

**Northeast Fisheries Science Center Reference Document 15-23**

doi:10.7289/V5MP518G

# The International Sampling Program: Continent of Origin and Biological Characteristics of Atlantic Salmon Collected at West Greenland in 2014

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**U.S. DEPARTMENT OF COMMERCE**  
National Oceanic and Atmospheric Administration  
National Marine Fisheries Service  
Northeast Fisheries Science Center  
Woods Hole, Massachusetts  
October 2015

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**Information Quality Act Compliance:** In accordance with section 515 of Public Law 106-554, the Northeast Fisheries Science Center completed both technical and policy reviews for this report. These predissemination reviews are on file at the NEFSC Editorial Office.

This document may be cited as:

Sheehan TF, Belleni L, Coghlan B, Deschamps D, Haas-Castro R, Mee D, Thomas K, Nygaard R, King TL, Robertson MJ, Ó Maoiléidigh N. 2015. The International Sampling Program: Continent of Origin and Biological Characteristics of Atlantic Salmon Collected at West Greenland in 2014. US Dept Commer, Northeast Fish Sci Cent Ref Doc. 15-23; 33 p. Available from: National Marine Fisheries Service, 166 Water Street, Woods Hole, MA 02543-1026, or online at <http://www.nefsc.noaa.gov/publications/>

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## ABSTRACT

An Atlantic salmon (*Salmo salar*) mixed-stock fishery operating from 1 August through 31 October exists off the western coast of Greenland, which primarily harvests one-sea-winter (1SW) North American and European origin salmon destined to return to natal waters as two-sea-winter spawning adults. To collect data on the biological characteristics and origin of the harvest necessary for international stock assessment efforts, parties to the North Atlantic Salmon Conservation Organization's (NASCO) West Greenland Commission (WGC) agreed to participate in an international sampling program for the 2014 fishery. The sampling program was coordinated by the USA (NOAA Fisheries Service) and involved 6 samplers from 5 countries, deployed among 4 communities (Sisimuit, Maniitsoq, Paamiut and Qaqortoq) located on the west coast of Greenland. In addition, 2 fish processing factories from 2 different communities (Arsuk and Atammik) also collected biological samples from landed Atlantic salmon. Reported landings in 2014 were 57.8 metric tons (t). Data on length, weight, freshwater and marine age from scale samples and continent of origin from genetic analysis of tissue samples were collected. Since 2002 (with the exception of 2006 and 2011), unreported landings were identified by comparing the reported landings to the weight of the sampled harvest for each community. Underreporting was detected for non-factory landings in 1 of the 4 communities (Qaqortoq) and the total adjusted landings for this community were approximately 0.6 t higher than the reported landings, resulting in total adjusted landings of 58.4 t in 2014. In total, 1,013 salmon were observed by the sampling teams and 649 of these were sampled for biological characteristics. An additional 276 salmon were also sampled from the factory landed fish. Approximately 6% by weight of the reported landings were observed by the sampling teams. As seen since the mid-1990s, a high proportion of the harvested stock was of North American origin (71.7%) with the balance being European origin (28.3%). North American origin fish were primarily freshwater age 2 or 3 years (29.0% and 44.5% respectively) and 1SW (91.3%). European origin fish were primarily freshwater age 2 (60.7%) and 1SW (96.1%). The mean length of North American and European 1SW salmon was 66.4 and 64.3 cm and the mean whole weight was 3.39 and 3.13 kg, respectively. Approximately 12,800 North American (41.8 t) and 5,400 European salmon (16.5 t) were harvested, not taking into account any unreported catch. The sampling program was successful in adequately sampling the Greenland catch, both temporally and spatially, and provided essential input data to international stock assessment efforts, which provide stock status and catch options for subsequent fishery management.

## INTRODUCTION

An important mixed-stock Atlantic salmon (*Salmo salar*) fishery exists off the western coast of Greenland. This fishery takes primarily one-sea-winter (1SW) North American and European origin salmon that would potentially return to natal waters as mature two-sea-winter (2SW) spawning adults or older. Effective management of the resource on both continents requires annual collection of accurate landings data, continent of origin assignments, and biological characteristics data to assess the impact of the fishery on the contributing stock complexes. Data collected during the fishery are also required for use in assessment models to predict pre-fishery abundance of North American and European stocks to provide fishery managers with catch options required for setting harvest regulations.

Atlantic salmon were first documented off the coast of Greenland in 1780 and were targeted by a small local inshore gillnet fishery (Jensen 1990). During the early 1960s, the fishery developed an international presence; in 1965, vessels from Norway, Denmark, Sweden, and the Faroe Islands arrived and introduced an offshore drift-gillnet fishery (ibid.). Reported catches increased to a high of 2,689 t in 1971 (Figure 1). Mark-recapture studies conducted during this period indicated that the Atlantic salmon caught in this fishery were of North American and European origin and were not uniformly distributed along the coast (Reddin et al. 2012). Due to the concerns that this fishery would have deleterious impacts on the contributing stock complexes, a quota system was agreed upon and implemented in 1976 (Colligan et al. 2008), and since 1984, catch regulations have been established by NASCO.

Since 1969, a coordinated international sampling program has been conducted to obtain biological samples from the Greenland salmon fishery. From 1969-1981, research vessels were used to obtain samples. Since 1982, international teams of samplers have been deployed throughout West Greenland to obtain samples from fish processing plants (when a commercial fishery was allowed), local markets, and other vendors from individual communities where Atlantic salmon are being landed. The focus of this sampling program was to collect biological data and samples. Historically, length, weight, and scale samples were collected, and individual salmon were scanned for fin clips or external/internal tags. Beginning in 2002, tissue samples have been collected from fish for genetic stock identification.

The purpose of this paper is to:

- Describe the international sampling program;
- Present the results from the continent of origin analysis; and
- Summarize the biological characteristics of the catch from West Greenland during the internal-use-only fishery of 2014.

## International Sampling Program

The WGC of NASCO has agreed to regulatory measures for the West Greenland fishery for all years from 1984 onward (with the exception of 1985, 1991, 1992, and 1996). Since 2006, these have been applied as multi-year regulatory measures. The latest measure was established for the period 2012 to 2014 (WGC(12)12) and restricted landings in 2012 to the amount used for internal consumption in Greenland only, which in the past has been estimated to be 20 t. In addition, no commercial export of salmon is allowed. These regulatory measures were to also apply in 2014 if the Framework of Indicators (FWI) developed and updated by the International Council for the Exploration of the Sea (ICES 2007, 2012) indicated no significant change, implying that a reassessment of the catch advice would not be required (WGC(12)12). The FWI was applied in 2014 and the results indicated that a reassessment of the catch advice was not required. Therefore the 2012 regulatory measures continued for the 2014 fishery.

From 2002 to 2011 the quota for commercial landings of Atlantic salmon for export was set to 0 tons by the Government of Greenland, but the internal-use-only fishery for personal and local consumption was unaffected. Licensed fishermen were permitted to sell salmon to hotels, institutions, and local markets. Also, licensed fishers and unlicensed fishers were allowed to land salmon for private consumption. This internal-use-only fishery was without a quota limit, but in the past has been estimated at 20 t annually. The fishery generally operates during the months of August, September and October and since 2005 the fishery has opened on 1 August and closed on 31 October. The fishery is regulated according to the Government of Greenland Executive Order No. 12 of 1 August 2012, an update to the previous order (Government of Greenland Executive Order No. 21 of 10 August 2002).

From 2012-2014, the Government of Greenland set the national quota for commercial landings of Atlantic salmon for export to zero tons. No export of salmon from Greenland was allowed. However, in 2012 the Government of Greenland set a 35 t national quota for landing at fishing processing factories to provide a year round supply of local harvested Atlantic salmon within Greenland. The internal-use-only fishery for personal and local consumption remained unaffected and unrestricted by the quota for factory landings. A factory landings quota was again set to 35 t in 2013, but was reduced to 30 t in 2014.

Under NASCO's West Greenland Sampling Agreement (WGC(14)13), parties to NASCO's WGC agreed to provide staff to sample Atlantic salmon catches from the West Greenland internal-use-only fishery during the 2014 season.

The objectives of the sampling program were to:

- Continue the time series of data (1969-2013) on continent of origin and biological characteristics of the Atlantic salmon in the West Greenland fishery;
- Provide data on mean weight, length, age and continent of origin for use in the North American and European Atlantic salmon run-reconstruction models; and
- Collect information on the recovery of internal and external tags.



As outlined in the sampling agreement, the European Union agreed to provide staff to sample the fishery for a minimum of 8 person-weeks; the United States agreed for a minimum of 2 person-weeks; and Canada for a minimum of 2 person-weeks. Samplers from various countries involved in the program were as follows:

<b>Country</b>	<b>Sampler</b>	<b>Institute</b>	<b>Period</b>	<b>Community (NAFO Division)</b>
UK (England & Wales)	Dave Mee	Natural Resources Wales	13 Aug – 25 Aug	Qaqortoq (1F)
Ireland	Brian Coghlan	Inland Fisheries Ireland	23 Aug – 04 Sep	Paamiut (1E)
UK (Scotland)	Lawrence Belleni	Marine Scotland	30 Aug – 15 Sep	Maniitsoq (1C)
USA	Ruth Haas-Castro	NOAA Fisheries Service	12 Sep – 24 Sep	Sisimiut (1B)
Canada	Denise Deschamps	Ministère des forêts, de la faune et des parcs	17 Sep – 06 Oct	Qaqortoq (1F)
Ireland	Katie Thomas	Marine Institute	27 Sep – 12 Oct	Maniitsoq (1C)

Individual samplers were deployed during the course of the fishing season to provide the best possible spatial and temporal coverage of the fishery, given logistics and other considerations. The coordination of this effort was handled by the USA (NOAA Fisheries Service), with assistance from the Greenland Institute of Natural Resources (GINR). Samplers were stationed in 4 communities representing 4 Northwest Atlantic Fisheries Organization (NAFO) divisions (Figure 2): Sisimiut (1B), Maniitsoq (1C), Paamiut (1E) and Qaqortoq (1F). Samplers were not deployed to Nuuk (1D) due to the continued uncertainty of access to landed Atlantic salmon in this community (ICES 2012).

In addition, arrangements were made to collect biological characteristics data and samples from 4 of the factories registered to receive Atlantic salmon. The factories were located in the communities of Kangaamiut (NAFO Division 1C), Atammik (1C), Qeqertarsuatsiaat (1D) and Arsuk (1E). Sampling instructions and supplies for sampling 300 salmon were provided to GINR and these packages were forwarded to the individual factories at the beginning of the fishery. The expectation was for factory staff to collect a maximum of 25 samples per day to spread the sample collection over the fishing season.

Reported landings in 2014 were 57.8 t (57.7 t for West Greenland and 0.1 t for East Greenland ICES Statistical Area XIV). In the past, non-reporting of harvest was identified by comparing the reported landings to the sample data. From 2002-2013 (with the exception of 2006 and 2011), the sampling team documented more fish than reported in at least 1 division (ICES 2014). A documented salmon could be one that was either sampled, checked for an adipose clip only, or not sampled but seen. When this type of discrepancy occurs, the reported

landings are adjusted to include the total weight of the fish documented as being landed during the sampling period, and the adjusted landings are included in all subsequent assessments. Considering that samplers are not stationed within a community throughout the entire fishing season and that there are numerous communities without samplers present, these adjusted landings should be considered minimum estimates.

In 2014, a discrepancy occurred in 1 of the 4 sampled communities (Table 1). Reported landings for Qaqortoq were 940 kg and the adjusted landings were determined to be 1560 kg (difference of 620 kg, 66% of reported landings). The reported landings and adjusted landings for 2002-2014 are presented in Table 2. To provide the most reliable estimate of catch, which is necessary for estimating the potential fishery impacts on contributing stocks, it is important to continue to improve the catch reporting procedure and the quality of the catch statistics. Factory landings and samples are not considered within this process since these landings are strictly regulated by the Government of Greenland (e.g. only licensed commercial fishers can land at designated factories) and are accounted for and reported by the factory managers to the Greenland License Control Office on a weekly to daily basis.

Landed fish were sampled at random, and when possible, the total catch was sampled. Individual fish were measured (fork length, mm) and weighed (gutted weight (GW) or whole weight (WW), kg). Scales were taken for age determination, and adipose fins were taken for DNA analysis for stock identification. Fish were also examined for fin clips, external marks, external tags, and internal tags. Adipose-clipped fish were sampled for microtags (coded wire tags).

A total of 1,013 salmon were observed by the sampling teams, and an additional 276 salmon were sampled by the factory staff for a total of 1,289. Of this total, 925 were sampled for biological characteristics (representing ~6% by weight of the reported landings), 150 fish were only checked for an adipose clip, and 214 were documented as being landed but were not sampled or examined further. Biological characteristics data were collected as follows:

- 892 fork lengths;
- 848 gutted weights;
- 41 whole weights;
- 775 scale samples; and
- 920 genetic samples.

A total of 8 adipose-clipped fish were documented. Of all the fish examined by the samplers, none had an external or an internal tag. A single tag was provided directly to a sampler by the fisherman from an un-sampled fish. An additional 21 tags were provided directly to GINR by fishermen or consumers, many of these from historic releases across the North Atlantic. The tag breakdown was as follows (Table 3):

- 21 Carlin tags
- 1 Floy tag

Non-factory sampling often occurs at a local market which is a centralized location where harvested salmon are present and available. Prior to any sampling, the sampler always obtain

permission from the market manager. This arrangement has generally been successful for all samplers, although there have been issues in some years in Nuuk (Sheehan et al. 2013). Because of concerns that proper arrangements had not been made to allow sampling of fish in Nuuk in 2014, no sampling occurred in that community. In 2014 some minor problems were encountered when samplers were not allowed access to fish. Further communication from the Program Coordinator and GINR helped rectify the situation. These issues were restricted to Maniitsoq and Qaqortoq.

Landings were allowed to factories in 2014 and 6 factories received salmon: Atammik (1C), Kangaamuit (1C), Manitsoq (1C), Nuuk (1D), Qeqertarsuatsiaat (1D) and Arsuk (1E). Arrangements to have factory staff collect biological samples from landed salmon were made with 4 factories, but unfortunately only 2 factories were able to collect any samples. The factories are located in small communities, and the transport time for the sampling packages was longer than expected. The packages were received after the factory quota had been filled and fishing for factory landings ceased.

The limitation of the fishery to internal-use-only caused some practical problems for the sampling teams; however, the sampling program provided adequate representation of the Greenland catch, both temporally and spatially. Obtaining samples from 2 of the 4 factories receiving salmon was a major advancement over previous year's sampling efforts. This was the first year samples were obtained from factories since they began receiving salmon in 2012. There continued to be minor problems with samplers being denied access to landed salmon in some communities; however, following intervention, access was restored. There also continued to be no sampling in Nuuk, which results in a potential for bias when describing the biological characteristics of the harvest, stock assessment results, and catch advice. However, this potential bias is expected to be minimized given that sampling occurred both to the north and south of Nuuk.

## CONTINENT OF ORIGIN

Fin tissue samples were collected and preserved in RNAlater<sup>®1</sup>, an aqueous, non-toxic tissue and cell storage reagent that stabilizes and protects cellular RNA. A total of 920 usable samples were collected from 6 communities in 4 NAFO divisions: non-factory landings from Sisimiut in 1B (n=64), Maniitsoq in 1C (n=249), Paamiut in 1E (n=99), and Qaqortoq in 1F (n=234), and factory landings from Atammik in 1C (n=124) and Arsuk in 1E (n=150). A small number of tissue samples (n=4) were collected, but not processed due to poor sample quality, and were therefore removed from the database.

DNA isolation and the subsequent microsatellite analyses were performed according to standardized protocols (King et al. 2001; Sheehan et al. 2010). A database of approximately 5,000 Atlantic salmon genotypes of known origin was used as a baseline to assign the samples to continent of origin. In total, 71.7% of the salmon sampled were of North American origin and 28.3% were of European origin. The NAFO division-specific continent of origin assignments are presented in Table 4.

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<sup>1</sup> Reference to trade names does not imply endorsement by any collaborating agency or government.

These findings show that high proportions of fish from the North American stock complex continue to contribute to the fishery (Figure 3). The variability in the recent stock complex contributions between divisions and the deviation from past trends (Figure 4) underscore the need to annually sample multiple NAFO Divisions to achieve accurate estimates of continental contributions to the harvest.

Variations in the estimated weighted proportions of North American and European salmon in the fishery during 1987-2012 and the adjusted landings that were sampled are shown in Table 5 and Figure 5. The 2014 North American weighted contribution (72%) to the fishery was approximately equal to the long-term mean (1982-2013, 69%), but below the recent 10-year mean (2005-2014, 80%). The European weighted contribution (28%) to the 2014 fishery was approximately equal to the long-term mean (1982-2014, 31%), but above the 10-year mean (2005-2014, 20%). In terms of numbers of fish, the 2014 fishery caught approximately 12,800 North American salmon (41.8 t) and 5,400 European fish (16.5 t; Table 5 and Figure 5). The 2014 total number of fish harvested (18,200) is higher than in 2013 (14,200) and the highest total since 1997. It is the highest total in the last ten years (2005-2014), the 15<sup>th</sup> highest total in the 31 year time series (1982-2014 with no harvest estimates in 1993 and 1994), but only 5.4% of the maximum estimate of 336,000 fish harvested in 1982.

## **BIOLOGICAL CHARACTERISTICS OF THE CATCHES**

Biological characteristics (length, weight, and age) were recorded for all sampled fish. Overall across all sea ages, the mean sampled fork length was 66.0 cm and the mean gutted weight was 2.90 kg.

This was the first year that samples were obtained from factories in addition to the non-factory local market landings. To evaluate if factory landings were representative of the non-factory landings, an ANOVA was conducted to determine if the weight (lognormal gutted weight) of Atlantic salmon in 2014 differed between sample types (factory or non-factory), while also considering possible differences among NAFO Divisions (1C and 1E), among standard weeks (34-40), or between continents of origin (Europe or North America). NAFO Divisions 1C and 1E were selected because both divisions had factory and non-factory landings. Standard weeks 34-40 were selected as this was the range over which samples were available within each division. Differences in weight were detected based on the standard week of sampling ( $F_{[5, 579]}=7.20$ ,  $p<0.001$ ) and continent of origin ( $F_{[1, 579]}=8.39$ ,  $p=0.004$ ), whereas differences in weight were not noted among the NAFO divisions ( $F_{[1, 579]}=2.39$ ,  $p=0.123$ ) or sample types ( $F_{[1, 579]}=0.33$ ,  $p=0.568$ ).

The lack of difference in weight based on sample type (Figure 6) or NAFO division suggests that there are no differences in salmon characteristics for factory and non-factory landings. Differences in weights based on standard week and continent of origin were expected, given the rapid growth that salmon experience during the summer months off the coast of West Greenland and the apparent size difference between North American and European salmon stocks harvested within the fishery (ICES 2015). The continent of origin estimates for the 2 sample types in NAFO Divisions 1C and 1E also appear to be similar (Figure 7). There appears to be no difference in origin or size between the 2 sample types, and therefore they were combined for subsequent summation and reporting.

An overall decrease in mean whole weight of both European and North American 1SW salmon occurred between 1969 and 1995 (Table 6 and Figure 8). This trend was reversed in 1996 when mean weights began to increase, although evidence suggests that these trends may be partially explained by annual variation in the timing of the sampling program (ICES 2011). In 2014, the mean length of North American 1SW salmon was 65.6 cm, and the mean whole weight was 3.25 kg; the mean length of European 1SW salmon was 63.6 cm, and the mean whole weight was 3.02 kg. The North American 1SW fork length estimate was approximately equal to the 2013 value (66.2 cm) and the previous 10-year average (65.3 cm, 2004-2013). The European 1SW mean fork length was slightly lower than the 2013 value (64.6 cm) and previous 10-year average (64.7 cm, 2004-2013). The North American 1SW whole weight was approximately equal to the 2013 value (3.33 kg) and previous 10-year average (3.20 kg, 2004-2013). The European 1SW whole weight was lower than both the 2013 value (3.16 kg) and previous 10-year average (3.18 kg, 2004-2013). A summary of the mean fork lengths and whole weights in the 2014 fishery by sea age, continent of origin, and NAFO division is presented in Table 7. Note that the weight data have not been adjusted for date of capture, and hence may not represent an actual change in mean weight over the time series because fish sampled later in the fishing season have had additional time to grow compared to fish sampled early in the season (ICES 2011).

The smolt age distribution of the sampled catch by continent of origin and NAFO division is presented in Table 8. The smolt age distributions by origin for all North American and European origin salmon caught (1968-2014) are provided in Table 9.

In 2014, the percentages of fish by smolt age within continent of origin were:

Continent of origin	Percent of continent of origin by smolt age (years)					
	1	2	3	4	5	6
North American	0.4%	26.0%	44.5%	21.9%	6.9%	0.4%
European	4.5%	60.7%	30.8%	4.0%	0.0%	0.0%

The mean smolt age of the 2014 North American origin samples was 3.1 years. Although age 1 smolts historically represent a small proportion of the catch (previous 10-year mean of 1.3%, 2004-2013), the 2014 value (0.4%) is one of the lowest. There has been a consistent trend over the past two decades of decreasing contributions from age 1 smolts, which is indicative of the relatively minor contribution of the more southerly North American populations to the fishery. The percentage of smolt age 2 salmon of North American origin in the 2014 fishery (26.0%) is lower than in 2013 (32.6%) and approximates the previous 10-year mean (25.8%, 2004-2013). Age 3 and older smolts accounted for 73.6% of the 2014 harvest of North American fish, which is approximately equal to the previous 10-year mean (72.9%, 2004-2013), but greater than the overall mean for the 41-year time series (66%, 1968-2014 excluding data gaps in 1977 and 1993-1994).

The mean smolt age of the European salmon in 2014 was 2.3 years. The percentage of smolt age 1 (4.5%) is equal to the 2013 value, but below the previous 10-year mean of 11.4%

(2004-2013). The percentage of smolt age 2 (60.7%) in the 2014 fishery is slightly lower than in 2013 (68.2%) and approximately equal to the previous 10-year mean (59.6%, 2004-2013). The contribution of age 3 and older European origin smolts (34.8%) is slightly greater than the previous 10-year mean (27.9%, 2004-2013).

In 2014, the proportions by sea age by continent of origin were:

<b>Continent of origin</b>	<b>Percent of continent of origin by sea age (years)</b>		
	<b>1SW</b>	<b>2SW</b>	<b>Repeat Spawners</b>
North American	91.3%	1.1%	7.6%
European	96.1%	2.4%	1.5%

As expected, the 1SW age group was dominant (92.6%) in the 2014 fishery (Table 10). This value is slightly below the 2013 value (95.2%). Concerns have been raised over recent difficulty with discerning winter annuli from apparent ‘checks’ in the marine zone of Atlantic salmon multi-sea winter scales. Care should be taken to properly discern true marine annuli from growth checks, and further study of this phenomenon is warranted.

## **ACKNOWLEDGEMENTS**

We would like to acknowledge the Greenland Institute of Nature Resources and the fishers and residents in Greenland who provided access to their fish. We would also like to thank the various laboratories and agencies for supporting the program, providing the samplers, and for the funding necessary to support the sampling in Greenland. Funding support for the samplers was provided by Natural Resources Wales (for Dave Mee), Inland Fisheries Ireland (for Brian Coghlan), Marine Scotland (for Lawrence Bellini), NOAA Fisheries Service (for Ruth Haas-Castro), Fisheries and Oceans Canada, Ottawa (for Denise Deschamps) and the Marine Institute (for Katie Thomas). Fisheries and Oceans Canada (Newfoundland and Labrador Region) conducted the aging of all scale samples collected and maintains the master sampling database. NOAA Fisheries Service provided funding to the U. S. Geological Survey to support the genetic processing and continent of origin analysis. Reference to trade names does not imply endorsement by any collaborating agency or government.

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**Table 1. Evaluation of underreporting in sampled communities during the 2014 Greenland Atlantic salmon (*Salmo salar*) fishery by community/Northwest Atlantic Fisheries Organization (NAFO) division. The total number of salmon documented by the sampling teams (salmon that have been sampled, seen but not sampled and seen and checked for an adipose fin clip only) is converted to a total whole weight (WW) based on a conversion factor of 1.11 (ICES 2014) and compared to the reported landings for each community. Gutted weight is denoted as GW.**

<b>Community (NAFO Division)</b>	<b>Number sampled</b>	<b>Additional Number seen</b>	<b>Avg. sampled GW (kg)</b>	<b>Avg. converted WW (kg)</b>
Sisimiut (1B)	65	14	3.24	3.60
Maniitsoq (1C)	251	117	3.14	3.49
Paamiut (1E)	99	14	2.53	2.80
Qaqortoq (1F)	234	219	3.10	3.44
<b>Total</b>	<b>649</b>	<b>364</b>	<b>3.03</b>	<b>3.36</b>

<b>Community</b>	<b>Est. WW sampled/seen (kg)</b>	<b>Reported landings (kg)</b>	<b>Adjusted landings (kg)</b>	<b>Difference (kg)</b>	<b>Difference as % of reported landings</b>
Sisimiut (1B)	284	2,706	2,706	0	0%
Maniitsoq (1C)	1,283	3,351	3,351	0	0%
Paamiut (1E)	317	1,032	1,032	0	0%
Qaqortoq (1F)	1,560	940	1,560	620	66%
<b>Total</b>	<b>3,444</b>	<b>8,029</b>	<b>8,649</b>	<b>620</b>	<b>8%</b>



**Table 2. Reported landings (kg) for the Greenland Atlantic salmon (*Salmo salar*) fishery (2002–2014) by Northwest Atlantic Fisheries Organization (NAFO) division as reported by the Home Rule Government and the division-specific adjusted landings where the sampling teams observed more fish landed than were reported. Landings from International Council for the Exploration of the Seas Statistical Area XIV (East Greenland) are not included in the assessment, but amounted to 0.1 t in 2014. Shaded cells indicate that sampling took place in that year and division.**

Year		NAFO division						Total
		1A	1B	1C	1D	1E	1F	
2002	Reported	14	78	2,100	3,752	1,417	1,661	9,022
	Adjusted						2,408	9,769
2003	Reported	619	17	1,621	648	1,274	4,516	8,694
	Adjusted			1,782	2,709		5,912	12,312
2004	Reported	3,476	611	3,516	2,433	2,609	2,068	14,712
	Adjusted				4,929			17,209
2005	Reported	1,294	3,120	2,240	756	2,937	4,956	15,303
	Adjusted				2,730			17,276
2006	Reported	5,427	2,611	3,424	4,731	2,636	4,192	23,021
	Adjusted							
2007	Reported	2,019	5,089	6,148	4,470	4,828	2,093	24,647
	Adjusted						2,252	24,806
2008	Reported	4,882	2,210	10,024	1,595	2,457	4,979	26,147
	Adjusted				3,577		5,478	28,627
2009	Reported	195	6,151	7,090	2,988	4,296	4,777	25,496
	Adjusted				5,466			27,975
2010	Reported	17,263	4,558	2,363	2,747	6,766	4,252	37,949
	Adjusted		4,824		6,566		5,274	43,056
2011	Reported	1,858	3,662	5,274	7,977	4,021	4,613	27,407
	Adjusted							
2012	Reported	5,353	784	14,991	4,564	3,993	2,951	32,636
	Adjusted		2,001				3,694	34,596

**Table 2 Continued.**

Year		NAFO division						Total
		1A	1B	1C	1D	1E	1F	
2013	Reported	3,052	2,359	17,950	13,356	6,442	3,774	46,933
	Adjusted		2,461				4,408	47,669
2014	Reported	3,626	2,756	13,762	19,123	14,979	3,416	57,662
	Adjusted						4,036	58,282

**Table 3. Reported tag recaptures (n=22) from the 2014 Greenland Atlantic salmon (*Salmo salar*) fishery. NAFO division refers to Northwest Atlantic Fisheries Organization statistical areas.**

<b>Tag type</b>	<b>Tag code (Seq. code)</b>	<b>Release country</b>	<b>Recapture location (NAFO Division)</b>	<b>Recapture year</b>
Carlin	light blue (YY31.575)	Canada	Sisimuit (1B)	2104
Carlin	dark blue (RDH W40190)	Canada	unknown	1970s
Carlin	dark blue (RDH X41376)	Canada	Kaangaamiut area (1C)	1987-1988
Carlin	dark blue (RDH X74055)	Canada	Kaangaamiut area (1C)	1987-1988
Carlin	dark blue (RDH Y5714)	Canada	Kaangaamiut area (1C)	1987-1988
Carlin	dark blue (RDH Y7326)	Canada	Kaangaamiut area (1C)	1987-1988
Carlin	dark blue (RDH Z42712)	Canada	Kaangaamiut area (1C)	1987-1988
Carlin	light blue (YY34,811)	Canada	Nuuk (1D)	2014
Carlin	light blue (YY37,601)	Canada	Aasiaat area (1B)	2013
Floy	yellow (A-00814)	Canada	Narsaq (1F)	2014
Carlin	black (RFP2792)	France	Arsuk Area (1E)	
Carlin	light blue/light green (58232)	Norway	Arsuk Area (1E)	2000-2001
Carlin	light green (98925)	Norway	Qeqertarsuatsiaat (1D)	1988-1989
Carlin	green (24404)	Scotland	Kaangaamiut area (1C)	1987-1988
Carlin	green (USA 145,063)	USA	Qeqertarsuatsiaat (1D)	1988-1989
Carlin	green (USA 217175)	USA	Qeqertarsuatsiaat (1D)	1988-1989
Carlin	green (USA 24630)	USA	Kaangaamiut area (1C)	1987-1988
Carlin	green (USA 289697)	USA	Kaangaamiut area (1C)	1987-1988
Carlin	green (USA 291510)	USA	Kaangaamiut area (1C)	1987-1988
Carlin	green (USA 398,712)	USA	Qeqertarsuatsiaat (1D)	1988-1989
Carlin	green (USA 398,917)	USA	Qeqertarsuatsiaat (1D)	1988-1989
Carlin	green (USA-CTR 167,495)	USA	Sisimiut (1B)	1978-1982

**Table 4. The continental proportions of North American (NA) and European (E) Atlantic salmon (*Salmo salar*) caught in West Greenland 2014 by Northwest Atlantic Fisheries Organization (NAFO) division. A total of five fish without origin are not included.**

NAFO division	Fishing dates	Number		Totals	Percentages	
		NA	E		NA	E
1B	Sep 16 - Sep 24	49	15	64	76.6	23.4
1C	Aug 27 - Oct 07	288	85	373	77.2	22.8
1E	Aug 25 - Sep 08	153	96	249	61.4	38.6
1F	Aug 14 - Oct 06	170	64	234	72.6	27.4
Total		660	260	920	71.7	28.3

**Table 5. The catch weighted numbers of North American (NA) and European (E) Atlantic salmon (*Salmo salar*) caught at West Greenland from 1971-2014 and the proportion of the catch by weight. Numbers are rounded to the nearest hundred fish. Continent of origin assignments were based on scale characteristics until 1995, scale characteristics and DNA based assignments until 2001, and DNA based assignments only from 2002 onwards.**

	Proportion weighted by catch		Numbers of Salmon caught	
	NA	E	NA	E
1982	57	43	192,200	143,800
1983	40	60	39,500	60,500
1984	54	46	48,800	41,200
1985	47	53	143,500	161,500
1986	59	41	188,300	131,900
1987	59	41	171,900	126,400
1988	43	57	125,500	168,800
1989	55	45	65,000	52,700
1990	74	26	62,400	21,700
1991	63	37	111,700	65,400
1992	45	55	46,900	38,500
1993	-	-	-	-
1994	-	-	-	-
1995	67	33	21,400	10,700
1996	70	30	22,400	9,700
1997	85	15	18,000	3,300
1998	79	21	3,100	900
1999	91	9	5,700	600
2000	65	35	5,100	2,700
2001	67	33	9,400	4,700
2002	69	31	2,300	1,000

**Table 5 Continued.**

	<b>Proportion weighted by catch</b>		<b>Numbers of Salmon caught</b>	
	<b>NA</b>	<b>E</b>	<b>NA</b>	<b>E</b>
2003	64	36	2,600	1,400
2004	72	28	3,900	1,500
2005	74	26	3,500	1,200
2006	69	31	4,000	1,800
2007	76	24	6,100	1,900
2008	86	14	8,000	1,300
2009	89	11	7,000	800
2010	80	20	10,000	2,600
2011	93	7	7,500	600
2012	79	21	7,800	2,100
2013	82	18	11,500	2,700
2014	72	28	12,800	5,400

**Table 6. Annual mean fork lengths and whole weights by continent of origin (NA - North American and E – European) and sea age (1SW – one sea-winter, 2SW – two sea-winter and PS – previous spawner) of Atlantic salmon (*Salmo salar*) caught at West Greenland, 1969-2014.**

	Whole weight (kg)									Fork length (cm)					
	Sea age & origin									Sea age & origin					
	1SW NA	E	2SW NA	E	PS NA	E	All sea ages NA	E	TOTAL	1SW NA	E	2SW NA	E	PS NA	E
1969	3.12	3.76	5.48	5.80	-	5.13	3.25	3.86	3.58	65.0	68.7	77.0	80.3	-	75.3
1970	2.85	3.46	5.65	5.50	4.85	3.80	3.06	3.53	3.28	64.7	68.6	81.5	82.0	78.0	75.0
1971	2.65	3.38	4.30	-	-	-	2.68	3.38	3.14	62.8	67.7	72.0	-	-	-
1972	2.96	3.46	5.85	6.13	2.65	4.00	3.25	3.55	3.44	64.2	67.9	80.7	82.4	61.5	69.0
1973	3.28	4.54	9.47	10.00	-	-	3.83	4.66	4.18	64.5	70.4	88.0	96.0	61.5	-
1974	3.12	3.81	7.06	8.06	3.42	-	3.22	3.86	3.58	64.1	68.1	82.8	87.4	66.0	-
1975	2.58	3.42	6.12	6.23	2.60	4.80	2.65	3.48	3.12	61.7	67.5	80.6	82.2	66.0	75.0
1976	2.55	3.21	6.16	7.20	3.55	3.57	2.75	3.24	3.04	61.3	65.9	80.7	87.5	72.0	70.7
1977	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1978	2.96	3.50	7.00	7.90	2.45	6.60	3.04	3.53	3.35	63.7	67.3	83.6	-	60.8	85.0
1979	2.98	3.50	7.06	7.60	3.92	6.33	3.12	3.56	3.34	63.4	66.7	81.6	85.3	61.9	82.0
1980	2.98	3.33	6.82	6.73	3.55	3.90	3.07	3.38	3.22	64.0	66.3	82.9	83.0	67.0	70.9
1981	2.77	3.48	6.93	7.42	4.12	3.65	2.89	3.58	3.17	62.3	66.7	82.8	84.5	72.5	-
1982	2.79	3.21	5.59	5.59	3.96	5.66	2.92	3.43	3.11	62.7	66.2	78.4	77.8	71.4	80.9
1983	2.54	3.01	5.79	5.86	3.37	3.55	3.02	3.14	3.10	61.5	65.4	81.1	81.5	68.2	70.5
1984	2.64	2.84	5.84	5.77	3.62	5.78	3.20	3.03	3.11	62.3	63.9	80.7	80.0	69.8	79.5
1985	2.50	2.89	5.42	5.45	5.20	4.97	2.72	3.01	2.87	61.2	64.3	78.9	78.6	79.1	77.0
1986	2.75	3.13	6.44	6.08	3.32	4.37	2.89	3.19	3.03	62.8	65.1	80.7	79.8	66.5	73.4
1987	3.00	3.20	6.36	5.96	4.69	4.70	3.10	3.26	3.16	64.2	65.6	81.2	79.6	74.8	74.8
1988	2.83	3.36	6.77	6.78	4.75	4.64	2.93	3.41	3.18	63.0	66.6	82.1	82.4	74.7	73.8
1989	2.56	2.86	5.87	5.77	4.23	5.83	2.77	2.99	2.87	62.3	64.5	80.8	81.0	73.8	82.2
1990	2.53	2.61	6.47	5.78	3.90	5.09	2.67	2.72	2.69	62.3	62.7	83.4	81.1	72.6	78.6
1991	2.42	2.54	5.82	6.23	5.15	5.09	2.57	2.79	2.65	61.6	62.7	80.6	82.2	81.7	80.0
1992	2.54	2.66	6.49	6.01	4.09	5.28	2.86	2.74	2.81	62.3	63.2	83.4	81.1	77.4	82.7
1995	2.37	2.67	6.09	5.88	3.71	4.98	2.45	2.75	2.56	61.0	63.2	81.3	81.0	70.9	81.3
1996	2.63	2.86	6.50	6.30	4.98	5.44	2.83	2.90	2.88	62.8	64.0	81.4	81.1	77.1	79.4
1997	2.57	2.82	7.95	6.11	4.82	6.90	2.63	2.84	2.71	62.3	63.6	85.7	84.0	79.4	87.0
1998	2.72	2.83	6.44	-	3.28	4.77	2.76	2.84	2.78	62.0	62.7	84.0	-	66.3	76.0
1999	3.02	3.03	7.59	-	4.20	-	3.09	3.03	3.08	63.8	63.5	86.6	-	70.9	-
2000	2.47	2.81	-	-	2.58	-	2.47	2.81	2.57	60.7	63.2	-	-	64.7	-
2001	2.89	3.03	6.76	5.96	4.41	4.06	2.95	3.09	3.00	63.1	63.7	81.7	79.1	75.3	72.1
2002	2.84	2.92	7.12	-	5.00	-	2.89	2.92	2.90	62.6	62.1	83.0	-	75.8	-
2003	2.94	3.08	8.82	5.58	4.04	-	3.02	3.10	3.04	63.0	64.4	86.1	78.3	71.4	-
2004	3.11	2.95	7.33	5.22	4.71	6.48	3.17	3.22	3.18	64.7	65.0	86.2	76.4	77.6	88.0
2005	3.19	3.33	7.05	4.19	4.31	2.89	3.31	3.33	3.31	65.9	66.4	83.3	75.5	73.7	62.3
2006	3.10	3.25	9.72	-	5.05	3.67	3.25	3.26	3.24	65.3	65.3	90.0	-	76.8	69.5
2007	2.89	2.87	6.19	6.47	4.94	3.57	2.98	2.99	2.98	63.5	63.3	80.9	80.6	76.7	71.3
2008	3.04	3.03	6.35	7.47	3.82	3.39	3.08	3.07	3.08	64.6	63.9	80.1	85.5	71.1	73.0
2009	3.28	3.40	7.59	6.54	5.25	4.28	3.48	3.67	3.50	64.9	65.5	84.6	81.7	75.9	73.5
2010	3.44	3.24	6.40	5.45	4.17	3.92	3.47	3.28	3.42	66.7	65.2	80.0	75.0	72.4	70.0
2011	3.30	3.18	5.69	4.94	4.46	5.11	3.39	3.49	3.40	65.8	64.7	78.6	75.0	73.7	76.3
2012	3.34	3.38	6.00	4.51	4.65	3.65	3.44	3.40	3.44	65.4	64.9	75.9	70.4	72.8	68.9
2013	3.33	3.16	6.43	4.51	3.64	5.38	3.39	3.20	3.35	66.2	64.6	81.0	72.8	69.9	73.6
2014	3.25	3.02	7.60	6.00	4.47	5.42	3.39	3.13	3.32	65.6	63.6	86.0	78.7	73.6	83.5

**Table 7. Mean fork lengths (cm) and whole weight (kg) by sea age (1SW – one sea-winter and 2SW – two sea-winter), continent of origin and Northwest Atlantic Fisheries Organization (NAFO) division for Atlantic salmon (*Salmo salar*) caught at West Greenland in 2014 with corresponding standard deviation (S.D.). Table does not include salmon of unknown age (n=163), origin (n=5), fork length (n=33) or weight (36).**

NAFO Div.	1 SW		2 SW		Previous spawners		Fork length (cm) (S.D.)	All sea ages		
	Fork length (cm) (S.D.)	Whole weight (kg) (S.D.)	Fork length (cm) (S.D.)	Whole weight (kg) (S.D.)	Fork length (cm) (S.D.)	Whole weight (kg) (S.D.)		No.	Whole weight (kg) (S.D.)	No.
North American and European										
1B	64.8 (3.4)	3.31 (0.56)	87.6 -	9.59 -	74.6 (8.9)	4.76 (1.96)	65.9 (5.5)	64	3.53 (1.14)	62
1C	65.3 (3.9)	3.21 (0.70)	85.0 (6.3)	7.11 (1.66)	71.8 (8.4)	4.2 (1.89)	66.0 (5.1)	333	3.33 (0.99)	332
1E	63.5 (3.2)	2.79 (0.68)	- -	- -	72.0 (14.5)	3.46 (1.37)	63.7 (4.1)	95	2.81 (0.54)	95
1F	65.3 (3.8)	3.29 (0.70)	77.9 (7.1)	5.83 (1.33)	77.3 (8.2)	5.02 (1.92)	66.4 (5.5)	232	3.45 (1.00)	232
All Areas	65.0 (3.8)	3.18 (0.68)	82.6 (7.1)	6.87 (1.76)	74.4 (8.8)	4.54 (1.87)	65.8 (5.2)	724	3.32 (0.98)	721
North American										
1B	65.2 (3.3)	3.34 (0.50)	87.6 -	9.59 -	74.6 (8.9)	4.76 (1.96)	66.6 (5.8)	49	3.62 (1.23)	48
1C	65.7 (3.8)	3.27 (0.73)	85.4 (7.9)	7.21 (2.10)	70.8 (7.7)	4.07 (1.88)	66.3 (5.0)	251	3.38 (1.01)	250
1E	64.5 (2.7)	2.90 (0.47)	- -	- -	63.6 (0.8)	2.67 (0.12)	64.5 (2.7)	52	2.86 (0.46)	52
1F	65.9 (3.3)	3.33 (0.69)	86.5 -	7.16 -	77.4 (8.5)	5.02 (1.99)	67.0 (5.4)	168	3.51 (1.04)	168
All Areas	65.6 (3.5)	3.25 (0.69)	86.0 (6.2)	7.60 (1.88)	73.6 (8.6)	4.47 (1.93)	66.4 (5.1)	520	3.39 (1.02)	518
European										
1B	63.5 (3.3)	3.23 (0.70)	- -	- -	- -	- -	63.5 (3.3)	15	3.23 (0.70)	14
1C	64.1 (3.9)	3.04 (0.58)	84.2 (3.1)	6.91 (0.78)	86.4 -	6.16 -	64.8 (5.5)	82	3.17 (0.90)	82
1E	62.2 (3.9)	2.69 (0.63)	- -	- -	88.7 -	5.04 -	62.8 (5.2)	43	2.74 (0.62)	43
1F	64.0 (4.5)	3.18 (0.71)	75.0 (5.1)	5.39 (1.22)	75.4 -	5.07 -	64.7 (5.2)	64	3.31 (0.89)	64
All Areas	63.6 (4.0)	3.02 (0.64)	78.7 (6.4)	6.00 (1.26)	83.5 (7.1)	5.42 (0.64)	64.3 (5.2)	204	3.13 (0.85)	203



**Table 8. The smolt-age (river age) composition (%) of Atlantic salmon (*Salmo salar*) by continent of origin (NA - North American and E – European) and Northwest Atlantic Fisheries Organization (NAFO) division caught in 2014 at West Greenland. Table does not include salmon of unknown age (n=184) or origin (n=5).**

NAFO Division	Origin	River age (%)						Total No.
		1	2	3	4	5	6	
1B	NA	0	13.6	56.8	29.5	0	0	44
	E	7.1	71.4	14.3	7.1	0	0	14
		1.7	27.6	46.6	24.1	0	0	58
1C	NA	0.4	31.0	42.8	19.6	6.3	0	271
	E	6.2	61.7	28.4	3.7	0	0	81
		1.7	38.1	39.5	15.9	4.8	0	352
1E	NA	2.0	29.4	43.1	17.6	5.9	2.0	51
	E	0	58.1	41.9	0	0	0	43
		1.1	42.6	42.6	9.6	3.2	1.1	94
1F	NA	0	20.1	44.4	24.9	10.1	0.6	169
	E	4.8	58.7	30.2	6.3	0	0	63
		1.3	30.6	40.5	19.8	7.3	0.4	232
All Areas	NA	0.4	26.0	44.5	21.9	6.9	0.4	535
	E	4.5	60.7	30.8	4.0	0	0	201
		1.5	35.5	40.8	17.0	5.0	0.3	736

**Table 9. River age distribution (%) for North American and European origin Atlantic salmon (*Salmo salar*) caught at West Greenland, 1968-2014. Not all rows add to 1.0 due to rounding errors.**

YEAR	1	2	3	4	5	6	7	8
	North American							
1968	0.3	19.6	40.4	21.3	16.2	2.2	0	0
1969	0	27.1	45.8	19.6	6.5	0.9	0	0
1970	0	58.1	25.6	11.6	2.3	2.3	0	0
1971	1.2	32.9	36.5	16.5	9.4	3.5	0	0
1972	0.8	31.9	51.4	10.6	3.9	1.2	0.4	0
1973	2	40.8	34.7	18.4	2.0	2.0	0	0
1974	0.9	36.0	36.6	12.0	11.7	2.6	0.3	0
1975	0.4	17.3	47.6	24.4	6.2	4.0	0	0
1976	0.7	42.6	30.6	14.6	10.9	0.4	0.4	0
1978	2.7	31.9	43.0	13.6	6.0	2.0	0.9	0
1979	4.2	39.9	40.6	11.3	2.8	1.1	0.1	0
1980	5.9	36.3	32.9	16.3	7.9	0.7	0.1	0
1981	3.5	31.6	37.5	19.0	6.6	1.6	0.2	0
1982	1.4	37.7	38.3	15.9	5.8	0.7	0	0.2
1983	3.1	47.0	32.6	12.7	3.7	0.8	0.1	0
1984	4.8	51.7	28.9	9.0	4.6	0.9	0.2	0
1985	5.1	41.0	35.7	12.1	4.9	1.1	0.1	0
1986	2.0	39.9	33.4	20.0	4.0	0.7	0	0
1987	3.9	41.4	31.8	16.7	5.8	0.4	0	0
1988	5.2	31.3	30.8	20.9	10.7	1.0	0.1	0
1989	7.9	39.0	30.1	15.9	5.9	1.3	0	0
1990	8.8	45.3	30.7	12.1	2.4	0.5	0.1	0
1991	5.2	33.6	43.5	12.8	3.9	0.8	0.3	0
1992	6.7	36.7	34.1	19.1	3.2	0.3	0	0
1995	2.4	19.0	45.4	22.6	8.8	1.8	0.1	0
1996	1.7	18.7	46.0	23.8	8.8	0.8	0.1	0
1997	1.3	16.4	48.4	17.6	15.1	1.3	0	0
1998	4.0	35.1	37.0	16.5	6.1	1.1	0.1	0
1999	2.7	23.5	50.6	20.3	2.9	0	0	0
2000	3.2	26.6	38.6	23.4	7.6	0.6	0	0
2001	1.9	15.2	39.4	32.0	10.8	0.7	0	0
2002	1.5	27.4	46.5	14.2	9.5	0.9	0	0
2003	2.6	28.8	38.9	21.0	7.6	1.1	0	0
2004	1.9	19.1	51.9	22.9	3.7	0.5	0	0
2005	2.7	21.4	36.3	30.5	8.5	0.5	0	0
2006	0.6	13.9	44.6	27.6	12.3	1.0	0	0
2007	1.6	27.7	34.5	26.2	9.2	0.9	0	0
2008	0.9	25.1	51.9	16.8	4.7	0.6	0	0
2009	2.6	30.7	47.3	15.4	3.7	0.4	0	0
2010	1.6	21.7	47.9	21.7	6.3	0.8	0	0
2011	1.0	35.9	45.9	14.4	2.8	0	0	0
2012	0.3	29.8	39.4	23.3	6.5	0.7	0	0
2013	0.1	32.6	37.3	20.8	8.6	0.6	0	0
2014	0.4	26.0	44.5	21.9	6.9	0.4	0	0
<b>10 yr mean (2004-2013)</b>	1.3	25.8	43.7	22.0	6.6	0.6	0.0	0.0
<b>Overall Mean</b>	2.5	31.5	39.7	18.4	6.8	1.1	0.1	0.0

**Table 9 continued.**

YEAR	1	2	3	4	5	6	7	8
	European							
1968	21.6	60.3	15.2	2.7	0.3	0	0	0
1969	0	83.8	16.2	0	0	0	0	0
1970	0	90.4	9.6	0	0	0	0	0
1971	9.3	66.5	19.9	3.1	1.2	0	0	0
1972	11.0	71.2	16.7	1.0	0.1	0	0	0
1973	26.0	58.0	14.0	2.0	0	0	0	0
1974	22.9	68.2	8.5	0.4	0	0	0	0
1975	26.0	53.4	18.2	2.5	0	0	0	0
1976	23.5	67.2	8.4	0.6	0.3	0	0	0
1978	26.2	65.4	8.2	0.2	0	0	0	0
1979	23.6	64.8	11.0	0.6	0	0	0	0
1980	25.8	56.9	14.7	2.5	0.2	0	0	0
1981	15.4	67.3	15.7	1.6	0	0	0	0
1982	15.6	56.1	23.5	4.2	0.7	0	0	0
1983	34.7	50.2	12.3	2.4	0.3	0.1	0.1	0
1984	22.7	56.9	15.2	4.2	0.9	0.2	0	0
1985	20.2	61.6	14.9	2.7	0.6	0	0	0
1986	19.5	62.5	15.1	2.7	0.2	0	0	0
1987	19.2	62.5	14.8	3.3	0.3	0	0	0
1988	18.4	61.6	17.3	2.3	0.5	0	0	0
1989	18.0	61.7	17.4	2.7	0.3	0	0	0
1990	15.9	56.3	23.0	4.4	0.2	0.2	0	0
1991	20.9	47.4	26.3	4.2	1.2	0	0	0
1992	11.8	38.2	42.8	6.5	0.6	0	0	0
1995	14.8	67.3	17.2	0.6	0	0	0	0
1996	15.8	71.1	12.2	0.9	0	0	0	0
1997	4.1	58.1	37.8	0	0	0	0	0
1998	28.6	60.0	7.6	2.9	0	1.0	0	0
1999	27.7	65.1	7.2	0	0	0	0	0
2000	36.5	46.7	13.1	2.9	0.7	0	0	0
2001	16.0	51.2	27.3	4.9	0.7	0	0	0
2002	9.4	62.9	20.1	7.6	0	0	0	0
2003	16.2	58.0	22.1	3.0	0.8	0	0	0
2004	18.3	57.7	20.5	3.2	0.2	0	0	0
2005	19.2	60.5	15.0	5.4	0	0	0	0
2006	17.7	54.0	23.6	3.7	0.9	0	0	0
2007	7.0	48.5	33.0	10.5	1.0	0	0	0
2008	7.0	72.8	19.3	0.8	0	0	0	0
2009	14.3	59.5	23.8	2.4	0	0	0	0
2010	11.3	57.1	27.3	3.4	0.8	0	0	0
2011	19.0	51.7	27.6	1.7	0	0	0	0
2012	9.3	63.0	24.0	3.7	0	0	0	0
2013	4.5	68.2	24.4	2.5	0.5	0	0	0
2014	4.5	60.7	30.8	4.0	0	0	0	0
<b>10 yr mean (2004-2013)</b>	12.8	59.3	23.8	3.7	0.3	0.0	0.0	0.0
<b>Overall Mean</b>	17.0	61.0	18.9	2.7	0.3	0.0	0.0	0.0

**Table 10. The sea-age (1SW – one sea-winter and 2SW – two sea-winter) composition of Atlantic salmon (*Salmo salar*) by continent of origin (NA - North American and E – European) and Northwest Atlantic Fisheries Organization (NAFO) division caught at West Greenland in 2014. Table does not include salmon with unknown age (n=163) or origin (n=5). Not all rows add to 100 due to rounding errors.**

NAFO	Origin	Sea-age composition (%)			Total No.
		1SW	2SW	Previous Spawners	
1B	NA	87.8	2.0	10.2	49
	E	100.0	0	0	15
		90.6	1.6	7.8	64
1C	NA	91.5	1.4	7.1	282
	E	96.4	2.4	1.2	84
		92.6	1.6	5.7	366
1E	NA	96.2	0	3.8	52
	E	97.7	0	2.3	43
		96.8	0	3.2	95
1F	NA	90.5	0.6	8.9	168
	E	93.8	4.7	1.6	64
		91.4	1.7	6.9	232
All areas	NA	91.3	1.1	7.6	551
	E	96.1	2.4	1.5	206
		92.6	1.5	5.9	757

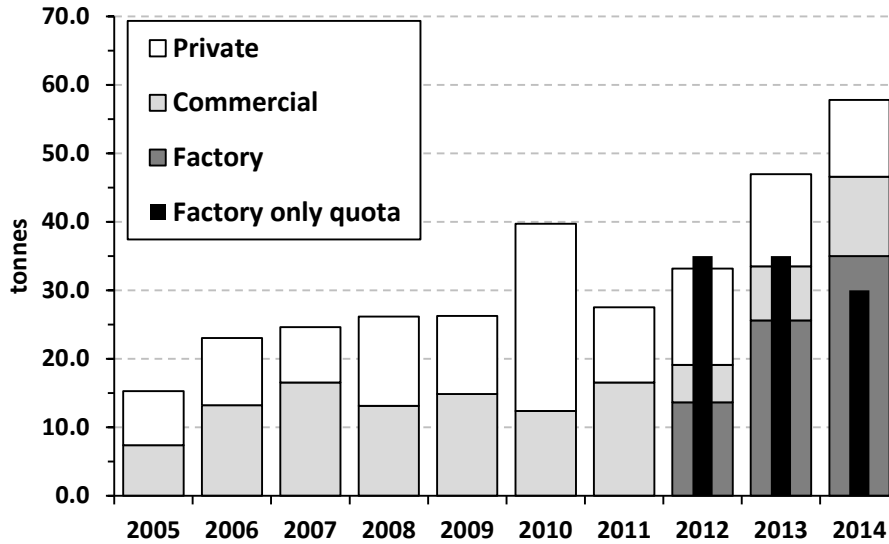
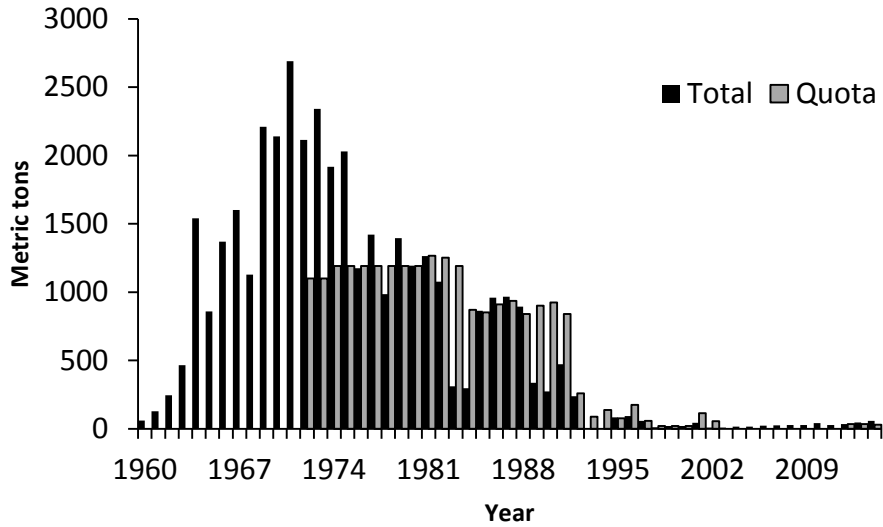


Figure 1. Nominal catches and commercial quotas (metric tons, round fresh weight) of Atlantic salmon (*Salmon salar*) at West Greenland for 1960–2014 (top panel) and 2005–2014 (bottom panel). Total reported landings from 2005–2014 are displayed by landings type. No quotas were set from 2003–2011, but since 2012 an annual quota has been set and applied to factory landings only.

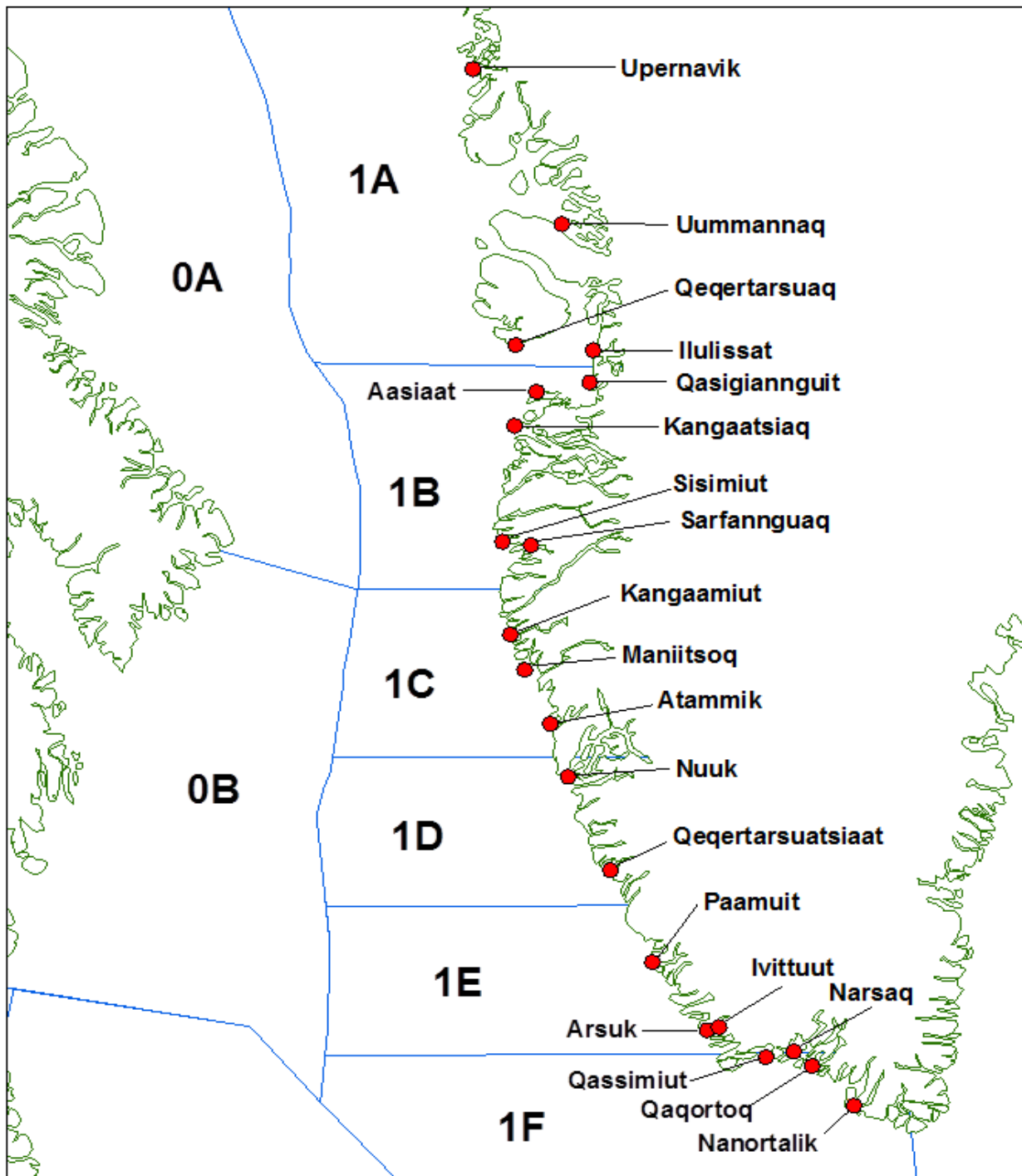


Figure 2. Map of Southwest Greenland showing communities to which Atlantic salmon (*Salmo salar*) have historically been landed. Northwest Atlantic Fisheries Organization (NAFO) Divisions (1A-1F) are also shown.

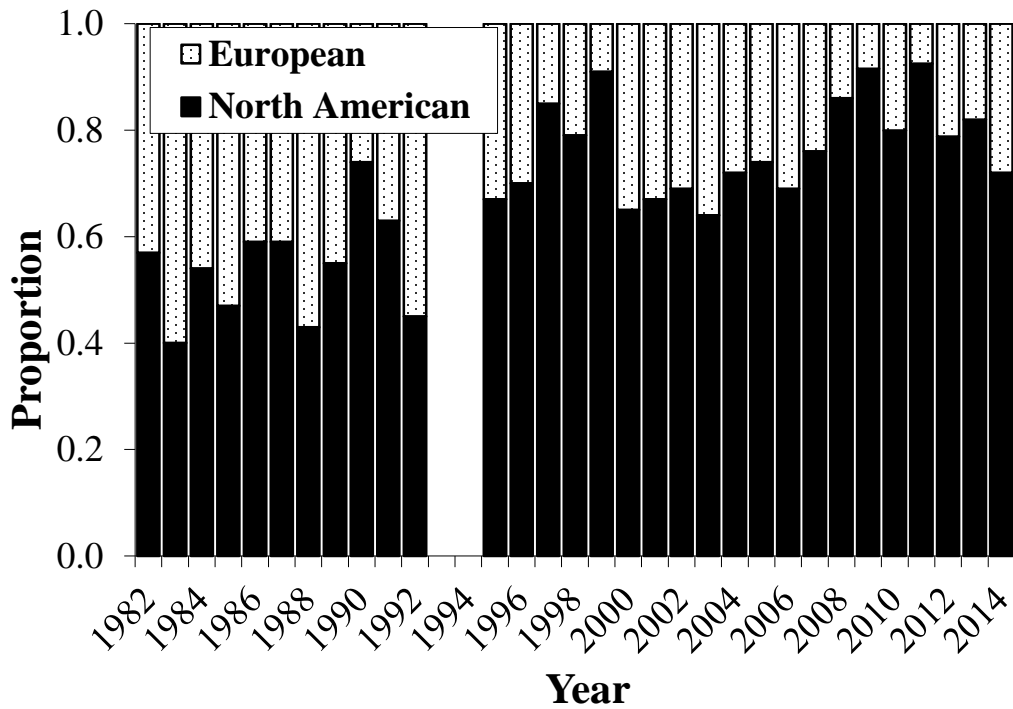
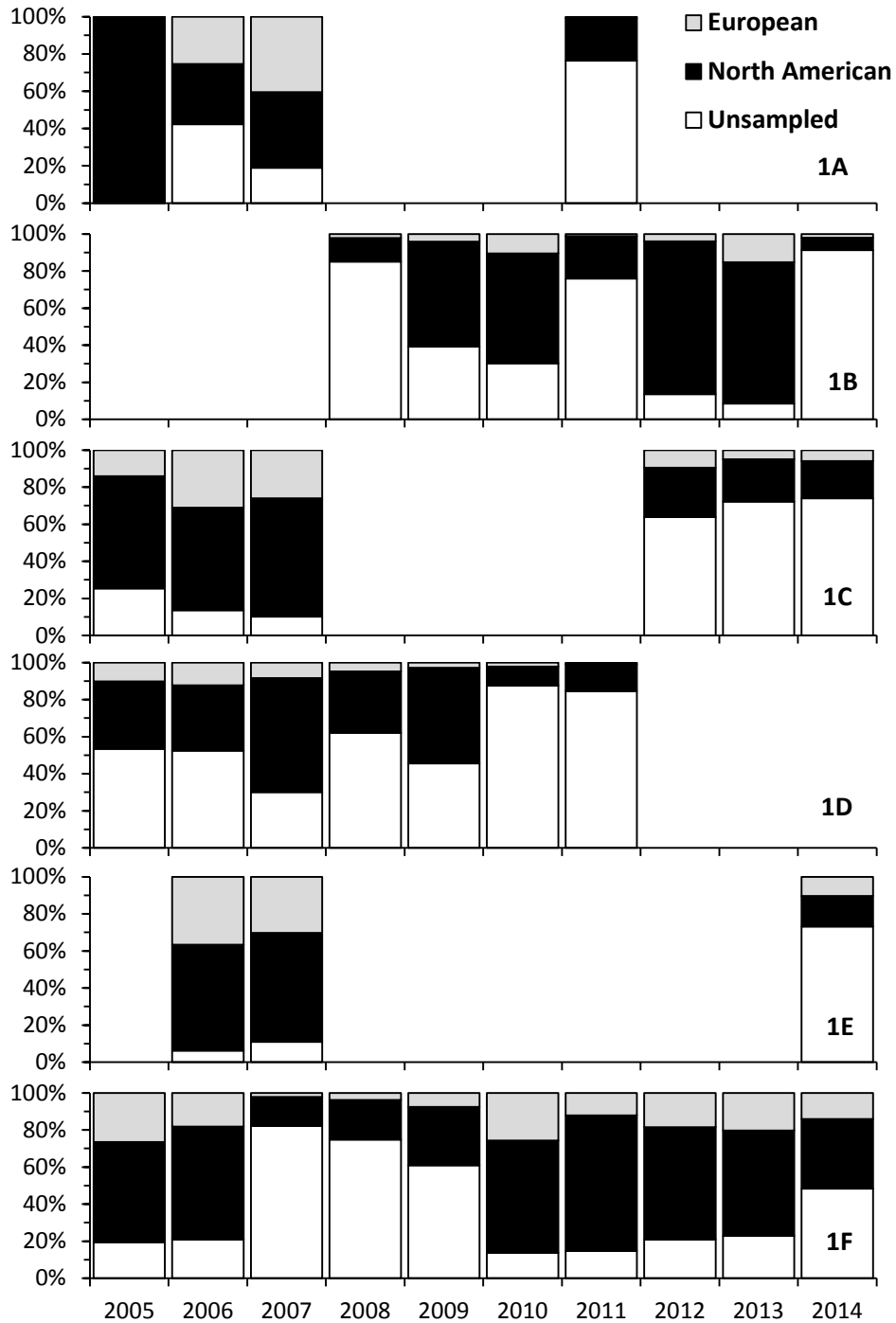


Figure 3. The weighted proportions of North American and European Atlantic salmon (*Salmo salar*) caught at West Greenland from 1982-2014. Proportions were weighted by the estimated numbers of salmon, by origin, for each division according to the adjusted landings.



**Figure 4. Proportions of unsampled adjusted landings, North American origin and European origin Atlantic salmon (*Salmo salar*) by Northwest Atlantic Fisheries Organization (NAFO) divisions sampled at West Greenland from 2005–2014. Year-division combinations with data identify when and where sampling occurred. Division 1A 2005 value is from one sample.**



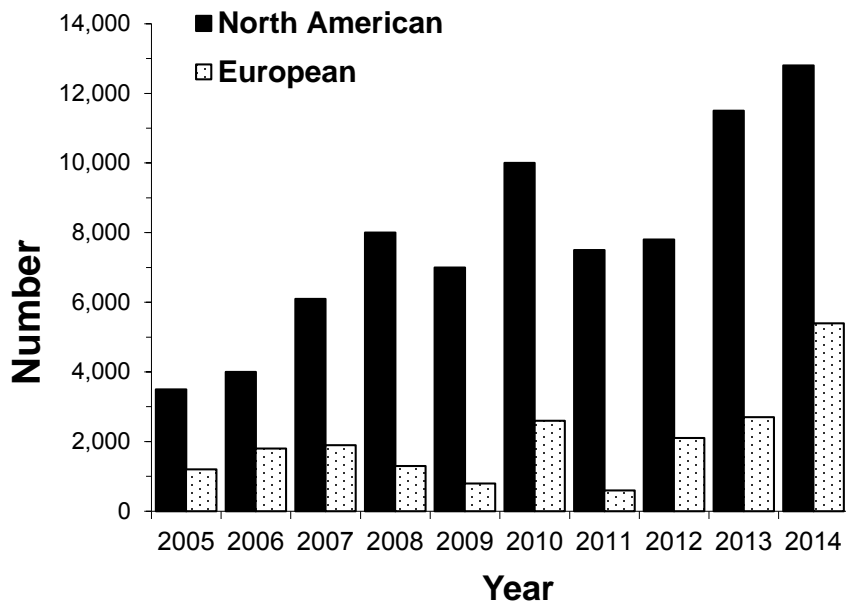
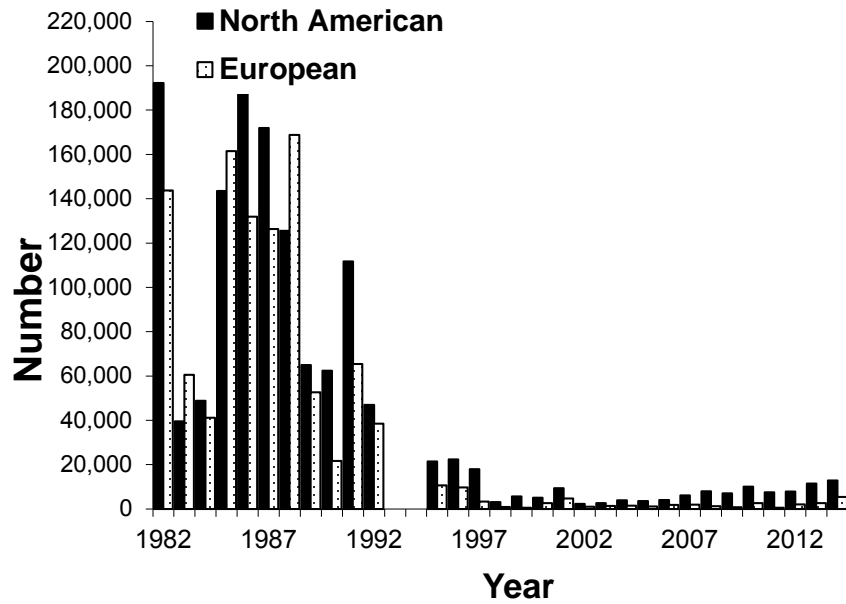


Figure 5. The weighted numbers of North American and European Atlantic salmon (*Salmo salar*) caught at West Greenland from 1982–2014 (top) and 2005–2014 (bottom). Numbers are rounded to the nearest hundred fish. In 2013, it is estimated that approximately 12,800 and 5,400 North American and European origin fish were harvested, respectively.

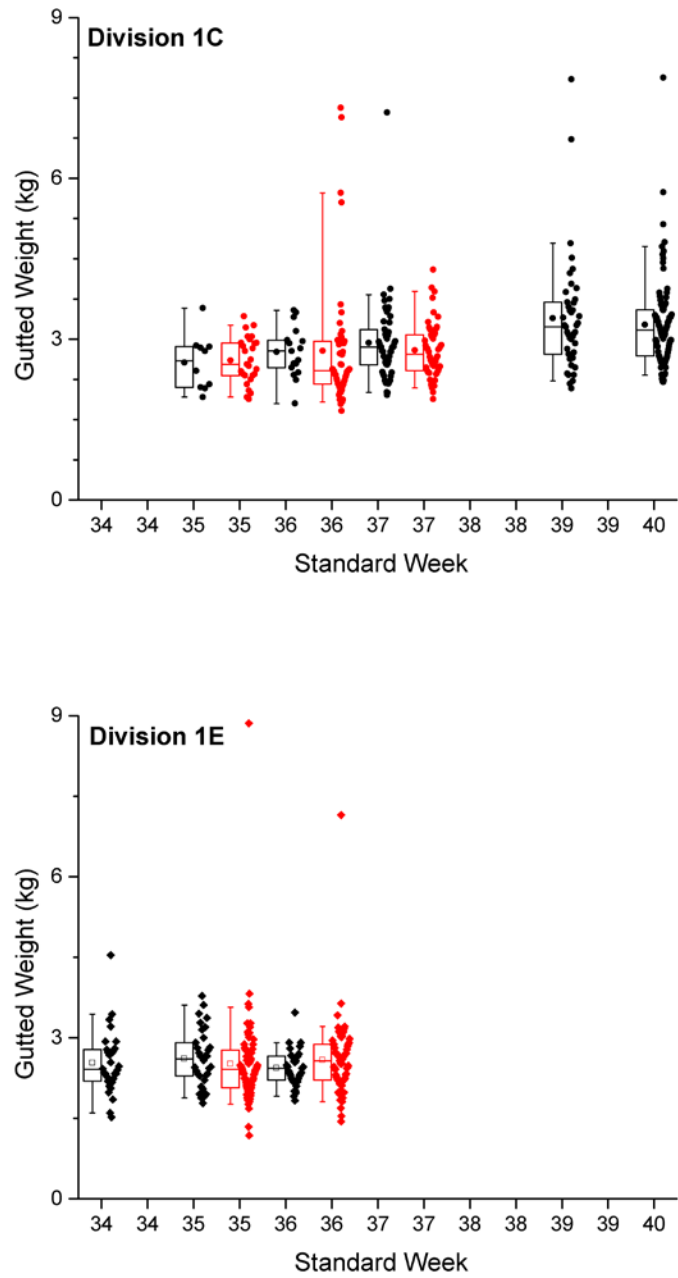
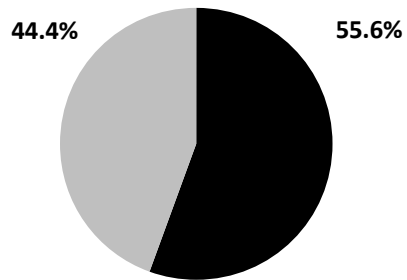
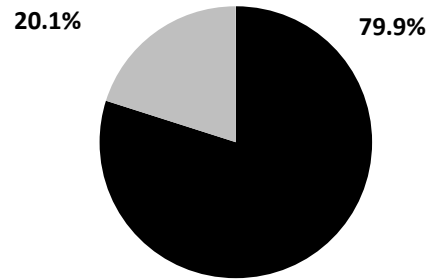


Figure 6. Box plots of gutted weight for non-factory (black) and factory (red) samples collected in 2014 from Northwest Atlantic Fisheries Organization (NAFO) Divisions 1C (top) and 1E (bottom) across standard weeks 34-40. Data are represented by the mean (hollow square), median (horizontal line), 25th and 75th percentiles (box), 5th and 95th percentiles (whiskers), and the individual values.

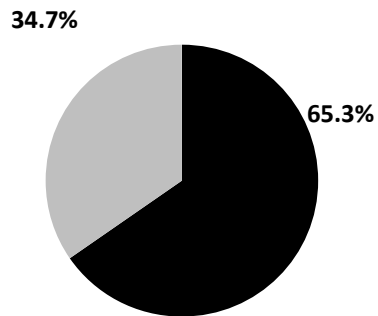
**Paamuit (1E, non-factory, n=99)**



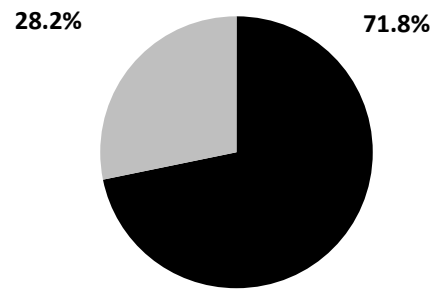
**Maniitsoq (1C, non-factory, n=249)**



**Arsuk (1E, factory, n=150)**



**Attamik (1C, factory, n=124)**



**Figure 7. The sample sizes and percentages of North American and European Atlantic salmon (*Salmo salar*) sampled from factory and non-factory samples collected in Northwest Atlantic Fisheries Organization (NAFO) Division 1C and 1E in 2014.**

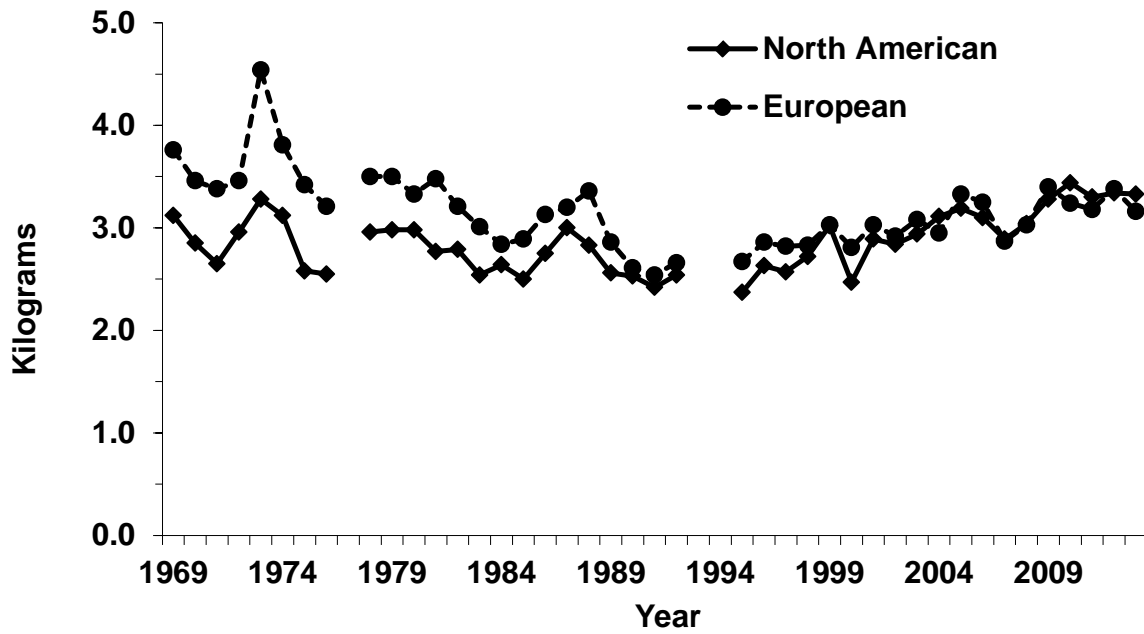


Figure 8. Mean uncorrected whole weight (kg) of European and North American 1SW Atlantic salmon (*Salmo salar*) sampled in West Greenland from 1969-2014.

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