Northwest Atlantic Fisheries Organization

Serial No. N6795 **NAFO SCR Doc. 18/011**

SCIENTIFIC COUNCIL MEETING – JUNE 2018

Results for Greenland halibut, American plaice and Atlantic cod of the Spanish survey in NAFO Div. 3NO for the period 1997-2017

by

Diana González-Troncoso[1], Ana Gago[1], Lupe Ramilo[1] and Esther Román[1]

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 (2013-2017). Greenland halibut biomass and abundance estimates presented a decreasing trend since 1999, cut in 2007-209 with a high increase. In 2011 the biomass drops under the 2008 value, being stable since then until 2014 with a slight increase in 2015 and 2016 and a big increase in 2017, reaching the highest value in the series. 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 2011-2017 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 and 2017. 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. The 2016 ALK for American plaice was not sexed. The 2017 ALK for American plaice is not available yet, so the 2016 ALK was used. In 2016 and 2017 the level of all the ages is low. 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 2017, biomass decreased by a quarter. 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 1997-2017.

The number of valid tows, the depth strata covered and the dates of the survey series (1997-2017) are presented in Table 1. Table 2 shows the swept area and number of hauls by stratum for the last five years (2013-2017). 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 2017 was 114.

For each species, we present all the transformed indices until 2000 and no-transformed from 2002 to 2017. 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 2013-2017. To see the results of the rest of the years, see González-Troncoso *et al.*, 2013. For American plaice 2017 ALK is not available yet, so only the age results for 2013-2016 are presented.

Figure 1 presents the maps with the distribution of the catches of the three species during the 2017 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 (1978-2016), EU in Div. 3M (1988-2016), EU-Spain in Div. 3NO (1997-2016) and EU-Spain in Div. 3L (2003-2016). 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.

In 2010, Fisheries Commission implemented a survey-based harvest control rule to generate annual TACs over at least 2011-2014. 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. In 2013 Fisheries Commission extended this management approach to set the TACs for 2015 – 2017 but did not apply the HCR in 2017, rather setting the TAC equal to the 2016 TAC. Catch exceeded the TAC in every year from 2004 to 2014 but was similar to the TAC in 2015 and 2016. 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 recent recruitment has generally increased but remains below average (NAFO, 2017).

Mean catches and Biomass

Table 3 shows the mean catches and their variance per haul and year for Greenland halibut during the period 2013-2017. 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 1997-2017. 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 2013-2017.

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 increased 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 and a big increase in 2017, reaching the maximum of the series. The biomass 5+ has had the same trend as the total biomass with a marked increase from 2008, being 2017 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 2017. 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. Without the peak of 2009 and 2010, the numbers had been stable since 2002. A high increase occurred in 2017, but the level is still below the first years of the series.

Length Distribution

Table 7 presents the mean number per tow by sex and year for 1997-2017. 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 2013-2017. 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 and in 2017, with a mode in lengths 14-15, that corresponds to age 1. In 2009, 2010 and 2017 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 2017 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 2013-2017, and the total by year (for the entire series) in Figure 6. Individuals between 0 and 20 years were caught in the period 1997-2017 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 2014-2017 the mode is at 7 years old. Age 1 represents around 10% of the total numbers in 2015 and 2016 and more than 15% in 2017. In 2017 age 1 is the third highest of the values of the age range.

Mean length and mean weight at age

Mean length and weight at age by sex for 2013-2017 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 2012-2017 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, 2017).

Mean catches and Biomass

American plaice mean catches and SD by stratum are presented in Table 12 for 2013-2017. Biomass for stratum for the same period is presented in Table 13.

The annual entire time series (1997-2017) of biomass and stratified mean catches with their SD estimates for American plaice are presented in Table 14 and in Figures 9 and 10. Estimated parameters *a* and *b* values of length-weight distribution are presented in Table 15 for 2013-2017.

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 and 2017.

Length Distribution

Table 16 shows the mean number per tow by sex and year for 1997-2017, and Table 17 the same index by length for 2013-2017, 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 and 2017.

Age numbers

The 2016 ALK for American plaice was not sexed; just the total ALK was used. The 2017 ALK for American plaice is not available yet, so the 2016 ALK was used in order to get the age distribution from the length distribution in that year. We present the mean number per tow at age by sex and by year from 2013 to 2017 in Table 18 and the total by year (1997-2017) 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 2016, reaching 14 years old, although it failed at 5 years old and is almost disappeared in 2017. 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 2015-2017 the maximum is in 7 years old. In 2016 and 2017 the level of all the ages is low.

Mean length and mean weight

Mean length and weight at age by sex for 2013-2017 are presented in Tables 19 and 20, and shown in Figures 14 and 15, for 1997-2017. 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.

Atlantic cod

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, 2017).

Mean Catches and Biomass

Atlantic cod mean catches and SD by stratum are presented in Table 21 for 2013-2017. Biomass by stratum and year are presented in Table 22 for the same period.

The entire time series (1997-2017) of biomass and stratified mean catches with their SD estimates for Atlantic cod are presented in Table 23 and Figures 16 and 17. Estimated parameters *a* and *b* values of length-weight relationship are presented in Table 24 for 2013-2017.

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 2017, biomass decreased by a quarter.

Length Distribution

Table 25 presents the mean number per tow by year for 1997-2017 and this index by length for the period 2013-2017 can be seen in Table 26, besides the sampled size and its catch. Figures 18 and 19 show the length distribution by year (1997-2017). 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 and 2017, 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 (2013-2017) is presented in Table 27 and the total by year (1997-2017) 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 (2013-2017), and shown in Figures 21 and 22 (1997-2017). 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 and 2017.

Acknowledges

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

References

González Troncoso, D., C. González and X. Paz. 2004. American plaice biomass and abundance from the surveys conducted by Spain in the NAFO Regulatory Area of Divisions 3NO, 1995-2003. NAFO SCR Doc. 04/09, Serial Number N4954, 22 pp.

González Troncoso, D., E. Román and X. Paz. 2004. Results for Greenland halibut from the surveys conducted by Spain in the NAFO Regulatory Area of Divisions 3NO, 1996-2003. NAFO SCR Doc. 04/11, Serial Number N4956, 16 pp.

González Troncoso, D., E. Román and X. Paz. 2005. Results for Greenland halibut of the Spanish survey in NAFO Divisions 3NO: Biomass, length distribution and age distribution for the period 1997-2004. NAFO SCR Doc. 05/27, Serial Number N5113, 18 pp.

González Troncoso, D., E. Román and X. Paz. 2006. 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. NAFO SCR Doc. 06/12, Serial Number N5227, 43 pp.

González Troncoso, D., E. Román and X. Paz. 2013. Results for Greenland halibut, American plaice and Atlantic cod of the Spanish survey in NAFO Div. 3NO for the period 1997-2012. NAFO SCR Doc. 13/10, Serial Number N6160, 52 pp.

NAFO, 2017. Report of Scientific Council Meeting, 01-15 June 2017. NAFO SCS Doc. 17-16, Serial No. N6718, 216 pp.

Walsh, J.S., X. Paz and P. Durán. 2001. A preliminary investigation of the efficiency of Canadian and Spanish Survey bottom trawls on the Southern Bank. NAFO SCR Doc., 01/74, Serial nº N4453, 18 pp.

Table 1. Spanish spring bottom trawl surveys in NAFO Div. 3NO: 1997-2017.

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
2017	R/V *Vizconde de Eza*	113	44-1450	May 23-June 11

(*)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: 2013-2017. Swept area in square miles. n.s. means stratum not surveyed.

	2013		2014		2015		2016		2017	
Stratum	Swept area	Tow number	Swept area	Tow number	Swept area	Tow number	Swept area	Tow number	Swept area	Tow number
353	0.0349	3	0.0379	3	0.0401	3	0.0356	3	0.0360	3
354	0.0338	3	0.0394	3	0.0390	3	0.0345	3	0.0356	3
355	0.0225	2	0.0263	2	0.0263	2	0.0233	2	0.0225	2
356	0.0225	2	0.0266	2	0.0255	2	0.0225	2	0.0233	2
357	0.0236	2	0.0263	2	0.0233	2	0.0233	2	0.0233	2
358	0.0338	3	0.0390	3	0.0349	3	0.0338	3	0.0364	3
359	0.0829	7	0.0908	7	0.0855	7	0.0593	5	0.0596	5
360	0.2231	19	0.2629	20	0.2363	20	0.1995	17	0.2044	17
374	0.0233	2	0.0259	2	0.0229	2	0.0233	2	0.0236	2
375	0.0360	3	0.0390	3	0.0341	3	0.0360	3	0.0364	3
376	0.1305	11	0.1324	10	0.1159	10	0.0945	8	0.0975	8
377	0.0236	2	0.0259	2	0.0233	2	0.0233	2	0.0251	2
378	0.0225	2	0.0263	2	0.0225	2	0.0225	2	0.0236	2
379	0.0240	2	0.0255	2	0.0225	2	0.0229	2	0.0244	2
380	0.0229	2	0.0263	2	0.0229	2	0.0236	2	0.0236	2
381	0.0244	2	0.0259	2	0.0236	2	0.0229	2	0.0229	2
382	0.0484	4	0.0521	4	0.0458	4	0.0465	4	0.0360	3
721	0.0225	2	0.0266	2	0.0240	2	0.0225	2	0.0229	2
722	0.0221	2	0.0259	2	0.0259	2	0.0229	2	0.0233	2
723	0.0221	2	0.0259	2	0.0233	2	0.0225	2	0.0229	2
724	0.0225	2	0.0255	2	0.0236	2	0.0233	2	0.0240	2
725	0.0229	2	0.0255	2	0.0229	2	0.0229	2	0.0244	2
726	0.0221	2	0.0248	2	0.0229	2	0.0225	2	0.0233	2
727	0.0229	2	0.0259	2	0.0225	2	0.0225	2	0.0229	2
728	0.0233	2	0.0248	2	0.0225	2	0.0229	2	0.0229	2
752	0.0233	2	0.0240	2	0.0225	2	0.0236	2	0.0236	2
753	0.0236	2	0.0240	2	0.0233	2	0.0229	2	0.0233	2
754	0.0240	2	0.0225	2	0.0225	2	0.0225	2	0.0218	2
755	0.0454	4	0.0454	4	0.0450	4	0.0458	4	0.0338	3
756	0.0229	2	0.0229	2	0.0229	2	0.0225	2	0.0229	2
757	0.0240	2	0.0244	2	0.0229	2	0.0225	2	0.0225	2
758	0.0225	2	0.0221	2	0.0221	2	0.0221	2	0.0229	2
759	0.0225	2	0.0229	2	0.0229	2	0.0229	2	0.0225	2
760	0.0229	2	0.0364	3	0.0225	2	0.0229	2	0.0236	2
761	0.0225	2	0.0240	2	0.0240	2	0.0225	2	0.0236	2
762	0.0218	2	0.0229	2	0.0229	2	0.0225	2	0.0229	2
763	0.0341	3	0.0233	2	0.0341	3	0.0338	3	0.0353	3
764	0.0214	2	0.0259	2	0.0251	2	0.0225	2	0.0229	2
765	0.0221	2	0.0240	2	0.0236	2	0.0229	2	0.0225	2
766	0.0221	2	0.0221	2	0.0236	2	0.0229	2	0.0225	2
767	0.0218	2	0.0221	2	0.0229	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: 2013-2017. n.s. means stratum not surveyed.

	2013		2014		2015		2016		2017	
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	2.81	2.97	0.25	0.25	0.11	0.18	0.03	0.03	0.03	0.01
354	0.13	0.10	0.08	0.12	0.61	0.87	0.19	0.16	1.10	0.54
355	0.14	0.02	0.22	0.15	5.04	7.00	0.15	0.08	0.60	0.09
356	0.30	0.32	0.33	0.30	1.10	1.43	0.32	0.33	0.08	0.02
357	0.03	0.05	0.37	0.49	0.47	0.54	0.18	0.13	0.67	0.90
358	0.12	0.20	0.09	0.15	0.02	0.03	0.00	0.00	0.00	0.00
359	0.03	0.09	0.33	0.86	0.00	0.00	0.02	0.02	0.21	0.33
360	0.01	0.06	0.01	0.05	0.00	0.01	0.00	0.01	0.03	0.04
374	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23	0.25
375	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
376	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
377	0.00	0.00	0.01	0.01	0.15	0.21	0.14	0.20	0.05	0.02
378	0.00	0.00	0.22	0.31	0.03	0.05	0.03	0.02	1.73	1.76
379	0.58	0.19	1.21	0.88	0.02	0.02	0.00	0.00	0.01	0.01
380	7.63	2.97	0.92	1.24	2.38	0.88	1.20	1.69	16.02	2.71
381	0.00	0.00	0.04	0.06	0.91	1.13	0.48	0.68	1.59	1.01
382	0.00	0.00	0.01	0.01	0.12	0.14	0.06	0.08	0.15	0.06
721	3.17	4.45	0.27	0.31	2.34	0.04	0.83	1.18	3.93	5.56
722	18.30	11.34	12.80	4.75	24.22	13.02	6.56	6.28	9.50	11.58
723	6.35	8.79	1.16	1.47	5.58	0.09	0.03	0.02	2.87	4.00
724	6.90	6.60	11.96	13.26	20.72	15.86	9.91	4.51	3.45	0.85
725	1.97	0.04	1.29	0.09	2.51	1.24	0.31	0.43	4.77	0.74
726	10.86	0.71	7.93	3.61	22.88	15.06	10.45	6.32	22.78	5.63
727	40.56	41.80	21.39	3.03	9.78	1.80	6.98	3.62	57.93	45.29
728	15.20	9.79	14.94	5.95	20.21	20.51	26.86	30.76	135.45	125.16
752	16.91	1.92	29.69	8.04	50.45	10.96	62.16	32.16	92.18	11.84
753	13.27	8.84	37.60	28.28	21.65	5.73	46.35	5.30	41.55	6.09
754	31.42	38.45	19.95	5.02	22.35	2.33	57.60	16.55	59.06	38.12
755	12.21	2.12	26.00	19.72	25.70	21.22	28.07	14.22	35.47	18.06
756	16.18	17.45	35.19	9.88	44.67	2.59	20.06	4.73	102.82	10.66
757	34.86	34.14	31.02	7.87	51.77	19.99	59.35	10.96	149.78	60.42
758	32.55	7.49	33.94	7.50	35.70	4.25	33.81	13.71	159.00	174.37
759	32.81	7.57	12.35	5.97	44.64	14.75	41.68	44.72	75.48	19.13
760	28.03	4.24	18.42	10.50	37.97	28.68	27.91	18.80	46.29	32.61
761	15.12	6.07	36.81	7.44	50.94	23.95	37.46	1.64	23.26	7.22
762	7.17	2.84	19.16	3.79	58.78	6.02	37.16	19.57	80.02	35.79
763	9.49	1.43	10.58	2.68	28.55	19.86	31.24	19.73	55.06	56.85
764	23.92	13.70	21.79	5.40	28.98	0.53	14.29	3.56	37.14	1.86
765	11.97	8.99	10.94	12.62	23.60	6.05	15.46	2.08	15.48	7.04
766	15.75	18.84	12.70	2.36	16.88	0.82	8.91	1.08	29.16	17.40
767	7.21	7.64	9.93	0.54	10.82	12.01	9.00	5.01	23.30	16.68

Table 4. Greenland halibut survey biomass (t) by stratum in NAFO Div. 3NO: 2013-2017. n.s. means stratum not surveyed.

Strata	2013	2014	2015	2016	2017	Strata	2013	2014	2015	2016	2017
353	65	5	2	1	1	**725**	18	11	23	3	41
354	3	2	12	4	23	**726**	71	46	144	67	141
355	1	1	28	1	4	**727**	340	159	83	60	486
356	1	1	4	1	0	**728**	102	94	140	183	924
357	0	5	7	2	9	**752**	191	324	587	689	1022
358	2	2	0	0	0	**753**	155	432	257	559	493
359	1	11	0	1	7	**754**	471	319	358	922	977
360	3	3	1	1	6	**755**	414	883	880	945	1214
374	0	0	0	0	4	**756**	143	311	394	180	908
375	0	0	0	0	0	**757**	296	260	462	538	1358
376	0	0	0	0	1	**758**	286	304	319	303	1376
377	0	0	1	1	0	**759**	370	137	496	463	852
378	0	2	0	0	20	**760**	377	234	520	376	603
379	5	10	0	0	0	**761**	230	525	726	569	337
380	64	7	20	10	130	**762**	140	355	1089	700	1483
381	0	0	11	6	20	**763**	218	237	655	725	1223
382	0	0	4	2	4	**764**	224	168	231	127	325
721	18	1	13	5	22	**765**	134	113	248	168	171
722	139	83	157	48	69	**766**	205	165	206	112	373
723	89	14	74	0	39	**767**	105	142	149	124	322
724	76	116	217	106	36						

Table 5. Greenland halibut survey biomass (t) with SD and stratified mean catch per tow (kg) and SD by in NAFO Div. 3NO: 1997-2017.

Year	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Biomass	6859	11305	11246	9331	7721	2380	4701	3437	3071	2720	3286
SD	546	860	973	707	790	410	575	373	325	379	363
Biomass 5+	4303	6284	6367	8785	6700	2011	3386	2318	2585	2151	3057
Biomass 10+	406	504	660	1111	741	279	495	318	380	182	343
MCPT	7.73	11.73	12.00	9.48	8.17	2.64	5.10	3.68	3.39	3.03	3.98
SD	0.62	0.89	1.00	0.75	0.84	0.45	0.61	0.40	0.36	0.42	0.44

Year	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Biomass	7272	12927	12462	6483	6830	4959	5482	8519	8002	15026
SD	708	1506	1197	593	631	606	465	664	700	1728
Biomass 5+	6908	11971	12057	6091	6297	4697	5322	8397	7784	14521
Biomass 10+	798	1134	1158	1163	1587	1319	1529	1759	1945	2436
MCPT	7.66	14.78	14.80	7.09	7.37	5.46	6.24	9.49	8.80	16.63
SD	0.74	1.73	1.40	0.63	0.69	0.47	0.53	0.73	0.78	1.92

Table 6. Greenland halibut length weight relationships in Spanish Spring Surveys in NAFO Div. 3NO: 2013-2017. E(x) means Error of the parameter x.

	Males						Females						Total					
	a	**b**	**E(a)**	**E(b)**	**R2**	**N**	**a**	**b**	**E(a)**	**E(b)**	**R2**	**N**	**a**	**b**	**E(a)**	**E(b)**	**R2**	**N**
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
2017	**0.00440**	**3.14204**	0.0813	0.0233	0.999	501	**0.0031**	**3.2499**	0.0605	0.0164	0.999	667	**0.0032**	**3.2393**	0.0529	0.0144	0.999	1184

Table 7. Greenland halibut mean number per tow by year in Spanish Spring Surveys in NAFO Div. 3NO: 1997-2017. Indet. means indeterminate.

	1997				1998				1999				2000				2001				2002			
	Males	Females	Indet.	Total	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	3.262	4.718	0.111	8.092

	2003				2004				2005				2006				2007				2008			
	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
MNPT	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	2.895	4.803	0.048	7.746	3.698	7.075	0.051	10.825

	2009				2010				2011				2012				2013				2014			
	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
MNPT	8.980	14.667	0.128	23.775	6.657	13.979	0.010	20.646	3.849	6.847	0.107	10.802	3.453	6.618	0.010	10.081	2.234	4.463	0.049	6.746	2.614	4.853	0.004	7.472

	2015				2016				2017			
	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
MNPT	2.785	6.951	0.046	9.782	2.632	6.586	0.040	9.259	6.436	14.333	0.852	21.621

Table 8. Greenland halibut mean number per tow by length class and year. Spanish Spring Survey in NAFO 3NO: 2013-2017. Indet. means indeterminate.

	2013				2014				2015				2016				2017			
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	0.005	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	0.000	0.004	0.000	0.004
8	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	0.000	0.000	0.033	0.033
10	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	0.240	0.217	0.277	0.734
12	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	0.756	0.592	0.514	1.862
14	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	0.287	0.226	0.020	0.534
16	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	0.146	0.103	0.000	0.249
18	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	0.118	0.193	0.007	0.318
20	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	0.298	0.323	0.000	0.621
22	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	0.252	0.339	0.000	0.592
24	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	0.164	0.190	0.000	0.354
26	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	0.098	0.122	0.000	0.221
28	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	0.181	0.204	0.000	0.385
30	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	0.305	0.272	0.000	0.578
32	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	0.179	0.371	0.000	0.550
34	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	0.242	0.288	0.000	0.530
36	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	0.190	0.316	0.000	0.506
38	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	0.208	0.352	0.000	0.560
40	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	0.262	0.500	0.000	0.762
42	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	0.376	0.654	0.000	1.029
44	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	0.324	0.934	0.000	1.258
46	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	0.329	1.107	0.000	1.437
48	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	0.340	0.952	0.000	1.291
50	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	0.327	1.021	0.000	1.348
52	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	0.322	1.068	0.000	1.389
54	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	0.233	1.003	0.000	1.236
56	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	0.118	1.053	0.000	1.171
58	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	0.077	0.742	0.000	0.819
60	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	0.021	0.325	0.000	0.347
62	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	0.011	0.246	0.000	0.257
64	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	0.032	0.190	0.000	0.221
66	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	0.000	0.108	0.000	0.108
68	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	0.000	0.123	0.000	0.123
70	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	0.000	0.081	0.000	0.081
72	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	0.000	0.024	0.000	0.024
74	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	0.000	0.015	0.000	0.015
76	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	0.000	0.026	0.000	0.026
78	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	0.000	0.022	0.000	0.022
80	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	0.000	0.024	0.000	0.024
82	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	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	0.011	0.000	0.011	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	0.008	0.000	0.008	0.000	0.006	0.000	0.006	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	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
90	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	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	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	0.005	0.000	0.005	0.000	0.000	0.000	0.000
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	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	6.436	14.333	0.852	21.621
Nº samples:				67				77				73				80				96
Nº Ind.:	378	756	8	1142	467	863	1	1331	444	1119	8	1571	447	1074	6	1527	1039	2316	102	3457
Sampled catch:				857				956				1421				1273				2499
Range:				7-90				9-79				7-87				10-95				7-81
Total catch:				885				961				1426				1278				2669
Total hauls:				122				122				122				115				113

Table 9. Greenland halibut mean number per tow by age, sex and year. Spanish Spring Survey in NAFO 3NO: 2013-2017. Indet. means indeterminate.

	2013				2014				2015				2016				2017			
Age	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
0																				
1	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	1.45	1.08	0.85	3.37
2	0.20	0.26		0.45	0.46	0.83		1.28	0.28	0.33		0.62	0.19	0.35		0.54	0.66	1.00	0.01	1.66
3	0.09	0.14		0.23	0.14	0.12		0.26	0.10	0.11		0.20	0.15	0.19		0.34	0.40	0.48		0.88
4	0.24	0.57		0.81	0.04	0.11		0.14	0.04	0.18		0.21	0.19	0.26		0.45	0.55	0.55		1.10
5	0.40	0.78		1.17	0.26	0.29		0.54	0.26	0.21		0.47	0.22	0.29		0.51	0.63	1.75		2.38
6	0.46	1.01		1.48	0.69	0.96		1.65	0.55	1.26		1.81	0.54	1.32		1.86	1.21	3.17		4.38
7	0.55	0.67		1.22	0.60	1.14		1.74	0.86	2.52		3.38	0.48	2.07		2.55	1.10	3.52		4.62
8	0.07	0.26		0.33	0.10	0.35		0.45	0.14	0.80		0.94	0.28	0.62		0.90	0.28	1.39		1.68
9	0.06	0.15		0.21	0.03	0.18		0.21	0.03	0.40		0.44	0.03	0.19		0.22	0.14	0.37		0.51
10	0.02	0.22		0.24		0.23		0.23		0.35		0.35	0.01	0.27		0.28	0.03	0.35		0.38
11	0.01	0.13		0.13		0.18		0.18		0.19		0.19	0.01	0.11		0.12		0.23		0.23
12		0.09		0.09		0.11		0.11		0.10		0.10		0.17		0.17		0.22		0.22
13		0.03		0.03		0.05		0.05		0.03		0.03		0.08		0.08		0.11		0.11
14		0.04		0.04		0.03		0.03		0.04		0.04		0.05		0.05		0.05		0.05
15		0.01		0.01		0.03		0.03		0.02		0.02		0.03		0.03		0.01		0.01
16		0.02		0.02		0.03		0.03		0.03		0.03		0.03		0.03		0.02		0.02
17		0.01		0.01						0.02		0.02		0.01		0.01		0.01		0.01
18		0.01		0.01										0.00		0.00				
19																				
20														0.01		0.01				
Total	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	6.44	14.33	0.85	21.62

Table 10. Greenland halibut mean length (cm) per tow by age, sex and year. Spanish Spring Survey in NAFO 3NO: 2013-2017. Indet. means indeterminate.

	2013				2014				2015				2016				2017			
Age	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
0																				
1	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	13.75	13.19	12.27	13.20
2	19.77	19.69		19.73	21.35	22.28		21.95	21.15	20.87		21.00	21.74	21.74		21.74	21.32	21.38	19.50	21.35
3	27.00	27.13		27.08	24.48	24.88		24.66	26.32	28.59		27.52	28.30	29.44		28.95	26.57	28.10		27.41
4	32.39	33.72		33.33	31.78	34.53		33.80	31.07	32.71		32.43	33.85	32.95		33.32	31.60	32.53		32.07
5	37.55	40.07		39.21	38.51	39.07		38.80	37.83	40.01		38.81	38.83	38.08		38.41	37.70	39.66		39.14
6	44.02	45.49		45.03	43.97	44.98		44.56	44.08	45.61		45.14	44.27	45.58		45.19	44.30	46.01		45.54
7	51.04	51.26		51.16	51.07	50.95		50.99	51.25	51.21		51.22	49.95	52.50		52.02	50.10	53.15		52.42
8	56.36	55.64		55.80	56.10	54.58		54.91	55.92	55.02		55.15	55.47	55.49		55.49	55.94	56.78		56.64
9	58.34	56.39		56.95	57.50	57.47		57.47	57.50	57.28		57.30	58.14	58.86		58.76	58.52	59.76		59.43
10	61.14	61.68		61.63		60.91		60.91		60.46		60.46	58.50	59.16		59.15	61.20	62.40		62.30
11	63.50	63.69		63.68		64.75		64.75		63.70		63.70	65.50	63.35		63.50		65.34		65.34
12		65.43		65.43		67.25		67.25		66.82		66.82		64.56		64.56		66.39		66.39
13		71.23		71.23		74.39		74.39		72.71		72.71		69.42		69.42		71.72		71.72
14		71.72		71.72		73.34		73.34		72.45		72.45		70.39		70.39		74.67		74.67
15		74.50		74.50		74.91		74.91		75.21		75.21		75.89		75.89		71.50		71.50
16		80.98		80.98		76.20		76.20		77.99		77.99		78.54		78.54		79.38		79.38
17		81.50		81.50						86.05		86.05		81.02		81.02		77.50		77.50
18		90.50		90.50										95.50		95.50				
19																				
20														88.73		88.73				
Total	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	34.16	44.51	12.32	40.16

Table 11. Greenland halibut mean weight (g) per tow by age, sex and year. Spanish Spring Survey in NAFO 3NO: 2013-2017. Indet. means indeterminate.

	2013				2014				2015				2016				2017			
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	13	14	16	15	6	15	11	13	5	12	11	11	8	11	18	14	11	15
2	53	55		54	70	84		79	64	66		65	69	73		72	68	67	48	67
3	140	156		150	105	119		111	128	177		154	163	193		180	135	160		149
4	241	298		281	237	326		302	213	267		258	284	278		280	229	257		243
5	383	520		473	442	483		463	410	511		456	440	443		442	402	499		473
6	626	775		728	661	755		716	661	782		745	679	797		762	670	788		756
7	991	1133		1069	1056	1119		1098	1063	1137		1118	988	1256		1206	975	1257		1190
8	1341	1471		1443	1408	1392		1396	1397	1432		1426	1375	1497		1459	1368	1546		1516
9	1490	1529		1518	1519	1628		1615	1524	1622		1615	1597	1811		1782	1590	1825		1763
10	1724	2039		2009		1959		1959		1932		1932	1625	1848		1842	1809	2100		2075
11	1938	2266		2243		2380		2380		2288		2288	2335	2305		2307		2446		2446
12		2471		2471		2677		2677		2673		2673		2462		2462		2577		2577
13		3256		3256		3690		3690		3510		3510		3148		3148		3321		3321
14		3315		3315		3512		3512		3462		3462		3260		3260		3806		3806
15		3721		3721		3772		3772		3919		3919		4150		4150		3259		3259
16		4861		4861		3966		3966		4414		4414		4673		4673		4588		4588
17		4960		4960						6030		6030		5128		5128		4235		4235
18		6935		6935										8752		8752				
19																				
20														6900.12		6900.12				
Total	587	930	13	810	551	989	6	835	602	1124	5	970	569	1108	8	950	473	947	11	769

Table 12. American plaice mean catch (kg) and SD by stratum. Spanish Spring Surveys in NAFO Div. 3NO: 2013-2017. n.s. means stratum not surveyed.

	2013		2014		2015		2016		2017	
Stratum	A. Plaice Mean catch	A. Plaice SD	A. Plaice Mean catch	A. Plaice SD	A. Plaice Mean catch	A. Plaice SD	A. Plaice Mean catch	A. Plaice SD	A. Plaice Mean catch	A. Plaice SD
353	216.48	132.63	55.51	13.19	73.66	18.18	23.23	24.97	14.96	5.64
354	58.79	54.85	56.70	76.25	78.85	81.90	42.63	32.66	84.16	68.30
355	10.40	3.41	5.34	4.13	3.96	3.35	8.66	3.17	24.68	1.87
356	1.08	1.53	0.00	0.00	1.09	1.54	0.10	0.14	3.14	0.88
357	0.00	0.00	0.64	0.90	0.18	0.25	0.01	0.02	0.69	0.98
358	26.27	43.04	18.71	18.22	50.48	74.16	145.62	53.39	93.22	130.18
359	142.43	119.20	61.36	54.21	222.91	98.41	50.75	47.15	96.70	90.20
360	479.42	490.74	268.10	280.43	262.51	231.68	63.87	81.60	57.13	88.03
374	952.66	561.92	681.86	206.84	301.29	239.68	32.03	15.03	1.06	1.21
375	65.63	66.77	118.37	51.35	56.90	61.60	14.22	10.12	5.92	4.50
376	47.28	32.12	46.20	41.87	51.41	31.11	29.99	20.60	17.76	16.93
377	149.80	66.76	205.18	106.95	207.38	7.64	67.83	48.01	8.91	8.26
378	3.77	5.33	14.44	20.41	67.52	64.74	79.65	77.57	84.05	79.17
379	0.00	0.00	0.00	0.00	0.00	0.00	1.85	0.49	42.03	59.43
380	1.81	1.56	7.74	5.90	0.78	0.69	269.90	204.64	50.50	26.73
381	123.28	95.78	143.99	12.46	506.96	18.72	87.31	77.48	4.39	0.72
382	90.53	61.16	95.91	110.71	368.11	166.21	11.63	7.91	3.38	1.22
721	0.02	0.03	0.00	0.00	0.01	0.02	0.00	0.00	0.16	0.22
722	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
723	0.00	0.00	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	0.21	0.30	0.87	1.22	0.54	0.76
726	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.65	0.92
727	0.00	0.00	0.07	0.10	0.00	0.00	61.38	60.13	16.75	1.63
728	0.00	0.00	0.00	0.00	0.00	0.00	14.77	18.71	0.00	0.00
752	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.72	1.05
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: 2013-2017. n.s. means stratum not surveyed.

Strata	2013	2014	2015	2016	2017	Strata	2013	2014	2015	2016	2017
353	5009	1183	1481	526	335	**725**	0	0	2	8	5
354	1286	1063	1492	912	1743	**726**	0	0	0	0	4
355	68	30	22	55	162	**727**	0	1	0	524	141
356	5	0	4	0	13	**728**	0	0	0	101	0
357	0	8	3	0	10	**752**	0	0	0	0	19
358	525	324	977	2912	1730	**753**	0	0	0	0	0
359	5065	1993	7683	1803	3414	**754**	0	0	0	0	0
360	113616	56766	61846	15147	13224	**755**	0	0	0	0	0
374	17537	11279	5637	590	19	**756**	0	0	0	0	0
375	1482	2468	1356	321	132	**757**	0	0	0	0	0
376	5317	4655	5919	3387	1944	**758**	0	0	0	0	0
377	1268	1586	1784	583	71	**759**	0	0	0	0	0
378	47	153	834	984	989	**760**	0	0	0	0	0
379	0	0	0	17	366	**761**	0	0	0	0	0
380	15	57	7	2193	410	**762**	0	0	0	0	0
381	1457	1603	6180	1099	55	**763**	0	0	0	0	0
382	2567	2525	11039	343	97	**764**	0	0	0	0	0
721	0	0	0	0	1	**765**	0	0	0	0	0
722	0	0	0	0	0	**766**	0	0	0	0	0
723	0	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: 1997-2017.

Year	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Biomass	21827	64635	110010	152997	101137	69511	116842	129432	123227	170910	112086
SD	4495	5946	5825	16740	10841	7097	9777	12335	11396	24806	13032
MCPT	25.80	72.25	128.72	175.49	115.95	77.77	127.17	143.93	138.77	202.84	141.82
SD	5.09	6.51	6.85	19.24	12.31	7.46	10.79	13.03	12.92	29.01	15.31

Year	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Biomass	172735	93025	112247	151160	137964	155264	85691	106267	31506	24885
SD	17696	10258	18089	29753	27395	29284	14019	13432	5257	5713
MCPT	193.67	106.59	134.33	172.05	155.11	176.26	108.50	121.19	35.55	28.88
SD	20.39	11.31	22.27	34.95	30.53	31.60	17.41	14.89	5.84	6.38

Table 15. American plaice length weight relationships in Spanish Spring Surveys in NAFO Div. 3NO: 2013-2017. 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**
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
2017	**0.00432**	**3.17842**	0.1382	0.0427	0.997	361	**0.0033**	**3.2539**	0.073	0.0207	0.999	546	**0.0034**	**3.2508**	0.0644	0.0186	0.999	912

Table 16. American plaice mean number per tow by year in Spanish Spring Surveys in NAFO Div. 3NO: 1997-2017. Indet. means indeterminate.

	1997				1998				1999				2000				2001				2002			
	Males	Females	Indet.	Total	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	149.083	175.044	0.319	324.447

	2003				2004				2005				2006				2007				2008			
	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total				
MNPT	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	249.539	242.885	3.602	496.025	351.426	361.373	12.541	725.340

	2009				2010				2011				2012				2013				2014			
	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total				
MNPT	134.548	186.163	4.328	325.039	281.719	234.732	0.195	516.645	385.477	286.713	0.010	672.200	350.620	246.778	0.684	598.083	376.247	261.170	3.239	640.655	172.242	155.876	0.596	328.714

	2015				2016				2017			
	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
MNPT	241.001	182.255	0.633	423.888	64.051	56.961	0.156	121.168	52.599	38.981	0.051	91.631

Table 17. American plaice mean number per tow by length class and year. Spanish Spring Survey in NAFO 3NO: 2013-2017. Indet. means indeterminate.

	2013				2014				2015				2016				2017			
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	0.253	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	0.000	0.000	0.000	0.000
6	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	0.000	0.000	0.000	0.000
8	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	0.000	0.000	0.051	0.051
10	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	0.048	0.101	0.000	0.149
12	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	0.080	0.161	0.000	0.241
14	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	0.323	0.295	0.000	0.618
16	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	0.654	0.610	0.000	1.264
18	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	0.966	1.258	0.000	2.225
20	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	1.784	2.096	0.000	3.880
22	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	2.707	2.337	0.000	5.044
24	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	3.466	3.185	0.000	6.652
26	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	2.923	2.488	0.000	5.411
28	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	4.276	2.444	0.000	6.721
30	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	10.391	1.571	0.000	11.962
32	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	12.488	1.610	0.000	14.098
34	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	8.860	2.430	0.000	11.290
36	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	2.745	3.283	0.000	6.028
38	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	0.710	3.639	0.000	4.350
40	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	0.095	3.955	0.000	4.050
42	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	0.054	2.679	0.000	2.732
44	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	0.028	1.501	0.000	1.529
46	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	0.000	1.354	0.000	1.354
48	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	0.000	0.710	0.000	0.710
50	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	0.000	0.459	0.000	0.459
52	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	0.000	0.251	0.000	0.251
54	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	0.000	0.152	0.000	0.152
56	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	0.000	0.094	0.000	0.094
58	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	0.000	0.100	0.000	0.100
60	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	0.000	0.028	0.000	0.028
62	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	0.000	0.163	0.000	0.163
64	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	0.000	0.020	0.000	0.020
66	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	0.000	0.000	0.000	0.000
68	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	0.000	0.008	0.000	0.008
70	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	0.000	0.000	0.000	0.000
72	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
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	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	52.599	38.981	0.051	91.631
Nº samples:				66				65				68				67				68
Nº Ind.:	6627	7310	98	14035	4696	5066	49	9811	6727	6444	17	13188	2986	3583	16	6585	2265	2781	5	5051
Sampled catch:				4027				3316				4013				1970				1518
Range:				5-72				4-68				4-70				8-68				8-69
Total catch:				14575				9503				11756				3552				2680
Total hauls:				122				122				122				115				113

Table 18. American plaice mean number per tow by age, sex and year. Spanish Spring Survey in NAFO 3NO: 2013-2017. Indet. means indeterminate. In 2016, the ALK is not sexed. The 2017 ALK is not available yet, so the 2016 ALK was used.

	2013				2014				2015				2016				2017			
Age	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
1	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	0.33	0.24	0.15	0.72	0.81	1.67	0.24	2.73	4.35	1.67	0.43	6.45		0.01	0.00	0.01			0.03	0.03
3	0.16	0.63	0.28	1.07	8.61	5.40	0.09	14.10	30.99	29.61		60.61	2.17	2.40	0.13	4.70	0.93	1.12	0.03	2.07
4	7.69	4.16	0.30	12.15	7.42	2.18	0.01	9.61	9.59	10.05		19.64	9.35	10.74	0.02	20.11	6.17	5.97		12.14
5	94.09	38.48	0.07	132.64	5.31	4.38		9.69	12.10	1.76		13.86	3.81	3.32		7.13	3.34	3.03		6.37
6	104.24	56.26	0.00	160.50	42.75	18.20		60.94	65.55	11.54		77.09	8.42	2.59		11.01	6.89	3.15		10.04
7	124.59	58.25		182.84	42.54	24.96		67.50	103.99	53.47		157.46	22.33	8.06		30.38	18.46	5.35		23.81
8	34.41	30.40		64.82	37.89	36.75		74.63	12.96	26.04		39.00	12.34	10.14		22.48	11.49	5.18		16.67
9	8.83	33.12		41.94	16.95	25.31		42.27	1.35	26.39		27.75	4.35	6.54		10.89	4.16	3.95		8.11
10	0.97	20.80		21.77	6.45	15.96		22.41	0.06	10.93		10.99	0.98	6.36		7.34	0.88	4.52		5.39
11	0.84	7.33		8.17	3.45	11.41		14.86		6.05		6.05	0.24	3.04		3.28	0.23	2.54		2.77
12	0.02	5.21		5.23	0.02	3.62		3.64	0.00	2.09		2.10	0.06	1.88		1.94	0.05	1.98		2.02
13		2.62		2.62	0.02	1.70		1.71	0.00	0.70		0.71	0.01	0.64		0.65	0.01	0.80		0.81
14		1.31		1.31	0.02	1.86		1.88	0.00	0.38		0.38	0.00	0.73		0.73	0.00	0.94		0.94
15		0.61		0.61		1.12		1.12	0.00	0.23		0.23		0.09		0.09		0.11		0.11
16		0.52		0.52		0.38		0.38		0.10		0.10		0.05		0.05		0.09		0.09
17		0.32		0.32		0.53		0.53		0.37		0.37		0.24		0.24		0.17		0.17
18		0.48		0.48		0.23		0.23		0.07		0.07		0.01		0.01		0.05		0.05
19		0.13		0.13		0.11		0.11		0.16		0.16				0.00				0.00
20		0.11		0.11		0.04		0.04		0.07		0.07		0.07		0.07		0.04		0.04
21		0.19		0.19		0.02		0.02		0.24		0.24				0.00				0.00
22										0.06		0.06		0.02		0.02				0.00
23																0.00				0.00
24										0.08		0.08		0.01		0.01		0.01		0.01
Total	376.25	261.17	3.24	640.66	172.24	155.88	0.60	328.71	241.00	182.25	0.63	423.89	64.05	56.96	0.16	121.17	52.60	38.98	0.05	91.63

Table 19. American plaice mean length (cm) per tow by age, sex and year. Spanish Spring Survey in NAFO 3NO: 2013-2017. Indet. means indeterminate. In 2016, the ALK is not sexed. The 2017 ALK is not available yet, so the 2016 ALK was used.

	2013				2014				2015				2016				2017			
Age	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
1	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	13.45	16.24	15.77	14.86	11.91	12.83	9.84	12.29	12.54	11.82	9.50	12.15		9.00	9.00	9.00			9.00	9.00
3	13.64	16.90	13.65	15.56	14.16	15.21	11.65	14.55	17.06	16.95		17.01	17.08	17.32	12.01	17.06	19.27	18.42	9.00	18.69
4	23.29	21.93	16.07	22.65	26.87	19.17	15.00	25.11	20.98	20.65		20.81	20.69	20.08	13.95	20.36	22.33	22.02		22.18
5	26.45	25.89	17.22	26.28	27.04	26.86		26.96	27.57	23.35		27.04	24.10	22.54		23.37	24.60	24.11		24.37
6	28.56	28.50	19.00	28.54	29.49	28.75		29.27	30.21	29.50		30.11	29.86	28.92		29.64	29.58	27.79		29.02
7	30.42	31.48		30.76	29.99	32.97		31.09	32.02	33.15		32.41	31.75	33.48		32.21	31.92	31.93		31.92
8	34.17	35.81		34.94	30.90	35.13		32.98	35.07	37.48		36.68	33.57	36.20		34.75	33.91	35.94		34.54
9	33.87	38.23		37.31	32.08	36.17		34.53	38.51	38.91		38.89	34.21	38.45		36.76	34.34	39.30		36.75
10	39.71	40.47		40.43	33.38	39.72		37.90	42.80	42.46		42.46	36.34	40.59		40.02	36.38	41.30		40.50
11	37.87	42.59		42.10	34.41	41.38		39.76		44.80		44.80	37.97	41.75		41.47	38.25	42.64		42.28
12	46.87	45.49		45.49	53.00	46.31		46.34	45.00	48.56		48.56	40.13	43.99		43.87	40.49	45.24		45.13
13		47.20		47.20	45.00	45.29		45.28	45.00	52.66		52.62	41.14	47.00		46.91	42.01	48.08		48.04
14		51.41		51.41	53.00	47.99		48.04	45.00	52.90		52.85	45.00	50.66		50.66	45.00	49.37		49.37
15		51.84		51.84		52.23		52.23	45.00	53.00		52.93		51.87		51.87		51.64		51.64
16		56.22		56.22		53.46		53.46		57.71		57.71		55.66		55.66		59.02		59.02
17		59.56		59.56		57.51		57.51		59.68		59.68		59.93		59.93		60.78		60.78
18		59.79		59.79		58.26		58.26		58.28		58.28		63.00		63.00		63.00		63.00
19		59.91		59.91		61.92		61.92		56.99		56.99								
20		63.62		63.62		65.00		65.00		63.70		63.70		61.98		61.98		62.78		62.78
21		64.97		64.97		65.90		65.90		60.75		60.75								
22										62.21		62.21		67.00		67.00				
23																				
24										65.00		65.00		65.00		65.00		65.00		65.00
Total	29.21	32.97	9.369	30.64	29.39	34.57	9.346	31.81	28.79	32.17	8.608	30.21	29.56	32.66	12.2	30.99	30.54	33.89	9	31.95

Table 20. American plaice mean weight (g) per tow by age, sex and year. Spanish Spring Survey in NAFO 3NO: 2013-2017. Indet. means indeterminate. In 2016, the ALK is not sexed. The 2017 ALK is not available yet, so the 2016 ALK was used.

	2013				2014				2015				2016				2017			
Age	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
1	3	3	4	4	4	5	4	4	5	5	2	3								
2	27	37	37	32	14	16	7	15	16	12	6	14		4	4	4			4	4
3	22	45	23	36	22	29	12	25	42	39		41	42	42	11	41	60	52	4	55
4	107	95	37	101	168	66	26	144	79	72		75	73	65	18	68	90	84		87
5	154	155	45	154	170	175		172	173	104		164	113	91		103	119	110		115
6	194	210	61	200	224	215		222	229	222		228	213	202		210	211	172		199
7	234	289		251	236	334		272	275	324		291	256	321		273	266	279		269
8	323	425		371	263	411		336	364	478		440	305	405		350	320	395		343
9	318	519		477	292	453		388	481	539		537	323	495		427	333	528		428
10	498	618		612	329	594		518	673	712		712	392	584		559	403	614		580
11	437	730		700	359	672		600		850		850	445	641		626	469	681		664
12	820	889		889	1400	974		977	777	1099		1098	527	773		765	560	839		833
13		990		990	833	903		902	777	1432		1428	569	964		957	628	1025		1022
14		1306		1306	1400	1093		1096	777	1455		1451	753	1207		1206	776	1100		1099
15		1358		1358		1429		1429	777	1457		1450		1274		1274		1254		1254
16		1732		1732		1516		1516		1923		1923		1636		1636		1983		1983
17		2067		2067		1927		1927		2220		2220		2038		2038		2139		2139
18		2079		2079		1994		1994		2021		2021		2385		2385		2393		2393
19		2104		2104		2424		2424		1858		1858								
20		2498		2498		2848		2848		2706		2706		2278		2278		2391		2391
21		2668		2668		2959		2959		2277		2277								
22										2465		2465		2910		2910				
23																				
24										2827		2827		2639		2639		2649		2649
Total	211	370	11	275	234	438	7	330	221	375	5	287	225	371	12	294	246	410	4	315

Table 21. Atlantic cod mean catch (kg) and SD by stratum. Spanish Spring Surveys in NAFO Div. 3NO: 2013-2017. n.s. means stratum not surveyed.

	2013		2014		2015		2016		2017	
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	23.85	27.59	5.13	8.89	70.81	104.76	12.22	9.54	23.86	31.61
354	14.17	21.04	75.46	99.83	180.78	213.46	125.13	96.34	28.55	15.60
355	1.01	1.42	0.00	0.00	21.53	30.44	29.56	39.65	13.90	13.60
356	0.00	0.00	1.25	1.76	5.47	4.32	4.84	3.17	30.60	10.26
357	4.96	1.96	3.52	4.98	5.31	6.04	1.01	1.43	26.98	12.21
358	164.20	153.12	213.36	233.77	1268.78	2109.79	430.29	527.16	1197.25	1491.99
359	92.73	108.90	1676.53	2880.87	196.07	362.84	14.56	24.02	17.52	17.14
360	48.81	64.30	220.65	711.44	50.46	119.32	111.17	302.23	39.55	136.60
374	8.27	11.70	271.12	302.52	0.00	0.00	0.00	0.00	0.00	0.00
375	15.22	24.10	54.57	94.51	4.85	3.13	0.15	0.26	0.10	0.10
376	11.71	21.15	11.38	24.32	18.63	39.72	0.15	0.16	0.25	0.51
377	684.24	249.87	754.88	259.76	549.79	14.52	26.82	37.93	0.66	0.94
378	67.71	72.25	1989.05	2779.71	1286.60	1620.13	178.50	147.64	137.19	106.98
379	4.73	2.28	10.03	4.49	1.56	2.21	28.86	29.20	48.47	64.53
380	0.00	0.00	47.61	26.88	23.10	28.99	201.32	263.77	38.66	24.53
381	214.50	97.86	216.67	196.91	400.87	196.56	341.10	482.39	2.64	3.73
382	274.53	160.99	12.07	4.02	183.58	118.93	0.02	0.02	0.00	0.00
721	0.00	0.00	0.00	0.00	5.09	4.41	0.00	0.00	0.00	0.00
722	0.00	0.00	0.85	1.20	0.00	0.00	0.00	0.00	0.00	0.00
723	3.81	0.22	2.98	4.21	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	3.74	5.29	10.89	15.39
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	8.83	8.02	1.74	1.51
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: 2013-2017. n.s. means stratum not surveyed.

Strata	2013	2014	2015	2016	2017
353	552	1381	1424	277	535
354	310	18564	3421	2677	591
355	7	0	121	188	91
356	0	59	20	20	124
357	69	577	75	14	381
358	3284	48007	24557	8606	22217
359	3297	705820	6758	517	618
360	11568	614072	11888	26364	9157
374	152	58019	0	0	0
375	344	14788	115	3	2
376	1317	15180	2145	17	28
377	5792	75488	4729	231	5
378	837	276478	15897	2205	1614
379	42	1063	15	267	422
380	0	4571	194	1636	314
381	2534	31200	4887	4295	33
382	7786	4141	5505	1	0
721	0	0	28	0	0
722	0	71	0	0	0
723	53	462	0	0	0
724	0	0	0	0	0

Strata	2013	2014	2015	2016	2017
725	0	0	0	34	94
726	0	0	0	0	0
727	0	0	0	75	15
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. Atlantic cod survey biomass (t) with SD and stratified mean catch per tow (kg) and SD by in NAFO Div. 3NO: 1997-2017.

Year	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Biomass	2131	19444	3054	7576	32548	10502	5455	3712	4509	19921	10592
SD	1322	18206	655	2566	15903	7971	3016	848	1984	8109	5853
MCPT	2.50	19.47	3.50	8.46	36.96	11.07	5.93	4.09	5.06	23.35	13.47
SD	1.54	17.82	0.75	2.58	17.97	7.82	3.29	0.95	2.16	9.39	7.44

Year	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Biomass	23817	72757	76856	137378	87436	37945	143299	81780	47429	36241
SD	5221	40466	37369	54393	30292	5114	54386	28297	19188	17444
MCPT	26.55	80.73	90.96	155.16	97.02	43.33	180.81	92.64	53.13	42.28
SD	5.71	46.81	43.41	64.42	32.90	5.90	67.34	32.30	21.51	20.79

Table 24. Atlantic cod length weight relationships in Spanish Spring Surveys in NAFO Div. 3NO: 2013-2017. E(x) means Error of the parameter x.

	a	b	E(a)	E(b)	R2	N
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
2017	**0.00379**	**3.18329**	0.0829	0.0209	0.9979	942

Table 25. Atlantic cod mean number per tow by year in Spanish Spring Surveys in NAFO Div. 3NO: 1997-2017. Indet. means indeterminate.

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
MNPT	1.997	12.378	8.847	9.220	41.290	12.930	4.684	9.035	9.005	40.718	32.605

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
MNPT	49.717	131.444	118.451	139.982	79.685	26.421	82.688	83.149	22.871	36.521

Table 26. Atlantic cod mean number per tow by length class and year. Spanish Spring Survey in NAFO 3NO: 2013-2017.

	2013	2014	2015	2016	2017
Lenght (cm.)	Total	Total	Total	Total	Total
6	0.000	0.000	0.039	0.000	0.000
8	0.014	0.000	0.013	0.000	0.000
10	0.000	0.027	0.026	0.000	0.018
12	0.143	0.058	0.091	0.024	0.052
14	0.165	0.048	0.229	0.149	0.150
16	0.217	0.105	0.358	0.445	0.139
18	0.089	0.165	0.179	0.314	0.171
20	0.055	0.203	0.142	0.405	0.167
22	0.020	0.308	0.711	0.806	0.285
24	0.054	0.233	2.836	1.189	1.109
26	0.081	0.528	4.258	1.082	1.886
28	0.119	0.469	3.838	0.721	1.954
30	0.175	0.510	2.722	0.627	1.649
32	0.256	0.501	3.328	0.629	1.440
34	0.322	0.969	5.313	0.629	1.573
36	0.407	1.135	7.129	0.455	2.585
38	0.858	1.131	4.582	0.307	2.454
40	1.195	1.585	4.773	0.439	2.461
42	1.493	1.575	4.396	0.392	2.018
44	1.789	2.098	4.105	0.333	1.688
46	1.765	2.377	3.406	0.319	1.471
48	1.749	3.219	2.181	0.328	1.451
50	1.664	3.263	3.019	0.287	2.111
52	1.770	3.855	2.460	0.375	0.917
54	1.686	4.588	2.697	0.549	0.775
56	1.522	4.616	2.535	0.654	0.801
58	1.583	4.332	2.458	0.644	0.506
60	1.340	4.987	2.265	0.782	0.302
62	1.226	5.393	1.677	0.579	0.719
64	0.809	5.866	1.953	0.675	0.433
66	0.706	5.383	1.390	0.568	0.894
68	0.446	4.021	1.096	0.679	0.604
70	0.272	4.384	1.084	0.533	0.324
72	0.369	3.238	1.099	0.527	0.458
74	0.251	2.517	0.804	0.535	0.263
76	0.174	2.456	0.566	0.398	0.315
78	0.161	1.425	0.502	0.566	0.284
80	0.198	0.967	0.549	0.564	0.166
82	0.133	0.934	0.498	0.774	0.347
84	0.194	0.957	0.408	0.725	0.313
86	0.143	0.350	0.331	0.581	0.255
88	0.126	0.456	0.237	0.560	0.228
90	0.110	0.420	0.114	0.359	0.146
92	0.114	0.224	0.199	0.254	0.112
94	0.087	0.186	0.197	0.390	0.164
96	0.084	0.331	0.125	0.212	0.150
98	0.061	0.085	0.044	0.031	0.025
100	0.092	0.078	0.088	0.155	0.064
102	0.050	0.052	0.026	0.055	0.025
104	0.039	0.026	0.027	0.084	0.042
106	0.000	0.000	0.000	0.040	0.025
108	0.005	0.013	0.031	0.037	0.009
110	0.027	0.012	0.013	0.099	0.000
112	0.000	0.000	0.000	0.007	0.009
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	0.014	0.013	0.000	0.000	0.017
122	0.000	0.012	0.000	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	26.421	82.688	83.149	22.871	36.521
Nº samples:	57	55	61	49	47
Nº Ind.:	3571	4700	4728	2255	1709
Sampled catch:	5251	8988	7607	3959	0
Range:	9-120	10-122	6-110	13-113	10-121
Total catch:	5434	23952	12477	5317	5135
Total hauls:	122	122	122	115	114

Table 27. Atlantic cod mean number per tow by age and year. Spanish Spring Survey in NAFO 3NO: 2013-2017.

Age	2013	2014	2015	2016	2017
1	0.67	0.15	0.96	0.71	0.28
2	0.46	2.51	13.89	4.56	5.14
3	1.86	5.00	23.68	2.26	8.41
4	7.13	8.10	14.29	1.53	7.99
5	4.20	31.29	5.04	1.40	5.58
6	1.06	12.21	10.62	0.74	1.93
7	9.26	1.53	4.45	4.48	1.03
8	0.23	16.69	1.26	2.61	1.78
9	0.91	1.93	8.29	0.26	1.81
10	0.58	2.53	0.21	3.82	0.16
11	0.05	0.70	0.36	0.24	2.05
12	0.00	0.01	0.09	0.07	0.07
13		0.01	0.01	0.12	0.19
14	0.01	0.01		0.06	0.08
15					0.01
16					
17					
18					
19					
20					
Total	26.42	82.69	83.15	22.87	36.52

Table 28. Atlantic cod mean length (cm) per tow by age and year. Spanish Spring Survey in NAFO 3NO: 2013-2017.

Age	2013	2014	2015	2016	2017
1	16.10	13.86	15.98	16.60	15.24
2	28.64	26.29	27.61	25.66	26.88
3	38.43	38.44	36.90	33.53	34.71
4	46.44	47.42	44.63	43.35	42.04
5	51.81	58.26	52.27	51.25	49.08
6	53.11	62.97	59.86	60.02	56.20
7	61.16	73.54	61.79	71.50	61.92
8	71.43	72.87	64.69	73.17	69.15
9	84.43	73.76	69.76	76.90	71.81
10	93.60	83.93	88.22	80.81	77.75
11	92.49	92.39	90.55	103.52	80.05
12	109.50	122.50	92.05	99.77	102.97
13		103.50	103.50	99.10	93.68
14	110.50	120.50		107.52	91.90
15					108.50
16					
17					
18					
19					
20					
Total	53.77	60.34	45.76	55.89	46.00

Table 29. Atlantic cod mean weight (g) per tow by age and year. Spanish Spring Survey in NAFO 3NO: 2013-2017.

Age	2013	2014	2015	2016	2017
1	34	19	33	31	24
2	194	146	165	126	142
3	479	460	408	287	320
4	865	898	740	649	576
5	1211	1730	1220	1095	938
6	1359	2207	1914	1847	1462
7	2046	3546	2191	3239	2012
8	3417	3470	2544	3580	2943
9	5454	3667	3142	4132	3284
10	7531	5430	6493	4793	4410
11	7143	7245	6788	9859	4584
12	11820	17443	7061	8751	10051
13		10236	9937	8635	7474
14	12157	16558		11085	6778
15					11439
16					
17					
18					
19					
20					
Total	1640	2187	1114	2323	1158

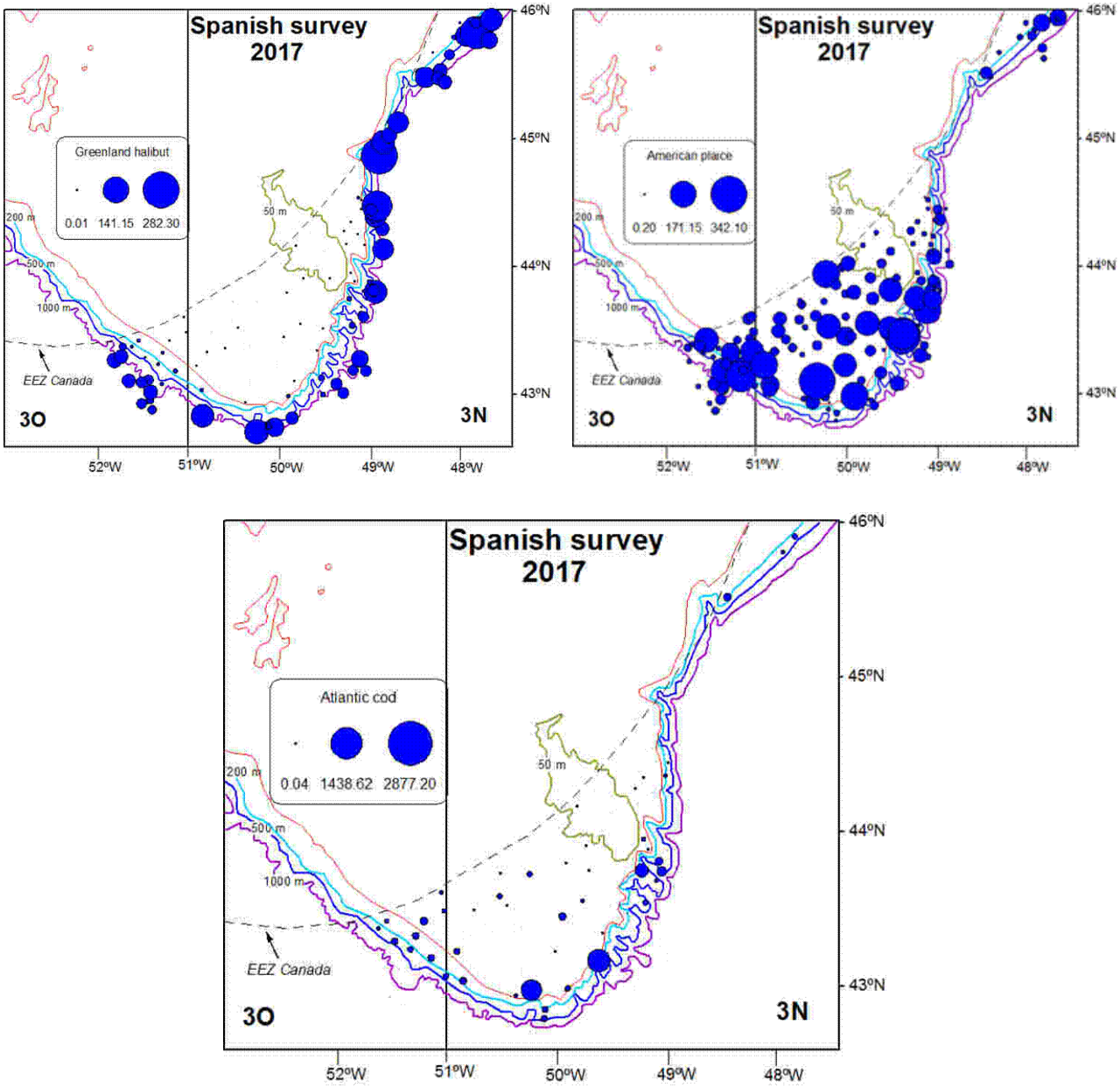

Fig. 1 Position of the hauls and the catch of Greenland halibut, American plaice and Atlantic cod during the 2017 Spanish 3NO survey. Note that the scale is different in the three graphs.

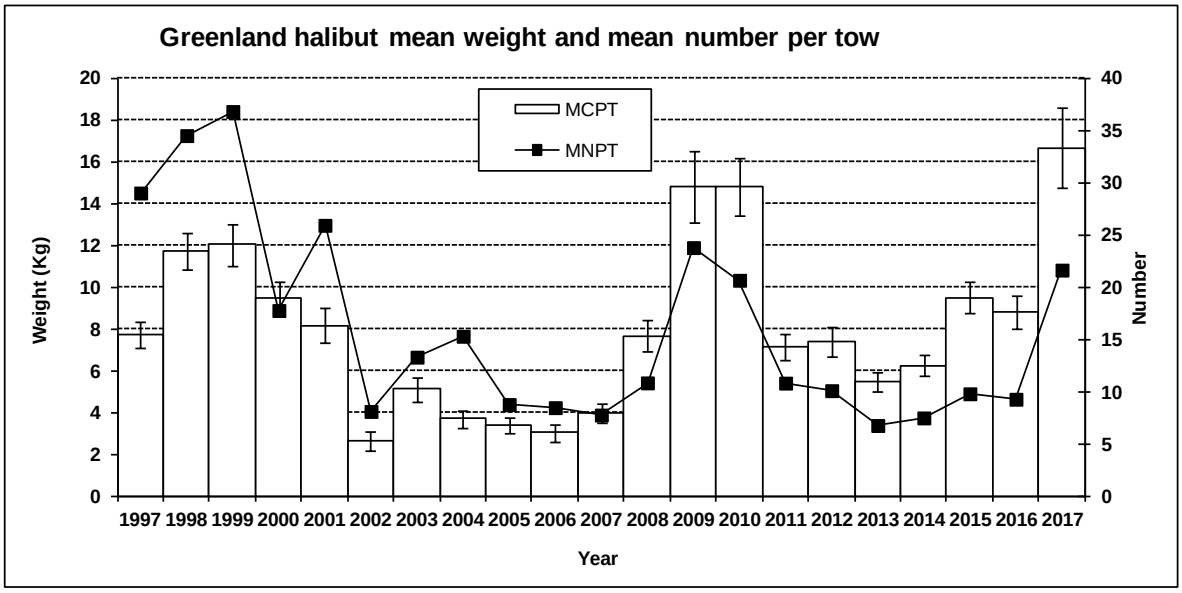

Fig. 2 Greenland halibut stratified mean catches in Kg and ±SD by year and mean number by year. Spanish Spring surveys in NAFO Div. 3NO: 1997-2017.

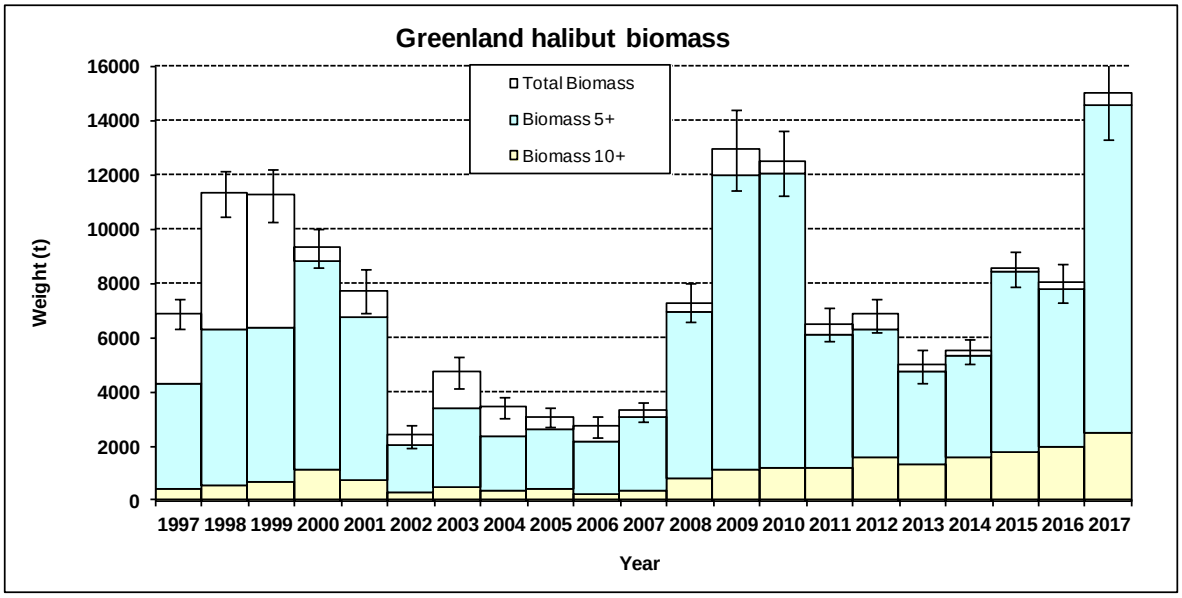

Fig. 3 Greenland halibut biomass calculated by the swept area method in tons and ±SD by year. Spanish Spring surveys in NAFO Div. 3NO: 1997-2017.

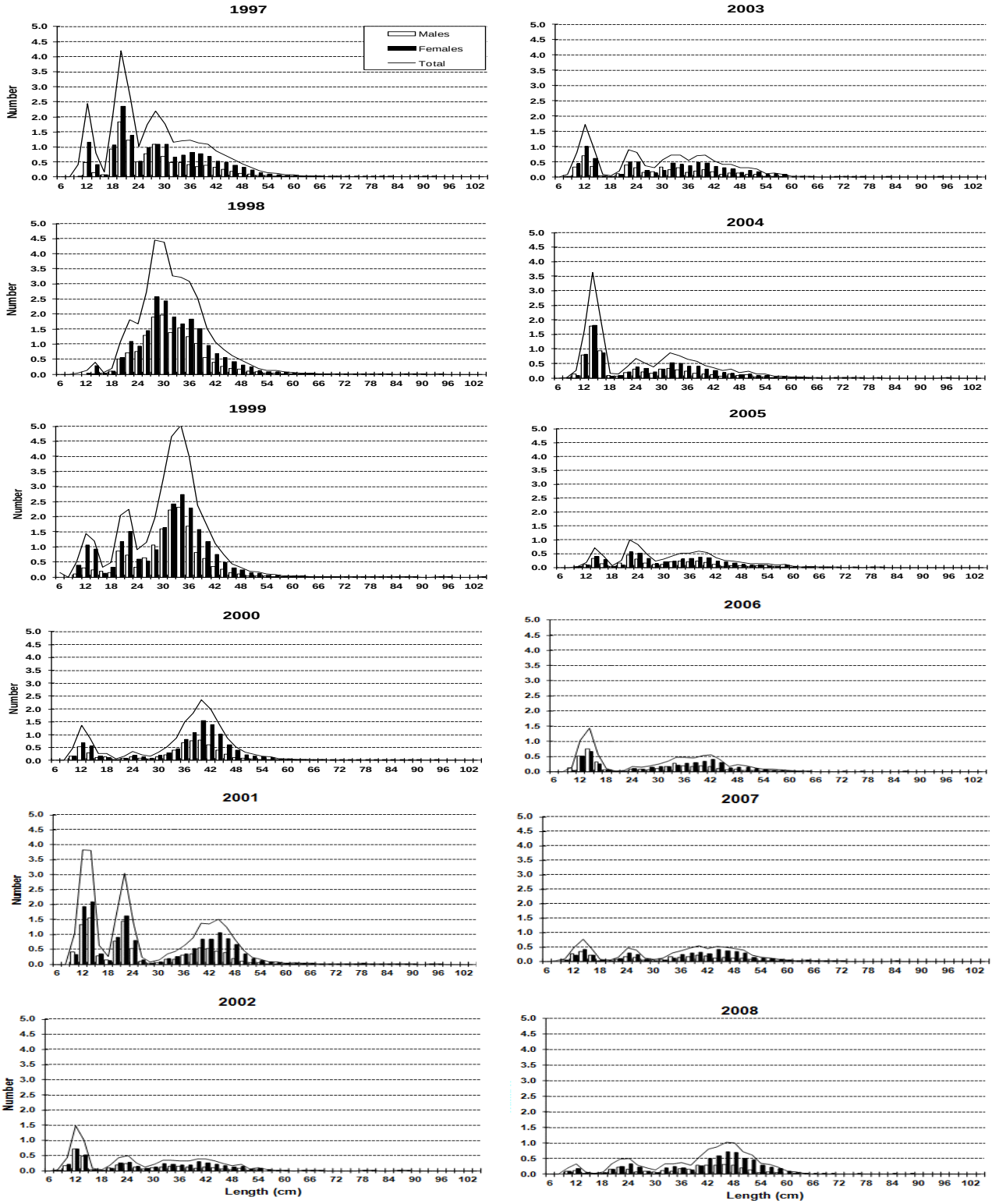

Fig. 4 Greenland halibut length distribution (cm) on NAFO 3NO: 1997-2017. Mean catches per tow number. Data from 2013 to 2017 are in Table 8; data for 1997-2012 can be seen in SCR Doc 13/10.

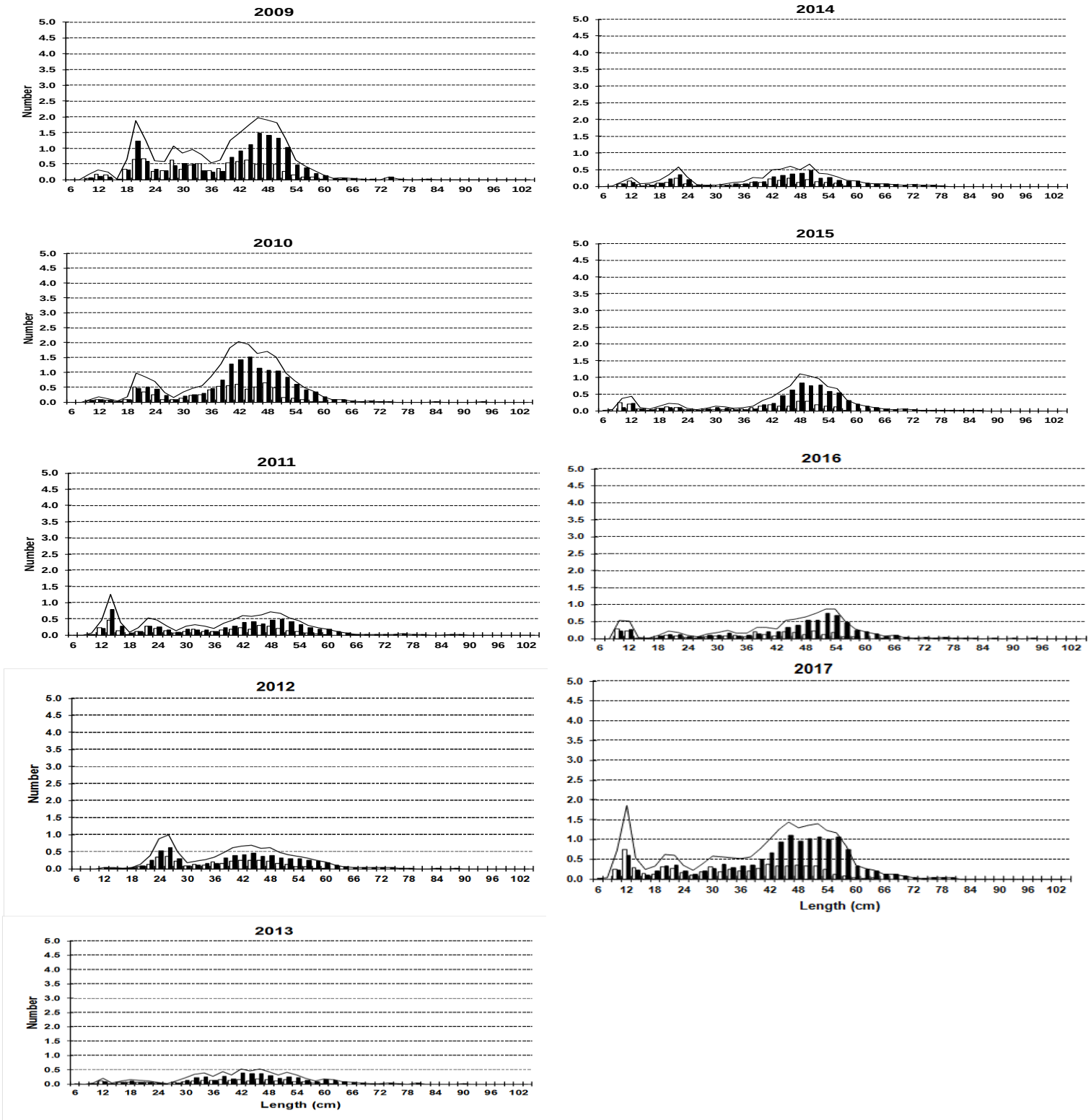

Fig. 4 (cont.) Greenland halibut length distribution (cm) on NAFO 3NO: 1997-2017. Mean catches per tow number. Data from 2013 to 2017 are in Table 8; data for 1997-2012 can be seen in SCR Doc 13/10.

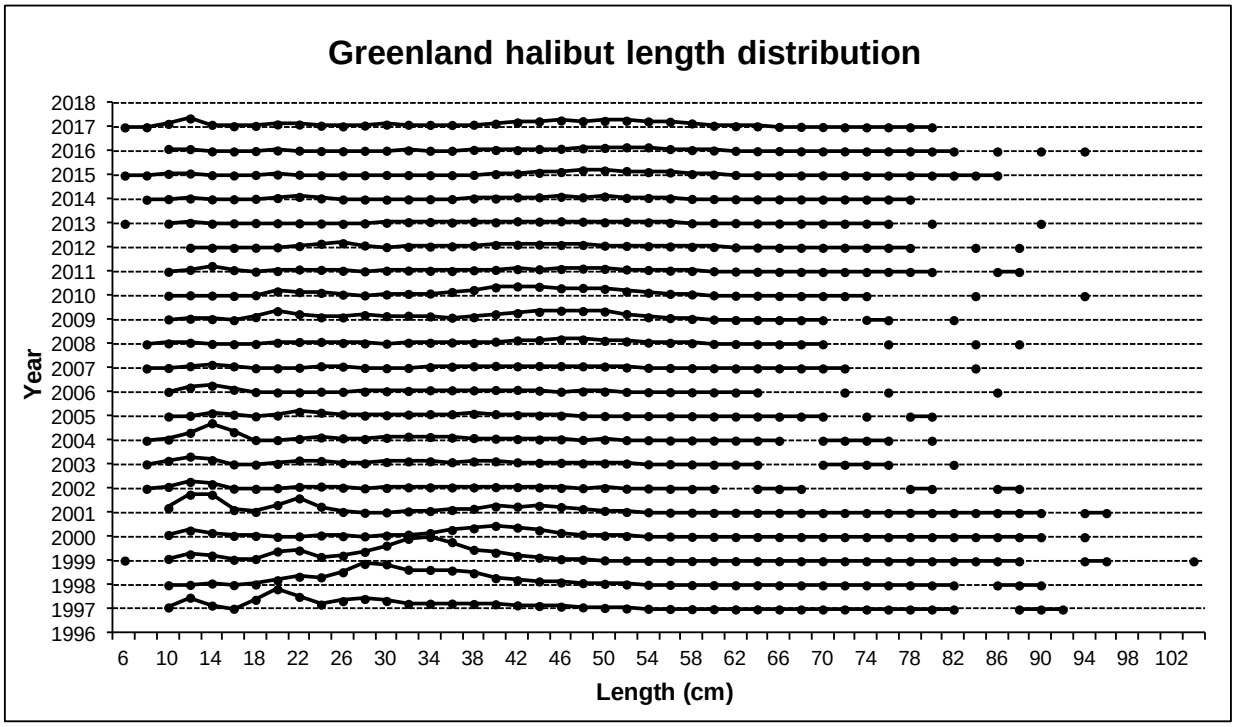

Fig. 5 Greenland halibut mean number per tow by length (cm) on NAFO 3NO: 1997-2017. Data from 2013 to 2017 are in Table 8; data for 1997-2012 can be seen in SCR Doc 13/10.

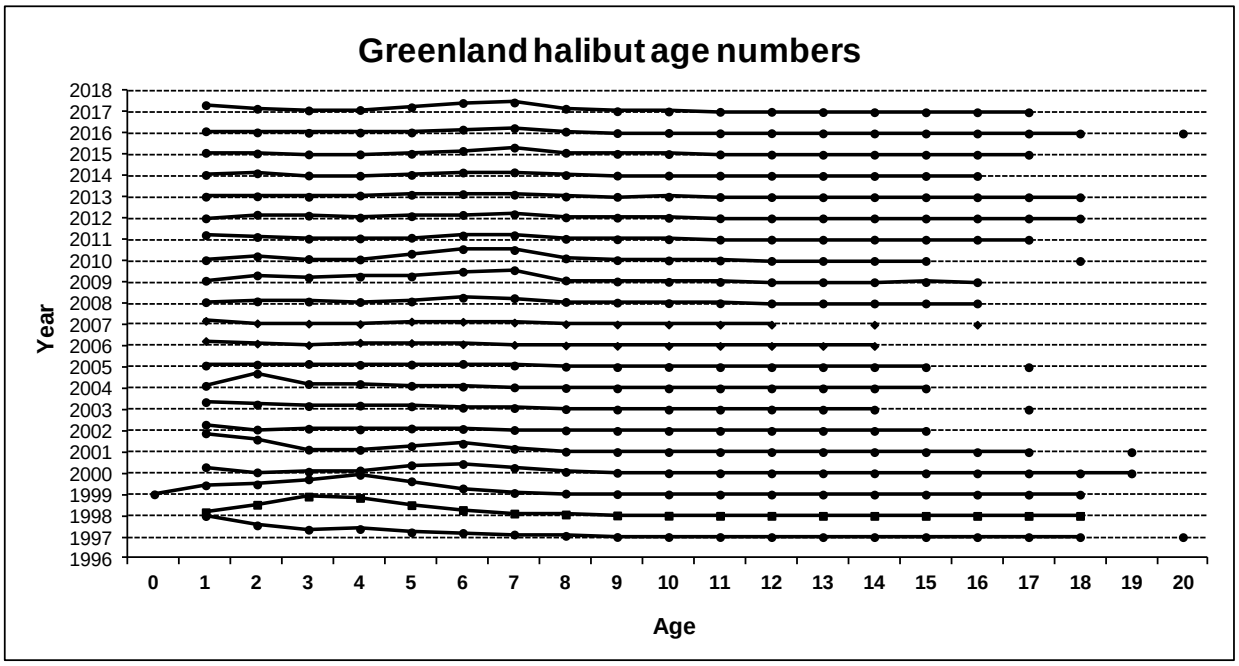

Fig. 6 Greenland halibut mean numbers per tow by age on NAFO 3NO: 1997-2017. Data from 2013 to 2017 are in Table 9; data for 1997-2012 can be seen in SCR Doc 13/10.

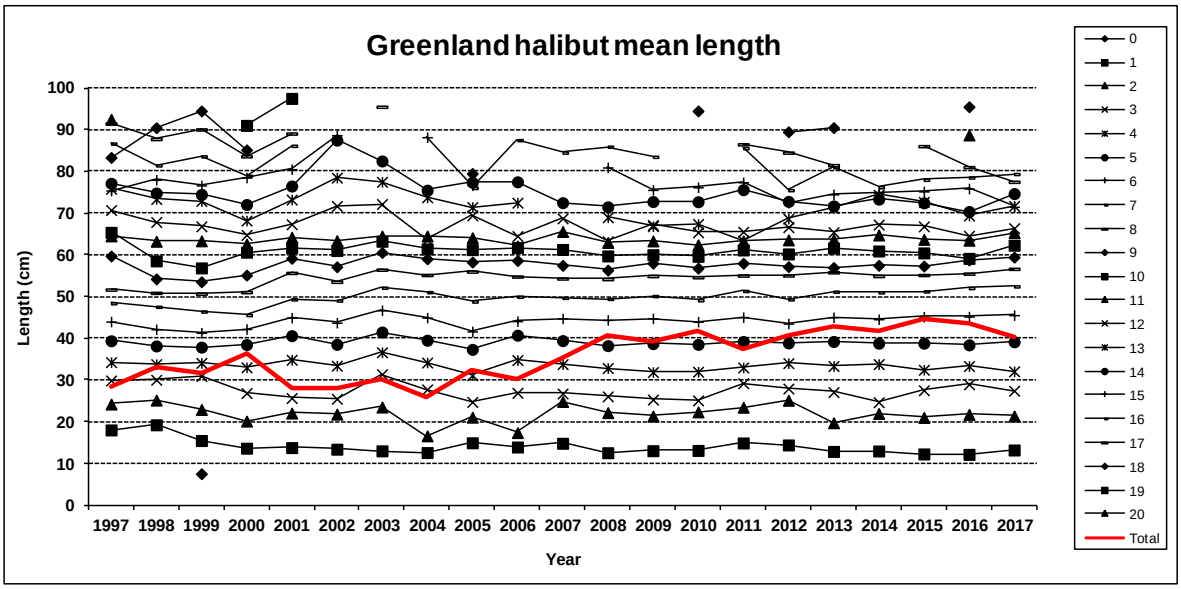

Fig. 7 Greenland halibut mean length (cm) at age on NAFO 3NO: 1997-2017. Data from 2013 to 2017 are in Table 10; data for 1997-2012 can be seen in SCR Doc 13/10.

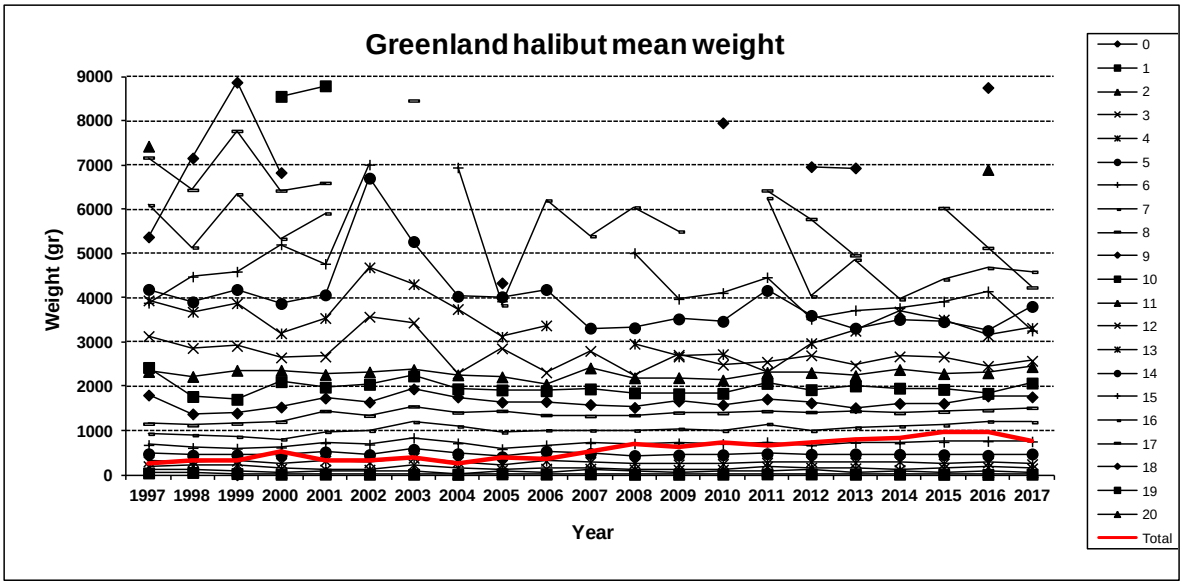

Fig. 8 Greenland halibut mean weight (gr) at age on NAFO 3NO: 1997-2017. Data from 2013 to 2017 are in Table 11; data for 1997-2012 can be seen in SCR Doc 13/10.

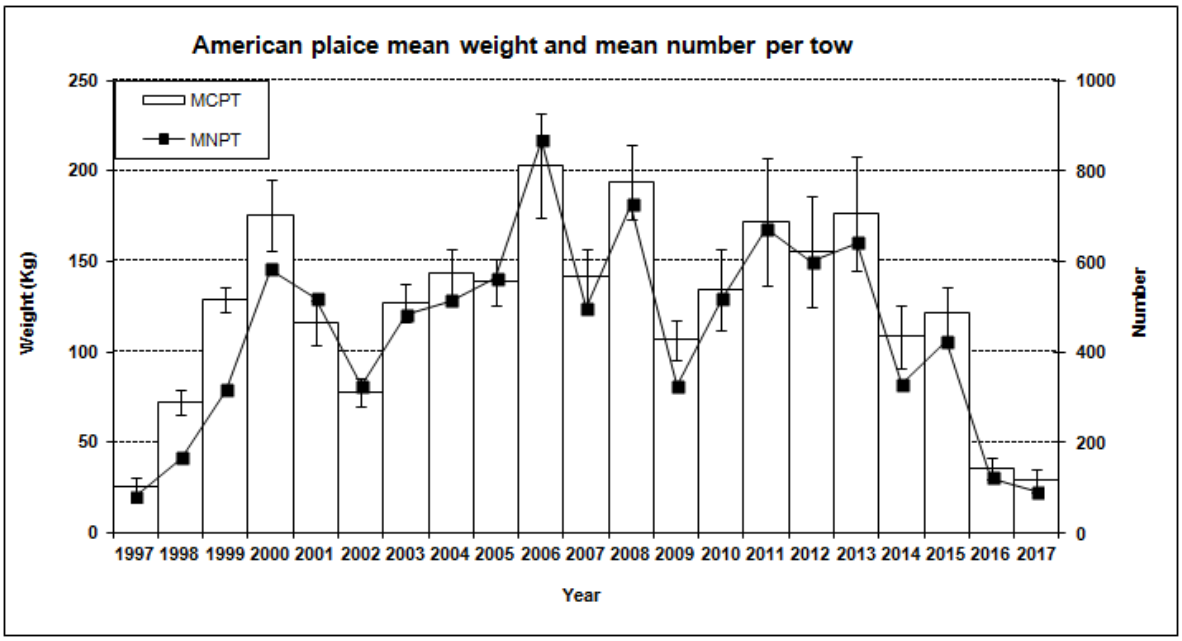

Fig. 9 American plaice stratified mean catches in Kg and ±SD by year and mean number by year. Spanish Spring surveys in NAFO Div. 3NO: 1997-2017.

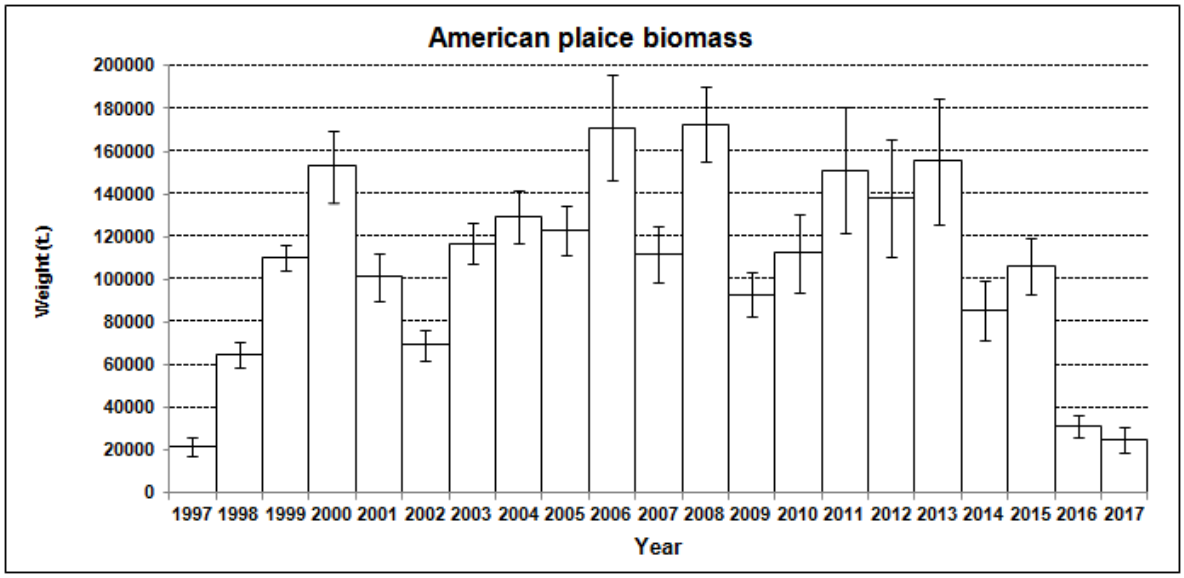

Fig. 10 American plaice biomass calculated by the swept method in tons and ±SD by year. Spanish Spring surveys in NAFO Div. 3NO: 1997-2017.

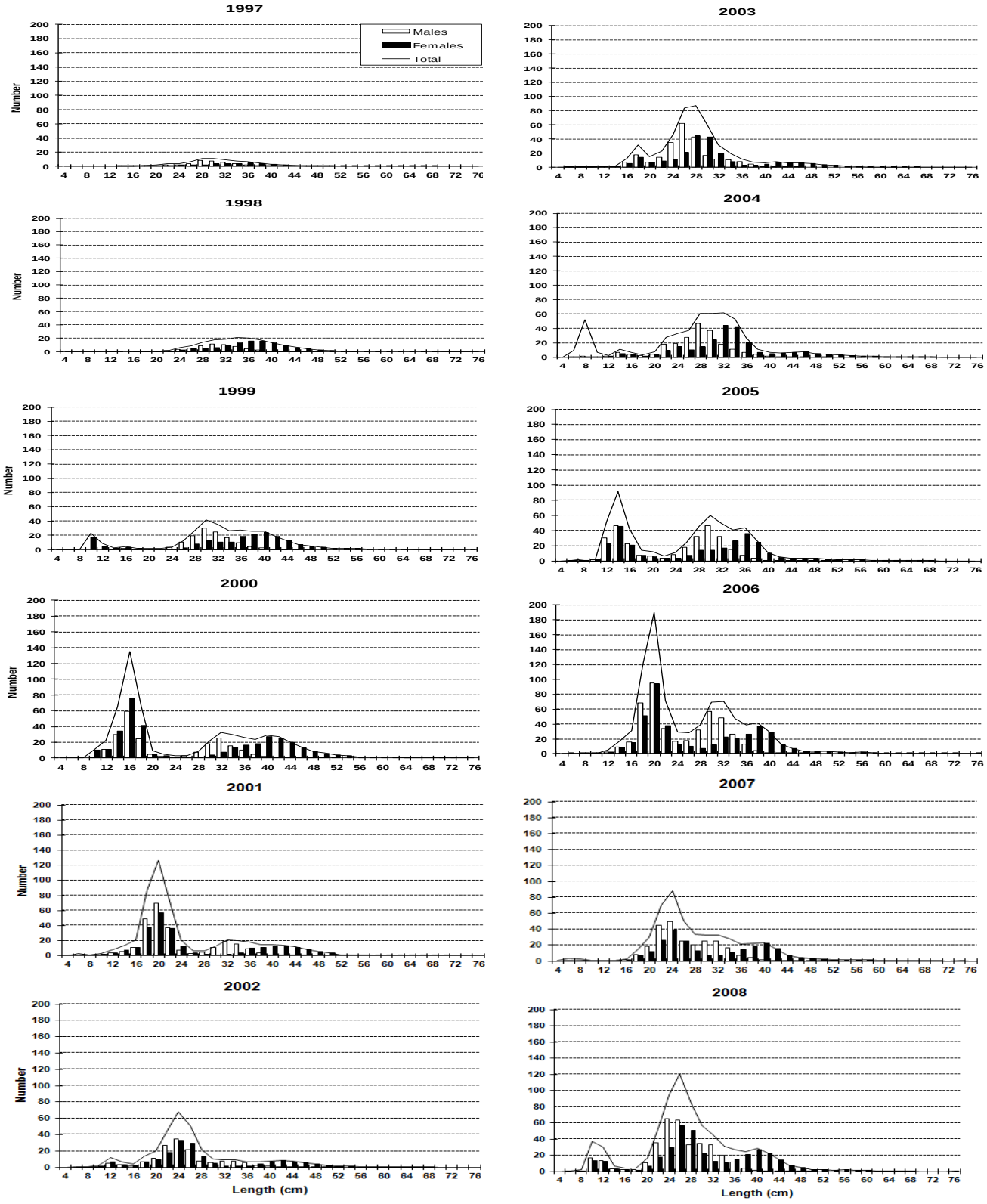

Fig. 11 American plaice length distribution (cm) on NAFO 3NO: 1997-2017. Mean catches per tow number. Data from 2013 to 2017 are in Table 17; data for 1997-2012 can be seen in SCR Doc 13/10.

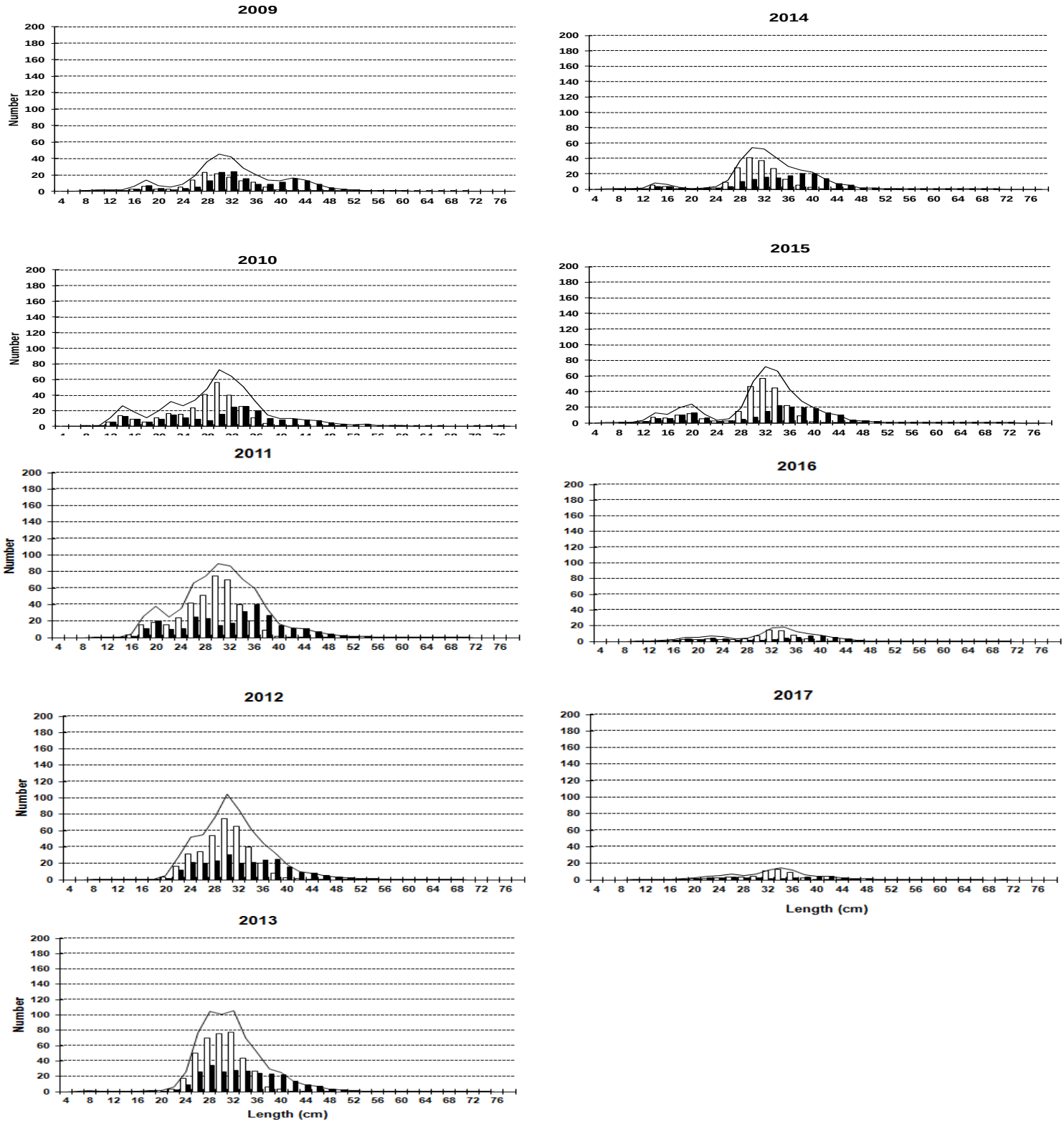

Fig. 11 (cont.) American plaice length distribution (cm) on NAFO 3NO: 1997-2017. Mean catches per tow number. Data from 2013 to 2017 are in Table 17; data for 1997-2012 can be seen in SCR Doc 13/10.

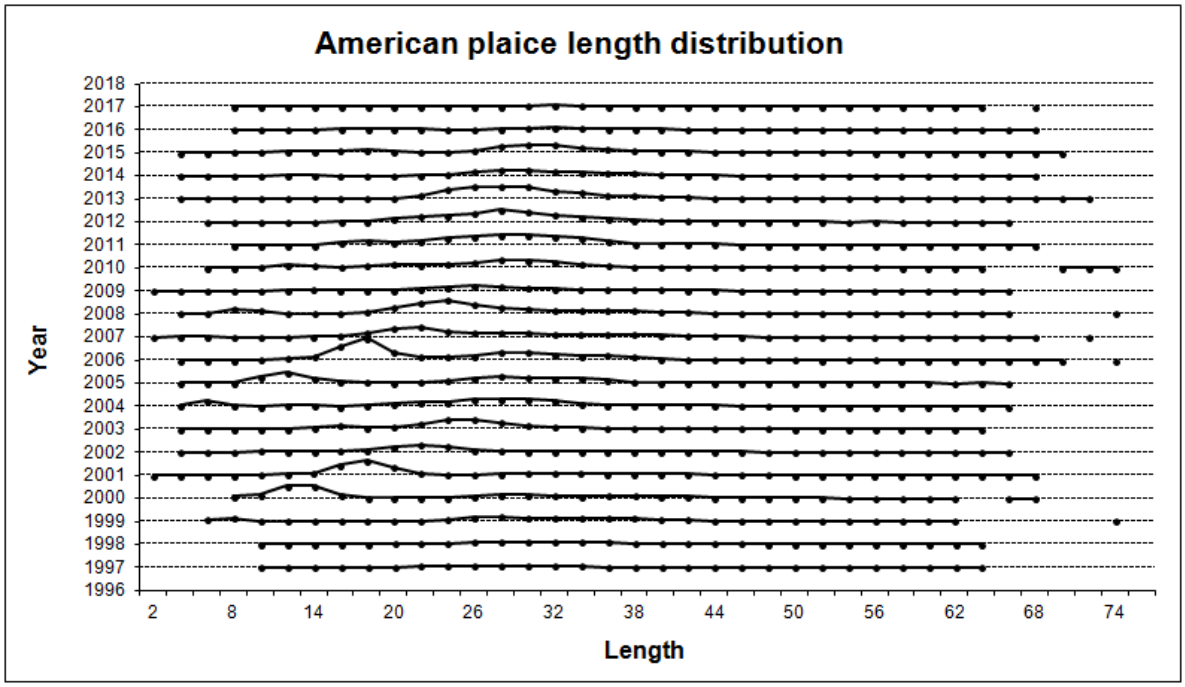

Fig. 12 American plaice mean catches per tow by length (cm) on NAFO 3NO: 1997-2017. Data from 2013 to 2017 are in Table 17; data for 1997-2012 can be seen in SCR Doc 13/10.

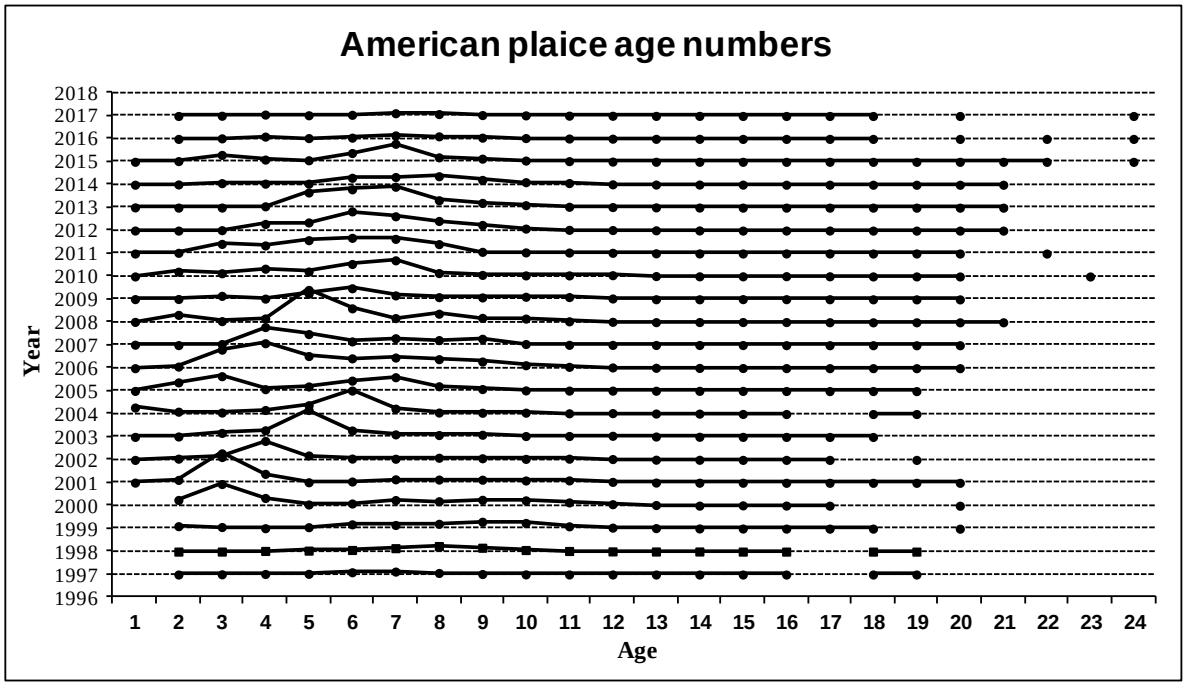

Fig. 13 American plaice mean catches per tow by age on NAFO 3NO: 1997-2017. Data from 2013 to 2017 are in Table 18; data for 1997-2012 can be seen in SCR Doc 13/10. The 2016 ALK was not sexed. The 2017 ALK is not available yet, so the 2016 ALK was used.

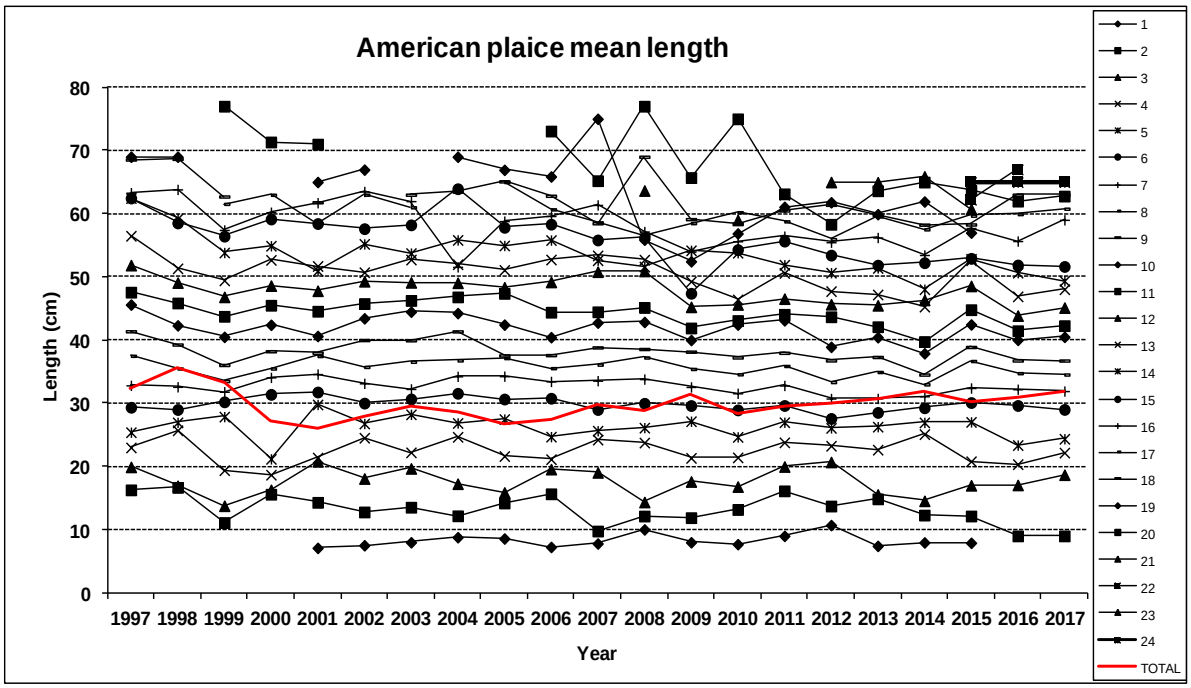

Fig. 14 American plaice mean length (cm) at age on NAFO 3NO: 1997-2017. Data from 2013 to 2017 are in Table 19; data for 1997-2012 can be seen in SCR Doc 13/10. The 2016 ALK was not sexed. The 2017 ALK is not available yet, so the 2016 ALK was used.

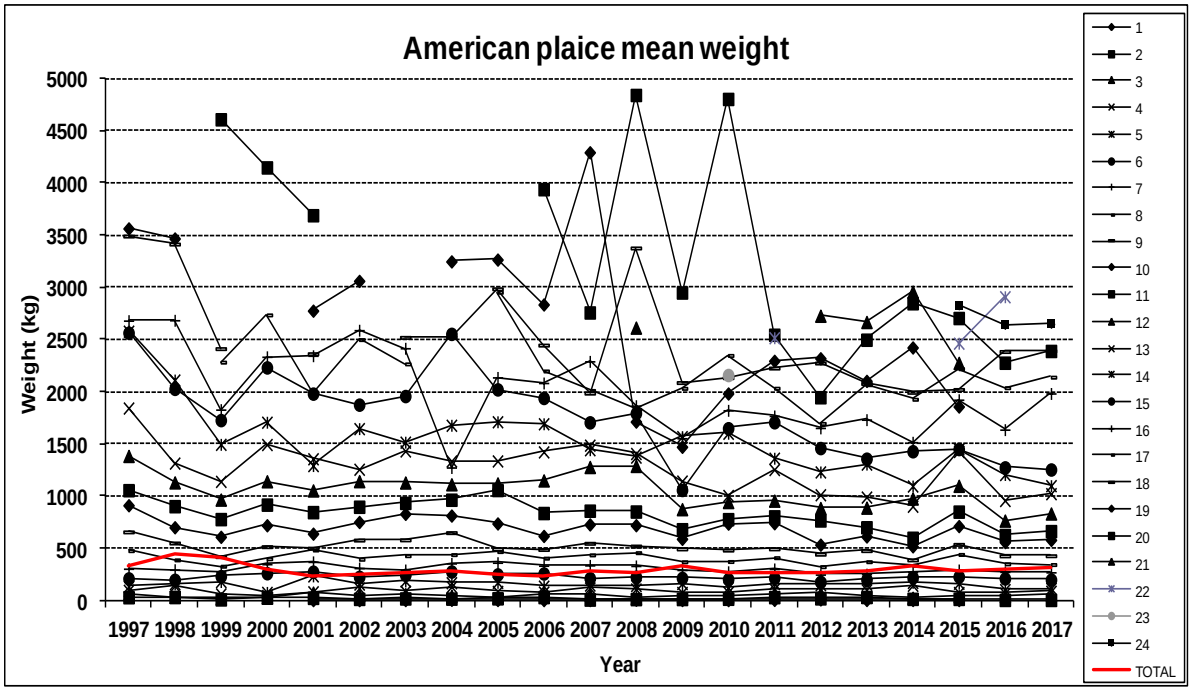

Fig. 15 American plaice mean weight (gr) at age on NAFO 3NO: 1997-2017. Data from 2013 to 2017 are in Table 20; data for 1997-2012 can be seen in SCR Doc 13/10. The 2016 ALK was not sexed. The 2017 ALK is not available yet, so the 2016 ALK was used.

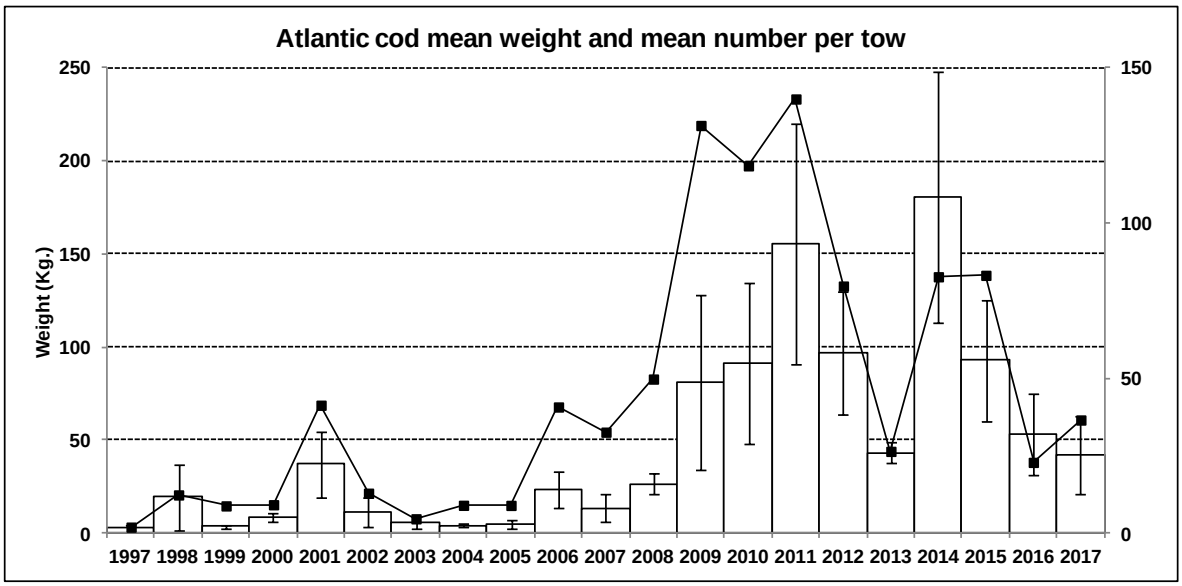

Fig. 16 Atlantic cod stratified mean catches in Kg and ±SD by year and mean number by year. Spanish Spring surveys in NAFO Div. 3NO: 1997-2017.

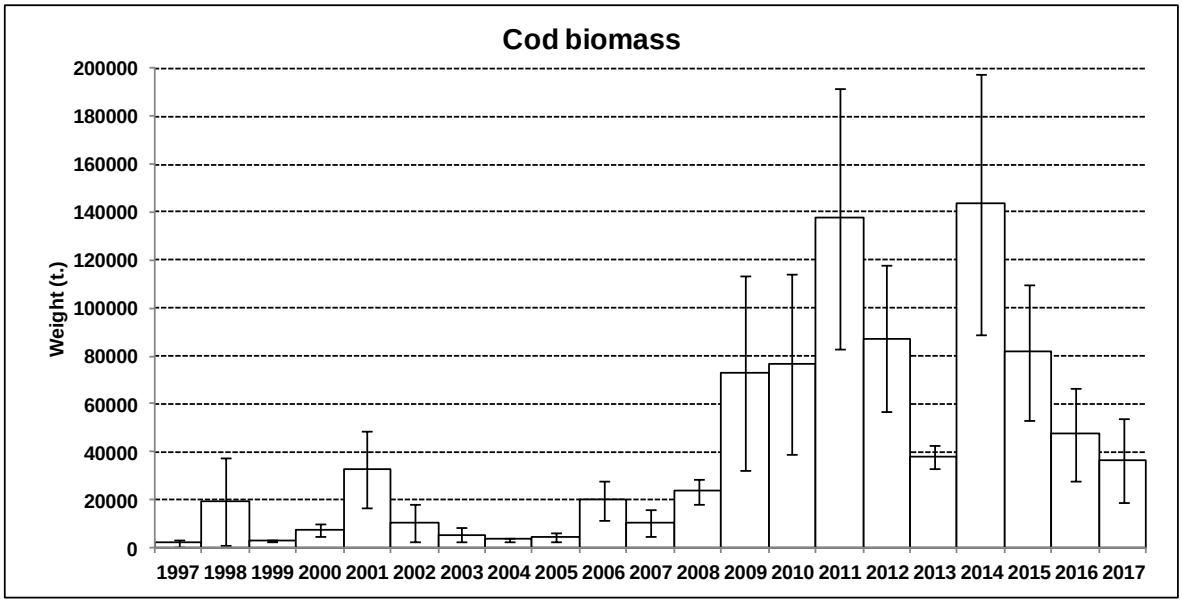

Fig. 17 Atlantic cod biomass calculated by the swept method in tons and ±SD by year. Spanish Spring surveys in NAFO Div. 3NO: 1997-2017.

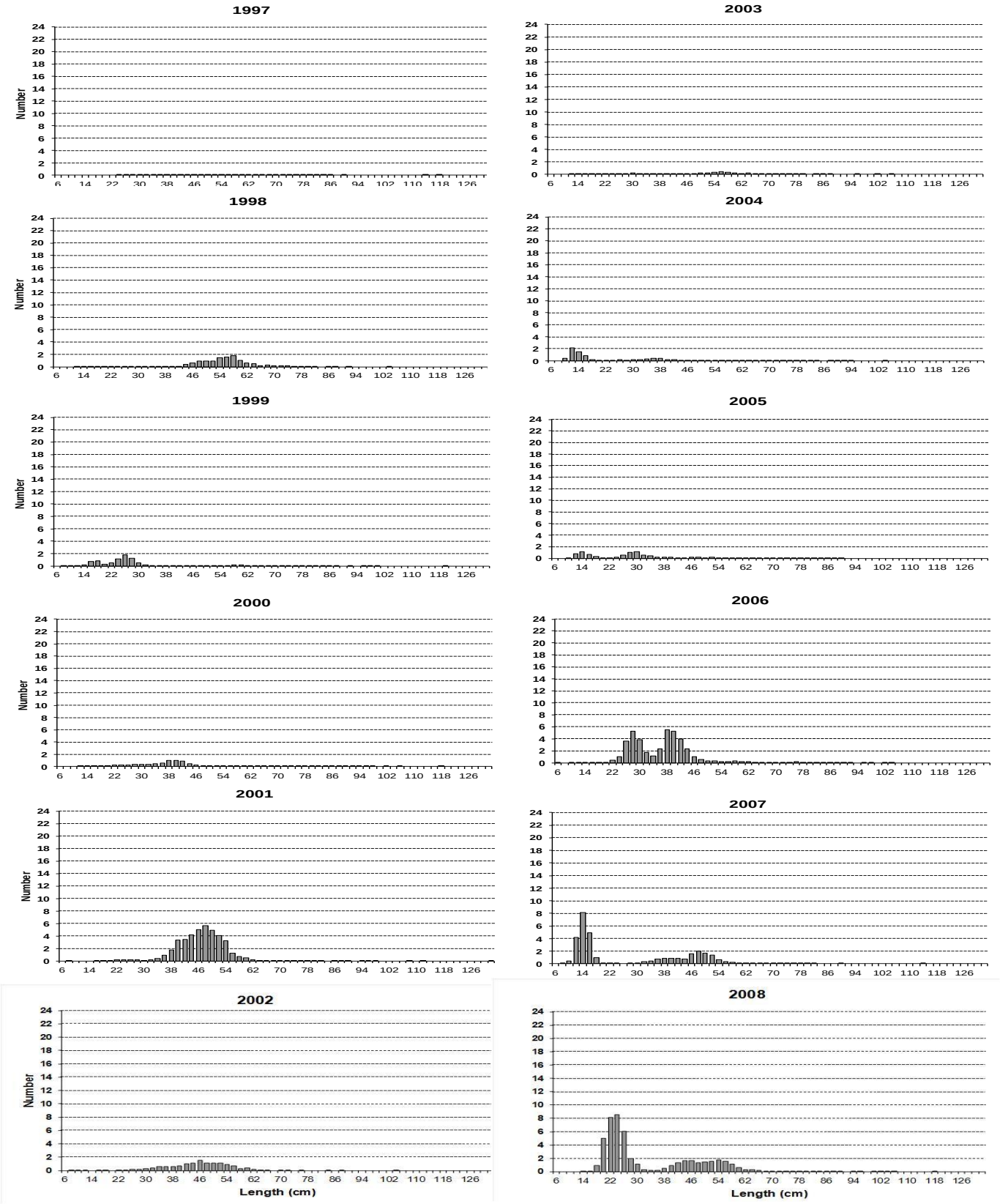

Fig. 18 Atlantic cod length distribution (cm) on NAFO 3NO: 1997-2017. Mean catches per tow number. Data from 2013 to 2017 are in Table 26; data for 1997-2012 can be seen in SCR Doc 13/10.

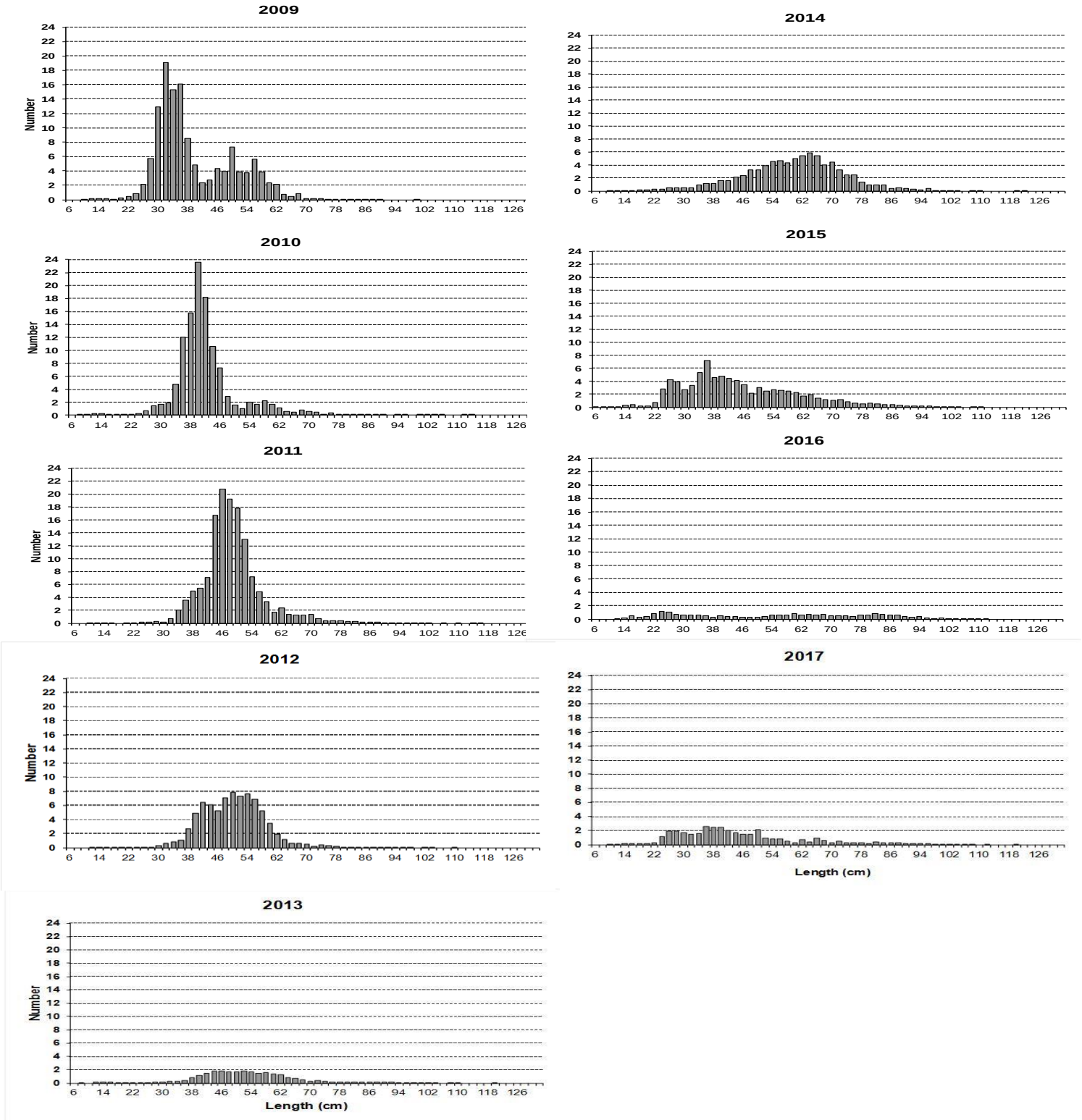

Fig.18 (cont.) Atlantic cod length distribution (cm) on NAFO 3NO: 1997-2017. Mean catches per tow number. Data from 2013 to 2017 are in Table 26; data for 1997-2012 can be seen in SCR Doc 13/10.

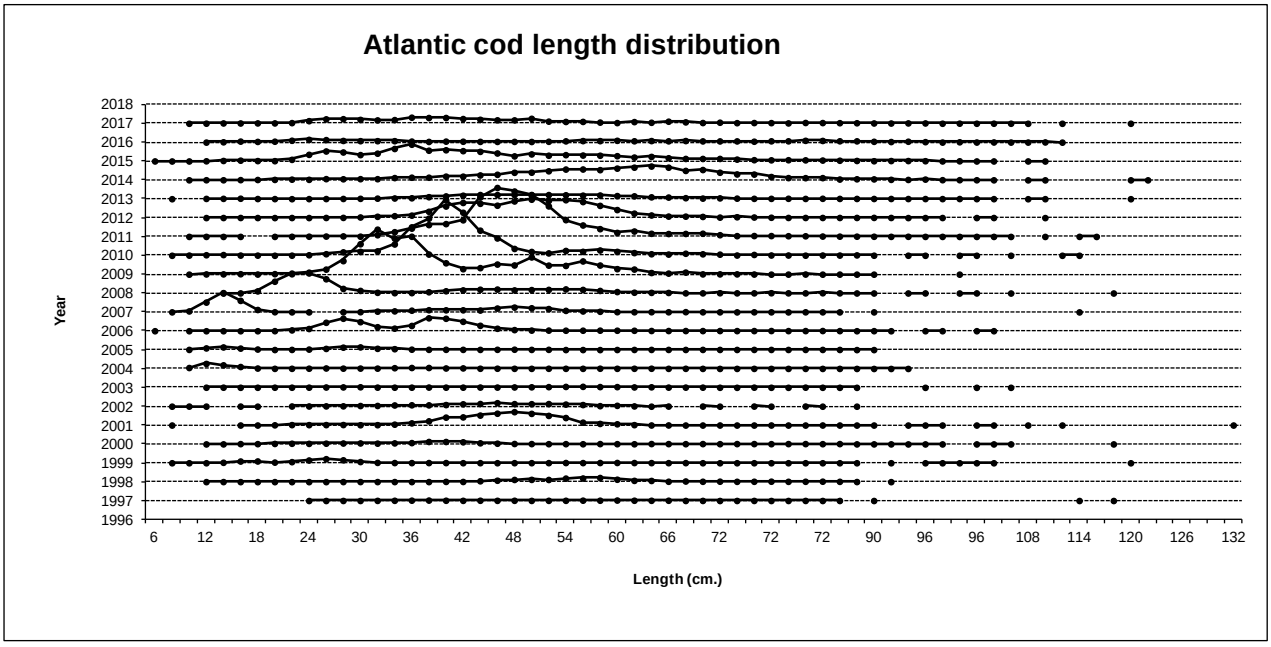

Fig. 19 Atlantic cod stratified mean catches in Kg and ±SD by year and mean number by year. Spanish Spring surveys in NAFO Div. 3NO: 1997-2017. Data from 2013 to 2017 are in Table 26; data for 1997-2012 can be seen in SCR Doc 13/10.

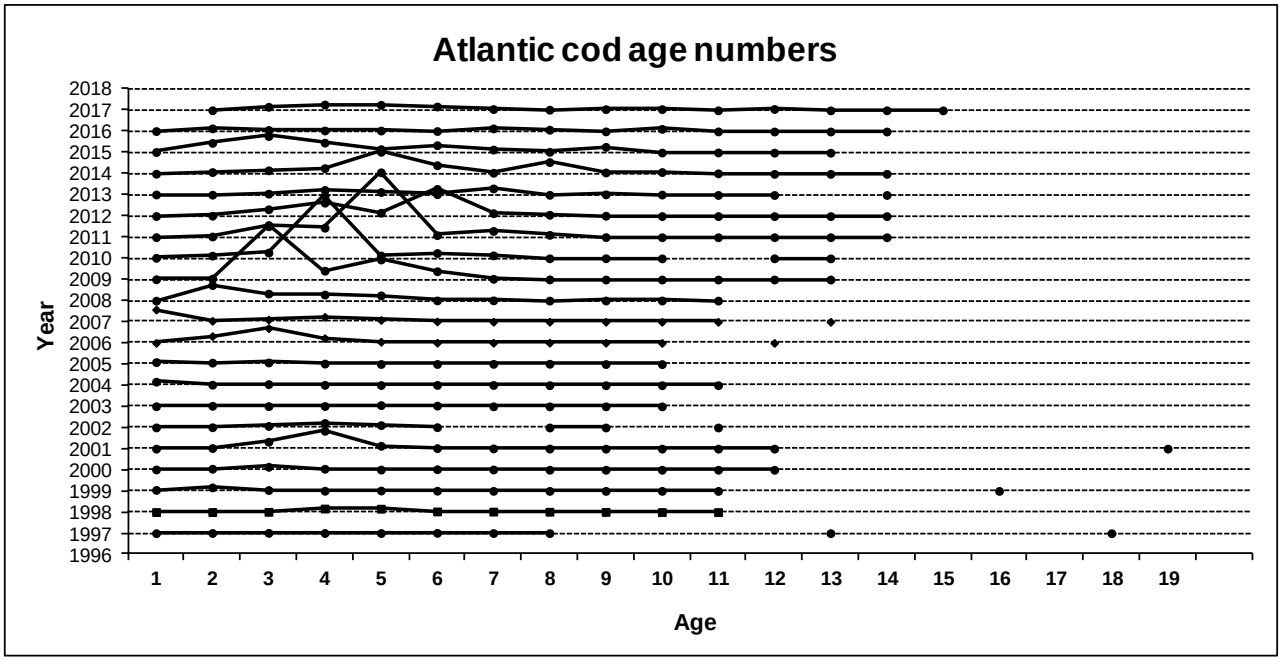

Fig.20 Atlantic cod biomass calculated by the swept method in tons and ±SD by year. Spanish Spring surveys in NAFO Div. 3NO: 1997-2017. Data from 2013 to 2017 are in Table 27; data for 1997-2012 can be seen in SCR Doc 13/10.

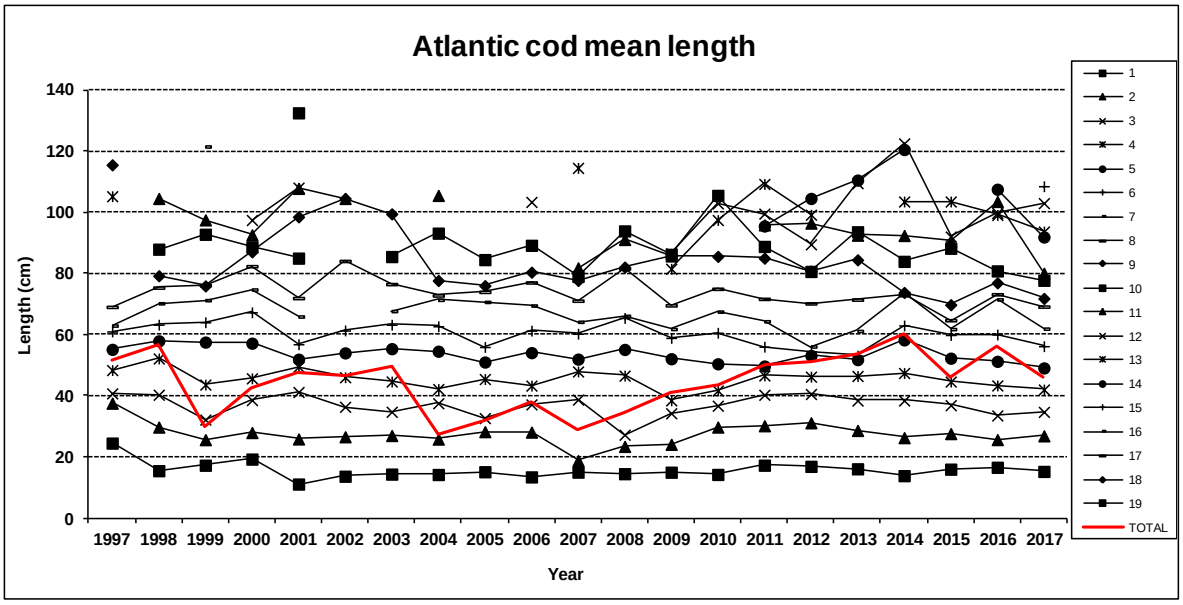

Fig.21 Atlantic cod mean length (cm) at age on NAFO 3NO: 1997-2017. Ages from 1 to 19. Data from 2013 to 2017 are in Table 28; data for 1997-2012 can be seen in SCR Doc 13/10.

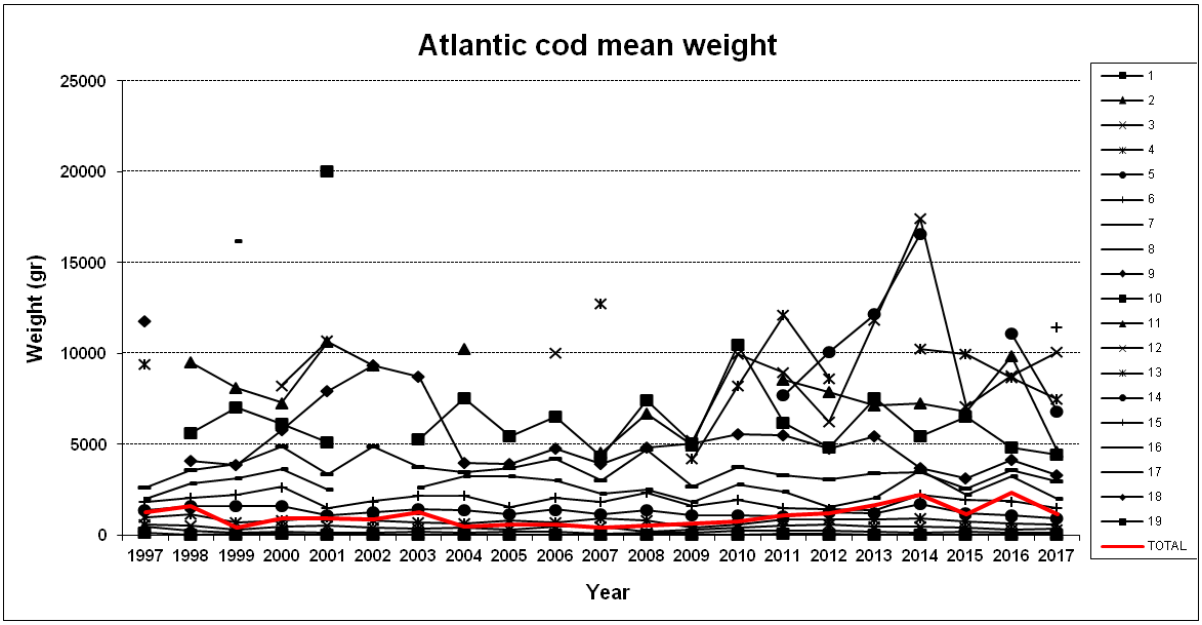

Fig. 22 Atlantic cod mean weight (gr) at age on NAFO 3NO: 1997-2017. Ages from 1 to 19. Data from 2013 to 2017 are in Table 29; data for 1997-2012 can be seen in SCR Doc 13/10.