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Results for Greenland Halibut and American Plaice of the Spanish Survey in NAFO Divisions 3NO: Biomass, Length Distribution and Age Distribution for the Period 1997-2005

by

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Abstract

Greenland halibut (*Reinhardtius hippoglossoides*) and American plaice (*Hippoglossoides platessoides*) indices from the bottom trawl survey that Spain carries out in spring since 1995 in Divisions 3NO of the NAFO Regulatory Area are presented. Biomass, length distribution and age distribution are presented since 1997, year in that the survey extended the depth strata. In 2001, the R/V *Vizconde de Eza* replaced the C/V *Playa de Menduíña* in the execution of the survey. We present the transformed to the R/V *Vizconde de Eza* series for the period 1997-2000, and the original obtained data for the period 2002-2005. In 2001, there are data from the two vessels. This year the data were updated, so a new calibration was made. The changes affect the species length distribution. Greenland halibut biomass and abundance estimates present a decreasing trend along the period. It seems not to be recuperation of the stock. But in last years it can be seen a presence of juveniles, mainly in 2004. For American plaice we can see an increasing trend along the whole period. For this species, a good recruitment occurred in 2004 (ages 1 and 2).

Material and Methods

Since 1995, Spain carries out a spring-summer survey in the NAFO Regulatory Area of Div. 3NO on board the C/V *Playa de Menduíña* with a net trawl type *Pedreira*. In 2001, this vessel was replaced by the R/V *Vizconde de Eza*, using a trawl net type *Campelen*. To know more details about the technical specifications of the surveys, see Walsh *et al*., 2001 and González Troncoso *et al*., 2004.

The catch of each haul was sorted and weighted into species and a sample of each species was taken in order to measure the length distribution. For Greenland halibut and American plaice each individual of the sample was measured to the total length to the nearest lower cm. We present the indices for the period 1997-2005. In 1995 and 1996 only the less deeper strata was surveyed, so these years are not representative for these species, thus they are not included in the analysis.

In Table 1, we present the number of valid tows, the depth strata covered and the dates of the survey series (1997-2005).

This year, errors in the length distribution data process tools were found. The changes affect both the numbers and the shape of the length distribution. A new calibration factors for the length distribution were calculated for each species following identical method employed in previous years, fitting the ratios of the number of the two vessels length by length. There is a length range in which the ratios of the data are scattered, so it seems to be better not to apply the fit to the entire length range but to cut in an appropriate point. A residual analysis was made in order to choose the best length to make the cut, or if it was better to cut or not. The new transformation factors and their graph are presented for both transformed species. The changes do not affect the mean catches and the biomass, so

these indices are the same than last years. For details about the transformation of these species, see González Troncoso *et al.*, 2004 and González Troncoso *et al.*, 2004.

For each species, all the indices are presented transformed until 2000 and no-transformed in the period 2002-2005. In the year 2001, there are data transformed from the former vessel with original data from the new vessel. We present per haul the mean catch, the stratified mean catch and the biomass with their variance per year; the length distribution in number per haul stratified mean catches per length, sex and year; and per age the age numbers, the mean length and the mean weight per haul stratified mean catches. The age numbers were calculated starting from the length distribution per haul stratified mean catches applying the Age Length Key (ALK) for age-length keys. Weight at age was calculated by applying the length/weight relationship for each year to the mean length. For Greenland halibut, Spanish ALK was applied, but for American plaice we have no ALK yet, so we have used the Canadian ALK for this species (K. Dwyer and J. Morgan, com. pers.)

Results

Greenland halibut

Introduction

The Greenland halibut stock in Subarea 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 (1978-2004), EU in Div. 3M (1988-2004) and EU-Spain in Div. 3NO (1995-2004). Commercial catch-at-age data were available from 1975-2004.

The exploitable biomass (age 5+) 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. However, increasingly higher catches and fishing mortality since then accompanied by scarce recruitment has caused a subsequent decline. The 2005 biomass estimate is the lowest in the series.

So, the exploitable biomass has been declining in recent years and is presently estimated to be at its lowest observed level. Recent recruitment has been below average, and fishing mortality has increased substantially in recent years, and is currently estimated as the highest in the time series (NAFO, 2005). Our results confirm these results presented by the Scientific Council last year.

Mean catches and Biomass

Table 2 shows the swept area, the tow number, the mean catches and their variance per haul and year to Greenland halibut. In Table 3 and Fig. 1 we present the stratified mean catches per stratum with the total variance per year. Table 4 and Fig. 2 present the biomass per swept area per stratum and their total variance per year, as the biomass corresponding with the ages 5+ and 10+. In Table 5 we present the length-weight relationship parameters *a* and *b*.

The biomass of the Greenland halibut has decreased since the year 1999. At this moment, the biomass is much below the level of 1997. As the Canadian data, our lowest data is in 2002. The stock seems not to recover.

Length Distribution

The result of the model proposed by Warren for Greenland halibut was the following:

$$\ln(\text{ratio}) = \exp(11.844 + 0.0556l - 4.5043\ln(l))$$

Figure 3 shows the ratios and their fit. In this figure, we observed that, although the data is a bit dispersed, in general the fit is good. So, for this species, this fit was taken for all the length range.

Table 6 presents the length distribution in number per stratified mean catch by haul for the Greenland halibut, by sex and year, with the number of samples in which there was length measures, the total number of individuals measured in these samples, the sampled catch and the range of lengths met, as the total catch of this species and the total hauls

made in the survey. In Fig. 4 and 5 we can follow the evolution along the years. We can follow a mode since 1997 until 2001, but since then no high new values appears. The highest recruitments were in 1997, 2001 and 2004. In 2005 the small individuals (around 22 cm) are the mode of the length distribution range.

Age numbers

We present the abundance at age per stratified mean catch by haul in the Table 7 and Fig. 6, by sex and year. Individuals between 0 and 20 years were caught in the period 1997-2005, and in last years (most since 2002) younger individuals were caught. Perhaps it can be due to the change of gear and/or vessel. We can follow three conspicuous cohorts in our series, the 1994-1996 cohorts (ages 1, 2 and 3 in 1997). Cohorts from following years seem to be weaker than those ones, but more constant. And 2002-2003 cohorts appear to be quite strong, as we can see in recent years, especially 2003 one. This year the presence of all the ages-classes is very weak.

Mean length and mean weight

Mean length and weight at age by sex over time are presented in Tables 8 and 9, and shown in Fig. 7 and 8. It seems that the greatest ages were increasing their mean length and weight until 2003, and falling in the youngest individuals, but this year the trend changes and these values decreased for ages 13 and 14+ and increased for ages 1 and 2.

American plaice

Introduction

There was no directed fishing of American plaice in 1994 and there has been a moratorium from 1995. Even under moratorium, catches have increased substantially in recent years. Biomass and SSB are very low compared to historic levels. SSB declined to the lowest estimated level in 1994 and 1995. It has increased since then but still remains very low. There has been no good recruitment to the exploitable biomass since the mid-1980s (NAFO, 2005).

Mean catches and Biomass

American plaice haul mean catches by stratum are presented in Table 10, included swept area, number of hauls and SD. Stratified haul mean catches by stratum and year and their SD are presented in Table 11.

The entire time series (1997-2005) of biomass and their SD estimates of American plaice are presented in Table 12. Estimated parameters values of length-weight distribution *a* and *b* are presented in Table 13.

The American plaice indices show a general increasing trend along the years, agree with the results from the Canadian surveys. We can see a decreasing until the year 2002, and an increasing in 2003 and 2004, with a slight decreasing in 2005 (Fig. 9 and 10).

Length Distribution

The result of the model proposed by Warren for American plaice was the following:

$$\ln(\text{ratio}) = \exp(9.1237 + 0.1047l - 4.0231\ln(l))$$

Figure 11 shows the ratios and their fit. In this figure, we observed that, for the lengths below 12 cm, the data are very scattered, so, for these values, the mean of the ratios factor was applied, and two length-classes are formed as:

$$\text{For } l \leq 12 \quad : \text{cf} = 12.0930$$

$$\text{For } l \geq 13 \quad : \text{cf} = \exp(9.1237 + 0.1047l - 4.0231\ln(l))$$

Table 14 and Fig. 12 and 13 show the length distribution per haul stratified mean catches by sex and year, besides the sampled size and its catch, for the period 1997-2005. The data have been grouped two by two**,** so we present the data every two cm. In 2004 there is a great presence of juveniles (8 cm), and in 2005 the mode appears around 14 cm.

Age numbers

We present the abundance at age per stratified mean catch by haul in the Table 15 and Fig. 14, by sex and year. The ALK is the Canadian one. We can follow a cohort without problems since the year 2000, starting in individuals of 2 years old (1998 cohort), reaching the 7 year old in 2005; a second cohort, weaker, can be followed since 1999, starting in 2 years old, too (1997 cohort). And more recently, a new cohort from the year 2002 (one year old in 2003), can be followed until this year.

Mean length and mean weight

Mean length and weight at age by sex over time are presented in Tables 16 and 17, and shown in Fig. 15 and 16. The mean length is more or less stable in all ages, at least since the year 2002. The same occurs with the mean weight, although with more variations. The major variations appear in the older ages studied: 13, 14 and 15+ years old individuals. From 1997 to 1999 a general decreasing in the two means is observed.

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TABLE 1. Spanish spring bottom trawl surveys on NAFO Div. 3NO: 1997-2005

Year	Vessel	Valid tows	Depth strata covered (m)	Dates
1997	C/V *Playa de Menduíña*	128	56-1280	April 26-May 18
1998	C/V *Playa de Menduíña*	124	56-1464	May 06-May 26
1999	C/V *Playa de Menduíña*	114	56-1464	May 07-May 26
2000	C/V *Playa de Menduíña*	118	56-1464	May 07-May 28
2001	R/V *Vizconde de Eza* C/V *Playa de Menduíña*	123(*)	56-1464	May 05-May 23
2002	R/V *Vizconde de Eza*	125	56-1464	April 29-May 19
2003	R/V *Vizconde de Eza*	118	56-1464	May 11-Jun 02
2004	R/V *Vizconde de Eza*	120	56-1464	Jun 06 – Jun 24
2005	R/V *Vizconde de Eza*	119	56-1464	Jun 10 – Jun 29

(*) We took, for the calculation of the series, 83 hauls from the R/V *Vizconde de Eza* and 40 hauls from the C/V *Playa de Menduíña* (123 hauls in total).

TABLE 2. Swept area, number of hauls and Greenland halibut mean catch (kg) and SD (**) by stratum. Spanish Spring Surveys on NAFO Div. 3NO: 1997-2005. Swept area in square miles. n.s. means stratum not surveyed. 1997-2000 data are transformed C/V *Playa de Menduíña* data, and 2002-2005 data are original from R/V *Vizconde de Eza*. In 2001, there are data from the two vessels.

	1997				1998				1999			
Stratum	Swept area	Tow number	G. halibut Mean catch	G. halibut SD	Swept area	Tow number	G. halibut Mean catch	G. halibut SD	Swept area	Tow number	G. halibut Mean catch	G. halibut SD
353	0.0480	4	0.06	0.053	0.0465	4	1.37	1.274	0.0360	3	0.61	0.569
354	0.0233	2	0.70	0.095	0.0356	3	2.36	1.246	0.0218	2	0.86	0.781
355	0.0233	2	4.07	0.230	0.0221	2	0.29	0.066	0.0229	2	0.22	0.295
356	0.0225	2	4.11	1.871	0.0221	2	4.27	4.759	0.0229	2	0.23	0.174
357	0.0443	4	1.08	1.341	0.0240	2	8.40	6.433	0.0236	2	1.69	0.276
358	0.0563	5	1.38	1.168	0.0236	3	2.35	1.843	0.0349	3	4.10	3.155
359	0.0690	6	0.66	0.623	0.0698	6	0.22	0.185	0.0364	3	2.15	3.725
360	0.3754	32	0.04	0.183	0.2561	25	0.04	0.158	0.2325	19	0.31	0.918
374	0.0353	3	0.00	0.000	0.0353	3	0.05	0.080	0.0244	2	0.00	0.000
375	0.0116	1	0.00	-	0.0345	3	0.00	0.000	0.0236	2	0.00	0.000
376	0.1583	14	0.00	0.000	0.0930	10	0.00	0.000	0.1219	10	0.00	0.000
377	0.0116	1	0.00	-	0.0229	2	0.03	0.039	0.0240	2	0.48	0.683
378	0.0210	2	0.78	0.985	0.0120	2	0.66	0.873	0.0229	2	1.03	0.330
379	0.0206	2	2.23	1.031	0.0356	3	1.88	0.826	0.0236	2	0.96	0.013
380	0.0210	2	2.64	1.210	0.0113	2	2.48	2.022	0.0236	2	3.94	1.326
381	0.0221	2	0.21	0.009	0.0229	2	0.70	0.144	0.0229	2	2.82	0.985
382	0.0461	4	0.00	0.000	0.0229	3	0.04	0.064	0.0484	4	0.00	0.001
721	0.0221	2	2.98	1.053	0.0203	2	11.82	9.833	0.0244	2	0.62	0.249
722	0.0214	2	1.53	2.163	0.0101	2	24.84	1.628	0.0229	2	13.36	7.909
723	0.0210	2	5.16	2.543	0.0233	2	5.32	1.956	0.0229	2	11.07	10.916
724	0.0225	2	1.92	0.624	0.0206	2	8.40	1.044	0.0225	2	4.55	1.181
725	0.0206	2	7.85	4.225	0.0086	1	2.07	-	0.0229	2	4.97	5.763
726	n.s.	n.s.	n.s.	n.s.	0.0094	2	27.96	33.187	0.0225	2	29.04	26.314
727	0.0094	1	5.16	-	0.0233	2	7.80	6.754	0.0236	2	10.48	8.316
728	0.0214	2	36.24	23.055	0.0206	2	57.21	56.042	0.0233	2	62.32	12.655
752	0.0218	2	36.90	9.964	0.0229	2	54.22	23.669	0.0233	2	56.93	8.677
753	0.0214	2	32.43	8.270	0.0218	2	33.32	8.507	0.0229	2	64.23	4.417
754	0.0330	3	18.70	4.941	0.0210	2	17.32	4.706	0.0206	2	17.12	11.204
755	n.s.	n.s.	n.s.	n.s.	0.0206	2	19.07	0.177	0.0311	3	15.94	8.279
756	0.0109	1	68.36	-	0.0225	2	220.13	34.559	0.0225	2	125.28	46.721
757	0.0304	3	34.70	10.823	0.0206	2	95.25	21.628	0.0233	2	106.53	27.496
758	0.0214	2	39.36	23.502	0.0105	2	52.55	9.813	0.0214	2	52.72	11.736
759	n.s.	n.s.	n.s.	n.s.	0.0214	2	48.19	35.497	0.0218	2	44.72	44.096
760	0.0105	1	10.44	-	0.0214	2	32.89	28.743	0.0225	2	44.98	46.019
761	0.0315	3	61.90	36.985	0.0206	2	46.01	16.364	0.0210	2	37.88	1.004
762	0.0308	3	45.89	27.172	0.0094	2	38.22	15.038	0.0210	2	63.34	37.289
763	n.s.	n.s.	n.s.	n.s.	0.0218	2	35.02	27.312	0.0311	3	21.44	8.946
764	0.0206	2	20.63	2.422	0.0218	2	21.31	10.686	0.0225	2	28.81	12.412
765	0.0206	2	35.43	14.289	0.0098	2	22.82	3.131	0.0221	2	31.43	0.328
766	0.0308	3	62.87	9.784	0.0191	2	20.82	3.479	0.0218	2	31.31	20.000
767	n.s.	n.s.	n.s.	n.s.	0.0109	2	10.21	50.629	0.0214	2	25.90	9.786

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

TABLE 2 (cont.). Swept area, number of hauls and Greenland halibut mean catch (kg) and SD (**) by stratum. Spanish Spring Surveys on NAFO Div. 3NO: 1997-2005. Swept area in square miles. n.s. means stratum not surveyed. 1997-2000 data are transformed C/V *Playa de Menduíña* data, and 2002-2005 data are original from R/V *Vizconde de Eza*. In 2001, there are data from the two vessels.

	2000				2001				2002			
Stratum	Swept area	Tow number	G. halibut Mean catch	G. halibut SD	Swept area	Tow number	G. halibut Mean catch	G. halibut SD	Swept area	Tow number	G. halibut Mean catch	G. halibut SD
353	0.0356	3	0.19	0.178	0.0341	3	0.03	0.038	0.0476	4	0.21	0.278
354	0.0356	3	0.11	0.057	0.0338	3	3.22	1.927	0.0356	3	0.85	0.839
355	0.0233	2	0.22	0.274	0.0240	2	17.25	15.486	0.0236	2	0.43	0.467
356	0.0225	2	0.49	0.043	0.0240	2	0.07	0.042	0.0233	2	1.40	1.131
357	0.0124	1	0.11	-	0.0244	2	2.69	2.135	0.0240	2	1.15	1.626
358	0.0341	3	0.48	0.529	0.0345	3	8.46	12.298	0.0345	3	3.20	0.819
359	0.0469	4	1.35	2.014	0.0803	7	1.97	2.329	0.0686	6	0.28	0.219
360	0.2396	20	0.13	0.352	0.2423	20	0.17	0.484	0.2865	25	0.00	0.007
374	0.0240	2	0.00	0.000	0.0240	2	0.00	0.000	0.0345	3	0.00	0.000
375	0.0244	2	0.00	0.000	0.0338	3	0.00	0.000	0.0353	3	0.00	0.000
376	0.1200	10	0.00	0.000	0.1155	10	0.00	0.000	0.1140	10	0.00	0.000
377	0.0229	2	0.16	0.221	0.0229	2	0.42	0.537	0.0229	2	0.00	0.001
378	0.0233	2	1.09	1.214	0.0236	2	5.69	8.040	0.0233	2	1.85	0.636
379	0.0225	2	1.23	0.880	0.0229	2	4.61	4.236	0.0229	2	5.85	4.313
380	0.0236	2	2.42	1.447	0.0206	2	4.06	0.066	0.0225	2	5.05	3.041
381	0.0236	2	1.36	0.352	0.0236	2	0.90	1.271	0.0229	2	0.5275	0.145
382	0.0499	4	0.12	0.147	0.0469	4	0.05	0.080	0.0341	3	0.401	0.683
721	0.0236	2	0.48	0.681	0.0248	2	0.40	0.431	0.0233	2	0.08	0.062
722	0.0218	2	19.49	9.977	0.0233	2	1.09	0.863	0.0236	2	2.63	2.906
723	0.0248	2	2.85	1.094	0.0240	2	1.33	0.240	0.0233	2	1.24	1.075
724	0.0233	2	5.83	2.179	0.0353	3	3.45	2.786	0.0225	2	4.75	1.202
725	0.0210	2	10.03	8.796	0.0116	1	2.67	0.522	0.0225	2	7.35	6.718
726	0.0221	2	12.95	3.348	0.0116	1	3.65	1.200	0.0214	2	3.25	3.323
727	0.0210	2	2.65	1.181	0.0225	2	3.79	0.243	0.0233	2	2.01	1.400
728	0.0210	2	29.91	0.098	0.0229	2	8.62	1.654	0.0229	2	7.93	10.986
752	0.0206	2	23.33	1.989	0.0210	2	26.37	8.723	0.0116	1	0.34	-
753	0.0218	2	49.77	21.700	0.0214	2	22.66	4.883	0.0229	2	2.45	3.465
754	0.0195	2	46.69	14.381	0.0195	2	41.09	41.477	0.0341	3	20.33	4.996
755	0.0431	4	35.73	20.076	0.0416	4	27.16	16.279	0.0338	3	0.46	0.655
756	0.0203	2	60.60	40.187	0.0113	1	30.10	16.124	0.0229	2	10.55	14.920
757	0.0214	2	37.41	10.108	0.0233	2	42.23	4.326	0.0225	2	9.95	2.192
758	0.0210	2	56.67	11.487	0.0218	2	42.11	8.828	0.0225	2	17.15	1.485
759	0.0210	2	29.43	8.579	0.0221	2	76.11	21.890	0.0225	2	2.15	3.041
760	0.0210	2	30.56	2.862	0.0229	2	9.42	10.861	0.0229	2	4.75	4.172
761	0.0221	2	36.09	26.813	0.0225	2	8.10	7.778	0.0225	2	16.65	16.900
762	0.0203	2	36.37	1.726	0.0116	1	22.50	21.072	0.0225	2	2.11	1.563
763	0.0416	4	25.64	21.799	0.0330	3	31.61	22.554	0.0225	2	0.74	1.047
764	0.0218	2	16.96	6.498	0.0240	2	53.64	1.888	0.0236	2	6.95	5.869
765	0.0203	2	37.13	30.587	0.0113	1	35.87	13.111	0.0236	2	45.90	39.739
766	0.0214	2	16.76	2.475	0.0203	2	16.42	9.557	0.0233	2	9.53	1.025
767	0.0210	2	21.21	6.393	0.0218	2	5.72	2.593	0.0225	2	0.85	1.202

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

TABLE 2 (cont.). Swept area, number of hauls and Greenland halibut mean catch (kg) and SD (**) by stratum. Spanish Spring Surveys on NAFO Div. 3NO: 1997-2005. Swept area in square miles. n.s. means stratum not surveyed. 1997-2000 data are transformed C/V *Playa de Menduíña* data, and 2002-2005 data are original from R/V *Vizconde de Eza*. In 2001, there are data from the two vessels.

	2003				2004				2005			
Stratum	Swept area	Tow number	G. halibut Mean catch	G. halibut SD	Swept area	Tow number	G. halibut Mean catch	G. halibut SD	Swept area	Tow number	G. halibut Mean catch	G. halibut SD
353	0.0334	3	0.01	0.013	0.0338	3	1.44	2.395	0.0353	3	1.92	2.694
354	0.0338	3	0.04	0.029	0.0345	3	1.51	2.160	0.0353	3	3.13	4.202
355	0.0229	2	2.46	2.492	0.0229	2	4.02	5.119	0.0225	2	1.36	0.849
356	0.0225	2	2.95	3.695	0.0221	2	3.35	3.873	0.0233	2	0.92	0.973
357	0.0229	2	6.72	5.070	0.0229	2	1.50	0.521	0.0233	2	1.20	0.817
358	0.0338	3	3.45	5.973	0.0330	3	0.94	0.438	0.0349	3	1.91	3.063
359	0.0791	7	0.30	0.438	0.0791	7	1.18	2.137	0.0814	7	0.35	0.364
360	0.2254	20	0.02	0.056	0.2310	20	0.11	0.459	0.2325	20	0.29	1.075
374	0.0225	2	0.00	0.000	0.0233	2	0.00	0.005	0.0229	2	0.00	0.000
375	0.0330	3	0.00	0.002	0.0338	3	0.00	0.000	0.0349	3	0.00	0.000
376	0.1125	10	0.00	0.003	0.1166	10	0.00	0.000	0.1174	10	0.00	0.004
377	0.0225	2	1.55	1.884	0.0218	2	0.07	0.011	0.0233	2	1.34	1.898
378	0.0225	2	2.97	3.008	0.0225	2	0.38	0.530	0.0225	2	0.02	0.005
379	0.0229	2	7.67	5.275	0.0124	1	2.60	-	0.0236	2	3.72	3.370
380	0.0229	2	4.345	0.205	0.0221	2	10.3	0.424	0.0229	2	34.1	23.617
381	0.0229	2	1.06	1.188	0.0225	2	5.488	6.701	0.0233	2	6.248	3.948
382	0.0454	4	0.045	0.061	0.0461	4	0.0575	0.068	0.0458	4	0.49	0.571
721	0.0225	2	0.12	0.051	0.0221	2	1.92	0.693	0.0229	2	0.99	0.131
722	0.0221	2	1.66	0.410	0.0218	2	24.04	23.144	0.0233	2	23.29	12.887
723	0.0229	2	4.02	5.416	0.0229	2	3.85	3.755	0.0233	2	2.68	2.271
724	0.0225	2	7.07	4.971	0.0214	2	12.45	3.182	0.0225	2	11.98	10.925
725	0.0229	2	10.55	0.778	0.0225	2	19.57	19.537	0.0236	2	17.37	18.374
726	0.0225	2	0.00	0.000	0.0225	2	14.71	1.287	0.0113	1	12.24	-
727	0.0218	2	18.48	11.066	0.0233	2	20.47	10.281	0.0229	2	19.28	7.582
728	0.0225	2	39.95	17.748	0.0180	2	5.70	4.950	0.0109	1	0.84	-
752	0.0229	2	39.80	39.032	0.0214	2	4.64	5.424	0.0236	2	5.66	2.482
753	0.0229	2	16.64	12.721	0.0218	2	4.37	0.820	0.0225	2	9.00	1.107
754	0.0218	2	19.12	6.484	0.0214	2	3.21	0.007	0.0225	2	4.60	6.498
755	0.0221	2	1.88	2.652	0.0319	3	2.64	4.567	0.0450	4	5.61	4.039
756	0.0221	2	23.11	27.994	0.0218	2	14.99	4.609	0.0233	2	7.11	0.308
757	0.0221	2	2.49	2.348	0.0218	2	4.55	6.435	0.0225	2	6.81	3.422
758	0.0221	2	0.00	0.000	0.0214	2	9.73	3.714	0.0225	2	11.25	1.775
759	0.0113	1	21.61	-	0.0214	2	4.43	3.203	0.0229	2	9.03	12.763
760	0.0218	2	19.38	13.188	0.0221	2	14.63	7.958	0.0229	2	4.77	2.843
761	0.0225	2	13.26	3.387	0.0221	2	2.92	1.996	0.0221	2	6.61	5.172
762	0.0225	2	34.91	19.622	0.0233	2	8.44	4.349	0.0225	2	13.23	3.500
763	0.0311	3	1.75	3.037	0.0326	3	20.78	9.792	0.0334	3	5.06	6.575
764	0.0221	2	28.37	15.882	0.0229	2	33.78	29.165	0.0233	2	4.07	5.756
765	0.0113	1	31.80	-	0.0225	2	20.98	8.464	0.0229	2	18.44	0.926
766	0.0225	2	8.91	1.966	0.0225	2	8.46	11.958	0.0229	2	9.33	13.198
767	0.0229	2	15.96	21.270	0.0218	2	1.26	1.782	0.0113	1	0.00	-

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

TABLE 3. Stratified mean catches (Kg) by stratum and year and SD by year of Greenland halibut (1997-2005). n.s. means stratum not surveyed. 1997-2000 data are transformed C/V *Playa de Menduña* data (by FPC). 2002-2005 data are original from R/V *Vizconde de Eza*. In 2001, there are data from the two vessels.

Stratum	1997	1998	1999	2000	2001	2002	2003	2004	2005
353	15.61	368.31	164.80	50.27	7.17	57.16	2.06	387.99	516.48
354	171.84	581.54	211.23	27.55	792.94	209.92	10.33	371.38	769.98
355	301.21	21.29	16.18	16.14	1276.50	31.86	181.89	297.48	100.64
356	193.06	200.47	10.97	23.25	3.29	65.80	138.51	157.52	43.33
357	176.36	1377.73	277.07	17.81	441.16	188.60	1101.26	246.25	197.05
358	310.53	529.11	921.77	108.61	1903.50	720.00	776.85	212.40	430.50
359	279.62	94.44	905.35	568.81	827.57	116.83	125.94	495.40	145.85
360	120.66	100.23	852.78	358.57	461.98	5.79	49.54	314.48	795.80
374	0.00	9.93	0.00	0.00	0.00	0.00	0.00	0.75	0.00
375	0.00	0.00	0.00	0.00	0.00	0.00	0.36	0.00	0.00
376	0.00	0.00	0.00	0.00	0.00	0.00	1.73	0.00	1.60
377	0.00	2.78	48.27	15.59	42.00	0.10	154.80	7.40	134.20
378	108.38	92.26	143.03	151.61	790.22	257.15	413.25	52.13	2.71
379	236.64	199.42	101.35	130.87	488.13	620.10	813.02	275.60	394.00
380	253.84	237.93	377.84	232.32	389.43	484.80	417.12	988.80	3273.60
381	30.54	100.25	406.36	196.29	129.93	75.96	152.64	790.27	899.71
382	0.00	12.74	0.16	42.51	16.16	137.54	15.44	19.72	168.07
721	193.53	768.09	40.40	31.32	25.68	5.23	7.54	124.80	64.51
722	128.46	2086.59	1122.44	1637.46	91.56	220.50	139.44	2018.94	1956.15
723	799.62	824.44	1715.78	441.21	206.15	192.20	623.18	596.29	414.78
724	237.69	1041.12	564.01	722.86	427.80	589.00	876.06	1543.80	1484.90
725	824.43	217.35	521.45	1052.65	280.46	771.75	1107.75	2054.33	1823.59
726	n.s.	2013.07	2090.94	932.35	262.92	234.00	0.00	1059.12	880.92
727	495.47	749.00	1006.54	253.97	364.03	192.96	1773.60	1965.12	1850.98
728	2826.86	4462.31	4861.26	2333.24	672.64	618.66	3116.10	444.60	65.52
752	4833.71	7102.82	7457.90	3056.49	3454.13	44.41	5213.80	607.19	740.81
753	4475.84	4597.53	8863.93	6868.76	3126.94	338.10	2295.63	603.06	1242.35
754	3365.21	3117.02	3081.94	8403.69	7396.15	3660.00	3440.70	576.90	827.10
755	n.s.	7342.42	6136.26	13757.44	10457.90	177.23	721.88	1015.12	2160.81
756	6904.11	22233.50	12653.16	6121.02	3040.24	1065.55	2333.61	1514.09	718.36
757	3539.38	9715.91	10866.31	3815.73	4307.61	1014.90	253.98	464.10	694.62
758	3896.21	5202.82	5218.91	5610.39	4168.97	1697.85	0.00	962.87	1113.26
759	n.s.	6119.66	5679.93	3737.70	9666.37	273.05	2744.47	561.98	1146.18
760	1608.22	5065.54	6926.79	4706.01	1450.68	731.50	2983.75	2252.64	734.58
761	10584.19	7867.63	6477.12	6170.76	1385.10	2847.15	2266.61	499.58	1129.80
762	9728.04	8102.93	13428.13	7711.31	4769.98	446.26	7399.86	1788.22	2803.70
763	n.s.	9139.92	5595.80	6691.10	8250.35	193.14	457.62	5422.71	1319.79
764	2063.07	2131.30	2880.87	1695.94	5363.50	695.00	2837.00	3377.75	407.00
765	4392.98	2829.86	3897.46	4604.20	4447.98	5691.60	3943.20	2600.90	2285.94
766	9053.27	2998.23	4508.03	2413.42	2364.63	1371.60	1283.04	1217.59	1343.88
767	n.s.	1613.33	4092.64	3351.32	904.20	134.30	2521.68	199.08	0.00
TOTAL	72148.61	121270.85	124125.15	98060.56	84455.93	26177.55	51917.35	38088.31	35083.03
$\left(\overline{Y}\right)$	7.73	11.73	12.00	9.48	8.17	2.64	5.10	3.68	3.39
S.D.	0.62	0.89	1.00	0.75	0.84	0.45	0.61	0.40	0.36

TABLE 4. Survey estimates (by the swept area method) of Greenland halibut biomass (t) and SD by stratum and year on NAFO Div. 3NO. n.s. means stratum not surveyed. 1997-2000 data are transformed C/V *Playa de Menduíña* data. 2001-2005 data are original from R/V *Vizconde de Eza*. In 2001, there are data from the two vessels. The last two rows present the biomass corresponding to set of ages 5+ and 10+.

Stratum	1997	1998	1999	2000	2001	2002	2003	2004	2005
353	1	32	14	4	1	5	0	34	44
354	15	49	19	2	70	18	1	32	66
355	26	2	1	1	106	3	16	26	9
356	17	18	1	2	0	6	12	14	4
357	16	115	23	1	36	16	96	22	17
358	28	46	79	10	165	63	69	19	37
359	24	8	75	49	72	10	11	44	13
360	10	9	70	30	38	1	4	27	68
374	0	1	0	0	0	0	0	0	0
375	0	0	0	0	0	0	0	0	0
376	0	0	0	0	0	0	0	0	0
377	0	0	4	1	4	0	14	1	12
378	10	8	13	13	67	22	37	5	0
379	23	17	9	12	43	54	71	22	33
380	24	21	32	20	38	43	36	89	286
381	3	9	36	17	11	7	13	70	77
382	0	1	0	3	1	12	1	2	15
721	17	76	3	3	2	0	1	11	6
722	12	195	98	151	8	19	13	186	168
723	76	71	150	36	17	17	54	52	36
724	21	101	50	62	36	52	78	144	132
725	80	25	46	100	24	69	97	183	154
726	n.s.	195	186	84	22	22	0	94	78
727	53	64	85	24	32	17	163	169	162
728	265	433	418	222	59	54	277	49	6
752	444	621	642	296	329	151	456	57	63
753	419	423	775	632	293	30	201	55	110
754	306	297	299	862	758	275	316	54	74
755	n.s.	712	591	1276	1005	14	65	96	192
756	635	1976	1125	605	266	93	211	139	62
757	350	942	935	357	371	90	23	43	62
758	365	478	488	534	383	151	0	90	99
759	n.s.	573	522	356	874	24	244	53	100
760	153	474	616	448	127	64	274	204	64
761	1008	763	617	558	123	253	201	45	102
762	949	786	1279	762	424	40	658	154	249
763	n.s.	840	539	643	750	17	44	499	119
764	200	196	256	156	447	59	256	295	35
765	426	270	352	455	402	482	351	231	200
766	883	314	415	226	233	118	114	108	117
767	n.s.	146	383	319	83	12	220	18	0
TOTAL	6859	11305	11246	9331	7721	2380	4701	3437	3071
S.D.	546	860	973	707	790	410	575	373	325
Biomass 5+	4303	6284	6367	8785	6700	2011	3386	2318	2628
Biomass 10+	406	504	660	1111	741	279	495	318	497

TABLE5. Length weight relationships in the calculation of Greenland halibut biomass. The equation is $Weight = a\left(l + 0.5\right)^{b}$ Spanish Spring Surveys on NAFO Div. 3NO: 1997-2005. To calculate the parameters for the indeterminate individuals, we used the total data (males + females + indeterminate individuals)

		1997	1998	1999	2000	2001	2002	2003	2004	2005
Males	a	0,0042	0,0042	0,0044	0,0020	0,0036	0,0031	0,0033	0.0034	0.0036
		Error = 0.0663	Error = 0.0824	Error = 0.1112	Error = 0.1562	Error = 0.2538	Error = 0.0962	Error = 0.1081	Error = 0.0886	Error = 0.1075
	b	3,1561	3,1622	3,1587	3,3625	3,1925	3,2496	3,2318	3.2123	3.2050
		Error = 0.0185	Error = 0.0226	Error = 0.0308	Error = 0.0433	Error = 0.0846	Error = 0.0285	Error = 0.0318	Error = 0.0254	Error = 0.0306
		R^2 = 0.999	R^2 = 0.999	R^2 = 0.995	R^2 = 0.996	R^2 = 0.997	R^2 = 0.987	R^2 = 0.995	R2 = 0.997	R2 = 0.995
		N = 893	N = 417	N = 267	N = 315	N = 15	N = 316	N = 509	N = 498	N = 387
Females	a	0,0033	0,0038	0,0033	0,0018	0,0034	0,0027	0,0034	0.0026	0.0050
		Error = 0.0650	Error = 0.0692	Error = 0.0897	Error = 0.1003	Error = 0.2252	Error = 0.1315	Error = 0.0871	Error = 0.0767	Error = 0.1357
	b	3,2308	3,2043	3,2547	3,4066	3,2240	3,2950	3,2302	3.2998	3.1259
		Error = 0.0170	Error = 0.0179	Error = 0.0237	Error = 0.0262	Error = 0.0656	Error = 0.0368	Error = 0.0241	Error = 0.0212	Error = 0.0374
		R^2 = 0.999	R^2 = 0.999	R^2 = 0.996	R^2 = 0.995	R^2 = 0.995	R^2 = 0.993	R^2 = 0.997	R2 = 0.998	R2 = 0.991
		N = 1473	N = 681	N = 408	N = 642	N = 26	N = 456	N = 726	N = 600	N = 602
Indet.	a	0,0032	0,0036	0,0040	0,0019	0,0038	0,0028	0,0027	0.0027	0.0040
		Error = 0.0547	Error = 0.0706	Error = 0.1010	Error = 0.0893	Error = 0.1320	Error = 0.0941	Error = 0.0814	Error = 0.0781	Error = 0.0941
	b	3,2409	3,2201	3,2009	3,3882	3,1925	3,2837	3,2894	3.2812	3.1787
		Error = 0.0145	Error = 0.0183	Error = 0.0269	Error = 0.0234	Error = 0.0394	Error = 0.0263	Error = 0.0226	Error = 0.0217	Error = 0.0260
		R^2 = 0.999	R^2 = 0.999	R^2 = 0.987	R^2 = 0.998	R^2 = 0.997	R^2 = 0.996	R^2 = 0.997	R2 = 0.997	R2 = 0.996
		N = 2383	N = 1105	N = 679	N = 966	N = 44	N = 776	N = 1243	N = 1105	N = 990

TABLE 6. Greenland halibut length distribution per haul mean catches by sex and year. Number per stratified mean catches. Spanish Spring Survey on NAFO 3NO: 1997-2005 Indet. means indeterminate. 1997-2000 data are transformed C/V *Playa de Menduiña* data. 2002-2005 data are original R/V *Vizconde de Eza* data. In 2001, there are data form the two vessels. (*) indicates untransformed data.

	1997				1998				1999			
Lenght (cm.)	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
6	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.151	0.151
8	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
10	0.000	0.043	0.382	0.425	0.000	0.000	0.036	0.036	0.098	0.395	0.000	0.493
12	0.477	1.164	0.811	2.452	0.000	0.028	0.086	0.114	0.305	1.049	0.080	1.434
14	0.157	0.418	0.234	0.809	0.016	0.283	0.092	0.391	0.244	0.928	0.015	1.187
16	0.076	0.081	0.000	0.158	0.038	0.027	0.000	0.065	0.187	0.132	0.000	0.319
18	0.934	1.073	0.004	2.012	0.090	0.105	0.000	0.195	0.141	0.322	0.006	0.469
20	1.836	2.362	0.012	4.210	0.507	0.540	0.025	1.071	0.867	1.170	0.000	2.037
22	1.222	1.395	0.000	2.616	0.699	1.099	0.000	1.798	0.731	1.506	0.000	2.237
24	0.507	0.520	0.000	1.027	0.750	0.930	0.000	1.681	0.318	0.591	0.000	0.909
26	0.769	0.973	0.000	1.742	1.280	1.447	0.000	2.726	0.625	0.531	0.000	1.156
28	1.103	1.091	0.000	2.194	1.893	2.566	0.000	4.459	1.053	0.907	0.000	1.960
30	0.676	1.098	0.000	1.774	1.951	2.433	0.000	4.384	1.594	1.649	0.000	3.243
32	0.491	0.675	0.000	1.165	1.382	1.885	0.000	3.267	2.232	2.431	0.000	4.662
34	0.485	0.723	0.000	1.209	1.543	1.672	0.000	3.214	2.309	2.727	0.000	5.036
36	0.412	0.822	0.000	1.234	1.252	1.820	0.000	3.073	1.687	2.289	0.000	3.976
38	0.358	0.782	0.000	1.140	1.015	1.509	0.000	2.523	0.815	1.570	0.000	2.385
40	0.397	0.689	0.000	1.086	0.546	0.964	0.000	1.509	0.612	1.166	0.000	1.778
42	0.332	0.528	0.000	0.860	0.384	0.683	0.000	1.067	0.346	0.758	0.000	1.103
44	0.249	0.480	0.000	0.729	0.261	0.560	0.000	0.822	0.260	0.483	0.000	0.742
46	0.200	0.394	0.000	0.594	0.199	0.412	0.000	0.611	0.141	0.301	0.000	0.443
48	0.115	0.334	0.000	0.449	0.170	0.301	0.000	0.471	0.095	0.223	0.000	0.318
50	0.098	0.230	0.000	0.327	0.095	0.233	0.000	0.328	0.043	0.149	0.000	0.192
52	0.063	0.154	0.000	0.217	0.082	0.117	0.000	0.199	0.043	0.114	0.000	0.157
54	0.049	0.102	0.000	0.151	0.031	0.089	0.000	0.121	0.025	0.065	0.000	0.090
56	0.032	0.081	0.000	0.114	0.040	0.079	0.000	0.119	0.021	0.060	0.000	0.081
58	0.020	0.057	0.000	0.077	0.015	0.055	0.000	0.070	0.011	0.033	0.000	0.044
60	0.019	0.048	0.000	0.068	0.016	0.035	0.000	0.051	0.008	0.029	0.000	0.038
62	0.004	0.028	0.000	0.032	0.006	0.020	0.000	0.026	0.006	0.027	0.000	0.034
64	0.002	0.033	0.000	0.035	0.007	0.023	0.000	0.030	0.002	0.021	0.000	0.022
66	0.002	0.025	0.000	0.027	0.003	0.013	0.000	0.016	0.002	0.016	0.000	0.018
68	0.000	0.014	0.000	0.014	0.000	0.008	0.000	0.009	0.001	0.013	0.000	0.013
70	0.001	0.011	0.000	0.011	0.000	0.009	0.000	0.009	0.001	0.012	0.000	0.012
72	0.000	0.014	0.000	0.014	0.000	0.007	0.000	0.007	0.000	0.012	0.000	0.012
74	0.000	0.005	0.000	0.005	0.000	0.007	0.000	0.007	0.000	0.008	0.000	0.008
76	0.000	0.005	0.000	0.005	0.000	0.006	0.000	0.006	0.000	0.008	0.000	0.008
78	0.000	0.005	0.000	0.005	0.000	0.007	0.000	0.007	0.000	0.012	0.000	0.012
80	0.000	0.005	0.000	0.005	0.000	0.005	0.000	0.005	0.000	0.005	0.000	0.005
82	0.000	0.002	0.000	0.002	0.000	0.004	0.000	0.004	0.000	0.003	0.000	0.003
84	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.001
86	0.000	0.000	0.000	0.000	0.000	0.002	0.000	0.002	0.000	0.003	0.000	0.003
88	0.000	0.002	0.000	0.002	0.000	0.002	0.000	0.002	0.000	0.002	0.000	0.002
90	0.000	0.002	0.000	0.002	0.000	0.001	0.000	0.001	0.000	0.000	0.000	0.000
92	0.000	0.002	0.000	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
94	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.000	0.001	0.000	0.001
96	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.000	0.002
98	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
100	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
102	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
104	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.001
Total	11.087	16.467	1.445	28.999	14.270	19.987	0.239	34.496	14.821	21.726	0.251	36.799
Nº samples (*):				75				84				78
Nº Ind. (*):	3444	5550	55	9049	4470	7080	14	11564	4012	6533	6	10551
Sampled catch:				390				539				524
Range (*):				10-92				11-94				7-104
Total catch:				1259				1885				1898
Total hauls (*):				128				124				114

TABLE 6 (cont.). Greenland halibut length distribution per haul mean catches by sex and year. Number per stratified mean catches. Spanish Spring Survey on NAFO 3NO: 1997-2005 Indet. means indeterminate. 1997-2000 data are transformed C/V *Playa de Menduíña* data. 2002-2005 data are original R/V *Vizconde de Eza* data. In 2001, there are data from the two vessels. (*) indicates untransformed data.

	2000				2001				2002			
Lenght (cm.)	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
6	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
8	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.011	0.014	0.019	0.044
10	0.175	0.169	0.108	0.453	0.404	0.313	0.311	1.028	0.172	0.201	0.050	0.422
12	0.525	0.690	0.159	1.373	1.318	1.937	0.566	3.820	0.725	0.715	0.036	1.476
14	0.297	0.553	0.019	0.868	1.555	2.089	0.159	3.804	0.465	0.523	0.007	0.994
16	0.122	0.162	0.000	0.284	0.280	0.349	0.000	0.629	0.041	0.033	0.000	0.074
18	0.146	0.130	0.000	0.276	0.134	0.115	0.000	0.250	0.019	0.013	0.000	0.032
20	0.035	0.039	0.000	0.074	0.763	0.900	0.000	1.663	0.095	0.085	0.000	0.180
22	0.089	0.083	0.000	0.172	1.431	1.614	0.000	3.045	0.186	0.246	0.000	0.432
24	0.152	0.198	0.000	0.350	0.521	0.798	0.000	1.319	0.228	0.277	0.000	0.505
26	0.085	0.131	0.000	0.216	0.104	0.136	0.000	0.241	0.115	0.148	0.000	0.262
28	0.077	0.104	0.000	0.181	0.033	0.040	0.000	0.073	0.059	0.070	0.000	0.129
30	0.150	0.186	0.000	0.335	0.054	0.088	0.000	0.142	0.095	0.118	0.000	0.213
32	0.234	0.294	0.000	0.527	0.160	0.189	0.000	0.349	0.115	0.232	0.000	0.347
34	0.399	0.464	0.000	0.863	0.169	0.259	0.000	0.428	0.142	0.200	0.000	0.342
36	0.677	0.811	0.000	1.488	0.291	0.348	0.000	0.639	0.134	0.182	0.000	0.316
38	0.755	1.075	0.000	1.831	0.352	0.528	0.000	0.880	0.132	0.192	0.000	0.324
40	0.785	1.562	0.000	2.347	0.539	0.834	0.000	1.373	0.081	0.303	0.000	0.383
42	0.608	1.380	0.000	1.989	0.515	0.829	0.000	1.343	0.129	0.260	0.000	0.389
44	0.400	1.026	0.000	1.426	0.443	1.064	0.000	1.507	0.106	0.218	0.000	0.324
46	0.260	0.624	0.000	0.884	0.384	0.865	0.000	1.249	0.064	0.166	0.000	0.230
48	0.115	0.409	0.000	0.524	0.186	0.650	0.000	0.836	0.038	0.129	0.000	0.167
50	0.092	0.231	0.000	0.323	0.107	0.347	0.000	0.453	0.072	0.138	0.000	0.209
52	0.072	0.175	0.000	0.248	0.051	0.188	0.000	0.239	0.016	0.048	0.000	0.064
54	0.037	0.145	0.000	0.182	0.046	0.129	0.000	0.175	0.023	0.087	0.000	0.110
56	0.034	0.109	0.000	0.144	0.012	0.073	0.000	0.085	0.000	0.038	0.000	0.038
58	0.017	0.060	0.000	0.077	0.019	0.061	0.000	0.080	0.000	0.009	0.000	0.009
60	0.012	0.065	0.000	0.076	0.011	0.027	0.000	0.038	0.000	0.017	0.000	0.017
62	0.005	0.034	0.000	0.039	0.007	0.042	0.000	0.049	0.000	0.000	0.000	0.000
64	0.004	0.035	0.000	0.039	0.003	0.024	0.000	0.027	0.000	0.014	0.000	0.014
66	0.004	0.022	0.000	0.026	0.003	0.028	0.000	0.030	0.000	0.005	0.000	0.005
68	0.001	0.028	0.000	0.029	0.000	0.011	0.000	0.011	0.000	0.009	0.000	0.009
70	0.000	0.020	0.000	0.020	0.000	0.011	0.000	0.011	0.000	0.000	0.000	0.000
72	0.000	0.014	0.000	0.014	0.000	0.012	0.000	0.012	0.000	0.000	0.000	0.000
74	0.000	0.014	0.000	0.014	0.000	0.008	0.000	0.008	0.000	0.000	0.000	0.000
76	0.000	0.006	0.000	0.006	0.000	0.014	0.000	0.014	0.000	0.000	0.000	0.000
78	0.000	0.021	0.000	0.021	0.000	0.034	0.000	0.034	0.000	0.006	0.000	0.006
80	0.000	0.010	0.000	0.010	0.000	0.004	0.000	0.004	0.000	0.005	0.000	0.005
82	0.000	0.007	0.000	0.007	0.000	0.006	0.000	0.006	0.000	0.000	0.000	0.000
84	0.000	0.007	0.000	0.007	0.000	0.007	0.000	0.007	0.000	0.000	0.000	0.000
86	0.000	0.006	0.000	0.006	0.000	0.002	0.000	0.002	0.000	0.012	0.000	0.012
88	0.000	0.001	0.000	0.001	0.000	0.001	0.000	0.001	0.000	0.009	0.000	0.009
90	0.000	0.002	0.000	0.002	0.000	0.001	0.000	0.001	0.000	0.000	0.000	0.000
92	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
94	0.000	0.001	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
96	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.000	0.000	0.000	0.000
98	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
100	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
102	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
104	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total	6.364	11.103	0.286	17.753	9.894	14.977	1.036	25.907	3.262	4.718	0.111	8.092
Nº samples (*):				81				44				76
Nº Ind. (*):	2991	6162	10	9163	445	739	80	1264	535	782	17	1334
Sampled catch:				635				291				430
Range (*):				11-94				10-78				9-89
Total catch:				1437				332				429
Total hauls (*):				118				123				125

TABLE 6 (cont.). Greenland halibut length distribution per haul mean catches by sex and year. Number per stratified mean catches. Spanish Spring Survey on NAFO 3NO: 1997-2005 Indet. means indeterminate. 1997-2000 data are transformed C/V *Playa de Menduíña* data. 2002-2005 data are original R/V *Vizconde de Eza* data. In 2001, there are data from the two vessels. (*) indicates untransformed data.

	2003				2004				2005			
Lenght (cm.)	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
6	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
8	0.029	0.013	0.064	0.106	0.000	0.007	0.009	0.016	0.000	0.000	0.000	0.000
10	0.347	0.437	0.040	0.824	0.139	0.093	0.015	0.248	0.005	0.028	0.000	0.033
12	0.707	1.004	0.007	1.718	0.799	0.810	0.039	1.648	0.097	0.078	0.012	0.187
14	0.361	0.622	0.000	0.983	1.793	1.820	0.023	3.636	0.322	0.383	0.000	0.705
16	0.051	0.049	0.000	0.100	0.928	0.858	0.000	1.785	0.133	0.270	0.000	0.403
18	0.021	0.025	0.000	0.046	0.081	0.066	0.000	0.147	0.032	0.035	0.000	0.068
20	0.112	0.098	0.000	0.210	0.056	0.087	0.000	0.142	0.151	0.092	0.000	0.243
22	0.393	0.513	0.000	0.906	0.193	0.200	0.000	0.394	0.441	0.552	0.000	0.993
24	0.305	0.506	0.000	0.810	0.293	0.382	0.000	0.675	0.302	0.518	0.000	0.820
26	0.161	0.225	0.000	0.386	0.197	0.327	0.000	0.524	0.152	0.320	0.000	0.472
28	0.190	0.132	0.000	0.323	0.154	0.212	0.000	0.366	0.099	0.131	0.000	0.230
30	0.342	0.238	0.000	0.581	0.307	0.302	0.000	0.609	0.102	0.193	0.000	0.294
32	0.256	0.467	0.000	0.723	0.337	0.519	0.000	0.856	0.199	0.226	0.000	0.425
34	0.317	0.422	0.000	0.739	0.282	0.490	0.000	0.772	0.216	0.307	0.000	0.523
36	0.173	0.382	0.000	0.555	0.241	0.412	0.000	0.654	0.191	0.320	0.000	0.511
38	0.214	0.494	0.000	0.708	0.163	0.402	0.000	0.566	0.215	0.377	0.000	0.592
40	0.260	0.469	0.000	0.729	0.126	0.304	0.000	0.430	0.182	0.343	0.000	0.525
42	0.182	0.350	0.000	0.532	0.114	0.244	0.000	0.358	0.118	0.225	0.000	0.343
44	0.094	0.320	0.000	0.414	0.072	0.194	0.000	0.266	0.047	0.196	0.000	0.243
46	0.149	0.266	0.000	0.415	0.132	0.167	0.000	0.300	0.050	0.164	0.000	0.214
48	0.149	0.172	0.000	0.321	0.079	0.099	0.000	0.178	0.067	0.117	0.000	0.184
50	0.095	0.227	0.000	0.322	0.098	0.128	0.000	0.226	0.038	0.095	0.000	0.133
52	0.090	0.187	0.000	0.277	0.045	0.085	0.000	0.130	0.053	0.081	0.000	0.134
54	0.037	0.089	0.000	0.127	0.047	0.075	0.000	0.121	0.073	0.067	0.000	0.141
56	0.032	0.116	0.000	0.148	0.012	0.037	0.000	0.049	0.047	0.026	0.000	0.072
58	0.007	0.087	0.000	0.094	0.019	0.048	0.000	0.067	0.020	0.088	0.000	0.109
60	0.000	0.035	0.000	0.035	0.014	0.018	0.000	0.032	0.013	0.024	0.000	0.037
62	0.000	0.038	0.000	0.038	0.009	0.018	0.000	0.027	0.000	0.020	0.000	0.020
64	0.000	0.027	0.000	0.027	0.008	0.005	0.000	0.012	0.009	0.018	0.000	0.027
66	0.000	0.000	0.000	0.000	0.000	0.007	0.000	0.007	0.000	0.006	0.000	0.006
68	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.006	0.011	0.000	0.017
70	0.000	0.022	0.000	0.022	0.000	0.005	0.000	0.005	0.000	0.015	0.000	0.015
72	0.000	0.023	0.000	0.023	0.000	0.005	0.000	0.005	0.000	0.000	0.000	0.000
74	0.000	0.017	0.000	0.017	0.000	0.016	0.000	0.016	0.000	0.018	0.000	0.018
76	0.000	0.008	0.000	0.008	0.000	0.006	0.000	0.006	0.000	0.000	0.000	0.000
78	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.006	0.000	0.006
80	0.000	0.000	0.000	0.000	0.000	0.006	0.000	0.006	0.000	0.008	0.000	0.008
82	0.000	0.012	0.000	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
84	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
86	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
88	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
90	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
92	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
94	0.000	0.010	0.000	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
96	0.000	0.000	0.000	0.000	0.000	0.006	0.000	0.006	0.000	0.000	0.000	0.000
98	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
100	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
102	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
104	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total	5.077	8.101	0.111	13.288	6.738	8.459	0.087	15.284	3.381	5.359	0.012	8.752
Nº samples (*):				79				79				78
Nº Ind. (*):	878	1317	17	2212	1235	1511	13	2759	579	925	2	1506
Sampled catch:				742				624				507
Range (*):				8-95				9-96				11-81
Total catch:				749				624				551
Total hauls (*):				118				120				119

TABLE 7. Greenland halibut age numbers per haul mean catches by sex and year. Number per stratified mean catches. Spanish Spring Survey on NAFO 3NO: 1997-2005 Indet. means indeterminate. 1997-2000 data are transformed C/V *Playa de Menduíña* data. 2002-2005 data are original R/V *Vizconde de Eza* data. In 2001, there are data form the two vessels.

	1997				1998				1999			
Age	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
0											0.15	0.15
1	3.74	4.74	1.44	9.92	0.57	0.92	0.22	1.71	1.14	3.15	0.10	4.38
2	2.70	2.82	0.00	5.52	2.61	2.62	0.01	5.24	1.86	2.94	0.00	4.80
3	1.67	1.82		3.49	4.24	4.84		9.08	4.09	3.12		7.21
4	0.81	2.99		3.81	3.35	5.12		8.47	4.35	4.96		9.31
5	0.98	1.26		2.24	1.92	3.14		5.06	2.06	4.23		6.29
6	0.77	1.20		1.97	0.97	1.80		2.77	0.81	2.12		2.92
7	0.21	1.01		1.22	0.34	0.76		1.10	0.32	0.45		0.77
8	0.19	0.41		0.60	0.20	0.46		0.66	0.13	0.36		0.49
9	0.01	0.06		0.07	0.04	0.17		0.21	0.04	0.19		0.23
10	0.00	0.05		0.05	0.03	0.06		0.08	0.03	0.06		0.09
11	0.00	0.05		0.05	0.01	0.03		0.03	0.01	0.02		0.03
12	0.00	0.01		0.02	0.00	0.03		0.03	0.00	0.04		0.05
13		0.01		0.01		0.02		0.02		0.03		0.03
14		0.02		0.02		0.01		0.01		0.03		0.03
15		0.01		0.01		0.01		0.01		0.02		0.02
16		0.00		0.00		0.00		0.00		0.01		0.01
17		0.00		0.00		0.00		0.00		0.00		0.00
18		0.00		0.00		0.00		0.00		0.00		0.00
19										0.00		
20		0.00		0.00						0.00		
Total	11.09	16.47	1.44	29.00	14.27	19.99	0.24	34.50	14.82	21.73	0.25	36.80

	2000				2001				2002			
Age	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
0												
1	1.15	1.49	0.29	2.92	3.40	4.44	1.03	8.87	1.40	1.40	0.11	2.91
2	0.22	0.27		0.49	2.59	3.30	0.01	5.90	0.33	0.32	0.00	0.64
3	0.34	0.47		0.80	0.51	0.67		1.18	0.38	0.65		1.02
4	0.59	0.80		1.39	0.41	0.66		1.07	0.24	0.46		0.69
5	1.50	2.34		3.84	1.20	1.64		2.84	0.47	0.67		1.14
6	1.48	2.95		4.42	1.23	2.73		3.96	0.32	0.60		0.92
7	0.89	1.67		2.56	0.50	1.06		1.56	0.11	0.33		0.44
8	0.12	0.59		0.71	0.02	0.20		0.22	0.01	0.21		0.23
9	0.06	0.23		0.28	0.01	0.05		0.06		0.02		0.02
10	0.02	0.06		0.08	0.01	0.04		0.05		0.01		0.01
11	0.01	0.05		0.06	0.01	0.03		0.04		0.02		0.02
12	0.00	0.03		0.04	0.00	0.05		0.05		0.02		0.02
13	0.00	0.04		0.05	0.00	0.04		0.05		0.01		0.01
14	0.00	0.05		0.06	0.00	0.04		0.04		0.01		0.01
15		0.03		0.03		0.02		0.02		0.02		0.02
16		0.02		0.02		0.00		0.00				
17		0.01		0.01		0.00		0.00				
18		0.00		0.00								
19		0.00		0.00		0.00		0.00				
20												
Total	6.36	11.10	0.29	17.75	9.89	14.98	1.04	25.91	3.26	4.72	0.11	8.09

TABLE 7 (Cont.). Greenland halibut age numbers per haul mean catches by sex and year. Number per stratified mean catches. Spanish Spring Survey on NAFO 3NO: 1997-2005 Indet. means indeterminate. 1997-2000 data are transformed C/V *Playa de Menduíña* data. 2002-2005 data are original R/V *Vizconde de Eza* data. In 2001, there are data form the two vessels.

	2003				2004				2005			
Age	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
0												
1	1.39	2.07	0.11	3.56	0.45	0.71	0.05	1.22	0.42	0.33	0.01	0.76
2	1.05	1.35	0.00	2.40	3.55	3.37	0.04	6.96	0.56	0.66	0.00	1.22
3	0.82	0.86		1.68	0.74	1.34		2.09	0.63	0.92		1.55
4	0.86	1.05		1.91	1.01	1.04		2.06	0.44	0.68		1.12
5	0.35	1.22		1.58	0.33	0.91		1.24	0.49	0.75		1.25
6	0.29	0.61		0.90	0.39	0.46		0.85	0.40	1.15		1.56
7	0.28	0.50		0.78	0.15	0.37		0.51	0.30	0.49		0.78
8	0.04	0.23		0.26	0.09	0.12		0.21	0.08	0.14		0.22
9	0.00	0.06		0.06	0.01	0.04		0.05	0.02	0.03		0.05
10		0.04		0.04	0.02	0.01		0.03	0.02	0.10		0.11
11		0.01		0.01	0.01	0.00		0.01	0.00	0.03		0.03
12		0.07		0.07		0.03		0.03	0.01	0.02		0.03
13		0.01		0.01		0.02		0.02		0.03		0.03
14		0.01		0.01		0.01		0.01		0.03		0.03
15						0.01		0.01		0.01		0.01
16												
17		0.01		0.01						0.00		0.00
18												
19												
20												
Total	5.08	8.10	0.11	13.29	6.74	8.46	0.09	15.28	3.38	5.36	0.01	8.75

TABLE 8. Greenland halibut mean length (cm) per haul mean catches by sex and year. Number per stratified mean catches. Spanish Spring Survey on NAFO 3NO: 1997-2005. Indet. means indeterminate. 1997-2000 data are transformed C/V *Playa de Menduíña* data. 2002-2005 data are original R/V *Vizconde de Eza* data. In 2001, there are data form the two vessels. (*) indicates untransformed data.

	1997				1998				1999			
Age	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
0											7.50	7.50
1	19.81	18.18	12.74	18.01	21.13	19.32	14.09	19.24	16.18	15.28	12.90	15.46
2	25.07	23.39	20.19	24.21	25.80	24.54	21.50	25.16	23.11	22.79	18.50	22.91
3	30.53	29.26		29.87	30.57	29.55		30.03	31.66	30.02		30.95
4	35.84	33.84		34.27	34.21	33.49		33.78	34.05	34.09		34.07
5	39.56	39.25		39.38	37.70	38.41		38.14	37.18	38.20		37.87
6	43.76	44.13		43.99	42.32	42.05		42.14	42.30	40.91		41.30
7	50.97	47.85		48.38	48.42	47.13		47.53	46.47	46.35		46.40
8	50.30	52.28		51.66	50.85	50.89		50.88	51.48	50.42		50.69
9	59.75	59.71		59.72	55.22	53.98		54.22	54.20	53.41		53.54
10	62.50	65.54		65.39	55.28	60.01		58.54	52.29	58.76		56.86
11	65.19	64.52		64.53	62.73	63.40		63.25	62.78	63.55		63.35
12	66.19	71.70		70.74	64.83	68.11		67.86	65.90	66.89		66.83
13		75.84		75.84		73.38		73.38		72.91		72.91
14		77.14		77.14		74.81		74.81		74.49		74.49
15		75.41		75.41		77.99		77.99		76.64		76.64
16		86.66		86.66		81.44		81.44		83.60		83.60
17		91.50		91.50		87.76		87.76		90.06		90.06
18		83.35		83.35		90.48		90.48		94.50		94.50
19												
20		92.50		92.05								
Total	28.46	29.93	12.76	28.52	32.78	33.62	14.54	33.14	32.05	31.74	9.76	31.72

TABLE 8 (Cont.). Greenland halibut mean length (cm) per haul mean catches by sex and year. Number per stratified mean catches. Spanish Spring Survey on NAFO 3NO: 1997-2005. Indet. means indeterminate. 1997-2000 data are transformed C/V *Playa de Menduíña* data. 2002-2005 data are original R/V *Vizconde de Eza* data. In 2001, there are data form the two vessels. (*) indicates untransformed data.

	2000				2001				2002			
Age	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
0												
1	13.81	13.69	12.61	13.63	13.85	13.94	12.78	13.77	13.51	13.40	11.53	13.39
2	21.01	19.39		20.12	22.07	22.05	14.84	22.05	22.93	20.64	14.50	21.80
3	26.56	27.06		26.85	24.68	26.41		25.66	25.34	25.56		25.48
4	33.79	32.46		33.02	33.45	35.67		34.83	33.61	33.31		33.41
5	38.28	38.60		38.47	39.96	41.07		40.60	37.57	39.21		38.53
6	41.55	42.53		42.21	44.62	45.07		44.93	44.31	43.42		43.73
7	44.89	45.91		45.58	48.26	49.83		49.33	50.04	48.67		49.03
8	53.78	50.51		51.05	56.67	55.58		55.66	55.13	53.43		53.53
9	54.71	55.22		55.12	59.08	59.18		59.16		57.13		57.13
10	59.85	60.83		60.63	60.33	62.15		61.71		61.02		61.02
11	62.57	62.58		62.58	62.31	64.62		64.21		63.39		63.39
12	62.94	65.05		64.77	63.71	67.60		67.33		71.71		71.71
13	63.53	68.44		68.21	66.28	73.91		73.25		78.50		78.50
14	67.06	72.48		72.06	78.50	76.47		76.49		87.50		87.50
15		78.52		78.52		80.53		80.53		88.68		88.68
16		78.94		78.94		86.14		86.14				
17		83.62		83.62		89.08		89.08				
18		85.17		85.17								
19		91.03		91.03		97.50		97.50				
20												
Total	34.47	37.83	12.61	36.22	26.34	29.99	12.80	27.91	25.23	30.33	11.55	28.02

	2003				2004				2005			
Age	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
0												
1	12.96	13.17	10.15	12.99	12.14	12.94	11.54	12.58	14.77	16.35	12.50	15.42
2	23.06	23.83	12.50	23.49	16.47	16.75	14.07	16.59	20.68	21.16	12.50	20.93
3	31.31	31.43		31.37	25.29	29.09		27.74	24.98	25.79		25.46
4	36.64	36.62		36.63	33.61	34.70		34.17	31.66	29.71		30.48
5	42.37	41.22		41.48	39.85	39.40		39.52	36.91	37.79		37.44
6	47.12	46.49		46.70	45.12	44.79		44.94	41.07	42.56		42.17
7	51.58	52.40		52.11	52.07	50.62		51.04	48.58	48.64		48.62
8	56.19	56.47		56.43	54.02	55.95		55.16	55.20	56.01		55.70
9	58.50	60.69		60.57	59.66	58.82		59.04	57.66	58.58		58.20
10		63.25		63.25	61.61	61.10		61.41	62.45	60.71		61.00
11		64.50		64.50	64.50	64.50		64.50	61.50	64.15		63.87
12		72.19		72.19		63.61		63.61	68.48	68.16		68.24
13		77.50		77.50		73.79		73.79		70.93		70.91
14		82.50		82.50		75.50		75.50		76.19		76.19
15						88.20		88.20		78.77		78.77
16												
17		95.50		95.50						83.50		83.50
18												
19												
20												
Total	28.49	31.73	10.16	30.31	24.00	27.33	12.63	25.78	30.85	35.07	12.50	33.41

TABLE 9. Greenland halibut mean weight (gr) per haul mean catches by sex and year. Number per stratified mean catches. Spanish Spring Survey on NAFO 3NO: 1997-2005. Indet. means indeterminate. 1997-2000 data are transformed C/V *Playa de Menduíña* data. 2002-2005 data are original R/V *Vizconde de Eza* data. In 2001, there are data from the two vessels. (*) indicates untransformed data.

	1997				1998				1999			
Age	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
0											2.53	2.53
1	56.55	44.11	12.86	44.25	66.73	56.01	19.75	54.81	33.43	28.91	14.71	29.77
2	116.19	90.71	54.44	103.16	126.63	111.44	70.48	118.89	93.56	89.74	45.51	91.18
3	210.65	184.05		196.79	216.07	199.69		207.33	248.40	218.64		235.53
4	343.22	296.07		306.12	307.90	300.76		303.58	313.10	327.53		320.789
5	477.91	474.14		475.79	416.64	461.62		444.53	409.22	473.15		452.20
6	655.66	691.54		677.57	598.59	618.72		611.69	609.82	591.51		596.56
7	1039.74	904.80		927.81	910.39	891.49		897.31	822.33	886.29		859.87
8	1026.08	1215.64		1156.61	1069.28	1143.26		1120.75	1140.19	1164.85		1158.54
9	1712.22	1824.90		1803.51	1386.01	1376.62		1378.47	1348.28	1405.65		1395.92
10	1955.36	2451.90		2427.15	1432.74	1924.36		1771.37	1232.46	1904.19		1707.55
11	2237.75	2337.64		2335.75	2039.82	2276.20		2223.67	2111.90	2448.25		2362.51
12	2352.23	3300.22		3135.63	2253.06	2917.28		2867.21	2463.10	2940.32		2912.86
13		3942.66		3942.66		3684.55		3684.55		3877.33		3877.33
14		4190.79		4190.79		3909.22		3909.22		4188.33		4188.33
15		3887.49		3887.49		4480.36		4480.36		4594.01		4594.01
16		6092.92		6092.92		5136.80		5136.80		6339.81		6339.81
17		7169.24		7169.24		6438.79		6438.79		7771.36		7771.36
18		5376.62		5376.62		7159.28		7159.28		8870.58		8870.58
19												
20		7425.48		7425.48								
Total	232.20	308.61	12.96	264.67	303.57	365.55	22.83	337.54	299.38	352.89	7.97	328.98

	2000				2001				2002			
Age	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
0												
1	14.69	13.93	10.45	13.89	16.47	17.18	13.45	16.48	15.16	14.44	9.15	14.58
2	59.74	47.35		52.97	72.15	75.92	20.95	74.19	85.12	64.56	18.23	74.96
3	128.63	150.58		141.39	102.12	138.28		122.55	115.32	119.77		118.13
4	282.32	262.15		270.66	271.96	351.48		321.30	292.89	280.11		284.52
5	427.90	463.68		449.67	474.57	549.96		518.19	420.87	483.24		457.46
6	569.60	645.43		620.11	676.20	739.46		719.83	705.62	677.06		686.90
7	730.54	839.28		801.57	869.70	1020.42		971.90	1043.65	978.53		995.47
8	1328.46	1174.58		1199.73	1427.84	1443.38		1442.29	1413.34	1331.03		1336.18
9	1413.25	1563.75		1533.36	1628.57	1759.76		1735.49		1645.43		1645.43
10	1905.57	2159.81		2106.74	1741.34	2059.38		1981.96		2045.34		2045.34
11	2208.37	2378.52		2363.60	1929.96	2341.88		2269.44		2325.25		2325.25
12	2245.01	2715.93		2653.68	2073.82	2719.39		2673.75		3573.05		3573.05
13	2312.31	3242.15		3199.58	2352.00	3656.76		3543.88		4688.33		4688.33
14	2772.46	3964.91		3872.13	4033.42	4068.04		4067.64		6704.09		6704.09
15		5205.90		5205.90		4770.13		4770.13		7010.77		7010.77
16		5334.32		5334.32		5906.19		5906.19				
17		6423.59		6423.59		6596.90		6596.90				
18		6830.30		6830.30								
19		8552.11		8552.11		8790.83		8790.83				
20												
Total	420.62	613.57	10.45	534.68	235.78	384.60	13.51	312.93	222.00	406.07	9.20	326.40

TABLE 9 (Cont.). Greenland halibut mean weight (gr) per haul mean catches by sex and year. Number per stratified mean catches. Spanish Spring Survey on NAFO 3NO: 1997-2005. Indet. means indeterminate. 1997-2000 data are transformed C/V *Playa de Menduíña* data. 2002-2005 data are original R/V *Vizconde de Eza* data. In 2001, there are data from the two vessels. (*) indicates untransformed data.

	2003				2004				2005			
Age	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
0												
1	13.64	14.67	5.75	13.99	10.36	12.15	8.85	11.35	20.40	31.52	12.40	25.09
2	91.26	98.95	11.06	95.57	32.38	33.31	16.10	32.74	61.94	76.58	12.40	69.79
3	233.58	239.55		236.64	127.49	187.69		166.28	109.33	133.56		123.71
4	384.32	389.32		387.08	276.74	315.37		296.34	235.20	206.27		217.62
5	603.57	567.97		575.95	474.56	478.78		477.67	384.54	430.37		412.25
6	848.07	832.07		837.28	707.95	723.66		716.51	540.86	632.11		608.39
7	1139.15	1223.51		1193.47	1111.11	1087.07		1094.00	940.73	953.18		948.48
8	1491.39	1556.30		1546.84	1261.22	1510.72		1408.99	1371.22	1454.85		1423.31
9	1696.71	1957.74		1942.74	1714.45	1774.27		1759.06	1567.35	1686.45		1638.10
10		2235.61		2235.61	1901.04	2010.19		1944.89	2030.67	1867.95		1894.60
11		2380.78		2380.78	2200.49	2398.03		2258.79	1926.64	2219.97		2188.21
12		3442.28		3442.28		2297.05		2297.05	2733.13	2695.05		2704.57
13		4308.25		4308.25		3746.17		3746.17		3065.83		3065.83
14		5272.40		5272.40		4034.69		4034.69		3843.10		3843.10
15						6945.38		6945.38		4252.78		4252.79
16												
17		8458.35		8458.35						5056.70		5056.70
18												
19												
20												
Total	290.81	443.31	5.78	381.40	187.38	285.66	11.97	240.78	328.36	490.91	12.40	427.46

TABLE 10. Swept area, number of hauls and American plaice mean catch (kg) and SD (**) by stratum. Spanish Spring Surveys on NAFO Div. 3NO: 1997-2005. Swept area in square miles. n.s. means stratum not surveyed. 1997-2000 data are transformed C/V *Playa de Menduíña* data, and 2002-2005 data are original from R/V *Vizconde de Eza*. In 2001, there are data from the two vessels.

	1997				1998				1999			
Stratum	Swept area	Tow number	A. Plaice Mean catch	A. Plaice SD	Swept area	Tow number	A. Plaice Mean catch	A. Plaice SD	Swept area	Tow number	A. Plaice Mean catch	A. Plaice SD
353	0.0480	4	47.97	25.084	0.0465	4	267.95	103.830	0.0360	3	388.97	37.624
354	0.0233	2	34.16	18.447	0.0356	3	381.49	146.407	0.0218	2	184.12	100.017
355	0.0233	2	14.02	4.617	0.0221	2	134.67	132.931	0.0229	2	60.82	30.122
356	0.0225	2	8.15	4.133	0.0221	2	14.23	5.343	0.0229	2	31.47	23.877
357	0.0443	4	1.86	1.051	0.0240	2	2.33	0.484	0.0236	2	3.06	1.913
358	0.0563	5	4.44	4.415	0.0236	3	6.73	1.265	0.0349	3	9.06	15.047
359	0.0690	6	30.12	15.773	0.0698	6	198.60	199.740	0.0364	3	484.88	84.636
360	0.3754	32	26.15	17.839	0.2561	25	107.53	64.858	0.2325	19	263.77	91.624
374	0.0353	3	8.40	3.170	0.0353	3	4.00	0.906	0.0244	2	44.00	1.495
375	0.0116	1	1.85	-	0.0345	3	5.93	3.550	0.0236	2	42.21	15.545
376	0.1583	14	12.53	8.741	0.0930	10	82.92	73.283	0.1219	10	119.90	62.748
377	0.0116	1	20.96	-	0.0229	2	47.18	59.694	0.0240	2	86.16	117.320
378	0.0210	2	1.87	1.583	0.0120	2	5.22	2.199	0.0229	2	7.14	4.199
379	0.0206	2	1.78	1.568	0.0356	3	2.65	1.804	0.0236	2	0.78	0.308
380	0.0210	2	1.41	0.079	0.0113	2	1.69	0.945	0.0236	2	2.22	0.066
381	0.0221	2	1.55	0.895	0.0229	2	8.41	10.927	0.0229	2	0.59	0.231
382	0.0461	4	0.59	0.340	0.0229	3	4.35	3.017	0.0484	4	2.25	0.610
721	0.0221	2	13.40	12.225	0.0203	2	7.68	6.464	0.0244	2	20.06	10.378
722	0.0214	2	46.66	65.850	0.0101	2	1.99	2.375	0.0229	2	2.43	0.704
723	0.0210	2	8.79	5.464	0.0233	2	10.04	8.619	0.0229	2	34.05	29.946
724	0.0225	2	13.33	17.024	0.0206	2	10.84	2.528	0.0225	2	9.89	10.466
725	0.0206	2	1.31	0.882	0.0086	1	0.62	-	0.0229	2	2.48	0.073
726	n.s.	n.s.	n.s.	n.s.	0.0094	2	2.95	2.726	0.0225	2	39.96	47.051
727	0.0094	1	9.37	-	0.0233	2	9.02	3.782	0.0236	2	7.56	7.651
728	0.0214	2	32.09	23.965	0.0206	2	15.58	4.617	0.0233	2	37.93	22.294
752	0.0218	2	112.70	128.072	0.0229	2	49.95	7.102	0.0233	2	35.68	10.927
753	0.0214	2	56.78	41.643	0.0218	2	146.98	13.280	0.0229	2	14.74	4.969
754	0.0330	3	5.50	6.447	0.0210	2	2.67	3.782	0.0206	2	0.00	0.000
755	n.s.	n.s.	n.s.	n.s.	0.0206	2	0.39	0.550	0.0311	3	0.05	0.090
756	0.0109	1	75.68	-	0.0225	2	199.76	258.188	0.0225	2	124.34	44.457
757	0.0304	3	626.06	753.372	0.0206	2	82.24	100.918	0.0233	2	17.07	3.782
758	0.0214	2	0.60	0.447	0.0105	2	4.03	5.695	0.0214	2	0.31	0.438
759	n.s.	n.s.	n.s.	n.s.	0.0214	2	0.00	0.000	0.0218	2	0.34	0.484
760	0.0105	1	17.16	-	0.0214	2	8.04	5.519	0.0225	2	20.30	28.275
761	0.0315	3	1.21	1.954	0.0206	2	3.47	1.605	0.0210	2	0.00	0.000
762	0.0308	3	0.00	0.000	0.0094	2	0.00	0.000	0.0210	2	18.49	26.142
763	n.s.	n.s.	n.s.	n.s.	0.0218	2	0.08	0.110	0.0311	3	0.00	0.000
764	0.0206	2	0.17	0.237	0.0218	2	0.25	0.352	0.0225	2	0.00	0.000
765	0.0206	2	0.00	0.000	0.0098	2	0.00	0.000	0.0221	2	0.00	0.000
766	0.0308	3	0.00	0.000	0.0191	2	0.00	0.000	0.0218	2	0.00	0.000
767	n.s.	n.s.	n.s.	n.s.	0.0109	2	0.00	0.000	0.0214	2	0.00	0.000

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

TABLE 10 (cont.). Swept area, number of hauls and American plaice mean catch (kg) and SD (**) by stratum. Spanish Spring Surveys on NAFO Div. 3NO: 1997-2005. Swept area in square miles. n.s. means stratum not surveyed. 1997-2000 data are transformed C/V *Playa de Menduíña* data, and 2002-2005 data are original from R/V *Vizconde de Eza*. In 2001, there are data from the two vessels.

	2000				2001				2002			
Stratum	Swept area	Tow number	A. Plaice Mean catch	A. Plaice SD	Swept area	Tow number	A. Plaice Mean catch	A. Plaice SD	Swept area	Tow number	A. Plaice Mean catch	A. Plaice SD
353	0.0356	3	426.02	210.639	0.0341	3	451.08	185.936	0.0476	4	630.50	240.448
354	0.0356	3	147.44	84.780	0.0338	3	172.21	144.326	0.0356	3	207.67	77.048
355	0.0233	2	60.01	1.539	0.0240	2	206.75	85.065	0.0236	2	100.75	40.659
356	0.0225	2	28.11	24.368	0.0240	2	83.56	40.362	0.0233	2	53.95	51.548
357	0.0124	1	0.55	-	0.0244	2	76.85	105.720	0.0240	2	5.18	2.015
358	0.0341	3	298.64	437.609	0.0345	3	35.80	28.161	0.0345	3	27.67	21.202
359	0.0469	4	659.75	139.208	0.0803	7	347.89	328.624	0.0686	6	177.40	129.497
360	0.2396	20	324.76	269.238	0.2423	20	261.79	173.177	0.2865	25	143.72	117.177
374	0.0240	2	5.60	0.440	0.0240	2	14.95	1.909	0.0345	3	3.42	1.630
375	0.0244	2	30.11	9.300	0.0338	3	4.77	1.680	0.0353	3	1.41	1.073
376	0.1200	10	250.98	179.289	0.1155	10	46.95	32.487	0.1140	10	47.96	50.207
377	0.0229	2	27.02	29.064	0.0229	2	21.09	10.204	0.0229	2	34.05	39.527
378	0.0233	2	19.74	22.646	0.0236	2	2.75	1.287	0.0233	2	8.10	6.364
379	0.0225	2	2.30	1.146	0.0229	2	0.84	0.092	0.0229	2	5.75	5.445
380	0.0236	2	1.74	0.402	0.0206	2	2.97	0.638	0.0225	2	7.25	1.768
381	0.0236	2	2.03	1.269	0.0236	2	2.35	0.154	0.0229	2	3.81	2.821
382	0.0499	4	1.92	0.562	0.0469	4	3.02	0.929	0.0341	3	1.09	0.904
721	0.0236	2	4.21	4.725	0.0248	2	115.20	86.974	0.0233	2	18.20	12.445
722	0.0218	2	1.21	1.715	0.0233	2	30.29	35.511	0.0236	2	30.10	42.568
723	0.0248	2	10.67	7.344	0.0240	2	36.15	39.244	0.0233	2	7.20	0.849
724	0.0233	2	12.31	1.803	0.0353	3	26.47	26.158	0.0225	2	47.05	41.931
725	0.0210	2	8.64	8.707	0.0116	2	3.37	0.368	0.0225	2	3.55	4.313
726	0.0221	2	8.24	4.177	0.0116	2	1.80	0.430	0.0214	2	2.83	0.948
727	0.0210	2	4.59	2.089	0.0225	2	8.46	5.277	0.0233	2	2.85	1.061
728	0.0210	2	22.82	0.178	0.0229	2	5.85	1.143	0.0229	2	9.58	13.467
752	0.0206	2	128.14	25.680	0.0210	2	15.79	7.922	0.0116	1	0.00	-
753	0.0218	2	169.96	216.964	0.0214	2	60.01	68.290	0.0229	2	3.60	5.091
754	0.0195	2	0.00	0.000	0.0195	2	1.26	1.781	0.0341	3	8.60	14.206
755	0.0431	4	0.00	0.000	0.0416	4	0.00	0.000	0.0338	3	0.00	0.000
756	0.0203	2	31.68	11.829	0.0113	2	11.58	8.167	0.0229	2	11.73	12.551
757	0.0214	2	5.12	6.827	0.0233	2	105.18	148.295	0.0225	2	31.15	13.223
758	0.0210	2	1.32	1.649	0.0218	2	0.16	0.220	0.0225	2	1.27	0.523
759	0.0210	2	1.99	2.814	0.0221	2	0.26	0.374	0.0225	2	0.00	0.000
760	0.0210	2	43.59	58.396	0.0229	2	37.80	37.618	0.0229	2	4.75	6.718
761	0.0221	2	0.19	0.264	0.0225	2	0.25	0.346	0.0225	2	1.90	1.577
762	0.0203	2	0.00	0.000	0.0116	2	0.00	0.000	0.0225	2	0.30	0.424
763	0.0416	4	0.30	0.606	0.0330	3	0.00	0.000	0.0225	2	0.00	0.000
764	0.0218	2	0.00	0.000	0.0240	2	0.35	0.205	0.0236	2	0.50	0.707
765	0.0203	2	0.00	0.000	0.0113	2	0.05	0.071	0.0236	2	0.64	0.792
766	0.0214	2	0.00	0.000	0.0203	2	0.44	0.616	0.0233	2	0.00	0.000
767	0.0210	2	0.11	0.156	0.0218	2	0.00	0.000	0.0225	2	0.05	0.071

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

TABLE 10 (cont.). Swept area, number of hauls and American plaice mean catch (kg) and SD (**) by stratum. Spanish Spring Surveys on NAFO Div. 3NO: 1997-2005. Swept area in square miles. n.s. means stratum not surveyed. 1997-2000 data are transformed C/V *Playa de Menduíña* data, and 2002-2005 data are original from R/V *Vizconde de Eza*. In 2001, there are data from the two vessels.

	2003				2004				2005			
Stratum	Swept area	Tow number	A. Plaice Mean catch	A. Plaice SD	Swept area	Tow number	A. Plaice Mean catch	A. Plaice SD	Swept area	Tow number	A. Plaice Mean catch	A. Plaice SD
353	0.0334	3	470.86	217.828	0.033750	3	418.60	276.823	0.0353	3	224.63	106.622
354	0.0338	3	806.33	68.178	0.034500	3	220.64	173.634	0.0353	3	220.46	151.511
355	0.0229	2	112.14	7.297	0.022875	2	23.50	9.758	0.0225	2	73.44	60.161
356	0.0225	2	159.80	99.561	0.022125	2	0.66	0.893	0.0233	2	8.37	11.257
357	0.0229	2	59.40	76.650	0.022875	2	0.84	1.190	0.0233	2	0.00	0.000
358	0.0338	3	26.50	16.096	0.033000	3	27.72	15.234	0.0349	3	26.52	20.817
359	0.0791	7	459.09	433.737	0.079125	7	440.97	296.394	0.0814	7	371.26	369.519
360	0.2254	20	229.12	120.612	0.231000	20	283.51	168.955	0.2325	20	293.79	173.170
374	0.0225	2	15.33	4.207	0.023250	2	89.95	46.315	0.0229	2	126.47	116.171
375	0.0330	3	9.96	10.915	0.033750	3	73.12	19.172	0.0349	3	56.44	35.364
376	0.1125	10	62.92	55.173	0.116625	10	195.37	112.407	0.1174	10	177.42	92.305
377	0.0225	2	48.61	30.816	0.021750	2	84.23	73.928	0.0233	2	317.45	167.514
378	0.0225	2	9.42	8.040	0.022500	2	34.30	14.001	0.0225	2	10.15	7.734
379	0.0229	2	3.47	4.667	0.012375	1	0.71	-	0.0236	2	1.37	1.923
380	0.0229	2	6.68	0.735	0.022125	2	2.01	2.174	0.0229	2	0.35	0.488
381	0.0229	2	7.70	3.111	0.022500	2	29.64	18.611	0.0233	2	57.15	57.629
382	0.0454	4	2.12	0.643	0.046125	4	55.76	49.674	0.0458	4	36.82	11.832
721	0.0225	2	222.75	273.155	0.022125	2	0.00	0.000	0.0229	2	0.00	0.000
722	0.0221	2	14.31	15.493	0.021750	2	1.02	1.442	0.0233	2	0.00	0.000
723	0.0229	2	2.10	2.687	0.022875	2	0.68	0.955	0.0233	2	0.00	0.000
724	0.0225	2	7.02	7.050	0.021375	2	0.00	0.000	0.0225	2	0.00	0.000
725	0.0229	2	3.34	0.049	0.022500	2	19.30	27.294	0.0236	2	5.45	7.707
726	0.0225	2	0.00	0.000	0.022500	2	0.00	0.000	0.0113	1	0.00	-
727	0.0218	2	42.85	21.001	0.023250	2	0.37	0.338	0.0229	2	0.00	0.000
728	0.0225	2	40.45	23.264	0.018000	2	0.00	0.000	0.0109	1	0.00	-
752	0.0229	2	27.05	12.516	0.021375	2	0.00	0.000	0.0236	2	0.00	0.000
753	0.0229	2	0.00	0.000	0.021750	2	0.00	0.000	0.0225	2	0.00	0.000
754	0.0218	2	0.00	0.000	0.021375	2	0.00	0.000	0.0225	2	0.00	0.000
755	0.0221	2	0.00	0.000	0.031875	3	0.00	0.000	0.0450	4	0.00	0.000
756	0.0221	2	1.83	0.884	0.021750	2	0.00	0.000	0.0233	2	0.00	0.000
757	0.0221	2	5.17	7.304	0.021750	2	0.00	0.000	0.0225	2	0.00	0.000
758	0.0221	2	0.00	0.000	0.021375	2	0.00	0.000	0.0225	2	0.00	0.000
759	0.0113	1	0.00	-	0.021375	2	0.00	0.000	0.0229	2	0.00	0.000
760	0.0218	2	0.00	0.000	0.022125	2	0.00	0.000	0.0229	2	6.10	8.627
761	0.0225	2	0.00	0.000	0.022125	2	0.01	0.007	0.0221	2	0.00	0.000
762	0.0225	2	0.00	0.000	0.023250	2	0.00	0.000	0.0225	2	0.00	0.000
763	0.0311	3	0.00	0.000	0.032625	3	0.00	0.000	0.0334	3	0.00	0.000
764	0.0221	2	0.63	0.884	0.022875	2	0.00	0.000	0.0233	2	0.00	0.000
765	0.0113	1	0.00	-	0.022500	2	0.00	0.000	0.0229	2	0.00	0.000
766	0.0225	2	0.00	0.000	0.022500	2	0.00	0.000	0.0229	2	0.00	0.000
767	0.0229	2	0.00	0.000	0.021750	2	0.57	0.799	0.0113	1	0.00	-

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

TABLE 11. Stratified mean catches (Kg) by stratum and year and SD by year of American plaice (1997-2005). n.s. means stratum not surveyed. 1997-2000 data are transformed C/V *Playa de Menduíña* data. 2002-2005 data are original from R/V *Vizconde de Eza*. In 2001, there are data from the two vessels.

Stratum	1997	1998	1999	2000	2001	2002	2003	2004	2005
353	12903.67	72078.57	104632.35	114599.70	121339.62	169604.50	126660.44	112602.50	60426.37
354	8402.49	93846.24	45293.87	36269.52	42363.66	51086.00	198357.18	54277.44	54233.57
355	1037.72	9965.35	4500.63	4440.80	15299.50	7455.50	8298.36	1739.00	5434.56
356	382.89	668.59	1478.94	1321.33	3927.32	2535.65	7510.60	30.95	393.39
357	304.55	382.45	502.29	90.77	12602.58	848.70	9741.60	138.01	0.00
358	999.88	1513.72	2037.49	67195.07	8055.00	6225.00	5962.50	6236.25	5966.25
359	12680.29	83608.73	204132.53	277756.52	146459.89	74685.40	193275.09	185648.37	156301.96
360	72766.01	299247.75	734066.28	903798.01	728547.66	399985.01	637653.48	789018.07	817625.50
374	1796.59	856.16	9415.49	1197.73	3199.30	731.88	3279.55	19249.30	27063.51
375	500.53	1606.63	11438.83	8160.97	1291.77	381.21	2698.26	19816.42	15294.34
376	16719.30	110620.38	159942.67	334810.31	62631.30	63978.64	83931.28	260619.58	236676.28
377	2095.72	4718.47	8616.07	2702.20	2108.50	3405.00	4861.00	8422.50	31745.00
378	259.32	726.10	991.91	2744.49	382.25	1125.90	1308.69	4767.70	1411.06
379	188.36	281.25	82.40	243.73	88.51	609.50	367.82	75.26	145.22
380	134.92	162.68	213.43	167.31	285.07	696.00	641.28	193.20	33.12
381	222.76	1211.16	84.85	291.71	338.05	547.92	1108.80	4268.16	8229.60
382	202.64	1493.12	770.56	657.24	1037.19	372.73	726.30	19126.54	12628.40
721	871.09	499.21	1303.60	273.96	7488.00	1183.00	14478.75	0.00	0.00
722	3919.11	167.16	203.73	101.86	2544.36	2528.40	1201.62	85.68	0.00
723	1362.72	1556.71	5277.38	1653.10	5603.25	1116.00	325.50	104.63	0.00
724	1653.48	1343.68	1226.09	1526.83	3281.87	5834.20	869.86	0.00	0.00
725	137.94	65.30	260.04	907.63	353.82	372.75	350.18	2026.50	572.25
726	n.s	212.68	2876.79	593.27	129.33	203.76	0.00	0.00	0.00
727	899.68	865.65	725.35	440.29	811.92	273.60	4113.60	35.42	0.00
728	2502.92	1215.08	2958.88	1780.30	455.96	747.05	3155.10	0.00	0.00
752	14763.59	6543.72	4674.08	16785.97	2068.61	0.00	3543.55	0.00	0.00
753	7835.24	20283.24	2033.90	23454.24	8281.50	496.80	0.00	0.00	0.00
754	989.34	481.33	0.00	0.00	226.67	1548.60	0.00	0.00	0.00
755	n.s	149.64	19.95	0.00	0.00	0.00	0.00	0.00	0.00
756	7643.89	20175.92	12558.72	3200.13	1169.09	1184.23	184.33	0.00	0.00
757	63857.75	8388.77	1741.19	522.51	10728.11	3177.30	526.83	0.00	0.00
758	59.81	398.64	30.63	130.83	15.39	125.73	0.00	0.00	0.00
759	n.s	0.00	43.44	252.73	33.57	0.00	0.00	0.00	0.00
760	2643.21	1237.81	3126.85	6713.38	5821.20	731.50	0.00	0.00	939.40
761	206.83	592.85	0.00	31.90	41.90	324.05	0.00	0.86	0.00
762	0.00	0.00	3918.87	0.00	0.00	63.60	0.00	0.00	0.00
763	n.s	20.29	0.00	79.13	0.00	0.00	0.00	0.00	0.00
764	16.71	24.87	0.00	0.00	34.50	50.00	62.50	0.00	0.00
765	0.00	0.00	0.00	0.00	6.20	79.36	0.00	0.00	0.00
766	0.00	0.00	0.00	0.00	62.68	0.00	0.00	0.00	0.00
767	n.s	0.00	0.00	17.44	0.00	7.90	0.00	89.27	0.00
TOTAL	240960.96	747209.90	1331180.06	1814912.89	1199115.08	804322.34	1315194.03	1488571.60	1435119.78
$(\bar{Y})$	25.80	72.25	128.72	175.49	115.95	77.77	127.17	143.93	138.77
S.D.	5.09	6.51	6.85	19.24	12.31	7.46	10.79	13.03	12.92

TABLE 12. Survey estimates (by the swept area method) of American plaice biomass (t) and SD by stratum and year on NAFO Div. 3NO. n.s. means stratum not surveyed. 1997-2000 data are transformed C/V *Playa de Menduíña* data. 2002-2005 data are original from R/V *Vizconde de Eza*. In 2001, there are data from the two vessels.

Stratum	1997	1998	1999	2000	2001	2002	2003	2004	2005
353	1075	6200	8719	9651	10666	14245	11385	10009	5143
354	723	7903	4165	3054	3766	4302	17632	4720	4616
355	89	901	393	382	1275	631	726	152	483
356	34	60	129	117	327	218	668	3	34
357	28	32	43	7	1034	71	852	12	0
358	89	130	175	5907	700	541	530	567	513
359	1103	7192	16836	23702	12775	6530	17099	16424	13445
360	6203	25808	59988	75434	60151	34903	56586	68313	70333
374	153	73	773	100	267	64	292	1656	2366
375	43	140	968	670	115	32	245	1761	1316
376	1479	9578	13124	27901	5422	5612	7461	22347	20164
377	180	413	718	236	184	298	432	774	2731
378	25	62	87	236	32	97	116	424	125
379	18	24	7	22	8	53	32	6	12
380	13	14	18	14	28	62	56	17	3
381	20	106	7	25	29	48	97	379	708
382	18	131	64	53	88	33	64	1659	1104
721	79	49	107	23	605	102	1287	0	0
722	367	16	18	9	219	214	109	8	0
723	130	134	461	134	467	96	28	9	0
724	147	130	109	131	279	519	77	0	0
725	13	8	23	86	30	33	31	180	48
726	n.s.	21	256	54	11	19	0	0	0
727	96	74	61	42	72	24	378	3	0
728	234	118	255	170	40	65	280	0	0
752	1358	572	402	1628	197	143	310	0	0
753	733	1865	178	2157	775	43	0	0	0
754	90	46	0	0	23	6	0	0	0
755	n.s.	15	2	0	0	0	0	0	0
756	703	1793	1116	316	102	104	17	0	0
757	6307	813	150	49	923	282	48	0	0
758	6	37	3	12	1	11	0	0	0
759	n.s.	0	4	24	3	0	0	0	0
760	252	116	278	639	509	64	0	0	82
761	20	57	0	3	4	29	0	0	0
762	0	0	373	0	0	6	0	0	0
763	n.s.	2	0	8	0	0	0	0	0
764	2	2	0	0	3	4	6	0	0
765	0	0	0	0	1	7	0	0	0
766	0	0	0	0	6	0	0	0	0
767	n.s.	0	0	2	0	1	0	8	0
TOTAL	21827	64635	110010	152997	101137	69511	116842	129432	123227
S.D.	4495	5946	5825	16740	10841	7097	9777	12335	11396
Biomass 5+	21335	63888	109368	144336	78321	50934	110167	124194	117223
Biomass 10+	2478	18824	58716	87123	40922	26548	34517	35194	26735

TABLE 13. Length weight relationships in the calculation of American plaice biomass. The equation is $Weight = a\left(l + 0.5\right)^{b}$ Spanish Spring Surveys on NAFO Div. 3NO: 1997-2005. To calculate the parameters for the indeterminate individuals, we used the total data (males + females + indeterminate individuals)

		1997	1998	1999	2000	2001	2002	2003	2004	2005
Males	a	0.0043 Error = 0.1296	0.0041 Error = 0.1200	0.0049 Error = 0.2799	0.0024 Error = 0.1281	0.0064 Error = 0.1556	0.0041 Error = 0.0660	0.0037 Error = 0.0752	0.0075 Error = 0.1483	0.0027 Error = 0.0882
	b	3.1794 Error = 0.0378	3.1943 Error = 0.0348	3.1454 Error = 0.0817	3.3523 Error = 0.0382	3.0742 Error = 0.0485	3.1930 Error = 0.0205	3.2287 Error = 0.0234	3.0284 Error = 0.0468	3.3274 Error = 0.0274
		$R^2 = 0.995$ N = 1050	$R^2 = 0.996$ N = 573	$R^2 = 0.983$ N = 183	$R^2 = 0.995$ N = 321	$R^2 = 0.992$ N = 188	$R^2 = 0.988$ N = 384	$R^2 = 0.998$ N = 622	R2 = 0.992 N = 411	R2 = 0.997 N = 311
Females	a	0.0027 Error = 0.1058	0.0027 Error = 0.0595	0.0048 Error = 0.1420	0.0020 Error = 0.0981	0.0039 Error = 0.0624	0.0032 Error = 0.0628	0.0030 Error = 0.0549	0.0047 Error = 0.0807	0.0027 Error = 0.0634
	b	3.3263 Error = 0.0291	3.3218 Error = 0.0162	3.1704 Error = 0.0389	3.4049 Error = 0.0271	3.2256 Error = 0.0177	3.2752 Error = 0.0178	3.2918 Error = 0.0157	3.1757 Error = 0.0228	3.3290 Error = 0.0177
		$R^2 = 0.998$ N = 1396	$R^2 = 0.999$ N = 937	$R^2 = 0.993$ N = 201	$R^2 = 0.998$ N = 402	$R^2 = 0.998$ N = 370	$R^2 = 0.998$ N = 703	$R^2 = 0.999$ N = 960	R2 = 0.997 N = 765	R2 = 0.998 N = 569
Indet.	a	0.0026 Error = 0.0928	0.0028 Error = 0.0602	0.0022 Error = 0.1531	0.0020 Error = 0.0817	0.0054 Error = 0.0866	0.0035 Error = 0.0599	0.0032 Error = 0.0581	0.0069 Error = 0.1315	0.0025 Error = 0.0253
	b	3.3370 Error = 0.0255	3.3153 Error = 0.0164	3.3812 Error = 0.0431	3.4049 Error = 0.0226	3.1409 Error = 0.0248	3.2527 Error = 0.0171	3.2795 Error = 0.0167	3.0712 Error = 0.0382	3.3552 Error = 0.0148
		$R^2 = 0.997$ N = 2446	$R^2 = 0.999$ N = 1513	$R^2 = 0.989$ N = 386	$R^2 = 0.997$ N = 726	$R^2 = 0.996$ N = 573	$R^2 = 0.998$ N = 1087	$R^2 = 0.998$ N = 1587	R2 = 0.990 N = 1226	R2 = 0.999 N = 884

TABLE 14. American plaice length distribution. Estimated numbers per haul stratified mean catches. Spanish Spring Survey on NAFO 3NO: 1997-2005. Indet. means indeterminate. 1997-2000 data are transformed C/V *Playa de Menduíña* data. 2002-2005 data are original R/V *Vizconde de Eza* data. In 2001, there are data from the two vessels. (*) indicates untransformed data.

	1997				1998				1999			
Length (cm.)	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
4	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
6	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
8	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
10	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	17.087	5.812	22.898
12	0.000	0.000	0.000	0.000	0.007	0.008	0.000	0.015	0.000	4.272	4.272	8.543
14	0.073	0.049	0.000	0.121	0.009	0.000	0.000	0.009	0.289	1.667	0.190	2.146
16	0.136	0.242	0.000	0.378	0.546	0.263	0.000	0.809	1.474	2.739	0.000	4.212
18	0.648	0.705	0.023	1.377	0.044	0.146	0.000	0.190	0.210	0.894	0.000	1.104
20	1.215	0.750	0.000	1.966	0.370	0.163	0.000	0.533	0.398	0.508	0.000	0.906
22	2.337	1.371	0.000	3.708	1.053	0.693	0.000	1.746	0.765	0.857	0.000	1.622
24	2.605	1.883	0.000	4.489	3.474	2.310	0.000	5.784	2.904	0.468	0.000	3.372
26	4.484	2.641	0.000	7.126	5.241	3.713	0.000	8.954	10.069	2.129	0.000	12.197
28	8.809	2.201	0.000	11.010	8.847	4.872	0.000	13.719	19.126	7.192	0.000	26.318
30	7.228	3.773	0.000	11.001	11.342	5.977	0.000	17.319	29.710	11.614	0.000	41.323
32	5.657	4.242	0.000	9.898	10.173	8.235	0.000	18.408	24.357	10.595	0.000	34.952
34	3.662	4.350	0.000	8.012	7.537	13.315	0.000	20.852	16.253	10.386	0.000	26.638
36	1.897	4.574	0.000	6.471	4.471	15.805	0.000	20.276	9.405	18.159	0.000	27.564
38	0.964	3.885	0.000	4.849	2.240	15.381	0.000	17.621	4.435	20.646	0.000	25.081
40	0.359	3.021	0.000	3.381	0.785	12.615	0.000	13.400	1.846	23.474	0.000	25.320
42	0.205	1.968	0.000	2.173	0.462	8.995	0.000	9.457	0.370	18.287	0.000	18.657
44	0.182	1.128	0.000	1.310	0.117	6.272	0.000	6.388	0.467	12.030	0.000	12.497
46	0.039	0.666	0.000	0.705	0.119	3.702	0.000	3.821	0.043	6.881	0.000	6.924
48	0.006	0.433	0.000	0.438	0.025	2.391	0.000	2.416	0.020	4.457	0.000	4.478
50	0.003	0.385	0.000	0.388	0.000	1.132	0.000	1.132	0.000	3.395	0.000	3.395
52	0.000	0.158	0.000	0.158	0.000	0.476	0.000	0.476	0.000	1.747	0.000	1.747
54	0.000	0.122	0.000	0.122	0.023	0.380	0.000	0.404	0.000	1.360	0.000	1.360
56	0.000	0.047	0.000	0.047	0.000	0.301	0.000	0.301	0.000	0.938	0.000	0.938
58	0.000	0.037	0.000	0.037	0.000	0.314	0.000	0.314	0.000	0.432	0.000	0.432
60	0.000	0.034	0.000	0.034	0.000	0.306	0.000	0.306	0.000	0.401	0.000	0.401
62	0.000	0.054	0.000	0.054	0.000	0.103	0.000	0.103	0.000	0.047	0.000	0.047
64	0.000	0.057	0.000	0.057	0.000	0.122	0.000	0.122	0.000	0.298	0.000	0.298
66	0.000	0.008	0.000	0.008	0.000	0.045	0.000	0.045	0.000	0.000	0.000	0.000
68	0.000	0.011	0.000	0.011	0.000	0.091	0.000	0.091	0.000	0.000	0.000	0.000
70	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
72	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
74	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
76	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.054	0.000	0.054
Total	40.511	38.798	0.023	79.332	56.883	108.124	0.000	165.008	122.141	183.012	10.273	315.426
Nº samples (*):				116				108				93
Nº Ind. (*):	8297	5729	3	14029	4640	7390	0	12030	4541	7742	4	12287
Sampled catch:				1390				1617				1858
Range (*):				14-68				13-68				10-77
Total catch:				4209				8540				10565
Total hauls (*):				128				124				114

TABLE 14 (cont.). American plaice length distribution. Estimated numbers per haul stratified mean catches. Spanish Spring Survey on NAFO 3NO: 1997-2005. Indet. means indeterminate. 1997-2000 data are transformed C/V *Playa de Menduíña* data. 2002-2005 data are original R/V *Vizconde de Eza* data. In 2001, there are data from the two vessels. (*) indicates untransformed data.

	2000				2001				2002			
Length (cm.)	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
4	0.000	0.000	0.000	0.000	0.000	0.000	0.045	0.045	0.000	0.000	0.000	0.000
6	0.000	0.000	0.000	0.000	0.000	0.021	2.401	2.422	0.000	0.000	0.052	0.052
8	0.000	0.000	0.000	0.000	0.021	0.031	1.194	1.245	0.005	0.133	0.013	0.152
10	0.203	10.681	0.227	11.111	0.280	1.972	0.217	2.469	0.853	1.420	0.091	2.365
12	11.240	11.450	0.117	22.807	3.620	4.188	0.757	8.565	4.606	6.883	0.135	11.625
14	30.021	34.561	0.000	64.582	5.797	7.593	0.398	13.788	3.250	3.490	0.027	6.768
16	59.167	75.997	0.000	135.164	10.535	10.617	0.031	21.183	1.688	2.104	0.000	3.792
18	24.333	41.298	0.005	65.635	48.738	38.461	0.010	87.210	6.588	6.831	0.000	13.420
20	4.514	5.307	0.000	9.821	69.747	56.807	0.000	126.554	10.751	8.917	0.000	19.668
22	2.416	2.785	0.000	5.201	36.774	35.802	0.000	72.576	26.930	17.681	0.000	44.611
24	1.722	1.695	0.000	3.417	7.776	13.101	0.000	20.877	34.971	33.222	0.000	68.193
26	2.762	0.685	0.000	3.447	3.211	3.416	0.000	6.627	21.342	29.173	0.000	50.515
28	7.298	1.581	0.000	8.879	4.639	1.994	0.000	6.633	7.317	13.800	0.000	21.117
30	18.574	3.666	0.000	22.240	11.353	1.499	0.000	12.852	5.530	4.861	0.000	10.391
32	25.029	7.213	0.000	32.242	18.793	2.218	0.000	21.012	7.801	1.697	0.000	9.498
34	15.779	13.921	0.000	29.699	15.703	4.001	0.000	19.705	7.563	1.390	0.000	8.953
36	9.881	16.429	0.000	26.310	8.760	9.830	0.000	18.591	5.397	1.575	0.000	6.973
38	4.817	18.573	0.000	23.390	3.802	11.082	0.000	14.884	2.528	4.239	0.000	6.767
40	2.094	26.863	0.000	28.957	1.392	13.048	0.000	14.440	1.263	6.464	0.000	7.726
42	1.180	25.649	0.000	26.828	0.889	13.008	0.000	13.897	0.411	8.085	0.000	8.496
44	0.465	19.940	0.000	20.404	0.354	11.312	0.000	11.666	0.164	6.918	0.000	7.081
46	0.266	13.733	0.000	13.999	0.060	8.611	0.000	8.672	0.031	5.848	0.000	5.878
48	0.233	8.588	0.000	8.821	0.000	5.567	0.000	5.567	0.018	3.791	0.000	3.810
50	0.031	6.231	0.000	6.263	0.000	3.461	0.000	3.461	0.024	2.186	0.000	2.210
52	0.092	3.692	0.000	3.784	0.000	1.021	0.000	1.021	0.051	1.614	0.000	1.666
54	0.000	3.440	0.000	3.440	0.000	1.245	0.000	1.245	0.000	1.152	0.000	1.152
56	0.000	1.172	0.000	1.172	0.010	0.755	0.000	0.765	0.000	0.720	0.000	0.720
58	0.000	1.290	0.000	1.290	0.000	0.546	0.000	0.546	0.000	0.351	0.000	0.351
60	0.000	1.120	0.000	1.120	0.000	0.335	0.000	0.335	0.000	0.231	0.000	0.231
62	0.000	1.168	0.000	1.168	0.000	0.250	0.000	0.250	0.000	0.139	0.000	0.139
64	0.000	0.637	0.000	0.637	0.000	0.045	0.000	0.045	0.000	0.020	0.000	0.020
66	0.000	0.000	0.000	0.000	0.000	0.078	0.000	0.078	0.000	0.101	0.000	0.101
68	0.000	0.000	0.000	0.000	0.000	0.004	0.000	0.004	0.000	0.006	0.000	0.006
70	0.000	0.086	0.000	0.086	0.000	0.016	0.000	0.016	0.000	0.000	0.000	0.000
72	0.000	0.018	0.000	0.018	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
74	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
76	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total	222.117	359.467	0.348	581.933	252.254	261.936	5.053	519.242	149.083	175.044	0.319	324.447
Nº samples (*):				96				81				108
Nº Ind. (*):	3732	7721	5	11458	4996	7906	114	13016	5873	7234	12	13119
Sampled catch:				1697				3388				3675
Range (*):				11-72				5-70				7-68
Total catch:				15533				11477				9201
Total hauls (*):				118				123				125

TABLE 14 (cont.). American plaice length distribution. Estimated numbers per haul stratified mean catches. Spanish Spring Survey on NAFO 3NO: 1997-2005. Indet. means indeterminate. 1997-2000 data are transformed C/V *Playa de Menduíña* data. 2002-2005 data are original R/V *Vizconde de Eza* data. In 2001, there are data from the two vessels. (*) indicates untransformed data.

	2003				2004				2005			
Length (cm.)	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
4	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
6	0.188	0.044	0.287	0.519	0.084	0.090	8.701	8.875	0.014	0.007	0.513	0.534
8	0.356	0.223	0.056	0.635	1.027	0.746	49.783	51.556	0.172	0.400	1.875	2.446
10	0.074	0.142	0.065	0.280	0.133	0.271	6.226	6.630	1.474	1.177	0.099	2.750
12	0.814	0.891	0.000	1.705	1.164	1.209	0.004	2.377	29.728	22.828	0.062	52.618
14	1.576	1.005	0.000	2.581	6.529	4.615	0.000	11.145	46.137	45.635	0.056	91.828
16	6.969	5.441	0.000	12.410	3.692	3.184	0.000	6.875	22.245	20.487	0.000	42.733
18	17.873	13.925	0.000	31.798	1.904	1.239	0.000	3.143	6.715	6.709	0.000	13.424
20	7.441	7.791	0.000	15.232	4.051	3.190	0.000	7.241	6.343	5.253	0.000	11.596
22	14.162	8.973	0.000	23.135	18.341	8.930	0.000	27.271	3.618	3.026	0.000	6.644
24	35.284	11.606	0.000	46.890	18.592	14.481	0.000	33.073	7.908	3.341	0.000	11.249
26	62.238	21.586	0.000	83.823	27.188	10.344	0.000	37.532	17.567	6.709	0.000	24.276
28	42.882	44.576	0.000	87.458	46.289	14.760	0.000	61.048	31.709	13.734	0.000	45.444
30	17.283	42.818	0.000	60.100	36.904	23.718	0.000	60.622	46.328	13.928	0.000	60.256
32	11.921	19.885	0.000	31.805	17.960	43.845	0.000	61.804	32.463	16.433	0.000	48.896
34	11.256	8.363	0.000	19.618	10.580	42.211	0.000	52.791	14.535	26.469	0.000	41.005
36	8.333	3.467	0.000	11.800	6.172	20.482	0.000	26.654	7.360	35.775	0.000	43.134
38	4.505	2.965	0.000	7.470	3.628	6.955	0.000	10.583	3.353	24.246	0.000	27.600
40	1.685	4.476	0.000	6.161	1.587	4.815	0.000	6.402	0.745	10.301	0.000	11.046
42	0.475	7.659	0.000	8.135	0.582	5.407	0.000	5.990	0.202	4.700	0.000	4.903
44	0.147	6.731	0.000	6.877	0.183	6.655	0.000	6.838	0.057	3.419	0.000	3.477
46	0.063	6.855	0.000	6.917	0.109	7.216	0.000	7.325	0.164	3.433	0.000	3.597
48	0.000	5.653	0.000	5.653	0.000	5.071	0.000	5.071	0.090	2.990	0.000	3.080
50	0.000	3.517	0.000	3.517	0.008	3.552	0.000	3.559	0.107	2.272	0.000	2.379
52	0.000	3.150	0.000	3.150	0.000	2.925	0.000	2.925	0.049	1.634	0.000	1.683
54	0.000	2.273	0.000	2.273	0.000	2.326	0.000	2.326	0.000	1.531	0.000	1.531
56	0.000	1.159	0.000	1.159	0.059	1.604	0.000	1.663	0.000	1.546	0.000	1.546
58	0.000	0.804	0.000	0.804	0.000	1.066	0.000	1.066	0.000	0.905	0.000	0.905
60	0.000	0.447	0.000	0.447	0.000	0.271	0.000	0.271	0.000	0.753	0.000	0.753
62	0.000	0.073	0.000	0.073	0.000	0.294	0.000	0.294	0.000	0.407	0.000	0.407
64	0.000	0.222	0.000	0.222	0.000	0.162	0.000	0.162	0.000	0.174	0.000	0.174
66	0.000	0.032	0.000	0.032	0.000	0.132	0.000	0.132	0.000	0.302	0.000	0.302
68	0.000	0.000	0.000	0.000	0.000	0.049	0.000	0.049	0.000	0.081	0.000	0.081
70	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
72	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
74	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
76	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total	245.522	236.752	0.407	482.682	206.765	241.817	64.714	513.296	279.087	280.604	2.603	562.294
Nº samples (*):				91				75				70
Nº Ind. (*):	6122	7333	9	13464	5076	7561	1353	13990	6097	8494	62	14653
Sampled catch:				3885				4614				4556
Range (*):				6-66				6-68				6-69
Total catch:				13955				13729				13193
Total hauls (*):				118				120				119

TABLE 15. American plaice age numbers per haul mean catches by sex and year. Number per stratified mean catches. Spanish Spring Survey on NAFO 3NO: 1997-2005 Indet. means indeterminate. 1997-2000 data are transformed C/V *Playa de Menduiña* data. 2002-2005 data are original R/V *Vizconde de Eza* data. In 2001, there are data form the two vessels.

	1997				1998				1999			
Age	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
0												
1												
2	0.05	0.05		0.10	0.14	0.01		0.15		16.05	5.74	21.79
3	1.06	0.89	0.01	1.96	0.28	0.16		0.45	0.78	9.11	4.49	14.37
4	2.49	2.31	0.01	4.80	2.83	3.04		5.87	1.78	2.32	0.04	4.14
5	2.99	3.15	0.00	6.14	4.14	4.44		8.58	10.45	2.44		12.89
6	11.99	7.93		19.92	8.52	5.73		14.25	24.16	13.76		37.92
7	15.93	9.81		25.74	14.20	15.79		29.99	15.93	16.22		32.15
8	5.19	8.49		13.68	19.26	29.24		48.49	28.20	14.33		42.53
9	0.78	3.77		4.55	6.22	27.61		33.83	31.52	29.00		60.52
10	0.00	1.26		1.26	0.92	12.76		13.68	7.40	42.71		50.12
11	0.03	0.45		0.48	0.27	5.12		5.39	1.74	18.72		20.46
12		0.40		0.40	0.04	1.93		1.97	0.20	8.99		9.19
13		0.12		0.12	0.06	0.89		0.95		5.00		5.00
14		0.11		0.11		1.03		1.03		1.87		1.87
15		0.03		0.03		0.19		0.19		1.20		1.20
16		0.04		0.04		0.09		0.09		0.48		0.48
17										0.39		0.39
18		0.01		0.01		0.05		0.05		0.35		0.35
19		0.01		0.01		0.05		0.05				
20										0.05		0.05
Total	40.51	38.80	0.02	79.33	56.88	108.12	0.00	165.01	122.14	183.01	10.27	315.43

	2000				2001				2002			
Age	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
0												
1					0.02	0.02	1.76	1.80	0.00	0.01	0.04	0.05
2	19.25	31.09	0.19	50.52	10.71	12.12	2.68	25.51	4.54	6.04	0.20	10.78
3	73.87	115.31	0.16	189.34	135.76	120.45	0.60	256.81	10.72	14.24	0.08	25.04
4	36.19	31.67	0.00	67.85	38.91	39.15	0.01	78.07	75.72	89.62		165.33
5	5.46	5.54	0.00	11.00	2.09	2.72		4.81	21.83	16.57		38.40
6	12.33	7.31		19.64	9.78	1.66		11.44	7.53	3.88		11.40
7	24.53	25.18		49.71	18.82	11.77		30.59	8.07	1.98		10.04
8	20.83	18.66		39.49	12.20	16.30		28.50	13.57	5.27		18.84
9	23.00	28.90		51.90	14.72	12.44		27.17	4.41	9.87		14.28
10	5.44	41.54		46.98	6.82	13.62		20.44	1.65	7.22		8.86
11	0.86	28.23		29.09	2.40	18.80		21.20	0.98	9.69		10.67
12	0.34	13.21		13.56		8.26		8.26	0.06	7.39		7.45
13	0.02	6.36		6.38		2.27		2.27		1.84		1.84
14		0.97		0.97		0.96		0.96		1.03		1.03
15		3.32		3.32		0.76		0.76		0.09		0.09
16		1.59		1.59	0.01	0.21		0.22		0.27		0.27
17		0.48		0.48		0.20		0.20		0.05		0.05
18						0.17		0.17				
19						0.02		0.02		0.01		0.01
20		0.10		0.10		0.01		0.01				
Total	222.12	359.47	0.35	581.93	252.25	261.94	5.05	519.24	149.08	175.04	0.32	324.45

TABLE 15 (Cont.). American plaice age numbers per haul mean catches by sex and year. Number per stratified mean catches. Spanish Spring Survey on NAFO 3NO: 1997-2005 Indet. means indeterminate. 1997-2000 data are transformed C/V *Playa de Menduíña* data. 2002-2005 data are original R/V *Vizconde de Eza* data. In 2001, there are data form the two vessels.

	2003				2004				2005			
Age	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
0												
1	0.14	0.27	0.25	0.65	0.17	0.84	55.58	56.59	0.03	0.41	1.28	1.71
2	2.75	1.28	0.16	4.19	8.18	3.18	9.13	20.50	38.79	36.13	1.26	76.18
3	19.77	15.58		35.35	6.48	6.59	0.00	13.07	69.41	60.61	0.06	130.08
4	36.63	21.35		57.98	19.63	15.40		35.03	8.67	8.40		17.07
5	119.14	116.03		235.17	45.07	31.73		76.80	27.91	12.71		40.63
6	25.58	30.85		56.43	98.55	106.16		204.71	57.34	34.11		91.46
7	18.36	4.17		22.53	16.71	30.43		47.14	50.92	70.21		121.13
8	12.33	4.58		16.91	7.92	4.91		12.83	13.57	28.80		42.37
9	8.42	11.00		19.43	2.88	8.29		11.17	9.76	8.06		17.82
10	1.94	6.17		8.11	1.02	10.93		11.95	2.39	3.72		6.11
11	0.44	8.06		8.50	0.00	6.44		6.44	0.21	4.18		4.39
12	0.02	10.40		10.41	0.09	7.80		7.90	0.05	4.25		4.29
13		3.88		3.88		4.39		4.39	0.05	3.25		3.30
14		1.73		1.73	0.02	3.78		3.80		2.38		2.38
15		0.78		0.78	0.02	0.64		0.66		1.76		1.76
16		0.48		0.48	0.02	0.19		0.21		0.82		0.82
17		0.11		0.11						0.09		0.09
18		0.04		0.04		0.08		0.08		0.63		0.63
19						0.02		0.02		0.08		0.08
20												
Total	245.52	236.75	0.41	482.68	206.77	241.82	64.71	513.30	279.09	280.60	2.60	562.29

TABLE 16. American plaice mean length (cm) per haul mean catches by sex and year. Number per stratified mean catches. Spanish Spring Survey on NAFO 3NO: 1997-2005. Indet. means indeterminate. 1997-2000 data are transformed C/V *Playa de Menduíña* data. 2002-2005 data are original R/V *Vizconde de Eza* data. In 2001, there are data form the two vessels.

	1997				1998				1999			
Age	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
0												
1												
2	16.20	16.36		16.28	16.88	13.00		16.68		11.05	11.31	11.12
3	20.00	19.84	19.00	19.92	16.90	17.00		16.93	16.63	14.09	12.64	13.77
4	22.71	23.32	19.00	23.00	24.68	26.67		25.71	19.69	19.26	15.00	19.40
5	24.88	25.92	19.00	25.41	26.09	27.79		26.97	28.04	27.20		27.88
6	28.79	30.21		29.35	29.13	28.81		29.00	29.95	30.69		30.22
7	31.63	34.77		32.82	31.33	33.73		32.59	31.27	32.35		31.81
8	35.20	38.91		37.50	33.54	36.78		35.49	32.33	35.83		33.51
9	40.00	41.66		41.38	35.26	40.19		39.28	33.76	38.53		36.05
10	49.00	45.60		45.60	39.49	42.52		42.31	36.58	41.18		40.50
11	47.61	47.57		47.57	44.30	45.94		45.86	40.90	44.01		43.75
12		51.85		51.85	46.10	49.16		49.09	43.85	46.89		46.83
13		56.49		56.49	50.67	51.38		51.34		49.44		49.44
14		62.46		62.46		59.22		59.22		53.85		53.85
15		62.46		62.46		58.52		58.52		56.43		56.43
16		63.31		63.31		63.83		63.83		57.41		57.41
17										61.54		61.54
18		68.56		68.56		68.67		68.67		62.71		62.71
19		69.00		69.00		69.00		69.00				
20										77.00		77.00
Total	30.05	34.53	19.00	32.24	31.58	37.85		35.69	31.84	35.48	11.91	33.30

TABLE 16 (Cont.). American plaice mean length (cm) per haul mean catches by sex and year. Number per stratified mean catches. Spanish Spring Survey on NAFO 3NO: 1997-2005. Indet. means indeterminate. 1997-2000 data are transformed C/V *Playa de Menduíña* data. 2002-2005 data are original R/V *Vizconde de Eza* data. In 2001, there are data form the two vessels.

	2000				2001				2002			
Age	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
0												
1					9.00	7.20	7.08	7.10	9.00	9.00	7.07	7.52
2	15.47	15.70	11.39	15.60	15.13	14.58	9.83	14.31	13.03	12.65	11.48	12.79
3	16.41	16.23	12.13	16.30	20.78	20.88	12.84	20.81	18.06	18.13	13.27	18.08
4	18.45	18.96	19.00	18.69	21.21	21.58	17.72	21.39	23.99	24.99		24.53
5	21.51	20.88	19.00	21.19	29.82	29.77		29.79	26.15	27.62		26.79
6	30.78	32.45		31.40	31.33	34.37		31.77	29.59	30.84		30.01
7	32.24	35.87		34.08	33.26	36.76		34.61	32.15	37.21		33.14
8	33.57	37.63		35.49	34.31	39.83		37.46	34.40	39.20		35.74
9	35.23	40.61		38.22	35.60	40.82		37.99	35.89	41.82		39.99
10	39.01	42.85		42.41	35.60	43.15		40.63	38.57	44.54		43.43
11	42.80	45.58		45.50	36.57	45.57		44.55	41.10	46.24		45.77
12	50.18	48.57		48.61		47.80		47.80	52.00	49.28		49.30
13	51.00	52.68		52.68		51.72		51.72		50.73		50.73
14		54.91		54.91		50.96		50.96		55.21		55.21
15		59.15		59.15		58.43		58.43		57.62		57.62
16		60.23		60.23	57.00	61.94		61.72		63.51		63.51
17		62.98		62.98		58.49		58.49		63.00		63.00
18						61.80		61.80				
19						65.00		65.00		66.96		66.96
20		71.34		71.34		71.00		71.00				
Total	23.60	29.26	11.78	27.09	24.09	28.07	9.24	25.95	25.86	29.44	11.45	27.78

	2003				2004				2005			
Age	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
0												
1	7.64	8.67	7.45	7.99	8.51	8.78	8.79	8.79	8.50	8.97	8.47	8.58
2	14.00	13.17	8.61	13.54	14.09	14.28	9.73	12.18	14.01	14.60	9.09	14.21
3	19.79	19.55		19.68	18.31	16.23	13.00	17.26	15.94	15.81	14.15	15.88
4	22.84	21.16		22.22	24.11	25.41		24.68	22.82	20.41		21.64
5	27.20	29.31		28.24	26.66	27.17		26.87	27.26	27.98		27.49
6	29.74	31.44		30.67	29.90	33.11		31.57	30.21	31.40		30.66
7	31.52	35.54		32.26	33.18	34.84		34.25	32.14	35.83		34.28
8	35.69	38.92		36.56	35.47	38.87		36.78	34.35	38.45		37.14
9	36.88	42.31		39.95	39.32	42.08		41.36	34.79	40.92		37.56
10	39.04	46.18		44.48	41.33	44.53		44.25	39.18	44.52		42.43
11	38.37	46.69		46.26	51.00	46.82		46.82	44.85	47.50		47.38
12	45.00	49.13		49.12	45.10	49.10		49.06	49.73	48.33		48.34
13		52.73		52.73		51.99		51.99	53.00	51.06		51.09
14		53.75		53.75	57.00	55.83		55.84		54.96		54.96
15		58.22		58.22	57.00	64.15		63.94		57.83		57.83
16		61.98		61.98	57.00	51.00		51.57		58.81		58.81
17		61.00		61.00						65.00		65.00
18		63.00		63.00		63.48		63.48		65.10		65.10
19						69.00		69.00		66.93		66.93
20												
Total	27.26	31.64	7.91	29.39	28.32	33.90	8.92	28.50	24.69	28.90	8.91	26.72

TABLE 17. American plaice mean weight (gr) per haul mean catches by sex and year. Number per stratified mean catches. Spanish Spring Survey on NAFO 3NO: 1997-2005. Indet. means indeterminate. 1997-2000 data are transformed C/V *Playa de Menduíña* data. 2002-2005 data are original R/V *Vizconde de Eza* data. In 2001, there are data from the two vessels.

	1997				1998				1999			
Age	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
0												
1												
2	30.58	30.09		30.32	34.08	13.56		33.00		9.81	8.24	9.40
3	60.98	59.53	48.25	60.25	34.14	33.05		33.75	34.19	23.00	12.02	20.17
4	90.53	102.43	48.25	96.16	115.88	160.85		139.18	65.34	60.28	21.02	62.07
5	122.41	143.19	48.25	133.03	142.60	176.64		160.21	180.39	180.47		180.40
6	192.63	236.88		210.25	197.61	195.48		196.75	219.78	253.61		232.06
7	259.54	373.88		303.10	252.15	331.81		294.09	253.60	300.02		277.02
8	368.81	542.51		476.56	311.29	438.62		388.05	282.41	415.58		327.29
9	548.18	678.61		656.33	368.71	590.74		549.92	323.00	523.92		419.27
10	1019.79	911.38		911.53	526.59	713.13		700.57	414.67	642.60		608.93
11	933.18	1064.95		1055.90	746.72	910.89		902.75	585.62	796.73		778.79
12		1384.64		1384.64	841.32	1137.44		1130.94	726.28	971.49		966.25
13		1843.51		1843.51	1157.79	1325.51		1315.68		1140.42		1140.42
14		2580.03		2580.03		2111.99		2111.99		1495.55		1495.55
15		2565.46		2565.46		2027.53		2027.53		1727.69		1727.69
16		2681.12		2681.12		2684.74		2684.74		1828.20		1828.20
17										2283.43		2283.43
18		3491.89		3491.89		3415.05		3415.05		2413.08		2413.08
19		3564.93		3564.93		3468.37		3468.37				
20										4610.97		4610.97
Total	233.91	421.32	48.25	325.51	268.47	527.64		438.29	276.33	519.04	9.94	408.48

	2000				2001				2002			
Age	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
0												
1					5.52	2.36	2.58	2.61	4.53	4.27	2.03	2.55
2	24.78	26.73	8.24	25.92	28.14	24.01	8.97	24.16	15.31	13.47	10.57	14.19
3	29.96	28.38	10.43	28.98	74.66	74.78	17.85	74.58	48.02	51.69	16.15	50.00
4	45.19	47.76	45.86	46.39	80.14	84.04	45.36	82.09	107.46	126.02		117.52
5	85.85	67.41	45.86	76.56	224.47	241.89		234.33	141.66	175.42		156.23
6	240.11	293.64		260.03	259.90	361.60		274.64	213.89	247.39		225.28
7	282.85	409.54		347.02	312.53	459.67		369.14	273.99	454.37		309.50
8	323.42	484.21		399.40	345.34	585.81		482.85	336.57	541.72		393.92
9	379.83	622.11		514.73	385.35	636.37		500.33	388.21	662.77		577.97
10	537.06	743.81		719.87	392.43	762.73		639.11	482.17	812.73		751.27
11	724.88	923.47		917.61	425.17	899.33		845.69	584.61	928.89		897.25
12	1221.32	1139.85		1141.90		1053.94		1053.94	1234.38	1142.20		1142.96
13	1283.48	1494.13		1493.61		1356.99		1356.99		1256.80		1256.80
14		1707.48		1707.48		1291.89		1291.89		1645.89		1645.89
15		2232.76		2232.76		1981.57		1981.57		1875.93		1875.93
16		2334.60		2334.60	1607.50	2379.43		2344.69		2589.45		2589.45
17		2736.30		2736.30		1989.94		1989.94		2499.50		2499.50
18						2364.16		2364.16				
19						2776.59		2776.59		3061.95		3061.95
20		4149.65		4149.65		3691.44		3691.44				
Total	153.75	393.67	9.49	301.87	142.91	305.31	7.85	223.52	156.68	311.92	11.07	240.29

TABLE 17 (Cont.). American plaice mean weight (gr) per haul mean catches by sex and year. Number per stratified mean catches. Spanish Spring Survey on NAFO 3NO: 1997-2005. Indet. means indeterminate. 1997-2000 data are transformed C/V *Playa de Menduíña* data. 2002-2005 data are original R/V *Vizconde de Eza* data. In 2001, there are data from the two vessels.

	2003				2004				2005			
Age	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
0												
1	2.77	3.78	2.40	3.05	5.04	4.74	5.53	5.52	3.49	4.05	3.33	3.51
2	20.82	14.97	4.43	18.40	23.80	22.39	8.27	16.66	18.32	21.44	4.47	19.57
3	61.32	57.36		59.58	53.80	34.33	18.13	43.98	29.37	29.28	18.27	29.32
4	96.29	73.44		87.88	118.24	148.37		131.49	103.39	67.26		85.60
5	162.64	209.46		185.74	162.74	177.90		169.00	165.83	187.83		172.71
6	219.41	263.99		243.78	224.80	324.26		276.38	234.71	271.80		248.54
7	265.20	406.54		291.34	311.03	377.96		354.24	285.75	415.68		361.06
8	386.93	539.83		428.35	375.48	540.09		438.48	357.86	519.53		467.77
9	432.35	692.92		579.94	507.87	698.52		649.34	371.97	637.50		492.07
10	515.51	927.79		829.32	597.92	832.90		812.86	558.48	852.01		737.11
11	489.24	958.75		934.29	1108.14	964.46		964.56	885.54	1066.20		1057.75
12	804.42	1130.44		1129.93	764.27	1117.01		1112.85	1209.09	1120.37		1121.31
13		1432.20		1432.20		1335.85		1335.85	1480.60	1334.19		1336.37
14		1516.23		1516.23	1551.96	1679.11		1678.45		1711.56		1711.56
15		1958.44		1958.44	1551.96	2585.25		2554.39		2022.18		2022.18
16		2416.37		2416.37	1551.96	1243.96		1273.41		2136.98		2136.98
17		2266.74		2266.74						2953.40		2953.40
18		2520.70		2520.70		2522.62		2522.62		2986.58		2986.58
19						3248.73		3248.73		3266.33		3266.33
20												
Total	180.42	351.16	3.20	264.02	206.83	417.77	5.92	280.87	166.30	329.92	4.24	247.20

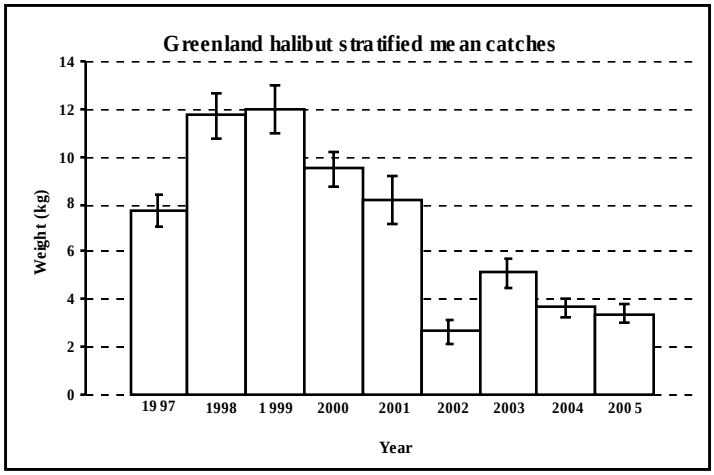

Fig. 1. Greenland halibut stratified mean catches in Kg and ±SD by year. Spanish Spring surveys on NAFO Div. 3NO: 1997-2005 (1997-2000 transformed data from C/V *Playa de Menduíña*; 2002-2005 original data from R/V *Vizconde de Eza*. In 2001, there are data from the two vessels).

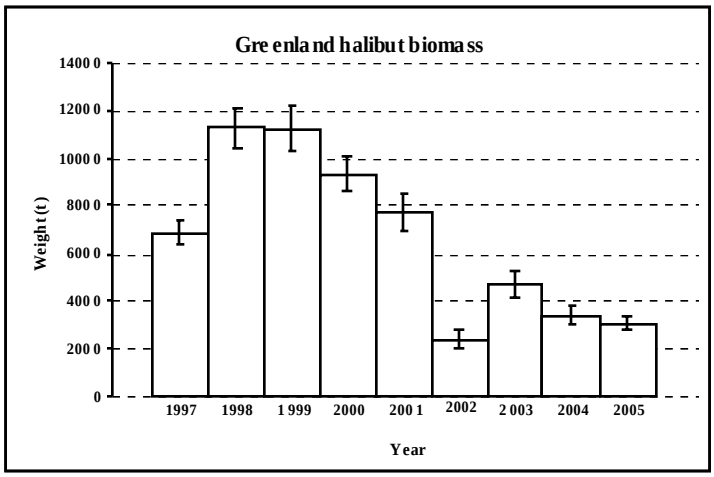

Fig. 2. Greenland halibut biomass in tons and ±SD by year. Spanish Spring surveys on NAFO Div. 3NO: 1997-2005 (1997-2000 transformed data from C/V *Playa de Menduíña*; 2002-2005 original data from R/V *Vizconde de Eza*. In 2001, there are data from the two vessels).

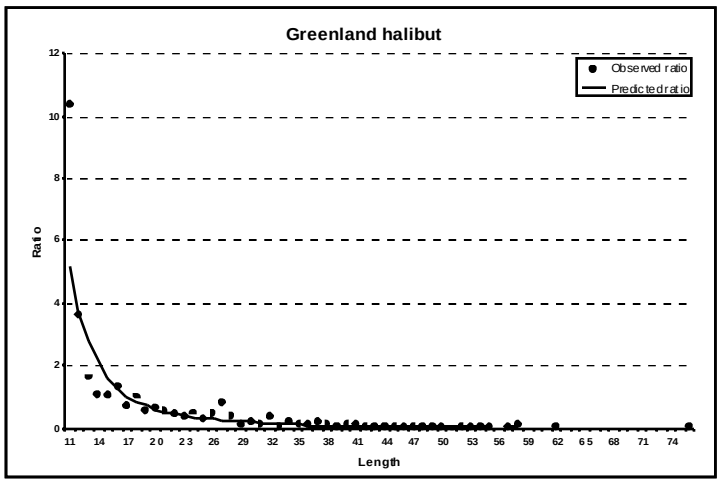

Fig. 3. Ratios of *Campelen* catch to *Pedreira* catch, by length group, of Greenland halibut, from comparative fishing trials between the two gears on the C/V *Playa de Menduíña* and the R/V *Vizconde de Eza*. The dots are the observed ratios and the curve is the fitted line.

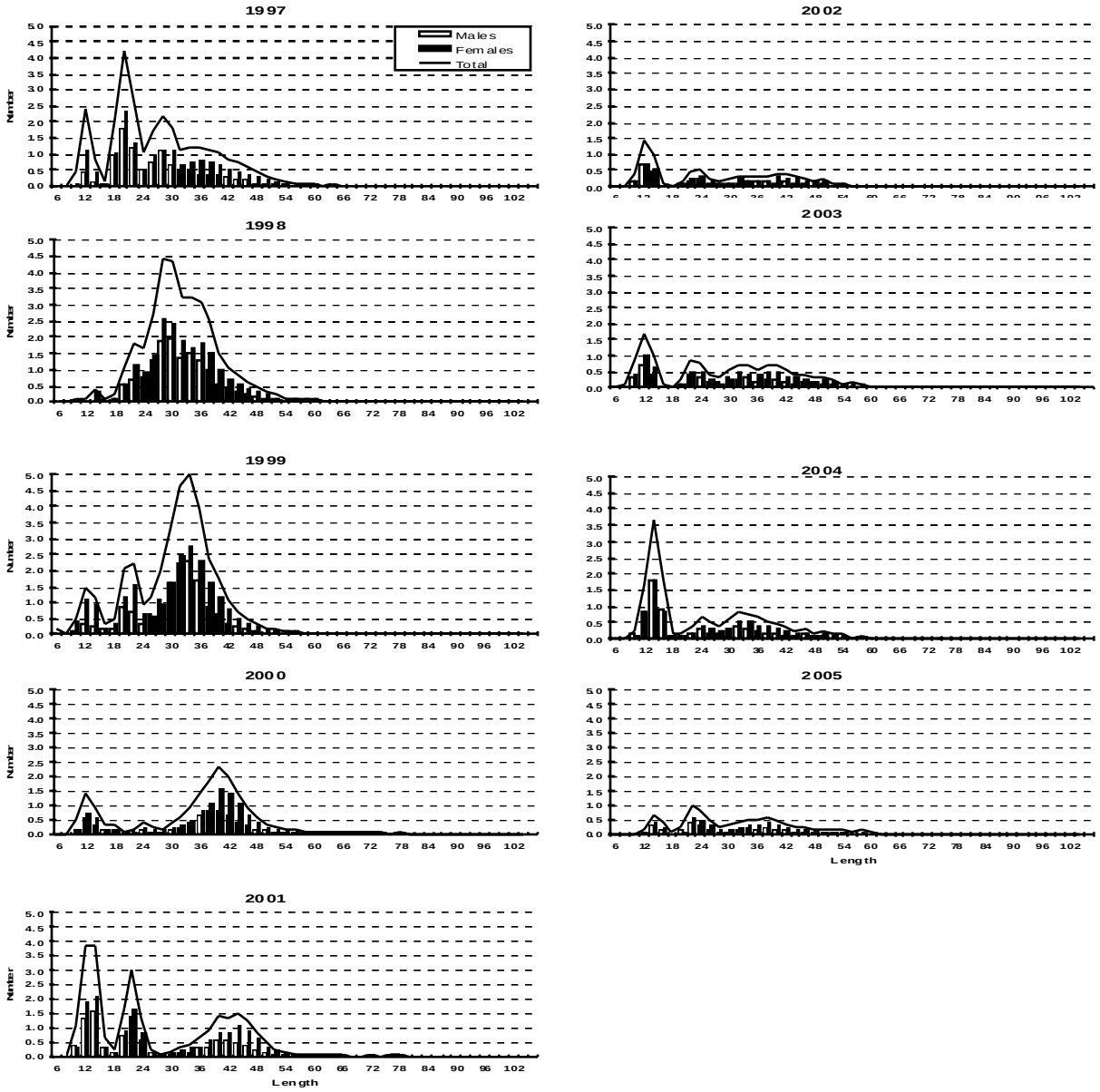

Fig. 4. Greenland halibut length distribution (cm) on NAFO 3NO: 1997-2005. Number per stratified mean catches. 1997-2000 data are transformed data from C/V *Playa de Menduíña*, and 2002-2005 data are original from R/V *Vizconde de Eza*. In 2001, there are data from the two vessels.

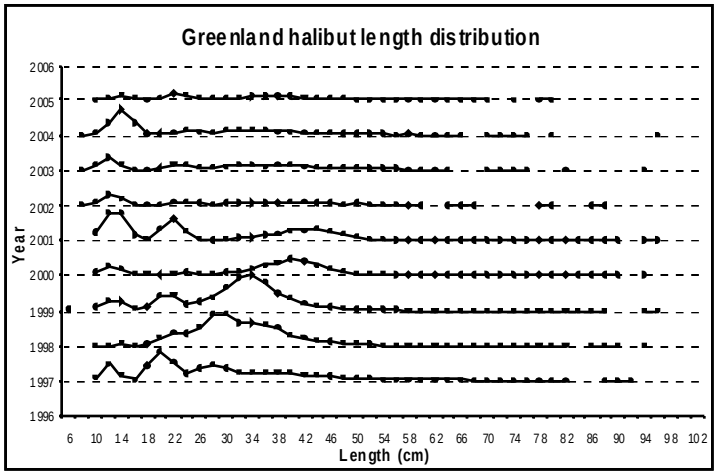

Fig. 5. Greenland halibut length distribution (cm) on NAFO 3NO: 1997-2005.

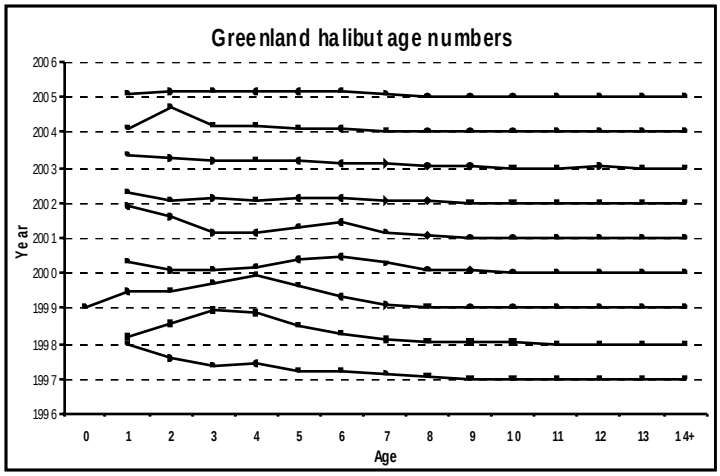

Fig. 6. Greenland halibut age distribution on NAFO 3NO: 1997-2005.

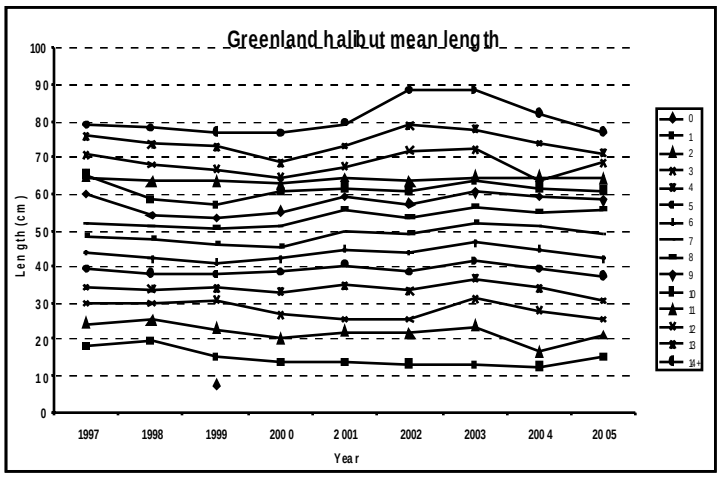

Fig. 7. Greenland halibut mean length (cm) at age on NAFO 3NO: 1997-2005. Ages from 0 to 14+.

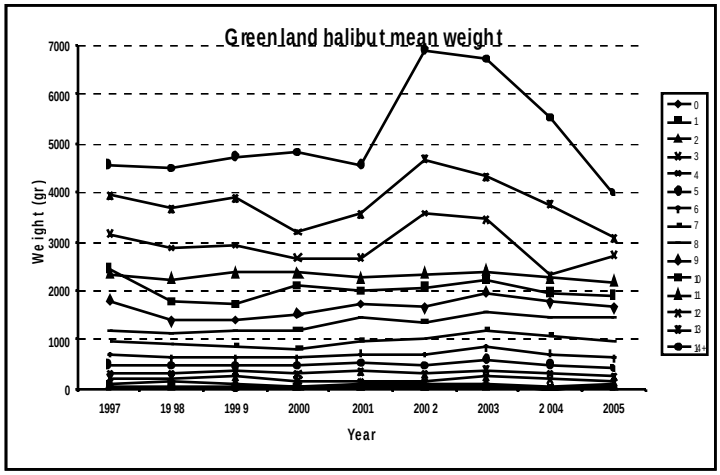

Fig. 8. Greenland halibut mean weight (gr) at age on NAFO 3NO: 1997-2005. Ages from 0 to 14+.

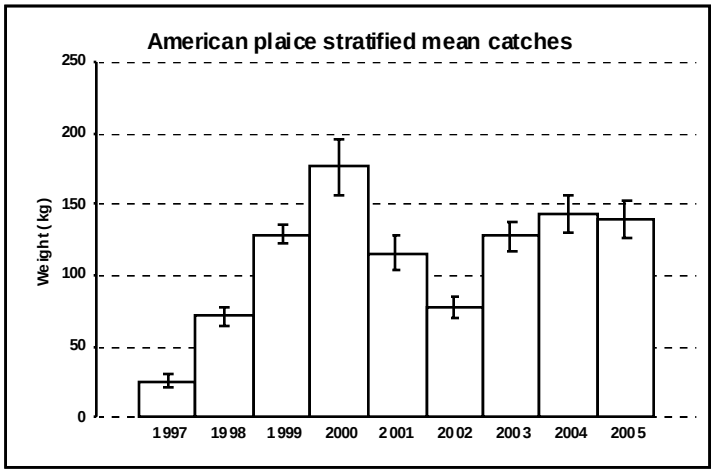

Fig. 9. American plaice stratified mean catches in Kg and ±SD by year. Spanish Spring surveys on NAFO Div. 3NO: 1997-2005 (1997-2000 transformed data from C/V *Playa de Menduíña*; 2002-2005 original data from R/V *Vizconde de Eza*. In 2001, there are data from the two vessels).

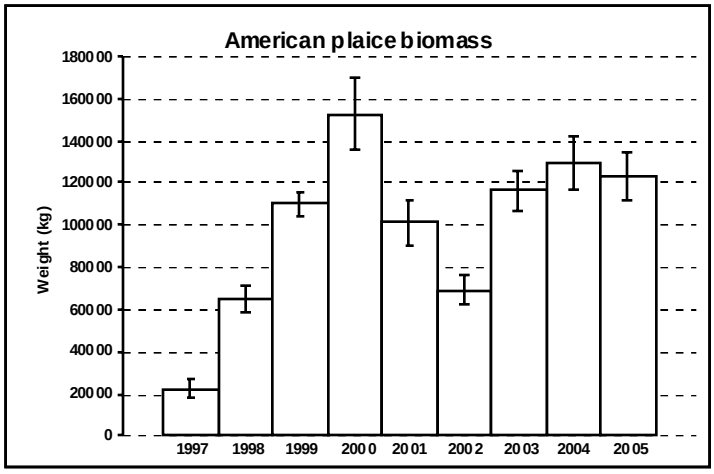

Fig. 10. American plaice biomass in tons and ±SD by year. Spanish Spring surveys on NAFO Div. 3NO: 1997-2005 (1997-2000 transformed data from C/V *Playa de Menduíña*; 2002-2005 original data from R/V *Vizconde de Eza*. In 2001, there are data from the two vessels).

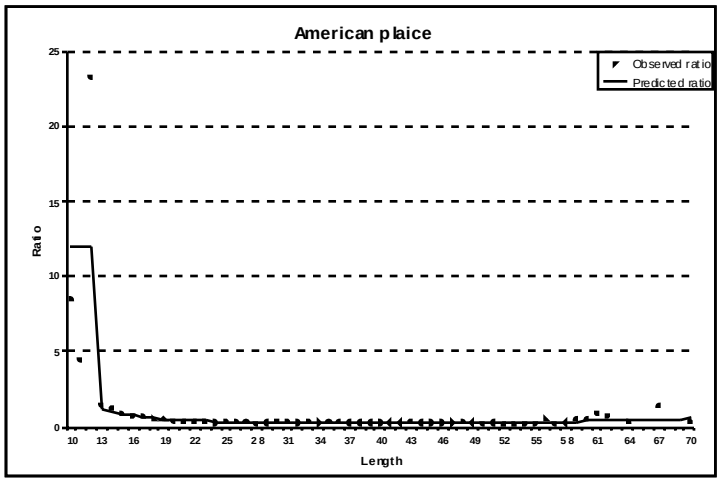

Fig. 11. Ratios of *Campelen* catch to *Pedreira* catch, by length group, of American plaice, from comparative fishing trials between the two gears on the C/V *Playa de Menduíña* and the R/V *Vizconde de Eza*. The dots are the observed ratios and the curve is the fitted line.

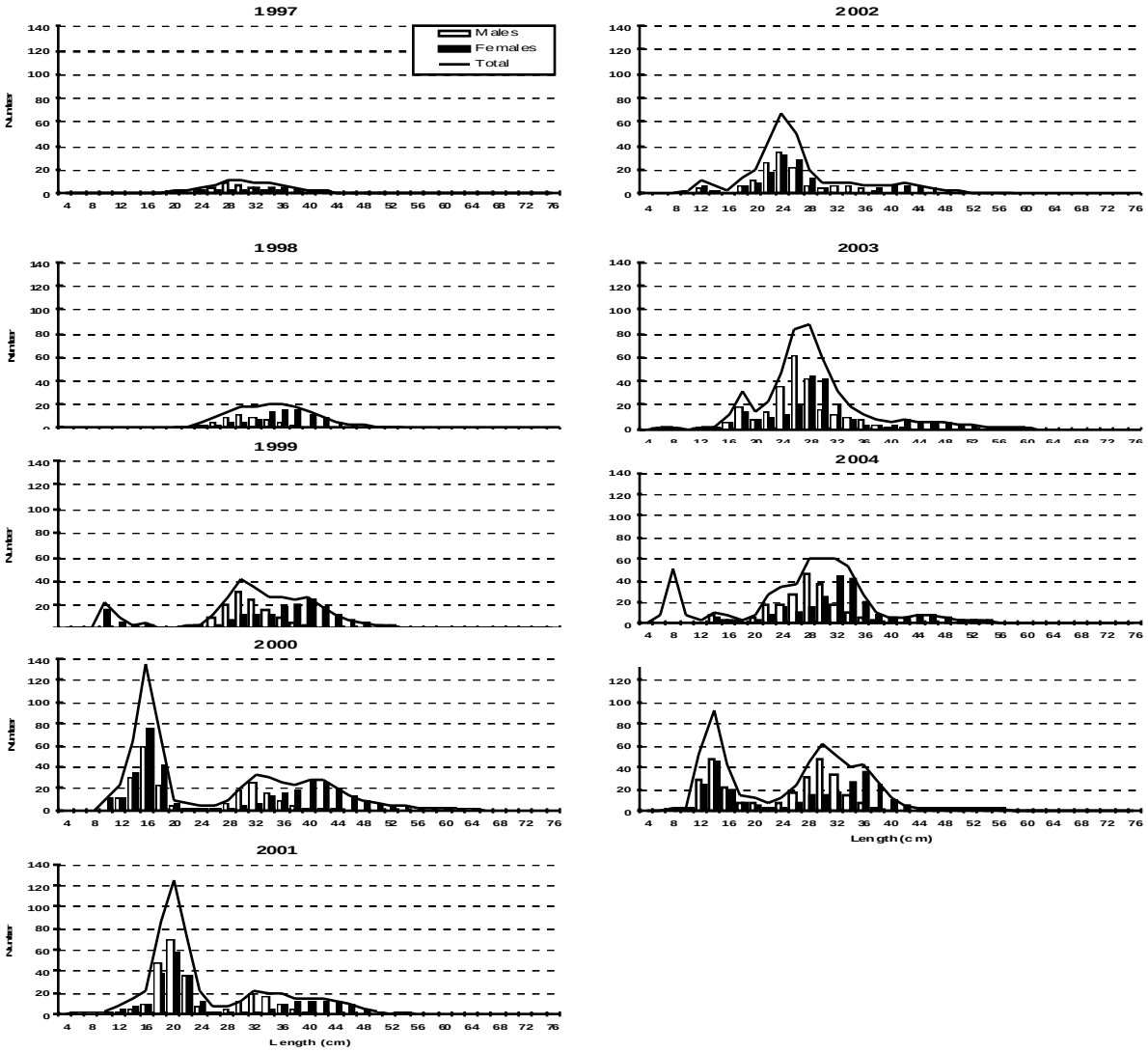

Fig. 12. American plaice length distribution (cm) on NAFO 3NO: 1997-2005. Estimated numbers per haul stratified mean catches. 1997-2000 data are transformed data from C/V *Playa de Menduíña*, and 2002-2005 data are original from R/V *Vizconde de Eza*. In 2001, there are data from the two vessels.

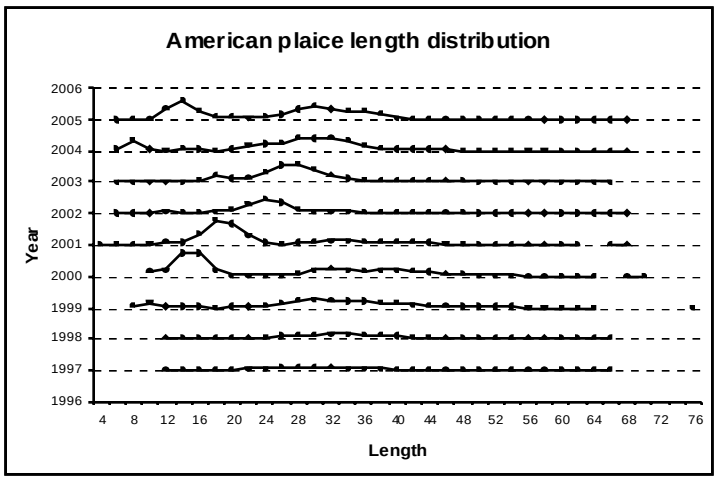

Fig. 13. Series of American plaice length distribution (cm) on NAFO 3NO: 1997-2005.

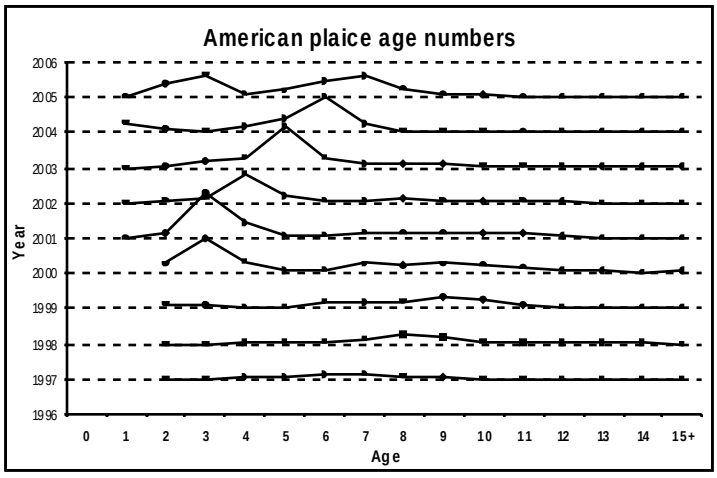

Fig. 14. Series of American plaice age distribution on NAFO 3NO: 1997-2005.

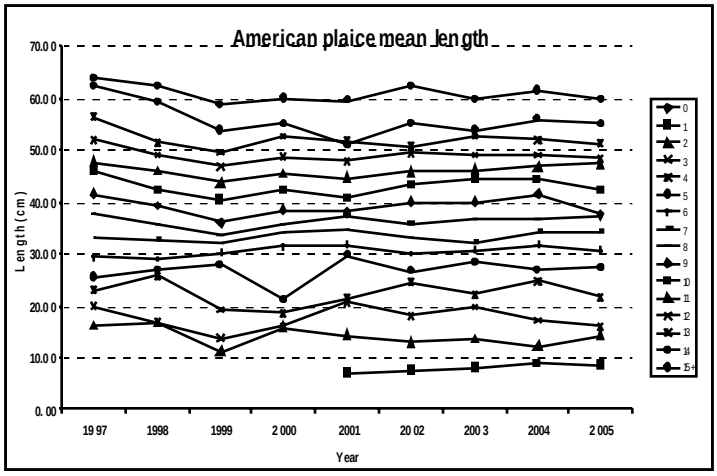

Fig. 15. American plaice mean length (cm) at age on NAFO 3NO: 1997-2005. Ages from 0 to 15+.

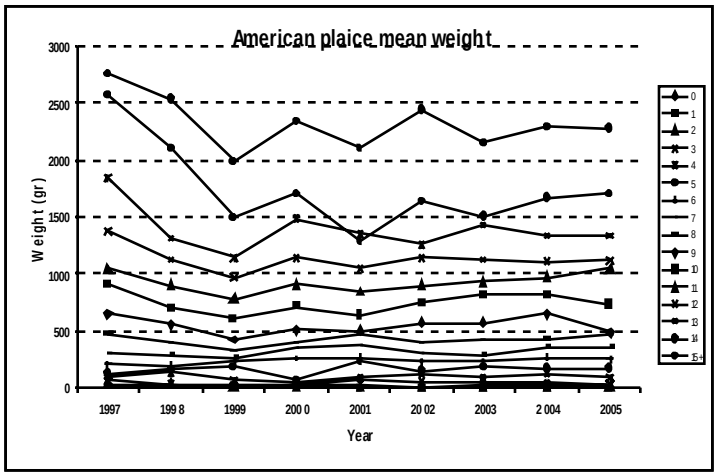

Fig. 16. American plaice mean weight (gr) at age on NAFO 3NO: 1997-2005. Ages from 0 to 15+.