Northwest Atlantic Fisheries Organization

Serial No. N6427 **NAFO SCR Doc. 15/007**

SCIENTIFIC COUNCIL MEETING – JUNE 2015

Results for Greenland halibut, American plaice and Atlantic cod of the Spanish survey in NAFO Div. 3NO for the period 1997-2014

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 town, length distribution and age distribution are presented for the last five years (2010-2014). 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 2011the biomass drops under the 2008 value, being stable since then. 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 2011-2014 the presence of all ages is poor. For American plaice we can see an increasing trend along the whole period, reaching a maximum of mean catch and number in 2006. 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. For Atlantic cod it can be seen a general decreasing in the biomass between 2002 and 2005 and an increasing since then, especially in 2006 and, higher, in 2009-2011, decreasing again in 2012-2013 but reaching the maximum in the series in 2014. 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.

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*. To know more details about the technical specifications of the surveys, see Walsh *et al.*, 2001 and González Troncoso *et al.*, 2004.

The catch of each haul was sorted and weighted into species and a sample of each species was taken in order to measure the length distribution. For Greenland halibut, American plaice and Atlantic cod each individual of the sample was measured to the total length to the nearest lower cm. As in1995 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 1997-2014.

The number of valid tows, the depth strata covered and the dates of the survey series (1997-2014) are presented in Table 1. Table 2 shows the swept area and number of hauls by stratum for the last five years (2010-2014). To know the results of the rest of the years, see González-Troncoso *et al.,* 2013.

For each species, we present all the transformed indices until 2000 and no-transformed from 2002 to 2014. 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 2009-2013. To see the results of the rest of the years, see González-Troncoso *et al*., 2013.

Figure 1 presents the maps with the distribution of the catches of the three species during the 2014 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 (1978-2013), EU in Div. 3M (1988-2013) and EU-Spain in Div. 3NO (1997-2013). In 2003 the Fisheries Commission implemented a fifteen years rebuilding plan for this stock, establishing progressively decreasing TACs. The catches in 2004-2010 have exceeded the rebuilding plan TACs by 30% on average, despite reductions in fishing effort. In 2011-2013, only STATLANT 21A catch data were available, so the data were inconsistent with regards last years assessments.

The exploitable biomass (age 5+) declined to low levels in 1995-97 due to very high catches and high fishing mortality. It increased during 1998-2000 due to greatly reduced catches, much lower fishing mortality and improved recruitment. Biomass increased over 2004-2008 with decreases in fishing mortality. However, it has shown decreases over 2008-2013, in part due to weaker year-classes recruiting to the biomass. The current assessment is based on surveys and results since 2004 shows greater divergence which complicates interpretation of overall status, but generally suggest stability in stock biomass over 2008-2013. The recruitment estimates for 2012 are very low (NAFO, 2014).

Mean catches and Biomass

Table 3 shows the mean catches and their variance per haul and year for Greenland halibut in the period 2010-2014. Biomass per stratum for the same period is presented in Table 4. Annual total biomass, as the biomass corresponding to ages 5+ and 10+, and mean weight per tow with the total variance per year are presented in Table 5 for years 1997-2014. 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 2010-2014.

Greenland halibut biomass increased from 6 859 t in 1997 to 11 305 t in 1999, then it decreased until 2002 (2 380 t), reaching the lowest value of the whole time-series. From 2002 to 2007, it maintained almost constant values at very low levels (3 282 t in 2007). It peaked in 2009 (12 927 t) and in 2010 (12 462 t), and after decreasing in 2011 to a half of the 2010 value (6 483 t), it has maintained stable at higher values than before 2008 (5 482 t in 2014). The biomass 5+ has had the same trend as the total biomass with a marked increase during 2008-2010, being the highest values of the series, and a decreasing in 2011 being stable since then. Since 2007, the 5+ biomass represents more than the 90% of total biomass. In the case of the 10+ biomass, it increased from 182 t in 2006 to 1 587 t in 2012 (maximum value of the time-series) and then maintained almost constant values until 2014 (1 529 t). 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 biomass, 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.

Length Distribution
Table 7 presents the mean number per tow by sex and year for 1997-2014. 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 2010-2014. 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 appears. 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. In 2012-2014 the presence of all the length classes was poor.

Age numbers
We present the mean number by age, sex and year in Table 9 for 2010-2014 and the total by year (for the entire series) in Figure 6. Individuals between 0 and 20 years were caught in the period 1997-2014 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. In 2014 the mode is at 7 years old, but the presence of all the year classes, including the recruitment, is very weak.

Mean length and mean weight
Mean length and weight at age by sex for 2010-2014 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 falled in the youngest individuals. In 2011-2014 the mean length and weight were more or less constant, although it seems to be lower for the oldest ages. The total mean length and the total mean weight have increased since 2006.

<u>American plaice</u>
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 very low compared to historic levels. SSB declined to the lowest estimated level in 1994 and 1995. It has increased since then but still remains very low. Although estimated recruitment at age 5 has been higher from 2003-2008 than from 1995-2002, recruitment has been low since the late 1980s (NAFO, 2014).

Mean catches and Biomass
American plaice mean catches and SD by stratum are presented in Table 12 for 2010-2014. Biomass for stratum for the same period is presented in Table 13.

The annual entire time series (1997-2014) 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 2010-2014.

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 of 21 827 t in 1997 to 152 997 t in 2000. Since then, it fluctuated from a minimum of 6 951 t in 2002 to maximun values of 170 910 in 2006 and 172 735 t in 2008. It decreased substantially from 155 264 t in 2013 to 85 691 t in 2014 (Table 14; Figures 9 and 10).

Length Distribution
Table 16 shows the mean number per tow by sex and year for 1997-2014, and Table 17 the same index by length for 2010-2014, 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 2011and 34 cm in 2012, but the mode length in those years is 28, as in 2009. 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 12-14 cm appears in 2014.

Age numbers
We present the mean number per tow at age by sex and by year (2010-2014) in Table 18 and the total by year (1997-2014) 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 16 year old in 2014 (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 2014, reaching 12 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 2014 eleven years old. The cohorts from 2005 to 2007 seem to be quite good, too.

Mean length and mean weight
Mean length and weight at age by sex for 2010-2014 are presented in Tables 19 and 20, and shown in Figures 14 and 15. 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. The 2013 spawning biomass has doubled since 2010 but remains well below 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). More recent year classes do not appear strong. The 2013 indices were not considered to indicate a significant change in the status of the stock (NAFO, 2014).

Mean Catches and Biomass
Atlantic cod mean catches and SD by stratum are presented in Table 21 for 2010-2014. Biomass by stratum and year are presented in Table 22 for the same period.

The entire time series (1997-2014) 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 2010-2014.

Biomass of cod presents very poor values between 1997 (2 131 t) and 2005 (4 509 t) with some fluctuations and a great deviation due to a few hauls in which the presence of that species was very high (e.g. 32 548 t in 2001). Since 2006 an increasing trend in the biomass of this species can be seen. Although the 2006 increase (19 921 t) 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 (23 817 t), 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 (143 299 t) after a decrease in 2012 and 2013 (Table 23; Figures 16 and 17). In 2014 there were five hauls with more than 1 ton catch, two of them with more than 3 tons and one with more than 8 tons of catch.

Length Distribution

Table 25 presents the mean number per tow by year for 1997-2014 and this index by length for the period 2010-2014 can be seen in Table 26, besides the sampled size and its catch. Figures 18 and 19 show the length distribution by year (1997-2014). 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 2008-2014 we can follow the evolution of these lengths. In 2014 the mode is in 64 cm, with no trace of good recruitment.

Age numbers

The mean number per tow at age by sex and year (2010-2014) is presented in Table 27 and the total by year (1997-2014) 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 we can follow (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.

Mean length and mean weight

Mean length and weight at age by sex over time are presented in Tables 28 and 29 (2010-2014), and shown in Figures 21 and 22 (1997-2014). 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, and since then they increased.

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Table 1. Spanish spring bottom trawl surveys in NAFO Div. 3NO: 1997-2014.

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

(*)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: 2010-2014. Swept area in square miles. n.s. means stratum not surveyed.

	2010		2011		2012		2013		2014	
Stratum	Swept area	Tow number	Swept area	Tow number	Swept area	Tow number	Swept area	Tow number	Swept area	Tow number
353	0.0225	2	0.0349	3	0.0338	3	0.0349	3	0.0379	3
354	0.0225	2	0.0345	3	0.0338	3	0.0338	3	0.0394	3
355	0.0229	2	0.0233	2	0.0229	2	0.0225	2	0.0263	2
356	0.0225	2	0.0229	2	0.0225	2	0.0225	2	0.0266	2
357	0.0225	2	0.0225	2	0.0229	2	0.0236	2	0.0263	2
358	0.0225	2	0.0345	3	0.0330	3	0.0338	3	0.0390	3
359	0.0705	6	0.0806	7	0.0806	7	0.0829	7	0.0908	7
360	0.1628	14	0.2374	20	0.2344	20	0.2231	19	0.2629	20
374	0.0225	2	0.0225	2	0.0229	2	0.0233	2	0.0259	2
375	0.0364	3	0.0360	3	0.0349	3	0.0360	3	0.0390	3
376	0.0788	7	0.1178	10	0.1181	10	0.1305	11	0.1324	10
377	0.0233	2	0.0233	2	0.0229	2	0.0236	2	0.0259	2
378	0.0225	2	0.0240	2	0.0229	2	0.0225	2	0.0263	2
379	0.0229	2	0.0221	2	0.0225	2	0.0240	2	0.0255	2
380	0.0236	2	0.0229	2	0.0229	2	0.0229	2	0.0263	2
381	0.0244	2	0.0233	2	0.0221	2	0.0244	2	0.0259	2
382	0.0233	2	0.0450	4	0.0454	4	0.0484	4	0.0521	4
721	0.0225	2	0.0229	2	0.0233	2	0.0225	2	0.0266	2
722	0.0225	2	0.0225	2	0.0221	2	0.0221	2	0.0259	2
723	0.0225	2	0.0218	2	0.0225	2	0.0221	2	0.0259	2
724	0.0229	2	0.0233	2	0.0225	2	0.0225	2	0.0255	2
725	0.0233	2	0.0240	2	0.0225	2	0.0229	2	0.0255	2
726	0.0233	2	0.0225	2	0.0221	2	0.0221	2	0.0248	2
727	0.0240	2	0.0225	2	0.0233	2	0.0229	2	0.0259	2
728	0.0240	2	0.0229	2	0.0229	2	0.0233	2	0.0248	2
752	0.0240	2	0.0236	2	0.0229	2	0.0233	2	0.0240	2
753	n.s.	n.s.	0.0225	2	0.0221	2	0.0236	2	0.0240	2
754	0.0225	2	0.0225	2	0.0221	2	0.0240	2	0.0225	2
755	0.0120	1	0.0454	4	0.0446	4	0.0454	4	0.0454	4
756	0.0225	2	0.0206	2	0.0221	2	0.0229	2	0.0229	2
757	0.0221	2	0.0236	2	0.0214	2	0.0240	2	0.0244	2
758	0.0225	2	0.0225	2	0.0221	2	0.0225	2	0.0221	2
759	0.0225	2	0.0218	2	0.0221	2	0.0225	2	0.0229	2
760	0.0225	2	0.0214	2	0.0225	2	0.0229	2	0.0364	3
761	0.0229	2	0.0236	2	0.0221	2	0.0225	2	0.0240	2
762	0.0229	2	0.0225	2	0.0225	2	0.0218	2	0.0229	2
763	n.s.	n.s.	0.0349	3	0.0330	3	0.0341	3	0.0233	2
764	n.s.	n.s.	0.0225	2	0.0225	2	0.0214	2	0.0259	2
765	0.0225	2	0.0225	2	0.0229	2	0.0221	2	0.0240	2
766	0.0225	2	0.0225	2	0.0225	2	0.0221	2	0.0221	2
767	n.s.	n.s.	0.0233	2	0.0203	2	0.0218	2	0.0221	2

Table 3. Greenland halibut mean catch (kg) and SD by stratum. Spanish Spring Surveys in NAFO Div. 3NO: 2010-2014. n.s. means stratum not surveyed.

	2010		2011		2012		2013		2014	
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	0.04	0.06	0.78	0.82	0.36	0.46	2.81	2.97	0.25	0.25
354	0.80	0.03	0.08	0.14	0.30	0.40	0.13	0.10	0.08	0.12
355	5.16	3.73	2.44	2.73	0.73	0.79	0.14	0.02	0.22	0.15
356	3.41	0.37	1.48	0.37	0.14	0.20	0.30	0.32	0.33	0.30
357	1.77	0.76	0.18	0.14	0.13	0.10	0.03	0.05	0.37	0.49
358	8.23	11.44	0.27	0.38	0.00	0.00	0.12	0.20	0.09	0.15
359	0.19	0.40	0.06	0.09	0.06	0.13	0.03	0.09	0.33	0.86
360	0.03	0.10	0.00	0.02	0.00	0.00	0.01	0.06	0.01	0.05
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	0.01	0.02	0.01	0.02	0.00	0.00	0.00	0.00	0.01	0.01
378	1.11	1.56	0.04	0.03	0.00	0.00	0.00	0.00	0.22	0.31
379	0.55	0.01	2.26	3.07	4.56	3.48	0.58	0.19	1.21	0.88
380	2.55	2.42	4.53	1.00	3.30	1.12	7.63	2.97	0.92	1.24
381	0.10	0.08	0.68	0.02	0.01	0.01	0.00	0.00	0.04	0.06
382	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
721	6.98	7.84	17.80	7.87	3.90	1.20	3.17	4.45	0.27	0.31
722	44.80	24.75	22.12	2.07	33.38	39.30	18.30	11.34	12.80	4.75
723	7.22	7.34	7.03	9.68	7.77	3.40	6.35	8.79	1.16	1.47
724	31.31	7.62	13.85	2.19	14.99	8.91	6.90	6.60	11.96	13.26
725	11.31	8.34	5.73	1.14	6.16	0.70	1.97	0.04	1.29	0.09
726	37.45	9.40	20.33	2.87	25.33	1.22	10.86	0.71	7.93	3.61
727	72.69	37.82	26.29	10.16	37.78	33.12	40.56	41.80	21.39	3.03
728	110.47	78.81	47.33	20.05	18.77	10.28	15.20	9.79	14.94	5.95
752	60.80	15.98	24.10	9.75	21.96	3.59	16.91	1.92	29.69	8.04
753	n.s.	n.s.	26.57	0.33	27.90	10.89	13.27	8.84	37.60	28.28
754	65.35	30.48	20.90	17.82	23.42	1.29	31.42	38.45	19.95	5.02
755	46.40	-	15.09	11.23	14.12	7.50	12.21	2.12	26.00	19.72
756	128.97	50.45	23.30	13.44	33.86	31.11	16.18	17.45	35.19	9.88
757	48.32	7.19	12.38	2.71	46.23	41.68	34.86	34.14	31.02	7.87
758	72.30	48.93	10.83	3.92	27.56	4.78	32.55	7.49	33.94	7.50
759	66.95	33.02	18.27	14.47	22.09	7.76	32.81	7.57	12.35	5.97
760	54.30	23.48	30.50	33.38	32.07	11.36	28.03	4.24	18.42	10.50
761	54.64	37.72	36.28	12.86	33.38	18.63	15.12	6.07	36.81	7.44
762	68.15	55.65	41.67	8.44	14.68	7.16	7.17	2.84	19.16	3.79
763	n.s.	n.s.	17.93	11.36	27.47	17.71	9.49	1.43	10.58	2.68
764	n.s.	n.s.	32.86	11.57	35.52	16.26	23.92	13.70	21.79	5.40
765	31.62	15.62	14.02	6.51	20.79	0.51	11.97	8.99	10.94	12.62
766	26.37	9.84	15.10	8.37	25.59	22.44	15.75	18.84	12.70	2.36
767	n.s.	n.s.	18.02	19.18	4.42	1.73	7.21	7.64	9.93	0.54

Table 4. Greenland halibut survey biomass (t) by stratum in NAFO Div. 3NO: 2010-2014. n.s. means stratum not surveyed.

Strata	2010	2011	2012	2013	2014	Strata	2010	2011	2012	2013	2014
353	1	18	9	65	5	**725**	102	50	57	18	11
354	18	2	7	3	2	**726**	232	130	165	71	46
355	33	16	5	1	1	**727**	581	224	312	340	159
356	14	6	1	1	1	**728**	718	323	128	102	94
357	26	3	2	0	5	**752**	664	267	252	191	324
358	165	5	0	2	2	**753**	0	326	348	155	432
359	7	2	2	1	11	**754**	1046	334	381	471	319
360	8	1	0	3	3	**755**	1489	512	487	414	883
374	0	0	0	0	0	**756**	1158	228	309	143	311
375	0	0	0	0	0	**757**	445	107	441	296	260
376	0	0	0	0	0	**758**	636	95	247	286	304
377	0	0	0	0	0	**759**	756	213	254	370	137
378	14	0	0	0	2	**760**	743	439	439	377	234
379	5	22	43	5	10	**761**	817	525	516	230	525
380	21	38	28	64	7	**762**	1263	785	277	140	355
381	1	8	0	0	0	**763**	0	403	652	218	237
382	0	0	0	0	0	**764**	0	292	307	224	168
721	40	101	22	18	1	**765**	348	154	225	134	113
722	335	165	248	139	83	**766**	337	193	327	205	165
723	100	100	107	89	14	**767**	0	245	69	105	142
724	339	148	165	76	116						

Table 5. Greenland halibut survey biomass (t) with SD and stratified mean catch per tow (kg) and SD by in NAFO Div. 3NO: 1997-2014.

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

Year	2006	2007	2008	2009	2010	2011	2012	2013	2014
Biomass	2720	3286	7272	12927	12462	6483	6830	4959	5482
SD	379	363	708	1506	1197	593	631	606	465
Biomass 5+	2151	3057	6908	11971	12057	6091	6297	4697	5322
Biomass 10+	182	343	798	1134	1158	1163	1587	1319	1529
MCPT	3.03	3.98	7.66	14.78	14.80	7.09	7.37	5.46	6.24
SD	0.42	0.44	0.74	1.73	1.40	0.63	0.69	0.47	0.53

Table 6. Greenland halibut length weight relationships in Spanish Spring Surveys in NAFO Div. 3NO: 2010-2014. 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**
2010	**0.00414**	**3.16630**	0.0927	0.0267	0.997	379	**0.0043**	**3.1713**	0.0802	0.0221	0.997	546	**0.0040**	**3.1909**	0.0705	0.0194	0.998	925
2011	**0.00540**	**3.09233**	0.1308	0.0378	0.993	516	**0.0029**	**3.2753**	0.0688	0.0186	0.998	871	**0.0033**	**3.2445**	0.0666	0.0185	0.998	1401
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

Table 7. Greenland halibut mean number per tow by year in Spanish Spring Surveys in NAFO Div. 3NO: 1997-2014. 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			
	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

Table 8. Greenland halibut mean number per tow by length class and year. Spanish Spring Survey in NAFO 3NO: 2010-2014. Indet. means indeterminate.

	2010				2011				2012				2013				2014			
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	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.005	0.000	0.000	0.000	0.000
8	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.004	0.004
10	0.029	0.053	0.000	0.082	0.018	0.010	0.034	0.061	0.000	0.000	0.000	0.000	0.013	0.013	0.016	0.041	0.078	0.064	0.000	0.142
12	0.078	0.091	0.005	0.175	0.220	0.195	0.042	0.458	0.000	0.030	0.010	0.040	0.101	0.071	0.028	0.200	0.149	0.109	0.000	0.258
14	0.047	0.062	0.005	0.114	0.455	0.773	0.031	1.259	0.018	0.019	0.000	0.036	0.017	0.014	0.000	0.031	0.049	0.020	0.000	0.069
16	0.011	0.035	0.000	0.046	0.121	0.275	0.000	0.396	0.004	0.003	0.000	0.007	0.048	0.058	0.000	0.106	0.062	0.038	0.000	0.100
18	0.094	0.089	0.000	0.183	0.013	0.064	0.000	0.077	0.017	0.026	0.000	0.043	0.056	0.099	0.000	0.155	0.101	0.088	0.000	0.189
20	0.515	0.469	0.000	0.984	0.101	0.112	0.000	0.213	0.058	0.075	0.000	0.133	0.057	0.066	0.000	0.122	0.118	0.224	0.000	0.342
22	0.329	0.496	0.000	0.825	0.261	0.261	0.000	0.522	0.139	0.241	0.000	0.380	0.053	0.058	0.000	0.111	0.237	0.348	0.000	0.585
24	0.256	0.427	0.000	0.683	0.191	0.255	0.000	0.446	0.348	0.526	0.000	0.874	0.026	0.033	0.000	0.058	0.081	0.197	0.000	0.278
26	0.090	0.215	0.000	0.306	0.117	0.146	0.000	0.263	0.358	0.625	0.000	0.983	0.005	0.000	0.000	0.005	0.020	0.033	0.000	0.053
28	0.083	0.075	0.000	0.157	0.052	0.086	0.000	0.138	0.222	0.284	0.000	0.506	0.063	0.035	0.000	0.098	0.016	0.023	0.000	0.040
30	0.137	0.211	0.000	0.348	0.100	0.174	0.000	0.275	0.084	0.083	0.000	0.167	0.086	0.136	0.000	0.222	0.022	0.000	0.000	0.022
32	0.228	0.236	0.000	0.464	0.166	0.147	0.000	0.313	0.126	0.106	0.000	0.232	0.111	0.228	0.000	0.339	0.035	0.033	0.000	0.068
34	0.256	0.287	0.000	0.543	0.109	0.150	0.000	0.259	0.112	0.163	0.000	0.275	0.123	0.252	0.000	0.374	0.039	0.073	0.000	0.112
36	0.405	0.456	0.000	0.861	0.104	0.106	0.000	0.210	0.195	0.146	0.000	0.341	0.124	0.138	0.000	0.262	0.059	0.073	0.000	0.132
38	0.526	0.749	0.000	1.276	0.156	0.214	0.000	0.370	0.152	0.326	0.000	0.478	0.146	0.278	0.000	0.424	0.121	0.136	0.000	0.258
40	0.551	1.271	0.000	1.822	0.176	0.271	0.000	0.447	0.232	0.393	0.000	0.625	0.137	0.174	0.000	0.311	0.125	0.126	0.000	0.251
42	0.595	1.427	0.000	2.022	0.226	0.375	0.000	0.601	0.253	0.417	0.000	0.670	0.149	0.379	0.000	0.528	0.214	0.275	0.000	0.489
44	0.439	1.505	0.000	1.944	0.172	0.402	0.000	0.574	0.240	0.450	0.000	0.690	0.098	0.359	0.000	0.457	0.186	0.323	0.000	0.509
46	0.497	1.133	0.000	1.630	0.291	0.338	0.000	0.629	0.239	0.368	0.000	0.607	0.166	0.364	0.000	0.530	0.246	0.362	0.000	0.609
48	0.643	1.057	0.000	1.700	0.257	0.457	0.000	0.714	0.228	0.388	0.000	0.616	0.152	0.285	0.000	0.437	0.123	0.378	0.000	0.501
50	0.472	1.040	0.000	1.512	0.196	0.468	0.000	0.664	0.144	0.326	0.000	0.470	0.107	0.205	0.000	0.312	0.190	0.472	0.000	0.663
52	0.149	0.828	0.000	0.978	0.134	0.399	0.000	0.534	0.121	0.298	0.000	0.419	0.156	0.243	0.000	0.399	0.139	0.241	0.000	0.380
54	0.122	0.587	0.000	0.709	0.100	0.324	0.000	0.424	0.067	0.304	0.000	0.371	0.093	0.223	0.000	0.317	0.106	0.260	0.000	0.366
56	0.076	0.402	0.000	0.478	0.055	0.227	0.000	0.282	0.063	0.241	0.000	0.304	0.071	0.139	0.000	0.210	0.090	0.184	0.000	0.275
58	0.021	0.334	0.000	0.356	0.046	0.181	0.000	0.228	0.018	0.219	0.000	0.237	0.038	0.079	0.000	0.116	0.007	0.162	0.000	0.170
60	0.006	0.169	0.000	0.176	0.006	0.165	0.000	0.171	0.015	0.187	0.000	0.202	0.023	0.156	0.000	0.179	0.000	0.148	0.000	0.148
62	0.000	0.088	0.000	0.088	0.000	0.099	0.000	0.099	0.000	0.116	0.000	0.116	0.017	0.130	0.000	0.146	0.000	0.095	0.000	0.095
64	0.000	0.083	0.000	0.083	0.000	0.051	0.000	0.051	0.000	0.064	0.000	0.064	0.000	0.072	0.000	0.072	0.000	0.073	0.000	0.073
66	0.000	0.034	0.000	0.034	0.006	0.017	0.000	0.023	0.000	0.025	0.000	0.025	0.000	0.049	0.000	0.049	0.000	0.068	0.000	0.068
68	0.000	0.016	0.000	0.016	0.000	0.012	0.000	0.012	0.000	0.033	0.000	0.033	0.000	0.030	0.000	0.030	0.000	0.062	0.000	0.062
70	0.000	0.026	0.000	0.026	0.000	0.005	0.000	0.005	0.000	0.025	0.000	0.025	0.000	0.015	0.000	0.015	0.000	0.025	0.000	0.025
72	0.000	0.006	0.000	0.006	0.000	0.010	0.000	0.010	0.000	0.041	0.000	0.041	0.000	0.022	0.000	0.022	0.000	0.057	0.000	0.057
74	0.000	0.006	0.000	0.006	0.000	0.005	0.000	0.005	0.000	0.025	0.000	0.025	0.000	0.025	0.000	0.025	0.000	0.028	0.000	0.028
76	0.000	0.000	0.000	0.000	0.000	0.026	0.000	0.026	0.000	0.021	0.000	0.021	0.000	0.006	0.000	0.006	0.000	0.039	0.000	0.039
78	0.000	0.000	0.000	0.000	0.000	0.021	0.000	0.021	0.000	0.005	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.015	0.000	0.015
80	0.000	0.000	0.000	0.000	0.000	0.008	0.000	0.008	0.000	0.000	0.000	0.000	0.000	0.024	0.000	0.024	0.000	0.000	0.000	0.000
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	0.000	0.000	0.000	0.000	0.000	0.000	0.000
84	0.000	0.007	0.000	0.007	0.000	0.000	0.000	0.000	0.000	0.016	0.000	0.016	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	0.009	0.000	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
88	0.000	0.000	0.000	0.000	0.000	0.008	0.000	0.008	0.000	0.005	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
90	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.006	0.000	0.006	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	0.005	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
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	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
Nº samples:				63				77				67				67				77
Nº Ind.:	994	2045	2	3041	701	1211	15	1927	549	1073	2	1624	378	756	8	1142	467	863	1	1331
Sampled catch:				2062				1082				1149				857				956
Range:				10-94				10-89				12-89				7-90				9-79
Total catch:				2095				1112				1197				885				961
Total hauls:				95				122				122				122				122

Table 9. Greenland halibut mean number per tow by age, sex and year. Spanish Spring Survey in NAFO 3NO: 2010-2014. Indet. means indeterminate.

	2010				2011				2012				2013				2014			
Age	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
0																				
1	0.16	0.20	0.01	0.37	0.81	1.28	0.11	2.20	0.02	0.05	0.01	0.08	0.13	0.09	0.05	0.27	0.31	0.20	0.00	0.51
2	1.02	1.18		2.21	0.60	0.70		1.30	0.65	1.15		1.80	0.20	0.26		0.45	0.46	0.83		1.28
3	0.32	0.62		0.94	0.19	0.29		0.48	0.63	0.71		1.34	0.09	0.14		0.23	0.14	0.12		0.26
4	0.35	0.38		0.73	0.27	0.34		0.62	0.17	0.27		0.44	0.24	0.57		0.81	0.04	0.11		0.14
5	1.62	1.80		3.42	0.38	0.56		0.95	0.47	0.62		1.09	0.40	0.78		1.17	0.26	0.29		0.54
6	1.29	4.29		5.58	0.94	1.07		2.01	0.55	1.16		1.71	0.46	1.01		1.48	0.69	0.96		1.65
7	1.59	3.56		5.16	0.53	1.60		2.12	0.77	1.23		2.00	0.55	0.67		1.22	0.60	1.14		1.74
8	0.24	0.99		1.23	0.08	0.35		0.43	0.13	0.41		0.54	0.07	0.26		0.33	0.10	0.35		0.45
9	0.03	0.36		0.39	0.03	0.20		0.22	0.03	0.37		0.40	0.06	0.15		0.21	0.03	0.18		0.21
10	0.03	0.23		0.26	0.00	0.23		0.24	0.03	0.31		0.34	0.02	0.22		0.24		0.23		0.23
11		0.24		0.24	0.00	0.05		0.05		0.11		0.11	0.01	0.13		0.13		0.18		0.18
12		0.04		0.04	0.01	0.05		0.06		0.05		0.05		0.09		0.09		0.11		0.11
13		0.02		0.02		0.02		0.02		0.06		0.06		0.03		0.03		0.05		0.05
14		0.03		0.03		0.06		0.06		0.05		0.05		0.04		0.04		0.03		0.03
15		0.02		0.02		0.01		0.01		0.01		0.01		0.01		0.01		0.03		0.03
16						0.02		0.02		0.03		0.03		0.02		0.02		0.03		0.03
17						0.01		0.01		0.02		0.02		0.01		0.01				
18		0.01		0.01						0.01		0.01		0.01		0.01				
19																				
20																				
Total	6.66	13.98	0.01	20.65	3.85	6.85	0.11	10.80	3.45	6.62	0.01	10.08	2.23	4.46	0.05	6.75	2.61	4.85	0.00	7.47

Table 10. Greenland halibut mean length (cm) per tow by age, sex and year. Spanish Spring Survey in NAFO 3NO: 2010-2014. Indet. means indeterminate.

	2010				2011				2012				2013				2014			
Age	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
0																				
1	13.26	12.91	14.00	13.09	14.65	15.16	13.17	14.88	15.14	14.30	13.50	14.41	13.13	12.88	12.06	12.85	13.15	12.75	9.50	12.96
2	22.06	22.56		22.33	23.46	23.44		23.45	24.91	25.23		25.12	19.77	19.69		19.73	21.35	22.28		21.95
3	25.18	25.03		25.08	29.13	29.26		29.21	28.30	27.61		27.94	27.00	27.13		27.08	24.48	24.88		24.66
4	31.97	31.97		31.97	32.87	33.09		32.99	33.83	34.15		34.02	32.39	33.72		33.33	31.78	34.53		33.80
5	38.49	38.55		38.52	38.60	39.62		39.21	38.41	39.21		38.87	37.55	40.07		39.21	38.51	39.07		38.80
6	44.03	43.93		43.96	45.54	44.62		45.05	43.29	43.64		43.52	44.02	45.49		45.03	43.97	44.98		44.56
7	48.89	49.20		49.10	51.33	51.33		51.33	49.03	49.50		49.32	51.04	51.26		51.16	51.07	50.95		50.99
8	54.07	54.76		54.62	56.53	54.66		55.02	54.63	55.18		55.05	56.36	55.64		55.80	56.10	54.58		54.91
9	56.15	56.84		56.79	56.78	58.14		57.97	57.28	57.15		57.16	58.34	56.39		56.95	57.50	57.47		57.47
10	58.30	59.79		59.63	61.50	61.16		61.17	58.40	60.38		60.21	61.14	61.68		61.63		60.91		60.91
11		62.40		62.40	61.50	63.34		63.29		63.57		63.57	63.50	63.69		63.68		64.75		64.75
12		65.39		65.39	67.50	65.30		65.54		66.62		66.62		65.43		65.43		67.25		67.25
13		67.40		67.40		63.40		63.40		68.66		68.66		71.23		71.23		74.39		74.39
14		72.72		72.72		75.62		75.62		72.80		72.80		71.72		71.72		73.34		73.34
15		76.19		76.19		77.38		77.38		72.50		72.50		74.50		74.50		74.91		74.91
16						85.57		85.57		75.50		75.50		80.98		80.98		76.20		76.20
17						86.50		86.50		84.50		84.50		81.50		81.50				
18		94.50		94.50						89.50		89.50		90.50		90.50				
19																				
20																				
Total	38.67	43.07	14.00	41.64	34.36	39.15	13.17	37.18	37.75	42.30	13.50	40.71	39.73	44.60	12.06	42.75	36.84	44.22	9.50	41.62

Table 11. Greenland halibut mean weight (g) per tow by age, sex and year. Spanish Spring Survey in NAFO 3NO: 2010-2014. Indet. means indeterminate.

	2010				2011				2012				2013				2014			
Age	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
0																				
1	15	15	18	15	22	22	15	22	25	20	16	20	15	14	13	14	16	15	6	15
2	76	87		82	95	91		93	117	119		118	53	55		54	70	84		79
3	116	122		120	187	189		188	173	159		165	140	156		150	105	119		111
4	242	257		250	268	280		275	293	311		304	241	298		281	237	326		302
5	440	470		456	441	504		479	434	487		465	383	520		473	442	483		463
6	670	711		702	739	744		742	626	689		669	626	775		728	661	755		716
7	935	1020		994	1063	1179		1150	925	1036		993	991	1133		1069	1056	1119		1098
8	1277	1423		1394	1422	1444		1439	1288	1461		1420	1341	1471		1443	1408	1392		1396
9	1436	1594		1583	1439	1753		1715	1483	1640		1627	1490	1529		1518	1519	1628		1615
10	1615	1870		1842	1838	2071		2067	1583	1958		1925	1724	2039		2009		1959		1959
11		2142		2142	1838	2322		2309		2313		2313	1938	2266		2243		2380		2380
12		2488		2488	2451	2567		2555		2702		2702		2471		2471		2677		2677
13		2727		2727		2327		2327		2976		2976		3256		3256		3690		3690
14		3470		3470		4167		4167		3603		3603		3315		3315		3512		3512
15		4112		4112		4465		4465		3523		3523		3721		3721		3772		3772
16						6252		6252		4032		4032		4861		4861		3966		3966
17						6426		6426		5782		5782		4960		4960				
18		7955		7955						6963		6963		6935		6935				
19																				
20																				
Total	551	796	18	717	465	774	15	657	509	841	16	726	587	930	13	810	551	989	6	835

Table 12. American plaice mean catch (kg) and SD by stratum. Spanish Spring Surveys in NAFO Div. 3NO: 2010-2014. n.s. means stratum not surveyed.

	2010		2011		2012		2013		2014	
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	76.65	23.69	176.17	63.06	48.19	31.32	216.48	132.63	55.51	13.19
354	91.98	96.36	32.62	22.35	68.89	70.27	58.79	54.85	56.70	76.25
355	8.31	7.37	28.07	12.97	9.62	9.50	10.40	3.41	5.34	4.13
356	0.00	0.00	0.00	0.00	0.51	0.72	1.08	1.53	0.00	0.00
357	1.43	1.37	0.02	0.03	0.00	0.00	0.00	0.00	0.64	0.90
358	16.08	2.09	8.95	5.54	3.15	4.42	26.27	43.04	18.71	18.22
359	270.83	295.54	95.47	71.95	127.72	171.24	142.43	119.20	61.36	54.21
360	307.45	267.99	474.90	575.54	399.52	491.34	479.42	490.74	268.10	280.43
374	150.65	21.99	813.15	131.17	547.80	380.00	952.66	561.92	681.86	206.84
375	89.90	54.31	150.59	82.35	59.42	28.10	65.63	66.77	118.37	51.35
376	83.39	80.95	62.48	86.03	34.36	33.89	47.28	32.12	46.20	41.87
377	199.40	52.61	119.65	57.20	366.11	68.67	149.80	66.76	205.18	106.95
378	123.25	139.94	20.06	25.51	2.93	2.73	3.77	5.33	14.44	20.41
379	0.00	0.00	0.29	0.40	0.00	0.00	0.00	0.00	0.00	0.00
380	372.20	419.03	8.46	3.17	8.95	12.66	1.81	1.56	7.74	5.90
381	13.08	11.07	71.75	9.40	152.70	206.76	123.28	95.78	143.99	12.46
382	102.97	138.92	98.66	90.80	480.11	214.81	90.53	61.16	95.91	110.71
721	0.00	0.00	0.23	0.32	0.00	0.00	0.02	0.03	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	0.01	0.02	0.00	0.00	0.11	0.15	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	0.18	0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
726	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
727	59.95	13.36	0.69	0.22	34.82	47.76	0.00	0.00	0.07	0.10
728	0.00	0.00	0.00	0.00	1.30	1.84	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	n.s.	n.s.	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
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	n.s.	n.s.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
764	n.s.	n.s.	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	n.s.	n.s.	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: 2010-2014. n.s. means stratum not surveyed.

Strata	2010	2011	2012	2013	2014	Strata	2010	2011	2012	2013	2014
353	1833	4077	1152	5009	1183	**725**	2	0	0	0	0
354	2011	698	1506	1286	1063	**726**	0	0	0	0	0
355	54	179	62	68	30	**727**	480	6	288	0	1
356	0	0	2	5	0	**728**	0	0	9	0	0
357	21	0	0	0	8	**752**	0	0	0	0	0
358	322	175	65	525	324	**753**	n.s.	0	0	0	0
359	9704	3489	4668	5065	1993	**754**	0	0	0	0	0
360	73604	111356	94879	113616	56766	**755**	0	0	0	0	0
374	2866	15468	10250	17537	11279	**756**	0	0	0	0	0
375	2009	3401	1385	1482	2468	**757**	0	0	0	0	0
376	9888	7078	3880	5317	4655	**758**	0	0	0	0	0
377	1715	1029	3201	1268	1586	**759**	0	0	0	0	0
378	1523	232	36	47	153	**760**	0	0	0	0	0
379	0	3	0	0	0	**761**	0	0	0	0	0
380	3025	71	75	15	57	**762**	0	0	0	0	0
381	154	889	1988	1457	1603	**763**	n.s.	0	0	0	0
382	3038	3008	14517	2567	2525	**764**	n.s.	0	0	0	0
721	0	1	0	0	0	**765**	0	0	0	0	0
722	0	0	0	0	0	**766**	0	0	0	0	0
723	0	0	1	0	0	**767**	n.s.	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: 1997-2014.

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

Year	2006	2007	2008	2009	2010	2011	2012	2013	2014
Biomass	170910	112086	172735	93025	112247	151160	137964	155264	85691
SD	24806	13032	17696	10258	18089	29753	27395	29284	14019
MCPT	202.84	141.82	193.67	106.59	134.33	172.05	155.11	176.26	108.50
SD	29.01	15.31	20.39	11.31	22.27	34.95	30.53	31.60	17.41

Table 15. American plaice length weight relationships in Spanish Spring Surveys in NAFO Div. 3NO: 2010-2014. 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**
2010	**0.00270**	**3.32315**	0.1264	0.0398	0.995	382	**0.0027**	**3.3332**	0.1016	0.0287	0.996	695	**0.0033**	**3.2755**	0.0545	0.0156	0.999	1091
2011	**0.00469**	**3.15597**	0.0919	0.0276	0.997	557	**0.0036**	**3.2453**	0.0637	0.0181	0.998	1038	**0.0039**	**3.2285**	0.0613	0.0176	0.998	1597
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

Table 16. American plaice mean number per tow by year in Spanish Spring Surveys in NAFO Div. 3NO: 1997-2014. 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			
	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

Table 17. American plaice mean number per tow by length class and year. Spanish Spring Survey in NAFO 3NO: 2010-2014. Indet. means indeterminate.

	2010				2011				2012				2013				2014			
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	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.253	0.253	0.000	0.000	0.008	0.008
6	0.020	0.007	0.195	0.221	0.000	0.000	0.000	0.000	0.000	0.000	0.079	0.079	0.144	0.011	1.490	1.645	0.013	0.008	0.163	0.183
8	0.040	0.106	0.000	0.146	0.000	0.078	0.000	0.078	0.000	0.000	0.135	0.135	0.031	0.000	0.652	0.683	0.079	0.045	0.209	0.333
10	5.652	5.813	0.000	11.465	0.063	0.066	0.000	0.128	0.064	0.016	0.277	0.357	0.044	0.030	0.127	0.200	0.645	0.142	0.178	0.965
12	13.825	12.833	0.000	26.658	0.195	0.220	0.000	0.415	0.038	0.033	0.194	0.265	0.100	0.125	0.041	0.267	4.782	3.064	0.013	7.858
14	9.208	9.087	0.000	18.295	3.230	1.081	0.010	4.321	0.037	0.332	0.000	0.369	0.110	0.436	0.326	0.873	2.953	3.567	0.026	6.546
16	5.606	5.537	0.000	11.142	15.370	10.447	0.000	25.816	0.379	0.496	0.000	0.875	0.385	1.038	0.337	1.760	0.908	1.014	0.000	1.922
18	10.834	9.345	0.000	20.179	18.082	20.344	0.000	38.426	3.398	1.464	0.000	4.863	1.082	0.556	0.011	1.648	0.309	0.160	0.000	0.469
20	16.893	14.650	0.000	31.543	15.116	10.105	0.000	25.222	16.317	12.092	0.000	28.409	3.729	2.642	0.000	6.371	0.642	1.065	0.000	1.707
22	15.894	10.922	0.000	26.817	24.201	10.896	0.000	35.098	30.991	21.311	0.000	52.301	17.122	8.493	0.000	25.615	1.666	1.710	0.000	3.376
24	24.252	9.510	0.000	33.762	41.480	24.442	0.000	65.922	34.632	20.584	0.000	55.215	50.459	26.073	0.000	76.533	8.759	3.393	0.000	12.152
26	40.883	7.316	0.000	48.199	51.597	23.269	0.000	74.867	54.164	22.669	0.000	76.833	70.033	34.461	0.000	104.494	27.272	9.528	0.000	36.799
28	56.452	16.059	0.000	72.511	75.074	14.248	0.000	89.322	74.377	30.164	0.000	104.542	75.578	25.543	0.000	101.121	41.309	12.821	0.000	54.130
30	39.702	24.479	0.000	64.181	69.544	17.391	0.000	86.935	64.827	20.397	0.000	85.224	77.589	27.953	0.000	105.542	36.716	15.350	0.000	52.066
32	25.227	25.449	0.000	50.677	39.504	31.733	0.000	71.236	40.060	21.282	0.000	61.342	43.729	26.620	0.000	70.349	26.480	14.748	0.000	41.228
34	11.550	20.411	0.000	31.961	20.299	39.746	0.000	60.045	20.386	23.807	0.000	44.192	26.539	23.731	0.000	50.270	12.459	17.318	0.000	29.777
36	3.882	10.721	0.000	14.603	8.914	26.537	0.000	35.451	7.540	25.102	0.000	32.642	5.972	23.152	0.000	29.124	4.978	20.084	0.000	25.062
38	1.226	8.739	0.000	9.965	1.757	14.690	0.000	16.447	2.028	15.882	0.000	17.910	2.891	22.206	0.000	25.097	2.084	20.020	0.000	22.104
40	0.395	9.650	0.000	10.046	0.875	10.742	0.000	11.616	0.960	8.640	0.000	9.601	0.615	13.225	0.000	13.839	0.109	13.481	0.000	13.590
42	0.081	8.885	0.000	8.965	0.077	10.603	0.000	10.679	0.209	7.553	0.000	7.762	0.050	8.535	0.000	8.585	0.024	7.229	0.000	7.252
44	0.000	7.461	0.000	7.461	0.000	7.054	0.000	7.054	0.114	4.944	0.000	5.058	0.000	6.836	0.000	6.836	0.015	4.752	0.000	4.768
46	0.047	4.639	0.000	4.686	0.092	4.441	0.000	4.533	0.000	3.619	0.000	3.619	0.022	3.599	0.000	3.622	0.000	1.771	0.000	1.771
48	0.044	2.760	0.000	2.804	0.000	2.439	0.000	2.439	0.039	2.431	0.000	2.470	0.000	2.020	0.000	2.020	0.000	1.320	0.000	1.320
50	0.000	2.054	0.000	2.054	0.007	1.475	0.000	1.482	0.012	1.191	0.000	1.203	0.023	1.427	0.000	1.450	0.000	0.866	0.000	0.866
52	0.000	2.767	0.000	2.767	0.000	1.232	0.000	1.232	0.049	1.035	0.000	1.084	0.000	0.444	0.000	0.444	0.041	0.779	0.000	0.820
54	0.000	1.539	0.000	1.539	0.000	0.637	0.000	0.637	0.000	0.585	0.000	0.585	0.000	0.282	0.000	0.282	0.000	0.732	0.000	0.732
56	0.000	1.358	0.000	1.358	0.000	0.856	0.000	0.856	0.000	0.626	0.000	0.626	0.000	0.305	0.000	0.305	0.000	0.215	0.000	0.215
58	0.007	1.021	0.000	1.028	0.000	0.926	0.000	0.926	0.000	0.121	0.000	0.121	0.000	0.584	0.000	0.584	0.000	0.436	0.000	0.436
60	0.000	0.580	0.000	0.580	0.000	0.469	0.000	0.469	0.000	0.266	0.000	0.266	0.000	0.233	0.000	0.233	0.000	0.117	0.000	0.117
62	0.000	0.520	0.000	0.520	0.000	0.341	0.000	0.341	0.000	0.088	0.000	0.088	0.000	0.292	0.000	0.292	0.000	0.099	0.000	0.099
64	0.000	0.473	0.000	0.473	0.000	0.146	0.000	0.146	0.000	0.026	0.000	0.026	0.000	0.188	0.000	0.188	0.000	0.021	0.000	0.021
66	0.000	0.000	0.000	0.000	0.000	0.035	0.000	0.035	0.000	0.021	0.000	0.021	0.000	0.094	0.000	0.094	0.000	0.009	0.000	0.009
68	0.000	0.000	0.000	0.000	0.000	0.025	0.000	0.025	0.000	0.000	0.000	0.000	0.000	0.011	0.000	0.011	0.000	0.012	0.000	0.012
70	0.000	0.008	0.000	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.019	0.000	0.019	0.000	0.000	0.000	0.000
72	0.000	0.012	0.000	0.012	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
74	0.000	0.019	0.000	0.019	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	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
Nº samples:				57				70				67				66				65
Nº Ind.:	3817	5613	12	9442	5295	7616	1	12912	4712	5894	37	10643	6627	7310	98	14035	4696	5066	49	9811
Sampled catch:				2795				3668				3067				4027				3316
Range:				6-74				8-69				6-67				5-72				4-68
Total catch:				9215				14415				13937				14575				9503
Total hauls:				95				122				122				122				122

Table 18. American plaice mean number per tow by age, sex and year. Spanish Spring Survey in NAFO 3NO: 2010-2014. Indet. means indeterminate.

	2010				2011				2012				2013				2014			
Age	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
1	0.01	0.11	0.19	0.32		0.08		0.08			0.68	0.68	0.08	0.01	2.44	2.52	0.02	0.05	0.25	0.32
2	21.82	20.14		41.96	4.51	1.91	0.00	6.42	0.11	0.21		0.32	0.33	0.24	0.15	0.72	0.81	1.67	0.24	2.73
3	10.92	17.21		28.13	46.51	37.72	0.01	84.24	2.02	1.94		3.96	0.16	0.63	0.28	1.07	8.61	5.40	0.09	14.10
4	38.74	29.11		67.85	45.42	25.50		70.92	33.17	25.18		58.35	7.69	4.16	0.30	12.15	7.42	2.18	0.01	9.61
5	29.59	13.91		43.50	77.52	39.25		116.78	47.78	23.62		71.40	94.09	38.48	0.07	132.64	5.31	4.38		9.69
6	81.49	27.39		108.88	103.49	33.67		137.16	114.42	53.55		167.96	104.24	56.26	0.00	160.50	42.75	18.20		60.94
7	73.32	67.68		141.00	75.62	52.47		128.10	84.64	40.56		125.20	124.59	58.25		182.84	42.54	24.96		67.50
8	17.64	12.07		29.71	24.96	57.45		82.41	50.29	34.16		84.46	34.41	30.40		64.82	37.89	36.75		74.63
9	5.61	8.05		13.66	6.20	8.63		14.83	12.38	37.15		49.52	8.83	33.12		41.94	16.95	25.31		42.27
10	1.62	7.94		9.56	1.10	8.87		9.97	5.20	12.44		17.64	0.97	20.80		21.77	6.45	15.96		22.41
11	0.75	8.69		9.44	0.13	8.63		8.76	0.37	6.61		6.98	0.84	7.33		8.17	3.45	11.41		14.86
12	0.11	11.00		11.11	0.00	6.35		6.36	0.07	5.03		5.10	0.02	5.21		5.23	0.02	3.62		3.64
13	0.09	3.41		3.50		2.18		2.18	0.05	2.62		2.67		2.62		2.62	0.02	1.70		1.71
14	0.00	1.34		1.34		0.90		0.90	0.08	1.58		1.65		1.31		1.31	0.02	1.86		1.88
15		1.39		1.39		0.35		0.35	0.05	0.34		0.39		0.61		0.61		1.12		1.12
16		2.58		2.58		0.76		0.76		0.79		0.79		0.52		0.52		0.38		0.38
17		1.55		1.55		0.91		0.91		0.64		0.64		0.32		0.32		0.53		0.53
18		0.52		0.52		0.29		0.29		0.20		0.20		0.48		0.48		0.23		0.23
19		0.49		0.49		0.56		0.56		0.07		0.07		0.13		0.13		0.11		0.11
20		0.01		0.01		0.16		0.16		0.08		0.08		0.11		0.11		0.04		0.04
21				0.00						0.01		0.01		0.19		0.19		0.02		0.02
22				0.00		0.07		0.07												
23		0.15		0.15																
Total	281.7	234.7	0.195	516.6	385.5	286.7	0.01	672.2	350.6	246.8	0.684	598.1	376.2	261.2	3.239	640.7	172.2	155.9	0.596	328.7

Table 19. American plaice mean length (cm) per tow by age, sex and year. Spanish Spring Survey in NAFO 3NO: 2010-2014. Indet. means indeterminate.

	2010				2011				2012				2013				2014			
Age	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
1	7.66	8.88	7.00	7.69		9.00		9.00			10.71	10.71	7.10	7.00	7.43	7.42	8.21	8.71	7.79	7.96
2	13.24	13.12		13.18	16.16	16.05	15.00	16.13	12.41	14.46		13.73	13.45	16.24	15.77	14.86	11.91	12.83	9.84	12.29
3	16.21	17.19		16.81	19.57	20.49	15.00	19.98	20.59	20.82		20.70	13.64	16.90	13.65	15.56	14.16	15.21	11.65	14.55
4	21.23	21.69		21.43	24.41	22.72		23.80	23.24	23.29		23.26	23.29	21.93	16.07	22.65	26.87	19.17	15.00	25.11
5	24.70	24.59		24.67	27.08	26.82		26.99	26.19	25.91		26.10	26.45	25.89	17.22	26.28	27.04	26.86		26.96
6	28.65	29.79		28.94	29.31	30.66		29.64	27.82	27.07		27.59	28.56	28.50	19.00	28.54	29.49	28.75		29.27
7	30.12	33.14		31.57	31.87	34.16		32.81	30.30	31.66		30.74	30.42	31.48		30.76	29.99	32.97		31.09
8	32.90	37.02		34.57	34.11	36.67		35.89	32.38	34.76		33.34	34.17	35.81		34.94	30.90	35.13		32.98
9	34.42	39.21		37.24	34.78	40.27		37.97	34.37	37.58		36.77	33.87	38.23		37.31	32.08	36.17		34.53
10	37.12	43.52		42.44	39.28	43.59		43.11	34.85	40.62		38.92	39.71	40.47		40.43	33.38	39.72		37.90
11	36.90	43.61		43.08	41.35	44.11		44.07	40.03	43.88		43.68	37.87	42.59		42.10	34.41	41.38		39.76
12	41.65	45.67		45.63	51.00	46.54		46.55	44.34	45.68		45.66	46.87	45.49		45.49	53.00	46.31		46.34
13	45.53	46.45		46.42		50.62		50.62	46.62	47.75		47.73		47.20		47.20	45.00	45.29		45.28
14	59.00	53.81		53.81		51.91		51.91	50.04	50.68		50.65		51.41		51.41	53.00	47.99		48.04
15		54.31		54.31		55.65		55.65	46.62	54.39		53.43		51.84		51.84		52.23		52.23
16		55.63		55.63		56.43		56.43		55.48		55.48		56.22		56.22		53.46		53.46
17		60.22		60.22		58.78		58.78		55.95		55.95		59.56		59.56		57.51		57.51
18		58.48		58.48		60.50		60.50		61.40		61.40		59.79		59.79		58.26		58.26
19		56.86		56.86		61.07		61.07		61.80		61.80		59.91		59.91		61.92		61.92
20		75.00		75.00		63.13		63.13		58.31		58.31		63.62		63.62		65.00		65.00
21										65.00		65.00		64.97		64.97		65.90		65.90
22						63.00		63.00												
23		59.00		59.00																
Total	26.38	30.64	7	28.31	27.89	31.8	15	29.56	28.74	32.05	10.71	30.08	29.21	32.97	9.369	30.64	29.39	34.57	9.346	31.81

Table 20. American plaice mean weight (g) per tow by age, sex and year. Spanish Spring Survey in NAFO 3NO: 2010-2014. Indet. means indeterminate.

	2010				2011				2012				2013				2014			
Age	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
1	2	4	2	3		5		5			9	9	3	3	4	4	4	5	4	4
2	16	15		16	31	31	24	31	15	22		19	27	37	37	32	14	16	7	15
3	32	41		38	59	71	24	64	68	70		69	22	45	23	36	22	29	12	25
4	76	84		79	116	100		111	102	104		103	107	95	37	101	168	66	26	144
5	121	127		123	161	165		162	152	147		151	154	155	45	154	170	175		172
6	194	234		204	204	252		216	181	170		178	194	210	61	200	224	215		222
7	228	324		274	265	354		301	234	275		247	234	289		251	236	334		272
8	302	475		373	326	445		409	286	377		323	323	425		371	263	411		336
9	354	571		482	349	597		494	347	474		443	318	519		477	292	453		388
10	449	794		736	513	767		739	357	608		534	498	618		612	329	594		518
11	452	806		778	596	808		805	551	778		766	437	730		700	359	672		600
12	660	946		943	1148	956		956	756	887		885	820	889		889	1400	974		977
13	914	1008		1005		1254		1254	883	1015		1012		990		990	833	903		902
14	2072	1601		1602		1362		1362	1117	1237		1231		1306		1306	1400	1093		1096
15		1650		1650		1707		1707	883	1541		1460		1358		1358		1429		1429
16		1822		1822		1768		1768		1653		1653		1732		1732		1516		1516
17		2348		2348		2033		2033		1696		1696		2067		2067		1927		1927
18		2135		2135		2227		2227		2275		2275		2079		2079		1994		1994
19		1983		1983		2296		2296		2320		2320		2104		2104		2424		2424
20		4806		4806		2546		2546		1947		1947		2498		2498		2848		2848
21										2728		2728		2668		2668		2959		2959
22						2517		2517												
23		2160		2160																
Total	171	368	2	260	189	348	24	257	206	334	9	259	211	370	11	275	234	438	7	330

Table 21. Atlantic cod mean catch (kg) and SD by stratum. Spanish Spring Surveys in NAFO Div. 3NO: 2010-2014. n.s. means stratum not surveyed.

	2010		2011		2012		2013		2014	
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	0.00	0.00	10.99	9.95	15.47	26.79	23.85	27.59	5.13	8.89
354	12.41	0.58	12.26	12.01	6.40	11.09	14.17	21.04	75.46	99.83
355	17.89	15.20	14.17	3.22	9.13	1.77	1.01	1.42	0.00	0.00
356	4.98	7.04	5.19	2.14	3.48	0.39	0.00	0.00	1.25	1.76
357	28.52	31.31	8.33	11.78	5.80	1.13	4.96	1.96	3.52	4.98
358	78.96	86.77	35.08	43.03	19.26	21.03	164.20	153.12	213.36	233.77
359	850.41	1569.07	357.90	431.22	793.65	1704.52	92.73	108.90	1676.53	2880.87
360	6.17	9.10	355.05	1005.53	75.23	291.00	48.81	64.30	220.65	711.44
374	0.00	0.00	754.30	636.11	106.60	133.22	8.27	11.70	271.12	302.52
375	0.86	1.50	62.03	5.59	55.99	50.30	15.22	24.10	54.57	94.51
376	1.35	2.78	4.92	10.03	1.72	3.33	11.71	21.15	11.38	24.32
377	13.30	18.81	460.46	585.70	759.15	371.58	684.24	249.87	754.88	259.76
378	3328.75	3276.80	76.89	57.01	21.83	20.40	67.71	72.25	1989.05	2779.71
379	38.85	28.92	17.25	12.46	2.99	4.23	4.73	2.28	10.03	4.49
380	61.05	53.25	29.15	24.68	374.96	523.02	0.00	0.00	47.61	26.88
381	1.65	1.00	51.35	57.91	435.15	80.26	214.50	97.86	216.67	196.91
382	3.13	0.79	567.93	1113.89	666.47	483.49	274.53	160.99	12.07	4.02
721	0.00	0.00	0.00	0.00	5.00	1.13	0.00	0.00	0.00	0.00
722	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.85	1.20
723	0.00	0.00	5.18	7.33	4.42	2.66	3.81	0.22	2.98	4.21
724	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
725	11.62	16.43	1.65	2.33	2.59	3.66	0.00	0.00	0.00	0.00
726	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
727	1.32	0.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
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	n.s.	n.s.	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
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	n.s.	n.s.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
764	n.s.	n.s.	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	n.s.	n.s.	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: 2010-2014. n.s. means stratum not surveyed.

Strata	2010	2011	2012	2013	2014	Strata	2010	2011	2012	2013	2014
353	0	254	370	552	1381	**725**	105	14	24	0	0
354	271	262	140	310	18564	**726**	0	0	0	0	0
355	116	90	59	7	0	**727**	11	0	0	0	0
356	21	21	15	0	59	**728**	0	0	0	0	0
357	416	121	83	69	577	**752**	0	0	0	0	0
358	1579	686	394	3284	48007	**753**	n.s.	0	0	0	0
359	30470	13082	29009	3297	705820	**754**	0	0	0	0	0
360	1477	83252	17866	11568	614072	**755**	0	0	0	0	0
374	0	14348	1995	152	58019	**756**	0	0	0	0	0
375	19	1401	1305	344	14788	**757**	0	0	0	0	0
376	160	558	194	1317	15180	**758**	0	0	0	0	0
377	114	3961	6637	5792	75488	**759**	0	0	0	0	0
378	41129	891	265	837	276478	**760**	0	0	0	0	0
379	360	165	28	42	1063	**761**	0	0	0	0	0
380	496	245	3147	0	4571	**762**	0	0	0	0	0
381	19	636	5664	2534	31200	**763**	n.s.	0	0	0	0
382	92	17315	20152	7786	4141	**764**	n.s.	0	0	0	0
721	0	0	28	0	0	**765**	0	0	0	0	0
722	0	0	0	0	71	**766**	0	0	0	0	0
723	0	74	61	53	462	**767**	n.s.	0	0	0	0
724	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: 1997-2014.

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

Year	2006	2007	2008	2009	2010	2011	2012	2013	2014
Biomass	19921	10592	23817	72757	76856	137378	87436	37945	143299
SD	8109	5853	5221	40466	37369	54393	30292	5114	54386
MCPT	23.35	13.47	26.55	80.73	90.96	155.16	97.02	43.33	180.81
SD	9.39	7.44	5.71	46.81	43.41	64.42	32.90	5.90	67.34

Table 24. Atlantic cod length weight relationships in Spanish Spring Surveys in NAFO Div. 3NO: 2010-2014. E(x) means Error of the parameter x.

	a	b	E(a)	E(b)	R2	N
2010	**0.00507**	**3.12153**	0.0533	0.0137	0.998	1007
2011	**0.00471**	**3.13897**	0.0594	0.015	0.998	1541
2012	**0.00571**	**3.09345**	0.1091	0.0273	0.994	768
2013	**0.00586**	**3.09132**	0.067	0.017	0.997	1853
2014	**0.00434**	**3.16276**	0.0551	0.0139	0.998	2554

Table 25. Atlantic cod mean number per tow by year in Spanish Spring Surveys in NAFO Div. 3NO: 1997-2014. Indet. means indeterminate.

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

	2006	2007	2008	2009	2010	2011	2012	2013	2014
MNPT	40.718	32.605	49.717	131.444	118.451	139.982	79.685	26.421	82.688

Table 26. Atlantic cod mean number per tow by length class and year. Spanish Spring Survey in NAFO 3NO: 2010-2014.

	2010	2011	2012	2013	2014
Lenght (cm.)	Total	Total	Total	Total	Total
6	0.000	0.000	0.000	0.000	0.000
8	0.020	0.000	0.000	0.014	0.000
10	0.095	0.026	0.000	0.000	0.027
12	0.248	0.026	0.012	0.143	0.058
14	0.321	0.013	0.037	0.165	0.048
16	0.098	0.026	0.049	0.217	0.105
18	0.082	0.000	0.024	0.089	0.165
20	0.023	0.025	0.012	0.055	0.203
22	0.067	0.060	0.034	0.020	0.308
24	0.241	0.110	0.019	0.054	0.233
26	0.672	0.167	0.059	0.081	0.528
28	1.469	0.240	0.089	0.119	0.469
30	1.661	0.118	0.264	0.175	0.510
32	1.894	0.732	0.555	0.256	0.501
34	4.813	2.015	0.801	0.322	0.969
36	12.069	3.541	1.047	0.407	1.135
38	15.752	5.037	2.665	0.858	1.131
40	23.565	5.450	4.911	1.195	1.585
42	18.257	7.059	6.423	1.493	1.575
44	10.659	16.735	6.058	1.789	2.098
46	7.370	20.782	5.256	1.765	2.377
48	2.918	19.274	7.065	1.749	3.219
50	1.642	17.802	7.811	1.664	3.263
52	1.028	12.962	7.273	1.770	3.855
54	2.065	7.130	7.583	1.686	4.588
56	1.682	4.865	6.798	1.522	4.616
58	2.262	3.304	5.188	1.583	4.332
60	1.679	1.725	3.408	1.340	4.987
62	1.158	2.314	1.889	1.226	5.393
64	0.659	1.340	1.106	0.809	5.866
66	0.523	1.239	0.639	0.706	5.383
68	0.881	1.276	0.612	0.446	4.021
70	0.635	1.359	0.492	0.272	4.384
72	0.496	0.745	0.208	0.369	3.238
74	0.123	0.345	0.352	0.251	2.517
76	0.373	0.388	0.249	0.174	2.456
78	0.136	0.373	0.145	0.161	1.425
80	0.129	0.313	0.063	0.198	0.967
82	0.065	0.283	0.055	0.133	0.934
84	0.115	0.173	0.059	0.194	0.957
86	0.106	0.136	0.054	0.143	0.350
88	0.183	0.114	0.063	0.126	0.456
90	0.050	0.090	0.091	0.110	0.420
92	0.000	0.039	0.060	0.114	0.224
94	0.043	0.072	0.012	0.087	0.186
96	0.016	0.026	0.021	0.084	0.331
98	0.000	0.025	0.036	0.061	0.085
100	0.013	0.013	0.000	0.092	0.078
102	0.020	0.013	0.020	0.050	0.052
104	0.020	0.000	0.005	0.039	0.026
106	0.020	0.013	0.000	0.000	0.000
108	0.000	0.000	0.000	0.005	0.013
110	0.000	0.013	0.008	0.027	0.012
112	0.020	0.000	0.000	0.000	0.000
114	0.020	0.043	0.000	0.000	0.000
116	0.000	0.013	0.000	0.000	0.000
118	0.000	0.000	0.000	0.000	0.000
120	0.000	0.000	0.000	0.014	0.013
122	0.000	0.000	0.000	0.000	0.012
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	118.451	139.982	79.685	26.421	82.688
Nº samples:	40	64	57	57	55
Nº Ind.:	1814	5197	5107	3571	4700
Sampled catch:	1875	6381	6371	5251	8988
Range:	9-114	10-116	13-110	9-120	10-122
Total catch:	12406	15136	13497	5434	23952
Total hauls:	95	122	122	122	122

Table 27. Atlantic cod mean number per tow by age and year. Spanish Spring Survey in NAFO 3NO: 2010-2014.

Age	2010	2011	2012	2013	2014
1	0.84	0.16	0.14	0.67	
2	3.92	1.04	0.58	0.46	
3	8.24	17.25	9.74	1.86	
4	88.96	13.57	19.04	7.13	
5	4.02	92.17	4.81	4.20	
6	7.65	3.00	38.65	1.06	
7	4.30	8.98	4.19	9.26	
8	0.12	3.38	1.86	0.23	
9	0.23	0.22	0.55	0.91	
10	0.02	0.02	0.06	0.58	
11		0.04	0.04	0.05	
12	0.12	0.09	0.01	0.00	
13	0.02	0.06	0.02		
14		0.01	0.01	0.01	
15					
16					
17					
18					
19					
20					
Total	118.45	139.98	79.69	26.42	

Table 28. Atlantic cod mean length (cm) per tow by age and year. Spanish Spring Survey in NAFO 3NO: 2010-2014.

Age	2010	2011	2012	2013	2014
1	14.26	30.18	16.90	16.10	
2	29.75	40.31	31.15	28.64	
3	36.73	46.63	40.56	38.43	
4	41.70	49.70	46.22	46.44	
5	50.43	56.02	53.15	51.81	
6	60.59	64.34	54.56	53.11	
7	67.50	71.67	56.10	61.16	
8	74.96	84.98	70.19	71.43	
9	85.55	88.82	80.76	84.43	
10	105.50	95.87	80.63	93.60	
11		99.54	96.45	92.49	
12	102.88	109.24	89.50	109.50	
13	97.45	95.50	99.19		
14			104.50	110.50	
15					
16					
17					
18					
19					
20					
Total	43.42	49.80	51.21	53.77	

Table 29. Atlantic cod mean weight (g) per tow by age and year. Spanish Spring Survey in NAFO 3NO: 2010-2014.

Age	2010	2011	2012	2013	2014
1	22	45	38	34	
2	207	215	247	194	
3	398	532	553	479	
4	593	830	833	865	
5	1072	1024	1277	1211	
6	1911	1488	1397	1359	
7	2759	2382	1516	2046	
8	3728	3273	3073	3417	
9	5557	5515	4748	5454	
10	10478	6153	4803	7531	
11		8549	7888	7143	
12	9980	8967	6229	11820	
13	8196	12108	8630		
14		7724	10059	12157	
15					
16					
17					
18					
19					
20					
Total	768	1108	1218	1640	

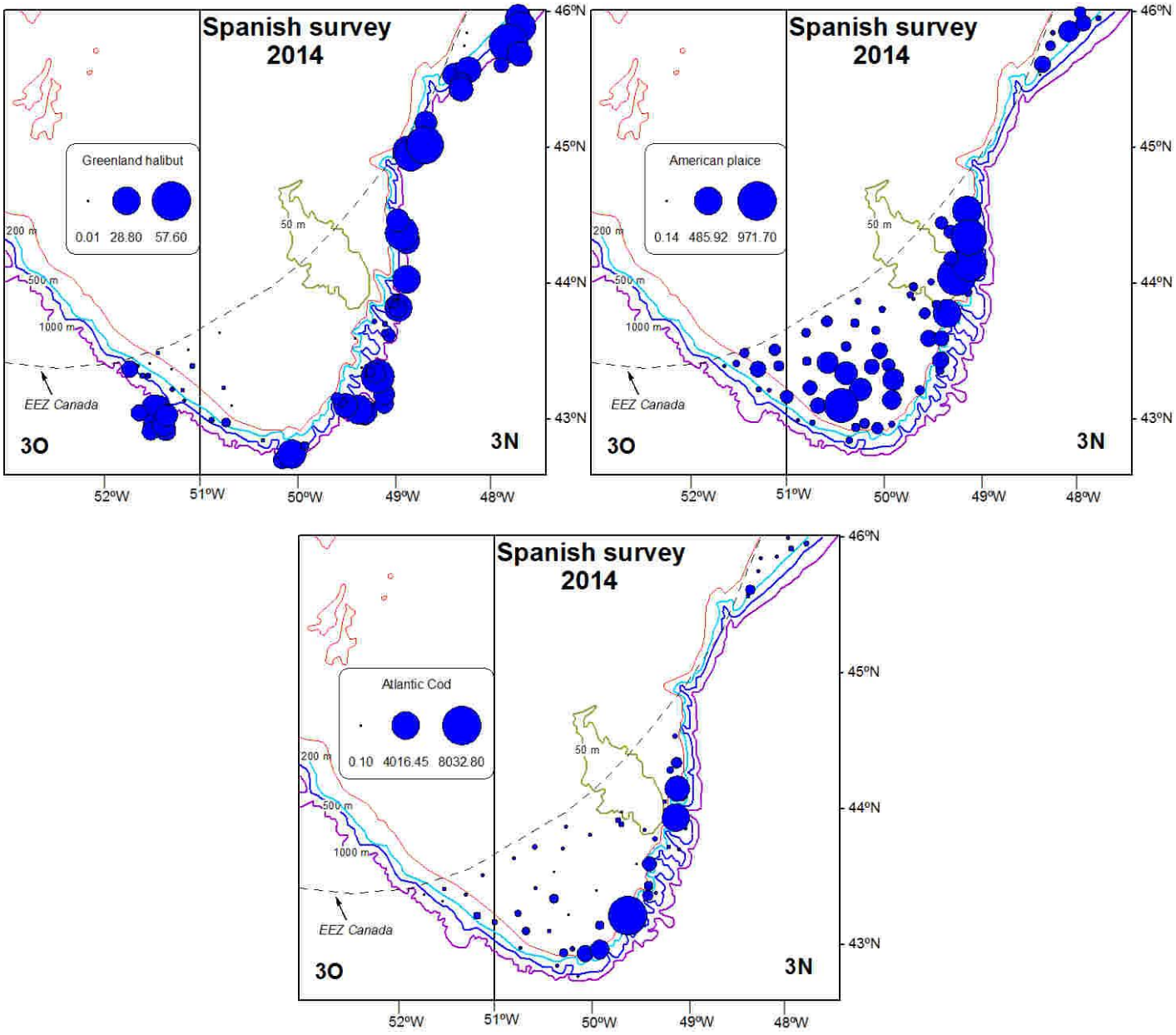

Figure 1. Position of the hauls and the catch of Greenland halibut, American plaice and Atlantic cod during the 2014 Spanish 3NO survey. Note that the scale is different in the three graphs.

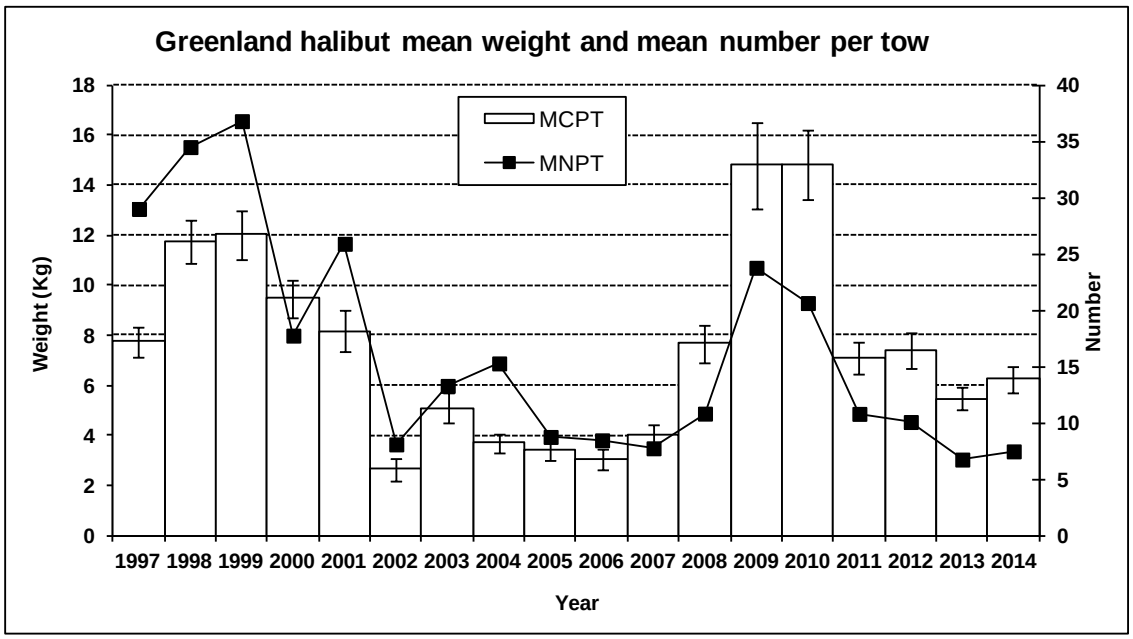

Figure 2. Greenland halibut stratified mean catches in Kg and ±SD by year and mean number by year. Spanish Spring surveys in NAFO Div. 3NO: 1997-2014.

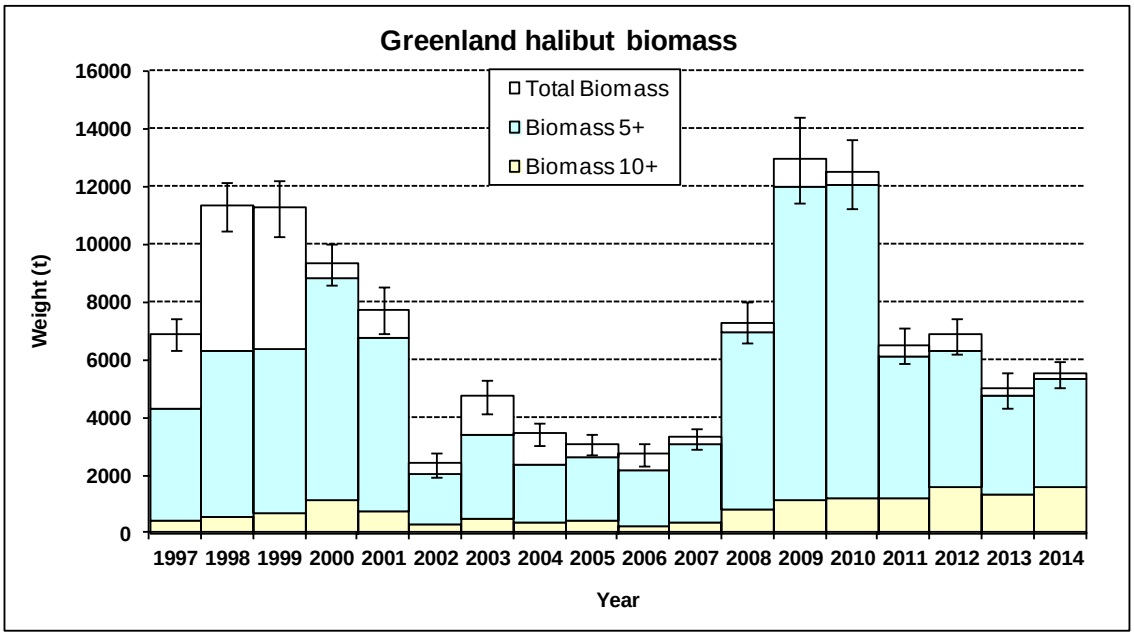

Figure 3. Greenland halibut biomass calculated by the swept area method in tons and ±SD by year. Spanish Spring surveys in NAFO Div. 3NO: 1997-2014.

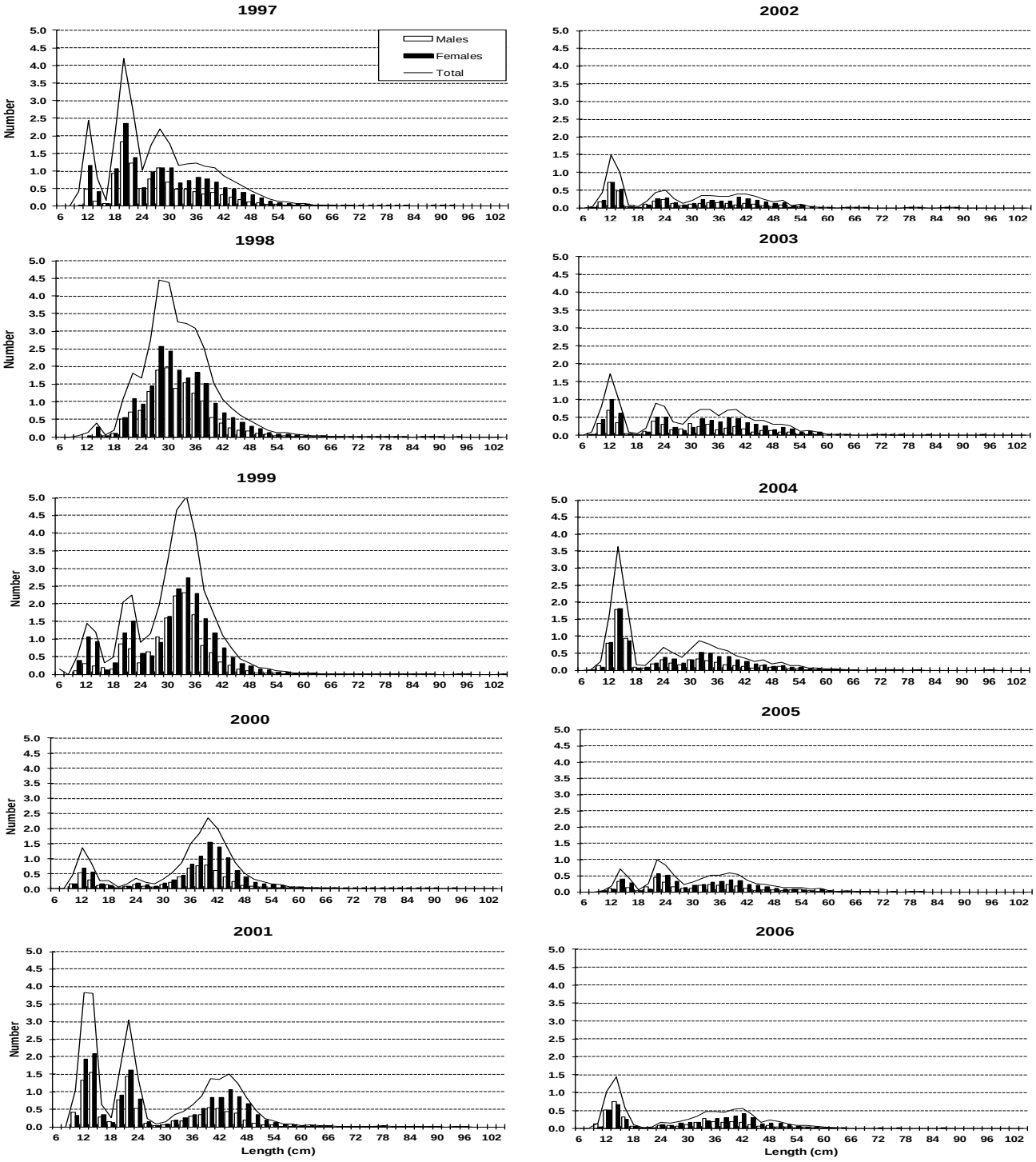

Figure 4. Greenland halibut length distribution (cm) on NAFO 3NO: 1997-2014. Mean catches per tow number. Data from 2010 to 2014 are in Table 8; data for 1997-2009 can be seen in SCR Doc 13/10.

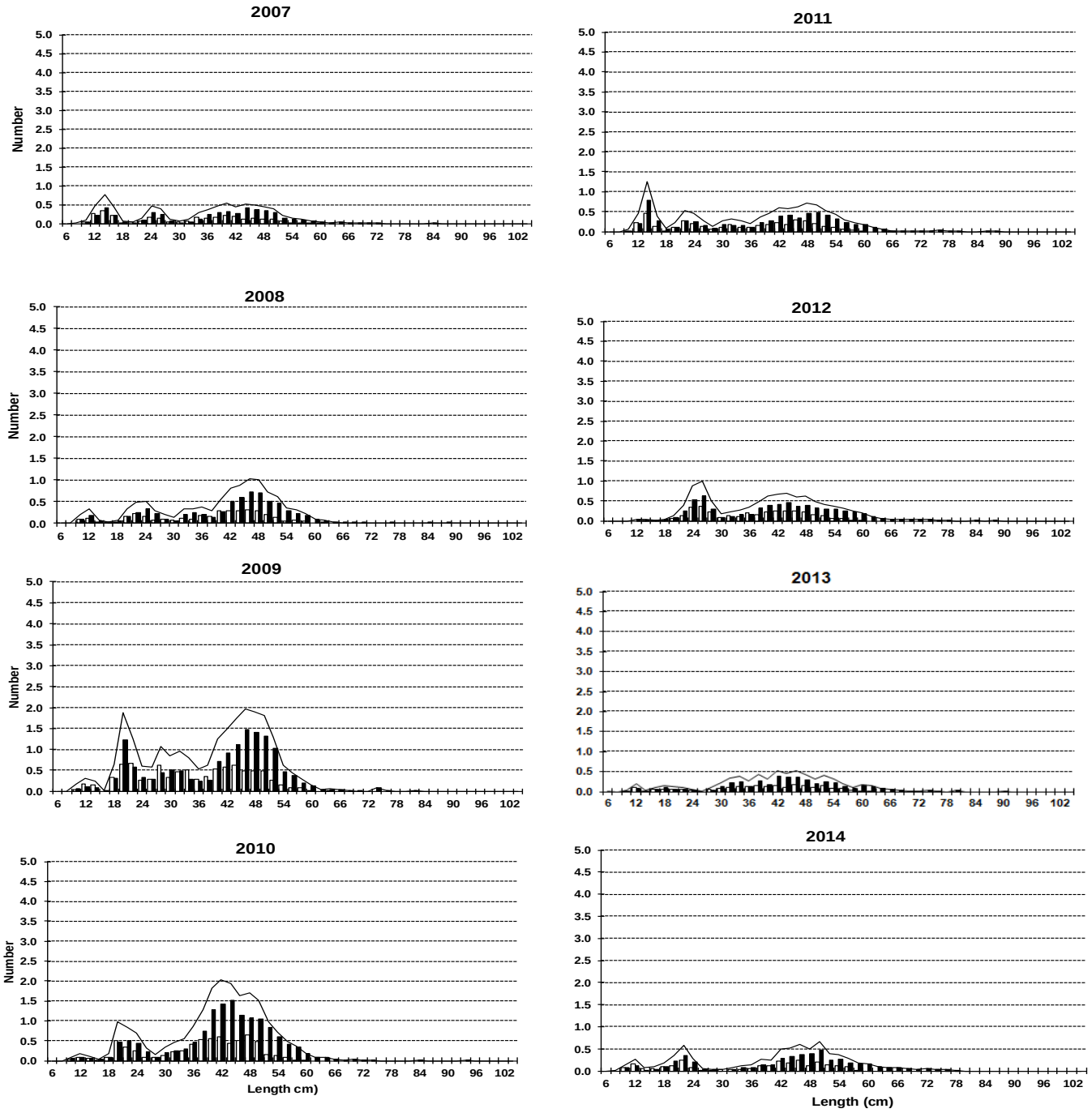

Figure 4 (cont.). Greenland halibut length distribution (cm) on NAFO 3NO: 1997-2014. Mean catches per tow number. Data from 2010 to 2014 are in Table 8; data for 1997-2009 can be seen in SCR Doc 13/10. The 2014 graphs have a different y-axis upper limit.

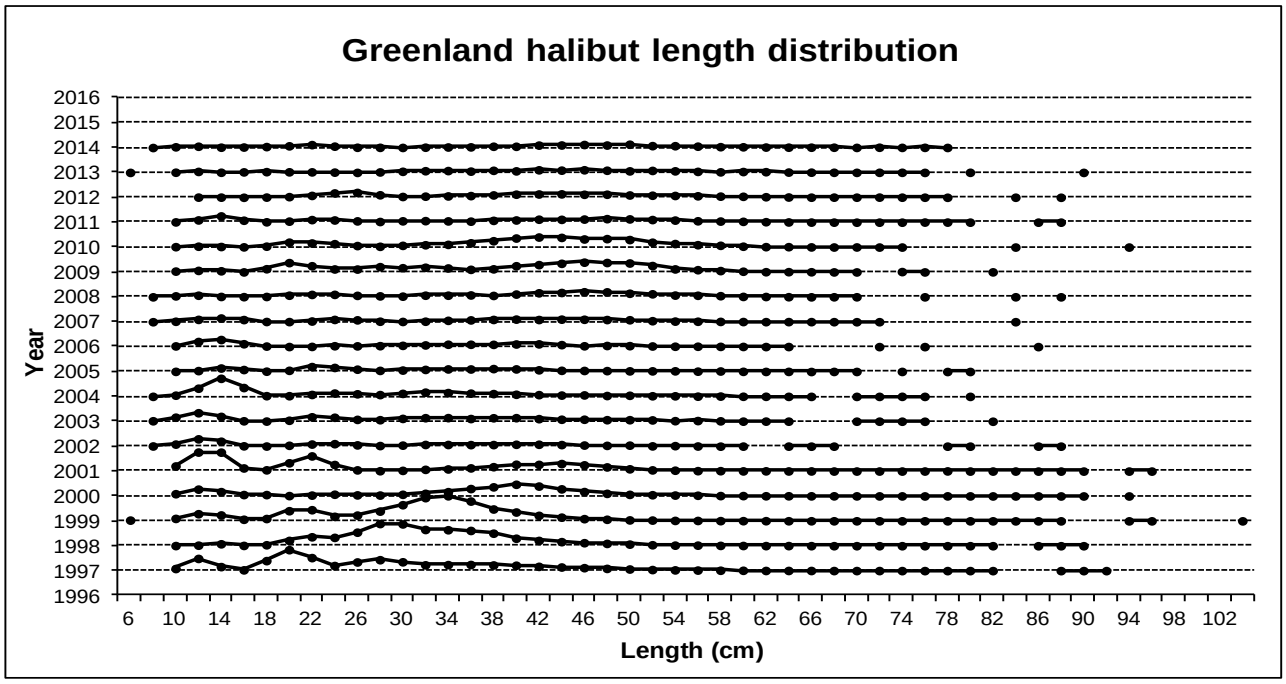

Figure 5. Greenland halibut mean number per tow by length (cm) on NAFO 3NO: 1997-2014. Data from 2010 to 2014 are in Table 8; data for 1997-2009 can be seen in SCR Doc 13/10.

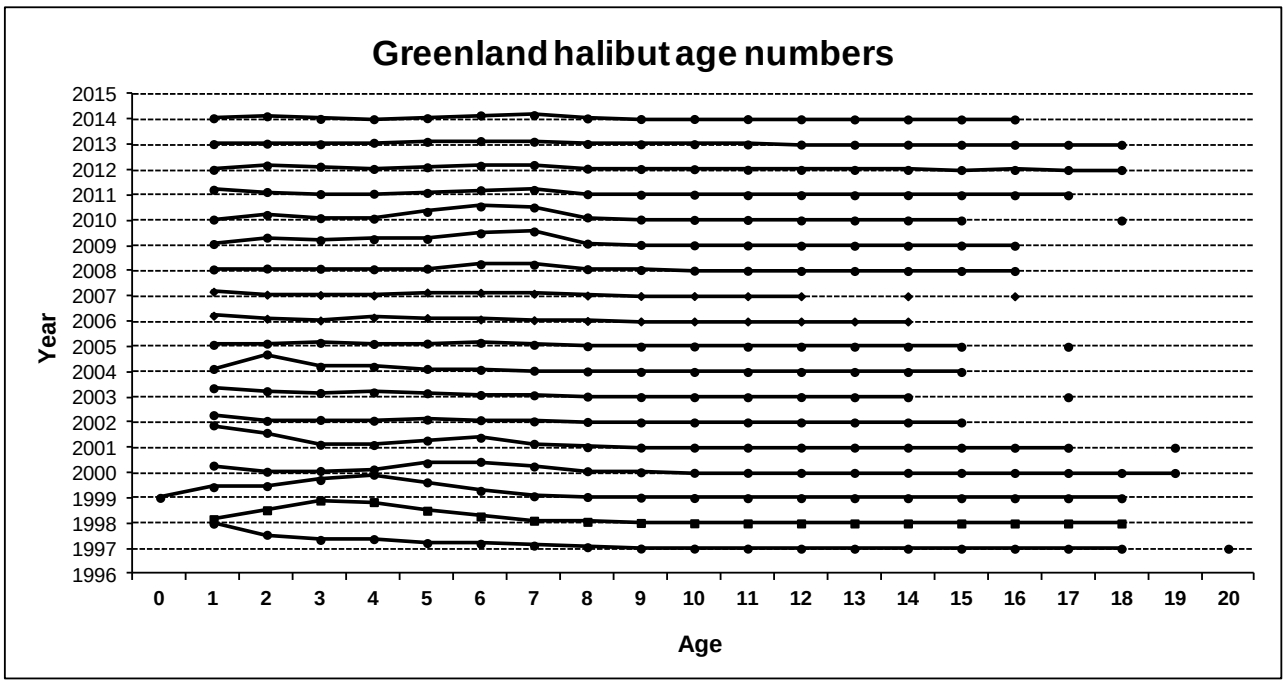

Figure 6. Greenland halibut mean numbers per tow by age on NAFO 3NO: 1997-2014. Data from 2010 to 2014 are in Table 9; data for 1997-2009 can be seen in SCR Doc 13/10.

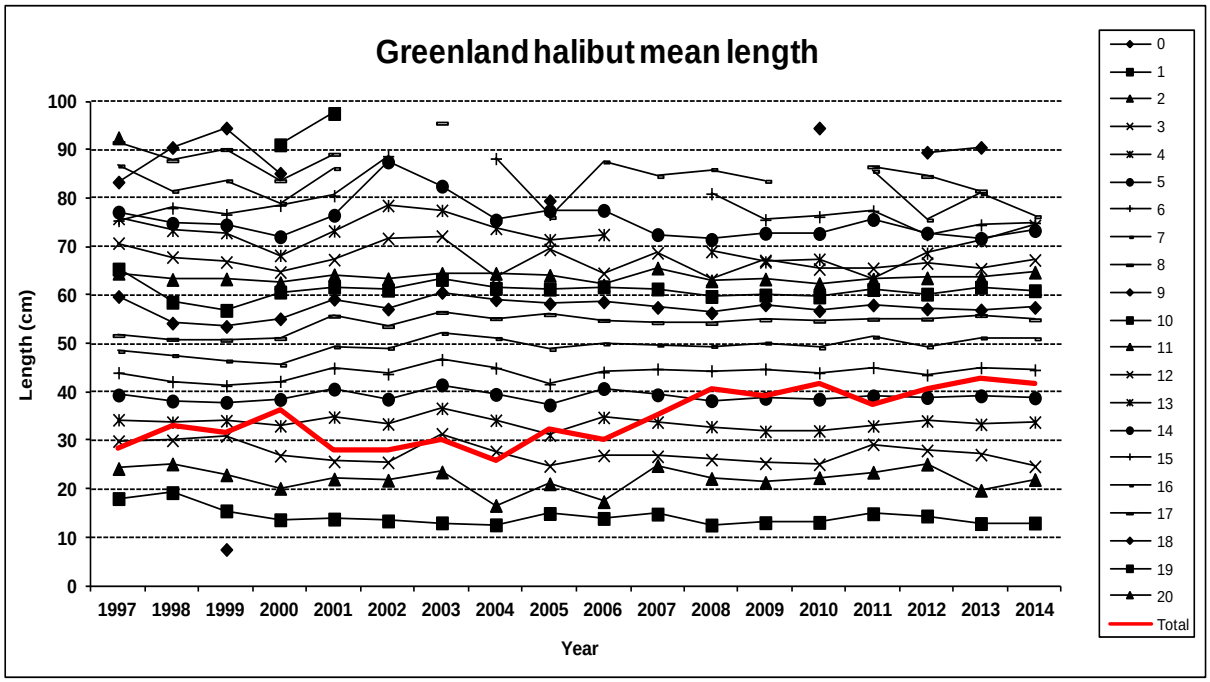

Figure 7. Greenland halibut mean length (cm) at age on NAFO 3NO: 1997-2014. Data from 2010 to 2014 are in Table 10; data for 1997-2009 can be seen in SCR Doc 13/10.

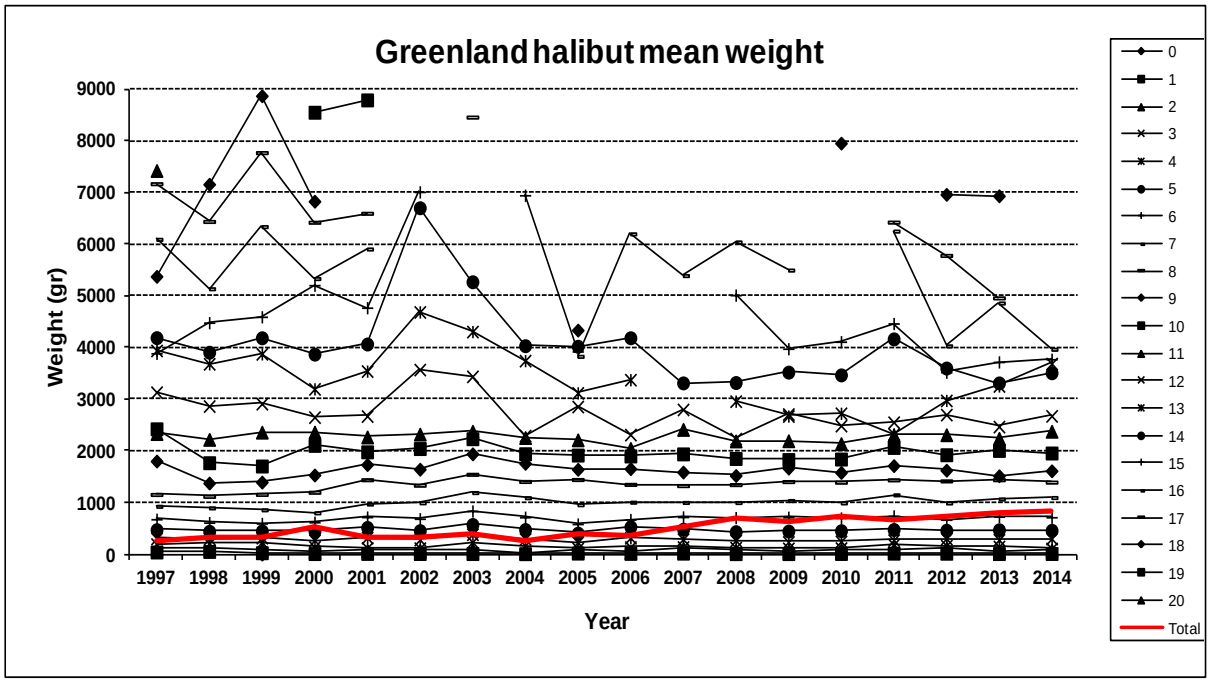

Figure 8. Greenland halibut mean weight (gr) at age on NAFO 3NO: 1997-2014. Data from 2010 to 2014 are in Table 11; data for 1997-2009 can be seen in SCR Doc 13/10.

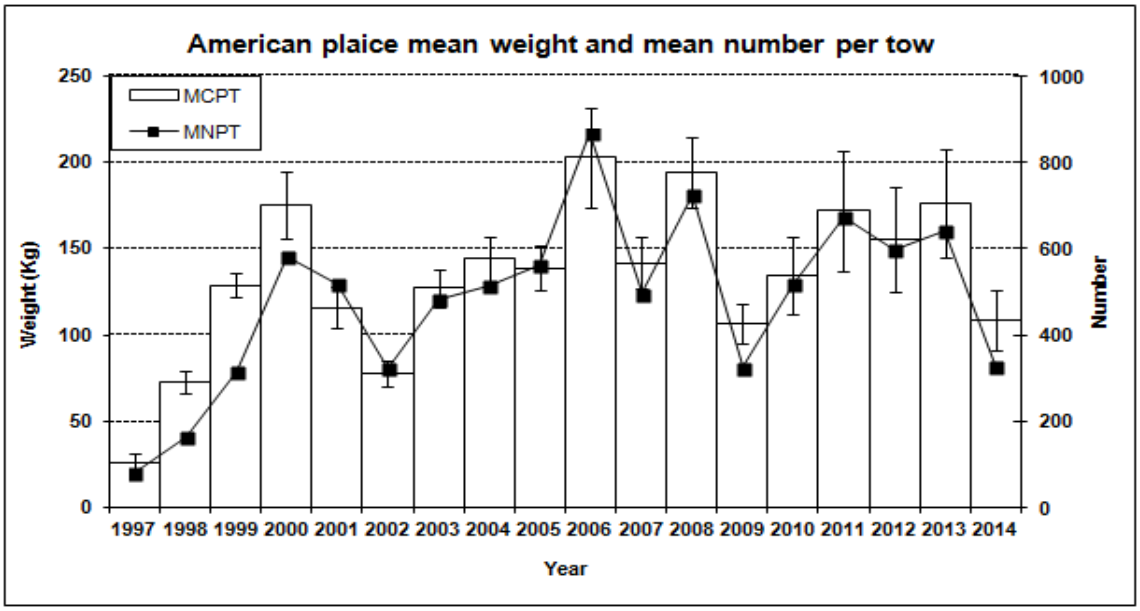

Figure 9. American plaice stratified mean catches in Kg and ±SD by year and mean number by year. Spanish Spring surveys in NAFO Div. 3NO: 1997-2014.

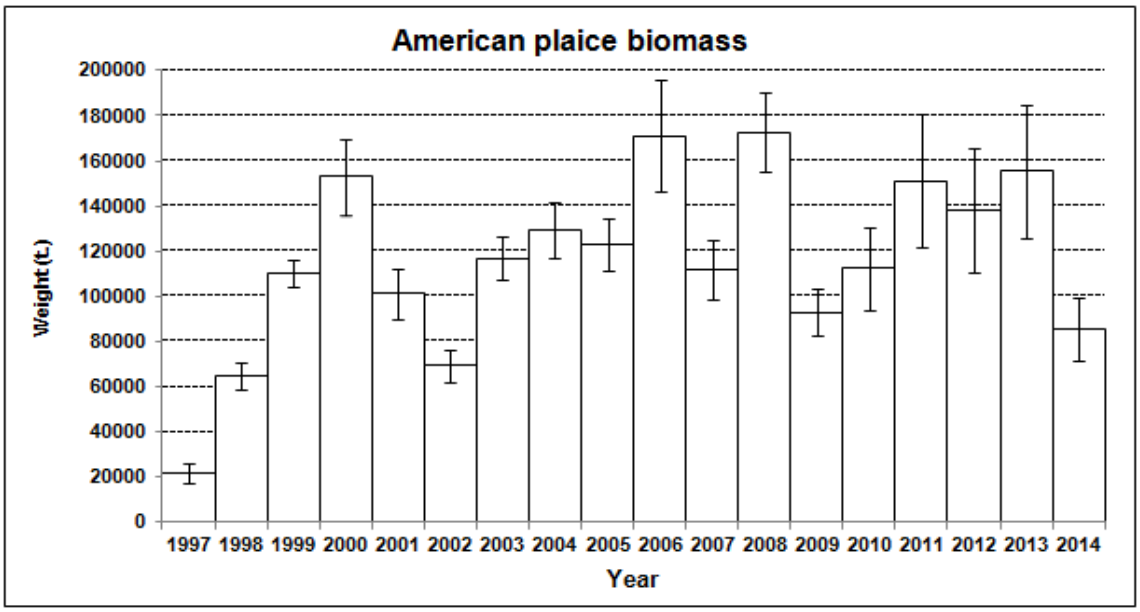

Figure 10. American plaice biomass calculated by the swept method in tons and ±SD by year. Spanish Spring surveys in NAFO Div. 3NO: 1997-2014.

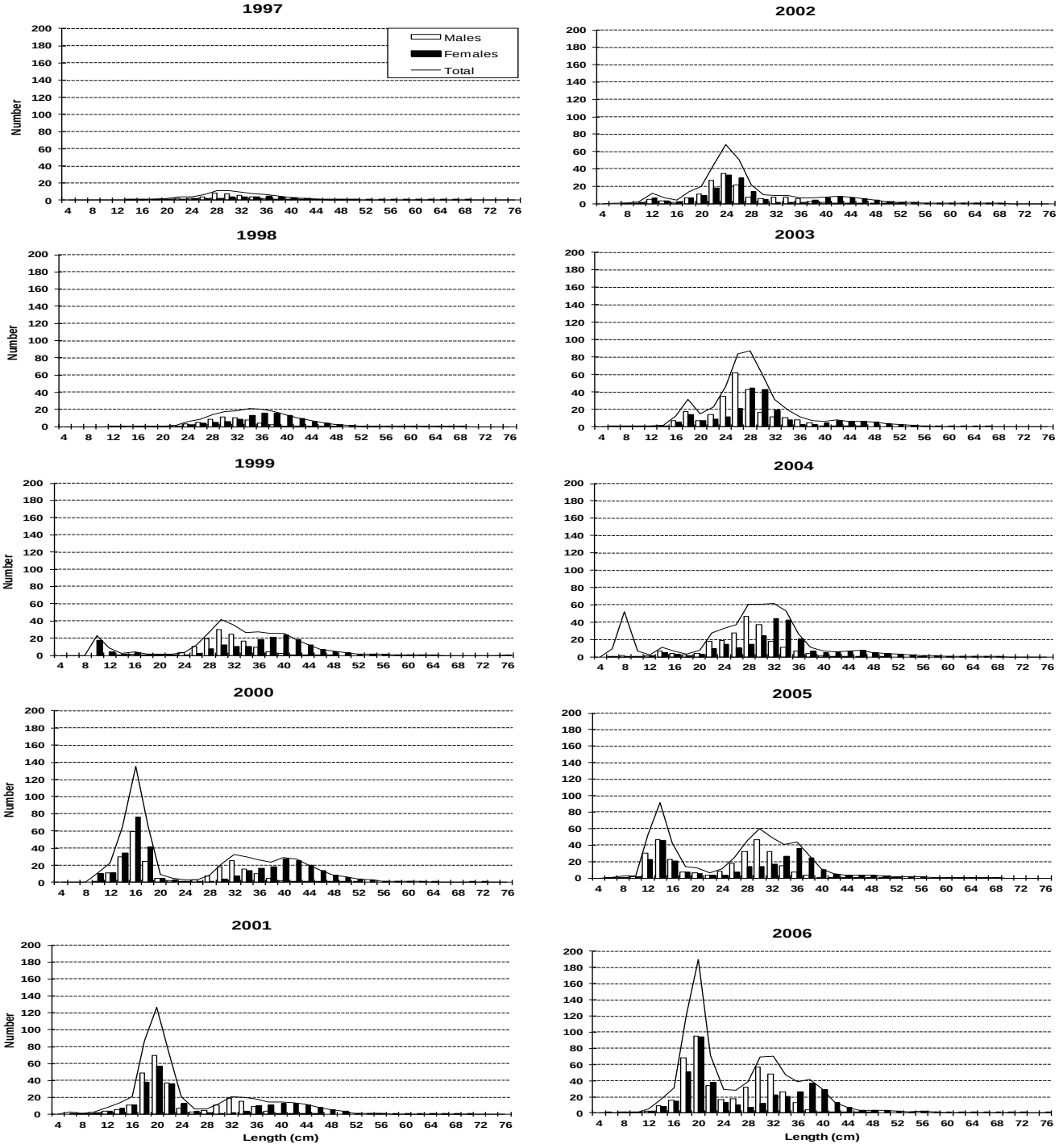

Figure 11. American plaice length distribution (cm) on NAFO 3NO: 1997-2014. Mean catches per tow number. Data from 2010 to 2014 are in Table 17; data for 1997-2009 can be seen in SCR Doc 13/10.

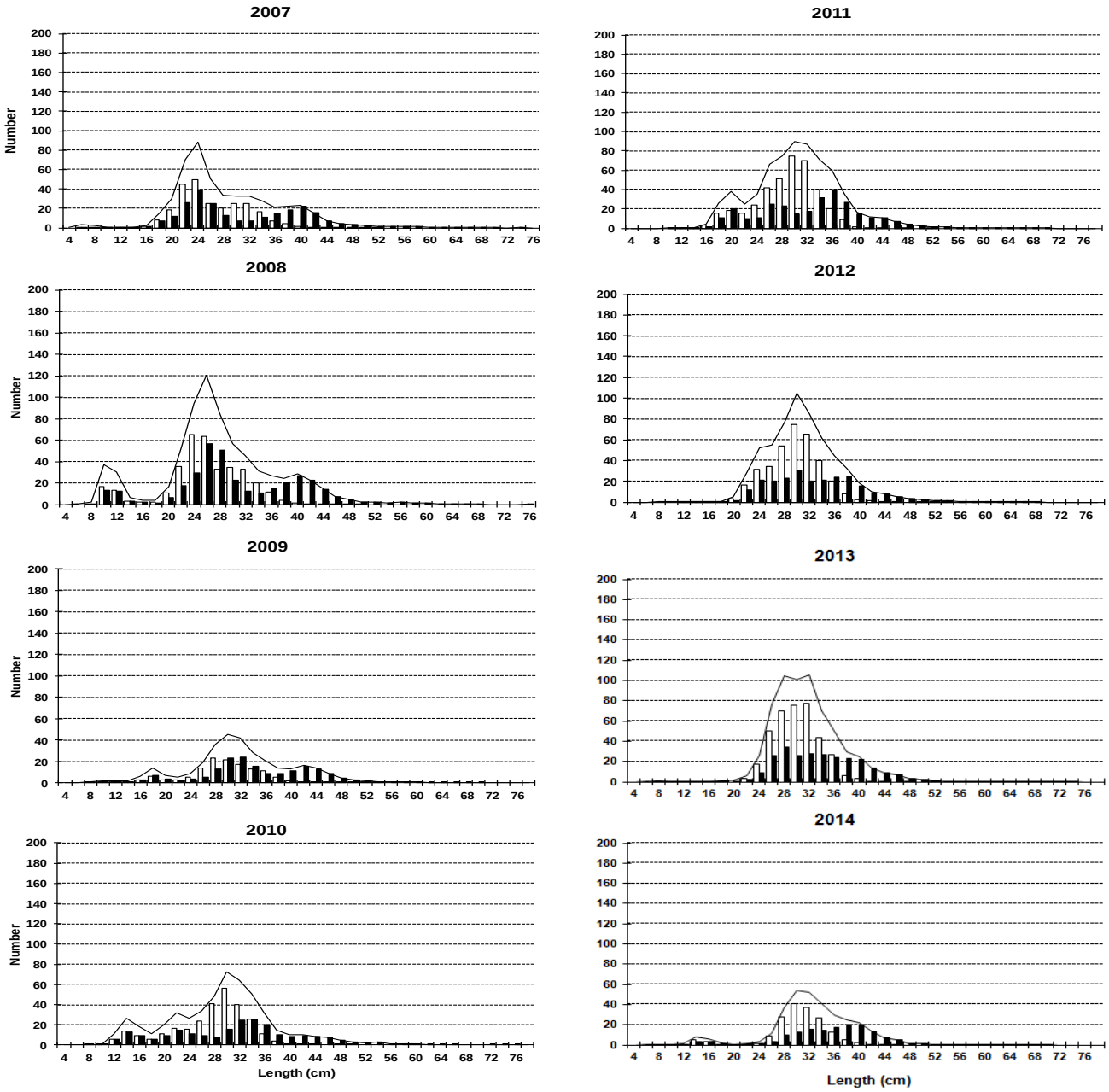

Figure 11 (cont.) American plaice length distribution (cm) on NAFO 3NO: 1997-2014. Mean catches per tow number. Data from 2010 to 2014 are in Table 17; data for 1997-2009 can be seen in SCR Doc 13/10.

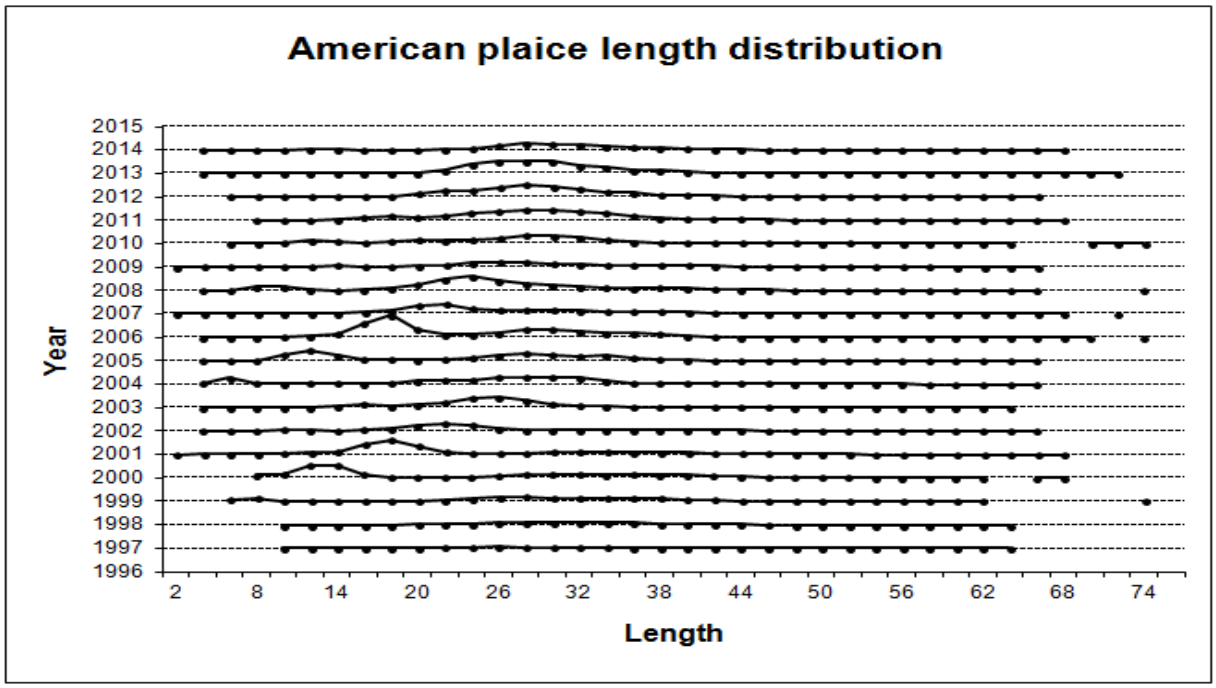

Figure 12. American plaice mean catches per tow by length (cm) on NAFO 3NO: 1997-2014. Data from 2010 to 2014 are in Table 17; data for 1997-2009 can be seen in SCR Doc 13/10.

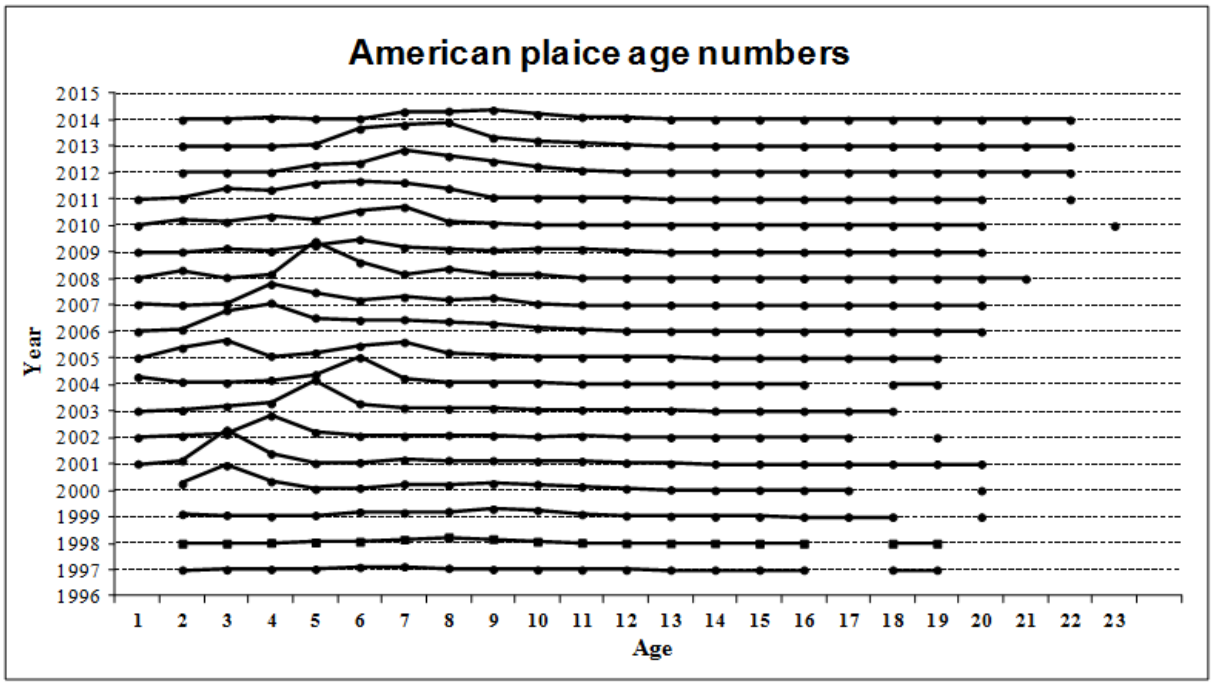

Figure 13. American plaice mean catches per tow by age on NAFO 3NO: 1997-2014. Data from 2010 to 2014 are in Table 18; data for 1997-2009 can be seen in SCR Doc 13/10.

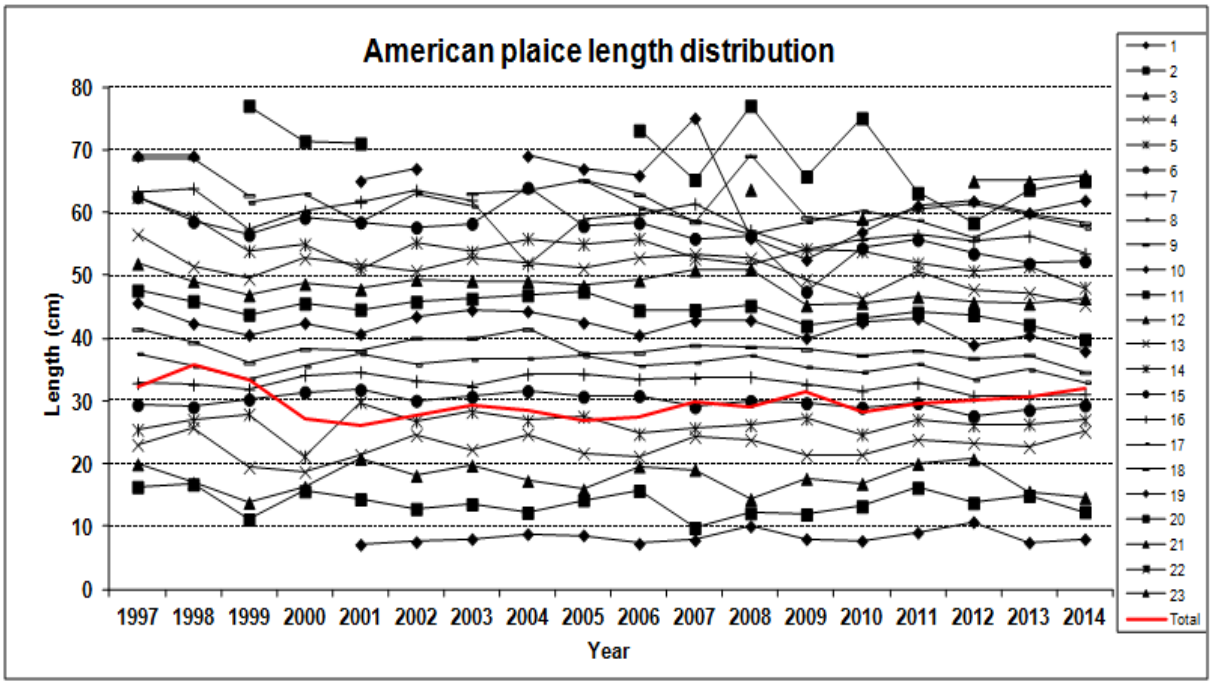

Figure 14. American plaice mean length (cm) at age on NAFO 3NO: 1997-2014. Data from 2010 to 2014 are in Table 19; data for 1997-2009 can be seen in SCR Doc 13/10.

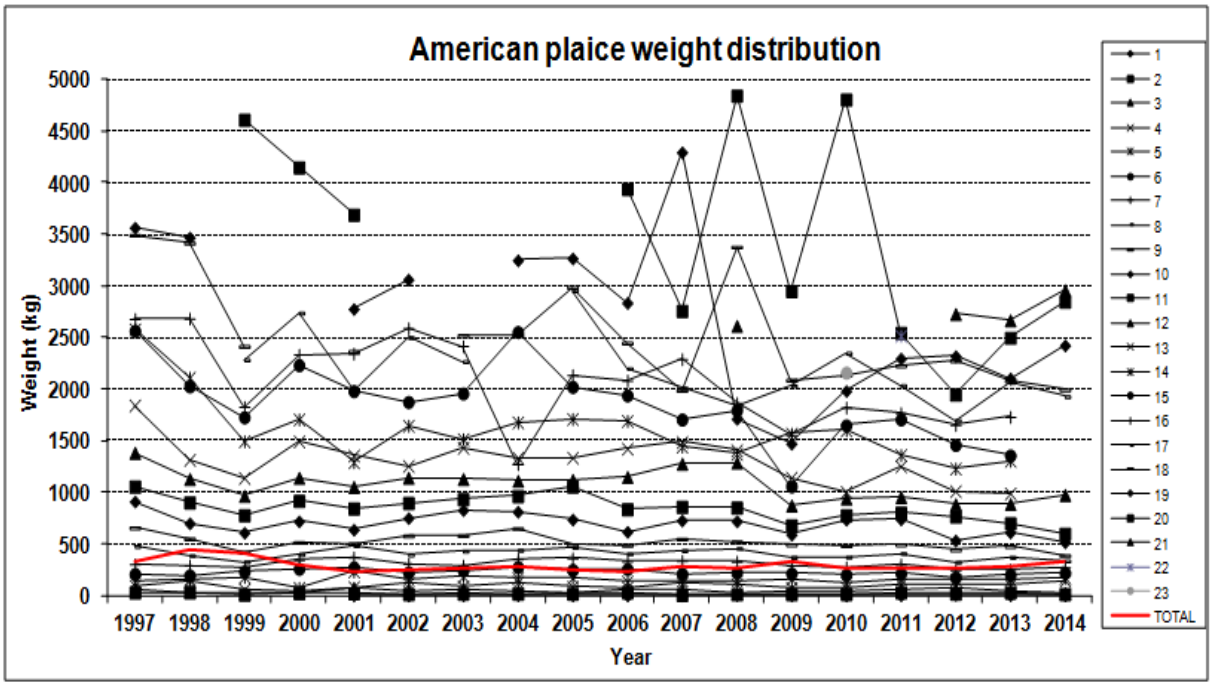

Figure 15. American plaice mean weight (gr) at age on NAFO 3NO: 1997-2014. Data from 2010 to 2014 are in Table 20; data for 1997-2009 can be seen in SCR Doc 13/10.

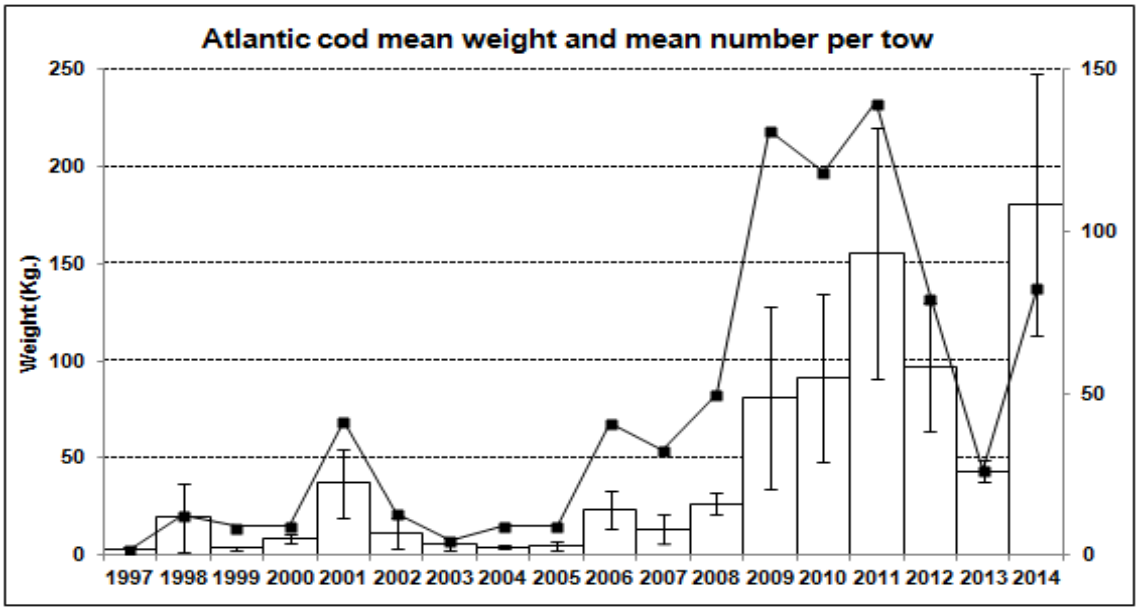

Figure 16. Atlantic cod stratified mean catches in Kg and ±SD by year and mean number by year. Spanish Spring surveys in NAFO Div. 3NO: 1997-2014.

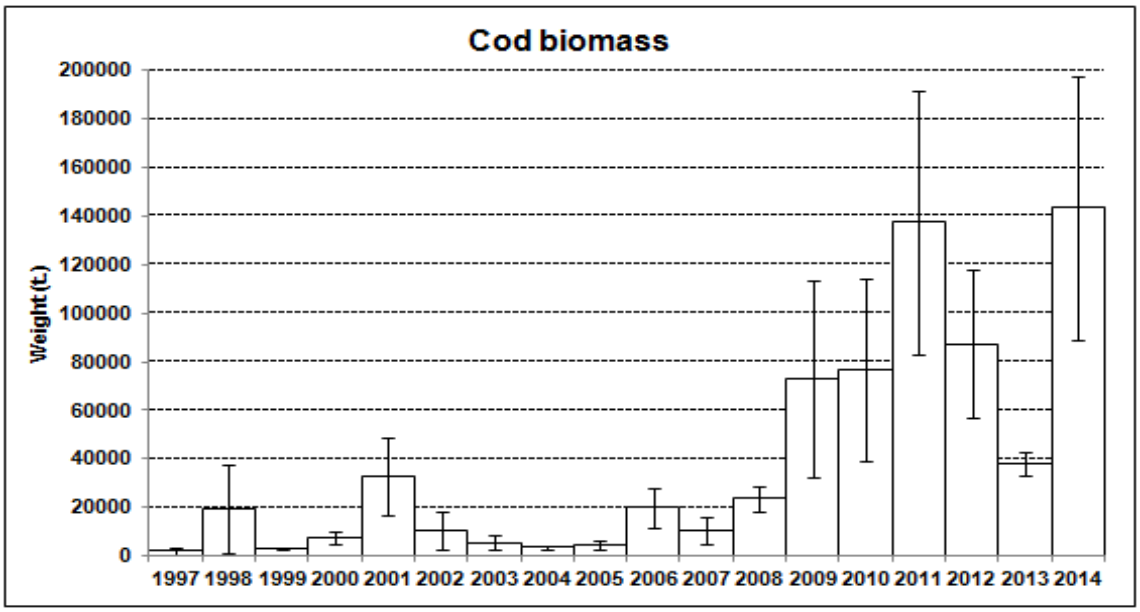

Figure 17. Atlantic cod biomass calculated by the swept method in tons and ±SD by year. Spanish Spring surveys in NAFO Div. 3NO: 1997-2014.

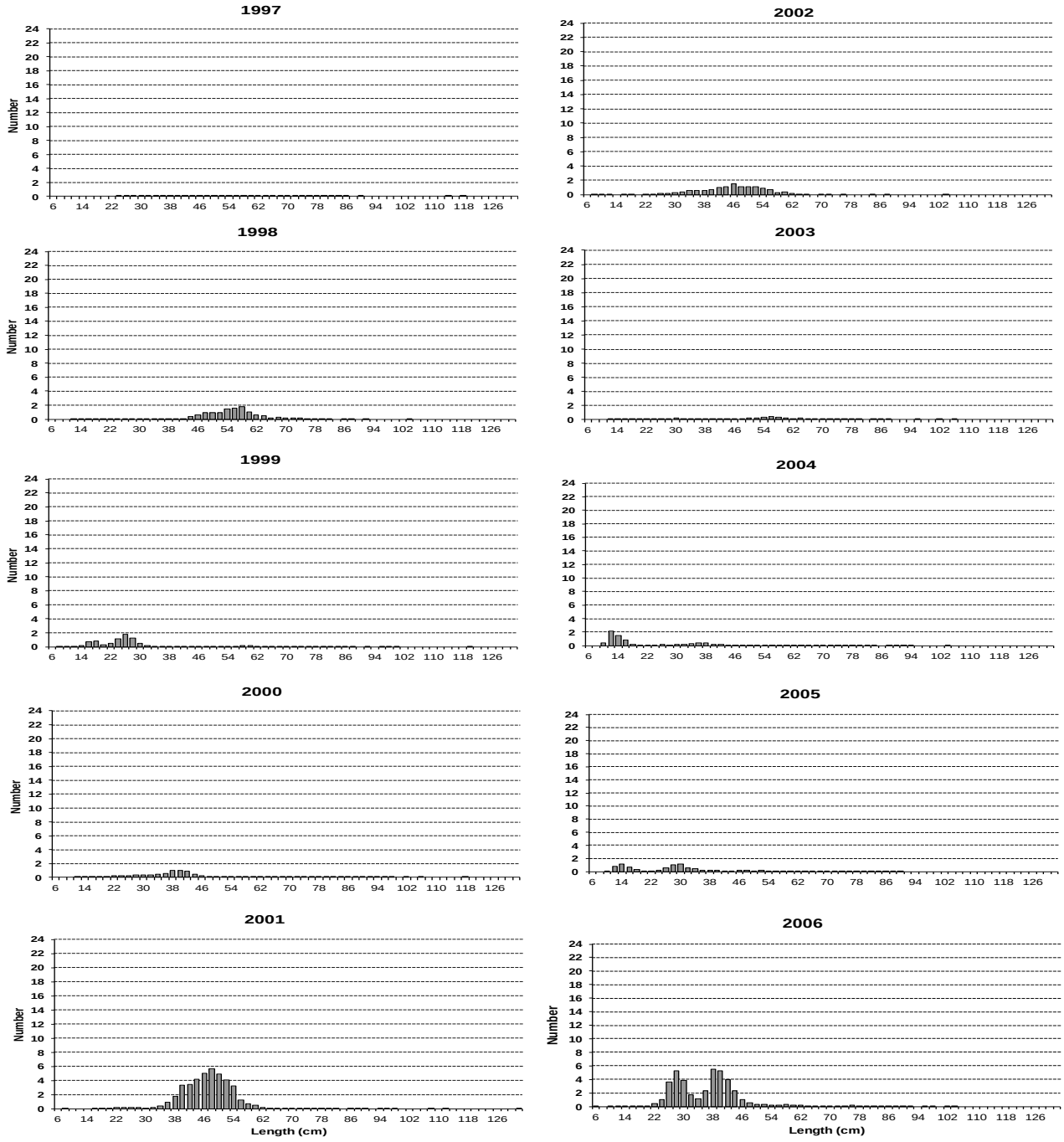

Figure 18. Atlantic cod length distribution (cm) on NAFO 3NO: 1997-2014. Mean catches per tow number. Data from 2010 to 2014 are in Table 26; data for 1997-2009 can be seen in SCR Doc 13/10.

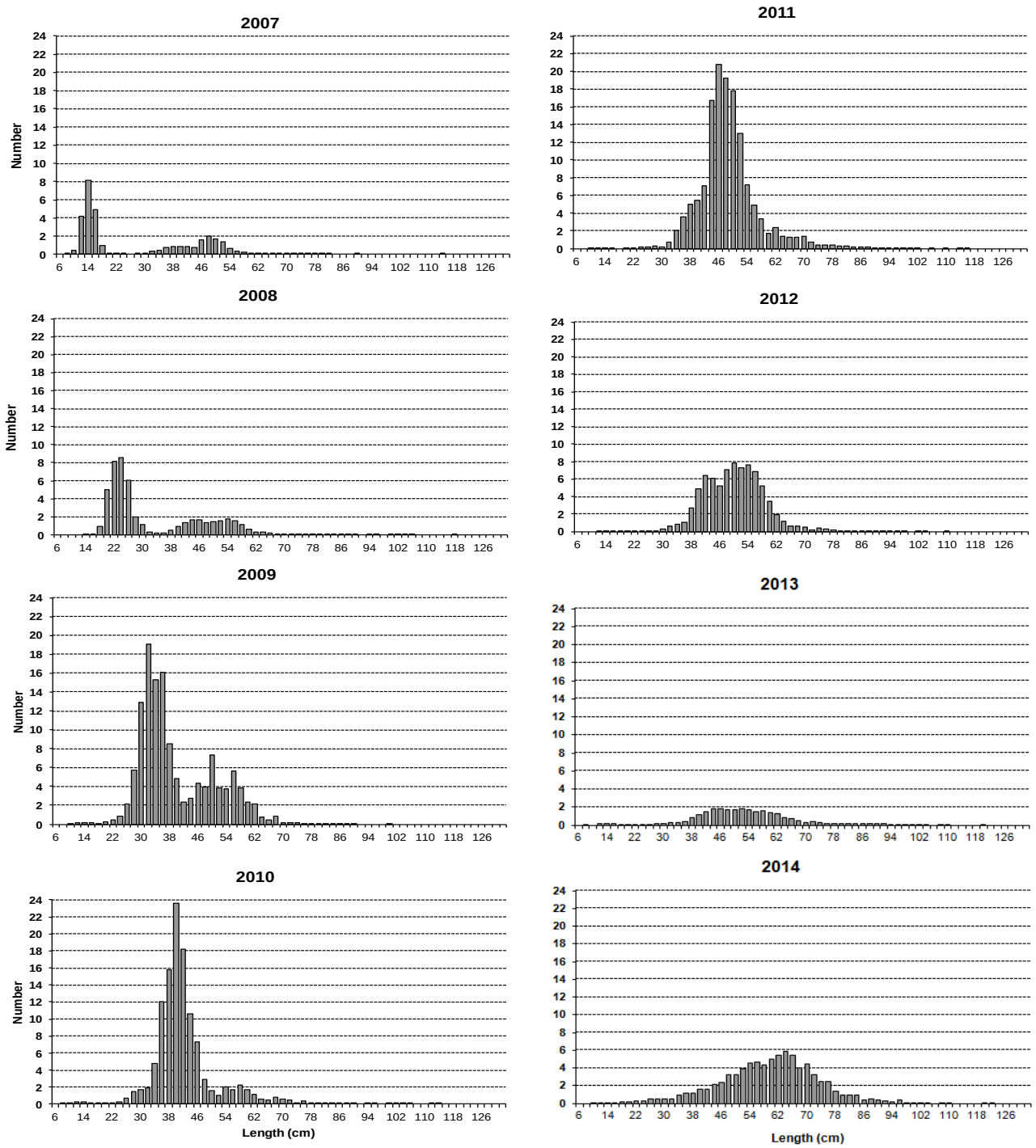

Figure 18 (cont.) Atlantic cod length distribution (cm) on NAFO 3NO: 1997-2014. Mean catches per tow number. Data from 2010 to 2014 are in Table 26; data for 1997-2009 can be seen in SCR Doc 13/10.

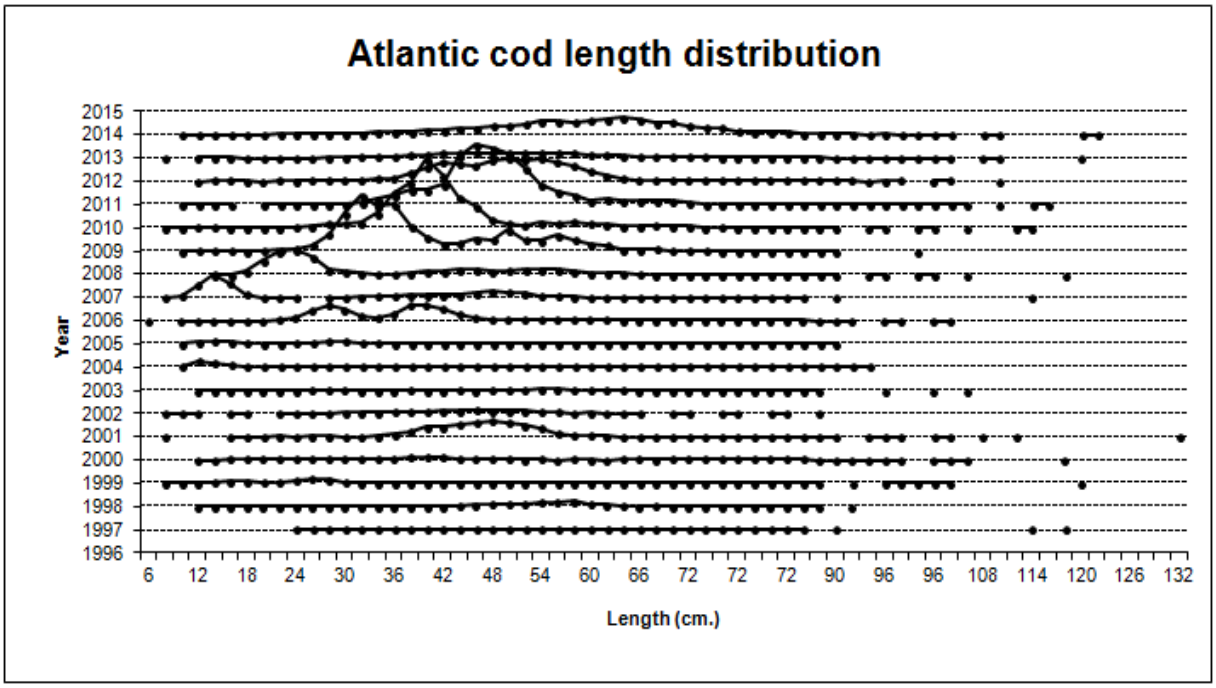

Figure 19. Atlantic cod stratified mean catches in Kg and ±SD by year and mean number by year. Spanish Spring surveys in NAFO Div. 3NO: 1997-2014. Data from 2010 to 2014 are in Table 26; data for 1997-2009 can be seen in SCR Doc 13/10.

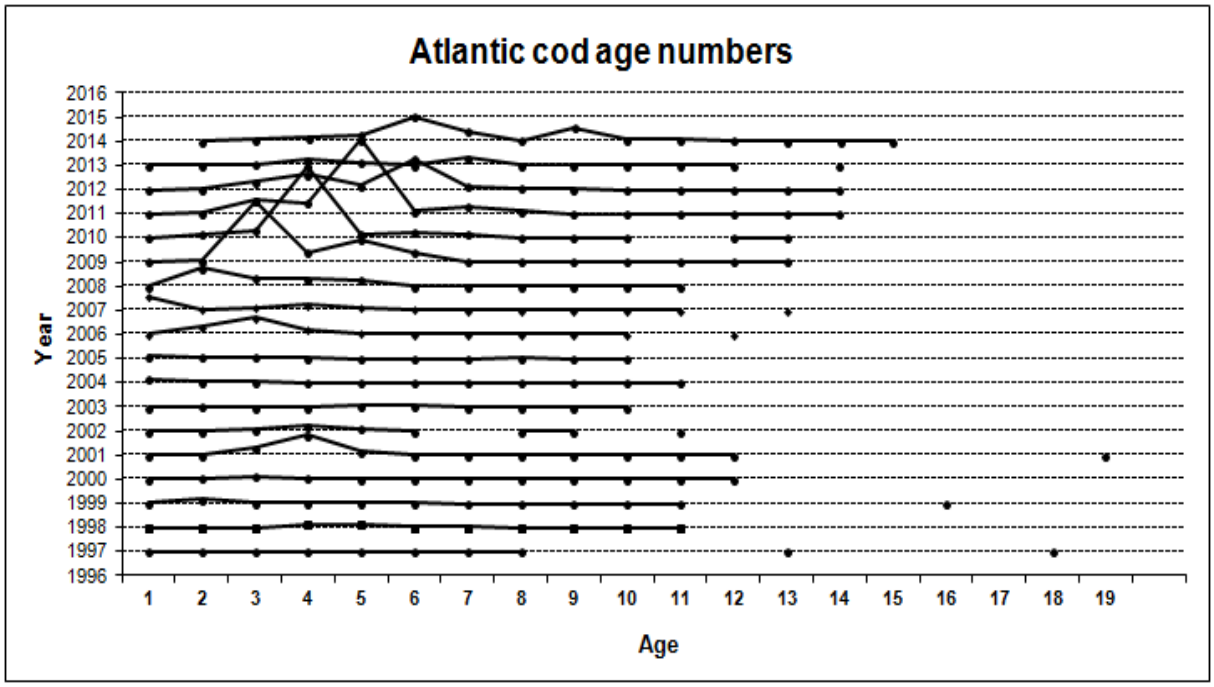

Figure 20. Atlantic cod biomass calculated by the swept method in tons and ±SD by year. Spanish Spring surveys in NAFO Div. 3NO: 1997-2014. Data from 2010 to 2014 are in Table 27; data for 1997-2009 can be seen in SCR Doc 13/10.

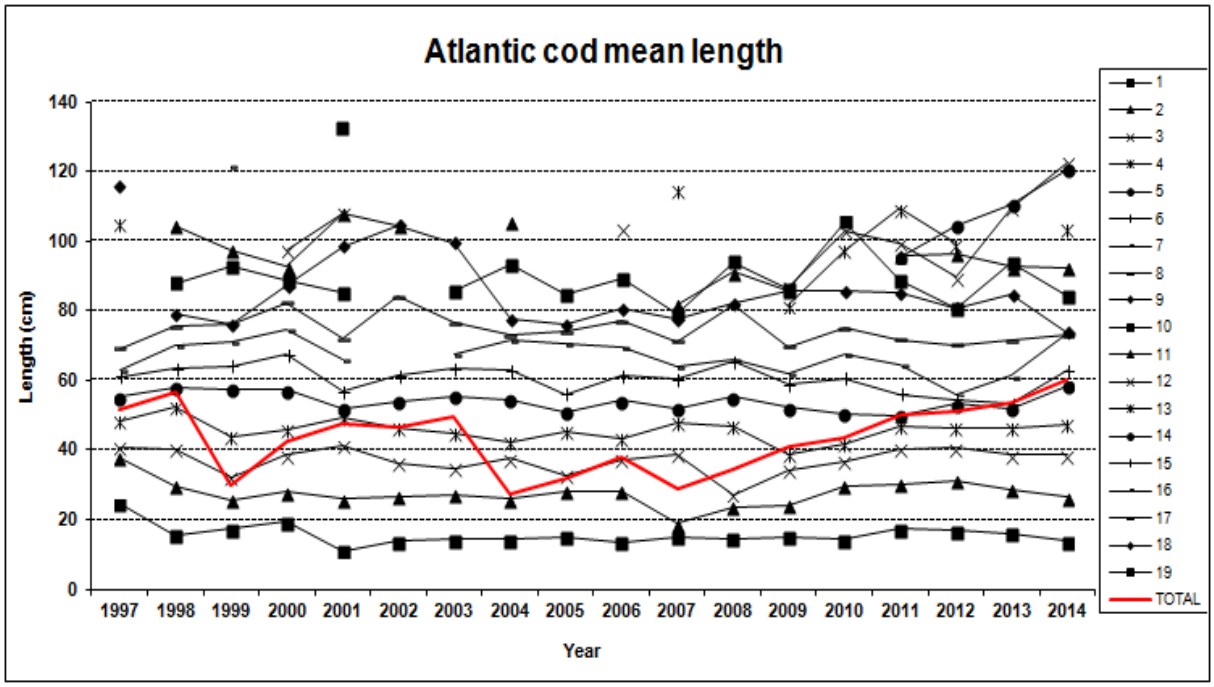

Figure 21. Atlantic cod mean length (cm) at age on NAFO 3NO: 1997-2014. Ages from 1 to 19. Data from 2010 to 2014 are in Table 28; data for 1997-2009 can be seen in SCR Doc 13/10.

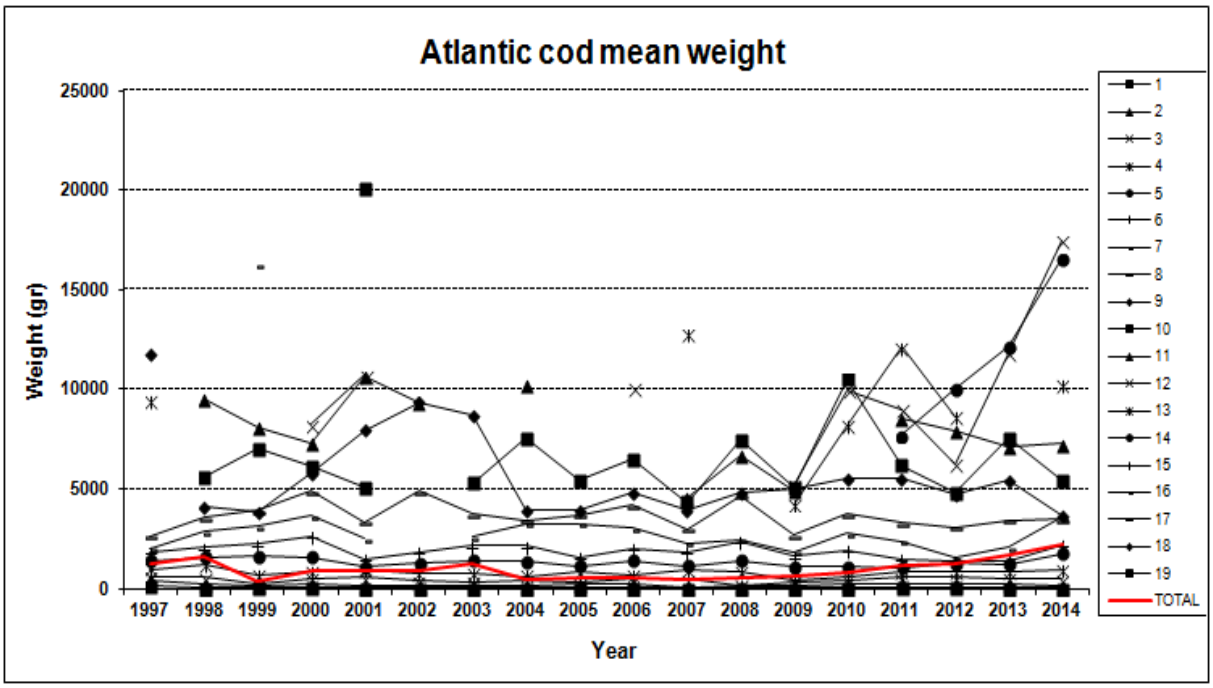

Figure 22. Atlantic cod mean weight (gr) at age on NAFO 3NO: 1997-2014. Ages from 1 to 19. Data from 2010 to 2014 are in Table 29; data for 1997-2009 can be seen in SCR Doc 13/10.