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Results for Greenland halibut, American plaice and Atlantic cod of the Spanish survey in NAFO Div. 3NO for the period 1997-2016

by

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Abstract

Greenland halibut (*Reinhardtius hippoglossoides*), American plaice (*Hippoglossoides platessoides*) and Atlantic cod (*Gadus morhua*) indices from the bottom trawl survey that Spain carries out in Spring since 1995 in Div. 3NO of the NAFO Regulatory Area are presented. Biomass, stratified mean catches and mean number per tow for the three species are presented since 1997, year in which the survey extended the depth strata. Mean catch per tow, length distribution and age distribution are presented for the last five years (2012-2016). Greenland halibut biomass and abundance estimates presented a decreasing trend since 1999, cut in year 2007 with an increase, reaching in 2009 the highest value in the series. In 2011 the biomass drops under the 2008 value, being stable since then until 2014 with a slight increase in 2015 and 2016. In last years it can be seen a presence of juveniles, mainly in 2004, but the greatest lengths have failed, although in 2009 there is a quite good presence of individuals of ages 6-7 and in 2010 between 5-7. In 2011-2016 the presence of all ages is poor, although in 2015-2016 an increase in the range of the length can be seen with regards to last years. For American plaice we can see a stable trend from 1999 to 2015, reaching a maximum of mean catch and number in 2006, and a severe decline in 2016. The greatest recruitment in the presented series occurred in 2004 and we can follow their mode along the years. No good recruitments were seen since then. In 2016 no ALK are available, but all the length ranges are poor. For Atlantic cod, it can be seen a low biomass until 2008, being higher and variable since then, reaching a historical maximum in 2014. From 2014 to 2016, biomass decreased by a third. In 2007-2008 the youngest length classes were much over the rest of the length classes. With the 2006 cohort the series reaches the maximum number of its historical values at five years in 2011. There have been no good recruitments since 2009, although in 2015 and 2016 a discrete presence of individuals of age 1 can be seen.

Material and Methods

Since 1995, Spain carries out a Spring-Summer survey in the NAFO Regulatory Area of Div. 3NO. From 1995 to 2000, the survey was conducted on board the C/V *Playa de 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*. For 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, American plaice and Atlantic cod each individual of the sample was measured to the total length to the nearest lower cm. As in 1995 and 1996 only depth less than 1000 m was surveyed, these years are not representative for these species, so only data from 1997 are presented. We present the total annual indices of biomass and abundance for the period 1997-2016.

The number of valid tows, the depth strata covered and the dates of the survey series (1997-2016) are presented in Table 1. Table 2 shows the swept area and number of hauls by stratum for the last five years (2012-2016). To know the results of the rest of the years, see González-Troncoso *et al.,* 2013. The effect of reducing the number of hauls to improve the biological sampling in each haul was investigated via boostrap, concluding that 7 hauls from the larger strata could be removed with any hardly difference in the indices estimates or their variance. The total number of valid hauls in 2016 was 115

For each species, we present all the transformed indices until 2000 and no-transformed from 2002 to 2016. In 2001 there are data transformed from the former vessel with original data from the new vessel. To know more about the transformation, see González-Troncoso *et al*., 2005 and González-Troncoso *et al*., 2006. We present the mean catch, the length distribution in number by sex and year; and the mean numbers with their mean length and mean weight by age for the years 2012-2016. To see the results of the rest of the years, see González-Troncoso *et al.*, 2013. For American plaice 2016 ALK is not available yet, so only the age results for 2012-2015 are presented.

Figure 1 presents the maps with the distribution of the catches of the three species during the 2016 Spanish 3NO survey.

Results

Greenland halibut

The Greenland halibut stock in Subarea 2 and Div. 3KLMNO is considered to be part of a biological stock complex, which includes Subareas 0 and 1. Abundance and biomass indices were available from research vessel surveys by Canada in Div. 2J+3KLMNO (1978-2015), EU in Div. 3M (1988-2015), EU-Spain in Div. 3NO (1997-2015) and EU-Spain in Div. 3L (2003-2015). In 2003 the Fisheries Commission implemented a fifteen years rebuilding plan for this stock, establishing progressively decreasing TACs. The STACFIS estimated catches in 2004-2010 have exceeded the rebuilding plan TACs by 30% on average, despite reductions in fishing effort. STACFIS could not estimate total catches for 2011-2015.

In 2010, Fisheries Commission implemented a survey-based harvest control rule to generate annual TACs over at least 2011-2014. In 2013 Fisheries Commission extended this management approach to set the TACs for 2015 – 2017. These surveys provide coverage of the majority of the spatial distribution of the stock and the area from which the majority of catches are taken. Over 1995-2007,

indices from the majority of the surveys generally provided a consistent signal in stock biomass. Results since 2007 show greater divergence which complicates interpretation of overall status. The overall trend since 2007 is unclear. Abundance indices at age 4 were used as a measure of recruitment and has been below average in four most recent years. (NAFO, 2016).

Mean catches and Biomass

Table 3 shows the mean catches and their variance per haul and year for Greenland halibut during the period 2012-2016. Biomass per stratum for the same period is presented in Table 4. Annual total biomass, as their corresponding biomass at ages 5+ and 10+, and mean catch per tow with the total variance per year are presented in Table 5 for years 1997-2016. In Figure 2, we compare the mean catch per tow with the mean number per town. Figure 3 presents the biomass per swept area per stratum and their total variance per year, as the 5+ and 10+ biomass. In Table 6, we present the length-weight relationship parameters *a* and *b* for 2012-2016.

Greenland halibut total biomass increased from 1997 to 1999 and then decreased until 2002, reaching the lowest value of the whole time-series. From 2002 to 2007, it maintained almost constant values at low levels. It peaked in 2009 and in 2010, and after decreasing in 2011 to a half of the 2010 value, it has maintained stable at higher values than before 2008, with a slight increase in 2015 and 2016. The biomass 5+ has had the same trend as the total biomass with a marked increase from 2008, being 2009 and 2010 the highest values of the series. Since 2007, 5+ biomass has represented more than 90% of total biomass, being 99% in 2015. In the case of the 10+ biomass, it has increased since 2006 onwards, reaching the maximum value of the time-series in 2016. Since 2012, 10+ biomass has represented more than 20% of total biomass. Despite of this, with respect to the mean number per tow, although in the 2008-2010 period there was a substantial increase in the numbers, this increase is not as the increase in mean catch, reaching the level of the 2001 numbers per town, but still far of the values of the first years of our series. Since 2009, there has been a decrease in numbers with a slight increase in the last three years.

Length Distribution

Table 7 presents the mean number per tow by sex and year for 1997-2016. Table 8 shows this index by length, sex and year, with the number of samples in which there were length measures, the total number of individuals measured in these samples, the sampled catch and the range of lengths met, as the total catch of this species and the total hauls made in the survey, for years 2012-2016. In Figures 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 appear. The highest recruitments were in 1997, 2001 and 2004. In 2006 and 2007 the small individuals (around 12-14 cm, corresponding to 1 year of age) are the mode of the length distribution range, but all the length ranges were poor. The same occurred in 2011, with a mode in lengths 14-15, that corresponds to age 1. In 2009 and 2010 an increase in number for lengths between 38-52 cm (ages 5-7) can be seen, but they almost disappear in 2011. It seems that the high increase in the biomass in 2009-2010 was due to the higher presence of these length classes, while at the beginning of the series the presence of juveniles was stronger. From 2012 to 2016 the presence of all the length classes was poor, although a slight increase in the range of the length can be seen for years 2015 and 2016.

Age numbers

We present the mean number by age, sex and year in Table 9 for 2012-2016, and the total by year (for the entire series) in Figure 6. Individuals between 0 and 20 years were caught in the period 1997-

2016 and since 2002 more number of younger individuals has been caught. 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. 2001-2003 cohorts appear to be quite strong, as we can see in recent years, particularly 2002 one, and these cohorts seem to be present in year 2008 (ages 5 to 7) and in 2009 (ages 6 to 8). In 2010 the mode of the ages is between 5 and 7 years, which can imply that the cohorts of years 2004 and 2005 could be better than it can be seen in the graph. Over 2014-2016 the mode is at 7 years old. Age 1 represents around 10% of the total numbers in 2015 and 2016.

Mean length and mean weight at age

Mean length and weight at age by sex for 2012-2016 are presented in Tables 10 and 11, and for the entire series in Figures 7 and 8. The greatest ages increased their mean length and weight until 2003, and fell in the youngest individuals. In 2012-2016 the mean length and weight were more or less constant. The total mean length and the total mean weight have increased slightly since 2006 onwards.

American plaice

There was no directed fishing of American plaice in 1994 and there has been a moratorium since 1995. Even under moratorium, catches increased substantially from 1995 to 2003 and then decreased. Biomass and SSB are 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. Although estimated recruitment at age 5 has been higher from 2003-2008 than from 1995-2002, recruitment has been low since the late 1980s, but has shown an increasing trend from 2007-2013. This has been followed by lower recruitments in 2014 and 2015 (NAFO, 2016).

Mean catches and Biomass

American plaice mean catches and SD by stratum are presented in Table 12 for 2012-2016. Biomass for stratum for the same period is presented in Table 13.

The annual entire time series (1997-2016) of biomass and stratified mean catches with their SD estimates for American plaice are presented in Table 14. Estimated parameters *a* and *b* values of length-weight distribution are presented in Table 15 for 2012-2016.

The American plaice indices show a general increasing trend along the years, agree with the results from the Canadian surveys. Biomass increased from a depressed value in 1997 to 2000. Since then, it has had an stable trend with a minimum in 2002 and maximum values in 2006 and 2008, showing a severe decline in 2016.

Length Distribution

Table 16 shows the mean number per tow by sex and year for 1997-2016, and Table 17 the same index by length for 2012-2016, besides the sampled size and catch. Figures 11 and 12 show length distribution by sex and year for the entire period. Between years 2000 and 2004 we can follow a mode that then disappeared; probably the 1998 year-class. In 2004 there is a great presence of juveniles (8 cm) and in 2005 the mode appears around 14 cm, following with a mode of around 20 cm in 2006, 24 in 2007, 26 in 2008 and 28 in 2009. This mode can be seen around 30 cm in 2010, 32 cm in 2011 and 34 cm in 2012, but the mode length in those years is 28, as in 2009. In 2014, there is

a mode around 28 cm, it can be follow in 2015 around 30 cm, and in 2016, with very few individuals, around 32 cm. In 2008 and 2010 there is a quite good presence of juveniles (individuals of 10-12 cm in 2008 and 12 cm in 2010) that does not appear in 2011-2013. A discrete occurrence of individuals of 12-20 cm appears in 2015, but not in 2016.

Age numbers

As the 2016 ALK for American plaice is not available yet, we present the mean number per tow at age by sex and by year from 2012 to 2015 in Table 18 and the total by year (1997-2015) in Figure 13. The ALK used for all years is the 3N Canadian one. We can follow a cohort without problems since the year 2000, starting in individuals of 2 years old (1998 cohort), reaching 17 year old in 2015 (almost disappeared); a second cohort, weaker, can be followed since 1999, starting in 2 years old (1997 cohort). Another cohort from the year 2002 (one year old in 2003), can be followed until 2015, reaching 13 years old, although it failed at 5 years old. And the 2003 cohort (one year in 2004) is a very strong cohort, reaching in 2008 five years old and the largest number in the whole series, and in 2015 twelve years old. In 2015 the maximum is in 7 years old, which indicates that the cohort from 2008 is quite strong.

Mean length and mean weight

Mean length and weight at age by sex for 2012-2015 are presented in Tables 19 and 20, and shown in Figures 14 and 15, for 1997-2015. The mean length is more or less stable in all ages, at least since 2002. The same occurs with the mean weight, although with more variations. The major variations appear in the oldest ages studied: 12+ years old individuals. From 1997 to 1999 a general decreasing in the two means is observed.

<u>Atlantic cod</u>

Atlantic cod in Divisions 3NO has been under moratorium to directed fishing since 1994. According to the NAFO Scientific Council, the stock of Atlantic cod in Divisions 3NO declined dramatically during the mid-1980s. SSB has increased considerably over the past five years but the 2015 estimate of 38 454 t still represents only 64% of B_{lim}. This increase in biomass has been driven by the relatively strong 2005 and 2006 year classes and by fishing mortality values that are amongst the lowest in the time series ($F<0.1$) and well below F_{lim} (0.3). More recent year classes do not appear as strong and hence despite the low fishing mortality, the increasing trend in SSB may not persist beyond the short term (NAFO, 2016).

Mean Catches and Biomass

Atlantic cod mean catches and SD by stratum are presented in Table 21 for 2012-2016. Biomass by stratum and year are presented in Table 22 for the same period.

The entire time series (1997-2016) of biomass and stratified mean catches with their SD estimates for Atlantic cod are presented in Table 23. Estimated parameters *a* and *b* values of length-weight relationship are presented in Table 24 for 2012-2016.

Biomass of cod presents poor values between 1997 and 2005 with some fluctuations and a great deviation due to a few hauls in which the presence of that species was very high (e.g., 2001). Since 2006 an increasing trend in the biomass of this species can be seen. Although the 2006 increase is above all for a single catch of almost 2 tons, in general the catches of Atlantic cod in the survey of

2006 were over the mean. In 2008 a quite high increase is shown, and in this case there is no haul with very high catches (the maximum was 585.5 kg). Since then the biomass has increased to values well above the years before, reaching the maximum of the series in 2014 after a decrease in 2012 and 2013, decreasing again since then. From 2014 to 2016, biomass decreased by a third.

Length Distribution

Table 25 presents the mean number per tow by year for 1997-2016 and this index by length for the period 2012-2016 can be seen in Table 26, besides the sampled size and its catch. Figures 18 and 19 show the length distribution by year (1997-2016). The modal values used to be very low before 2006 except in 2001, and in general all lengths presence was very low, even it is very difficult to follow the modal values. In 2001 we had a good presence of individuals between 36 and 58 cm. From 2006 a series of great modal values along the length distribution can be seen. In 2006 there were two modes in the length distribution, one around 30 cm and another one around 40 cm. There was no good recruitment until 2004, in which the individuals between 12 and 16 cm correspond to the greatest presence in the series, and in 2005 between 24 and 32, with a new mode between 12 and 16 cm, as in last year. In 2007 the youngest lengths dominated the length range, with the highest mode in the lengths 12-16, that are between 2 and 4 times the abundance of the 48 cm length class, the following mode. In 2008-2015 we can follow the evolution of these lengths. In 2015 the mode is in 36 cm, with a discrete presence of individuals of lengths 6-8 cm. It must be note that, although the biomass has decrease from 2014 to 2015, the mean number is almost the same in both years, probably due to the presence of the smallest individuals. In 2016, mean number per town sharply decreased, and modal values were very low. The mode is between 24 and 26 cm.

Age numbers

The mean number per tow at age and year (2012-2016) is presented in Table 27 and the total by year (1997-2016) in Figure 20. In accordance with the length distribution, until 2006, the numbers are too low to follow any cohort. But between 2006 and 2008 there are three good cohorts that can be followed (2005-2007 cohorts). With the 2006 cohort the series reaches the maximum number of its historical values at five years in 2011. But it seems that no new good recruitments have occurred since 2009, although in 2015 and 2016 a discrete presence of individuals of age 1 can be seen.

Mean length and mean weight

Mean length and weight at age by sex over time are presented in Tables 28 and 29 (2012-2016), and shown in Figures 21 and 22 (1997-2016). For the central ages, the mean length and the mean weight seem to be more or less stable. That does not occur in the oldest ages, with the two parameters very scattered. The total mean length and mean weight presented no trend until 2006, increasing since then except for a decrease in both indices in 2015.

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Table 1.- Spanish spring bottom trawl surveys in NAFO Div. 3NO: 1997-2016.

Year	Vessel	Valid tows	Depth strata covered (m)	Dates
1997	C/V *Playa de Menduíña*	128	42-1263	April 26-May 18
1998	C/V *Playa de Menduíña*	124	42-1390	May 06-May 26
1999	C/V *Playa de Menduíña*	114	41-1381	May 07-May 26
2000	C/V *Playa de Menduíña*	118	42-1401	May 07-May 28
2001(*)	R/V *Vizconde de Eza*	83	36-1156	May 03-May 24
	C/V *Playa de Menduíña*	121	40-1500	May 05-May 23
2002	R/V *Vizconde de Eza*	125	38-1540	April 29-May 19
2003	R/V *Vizconde de Eza*	118	38-1666	May 11-June 02
2004	R/V *Vizconde de Eza*	120	43-1539	June 06–June 24
2005	R/V *Vizconde de Eza*	119	47-1485	June 10–June 29
2005	R/V *Vizconde de Eza*	119	47-1485	June 10–June 29
2006	R/V *Vizconde de Eza*	120	45-1480	June 7–June 27
2007	R/V *Vizconde de Eza*	110	45-1374	May 29–June 19
2008	R/V *Vizconde de Eza*	122	45-1374	May 27–June 16
2009	R/V *Vizconde de Eza*	109	45-1374	May 31–June 18
2010	R/V *Vizconde de Eza*	95	45-1374	May 30–June 18
2011	R/V *Vizconde de Eza*	122	44-1450	June 5–June 24
2012	R/V Vizconde de Eza	122	44-1450	June 3–June 21
2013	R/V Vizconde de Eza	122	44-1450	June 1–June 21
2014	R/V Vizconde de Eza	122	44-1450	June 2–June 21
2015	R/V Vizconde de Eza	122	44-1450	May 31-June 19
2016	R/V Vizconde de Eza	115	44-1450	May 30-June 18

(*)For the calculation of the series, 83 hauls were taken 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 and number of hauls by stratum. Spanish Spring Surveys in NAFO Div. 3NO: 2012-2016. Swept area in square miles. n.s. means stratum not surveyed.

	2012		2013		2014		2015		2016	
Stratum	Swept area	Tow number	Swept area	Tow number	Swept area	Tow number	Swept area	Tow number	Swept area	Tow number
353	0.0338	3	0.0349	3	0.0379	3	0.0401	3	0.0356	3
354	0.0338	3	0.0338	3	0.0394	3	0.0390	3	0.0345	3
355	0.0229	2	0.0225	2	0.0263	2	0.0263	2	0.0233	2
356	0.0225	2	0.0225	2	0.0266	2	0.0255	2	0.0225	2
357	0.0229	2	0.0236	2	0.0263	2	0.0233	2	0.0233	2
358	0.0330	3	0.0338	3	0.0390	3	0.0349	3	0.0338	3
359	0.0806	7	0.0829	7	0.0908	7	0.0855	7	0.0593	5
360	0.2344	20	0.2231	19	0.2629	20	0.2363	20	0.1995	17
374	0.0229	2	0.0233	2	0.0259	2	0.0229	2	0.0233	2
375	0.0349	3	0.0360	3	0.0390	3	0.0341	3	0.0360	3
376	0.1181	10	0.1305	11	0.1324	10	0.1159	10	0.0945	8
377	0.0229	2	0.0236	2	0.0259	2	0.0233	2	0.0233	2
378	0.0229	2	0.0225	2	0.0263	2	0.0225	2	0.0225	2
379	0.0225	2	0.0240	2	0.0255	2	0.0225	2	0.0229	2
380	0.0229	2	0.0229	2	0.0263	2	0.0229	2	0.0236	2
381	0.0221	2	0.0244	2	0.0259	2	0.0236	2	0.0229	2
382	0.0454	4	0.0484	4	0.0521	4	0.0458	4	0.0465	4
721	0.0233	2	0.0225	2	0.0266	2	0.0240	2	0.0225	2
722	0.0221	2	0.0221	2	0.0259	2	0.0259	2	0.0229	2
723	0.0225	2	0.0221	2	0.0259	2	0.0233	2	0.0225	2
724	0.0225	2	0.0225	2	0.0255	2	0.0236	2	0.0233	2
725	0.0225	2	0.0229	2	0.0255	2	0.0229	2	0.0229	2
726	0.0221	2	0.0221	2	0.0248	2	0.0229	2	0.0225	2
727	0.0233	2	0.0229	2	0.0259	2	0.0225	2	0.0225	2
728	0.0229	2	0.0233	2	0.0248	2	0.0225	2	0.0229	2
752	0.0229	2	0.0233	2	0.0240	2	0.0225	2	0.0236	2
753	0.0221	2	0.0236	2	0.0240	2	0.0233	2	0.0229	2
754	0.0221	2	0.0240	2	0.0225	2	0.0225	2	0.0225	2
755	0.0446	4	0.0454	4	0.0454	4	0.0450	4	0.0458	4
756	0.0221	2	0.0229	2	0.0229	2	0.0229	2	0.0225	2
757	0.0214	2	0.0240	2	0.0244	2	0.0229	2	0.0225	2
758	0.0221	2	0.0225	2	0.0221	2	0.0221	2	0.0221	2
759	0.0221	2	0.0225	2	0.0229	2	0.0229	2	0.0229	2
760	0.0225	2	0.0229	2	0.0364	3	0.0225	2	0.0229	2
761	0.0221	2	0.0225	2	0.0240	2	0.0240	2	0.0225	2
762	0.0225	2	0.0218	2	0.0229	2	0.0229	2	0.0225	2
763	0.0330	3	0.0341	3	0.0233	2	0.0341	3	0.0338	3
764	0.0225	2	0.0214	2	0.0259	2	0.0251	2	0.0225	2
765	0.0229	2	0.0221	2	0.0240	2	0.0236	2	0.0229	2
766	0.0225	2	0.0221	2	0.0221	2	0.0236	2	0.0229	2
767	0.0203	2	0.0218	2	0.0221	2	0.0229	2	0.0229	2

Table 3.- Greenland halibut mean catch (kg) and SD by stratum. Spanish Spring Surveys in NAFO Div. 3NO: 2012-2016. n.s. means stratum not surveyed.

	2012		2013		2014		2015		2016	
Stratum	GHL Mean catch	GHL SD	GHL Mean catch	GHL SD	GHL Mean catch	GHL SD	GHL Mean catch	GHL SD	GHL Mean catch	GHL SD
353	0.36	0.46	2.81	2.97	0.25	0.25	0.11	0.18	0.03	0.03
354	0.30	0.40	0.13	0.10	0.08	0.12	0.61	0.87	0.19	0.16
355	0.73	0.79	0.14	0.02	0.22	0.15	5.04	7.00	0.15	0.08
356	0.14	0.20	0.30	0.32	0.33	0.30	1.10	1.43	0.32	0.33
357	0.13	0.10	0.03	0.05	0.37	0.49	0.47	0.54	0.18	0.13
358	0.00	0.00	0.12	0.20	0.09	0.15	0.02	0.03	0.00	0.00
359	0.06	0.13	0.03	0.09	0.33	0.86	0.00	0.00	0.02	0.02
360	0.00	0.00	0.01	0.06	0.01	0.05	0.00	0.01	0.00	0.01
374	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
375	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
376	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
377	0.00	0.00	0.00	0.00	0.01	0.01	0.15	0.21	0.14	0.20
378	0.00	0.00	0.00	0.00	0.22	0.31	0.03	0.05	0.03	0.02
379	4.56	3.48	0.58	0.19	1.21	0.88	0.02	0.02	0.00	0.00
380	3.30	1.12	7.63	2.97	0.92	1.24	2.38	0.88	1.20	1.69
381	0.01	0.01	0.00	0.00	0.04	0.06	0.91	1.13	0.48	0.68
382	0.00	0.00	0.00	0.00	0.01	0.01	0.12	0.14	0.06	0.08
721	3.90	1.20	3.17	4.45	0.27	0.31	2.34	0.04	0.83	1.18
722	33.38	39.30	18.30	11.34	12.80	4.75	24.22	13.02	6.56	6.28
723	7.77	3.40	6.35	8.79	1.16	1.47	5.58	0.09	0.03	0.02
724	14.99	8.91	6.90	6.60	11.96	13.26	20.72	15.86	9.91	4.51
725	6.16	0.70	1.97	0.04	1.29	0.09	2.51	1.24	0.31	0.43
726	25.33	1.22	10.86	0.71	7.93	3.61	22.88	15.06	10.45	6.32
727	37.78	33.12	40.56	41.80	21.39	3.03	9.78	1.80	6.98	3.62
728	18.77	10.28	15.20	9.79	14.94	5.95	20.21	20.51	26.86	30.76
752	21.96	3.59	16.91	1.92	29.69	8.04	50.45	10.96	62.16	32.16
753	27.90	10.89	13.27	8.84	37.60	28.28	21.65	5.73	46.35	5.30
754	23.42	1.29	31.42	38.45	19.95	5.02	22.35	2.33	57.60	16.55
755	14.12	7.50	12.21	2.12	26.00	19.72	25.70	21.22	28.07	14.22
756	33.86	31.11	16.18	17.45	35.19	9.88	44.67	2.59	20.06	4.73
757	46.23	41.68	34.86	34.14	31.02	7.87	51.77	19.99	59.35	10.96
758	27.56	4.78	32.55	7.49	33.94	7.50	35.70	4.25	33.81	13.71
759	22.09	7.76	32.81	7.57	12.35	5.97	44.64	14.75	41.68	44.72
760	32.07	11.36	28.03	4.24	18.42	10.50	37.97	28.68	27.91	18.80
761	33.38	18.63	15.12	6.07	36.81	7.44	50.94	23.95	37.46	1.64
762	14.68	7.16	7.17	2.84	19.16	3.79	58.78	6.02	37.16	19.57
763	27.47	17.71	9.49	1.43	10.58	2.68	28.55	19.86	31.24	19.73
764	35.52	16.26	23.92	13.70	21.79	5.40	28.98	0.53	14.29	3.56
765	20.79	0.51	11.97	8.99	10.94	12.62	23.60	6.05	15.46	2.08
766	25.59	22.44	15.75	18.84	12.70	2.36	16.88	0.82	8.91	1.08
767	4.42	1.73	7.21	7.64	9.93	0.54	10.82	12.01	9.00	5.01

Table 4.- Greenland halibut survey biomass (t) by stratum in NAFO Div. 3NO: 2012-2016. n.s. means stratum not surveyed.

Strata	2012	2013	2014	2015	2016	Strata	2012	2013	2014	2015	2016
353	9	65	5	2	1	**725**	57	18	11	23	3
354	7	3	2	12	4	**726**	165	71	46	144	67
355	5	1	1	28	1	**727**	312	340	159	83	60
356	1	1	1	4	1	**728**	128	102	94	140	183
357	2	0	5	7	2	**752**	252	191	324	587	689
358	0	2	2	0	0	**753**	348	155	432	257	559
359	2	1	11	0	1	**754**	381	471	319	358	922
360	0	3	3	1	1	**755**	487	414	883	880	945
374	0	0	0	0	0	**756**	309	143	311	394	180
375	0	0	0	0	0	**757**	441	296	260	462	538
376	0	0	0	0	0	**758**	247	286	304	319	303
377	0	0	0	1	1	**759**	254	370	137	496	463
378	0	0	2	0	0	**760**	439	377	234	520	376
379	43	5	10	0	0	**761**	516	230	525	726	569
380	28	64	7	20	10	**762**	277	140	355	1089	700
381	0	0	0	11	6	**763**	652	218	237	655	725
382	0	0	0	4	2	**764**	307	224	168	231	127
721	22	18	1	13	5	**765**	225	134	113	248	168
722	248	139	83	157	48	**766**	327	205	165	206	112
723	107	89	14	74	0	**767**	69	105	142	149	124
724	165	76	116	217	106						

Table 5.- Greenland halibut survey biomass (t) with SD and stratified mean catch per tow (kg) and SD by in NAFO Div. 3NO: 1997-2016.

Year	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Biomass	6859	11305	11246	9331	7721	2380	4701	3437	3071	2720
SD	546	860	973	707	790	410	575	373	325	379
Biomass 5+	4303	6284	6367	8785	6700	2011	3386	2318	2585	2151
Biomass 10+	406	504	660	1111	741	279	495	318	380	182
MCPT	7.73	11.73	12.00	9.48	8.17	2.64	5.10	3.68	3.39	3.03
SD	0.62	0.89	1.00	0.75	0.84	0.45	0.61	0.40	0.36	0.42

Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Biomass	3286	7272	12927	12462	6483	6830	4959	5482	8519	8002
SD	363	708	1506	1197	593	631	606	465	664	700
Biomass 5+	3057	6908	11971	12057	6091	6297	4697	5322	8397	7784
Biomass 10+	343	798	1134	1158	1163	1587	1319	1529	1759	1945
MCPT	3.98	7.66	14.78	14.80	7.09	7.37	5.46	6.24	9.49	8.80
SD	0.44	0.74	1.73	1.40	0.63	0.69	0.47	0.53	0.73	0.78

Table 6.- Greenland halibut length weight relationships in Spanish Spring Surveys in NAFO Div. 3NO: 2012-2016. E(x) means Error of the parameter x.

	Males						Females						Indet.					
	a	**b**	**E(a)**	**E(b)**	**R2**	**N**	**a**	**b**	**E(a)**	**E(b)**	**R2**	**N**	**a**	**b**	**E(a)**	**E(b)**	**R2**	**N**
2012	**0.00566**	**3.08178**	0.0846	0.0236	0.999	441	**0.0034**	**3.2350**	0.1038	0.0277	0.998	865	**0.0037**	**3.2099**	0.0976	0.0267	0.998	1309
2013	**0.00474**	**3.11481**	0.0763	0.0218	0.998	364	**0.0038**	**3.2000**	0.0704	0.0191	0.998	737	**0.0054**	**3.1051**	0.1402	0.0385	0.99	1109
2014	**0.00449**	**3.14211**	0.0825	0.0239	0.997	444	**0.0045**	**3.1576**	0.0994	0.0272	0.995	719	**0.0047**	**3.1452**	0.0913	0.0251	0.996	1164
2015	**0.00354**	**3.20453**	0.0962	0.0281	0.996	441	**0.0034**	**3.2296**	0.0638	0.0172	0.998	789	**0.0028**	**3.2852**	0.0692	0.019	0.998	1239
2016	**0.00353**	**3.20496**	0.0725	0.0207	0.998	383	**0.0031**	**3.2581**	0.066	0.0177	0.998	697	**0.0029**	**3.2736**	0.063	0.0169	0.998	1086

Table 7.- Greenland halibut mean number per tow by year in Spanish Spring Surveys in NAFO Div. 3NO: 1997-2016. Indet. means indeterminate.

	1997				1998				1999				2000				2001			
	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
MNPT	11.087	16.467	1.445	28.999	14.270	19.987	0.239	34.496	14.821	21.726	0.251	36.799	6.364	11.103	0.286	17.753	9.894	14.977	1.036	25.907

	2002				2003				2004				2005				2006			
	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
MNPT	3.262	4.718	0.111	8.092	5.077	8.101	0.111	13.288	6.738	8.459	0.087	15.284	3.381	5.359	0.012	8.752	3.683	4.765	0.007	8.455

	2007				2008				2009				2010				2011			
	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
MNPT	2.895	4.803	0.048	7.746	3.698	7.075	0.051	10.825	8.980	14.667	0.128	23.775	6.657	13.979	0.010	20.646	3.849	6.847	0.107	10.802

	2012				2013				2014				2015				2016			
	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
MNPT	3.453	6.618	0.010	10.081	2.234	4.463	0.049	6.746	2.614	4.853	0.004	7.472	2.785	6.951	0.046	9.782	2.632	6.586	0.040	9.259

Table 8.- Greenland halibut mean number per tow by length class and year. Spanish Spring Survey in NAFO 3NO: 2012-2016. Indet. means indeterminate.

	2012				2013				2014				2015				2016			
Lenght (cm.)	Males	Females	Indet.	Total	Males	Females	Indet.	Total	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	0.005	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.016	0.016	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	0.004	0.004	0.021	0.000	0.010	0.031	0.000	0.000	0.000	0.000
10	0.000	0.000	0.000	0.000	0.013	0.013	0.016	0.041	0.078	0.064	0.000	0.142	0.242	0.104	0.013	0.359	0.281	0.227	0.026	0.534
12	0.000	0.030	0.010	0.040	0.101	0.071	0.028	0.200	0.149	0.109	0.000	0.258	0.203	0.225	0.007	0.435	0.225	0.265	0.015	0.504
14	0.018	0.019	0.000	0.036	0.017	0.014	0.000	0.031	0.049	0.020	0.000	0.069	0.054	0.046	0.000	0.100	0.016	0.012	0.000	0.028
16	0.004	0.003	0.000	0.007	0.048	0.058	0.000	0.106	0.062	0.038	0.000	0.100	0.014	0.028	0.000	0.043	0.016	0.004	0.000	0.021
18	0.017	0.026	0.000	0.043	0.056	0.099	0.000	0.155	0.101	0.088	0.000	0.189	0.071	0.068	0.000	0.139	0.014	0.077	0.000	0.091
20	0.058	0.075	0.000	0.133	0.057	0.066	0.000	0.122	0.118	0.224	0.000	0.342	0.117	0.101	0.000	0.219	0.104	0.113	0.000	0.217
22	0.139	0.241	0.000	0.380	0.053	0.058	0.000	0.111	0.237	0.348	0.000	0.585	0.090	0.099	0.000	0.189	0.075	0.106	0.000	0.181
24	0.348	0.526	0.000	0.874	0.026	0.033	0.000	0.058	0.081	0.197	0.000	0.278	0.029	0.039	0.000	0.068	0.034	0.059	0.000	0.092
26	0.358	0.625	0.000	0.983	0.005	0.000	0.000	0.005	0.020	0.033	0.000	0.053	0.022	0.009	0.000	0.031	0.014	0.048	0.000	0.063
28	0.222	0.284	0.000	0.506	0.063	0.035	0.000	0.098	0.016	0.023	0.000	0.040	0.036	0.047	0.000	0.083	0.053	0.093	0.000	0.146
30	0.084	0.083	0.000	0.167	0.086	0.136	0.000	0.222	0.022	0.000	0.000	0.022	0.034	0.098	0.000	0.132	0.068	0.101	0.000	0.169
32	0.126	0.106	0.000	0.232	0.111	0.228	0.000	0.339	0.035	0.033	0.000	0.068	0.042	0.076	0.000	0.118	0.078	0.162	0.000	0.240
34	0.112	0.163	0.000	0.275	0.123	0.252	0.000	0.374	0.039	0.073	0.000	0.112	0.048	0.034	0.000	0.082	0.086	0.071	0.000	0.157
36	0.195	0.146	0.000	0.341	0.124	0.138	0.000	0.262	0.059	0.073	0.000	0.132	0.058	0.038	0.000	0.097	0.054	0.100	0.000	0.154
38	0.152	0.326	0.000	0.478	0.146	0.278	0.000	0.424	0.121	0.136	0.000	0.258	0.096	0.050	0.000	0.146	0.204	0.129	0.000	0.334
40	0.232	0.393	0.000	0.625	0.137	0.174	0.000	0.311	0.125	0.126	0.000	0.251	0.133	0.182	0.000	0.315	0.117	0.202	0.000	0.319
42	0.253	0.417	0.000	0.670	0.149	0.379	0.000	0.528	0.214	0.275	0.000	0.489	0.176	0.227	0.000	0.403	0.078	0.210	0.000	0.288
44	0.240	0.450	0.000	0.690	0.098	0.359	0.000	0.457	0.186	0.323	0.000	0.509	0.132	0.446	0.000	0.577	0.194	0.334	0.000	0.528
46	0.239	0.368	0.000	0.607	0.166	0.364	0.000	0.530	0.246	0.362	0.000	0.609	0.130	0.613	0.000	0.743	0.170	0.398	0.000	0.568
48	0.228	0.388	0.000	0.616	0.152	0.285	0.000	0.437	0.123	0.378	0.000	0.501	0.274	0.825	0.000	1.099	0.118	0.528	0.000	0.646
50	0.144	0.326	0.000	0.470	0.107	0.205	0.000	0.312	0.190	0.472	0.000	0.663	0.292	0.756	0.000	1.048	0.211	0.535	0.000	0.747
52	0.121	0.298	0.000	0.419	0.156	0.243	0.000	0.399	0.139	0.241	0.000	0.380	0.187	0.766	0.000	0.954	0.125	0.750	0.000	0.876
54	0.067	0.304	0.000	0.371	0.093	0.223	0.000	0.317	0.106	0.260	0.000	0.366	0.146	0.578	0.000	0.724	0.185	0.680	0.000	0.865
56	0.063	0.241	0.000	0.304	0.071	0.139	0.000	0.210	0.090	0.184	0.000	0.275	0.123	0.538	0.000	0.661	0.046	0.465	0.000	0.511
58	0.018	0.219	0.000	0.237	0.038	0.079	0.000	0.116	0.007	0.162	0.000	0.170	0.014	0.310	0.000	0.323	0.056	0.237	0.000	0.293
60	0.015	0.187	0.000	0.202	0.023	0.156	0.000	0.179	0.000	0.148	0.000	0.148	0.000	0.194	0.000	0.194	0.000	0.204	0.000	0.204
62	0.000	0.116	0.000	0.116	0.017	0.130	0.000	0.146	0.000	0.095	0.000	0.095	0.000	0.138	0.000	0.138	0.000	0.137	0.000	0.137
64	0.000	0.064	0.000	0.064	0.000	0.072	0.000	0.072	0.000	0.073	0.000	0.073	0.000	0.086	0.000	0.086	0.008	0.055	0.000	0.064
66	0.000	0.025	0.000	0.025	0.000	0.049	0.000	0.049	0.000	0.068	0.000	0.068	0.000	0.042	0.000	0.042	0.000	0.094	0.000	0.094
68	0.000	0.033	0.000	0.033	0.000	0.030	0.000	0.030	0.000	0.062	0.000	0.062	0.000	0.029	0.000	0.029	0.000	0.034	0.000	0.034
70	0.000	0.025	0.000	0.025	0.000	0.015	0.000	0.015	0.000	0.025	0.000	0.025	0.000	0.047	0.000	0.047	0.000	0.021	0.000	0.021
72	0.000	0.041	0.000	0.041	0.000	0.022	0.000	0.022	0.000	0.057	0.000	0.057	0.000	0.041	0.000	0.041	0.000	0.029	0.000	0.029
74	0.000	0.025	0.000	0.025	0.000	0.025	0.000	0.025	0.000	0.028	0.000	0.028	0.000	0.007	0.000	0.007	0.000	0.016	0.000	0.016
76	0.000	0.021	0.000	0.021	0.000	0.006	0.000	0.006	0.000	0.039	0.000	0.039	0.000	0.015	0.000	0.015	0.000	0.030	0.000	0.030
78	0.000	0.005	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.015	0.000	0.015	0.000	0.014	0.000	0.014	0.000	0.019	0.000	0.019
80	0.000	0.000	0.000	0.000	0.000	0.024	0.000	0.024	0.000	0.000	0.000	0.000	0.000	0.007	0.000	0.007	0.000	0.006	0.000	0.006
82	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.006	0.000	0.006	0.000	0.014	0.000	0.014
84	0.000	0.016	0.000	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.011	0.000	0.011	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	0.000	0.008	0.000	0.008	0.000	0.006	0.000	0.006
88	0.000	0.005	0.000	0.005	0.000	0.000	0.000	0.000	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	0.006	0.000	0.006	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.008	0.000	0.008
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	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	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.005
96	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	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	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	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	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	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total	3.453	6.618	0.010	10.081	2.234	4.463	0.049	6.746	2.614	4.853	0.004	7.472	2.785	6.951	0.046	9.782	2.632	6.586	0.040	9.259
Nº samples:				67				67				77				73				80
Nº Ind.:	549	1073	2	1624	378	756	8	1142	467	863	1	1331	444	1119	8	1571	447	1074	6	1527
Sampled catch:				1149				857				956				1421				1273
Range:				12-89				7-90				9-79				7-87				10-95
Total catch:				1197				885				961				1426				1278
Total hauls:				122				122				122				122				115

Table 9.- Greenland halibut mean number per tow by age, sex and year. Spanish Spring Survey in NAFO 3NO: 2012-2016. Indet. means indeterminate.

	2012				2013				2014				2015				2016			
Age	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
0																				
1	0.02	0.05	0.01	0.08	0.13	0.09	0.05	0.27	0.31	0.20	0.00	0.51	0.53	0.36	0.05	0.93	0.54	0.50	0.04	1.08
2	0.65	1.15		1.80	0.20	0.26		0.45	0.46	0.83		1.28	0.28	0.33		0.62	0.19	0.35		0.54
3	0.63	0.71		1.34	0.09	0.14		0.23	0.14	0.12		0.26	0.10	0.11		0.20	0.15	0.19		0.34
4	0.17	0.27		0.44	0.24	0.57		0.81	0.04	0.11		0.14	0.04	0.18		0.21	0.19	0.26		0.45
5	0.47	0.62		1.09	0.40	0.78		1.17	0.26	0.29		0.54	0.26	0.21		0.47	0.22	0.29		0.51
6	0.55	1.16		1.71	0.46	1.01		1.48	0.69	0.96		1.65	0.55	1.26		1.81	0.54	1.32		1.86
7	0.77	1.23		2.00	0.55	0.67		1.22	0.60	1.14		1.74	0.86	2.52		3.38	0.48	2.07		2.55
8	0.13	0.41		0.54	0.07	0.26		0.33	0.10	0.35		0.45	0.14	0.80		0.94	0.28	0.62		0.90
9	0.03	0.37		0.40	0.06	0.15		0.21	0.03	0.18		0.21	0.03	0.40		0.44	0.03	0.19		0.22
10	0.03	0.31		0.34	0.02	0.22		0.24		0.23		0.23		0.35		0.35	0.01	0.27		0.28
11		0.11		0.11	0.01	0.13		0.13		0.18		0.18		0.19		0.19	0.01	0.11		0.12
12		0.05		0.05		0.09		0.09		0.11		0.11		0.10		0.10		0.17		0.17
13		0.06		0.06		0.03		0.03		0.05		0.05		0.03		0.03		0.08		0.08
14		0.05		0.05		0.04		0.04		0.03		0.03		0.04		0.04		0.05		0.05
15		0.01		0.01		0.01		0.01		0.03		0.03		0.02		0.02		0.03		0.03
16		0.03		0.03		0.02		0.02		0.03		0.03		0.03		0.03		0.03		0.03
17		0.02		0.02		0.01		0.01						0.02		0.02		0.01		0.01
18		0.01		0.01		0.01		0.01										0.00		0.00
19																				
20																		0.01		0.01
Total	3.45	6.62	0.01	10.08	2.23	4.46	0.05	6.75	2.61	4.85	0.00	7.47	2.79	6.95	0.05	9.78	2.63	6.59	0.04	9.26

Table 10.- Greenland halibut mean length (cm) per tow by age, sex and year. Spanish Spring Survey in NAFO 3NO: 2012-2016. Indet. means indeterminate.

	2012				2013				2014				2015				2016			
Age	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
0																				
1	15.14	14.30	13.50	14.41	13.13	12.88	12.06	12.85	13.15	12.75	9.50	12.96	12.19	12.69	9.44	12.25	12.16	12.19	11.35	12.14
2	24.91	25.23		25.12	19.77	19.69		19.73	21.35	22.28		21.95	21.15	20.87		21.00	21.74	21.74		21.74
3	28.30	27.61		27.94	27.00	27.13		27.08	24.48	24.88		24.66	26.32	28.59		27.52	28.30	29.44		28.95
4	33.83	34.15		34.02	32.39	33.72		33.33	31.78	34.53		33.80	31.07	32.71		32.43	33.85	32.95		33.32
5	38.41	39.21		38.87	37.55	40.07		39.21	38.51	39.07		38.80	37.83	40.01		38.81	38.83	38.08		38.41
6	43.29	43.64		43.52	44.02	45.49		45.03	43.97	44.98		44.56	44.08	45.61		45.14	44.27	45.58		45.19
7	49.03	49.50		49.32	51.04	51.26		51.16	51.07	50.95		50.99	51.25	51.21		51.22	49.95	52.50		52.02
8	54.63	55.18		55.05	56.36	55.64		55.80	56.10	54.58		54.91	55.92	55.02		55.15	55.47	55.49		55.49
9	57.28	57.15		57.16	58.34	56.39		56.95	57.50	57.47		57.47	57.50	57.28		57.30	58.14	58.86		58.76
10	58.40	60.38		60.21	61.14	61.68		61.63		60.91		60.91		60.46		60.46	58.50	59.16		59.15
11		63.57		63.57	63.50	63.69		63.68		64.75		64.75		63.70		63.70	65.50	63.35		63.50
12		66.62		66.62		65.43		65.43		67.25		67.25		66.82		66.82		64.56		64.56
13		68.66		68.66		71.23		71.23		74.39		74.39		72.71		72.71		69.42		69.42
14		72.80		72.80		71.72		71.72		73.34		73.34		72.45		72.45		70.39		70.39
15		72.50		72.50		74.50		74.50		74.91		74.91		75.21		75.21		75.89		75.89
16		75.50		75.50		80.98		80.98		76.20		76.20		77.99		77.99		78.54		78.54
17		84.50		84.50		81.50		81.50						86.05		86.05		81.02		81.02
18		89.50		89.50		90.50		90.50										95.50		95.50
19																				
20																		88.73		88.73
Total	37.75	42.30	13.50	40.71	39.73	44.60	12.06	42.75	36.84	44.22	9.50	41.62	37.34	47.91	9.44	44.72	36.45	46.30	11.35	43.35

Table 11.- Greenland halibut mean weight (g) per tow by age, sex and year. Spanish Spring Survey in NAFO 3NO: 2012-2016. Indet. means indeterminate.

	2012				2013				2014				2015				2016			
Age	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
0																				
1	25	20	16	20	15	14	13	14	16	15	6	15	11	13	5	12	11	11	8	11
2	117	119		118	53	55		54	70	84		79	64	66		65	69	73		72
3	173	159		165	140	156		150	105	119		111	128	177		154	163	193		180
4	293	311		304	241	298		281	237	326		302	213	267		258	284	278		280
5	434	487		465	383	520		473	442	483		463	410	511		456	440	443		442
6	626	689		669	626	775		728	661	755		716	661	782		745	679	797		762
7	925	1036		993	991	1133		1069	1056	1119		1098	1063	1137		1118	988	1256		1206
8	1288	1461		1420	1341	1471		1443	1408	1392		1396	1397	1432		1426	1375	1497		1459
9	1483	1640		1627	1490	1529		1518	1519	1628		1615	1524	1622		1615	1597	1811		1782
10	1583	1958		1925	1724	2039		2009		1959		1959		1932		1932	1625	1848		1842
11		2313		2313	1938	2266		2243		2380		2380		2288		2288	2335	2305		2307
12		2702		2702		2471		2471		2677		2677		2673		2673		2462		2462
13		2976		2976		3256		3256		3690		3690		3510		3510		3148		3148
14		3603		3603		3315		3315		3512		3512		3462		3462		3260		3260
15		3523		3523		3721		3721		3772		3772		3919		3919		4150		4150
16		4032		4032		4861		4861		3966		3966		4414		4414		4673		4673
17		5782		5782		4960		4960						6030		6030		5128		5128
18		6963		6963		6935		6935										8752		8752
19																				
20																		6900		6900
Total	509	841	16	726	587	930	13	810	551	989	6	835	602	1124	5	970	569	1108	8	950

Table 12.- American plaice mean catch (kg) and SD by stratum. Spanish Spring Surveys in NAFO Div. 3NO: 2012-2016. n.s. means stratum not surveyed.

	2012		2013		2014		2015		2016	
	A. Plaice	A. Plaice	A. Plaice	A. Plaice	A. Plaice	A. Plaice	A. Plaice	A. Plaice	A. Plaice	A. Plaice
Stratum	Mean catch	SD	Mean catch	SD	Mean catch	SD	Mean catch	SD	Mean catch	SD
353	48.19	31.32	216.48	132.63	55.51	13.19	73.66	18.18	23.23	24.97
354	68.89	70.27	58.79	54.85	56.70	76.25	78.85	81.90	42.63	32.66
355	9.62	9.50	10.40	3.41	5.34	4.13	3.96	3.35	8.66	3.17
356	0.51	0.72	1.08	1.53	0.00	0.00	1.09	1.54	0.10	0.14
357	0.00	0.00	0.00	0.00	0.64	0.90	0.18	0.25	0.01	0.02
358	3.15	4.42	26.27	43.04	18.71	18.22	50.48	74.16	145.62	53.39
359	127.72	171.24	142.43	119.20	61.36	54.21	222.91	98.41	50.75	47.15
360	399.52	491.34	479.42	490.74	268.10	280.43	262.51	231.68	63.87	81.60
374	547.80	380.00	952.66	561.92	681.86	206.84	301.29	239.68	32.03	15.03
375	59.42	28.10	65.63	66.77	118.37	51.35	56.90	61.60	14.22	10.12
376	34.36	33.89	47.28	32.12	46.20	41.87	51.41	31.11	29.99	20.60
377	366.11	68.67	149.80	66.76	205.18	106.95	207.38	7.64	67.83	48.01
378	2.93	2.73	3.77	5.33	14.44	20.41	67.52	64.74	79.65	77.57
379	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.85	0.49
380	8.95	12.66	1.81	1.56	7.74	5.90	0.78	0.69	269.90	204.64
381	152.70	206.76	123.28	95.78	143.99	12.46	506.96	18.72	87.31	77.48
382	480.11	214.81	90.53	61.16	95.91	110.71	368.11	166.21	11.63	7.91
721	0.00	0.00	0.02	0.03	0.00	0.00	0.01	0.02	0.00	0.00
722	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
723	0.11	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
724	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
725	0.00	0.00	0.00	0.00	0.00	0.00	0.21	0.30	0.87	1.22
726	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
727	34.82	47.76	0.00	0.00	0.07	0.10	0.00	0.00	61.38	60.13
728	1.30	1.84	0.00	0.00	0.00	0.00	0.00	0.00	14.77	18.71
752	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
753	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
754	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
755	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
756	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
757	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
758	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
759	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
760	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
761	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
762	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
763	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
764	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
765	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
766	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
767	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table 13.- American plaice survey biomass (t) by stratum in NAFO Div. 3NO: 2012-2016. n.s. means stratum not surveyed.

Strata	2012	2013	2014	2015	2016	Strata	2012	2013	2014	2015	2016
353	1152	5009	1183	1481	526	**725**	0	0	0	2	8
354	1506	1286	1063	1492	912	**726**	0	0	0	0	0
355	62	68	30	22	55	**727**	288	0	1	0	524
356	2	5	0	4	0	**728**	9	0	0	0	101
357	0	0	8	3	0	**752**	0	0	0	0	0
358	65	525	324	977	2912	**753**	0	0	0	0	0
359	4668	5065	1993	7683	1803	**754**	0	0	0	0	0
360	94879	113616	56766	61846	15147	**755**	0	0	0	0	0
374	10250	17537	11279	5637	590	**756**	0	0	0	0	0
375	1385	1482	2468	1356	321	**757**	0	0	0	0	0
376	3880	5317	4655	5919	3387	**758**	0	0	0	0	0
377	3201	1268	1586	1784	583	**759**	0	0	0	0	0
378	36	47	153	834	984	**760**	0	0	0	0	0
379	0	0	0	0	17	**761**	0	0	0	0	0
380	75	15	57	7	2193	**762**	0	0	0	0	0
381	1988	1457	1603	6180	1099	**763**	0	0	0	0	0
382	14517	2567	2525	11039	343	**764**	0	0	0	0	0
721	0	0	0	0	0	**765**	0	0	0	0	0
722	0	0	0	0	0	**766**	0	0	0	0	0
723	1	0	0	0	0	**767**	0	0	0	0	0
724	0	0	0	0	0						

Table 14.- American plaice survey biomass (t) with SD and stratified mean catch per tow (kg) and SD by in NAFO Div. 3NO: 1997-2016.

Year	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Biomass	21827	64635	110010	152997	101137	69511	116842	129432	123227	170910
SD	4495	5946	5825	16740	10841	7097	9777	12335	11396	24806
MCPT	25.80	72.25	128.72	175.49	115.95	77.77	127.17	143.93	138.77	202.84
SD	5.09	6.51	6.85	19.24	12.31	7.46	10.79	13.03	12.92	29.01

Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Biomass	112086	172735	93025	112247	151160	137964	155264	85691	106267	31506
SD	13032	17696	10258	18089	29753	27395	29284	14019	13432	5257
MCPT	141.82	193.67	106.59	134.33	172.05	155.11	176.26	108.50	121.19	35.55
SD	15.31	20.39	11.31	22.27	34.95	30.53	31.60	17.41	14.89	5.84

Table 15.- American plaice length weight relationships in Spanish Spring Surveys in NAFO Div. 3NO: 2012-2016. E(x) means Error of the parameter x.

	Males						Females						Indet.					
	a	**b**	**E(a)**	**E(b)**	**R2**	**N**	**a**	**b**	**E(a)**	**E(b)**	**R2**	**N**	**a**	**b**	**E(a)**	**E(b)**	**R2**	**N**
2012	**0.00525**	**3.13031**	0.1089	0.0323	0.998	426	**0.0039**	**3.2240**	0.0907	0.025	0.999	715	**0.0043**	**3.1992**	0.0889	0.0243	0.999	1141
2013	**0.01096**	**2.91169**	0.2717	0.0846	0.972	609	**0.0059**	**3.1190**	0.1705	0.0477	0.987	987	**0.0079**	**3.0398**	0.1175	0.0342	0.992	1695
2014	**0.00471**	**3.17431**	0.0782	0.998	0.998	495	**0.0044**	**3.2026**	0.0679	0.0194	0.998	804	**0.0046**	**3.1909**	0.0742	0.0217	0.997	1338
2015	**0.00585**	**3.09893**	0.0495	0.0157	0.999	742	**0.0036**	**3.2490**	0.0439	0.0126	0.999	1105	**0.0043**	**3.2033**	0.062	0.018	0.998	1861
2016	**0.00492**	**3.13599**	0.0965	0.0304	0.997	551	**0.0037**	**3.2299**	0.0572	0.0162	0.999	810	**0.0033**	**3.2565**	0.0616	0.0178	0.998	1365

Table 16.- American plaice mean number per tow by year in Spanish Spring Surveys in NAFO Div. 3NO: 1997-2016. Indet. means indeterminate.

	1997				1998				1999				2000				2001			
	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
MNPT	40.511	38.798	0.023	79.332	56.883	108.124	0.000	165.008	122.141	183.012	10.273	315.426	222.117	359.467	0.348	581.933	252.254	261.936	5.053	519.242
	2002				2003				2004				2005				2006			
	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
MNPT	149.083	175.044	0.319	324.447	245.522	236.752	0.407	482.682	206.765	241.817	64.714	513.296	279.087	280.604	2.603	562.294	443.600	423.144	0.191	866.936
	2007				2008				2009				2010				2011			
	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
MNPT	249.539	242.885	3.602	496.025	351.426	361.373	12.541	725.340	134.548	186.163	4.328	325.039	281.719	234.732	0.195	516.645	385.477	286.713	0.010	672.200
	2012				2013				2014				2015				2016			
	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
MNPT	350.620	246.778	0.684	598.083	376.247	261.170	3.239	640.655	172.242	155.876	0.596	328.714	241.001	182.255	0.633	423.888	64.051	56.961	0.156	121.168

Table 17.- American plaice mean number per tow by length class and year. Spanish Spring Survey in NAFO 3NO: 2012-2016. Indet. means indeterminate.

	2012				2013				2014				2015				2016			
Lenght (cm.)	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
4	0.000	0.000	0.000	0.000	0.000	0.000	0.253	0.253	0.000	0.000	0.008	0.008	0.000	0.000	0.026	0.026	0.000	0.000	0.000	0.000
6	0.000	0.000	0.079	0.079	0.144	0.011	1.490	1.645	0.013	0.008	0.163	0.183	0.000	0.005	0.178	0.183	0.000	0.000	0.000	0.000
8	0.000	0.000	0.135	0.135	0.031	0.000	0.652	0.683	0.079	0.045	0.209	0.333	0.303	0.182	0.322	0.807	0.000	0.016	0.008	0.024
10	0.064	0.016	0.277	0.357	0.044	0.030	0.127	0.200	0.645	0.142	0.178	0.965	1.632	1.327	0.107	3.066	0.201	0.154	0.061	0.416
12	0.038	0.033	0.194	0.265	0.100	0.125	0.041	0.267	4.782	3.064	0.013	7.858	7.178	5.396	0.000	12.574	0.441	0.504	0.071	1.017
14	0.037	0.332	0.000	0.369	0.110	0.436	0.326	0.873	2.953	3.567	0.026	6.546	5.752	4.795	0.000	10.547	1.185	1.080	0.016	2.280
16	0.379	0.496	0.000	0.875	0.385	1.038	0.337	1.760	0.908	1.014	0.000	1.922	9.844	9.659	0.000	19.503	1.983	2.957	0.000	4.940
18	3.398	1.464	0.000	4.863	1.082	0.556	0.011	1.648	0.309	0.160	0.000	0.469	11.529	12.282	0.000	23.810	2.286	2.716	0.000	5.003
20	16.317	12.092	0.000	28.409	3.729	2.642	0.000	6.371	0.642	1.065	0.000	1.707	5.084	5.797	0.000	10.881	3.162	3.999	0.000	7.161
22	30.991	21.311	0.000	52.301	17.122	8.493	0.000	25.615	1.666	1.710	0.000	3.376	2.107	1.564	0.000	3.670	2.755	3.430	0.000	6.185
24	34.632	20.584	0.000	55.215	50.459	26.073	0.000	76.533	8.759	3.393	0.000	12.152	2.802	1.954	0.000	4.756	1.995	1.518	0.000	3.513
26	54.164	22.669	0.000	76.833	70.033	34.461	0.000	104.494	27.272	9.528	0.000	36.799	14.845	4.340	0.000	19.185	2.844	1.439	0.000	4.283
28	74.377	30.164	0.000	104.542	75.578	25.543	0.000	101.121	41.309	12.821	0.000	54.130	46.555	6.934	0.000	53.489	6.996	1.551	0.000	8.547
30	64.827	20.397	0.000	85.224	77.589	27.953	0.000	105.542	36.716	15.350	0.000	52.066	56.759	14.921	0.000	71.680	14.755	2.456	0.000	17.211
32	40.060	21.282	0.000	61.342	43.729	26.620	0.000	70.349	26.480	14.748	0.000	41.228	44.302	22.259	0.000	66.561	13.875	4.106	0.000	17.982
34	20.386	23.807	0.000	44.192	26.539	23.731	0.000	50.270	12.459	17.318	0.000	29.777	22.175	20.642	0.000	42.817	7.580	4.986	0.000	12.565
36	7.540	25.102	0.000	32.642	5.972	23.152	0.000	29.124	4.978	20.084	0.000	25.062	8.837	19.273	0.000	28.109	2.945	7.238	0.000	10.183
38	2.028	15.882	0.000	17.910	2.891	22.206	0.000	25.097	2.084	20.020	0.000	22.104	1.064	18.609	0.000	19.673	0.813	6.827	0.000	7.640
40	0.960	8.640	0.000	9.601	0.615	13.225	0.000	13.839	0.109	13.481	0.000	13.590	0.188	12.337	0.000	12.525	0.228	5.013	0.000	5.241
42	0.209	7.553	0.000	7.762	0.050	8.535	0.000	8.585	0.024	7.229	0.000	7.252	0.021	10.183	0.000	10.204	0.000	3.262	0.000	3.262
44	0.114	4.944	0.000	5.058	0.000	6.836	0.000	6.836	0.015	4.752	0.000	4.768	0.011	3.169	0.000	3.179	0.007	1.376	0.000	1.383
46	0.000	3.619	0.000	3.619	0.022	3.599	0.000	3.622	0.000	1.771	0.000	1.771	0.016	2.416	0.000	2.432	0.000	0.639	0.000	0.639
48	0.039	2.431	0.000	2.470	0.000	2.020	0.000	2.020	0.000	1.320	0.000	1.320	0.000	1.547	0.000	1.547	0.000	0.483	0.000	0.483
50	0.012	1.191	0.000	1.203	0.023	1.427	0.000	1.450	0.000	0.866	0.000	0.866	0.000	0.793	0.000	0.793	0.000	0.303	0.000	0.303
52	0.049	1.035	0.000	1.084	0.000	0.444	0.000	0.444	0.041	0.779	0.000	0.820	0.000	0.455	0.000	0.455	0.000	0.269	0.000	0.269
54	0.000	0.585	0.000	0.585	0.000	0.282	0.000	0.282	0.000	0.732	0.000	0.732	0.000	0.417	0.000	0.417	0.000	0.102	0.000	0.102
56	0.000	0.626	0.000	0.626	0.000	0.305	0.000	0.305	0.000	0.215	0.000	0.215	0.000	0.260	0.000	0.260	0.000	0.167	0.000	0.167
58	0.000	0.121	0.000	0.121	0.000	0.584	0.000	0.584	0.000	0.436	0.000	0.436	0.000	0.216	0.000	0.216	0.000	0.195	0.000	0.195
60	0.000	0.266	0.000	0.266	0.000	0.233	0.000	0.233	0.000	0.117	0.000	0.117	0.000	0.104	0.000	0.104	0.000	0.065	0.000	0.065
62	0.000	0.088	0.000	0.088	0.000	0.292	0.000	0.292	0.000	0.099	0.000	0.099	0.000	0.118	0.000	0.118	0.000	0.042	0.000	0.042
64	0.000	0.026	0.000	0.026	0.000	0.188	0.000	0.188	0.000	0.021	0.000	0.021	0.000	0.245	0.000	0.245	0.000	0.041	0.000	0.041
66	0.000	0.021	0.000	0.021	0.000	0.094	0.000	0.094	0.000	0.009	0.000	0.009	0.000	0.013	0.000	0.013	0.000	0.016	0.000	0.016
68	0.000	0.000	0.000	0.000	0.000	0.011	0.000	0.011	0.000	0.012	0.000	0.012	0.000	0.032	0.000	0.032	0.000	0.009	0.000	0.009
70	0.000	0.000	0.000	0.000	0.000	0.019	0.000	0.019	0.000	0.000	0.000	0.000	0.000	0.013	0.000	0.013	0.000	0.000	0.000	0.000
72	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.005	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	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	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total	350.620	246.778	0.684	598.083	376.247	261.170	3.239	640.655	172.242	155.876	0.596	328.714	241.001	182.255	0.633	423.888	64.051	56.961	0.156	121.168
Nº samples:				67				66				65				68				67
Nº Ind.:	4712	5894	37	10643	6627	7310	98	14035	4696	5066	49	9811	6727	6444	17	13188	2986	3583	16	6585
Sampled catch:				3067				4027				3316				4013				1970
Range:				6-67				5-72				4-68				4-70				8-68
Total catch:				13937				14575				9503				11756				3552
Total hauls:				122				122				122				122				115

Table 18.- American plaice mean number per tow by age, sex and year. Spanish Spring Survey in NAFO 3NO: 2012-2016. Indet. means indeterminate. The 2016 ALK is not available yet, so the numbers are not displayed.

	2012				2013				2014				2015				2016			
Age	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
1			0.68	0.68	0.08	0.01	2.44	2.52	0.02	0.05	0.25	0.32	0.04	0.19	0.20	0.43				
2	0.11	0.21		0.32	0.33	0.24	0.15	0.72	0.81	1.67	0.24	2.73	4.35	1.67	0.43	6.45				
3	2.02	1.94		3.96	0.16	0.63	0.28	1.07	8.61	5.40	0.09	14.10	30.99	29.61		60.61				
4	33.17	25.18		58.35	7.69	4.16	0.30	12.15	7.42	2.18	0.01	9.61	9.59	10.05		19.64				
5	47.78	23.62		71.40	94.09	38.48	0.07	132.64	5.31	4.38		9.69	12.10	1.76		13.86				
6	114.42	53.55		167.96	104.24	56.26	0.00	160.50	42.75	18.20		60.94	65.55	11.54		77.09				
7	84.64	40.56		125.20	124.59	58.25		182.84	42.54	24.96		67.50	103.99	53.47		157.46				
8	50.29	34.16		84.46	34.41	30.40		64.82	37.89	36.75		74.63	12.96	26.04		39.00				
9	12.38	37.15		49.52	8.83	33.12		41.94	16.95	25.31		42.27	1.35	26.39		27.75				
10	5.20	12.44		17.64	0.97	20.80		21.77	6.45	15.96		22.41	0.06	10.93		10.99				
11	0.37	6.61		6.98	0.84	7.33		8.17	3.45	11.41		14.86		6.05		6.05				
12	0.07	5.03		5.10	0.02	5.21		5.23	0.02	3.62		3.64	0.00	2.09		2.10				
13	0.05	2.62		2.67		2.62		2.62	0.02	1.70		1.71	0.00	0.70		0.71				
14	0.08	1.58		1.65		1.31		1.31	0.02	1.86		1.88	0.00	0.38		0.38				
15	0.05	0.34		0.39		0.61		0.61		1.12		1.12	0.00	0.23		0.23				
16		0.79		0.79		0.52		0.52		0.38		0.38		0.10		0.10				
17		0.64		0.64		0.32		0.32		0.53		0.53		0.37		0.37				
18		0.20		0.20		0.48		0.48		0.23		0.23		0.07		0.07				
19		0.07		0.07		0.13		0.13		0.11		0.11		0.16		0.16				
20		0.08		0.08		0.11		0.11		0.04		0.04		0.07		0.07				
21		0.01		0.01		0.19		0.19		0.02		0.02		0.24		0.24				
22														0.06		0.06				
23																				
24														0.08		0.08				
Total	350.6	246.8	0.684	598.1	376.2	261.2	3.239	640.7	172.2	155.9	0.596	328.7	241	182.3	0.633	423.9				

Table 19.- American plaice mean length (cm) per tow by age, sex and year. Spanish Spring Survey in NAFO 3NO: 2012-2016. Indet. means indeterminate. The 2016 ALK is not available yet, so the mean lengths are not displayed.

	2012				2013				2014				2015				2016			
Age	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
1			10.71	10.71	7.10	7.00	7.43	7.42	8.21	8.71	7.79	7.96	9.00	8.95	6.74	7.90				
2	12.41	14.46		13.73	13.45	16.24	15.77	14.86	11.91	12.83	9.84	12.29	12.54	11.82	9.50	12.15				
3	20.59	20.82		20.70	13.64	16.90	13.65	15.56	14.16	15.21	11.65	14.55	17.06	16.95		17.01				
4	23.24	23.29		23.26	23.29	21.93	16.07	22.65	26.87	19.17	15.00	25.11	20.98	20.65		20.81				
5	26.19	25.91		26.10	26.45	25.89	17.22	26.28	27.04	26.86		26.96	27.57	23.35		27.04				
6	27.82	27.07		27.59	28.56	28.50	19.00	28.54	29.49	28.75		29.27	30.21	29.50		30.11				
7	30.30	31.66		30.74	30.42	31.48		30.76	29.99	32.97		31.09	32.02	33.15		32.41				
8	32.38	34.76		33.34	34.17	35.81		34.94	30.90	35.13		32.98	35.07	37.48		36.68				
9	34.37	37.58		36.77	33.87	38.23		37.31	32.08	36.17		34.53	38.51	38.91		38.89				
10	34.85	40.62		38.92	39.71	40.47		40.43	33.38	39.72		37.90	42.80	42.46		42.46				
11	40.03	43.88		43.68	37.87	42.59		42.10	34.41	41.38		39.76		44.80		44.80				
12	44.34	45.68		45.66	46.87	45.49		45.49	53.00	46.31		46.34	45.00	48.56		48.56				
13	46.62	47.75		47.73		47.20		47.20	45.00	45.29		45.28	45.00	52.66		52.62				
14	50.04	50.68		50.65		51.41		51.41	53.00	47.99		48.04	45.00	52.90		52.85				
15	46.62	54.39		53.43		51.84		51.84		52.23		52.23	45.00	53.00		52.93				
16		55.48		55.48		56.22		56.22		53.46		53.46		57.71		57.71				
17		55.95		55.95		59.56		59.56		57.51		57.51		59.68		59.68				
18		61.40		61.40		59.79		59.79		58.26		58.26		58.28		58.28				
19		61.80		61.80		59.91		59.91		61.92		61.92		56.99		56.99				
20		58.31		58.31		63.62		63.62		65.00		65.00		63.70		63.70				
21		65.00		65.00		64.97		64.97		65.90		65.90		60.75		60.75				
22														62.21		62.21				
23																				
24														65.00		65.00				
Total	28.74	32.05	10.71	30.08	29.21	32.97	9.369	30.64	29.39	34.57	9.346	31.81	28.79	32.17	8.608	30.21				

Table 20.- American plaice mean weight (g) per tow by age, sex and year. Spanish Spring Survey in NAFO 3NO: 2012-2016. Indet. means indeterminate. The 2016 ALK is not available yet, so the mean weights are not displayed.

	2012				2013				2014				2015				2016			
Age	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
1			9	9	3	3	4	4	4	5	4	4	5	5	2	3				
2	15	22		19	27	37	37	32	14	16	7	15	16	12	6	14				
3	68	70		69	22	45	23	36	22	29	12	25	42	39		41				
4	102	104		103	107	95	37	101	168	66	26	144	79	72		75				
5	152	147		151	154	155	45	154	170	175		172	173	104		164				
6	181	170		178	194	210	61	200	224	215		222	229	222		228				
7	234	275		247	234	289		251	236	334		272	275	324		291				
8	286	377		323	323	425		371	263	411		336	364	478		440				
9	347	474		443	318	519		477	292	453		388	481	539		537				
10	357	608		534	498	618		612	329	594		518	673	712		712				
11	551	778		766	437	730		700	359	672		600		850		850				
12	756	887		885	820	889		889	1400	974		977	777	1099		1098				
13	883	1015		1012		990		990	833	903		902	777	1432		1428				
14	1117	1237		1231		1306		1306	1400	1093		1096	777	1455		1451				
15	883	1541		1460		1358		1358		1429		1429	777	1457		1450				
16		1653		1653		1732		1732		1516		1516		1923		1923				
17		1696		1696		2067		2067		1927		1927		2220		2220				
18		2275		2275		2079		2079		1994		1994		2021		2021				
19		2320		2320		2104		2104		2424		2424		1858		1858				
20		1947		1947		2498		2498		2848		2848		2706		2706				
21		2728		2728		2668		2668		2959		2959		2277		2277				
22														2465		2465				
23																				
24														2827		2827				
Total	206	334	9	259	211	370	11	275	234	438	7	330	221	375	5	287				

Table 21.- Atlantic cod mean catch (kg) and SD by stratum. Spanish Spring Surveys in NAFO Div. 3NO: 2012-2016. n.s. means stratum not surveyed.

	2012		2013		2014		2015		2016	
Stratum	Cod Mean catch	Cod SD	Cod Mean catch	Cod SD	Cod Mean catch	Cod SD	Cod Mean catch	Cod SD	Cod Mean catch	Cod SD
353	15.47	26.79	23.85	27.59	5.13	8.89	70.81	104.76	12.22	9.54
354	6.40	11.09	14.17	21.04	75.46	99.83	180.78	213.46	125.13	96.34
355	9.13	1.77	1.01	1.42	0.00	0.00	21.53	30.44	29.56	39.65
356	3.48	0.39	0.00	0.00	1.25	1.76	5.47	4.32	4.84	3.17
357	5.80	1.13	4.96	1.96	3.52	4.98	5.31	6.04	1.01	1.43
358	19.26	21.03	164.20	153.12	213.36	233.77	1268.78	2109.79	430.29	527.16
359	793.65	1704.52	92.73	108.90	1676.53	2880.87	196.07	362.84	14.56	24.02
360	75.23	291.00	48.81	64.30	220.65	711.44	50.46	119.32	111.17	302.23
374	106.60	133.22	8.27	11.70	271.12	302.52	0.00	0.00	0.00	0.00
375	55.99	50.30	15.22	24.10	54.57	94.51	4.85	3.13	0.15	0.26
376	1.72	3.33	11.71	21.15	11.38	24.32	18.63	39.72	0.15	0.16
377	759.15	371.58	684.24	249.87	754.88	259.76	549.79	14.52	26.82	37.93
378	21.83	20.40	67.71	72.25	1989.05	2779.71	1286.60	1620.13	178.50	147.64
379	2.99	4.23	4.73	2.28	10.03	4.49	1.56	2.21	28.86	29.20
380	374.96	523.02	0.00	0.00	47.61	26.88	23.10	28.99	201.32	263.77
381	435.15	80.26	214.50	97.86	216.67	196.91	400.87	196.56	341.10	482.39
382	666.47	483.49	274.53	160.99	12.07	4.02	183.58	118.93	0.02	0.02
721	5.00	1.13	0.00	0.00	0.00	0.00	5.09	4.41	0.00	0.00
722	0.00	0.00	0.00	0.00	0.85	1.20	0.00	0.00	0.00	0.00
723	4.42	2.66	3.81	0.22	2.98	4.21	0.00	0.00	0.00	0.00
724	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
725	2.59	3.66	0.00	0.00	0.00	0.00	0.00	0.00	3.74	5.29
726	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
727	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.83	8.02
728	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
752	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
753	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
754	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
755	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
756	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
757	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
758	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
759	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
760	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
761	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
762	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
763	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
764	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
765	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
766	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
767	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table 22.- Atlantic cod survey biomass (t) by stratum in NAFO Div. 3NO: 2012-2016. n.s. means stratum not surveyed.

Strata	2012	2013	2014	2015	2016
353	370	552	1381	1424	277
354	140	310	18564	3421	2677
355	59	7	0	121	188
356	15	0	59	20	20
357	83	69	577	75	14
358	394	3284	48007	24557	8606
359	29009	3297	705820	6758	517
360	17866	11568	614072	11888	26364
374	1995	152	58019	0	0
375	1305	344	14788	115	3
376	194	1317	15180	2145	17
377	6637	5792	75488	4729	231
378	265	837	276478	15897	2205
379	28	42	1063	15	267
380	3147	0	4571	194	1636
381	5664	2534	31200	4887	4295
382	20152	7786	4141	5505	1
721	28	0	0	28	0
722	0	0	71	0	0
723	61	53	462	0	0
724	0	0	0	0	0

Strata	2012	2013	2014	2015	2016
725	24	0	0	0	34
726	0	0	0	0	0
727	0	0	0	0	75
728	0	0	0	0	0
752	0	0	0	0	0
753	0	0	0	0	0
754	0	0	0	0	0
755	0	0	0	0	0
756	0	0	0	0	0
757	0	0	0	0	0
758	0	0	0	0	0
759	0	0	0	0	0
760	0	0	0	0	0
761	0	0	0	0	0
762	0	0	0	0	0
763	0	0	0	0	0
764	0	0	0	0	0
765	0	0	0	0	0
766	0	0	0	0	0
767	0	0	0	0	0

Table 23.- At lantic cod survey biomass (t) with SD and stratified mean catch per tow (kg) and SD by in NAFO Div. 3NO: 1997-2016.

Year	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Biomass	2131	19444	3054	7576	32548	10502	5455	3712	4509	19921
SD	1322	18206	655	2566	15903	7971	3016	848	1984	8109
MCPT	2.50	19.47	3.50	8.46	36.96	11.07	5.93	4.09	5.06	23.35
SD	1.54	17.82	0.75	2.58	17.97	7.82	3.29	0.95	2.16	9.39

Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Biomass	10592	23817	72757	76856	137378	87436	37945	143299	81780	47429
SD	5853	5221	40466	37369	54393	30292	5114	54386	28297	19188
MCPT	13.47	26.55	80.73	90.96	155.16	97.02	43.33	180.81	92.64	53.13
SD	7.44	5.71	46.81	43.41	64.42	32.90	5.90	67.34	32.30	21.51

Table 24.- Atlantic cod length weight relationships in Spanish Spring Surveys in NAFO Div. 3NO: 2012-2016. E(x) means Error of the parameter x.

	a	b	E(a)	E(b)	R2	N
2012	**0.00571**	**3.09345**	0.1091	0.0273	0.994	768
2013	**0.00586**	**3.09132**	0.0670	0.0170	0.997	1853
2014	**0.00434**	**3.16276**	0.0551	0.0139	0.998	2554
2015	**0.00514**	**3.11990**	0.0452	0.0116	0.999	2733
2016	**0.00419**	**3.16019**	0.0446	0.0112	0.999	1375

Table 25.- Atlantic cod mean number per tow by year in Spanish Spring Surveys in NAFO Div. 3NO: 1997-2016. Indet. means indeterminate.

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
MNPT	1.997	12.378	8.847	9.220	41.290	12.930	4.684	9.035	9.005	40.718

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
MNPT	32.605	49.717	131.444	118.451	139.982	79.685	26.421	82.688	83.149	22.871

Table 26.- Atlantic cod mean number per tow by length class and year. Spanish Spring Survey in NAFO 3NO: 2012-2016.

	2012	2013	2014	2015	2016
Lenght (cm.)	Total	Total	Total	Total	Total
6	0.000	0.000	0.000	0.039	0.000
8	0.000	0.014	0.000	0.013	0.000
10	0.000	0.000	0.027	0.026	0.000
12	0.012	0.143	0.058	0.091	0.024
14	0.037	0.165	0.048	0.229	0.149
16	0.049	0.217	0.105	0.358	0.445
18	0.024	0.089	0.165	0.179	0.314
20	0.012	0.055	0.203	0.142	0.405
22	0.034	0.020	0.308	0.711	0.806
24	0.019	0.054	0.233	2.836	1.189
26	0.059	0.081	0.528	4.258	1.082
28	0.089	0.119	0.469	3.838	0.721
30	0.264	0.175	0.510	2.722	0.627
32	0.555	0.256	0.501	3.328	0.629
34	0.801	0.322	0.969	5.313	0.629
36	1.047	0.407	1.135	7.129	0.455
38	2.665	0.858	1.131	4.582	0.307
40	4.911	1.195	1.585	4.773	0.439
42	6.423	1.493	1.575	4.396	0.392
44	6.058	1.789	2.098	4.105	0.333
46	5.256	1.765	2.377	3.406	0.319
48	7.065	1.749	3.219	2.181	0.328
50	7.811	1.664	3.263	3.019	0.287
52	7.273	1.770	3.855	2.460	0.375
54	7.583	1.686	4.588	2.697	0.549
56	6.798	1.522	4.616	2.535	0.654
58	5.188	1.583	4.332	2.458	0.644
60	3.408	1.340	4.987	2.265	0.782
62	1.889	1.226	5.393	1.677	0.579
64	1.106	0.809	5.866	1.953	0.675
66	0.639	0.706	5.383	1.390	0.568
68	0.612	0.446	4.021	1.096	0.679
70	0.492	0.272	4.384	1.084	0.533
72	0.208	0.369	3.238	1.099	0.527
74	0.352	0.251	2.517	0.804	0.535
76	0.249	0.174	2.456	0.566	0.398
78	0.145	0.161	1.425	0.502	0.566
80	0.063	0.198	0.967	0.549	0.564
82	0.055	0.133	0.934	0.498	0.774
84	0.059	0.194	0.957	0.408	0.725
86	0.054	0.143	0.350	0.331	0.581
88	0.063	0.126	0.456	0.237	0.560
90	0.091	0.110	0.420	0.114	0.359
92	0.060	0.114	0.224	0.199	0.254
94	0.012	0.087	0.186	0.197	0.390
96	0.021	0.084	0.331	0.125	0.212
98	0.036	0.061	0.085	0.044	0.031
100	0.000	0.092	0.078	0.088	0.155
102	0.020	0.050	0.052	0.026	0.055
104	0.005	0.039	0.026	0.027	0.084
106	0.000	0.000	0.000	0.000	0.040
108	0.000	0.005	0.013	0.031	0.037
110	0.008	0.027	0.012	0.013	0.099
112	0.000	0.000	0.000	0.000	0.007
114	0.000	0.000	0.000	0.000	0.000
116	0.000	0.000	0.000	0.000	0.000
118	0.000	0.000	0.000	0.000	0.000
120	0.000	0.014	0.013	0.000	0.000
122	0.000	0.000	0.012	0.000	0.000
124	0.000	0.000	0.000	0.000	0.000
126	0.000	0.000	0.000	0.000	0.000
128	0.000	0.000	0.000	0.000	0.000
130	0.000	0.000	0.000	0.000	0.000
132	0.000	0.000	0.000	0.000	0.000
Total	79.685	26.421	82.688	83.149	22.871
Nº samples:	57	57	55	61	49
Nº Ind.:	5107	3571	4700	4728	2255
Sampled catch:	6371	5251	8988	7607	3959
Range:	13-110	9-120	10-122	6-110	13-113
Total catch:	13497	5434	23952	12477	5317
Total hauls:	122	122	122	122	115

Table 27.- Atlantic cod mean number per tow by age and year. Spanish Spring Survey in NAFO 3NO: 2012-2016.

Age	2012	2013	2014	2015	2016
1	0.14	0.67	0.15	0.96	0.71
2	0.58	0.46	2.51	13.89	4.56
3	9.74	1.86	5.00	23.68	2.26
4	19.04	7.13	8.10	14.29	1.53
5	4.81	4.20	31.29	5.04	1.40
6	38.65	1.06	12.21	10.62	0.74
7	4.19	9.26	1.53	4.45	4.48
8	1.86	0.23	16.69	1.26	2.61
9	0.55	0.91	1.93	8.29	0.26
10	0.06	0.58	2.53	0.21	3.82
11	0.04	0.05	0.70	0.36	0.24
12	0.01	0.00	0.01	0.09	0.07
13	0.02		0.01	0.01	0.12
14	0.01	0.01	0.01		0.06
15					
16					
17					
18					
19					
20					
Total	79.69	26.42	82.69	83.15	22.87

Table 28.- Atlantic cod mean length (cm) per tow by age and year. Spanish Spring Survey in NAFO 3NO: 2012-2016.

Age	2012	2013	2014	2015	2016
1	16.90	16.10	13.86	15.98	16.60
2	31.15	28.64	26.29	27.61	25.66
3	40.56	38.43	38.44	36.90	33.53
4	46.22	46.44	47.42	44.63	43.35
5	53.15	51.81	58.26	52.27	51.25
6	54.56	53.11	62.97	59.86	60.02
7	56.10	61.16	73.54	61.79	71.50
8	70.19	71.43	72.87	64.69	73.17
9	80.76	84.43	73.76	69.76	76.90
10	80.63	93.60	83.93	88.22	80.81
11	96.45	92.49	92.39	90.55	103.52
12	89.50	109.50	122.50	92.05	99.77
13	99.19		103.50	103.50	99.10
14	104.50	110.50	120.50		107.52
15					
16					
17					
18					
19					
20					
Total	51.21	53.77	60.34	45.76	55.89

Table 29.- Atlantic cod mean weight (g) per tow by age and year. Spanish Spring Survey in NAFO 3NO: 2012-2016.

Age	2012	2013	2014	2015	2016
1	38	34	19	33	31
2	247	194	146	165	126
3	553	479	460	408	287
4	833	865	898	740	649
5	1277	1211	1730	1220	1095
6	1397	1359	2207	1914	1847
7	1516	2046	3546	2191	3239
8	3073	3417	3470	2544	3580
9	4748	5454	3667	3142	4132
10	4803	7531	5430	6493	4793
11	7888	7143	7245	6788	9859
12	6229	11820	17443	7061	8751
13	8630		10236	9937	8635
14	10059	12157	16558		11085
15					
16					
17					
18					
19					
20					
Total	1218	1640	2187	1114	2323

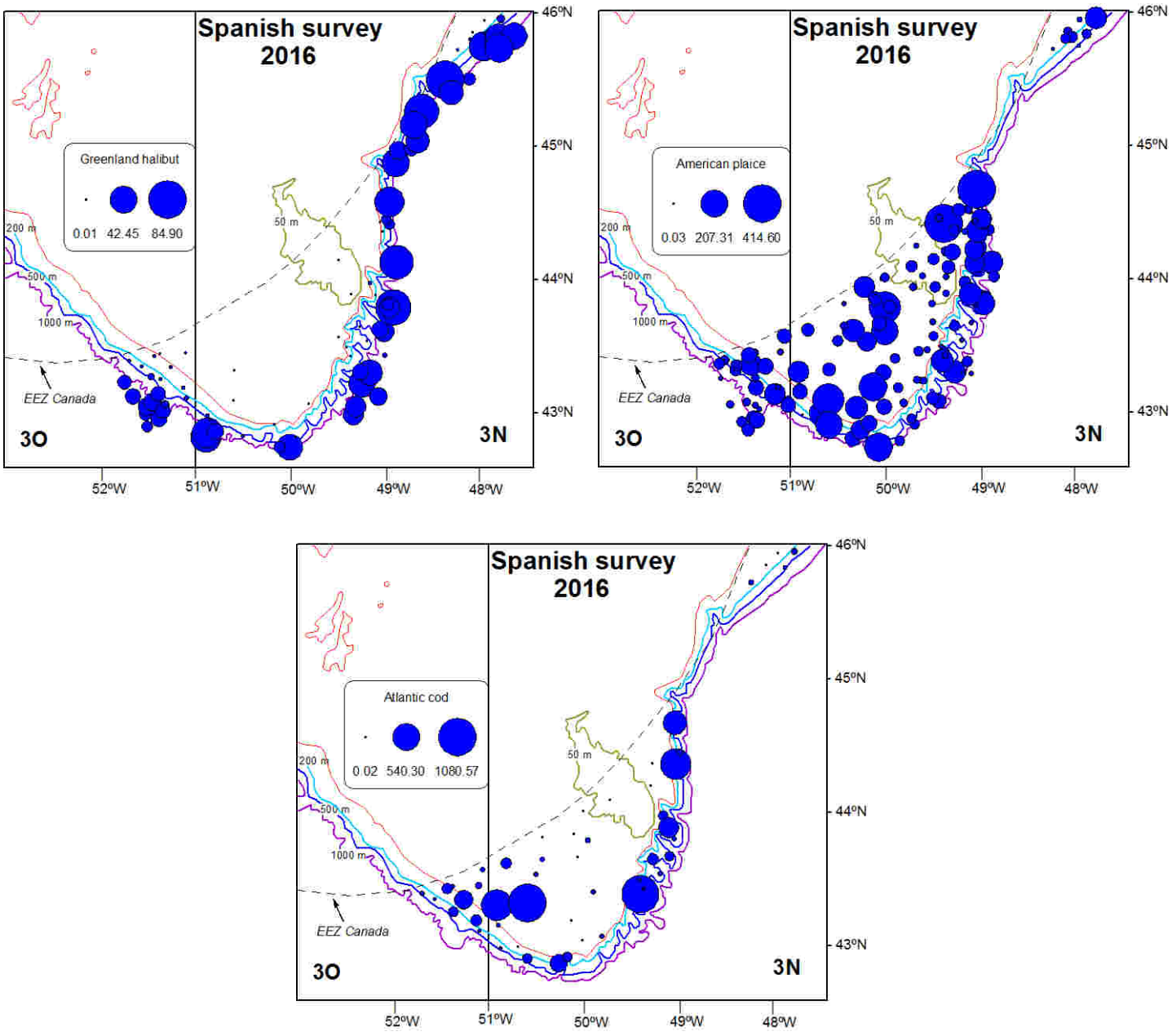

Fig. 1. Position of the hauls and the catch of Greenland halibut, American plaice and Atlantic cod during the 2016 Spanish 3NO survey. Note that the scale is different in the three graphs.

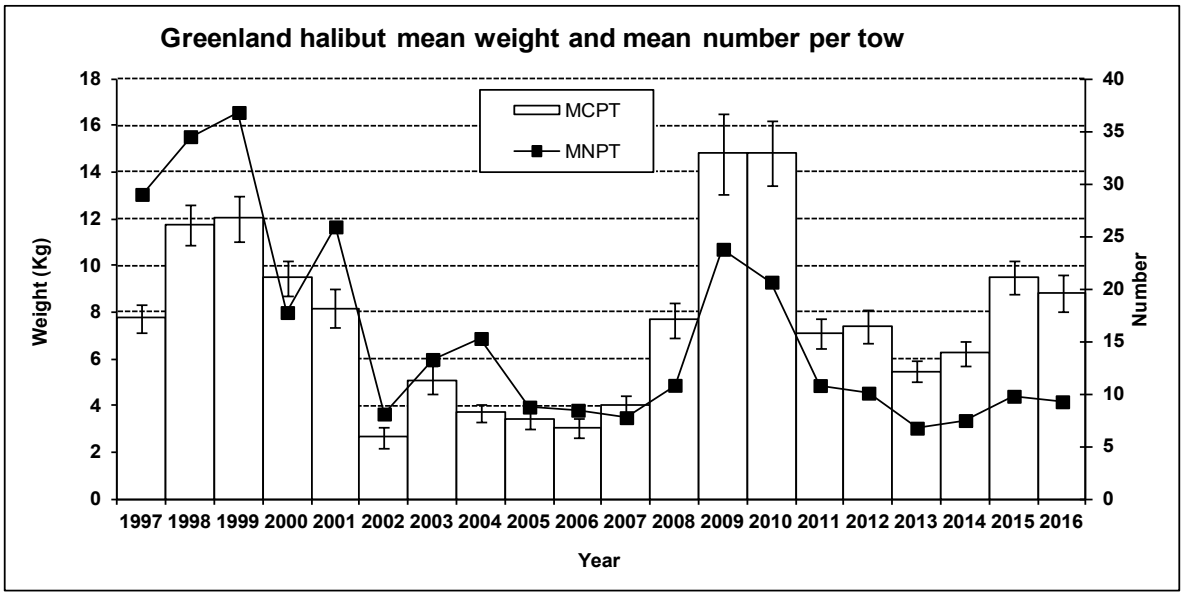

Fig. 2. Greenland halibut stratified mean catches in Kg and ±SD by year and mean number by year. Spanish Spring surveys in NAFO Div. 3NO: 1997-2016.

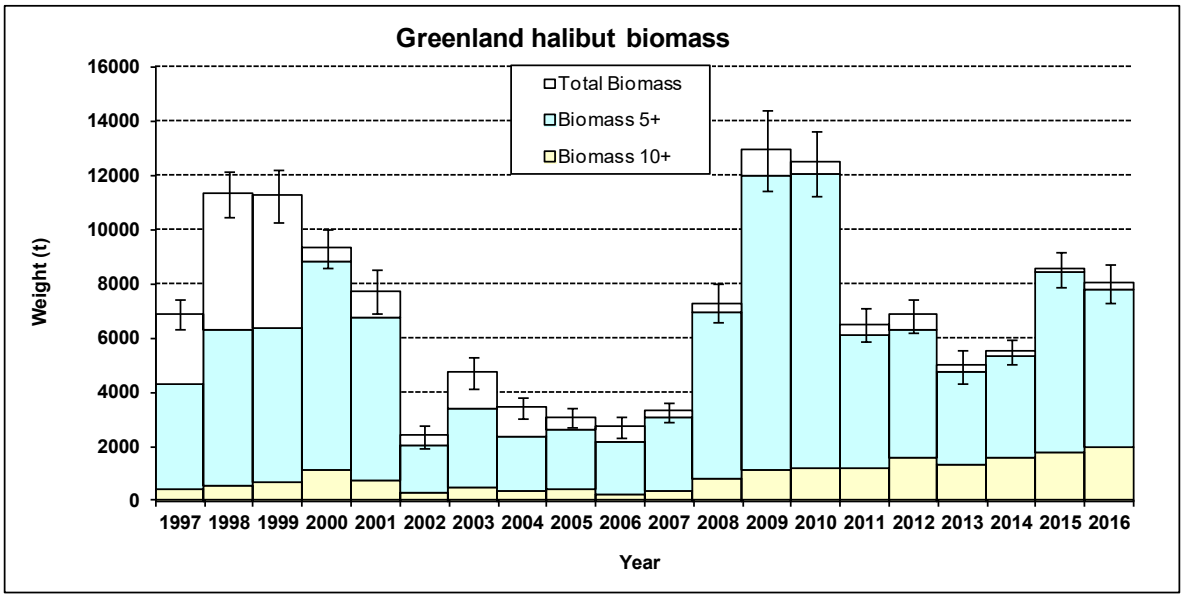

Fig. 3. Greenland halibut biomass calculated by the swept area method in tons and ±SD by year. Spanish Spring surveys in NAFO Div. 3NO: 1997-2016.

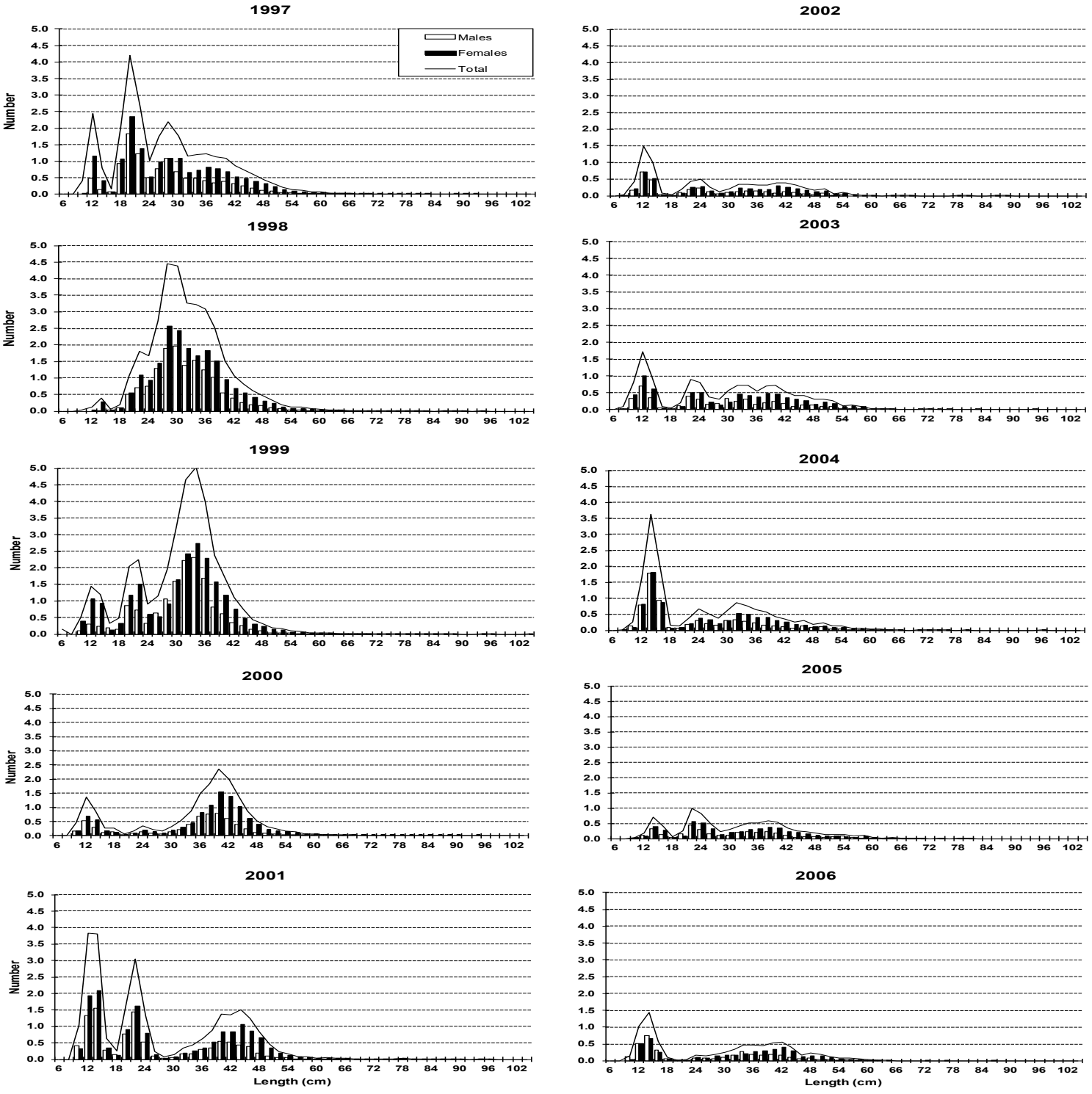

Fig. 4. Greenland halibut length distribution (cm) on NAFO 3NO: 1997-2016. Mean catches per tow number. Data from 2012 to 2016 are in Table 8; data for 1997-2011 can be seen in SCR Doc 13/10.

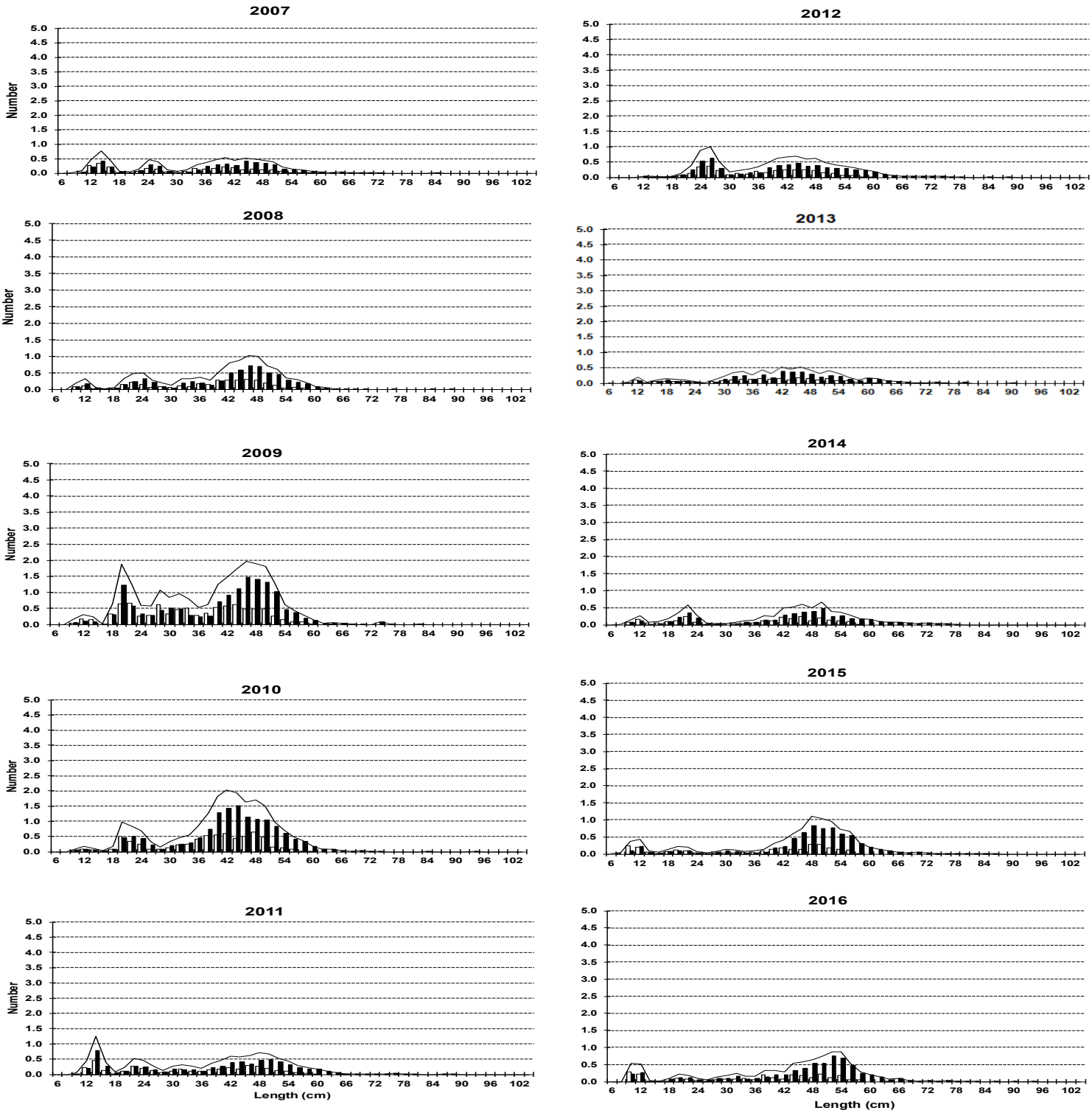

Fig.4 (cont.). Greenland halibut length distribution (cm) on NAFO 3NO: 1997-2016. Mean catches per tow number. Data from 2012 to 2016 are in Table 8; data for 1997-2011 can be seen in SCR Doc 13/10.

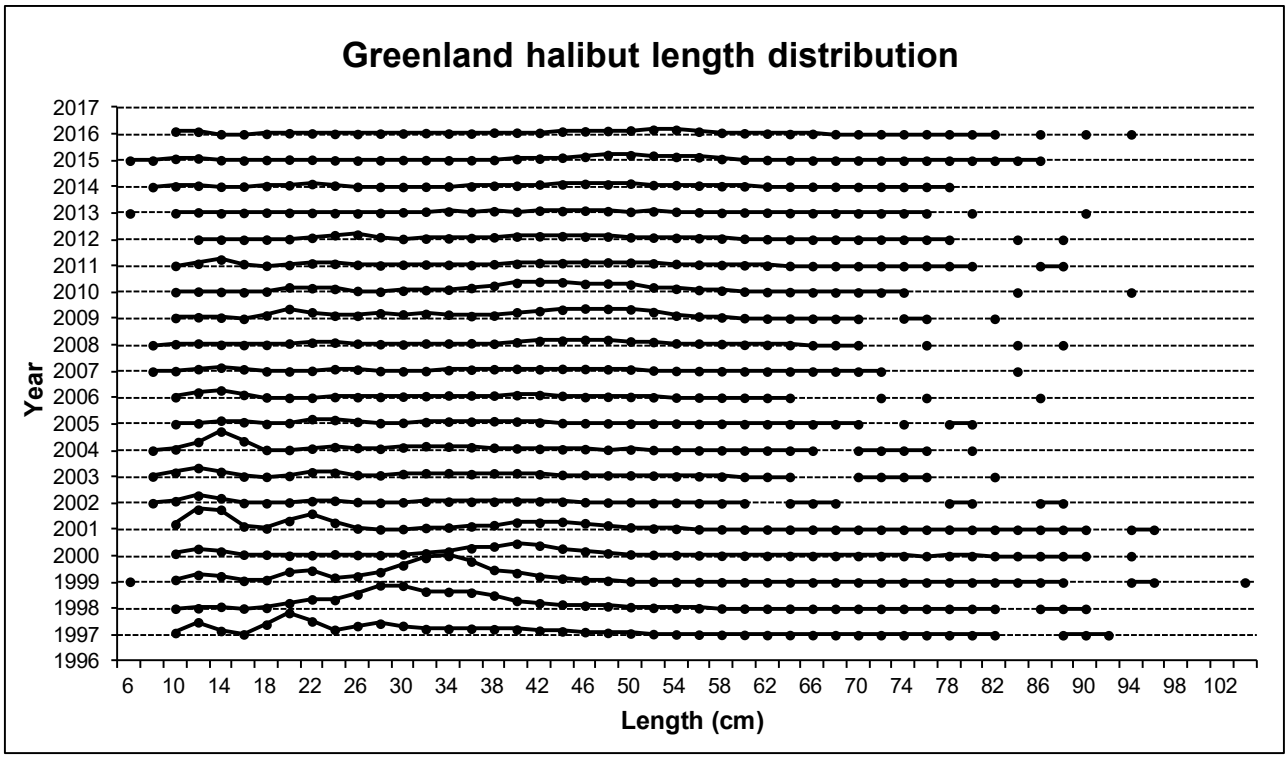

Fig. 5. Greenland halibut mean number per tow by length (cm) on NAFO 3NO: 1997-2016. Data from 2012 to 2016 are in Table 8; data for 1997-2011 can be seen in SCR Doc 13/10.

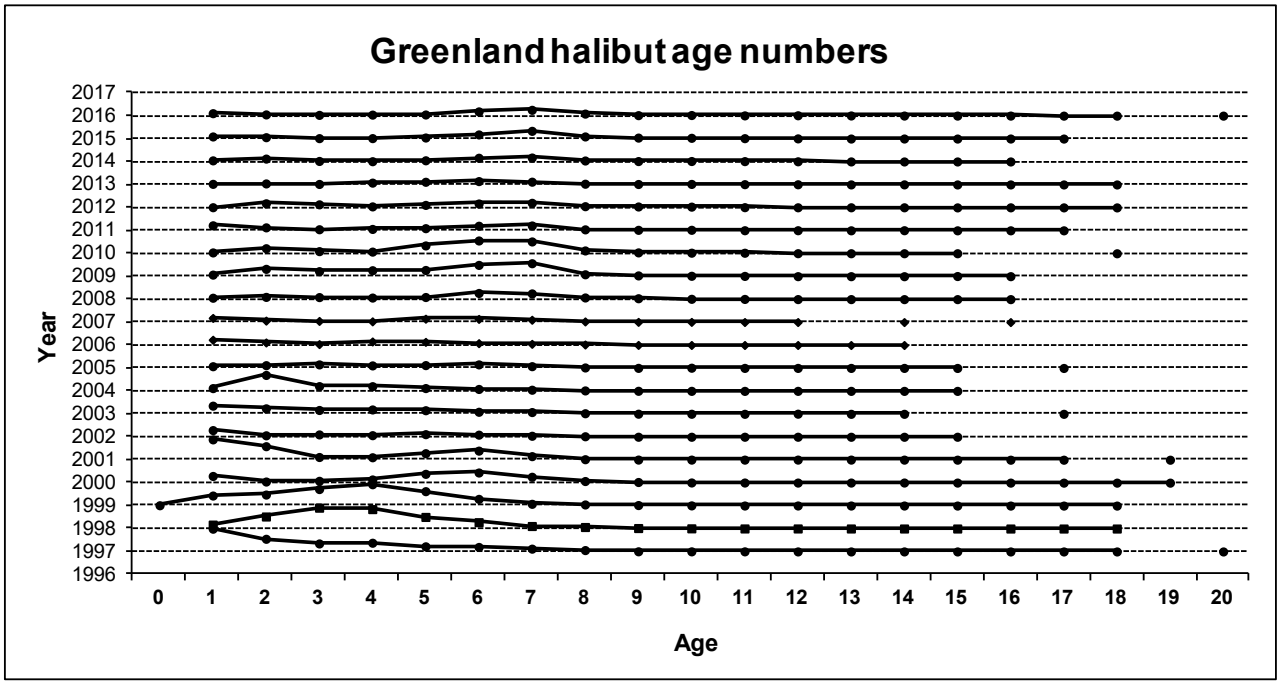

Fig. 6. Greenland halibut mean numbers per tow by age on NAFO 3NO: 1997-2016. Data from 2012 to 2016 are in Table 9; data for 1997-2011 can be seen in SCR Doc 13/10.

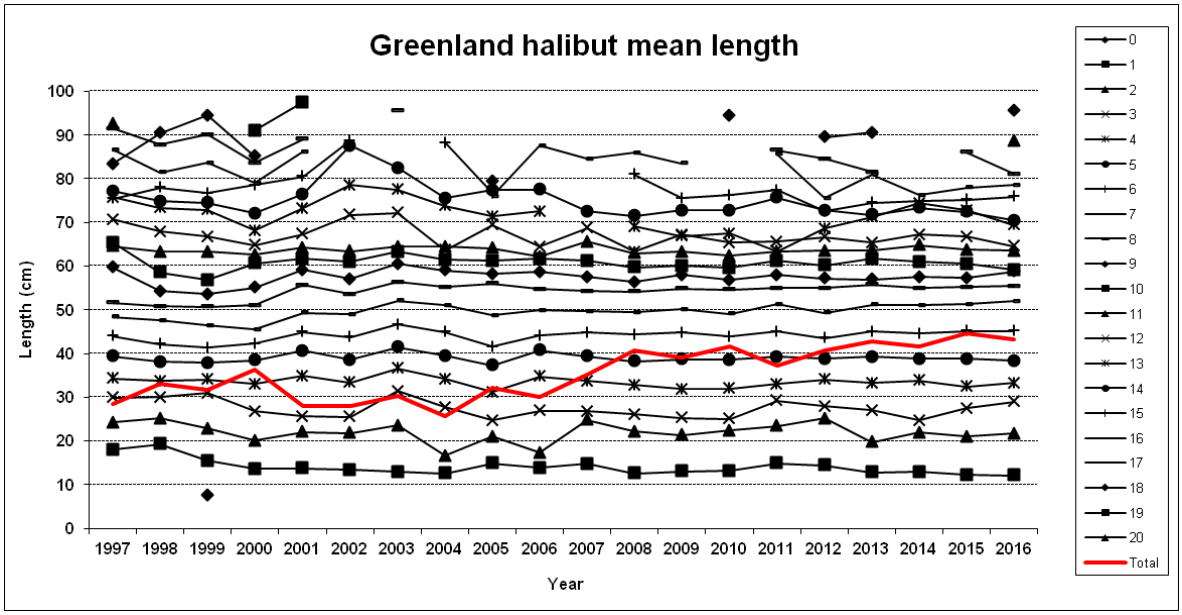

Fig. 7. Greenland halibut mean length (cm) at age on NAFO 3NO: 1997-2016. Data from 2012 to 2016 are in Table 10; data for 1997-2011 can be seen in SCR Doc 13/10.

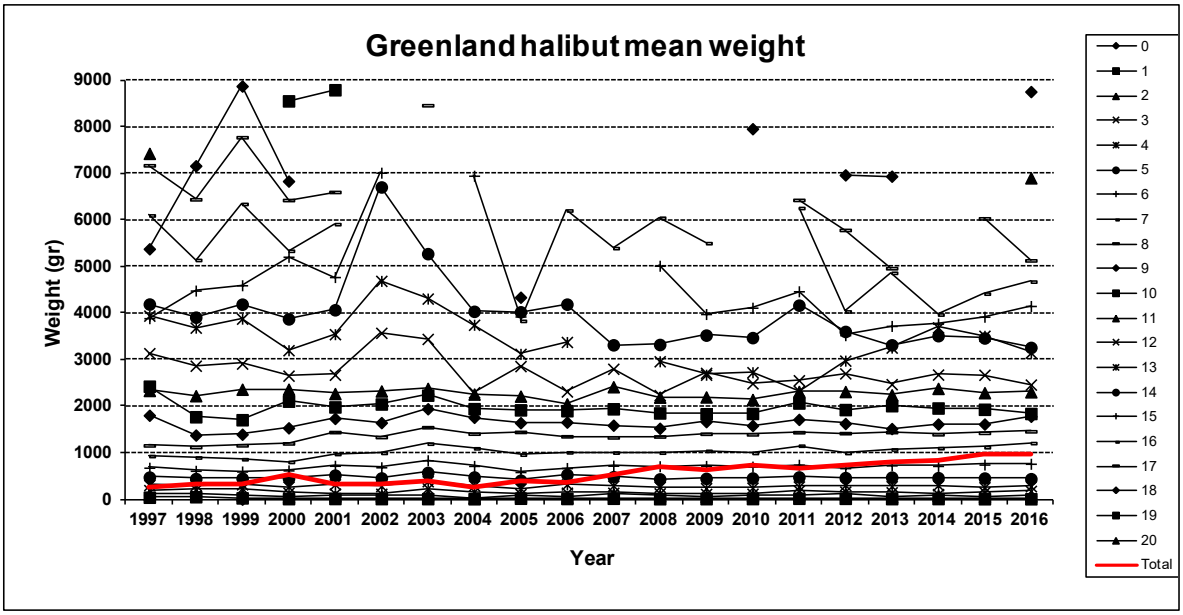

Fig. 8. Greenland halibut mean weight (gr) at age on NAFO 3NO: 1997-2016. Data from 2012 to 2016 are in Table 11; data for 1997-2011 can be seen in SCR Doc 13/10.

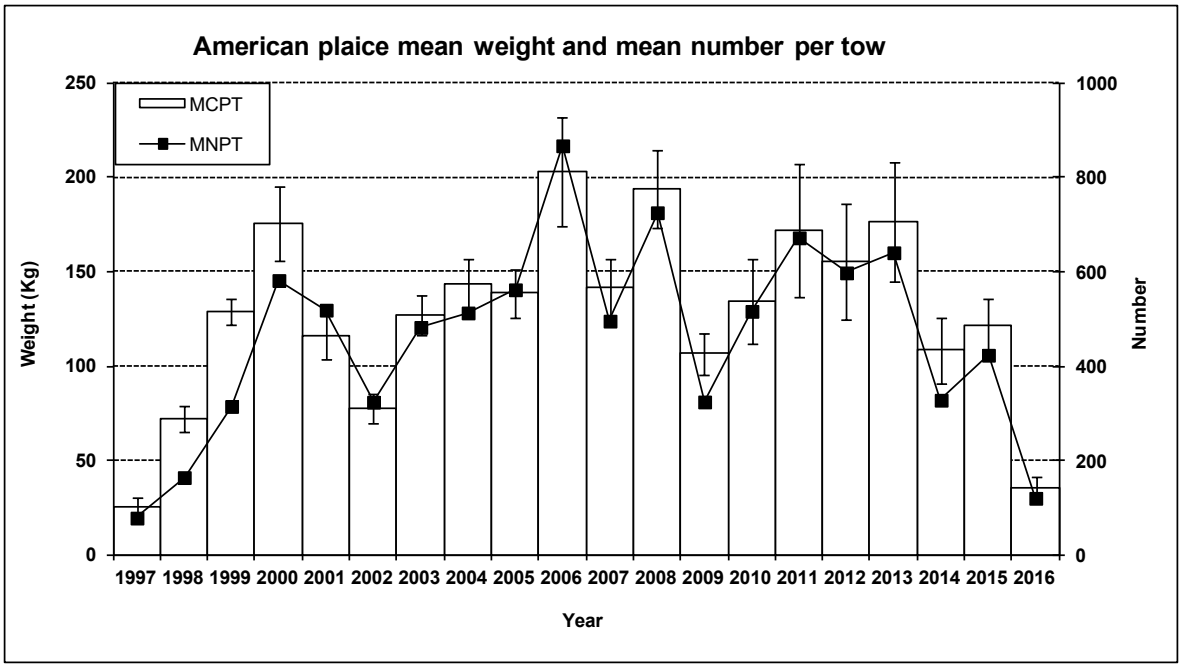

Fig. 9. American plaice stratified mean catches in Kg and ±SD by year and mean number by year. Spanish Spring surveys in NAFO Div. 3NO: 1997-2016.

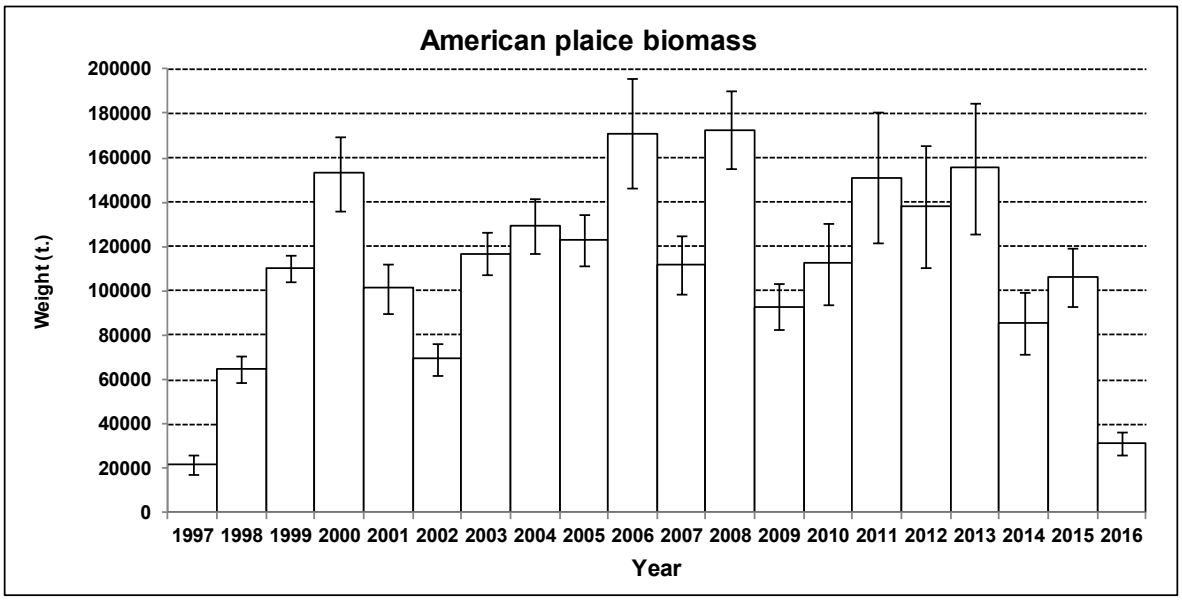

Fig. 10. American plaice biomass calculated by the swept method in tons and ±SD by year. Spanish Spring surveys in NAFO Div. 3NO: 1997-2016.

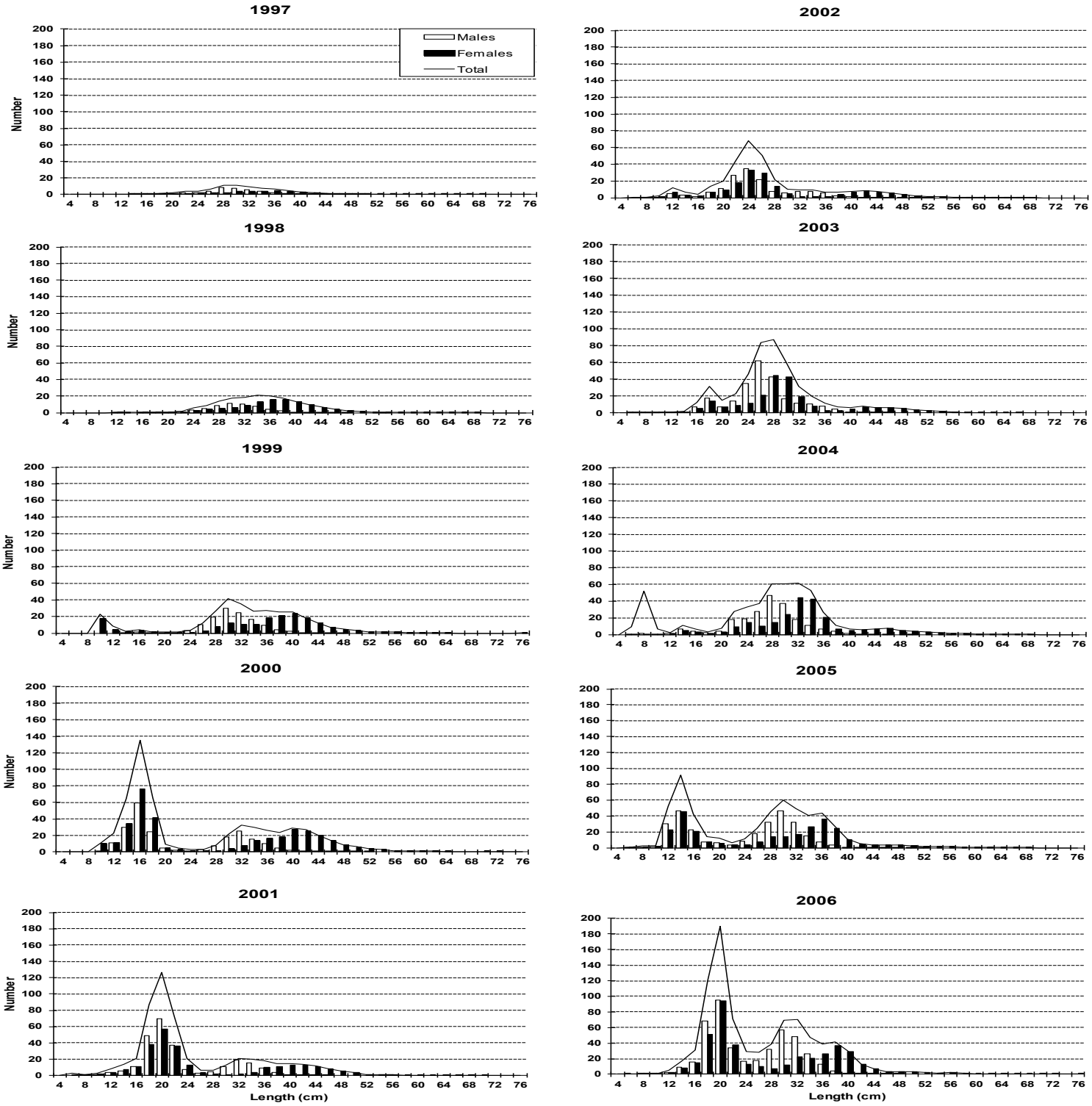

Fig. 11. American plaice length distribution (cm) on NAFO 3NO: 1997-2016. Mean catches per tow number. Data from 2012 to 2016 are in Table 17; data for 1997-2011 can be seen in SCR Doc 13/10.

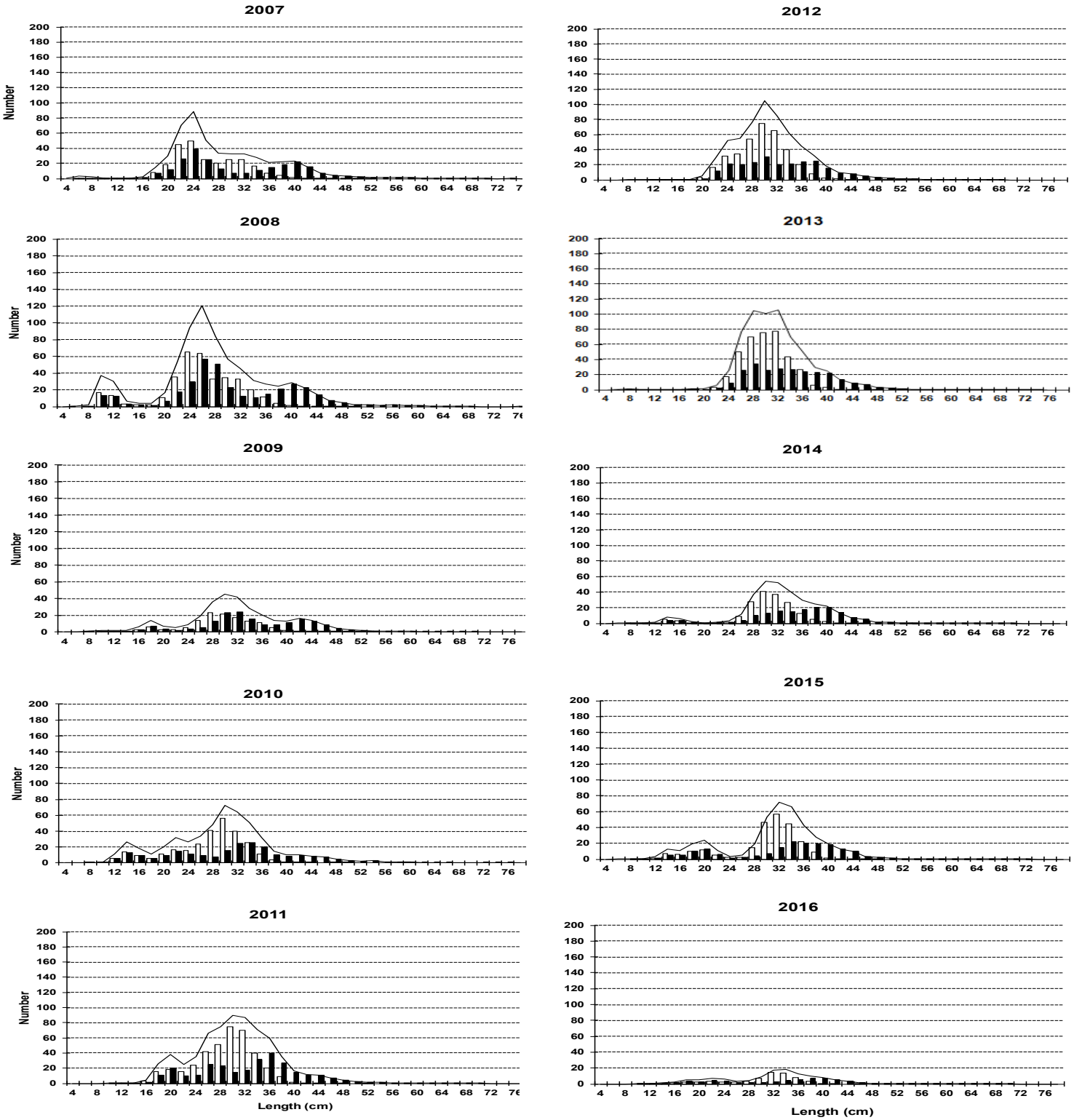

Fig. 11 (cont.). American plaice length distribution (cm) on NAFO 3NO: 1997-2016. Mean catches per tow number. Data from 2012 to 2016 are in Table 17; data for 1997-2011 can be seen in SCR Doc 13/10.

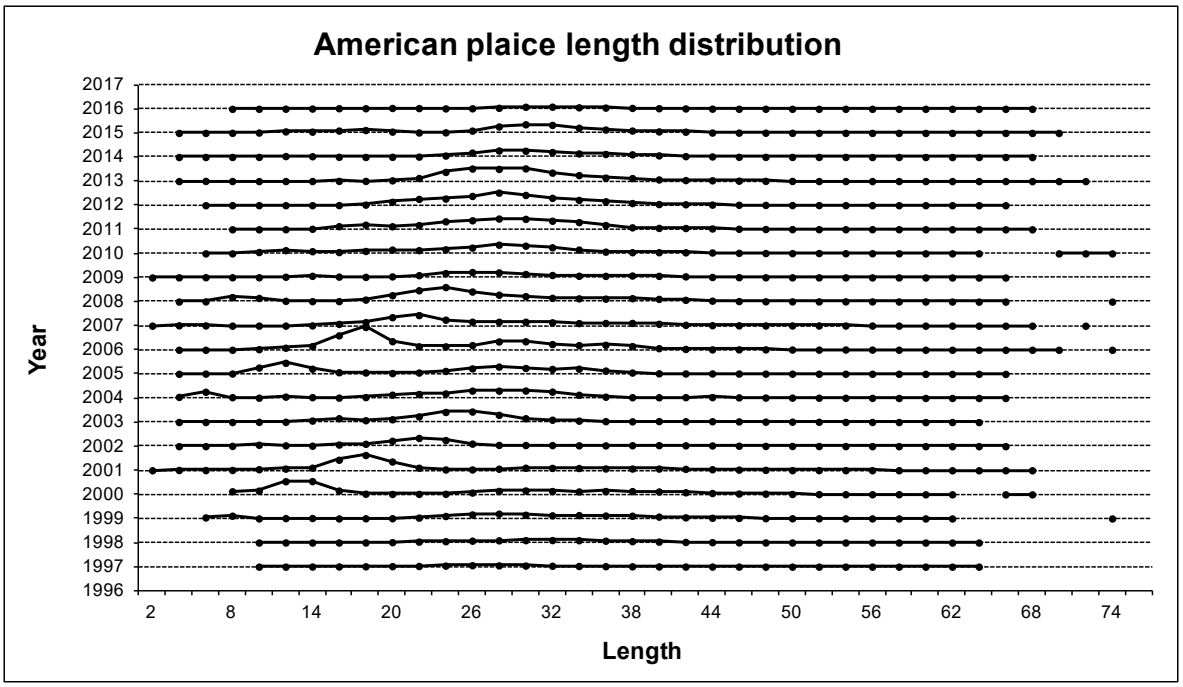

Fig. 12. American plaice mean catches per tow by length (cm) on NAFO 3NO: 1997-2016. Data from 2012 to 2016 are in Table 17; data for 1997-2011 can be seen in SCR Doc 13/10.

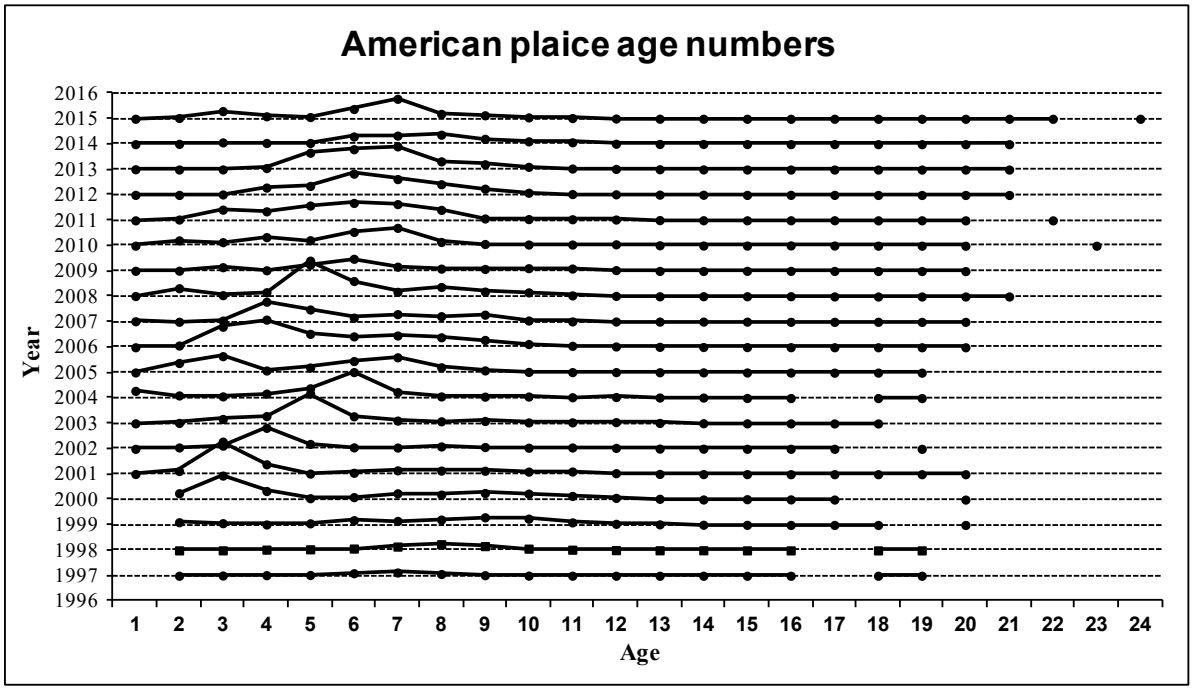

Fig. 13. American plaice mean catches per tow by age on NAFO 3NO: 1997-2016. Data from 2012 to 2016 are in Table 18; data for 1997-2011 can be seen in SCR Doc 13/10. The 2016 ALK is not available yet, so the numbers are not displayed.

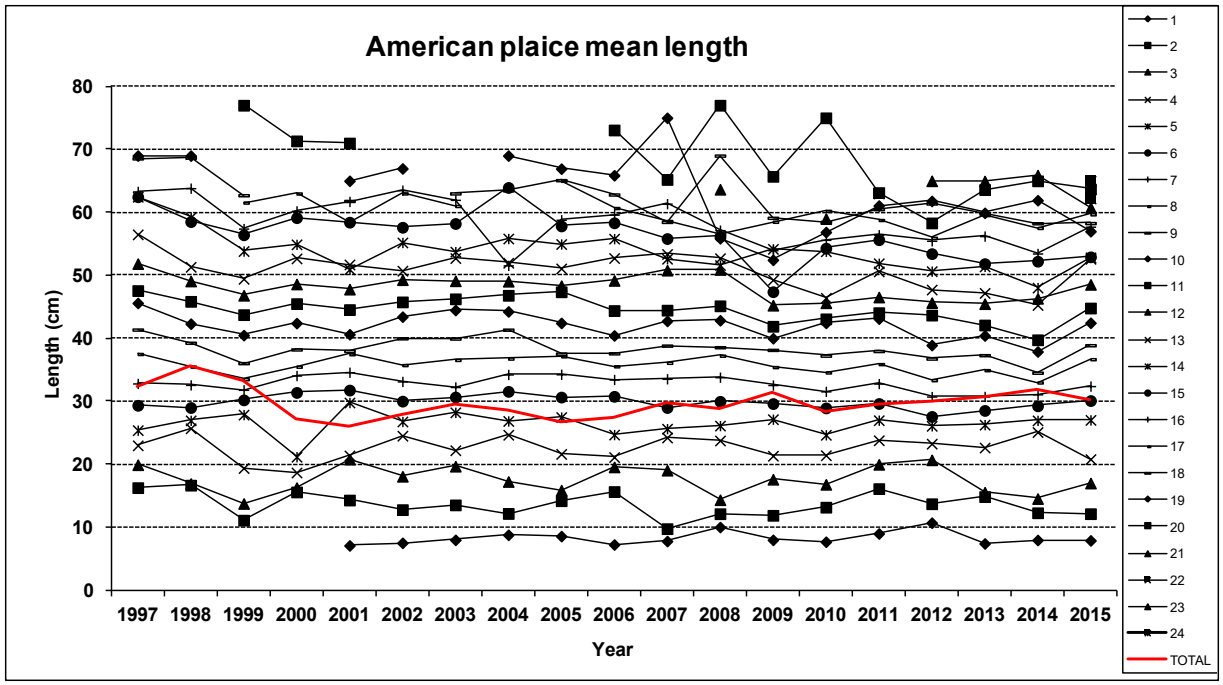

Fig.14. American plaice mean length (cm) at age on NAFO 3NO: 1997-2016. Data from 2012 to 2016 are in Table 19; data for 1997-2011 can be seen in SCR Doc 13/10. The 2016 ALK is not available yet, so the mean lengths are not displayed.

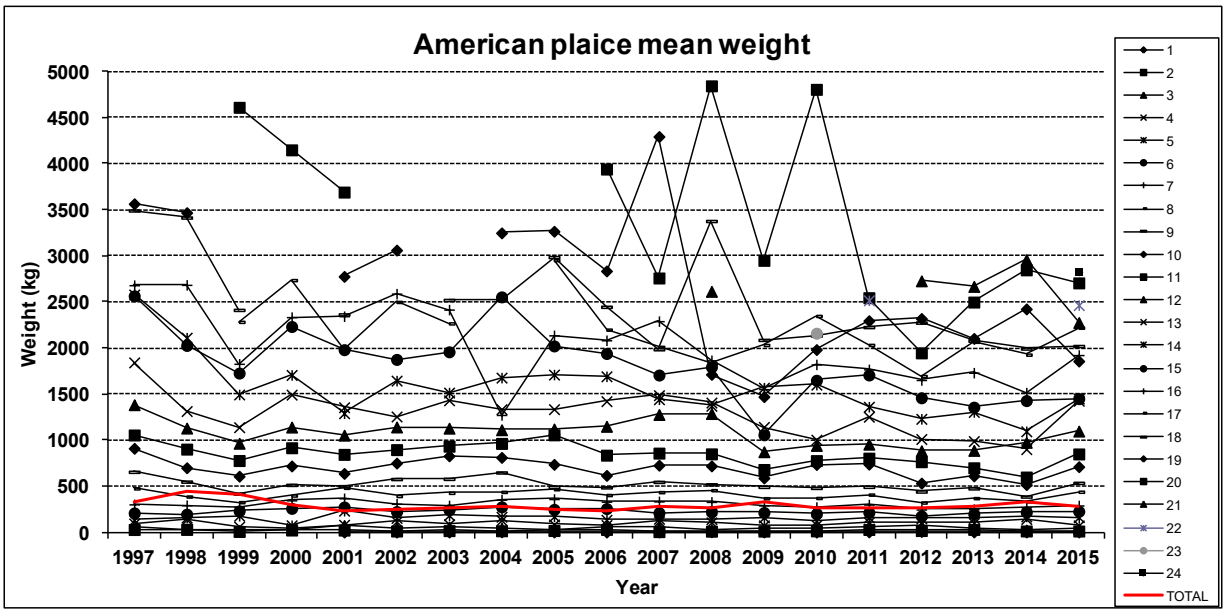

Fig.15. American plaice mean weight (gr) at age on NAFO 3NO: 1997-2016. Data from 2012 to 2016 are in Table 20; data for 1997-2011 can be seen in SCR Doc 13/10. The 2016 ALK is not available yet, so the mean weights are not displayed.

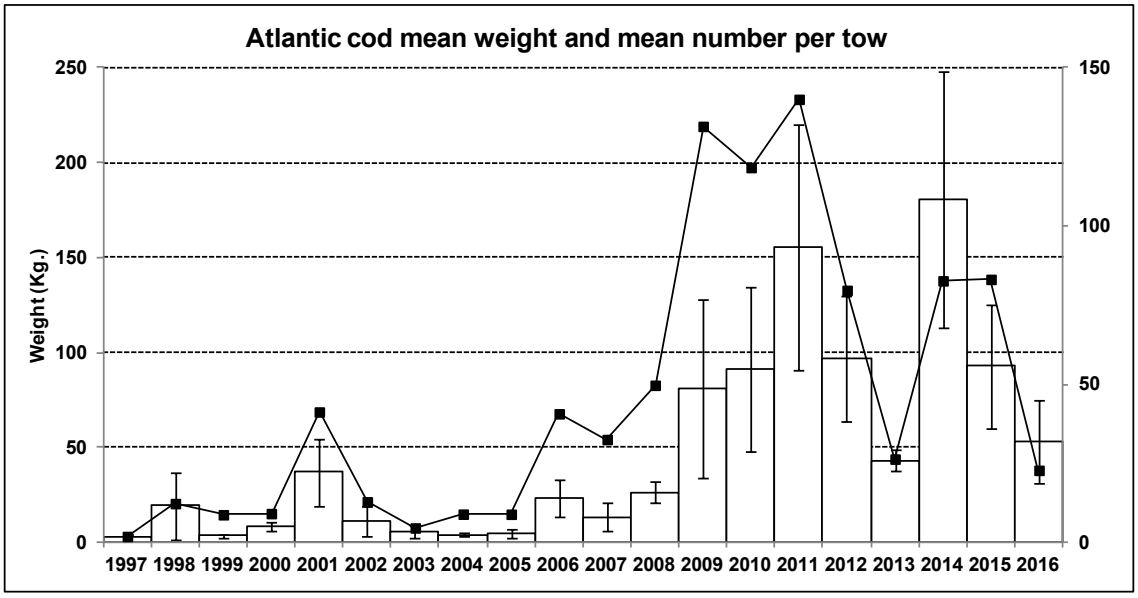

Fig.16. Atlantic cod stratified mean catches in Kg and ±SD by year and mean number by year. Spanish Spring surveys in NAFO Div. 3NO: 1997-2016.

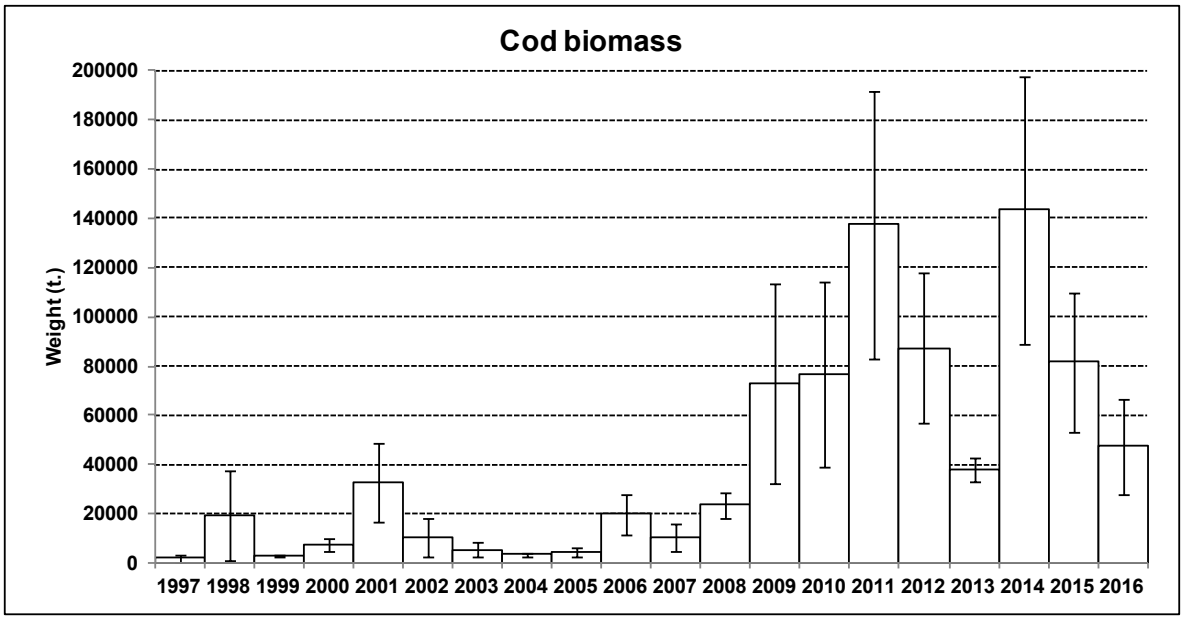

Fig. 17. Atlantic cod biomass calculated by the swept method in tons and ±SD by year. Spanish Spring surveys in NAFO Div. 3NO: 1997-2016.

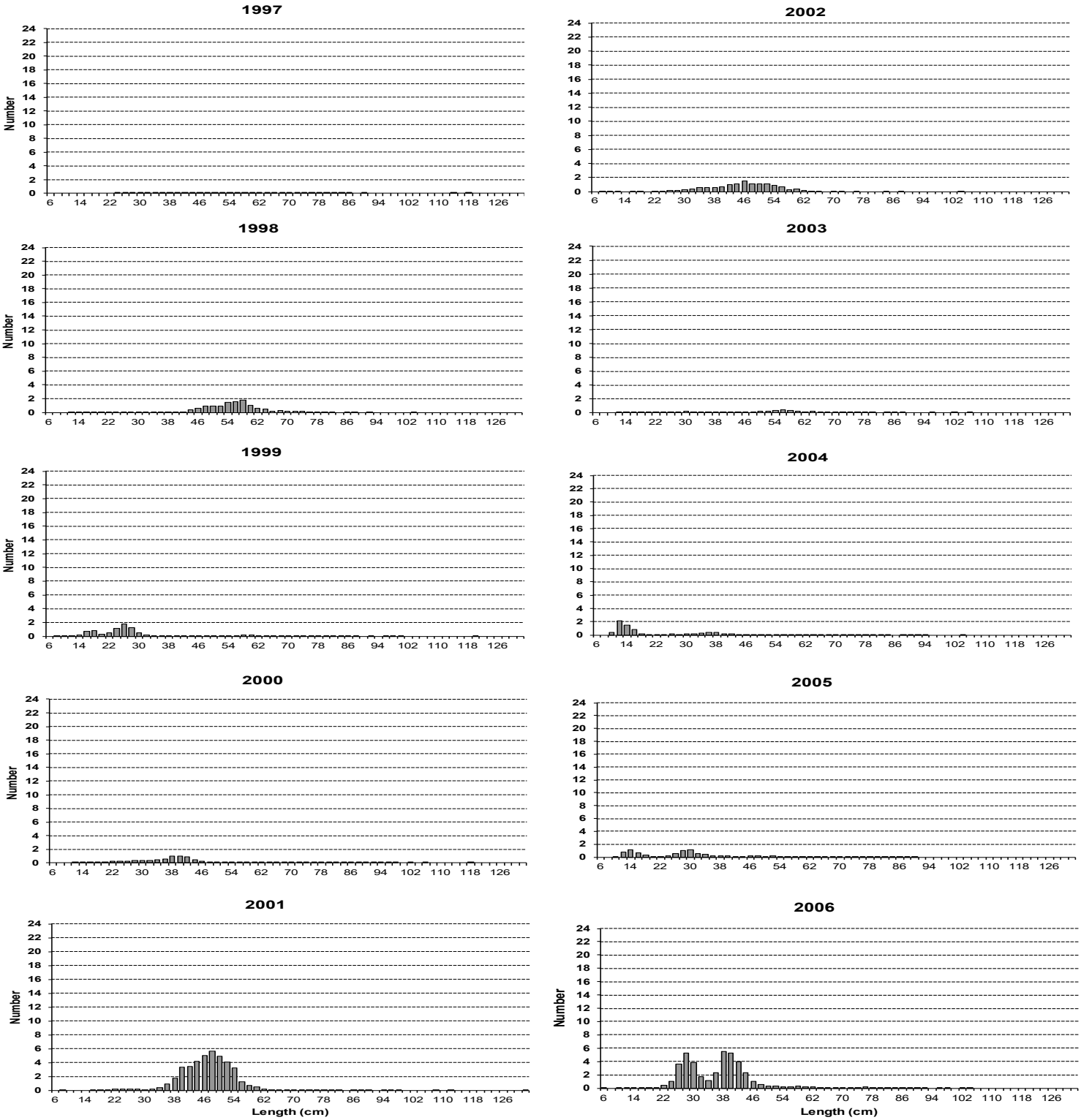

Fig. 18. Atlantic cod length distribution (cm) on NAFO 3NO: 1997-2016. Mean catches per tow number. Data from 2012 to 2016 are in Table 26; data for 1997-2011 can be seen in SCR Doc 13/10.

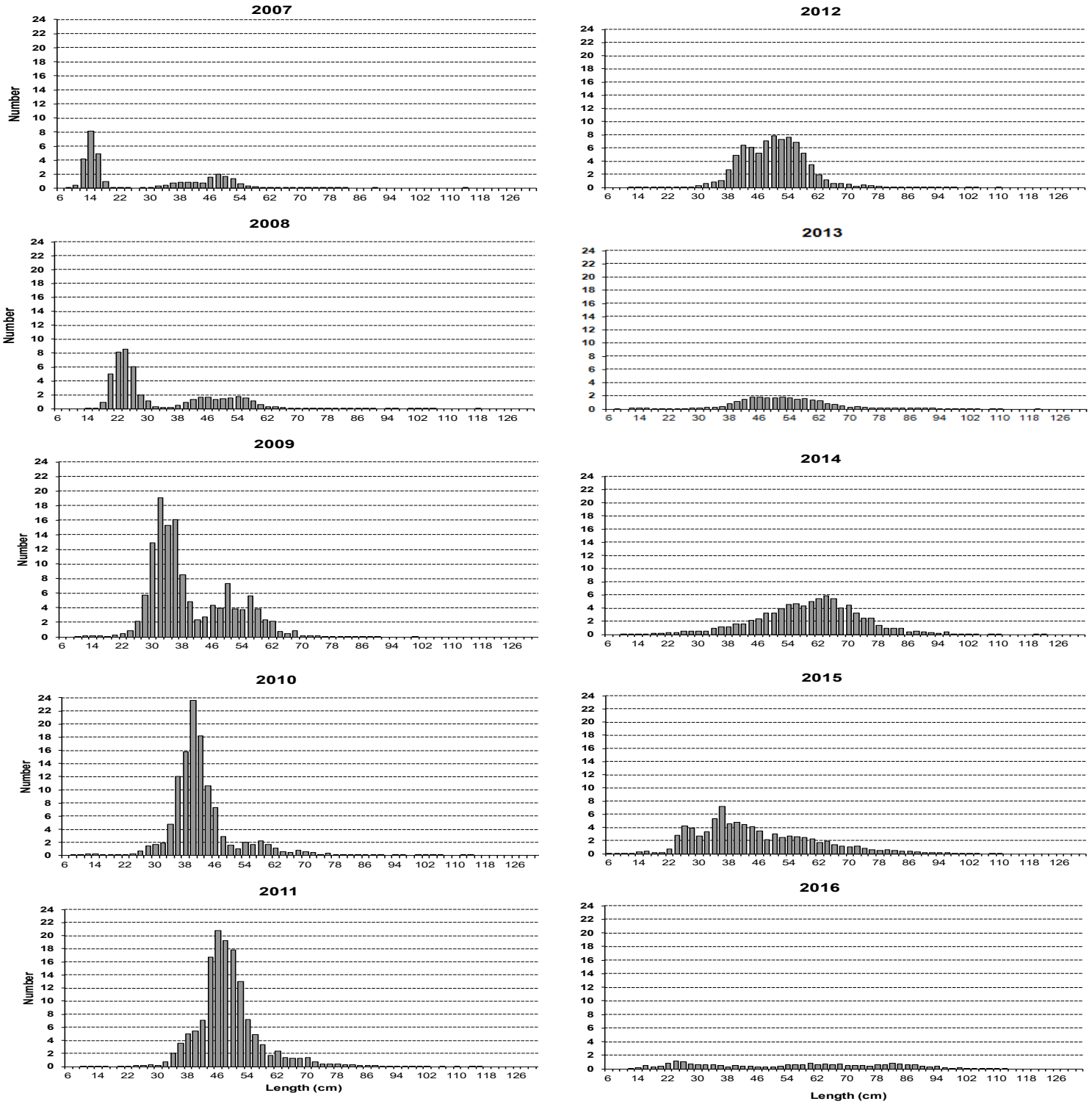

Fig. 18 (cont.). Atlantic cod length distribution (cm) on NAFO 3NO: 1997-2016. Mean catches per tow number. Data from 2012 to 2016 are in Table 26; data for 1997-2011 can be seen in SCR Doc 13/10.

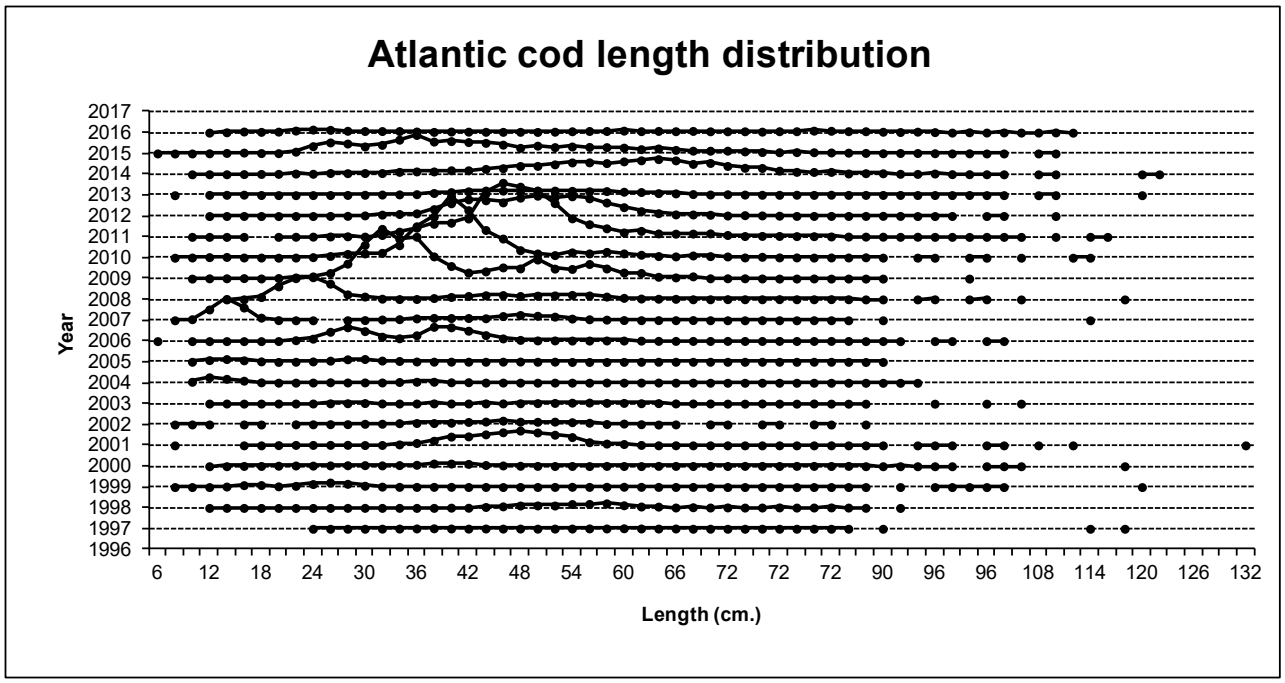

Fig. 19. Atlantic cod stratified mean catches in Kg and ±SD by year and mean number by year. Spanish Spring surveys in NAFO Div. 3NO: 1997-2016. Data from 2012 to 2016 are in Table 26; data for 1997-2011 can be seen in SCR Doc 13/10.

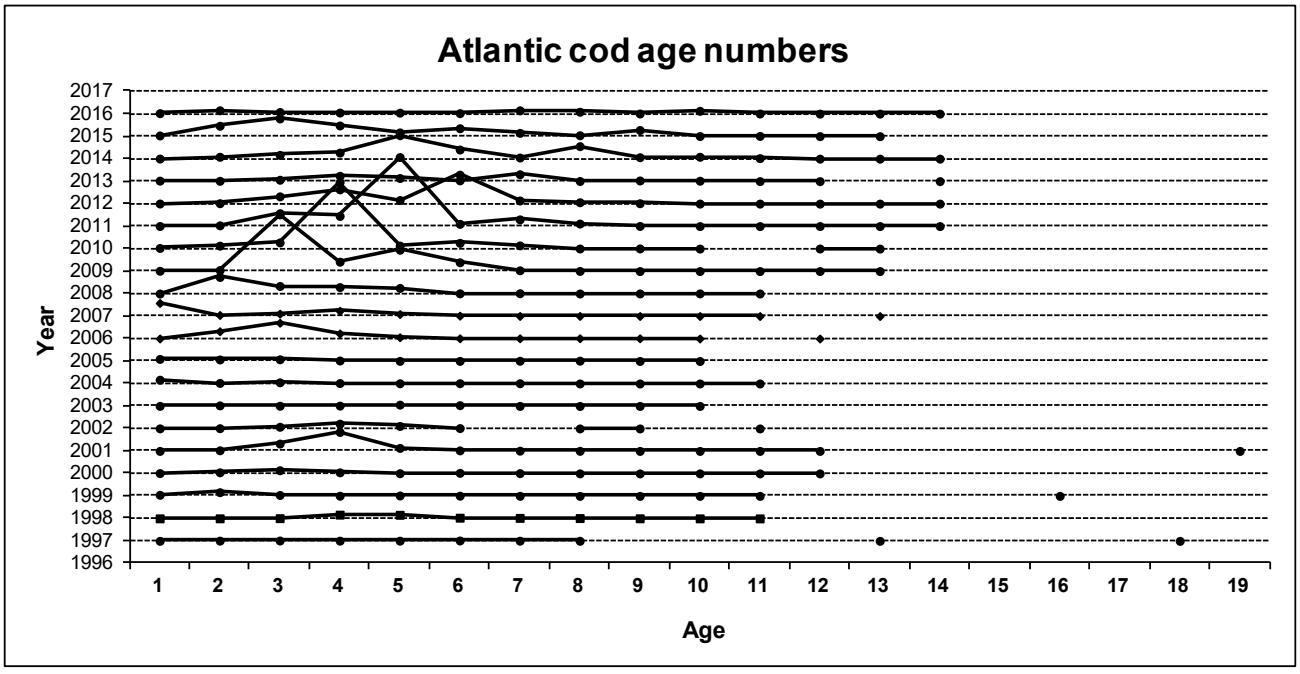

Fig. 20. Atlantic cod biomass calculated by the swept method in tons and ±SD by year. Spanish Spring surveys in NAFO Div. 3NO: 1997-2016. Data from 2012 to 2016 are in Table 27; data for 1997-2011 can be seen in SCR Doc 13/10.

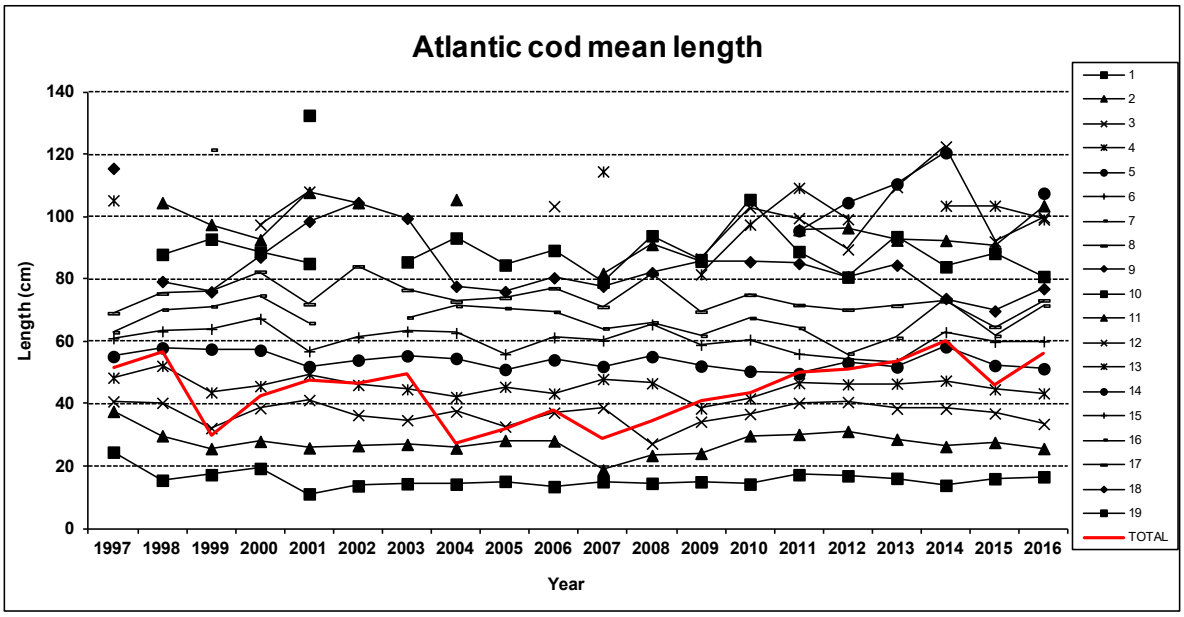

Fig.21. Atlantic cod mean length (cm) at age on NAFO 3NO: 1997-2016. Ages from 1 to 19. Data from 2012 to 2016 are in Table 28; data for 1997-2011 can be seen in SCR Doc 13/10.

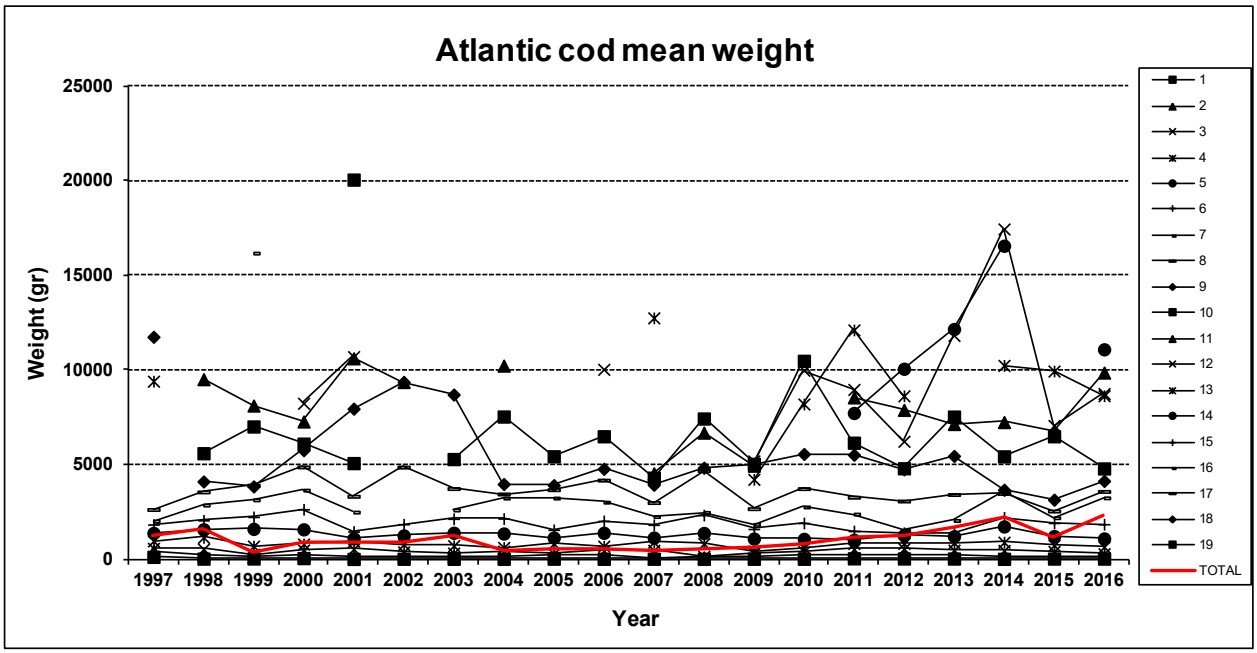

Fig. 22. Atlantic cod mean weight (gr) at age on NAFO 3NO: 1997-2016. Ages from 1 to 19. Data from 2012 to 2016 are in Table 29; data for 1997-2011 can be seen in SCR Doc 13/10.