The International Sampling Program: continent of origin and biological characteristics of Atlantic salmon (Salmo salar) collected at West Greenland in 2020 and 2021

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ABSTRACT

An Atlantic salmon (*Salmo salar*) mixed-stock fishery generally operating from August through October exists off the coast of Greenland and primarily harvests 1 sea-winter (1SW) North American and European origin salmon destined to return to natal waters as 2 sea-winter (2SW) 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 2020 and 2021 fisheries. Due to the ongoing restrictions and uncertainty related to the COVID-19 pandemic, the 2020 traditional sampling program involving international collaborators traveling to Greenland and sampling the harvest was canceled. As an alternative, a contingency plan was developed which involved providing sampling kits to Greenland's Fisheries License Control Authority (GFLK) Wildlife Officers, staff at the Greenland Institute of Nature Resources (GINR), and individual fishers throughout Greenland in an attempt to develop a Citizen Science sampling effort. In 2021, the traditional sampling program was again implemented, and international collaborators traveled to Greenland and sampled the harvest. Sampling kits were also provided to staff at the GINR, and the Citizen Science was modified and pursued. Reported landings were 31.7 metric tons (t) in 2020 and 41.0 t in 2021. In 2020, only 197 samples were collected whereas 1,548 were collected in 2021. The collected samples represented approximately 1% and 17% of the reported landings in 2020 and 2021, respectively. Delays in collating the 2020 samples resulted in the samples not being shipped to the North American collaborators in time for sample processing and summation prior to the 2021 International Council for the Exploration of the Sea (ICES) Working Group on North Atlantic Salmon (WGNAS) meeting. Delays also occurred in 2021, resulting in only a portion of the samples being available for processing prior to the 2022 WGNAS meeting. All samples have since been processed. In 2020, the mean length of sampled fish was 67.1 cm, and the mean whole weight was 3.50 kg. North American origin fish were primarily freshwater age 2 through 4 years (28.2, 23.1, and 28.2%, respectively), European origin fish were primarily freshwater age 2 (74.2%), and overall, 94.5% of the sampled fish were 1SW salmon. North American 1SW salmon averaged 66.6 cm with a mean whole weight of 3.20, and the 1SW mean length of European 1SW salmon was 65.6 cm with a mean whole weight of 3.38 kg. In 2021, the mean length of sampled fish was 66.6 cm, and the mean whole weight was 3.42 kg. North American origin fish were also primarily freshwater age 2 through 4 years (27.3, 38.3, and 21.7%, respectively), European origin fish were primarily freshwater age 2 (58.2%), and overall, 95.9% of the sampled fish were 1SW salmon. North American 1SW salmon averaged 66.2 cm with a mean whole weight of 3.34 kg, and the mean length of European 1SW salmon was 65.9 cm with a mean whole weight of 3.34 kg. Approximately 5,200 North American (17.2 t) and 3,600 European (13.7 t) salmon were harvested in 2020, and approximately 10,300 North American (34.4 t) and 2,000 European (7.4 t) salmon were harvested in 2021, not taking into account any unreported catch or reported harvest at East Greenland. Primary contributors to the sampled fish were the Gaspe Peninsula, the Gulf of St. Lawrence, and the Labrador South reporting groups (41 and 51% of the overall contribution in 2020 and 2021, respectively) for North American salmon and the United Kingdom/Ireland reporting group (42% and 16% of the overall contribution in 2020 and 2021, respectively) for European origin salmon. Travel restrictions associated with the COVID-19 pandemic significantly challenged the 2020 sampling program, and the sampling may not be wholly representative of the harvest across time and space. However, the samples do provide insights into the biological characteristics and origin of the harvested fish from this year. In 2021, the sampling program was

successful, and the resulting data are considered representative of the entire harvest given the spatial and temporal coverage of the sampling.

INTRODUCTION

A mixed-stock Atlantic salmon (*Salmo salar*) fishery exists off the western coast of Greenland. This fishery takes primarily 1 sea-winter (1SW, fish that have spent 1 winter at sea) North American and European origin salmon that would potentially return to natal waters as mature 2 sea-winter (2SW) spawning adults or older. Effective management of the resource on both continents requires annual collection of accurate landings data, continent and region of origin assignments, and biological characteristics data to assess the impact of the fishery on the contributing stock complexes. Data collected from the fishery are required for use in assessment models, which 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 recorded 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. 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). Because of the concern that this fishery would have deleterious impacts on the contributing stock complexes, a quota system was agreed upon and implemented in 1972, and since 1984, catch regulations have been established by the North Atlantic Salmon Conservation Organization's (NASCO) West Greenland Commission (WGC; Colligan et al. 2008).

Since 1969, a coordinated international sampling program has been conducted to obtain biological samples to describe the Greenland salmon fishery harvest. 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 is allowed), local markets, and other vendors from individual communities landing salmon. The focus of this sampling program is 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 and region of origin analysis; and
- summarize the biological characteristics of the catch from the 2020 and 2021 West Greenland internal-use-only fisheries.

ATLANTIC SALMON FISHERY AT GREENLAND

NASCO's WGC has agreed to regulatory measures for the West Greenland fishery for all years from 1984 onward (except 1985, 1991, 1992, and 1996). Since 2006, these regulations have

been applied as multiyear measures (with the exception of 2021). The latest multiyear regulatory measure was established for the period of 2018-2020 (NASCO 2018), and a single-year measure was established for the 2021 fishery (NASCO 2021a). For multiyear regulatory measures, the measure is applicable in subsequent years (i.e., years 2 and 3 of a 3-year measure) if the Framework of Indicators (FWI), developed and updated by the International Council for the Exploration of the Sea (ICES; ICES 2007, 2018), indicates no significant change, implying a reassessment of the catch advice would not be required.

Considering the low level of reported landings for the Atlantic salmon fishery at West Greenland since 2002 relative to historical landings, the management of the fishery has remained fairly stable, although some significant changes have occurred over the years. Since 2002, the national quota for commercial landings of Atlantic salmon for export has been set to 0 t by the Government of Greenland and hence no export of Atlantic salmon has been allowed, but the internal-use-only fishery for personal and local consumption continued. Selling of salmon to hotels, institutions, and local markets by licensed fishers and an unlicensed fishery for private consumption has been allowed. The fishery generally operates from August through October, but starting in 2015, the Government of Greenland has delayed the opening of the fishery until 15 August. From 2012-2014, the Government of Greenland set a 35, 35, and 30 t national quota, respectively, for landing at fishing processing factories to provide a year-round supply of locally harvested Atlantic salmon within Greenland. The internal-use-only fishery for personal and local consumption remained unaffected and unrestricted. From 2015-2017, the Government of Greenland unilaterally set a quota of 45 t for all components of its fishery as a quota could not be agreed to by all parties of the WGC of NASCO (NASCO 2015). The regulatory measure for those years stated that any harvest exceeding the quota within a year would be subtracted from the quota in the following year. In 2018, a new multi-annual regulatory measure for the Atlantic salmon fishery at West Greenland was adopted by members of NASCO's WGC (NASCO 2018). The measure prohibited factory landings and set the total allowable catch to 30 t annually with any overharvest in a particular year resulting in an equal reduction in the total allowable catch the following year. The regulatory measure also required all fishers to obtain a license with mandatory reporting requirements as a condition of the license.

In 2021, the Government of Greenland implemented a new "Management plan for Atlantic salmon in Greenland" (GoG 2021). The objective of the plan was to ensure access to Atlantic salmon for all citizens of Greenland while taking into account the international agreements that Greenland has negotiated. The plan will remain active for the 2021-2025 fishing seasons, and a number of new management approaches were outlined within it and have since been implemented. A significant change within the new management plan is the allocation of individual quotas for both commercial and recreational fishers for 3 geographic regions: Northwest, Southwest, and East Greenland. Quotas for the Greenland fishery have been set in most years since 1972 (ICES 2021), and the quota applied to the entire fishery and was not delineated by users groups or regions. Starting in 2021, the total quota was delineated amongst 6 individual user group-region combinations.

In 2021, NASCO's WGC could not agree to a multiyear regulatory measure and instead agreed to an "Interim Regulatory Measure for Fishing for Atlantic Salmon at West Greenland in 2021" (NASCO 2021a). The measure maintained many of the previous provisions of the recent regulatory measure including the ban on the export of wild Atlantic salmon from Greenland; the requirement of the license for all fishers with mandatory reporting as a condition of the license; and the maintenance and further development of monitoring, management, control, and

surveillance measures. The total allowable catch for all components of the Atlantic salmon fishery at West Greenland was set to 27 t, with an additional 3 t set for East Greenland, but the pay back clause for any overharvest that was included in the 2018 measure was not maintained.

INTERNATIONAL SAMPLING PROGRAM

Under NASCO's Statement of Cooperation on the West Greenland Fishery Sampling Program for 2020 and 2021 (NASCO 2020; NASCO 2021b), parties to NASCO's WGC agreed to provide staff and additional support to sample Atlantic salmon catches from the West Greenland internal-use-only fishery during the 2020 and 2021 seasons.

The objectives of the 2 sampling programs were to:

- continue the time series of data (1969-2019/2020) on continent of origin and biological characteristics of the Atlantic salmon at 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 agreements, the European Union agreed to provide staff to sample the fishery for a minimum of 8 person-weeks (which would amount to 8 weeks of sampling), and the United States and Canada both agreed to a minimum of 2 person-weeks for the 2020 sampling effort. For 2021, the European Union agreed to provide staff to sample the fishery for a minimum of 6 person-weeks, the United Kingdom agreed to a minimum of 4 person-weeks, and the United States and Canada both agreed to a minimum of 2 person-weeks.

Given uncertainty of potential travel restrictions and safety concerns associated with the COVID-19 pandemic, a Contingency Sampling Plan Working Group was formed by the WGC in 2020 to develop a "Plan B" in case international samplers were unable to travel to Greenland during the fishery. The group met a few times via video correspondence and developed a comprehensive contingency plan. Preparations to implement the sampling plan as outlined with a Statement of Cooperation on the West Greenland Fishery Sampling Program for 2020 (NASCO 2020) and the Contingency Sampling Plan continued simultaneously during early summer.

The Contingency Sampling Program consisted of providing individual sampling kits to groups of potential samplers based in Greenland. Three groups of potential samplers were identified: Greenland License Fishing Control (GLFK) Wildlife Officers, Greenland Institute of Nature Resources (GINR) staff, and individual fishers as part of a Citizen Science initiative. After the fishing season, it was expected that all samples would be returned to the GINR and then to the United States for data processing, auditing, and sample distribution for analysis.

Each Contingency Sampling Program sampling kit contained an instruction placard in Greenlandic (Figure 2) and Danish (Figure 3), pre-labeled genetic vials pre-filled with RNA*later*™ for tissue preservation, pre-labeled scale envelopes for scale storage, a plastic tape measure to collect fork length, a pair of scissors for fin clip collection, and a knife for scale collection. Sample kits provided to the Wildlife Officers and GINR staff also contained a hanging scale to collect gutted or whole weight data. A pencil was also provided so that all collected data could be recorded on the scale envelope.

The Wildlife Officers were supplied with equipment to collect up to 400 samples, the GINR staff were supplied with equipment to collect up to 400 total samples, and a total of 216 Citizen

Science sampling kits were assembled which was enough to collect 1620 samples. The Wildlife Officers and GINR sampling efforts were to be conducted in any communities visited during the course of their normal duties. The Citizen Science kits were to be provided to the Municipal Offices in the following communities: Sisimiut (31 kits), Maniitsoq (54 kits), Nuuk (83 kits), Qaqortoq (36 kits), and Tasiilaq (12 kits; Figure 4). Collectively, these kits would accommodate approximately half of the licenses administered in 2019 within each community. The expectation was that each Municipal Office Administrator would describe the program and offer each individual fisher the opportunity to voluntarily collect samples when they were picking up their fishing license.

On July 15, 2020, the decision to officially cancel the Sampling Program and implement the Contingency Sampling Program was made. The decision was made based on current and uncertain future agency policy and domestic and international travel restrictions. NASCO was informed of this decision via email.

Unfortunately, domestic shipping delays caused the Citizen Science sampling kits not to be delivered to the targeted municipal offices until early September 2020, after the fishery had started. Further, given restrictions associated with the pandemic, fishing licenses were administered online and therefore very few individual fishers were offered the opportunity to use the sampling kits to collect samples for the program, thereby greatly reducing the efficacy of the effort.

Given a loosening of travel restrictions in 2021, the sampling program reverted back to relying on international samplers traveling to Greenland and sampling within local communities. As such, the Contingency Sampling Program was not pursued, although sampling kits were provided to staff at the GINR and a slightly modified Citizen Science effort was continued. Staff at the GINR administered the Citizen Science program. A reduced sampling kit, which included 5 scale envelopes and a newly designed instruction sheet was mailed to each licensed fisher with a letter in Greenlandic (Figure 5) and Danish (Figure 6) introducing the program, providing instructions for the sampling, and asking for their participation. Prefilled genetic vials were not provided and instead the fishers were asked to take a small tissue sample and store it in the scale envelope along with the collected scales. Date, region, fork length, and weight (if available) were to be recorded on the same envelope. These simplified changes were made in hopes to foster greater participation.

SAMPLNG PROGRAM RESULTS

No international samplers traveled to Greenland in 2020, but GLFK Wildlife Officers, GNIR staff, and the Citizen Science initiative provided samples. In 2021, 6 samplers were scheduled to travel. However, pandemic-related travel restrictions greatly reduced the number of travelers allowed to enter Greenland on a weekly basis and as such there were no plane tickets available for some samplers scheduled to travel to Greenland in August. As a result, only 3 samplers were able to participate (Table 1). All 3 samplers were scheduled to sample in the northwest region. Given the absence of sampling in the southwest region, a contract was arranged with a local resident of Qaqortoq to collect samples from the local fish market on a daily basis. Samples were also provided by the GNIR staff and the Citizen Science initiative in 2021. The overall coordination of these efforts was handled by the U.S. (NOAA Fisheries Service) with assistance from the Greenland Institute of Natural Resources (GINR).

Reported landings in 2020 were 31.7 t (30.9 t for West Greenland and 0.8 t for East Greenland ICES Statistical Area XIV). Reported landings in 2021 were 41.0 t (40.0 t for West Greenland and 1.0 t for East Greenland ICES Statistical Area XIV). In the past, underreporting of harvest has been identified by comparing the reported landings to the sample data. Since 2002, with the exception of 2006, 2011, 2015, and 2018, the sampling team documented more fish than reported in at least 1 division (ICES 2021). 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.

No such discrepancy has been detected since 2018. The time series of reported landings and adjusted landings for 2002-2021 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 continually improve the catch reporting procedures and the quality of the catch statistics. Factory landings and samples, when allowed, are not considered within this process since these landings are strictly regulated by the Government of Greenland (i.e., only licensed commercial fishers can land at designated factories) and are accounted for and reported by the factory managers to the Greenland Fisheries License Control Authority on a daily to weekly 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 or whole weight, 0.01 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).

In 2020, a total of 197 Atlantic salmon were sampled for biological characteristics representing only 1% of the reported landings. Samples were provided from 3 sources and originated from 3 NAFO Divisions: Citizen Science Program (n = 31), GFLK (n = 26), and GINR (n = 140; Table 3). No additional fish were checked for an adipose clip and or were documented as being landed but not sampled or examined further. Biological characteristics data and samples were collected as follows:

- 140 fork lengths;
- 13 gutted weights;
- 44 whole weights;
- 76 scale samples; and
- 197 genetic samples.

In 2021, a total of 1,548 Atlantic salmon were sampled for biological characteristics representing 17% of the reported landings. Samples were provided from 3 sources and originated from 6 NAFO Divisions and from ICES Statistical Area XIV: Citizen Science Program (n = 252), GINR (n = 393), and the International Sampling Program (n = 903; Table 4). No additional fish were checked for an adipose clip and or were documented as being landed but not sampled or examined further. Biological characteristics data and samples were collected as follows:

- 1,295 fork lengths;

- 730 gutted weights;
- 454 whole weights;
- 1,300 scale samples; and
- 1,532 genetic samples.

In 2020, no adipose clipped fish and no external or internal tags were documented. In 2021, 6 adipose-clipped fish were documented. Of all the fish examined by the samplers, no internal or external tags were detected. A total of 7 Carlin tags were provided directly by fishers to the GINR in 2020, and a total of 3 tags (a PIT tag, an acoustic tag, and a Carlin tag) were provided to the GINR in 2021 (Table 5).

Tag recoveries at Greenland have been recorded from 1963 to the present time. In total, 5,508 tag recoveries were recorded and archived (Ó Maoiléidigh et al. 2018) from 1963-2009. A complete archive of tag recoveries from the contemporary sampling undertaken by this sampling program is also maintained and is provided in Table 6. A total of 143 tags have been recovered by the sampling program since 2003, not including the 10 recoveries from 2020 and 2021 listed in Table 5.

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 obtains permission from the market manager or fisher. This arrangement has generally been successful for all samplers, although there have been issues in some years in Nuuk (Sheehan et al. 2013). Similar issues have been noted in some communities, although very infrequently, when samplers were denied access to fish. The Qaqortoq sampler was denied access to fish in 2021, but access was reinstated after discussions were undertaken with a few involved parties. Since 2015, it has been a condition of the commercial fishing license to allow samplers access to landed salmon.

The Government of Greenland, in cooperation with the GINR, agreed to sample Atlantic salmon from the city of Nuuk on a weekly basis during the 2020 and 2021 fishing seasons (NASCO 2020; NASCO 2021b). As such, no sampler was deployed to Nuuk in 2020 or 2021, but staff from the GINR were able to collect samples from Nuuk in both years.

The limitation of the fishery to internal-use-only coupled with restrictions associated with the pandemic in 2020 caused significant problems for the sampling program. As such, the 2020 biological characteristics data, scale and tissue samples should be viewed with caution, as they may not be wholly the representative of the harvest as the sampling was greatly reduced temporally and generally restricted to the Nuuk region only. With the lessening of restrictions associated with the pandemic, the 2021 sampling was more robust and is considered more representative of the Greenland catch, both temporally and spatially.

CONTINENT AND REGION OF ORIGIN

Fin tissue samples were collected and preserved in RNA*later*™, an aqueous, nontoxic tissue and cell storage reagent that stabilizes and protects cellular RNA. A total of 197 usable samples were collected in 2020 from 4 communities in 3 NAFO divisions: Nuuk in 1D (n = 167), Paamiut in 1E (n = 16), and Narsaq and Qaqortoq in 1F (n = 14). In total, 196 samples were successfully processed from the 3 NAFO divisions: 1D (n = 167), 1E (n = 16), and 1D (n = 13; Figure 7). Origin assignment was not possible for a single sample.

A total of 1,536 usable samples were collected in 2021 from numerous communities across all 6 NAFO divisions: 1A (n = 6), 1B (n = 188), 1C (n = 702), 1D (n = 410), 1E (n = 33) and 1F

(n = 183). Samples were also collected from the ICES Statistical Area XIV (n = 14). In total, 1,532 samples were successfully processed from all 6 NAFO division and from ICES Area XIV: 1A (n = 6), 1B (n = 187), 1C (n = 702), 1D (n = 408), 1E (n = 33), 1F (n =1 82), and XIV (n = 14; Figure 8). Origin assignment were not possible for 18 of the samples

From 1969-2001, scale pattern analysis was used to make continent of origin determinations and estimate the proportion of the harvest originating from North American and European rivers (Reddin and Friedland 1999). From 2002-2016, DNA isolation and 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 were used as a baseline to assign the samples to continent of origin.

Starting in 2017, a single nucleotide polymorphism range-wide baseline (SNP; Jeffery et al. 2018) providing 20 North American and 8 European reporting groups was used to determine continent and region of origin. The baseline has since been revised, resulting in 21 North American and 10 European reporting groups (Table 7 and Figure 9; ICES 2019).

DNA extraction and genotyping of all fishery samples were carried out at the Aquatic Biotechnology Laboratory (Fisheries and Oceans Canada, Maritimes Region), and DNA was extracted with the Qiagen DNeasy Blood & Tissue 96-well extraction kit (Qiagen; www.qiagen.com) following the guidelines of the manufacturer. DNA was quantified by using Quant-iTTM PicoGreenTM (Life Technologies; www.thermofisher.com/us/en/home/brands/life-technologies.html) and diluted to a final concentration of 10 ng/μL in 10mM Tris (Qiagen Buffer EB). SNP genotyping of the 96 SNP loci was performed by using SNPtype assays (Fluidigm; www.fluidigm.com) per the manufacturer's protocols and as described in Jeffery et al. (2018). A Bayesian approach was used to estimate mixture composition or assign individuals to continent and region of origin via the R package '*rubias*' (Anderson et al. 2008).

In total, 55.6% of the salmon sampled in 2020 were of North American origin, and 44.4% were of European origin (Figure 10). In 2021, 82.3% of the salmon were of North American origin, and 17.7% were of European origin. The NAFO division-specific continent of origin assignments are presented in Tables 8 and 9. The time series of the proportion of sampled (by continent of origin) and unsampled harvest are shown in Figure 11. The variability in the recent stock complex contributions between divisions and the deviation from past trends 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 and number of North American and European salmon harvested in the fishery from 1982-2021 are shown in Table 10 and Figures 10 and 12. The 2020 North American weighted contribution (59%) was the lowest value recorded since 1992 and below the long-term mean (1982-2021, 69.4%). The 2021 value increased to 83% and is above both the long-term and previous 10-year means (2011-2020, 75.4%). The European weighted contribution (41%) to the 2020 fishery was an increase over the recent years and the highest of record since 1992. The 2021 estimate (17%) was a decrease from 2020 and below the long-term mean (1982-2021, 30.1%) and previous 10-year mean values (2011-2020, 24.5%). In terms of numbers of fish, the 2020 fishery caught approximately 5,200 North American salmon (17.2 t) and 3,600 European salmon (13.7 t), and the 2021 fishery caught approximately 10,300 North American salmon (34.4 t) and 2000 European salmon (7.4 t). The total number of fish harvested in 2020 (8,800) and 2021 (12,300) are approximately equal to the numbers harvested in recent years but less than 4% of the maximum number (336,000) harvested in 1982

The North American contributions to the West Greenland fishery, as in previous years (Bradbury et al. 2016; ICES 2017), are dominated by the Gaspé Peninsula, the Gulf of St. Lawrence, and the Labrador South reporting groups in 2020 (Table 11 and Figure 13) and 2021 (Table 12 and Figure 14). These 3 groups accounted for 78% of the North American contributions in 2020 and 88% in 2021. The Northeast Atlantic contributions were dominated by the United Kingdom/Ireland reporting group with 93% and 92% of the European contributions in 2020 and 2021, respectively.

From North America, there are lesser (1-7%) contributions to the overall harvest for a number of other reporting groups in both 2020 (Labrador Central, Lake Melville, St. Lawrence North Shore-Lower, Ungava Bay, and Maine, United States; Table 11 and Figure 13) and 2021 (Anticosti, Eastern Nova Scotia, Labrador Central, Lake Melville, Newfoundland 2, Northern Newfoundland, St. Lawrence North Shore-Lower, Québec City Region, Ungava Bay, Maine, United States, and Western Newfoundland; Table 12 and Figure 14). Within the European contributions, the only other reporting group that contributed to the harvest was the Southern Norway group contributing 1% in 2020 and 3% in 2021 to the total harvest. These results support the previous conclusion by ICES (2017) that stocks from the Northern North-East Atlantic Commission (NEAC) do not contribute a significant amount to the harvest at West Greenland. Further, the variation in NAFO division-specific region of origin assignments highlight the variation of region-specific contributions across years and NAFO divisions.

BIOLOGICAL CHARACTERISTICS OF THE CATCHES

Biological characteristics (length, weight, and age) were recorded for all sampled fish. An overall decrease in mean whole weight of both European and North American 1SW salmon occurred between 1969 and 1995 (Table 13 and Figure 15). This trend was reversed in 1996 when mean weights began to increase, although evidence suggests these trends may be partially explained by annual variation in the timing of the sampling program (ICES 2011, 2015).

In 2020, the mean length of North American 1SW salmon was 66.6 cm, and the mean whole weight was 3.20 kg; the mean length of European 1SW salmon was 65.6 cm, and the mean whole weight was 3.38 kg. The North American 1SW fork length estimate was an increase over the 2019 value (63.9 cm) and slightly above the previous 10-year average (2010-2019, 65.5 cm). The European 1SW mean fork length was a slight increase over the 2019 value (63.9 cm) and slightly above the previous 10-year average (2010-2019, 64.2 cm). The North American 1SW whole weight was an increase over the 2019 value (2.93 kg) and approximately equal to the previous 10-year average (2010-2019, 3.25 kg). The European 1SW whole weight was also an increase over the 2019 value (2.89 kg) and above the previous 10-year average (2010-2019, 3.10 kg).

In 2021, the mean length of North American 1SW salmon was 66.2 cm, and the mean whole weight was 3.34 kg; the mean length of European 1SW salmon was 65.9 cm, and the mean whole weight was 3.34 kg. The North American 1SW fork length estimate was similar to the 2020 value and slightly above the previous 10-year average (2011-2020, 65.5 cm). The European 1SW mean fork length was approximately equal to the 2020 value and slightly above the previous 10-year average (2011-2020, 64.3 cm). The North American 1SW whole weight was an increase over the 2020 value and the previous 10-year average (2011-2020, 3.22 kg). The European 1SW whole weight was approximately equal to the 2020 value and above the previous 10-year average (2011-2020, 3.12 kg).

A summary of the mean fork lengths and whole weights by sea age, continent of origin, and NAFO division is presented in Table 14 for the 2020 fishery and Table 15 for the 2021 fishery. 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, 2015).

The smolt age distribution of the sampled catch by continent of origin and NAFO division is presented in Table 16 for the 2020 fishery and Table 17 for the 2021 fishery. The smolt age distributions by origin for all North American and European origin salmon caught (1968-2021) are provided in Tables 18 and 19.

The mean smolt age of North American origin samples was 3.3 years in 2020 and 3.2 in 2021. Although age-1 smolts historically represent a small proportion of the catch, the 2020 value (2.6%) was the largest value since 2005. The 2021 value (0.4%) was in line with the previous 10-year mean of (0.5%, 2010-2019). There has been a consistent trend over the past 2 decades of decreased contributions of age-1 smolts as the overall (1968-2021) mean contribution of age-1 smolts equals 2.3%. This is indicative of the relatively minor contributions of the more southerly North American populations as age-1 smolt natural and hatchery production is restricted to the southern end of the range (ICES 2004). The percentage of age-2 smolts of North American origin in the 2020 and 2021 fisheries (28.2% and 27.3%) were in-line with the previous 10-year mean (2010-2019, 28.7). Age-3 and older smolts accounted for approximately 70% in both years and approximately 67% for the 51-year time series (1968-2021 excluding data gaps in 1977 and 1993-1994, 66.7%).

The mean smolt age of the European salmon was 2.2 years in both 2020 and 2021. The percentage of age-1 smolts increased from the 2019 value (9.7% in 2020 and 15.6% in 2021), and both were above the previous 10-year mean of 9.1% (2010-2019). The percentage of age-2 smolts in 2020 was 74.2% and 58.2 % in 2021, which are similar to the previous 10-year mean (2010-2019, 61.5%) and the overall mean (1968-2021, 61.3%). The contribution of age-3 and older European origin smolts was 16.1% in 2020 and 26.1% in 2021, both of which were below the previous 10-year mean (2010-2019, 29.4%).

The sea age distribution of the sampled catch by continent of origin and NAFO division is presented in Table 20 for the 2020 fishery and Table 21 for the 2021 fishery. As expected, the 1SW age group was dominant in 2020 (94.5%) and 2021 (95.9%). This value is within the range of historical values (Table 22). Concerns have been raised over 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 we note that further study of this phenomenon is warranted.

OTHER SAMPLING

The International Sampling Program at West Greenland provides a unique opportunity for researchers to obtain samples from sub-adult Atlantic salmon, above what is normally collected by the program, in support of research efforts at minimal additional costs. In recent years, the Sampling Program Coordinator has received inquiries from researchers requesting the collection of a variety of sample types from Atlantic salmon harvested in Greenland. The Program Coordinator reviews all requests received. If a request is reasonable and will not detract from the primary tasks of the samplers, the Program Coordinator will work with the individual researchers

and the samplers to facilitate the collection of the requested samples. The objective of this section is to provide an overview of the purpose of these additional samples collected by the sampling program. A generic title and the sample requester have been identified for each instance.

No sampling teams were deployed to Greenland in 2020 and therefore no other sampling was conducted. Although sampling teams were deployed in 2021, no additional sampling requests were received and therefore no other sampling was conducted, with the exception of sea lice sampling.

Sea Lice Sampling

Helene Fjørtoft (Norwegian University of Science and Technology, Norway)
Kim Præbel (UiT The Arctic University of Norway)

Live sea lice were collected and preserved in RNA*later*™ from Atlantic salmon harvests at Greenland. No sea lice were collected in 2020, and a total of 78 samples were collected from 2 communities in 2021. Samples were split evenly and provided to 2 researchers in support of 2 research projects. These projects are investigating the genomics of the Atlantic sea lice as it may relate to the ecology and drug resistance of the species, as well as the role farm/wild interactions may play into sea lice epidemiology. Sample processing and analysis continues for both studies.

ACKNOWLEDGEMENTS

We would like to acknowledge the fishers and residents of Greenland who provided access to their fish and to the Greenland Institute of Natural Resources for their continued support for this program. We would also like to thank the various laboratories and agencies for supporting the program, for providing the samplers, and for the funding necessary to support the sampling at Greenland. Funding support for the samplers was provided by Inland Fisheries Ireland (for Paddy Gargan), Agri-Food and Biosciences Institute (for Brendan Kerr), Office français de la biodiversité and Pôle Gestion des Migrateurs Amphihalins dans leur Environnement (for Marie Nevoux), and the Atlantic Salmon Federation (for Malu Ravn). Fisheries and Oceans Canada provided funding to support the genetic processing and continent/region of origin analysis. Fisheries and Oceans Canada (Newfoundland and Labrador Region) conducted the aging of all scale samples collected and maintains the master sampling database. Reference to trade names does not imply endorsement by any collaborating agency or government.

TABLES AND FIGURES

Table 1. Samplers participating in the 2021 sampling program by country, home institution, sampling period, and community/Northwest Atlantic Fisheries Organization (NAFO) division sampled.

Sampler	Country	Home Institution	Sampling Period	Community (NAFO Division)
Malu Ravn	Greenland	-	02 Aug – 15 Sep	Qaqortoq (1F)
Paddy Gargan	Ireland	Inland Fisheries	9 Sep – 20 Sep	Maniitsoq (1C)
Brendan Kerr	UK	Agri-Food and Biosciences Institute	16 Sep – 04 Oct	Maniitsoq (1C)
Marie Nevoux	France	UMR DECOD	17 Sep – 04 Oct	Sisimiut (1B)

Table 2. Reported landings (kg) for the Greenland Atlantic salmon (*Salmo salar*) fishery (2002-2021) 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 0.8 t in 2020 and 1.0 t in 2021. Shaded cells indicate that sampling took place in that year and division.

		NAFO Division						
Year		**1A**	**1B**	**1C**	**1D**	**1E**	**1F**	**Total**
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. Reported landings (kg) for the Greenland Atlantic salmon (*Salmo salar*) fishery (2002-2021) 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 0.8 t in 2020 and 1.0 t in 2021. Shaded cells indicate that sampling took place in that year and division.

		NAFO Division						
Year		**1A**	**1B**	**1C**	**1D**	**1E**	**1F**	**Total**
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
2015	Reported	751	8,801	10,055	17,966	4,170	14,134	55,877
	Adjusted							
2016	Reported	763	1,234	7,271	4,630	4,492	7,265	25,655
	Adjusted		1,499					25,920
2017	Reported	1,114	1,665	9,335	6,858	3,219	5,563	27,754
	Adjusted		1,942					28,031
2018	Reported	2,434	5,684	13,726	8,202	4,214	4,788	39,048
	Adjusted							
2019	Reported	776	3,036	4,351	8,027	4,822	7,321	28,333
	Adjusted							
2020	Reported	894	3,612	6,568	9,727	3,017	7,085	30,903
	Adjusted							
2021	Reported	1,315	4,766	13,591	10,107	3,400	6,499	39,984
	Adjusted							

Table 3. Total number of samples collected from the 2020 Greenland Atlantic salmon (*Salmo salar*) fishery by sample collection type and Northwest Atlantic Fisheries Organization (NAFO) division.

	NAFO Division			
Sample Type	**1D**	**1E**	**1F**	**Grand Total**
Citizen Science	18	10	3	31
GFLK	9	6	11	26
GINR	140			140
Total	167	16	14	197

Table 4. Total number of samples collected from the 2021 Greenland Atlantic salmon (*Salmo salar*) fishery by sample collection type and Northwest Atlantic Fisheries Organization (NAFO) division.

	NAFO Division/ICES Statistical Area							
Sample Type	**1A**	**1B**	**1C**	**1D**	**1E**	**1F**	**XIV**	**Grand Total**
Citizen Science	6	60	55	19	33	65	14	252
GINR				393				393
Sampling Program		131	653			119		903
Total	6	191	708	412	33	184	14	1,548

Table 5. Reported tag recaptures (n=10) at the Greenland Atlantic salmon (Salmo salar**) fishery in 2020 (n=7) and 2021 (n=3). Northwest Atlantic Fisheries Organization (NAFO) division refers to NAFO or International Council for the Exploration of the Sea statistical areas. No tags were recovered from sampled fish by the sampling team, but all 10 tags were provided directly by a fisher or consumer to the Greenland Institute of Natural Resources. Tags provided directly by a fisher or consumer are sometimes from historical recoveries and the exact recapture year is unknown. Empty cells identify incomplete recapture or release information.**

Tag type	Tag code (Seq. code)	Release country	River released	Release year	Recapture Community (NAFO Division)	Recapture year
carlin	green (USA-271907)	USA	Penobscot	1981	Napasoq (1C)	1970-1980
carlin	green (USA-181.228)	USA	Union	1979	Napasoq (1C)	1970-1980
carlin	green (P.Q. 50.191)	Canada	Aux Rochers	1977	Napasoq (1C)	1970-1980
carlin	blue (RDH M87483)	Canada			Napasoq (1C)	1970-1980
carlin	light blue (YY43.129)	Canada	Miramichi	2019	Sisimiut (1B)	2020
carlin	blue (H97364)	Canada			Sisimiut (1B)	~1990
carlin	blue (RDH P70480)	Canada			Sisimiut (1B)	~1990
carlin	light blue (YY58.326)	Canada	Margaree	2020	Narsaq (1F)	2021
PIT	190216279				Ilulissat (1A)	2021
acoustic	Lotek MCFT2-3LM (MC043904 CODE: 94)				Sisimiut (1B)	2021

Table 6. Reported tag recaptures (n = 143) from 2003-2019 at the Greenland Atlantic salmon (*Salmo salar*) fishery. NAFO Division/ICES Area refers to Northwest Atlantic Fisheries Organization or International Council for the Exploration of the Sea (ICES) statistical areas. Empty cells identify incomplete recapture or release information.

	TAG INFORMATION		RELEASE INFORMATION						RECAPTURE INFORMATION						
YEAR ENTERED	TAG TYPE	TAG CODE (SEQ. CODE)	COUNTRY	RIVER	DATE	LIFE STAGE	COMMUNITY (AREA)	NAFO DIVISION/ ICES AREA	YEAR	ENV. NO.	DATE	LENGTH (CM)	WEIGHT (KG)	GW OR WW	EXACT OR EST.
2003	carlin	green (C58283)	UK(Scot)	North Esk	Apr -May 2002	smolt	East Greenland	XIV	2003		27-Oct-03	80.0			est.
2003	carlin	green (C51949)	UK(Scot)	North Esk	Apr-June 2001	smolt	Qaqortoq	1F	2003	4579	11-Sep-03	84.0	6.36	GW	exact
2003	cwt	04 47 58	Ireland	Ballynahinch	18-Feb-02	smolt	Qaqortoq	1F	2003	4896	26-Aug-03	67.5	3.24	GW	exact
2003	cwt	22 42 36	UK(E&W)	Severn (Teme)	14-Mar-02	smolt	Qaqortoq	1F	2003	4478	4-Sep-03	65.4	2.54	GW	exact
2003	cwt	04 47 34	Ireland	Parteen	11-Apr-02	smolt	Qaqortoq	1F	2003	4287	21-Aug-03	56.2	1.78	GW	exact
2003	cwt	01 47 74	Ireland	Screebe	11-Apr-02	smolt	Maniitsoq	1C	2003	6017	1-Sep-03	66.1	3.62	WW	exact
2003	cwt	04 47 39	Ireland	Delphi	23-Apr-02	smolt	Nuuk	1D	2003	69	13-Aug-03	69.0	3.42	GW	exact
2003	cwt	01 47 80	Ireland	Burrishoole	30-Apr-02	smolt	Qaqortoq	1F	2003	4874	26-Aug-03	66.7	3.46	GW	exact
2003	cwt	01 47 76	Ireland	Burrishoole	30-Apr-02	smolt	Qaqortoq	1F	2003	4366	29-Aug-03	66.4	3.38	GW	exact
2003	cwt	01 47 82	Ireland	Burrishoole	30-Apr-02	smolt	Qaqortoq	1F	2003	4451	3-Sep-03	57.8	1.96	GW	exact
2003	cwt	01 42 22 (102/117)	UK(E&W)	Dee	May-02	smolt	Qaqortoq	1F	2003	4141	14-Aug-03	62.3	2.34	GW	exact
2003	streamer	green (NW20837)	Canada	NW Miramichi	2-Jun-02	smolt	Qaqortoq	1F	2003	4744	22-Aug-03	65.8	2.56	GW	exact
2003	streamer	clear (A02249)	Canada	SW Miramichi	4-Jun-02	smolt	Qaqortoq	1F	2003	4156-4190	15-Aug-03				est.
2003	streamer	green (NW32274)	Canada	SW Miramichi	May-June 2001	smolt	Maniitsoq	1C	2003	4474	Sep-03	65.8	2.56	GW	exact
2003	VIE	right eye orange	USA	Penobscot or Dennys	Apr -May 2002	smolt	Nuuk	1D	2003	104	14-Aug-03	61.0	2.40	GW	exact
2003	VIE	left eye orange	USA	Penobscot or Dennys	Apr -May 2002	smolt	Qaqortoq	1F	2003	4209	15-Aug-03	66.5	3.40	GW	exact
2003	VIE	left eye orange	USA	Penobscot or Dennys	Apr -May 2002	smolt	Qaqortoq	1F	2003	4236	18-Aug-03	64.8	2.50	GW	exact
2004	anchor	blue, YY 979	Canada	Miramichi	Jul-Oct 03	adult	Nuuk	1D	2004		17-Oct-04	84.0			est.
2004	anchor	A14601	Canada	Restigouche	May-June	smolt	Nuuk	1D	2004	572	3-Sep-04	65.3	3.40	WW	exact
2004	anchor	blue	Canada				Nuuk	1D	2004	316	17-Aug-04	60.0	2.22	GW	exact
2004	cwt	47 01 65	Ireland	Shannon	27-Mar-03	parr	Nuuk	1D	2004	291	17-Aug-04	61.0	2.50	GW	exact

Table 6 continued. Reported tag recaptures (n = 143) from 2003-2019 at the Greenland Atlantic salmon (*Salmo salar*) fishery. NAFO Division/ICES Area refers to Northwest Atlantic Fisheries Organization or International Council for the Exploration of the Sea (ICES) statistical areas. Empty cells identify incomplete recapture or release information.

	TAG INFORMATION		RELEASE INFORMATION						RECAPTURE INFORMATION						
YEAR ENTERED	TAG TYPE	TAG CODE (SEQ. CODE)	COUNTRY	RIVER	DATE	LIFE STAGE	COMMUNITY (AREA)	NAFO DIVISION/ ICES AREA	YEAR	ENV. NO.	DATE	LENGTH (CM)	WEIGHT (KG)	GW OR WW	EXACT OR EST.
2004	PIT	00302243	Canada	Miramichi	17-May-03	smolt	Qaqortoq	1F	2004		6-Oct-04				est.
2004	VIE	right eye pink	USA	Penobscot	22-Apr-03	smolt	Maniitsoq	1C	2004	6087	14-Sep-04	65.2	3.28	GW	exact
2004	VIE	right eye pink	USA	Penobscot	22-Apr-03	smolt	Maniitsoq	1C	2004	6315	21-Sep-04	65.3	2.84	WW	exact
2004	VIE	left eye red	USA	Penobscot	1-May-03	smolt	Maniitsoq	1C	2004		25-Sep-04				est.
2004	VIE	left eye yellow	USA	Dennys	9-May-03	smolt	Nuuk	1D	2004	137	14-Aug-04	62.5	2.82	GW	exact
2004	VIE	left eye yellow	USA	Dennys	9-May-03	smolt	Nuuk	1D	2004	362	17-Aug-04	64.4	3.52	WW	exact
2005	streamer	A43223	Canada	SW Miramichi	May	smolt	Sisimiut	1B	2005		20-Oct-05	74.0			est.
2005	streamer	A34346	Canada	SW Miramichi	May/Jun 04	smolt	Qaqortoq	1F	2005			70.0			est.
2005	VIE	right eye green	USA	Penobscot	12-Apr-04	smolt	Nuuk	1D	2005	140	20-Aug-05	69.0	3.48	GW	exact
2005	VIE	right eye orange	USA	Penobscot	29-Apr-04	smolt	Maniitsoq	1C	2005	6023	13-Sep-05	68.0	3.86	GW	exact
2005	VIE	right eye orange	USA	Penobscot	29-Apr-04	smolt	Maniitsoq	1C	2005	6024	13-Sep-05	71.0	4.36	GW	exact
2005	VIE	center jaw red	unknown				Nuuk	1D	2005	186	23-Aug-05	6.40	2.24	GW	exact
2006	carlin	green, 908.009	USA	Penobscot	1-May-96	smolt	Uummannaq	1A	2006		Sep-06	70-80			est.
2006	carlin	blue, YY12,172	Canada	SW Miramichi	3-Aug-05	adult	Qaqortoq	1F	2006		26-Sep-06	92.0			est.
2006	carlin	blue, YY09.968	Canada	SW Miramichi	22-Aug-05	adult	Qasigiannguit	1A	2006		27-Oct-06				est.
2006	carlin	blue, YY10,805	Canada	NW Miramichi	1-Sep-05	adult	Sisimiut (1B)	1B	2006		18-Oct-06				est.
2006	cwt	23 40 61 (01123)	Spain	Tea (Galicia)	14-Nov-03	parr	Nuuk	1D	2006	385	28-Aug-06	68.0	2.68	GW	exact
2006	streamer	clear, A78113	Canada	SW Miramichi	10-May-05	smolt	Maniitsoq	1C	2006		Sep-06				est.

Table 6 continued. Reported tag recaptures (n = 143) from 2003-2019 at the Greenland Atlantic salmon (Salmo salar) fishery. NAFO Division/ICES Area refers to Northwest Atlantic Fisheries Organization or International Council for the Exploration of the Sea (ICES) statistical areas. Empty cells identify incomplete recapture or release information.

	TAG INFORMATION		RELEASE INFORMATION						RECAPTURE INFORMATION						
YEAR ENTERED	TAG TYPE	TAG CODE (SEQ. CODE)	COUNTRY	RIVER	DATE	LIFE STAGE	COMMUNITY (AREA)	NAFO DIVISION/ ICES AREA	YEAR	ENV. NO.	DATE	LENGTH (CM)	WEIGHT (KG)	GW OR WW	EXACT OR EST.
2006	streamer	clear, A48507	Canada	Miramichi	30-May-05	smolt	Nuuk	1D	2006	376	28-Aug-06	65.7	2.60	GW	exact
2006	streamer	clear, A63913	Canada	Restigouche	1-Jun-05	smolt	Nuuk	1D	2006	81	12-Aug-06	58.0	1.76	GW	exact
2006	streamer	clear, A73298	Canada	Margaree	7-Jun-05	smolt	Paamuit (1E)	1E	2006			52.6			est.
2006	VIE	right eye yellow	USA	Dennys	6-Apr-05	smolt	Nuuk	1D	2006	337	28-Aug-06	65.5	3.30	GW	exact
2007	carlin	blue, YY16,697	Canada	SW Maramichi	Sep/Oct 06	adult	Nuuk	1D	2007		23-Sep-07	75.0			est.
2008	cwt	23 31 34 (17383)	Spain	R. Asón (Cantabria)	3-Nov-05	parr	Nuuk	1D	2007						est.
2007	cwt	23 41 08 (13574)	Spain	Ulla	Mar-06	smolt	Nuuk	1D	2007	295	19-Aug-07	64.5	2.76	GW	exact
2007	streamer	clear, VI 0822	Canada	Cains	May/Jun 06	smolt	Maniitsoq	1C	2007		5-Oct-07				est.
2007	VIE	right eye green	USA	Penobscot	May-06	smolt	Paamiut	1E	2007	10163	29-Aug-07	63.5	1.98	GW	exact
2007	VIE	right eye red	USA	Penobscot	May-06	smolt	Nuuk	1D	2007	510	5-Sep-07	62.0	3.24	WW	exact
2008	carlin	464,784	USA	Penobscot	7-May-87	smolt	Narsaq	1F	2008			69.0			est.
2008	cwt	62 01 05 (03239)	UK(Scot)	North Esk	05-Apr-07	smolt	Sisimiut	1B	2008	2499	30-Sep-08	62.9	3.10	GW	exact
2008	cwt	unk	unknown				Qaqortoq	1F	2008	4090	28-Aug-08	67.9	2.94	GW	exact
2008	PIT	unk	unknown				Maniitsoq	1C	2008		1-Oct-08	70.0			est.
2008	streamer	clear, B05324	Canada	Restigouche	May/Jun	smolt	Sisimiut	1B	2008	2119	6-Sep-08	62.8	2.68	GW	exact
2009	carlin	green, 829.816	USA	Penobscot	29-Apr-91	smolt	Narsaq	1F	2009		23-Sep-09				est.
2009	carlin	blue, YY16,182	Canada	SW Miramichi	21-Sep-06	adult	Narsaq	1F	2009		20-Oct-09				est.
2009	carlin	green, NJ-063966	Norway	Alta	4-Jun-07	smolt	Qaqortoq	1F	2009		12-Aug-09				est.

Table 6 continued. Reported tag recaptures (n = 143) from 2003-2019 at the Greenland Atlantic salmon (*Salmo salar*) fishery. NAFO Division/ICES Area refers to Northwest Atlantic Fisheries Organization or International Council for the Exploration of the Sea (ICES) statistical areas. Empty cells identify incomplete recapture or release information.

	TAG INFORMATION		RELEASE INFORMATION						RECAPTURE INFORMATION						
YEAR ENTERED	TAG TYPE	TAG CODE (SEQ. CODE)	COUNTRY	RIVER	DATE	LIFE STAGE	COMMUNITY (AREA)	NAFO DIVISION/ ICES AREA	YEAR	ENV. NO.	DATE	LENGTH (CM)	WEIGHT (KG)	GW OR WW	EXACT OR EST.
2009	carlin	light green, NK-073312	Norway	Figgio	15-Apr-08	smolt	65 37 N, 37 27 W	XIV	2009		12-Aug-09	40.0			est.
2009	carlin	light green, NY 069745	Norway	Eira	5-May-08	smolt	Tasiilaq	XIV	2009		3-Oct-09	61.0			est.
2009	carlin	light blue, YY17,656	Canada	SW Miramichi	16-Jul-08	adult	Sisimiut	1B	2009		15-Oct-09	75.0			est.
2009	carlin	light blue, YY24,460	Canada	SW Miramichi	2-Sep-08	adult	Sisimiut	1B	2009		2-Oct-09	88.0			est.
2009	cwt	42 1 32 18 1 (3585)	UK(E&W)	River Frome	24-Apr-08	smolt	Sismiut	1B	2009	2603	6-Oct-09	67.9	4.18	WW	exact
2009	cwt	47 05 37	Ireland	Bundorragha River	28-Apr-08	smolt	Sismiut	1B	2009	2553	2-Oct-09	67.3	4.40	WW	exact
2009	streamer	clear, B06584	Canada	Restigouche	17-May-08	smolt	Ivittuut	1E	2009		7-Sep-09				est.
2009	streamer	clear, B17418	Canada	Restigouche	28-May-08	smolt	Qaqortoq	1F	2009		14-Oct-09	70.0			est.
2010	cwt	47 05 61	Ireland	Bundorragha	28-Apr-09	smolt	Nuuk	1D	2010	11	10-Sep-10	665	3.62	WW	exact
2010	cwt	47 05 62	Ireland	Bundorragha	28-Apr-09	smolt	Nuuk	1D	2010	129	16-Sep-10	669	4.08	WW	exact
2010	cwt	Agency tag #13	Canada	St-Jean (Quebec, Gaspé)		smolt		1B	2010	2069	6-Sep-10	671	3.2	GW	exact
2010	cwt	59 01 84 (06829)	Norway	Dale	30-May-09	smolt	Qaqortoq	1F	2010	4044	16-Aug-10	640	2.70	GW	exact
2010	cwt	47 05 62	Ireland	Bundorragha	28-Apr-09	smolt	Qaqortoq	1F	2010	4061	17-Aug-10	640	2.78	GW	exact
2010	cwt	47 05 60	Ireland	Bundorragha	28-Apr-09	smolt	Qaqortoq	1F	2010	4220	23-Aug-10	650	2.50	GW	exact
2010	VIE	REG	USA	Penobscot	Apr-09	smolt	Nuuk	1D	2010	95	8-Sep-10	682	4.74	WW	exact
2010	streamer	clear, B19964	Canada	Restigouche	21-May-09	smolt	Ukivit	1E	2010		27-Aug-10	650	2.43	GW	est.
2010	streamer	clear, B47437	Canada	SW Miramichi	20-May-09	smolt	Kangilinnguit	1E	2010		19-Sep-10	640	4.00	WW	est.
2011	carlin	YY25,646 (blue)	Canada	Miramichi	Jun-Sep 2010	adult	Nuuk	1D	2011	301	12-Aug-11	817	4.66	GW	exact

Table 6 continued. Reported tag recaptures (n = 143) from 2003-2019 at the Greenland Atlantic salmon (*Salmo salar*) fishery. NAFO Division/ICES Area refers to Northwest Atlantic Fisheries Organization or International Council for the Exploration of the Sea (ICES) statistical areas. Empty cells identify incomplete recapture or release information.

	TAG INFORMATION		RELEASE INFORMATION						RECAPTURE INFORMATION						
YEAR ENTERED	TAG TYPE	TAG CODE (SEQ. CODE)	COUNTRY	RIVER	DATE	LIFE STAGE	COMMUNITY (AREA)	NAFO DIVISION/ ICES AREA	YEAR	ENV. NO.	DATE	LENGTH (CM)	WEIGHT (KG)	GW OR WW	EXACT OR EST.
2011	carlin	YY30,149 (blue)	Canada	Miramichi	Jul-Oct 2010	adult	Maniitsoq	1C	2011		26-Oct-11	950	9.20	GW	est.
2011	streamer	B-47437 (clear)	Canada	SW Miramichi	May/Jun-09	smolt	Itissaaq	1E	2010		19-Sep-10	640	4.00	WW	est.
2011	streamer	B-19964 (clear)	Canada	Restigouche	May/Jun-09	smolt	Paamiut	1E	2010		Sep-10	650	2.43	GW	exact
2011	acoustic	Vemco 57948	Canada	Riviere St Jean	Jun-10	kelt	Nuuk	1D	2011	514	22-Sep-11	850	6.16	GW	exact
2011	PIT	na	unknown				Nuuk	1D	2011	158	26-Sep-11	693	4.50	WW	exact
2012	carlin	YY34,105 (light blue)	Canada	NW Miramichi River	10-Sep-11	adult	Nanortalik	1F	2012			87	5.50	WW	est.
2012	spaghetti	A-01698 (red)	Canada	Campbellton River	11-May-12	adult		1D	2012		11-Aug-12	57			est.
2012	carlin	YY 32,569 (light blue)	Canada	SW Miramichi River	26-Aug-11	adult	Nuuk	1D	2012		8-Oct-12	94	9.14	WW	est.
2012	carlin	YY35,191 (light blue)	Canada	SW Miramichi River	8-Oct-11	adult	Nuuk	1D	2012		24-Oct-12	85	3.50	WW	est.
2012	carlin	R 695532 S (light green)	Sweden	Lagan	24-Apr-11	smolt	Qaqortoq	1F	2012		27-Oct-12	75	5.00	WW	est.
2012	carlin	YY35,639 (light blue)	Canada	SW Miramichi River	24-Sep-11	adult	Aasiaat	1B	2012		12-Oct-12	75	12.00	WW	est.
2013	carlin	NL 083810 (green)	Norway	Imsa	15-Mar-12	smolt	Sulussugutip allanngua (btwn Maniitsoq and Napasoq)	1C	2013				3.20	GW	est.
2013	carlin	H7 (front) Return to MAFF (back) (green)	UK(E&W)	Ouse	1975	smolt	Aasiaat	1B							
2013	carlin	YY37,601	Canada	Miramichi	24-Sep-12	kelt	Aasiaat	1B	2013		20-Oct-13		10.50	WW	est.
2014	carlin	light blue (YY31.575)	Canada	Northwest Miramichi	12-Aug-13	adult	Sisimuit	1B	2014			850	13.90	WW	est.

Table 6 continued. Reported tag recaptures (n = 143) from 2003-2019 at the Greenland Atlantic salmon (*Salmo salar*) fishery. NAFO Division/ICES Area refers to Northwest Atlantic Fisheries Organization or International Council for the Exploration of the Sea (ICES) statistical areas. Empty cells identify incomplete recapture or release information.

	TAG INFORMATION		RELEASE INFORMATION						RECAPTURE INFORMATION						
YEAR ENTERED	TAG TYPE	TAG CODE (SEQ. CODE)	COUNTRY	RIVER	DATE	LIFE STAGE	COMMUNITY (AREA)	NAFO DIVISION/ ICES AREA	YEAR	ENV. NO.	DATE	LENGTH (CM)	WEIGHT (KG)	GW OR WW	EXACT OR EST.
2014	carlin	dark blue (RDH W40190)	Canada	East River	10-May-79	smolt			1970's						
2014	carlin	dark blue (RDH X41376)	Canada	S. John River	23-Apr-81	smolt	Kaangaamiut area	1C	1987-1988						
2014	carlin	dark blue (RDH X74055)	Canada	LeHave	12-May-81	smolt	Kaangaamiut area	1C	1987-1988						
2014	carlin	dark blue (RDH Y5714)	Canada	NW Miramichi	15-Oct-92	adult	Kaangaamiut area	1C	1987-1988						
2014	carlin	dark blue (RDH Y7326)	Canada	SW Miramichi	23-Aug-92	adult	Kaangaamiut area	1C	1987-1988						
2014	carlin	dark blue (RDH Z42712)	Canada	New ALbany	2-May-83	smolt	Kaangaamiut area	1C	1987-1988						
2014	carlin	light blue (YY34,811)	Canada	NW Miramichi	29-Jun-13	adult	Qarajat Iluami	1D	2014		16-Oct-14	730	4.43		est.
2014	carlin	light blue (YY37,601)	Canada	SW Miramichi	24-Apr-12	adult	Aasiaat area	1B	2013		20-Oct-13				
2014	floy	yellow (A-00814)	Canada		1-Jun-14	adult	Narsaq	1F	2014		27-Oct-14				
2014	carlin	black (RFP2792)	France				Arsuk Area	1E							
2014	carlin	light blue/light green (58232)	Norway	Figgjo	18-May-77	smolt	Arsuk Area	1E	2000-2001						
2014	carlin	light green (98925)	Norway	Drammenselva	6-May-86	smolt	Qeqertarsuatsiaat	1D	1988-1989						
2014	carlin	green (24404)	UK(Scot)	North Esk	8-May-81	smolt	Kaangaamiut area	1C	1987-1988						

Table 6 continued. Reported tag recaptures (n = 143) from 2003-2019 at the Greenland Atlantic salmon (*Salmo salar*) fishery. NAFO Division/ICES Area refers to Northwest Atlantic Fisheries Organization or International Council for the Exploration of the Sea (ICES) statistical areas. Empty cells identify incomplete recapture or release information.

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2014	carlin	green (USA 145,063)	USA	Union	3-May-79	smolt	Qeqertarsuatsiaat	1D	1988-1989						
2014	carlin	green (USA 217175)	USA	Penobscot	7-May-80	smolt	Qeqertarsuatsiaat	1D	1988-1989						
2014	carlin	green (USA 24630)	USA	Penobscot	9-Mat-84	smolt	Kaangaamiut area	1C	1987-1988						
2014	carlin	green (USA 289697)	USA	Penobscot	4-May-81	smolt	Kaangaamiut area	1C	1987-1988						
2014	carlin	green (USA 291510)	USA	Penobscot	4-May-81	smolt	Kaangaamiut area	1C	1987-1988						
2014	carlin	green (USA 398,712)	USA	Penobscot	9-May-86	smolt	Qeqertarsuatsiaat	1D	1988-1989						
2014	carlin	green (USA 398,917)	USA	Penobscot	9-May-86	smolt	Qeqertarsuatsiaat	1D	1988-1989						
2014	carlin	green (USA-CTR 167,495)	USA	Conneticut	25-Apr-77	smolt	Sisimiut	1B	1978-1982						
2015	carlin	322,343 (green)	USA	Penobscot	8-May-86	smolt	Paamuit	1E							
2015	carlin	846,920 (green)	USA	Penobscot	29-Apr-91	smolt	Paamuit	1E							
2015	carlin	42501 (green)	Canada				Paamuit	1E							
2015	carlin	AA 26325 (light green)	Canada	Musquodoboit	1985	smolt	Nanortalik	1F							est.
2015	carlin	R 799099 S (light green)	Sweden	Nissan	14-Apr-14	smolt	Qaqortoq	1F	2015		20-Sep-15	65	2.55	GW	est.
2015	carlin	MSA 01,153 (blue)	Canada	Miramichi	11-Jul-14	adult	Paamiut	1E	2015		23-Oct-15	74	4.18	GW	est.
2016	cwt	01 42 87	UK(E&W)	Dee	May-15	smolt	Paamuit	1E	2016	10079	21-Sep-16	625	2.36	GW	exact
2016	cwt	07 47 14	Ireland	Corrib	9-Apr-15	smolt	Qaqortoq	1F	2016	4086	23-Aug-16	577	2.10	GW	exact
2016	carlin	blue (A59055)	Canada	LaHave	21-May-74	smolt	Arsuk Area	1E	1975-1980						

Table 6 continued. Reported tag recaptures (n = 143) from 2003-2019 at the Greenland Atlantic salmon (*Salmo salar*) fishery. NAFO Division/ICES Area refers to Northwest Atlantic Fisheries Organization or International Council for the Exploration of the Sea (ICES) statistical areas. Empty cells identify incomplete recapture or release information.

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2016	carlin	blue (G48113)	Canada	St. John River	30-Apr-73	smolt	Arsuk Area	1E	1975-1980						
2016	carlin	blue (RHD M97851)	Canada	St. John River	3-May-79	smolt	Arsuk Area	1E	1975-1980						
2016	carlin	Green (DD20701)	Canada	Saint Mary's	25-May-89	smolt	Arsuk Area	1E	1975-1980						
2016	carlin	Green (BB62280)	Canada	Middle River	26-May-87	smolt	Arsuk Area	1E	1975-1980						
2016	carlin	Brown (B334255)	Norway	Imsa	16-May-77	smolt	Arsuk Area	1E	1975-1980						
2016	carlin	Dark Green (W1346)	UK(Scot)	North Esk	26-May-77	smolt	Arsuk Area	1E	1975-1980						
2016	carlin	Light Green (40825)	UK(Scot)	North Esk	22-May-82	smolt	Arsuk Area	1E	1975-1980						
2016	carlin	Green (USA 15,812)	USA	Penobscot	7-May-74	smolt	Arsuk Area	1E	1975-1980						
2016	carlin	Green (USA 61 466)	USA	Penobscot	5-May-83	smolt	Arsuk Area	1E	1975-1980						
2016	carlin	Light blue (YY00,898)	Canada	Southwest Miramichi	18-Sep-03	adult	Narsaq area	1F	2004						
2016	radio	white (360 027)	USA	Androscoggin	14-May-15	smolt	Kangaamiut	1C	2016						
2017	spaghetti	green (AR3284)	Canada				Qaqortoq	1F	2017	4004	23-Aug-17	795	4.72	GW	exact
2017	VIE	right eye green	USA	Penobscot	2-May-16	smolt	Qaqortoq	1F	2017	4021	24-Aug-17	650	2.90	GW	exact
2017	VIE	left eye red	USA	Penobscot	28-Apr-16	smolt	Qaqortoq	1F	2017	4031	24-Aug-17	671	3.08	GW	exact
2017	carlin	blue (YY41, 797)	Canada	Southwest Miramichi	14-Jul-16	adult	Sisimiut	1B	2017	2162	23-Sep-17	856	6.78	GW	exact
2017	cwt	470763	Ireland	Burrishoole	3-May-16	smolt	Sisimiut	1B	2017	2082	17-Sep-17	646	2.91	GW	exact
2017	cwt	470766	Ireland	Bundorragha	29-Apr-16	smolt	Maniitsoq	1C	2017	6385	29-Sep-17	634	2.97	GW	exact
2017	carlin	YY42964	Canada	Northwest Miramichi	2-Oct-16	adult	Qaqortoq	1F					8.50	WW	est.

Table 6 continued. Reported tag recaptures (n = 143) from 2003-2019 at the Greenland Atlantic salmon (*Salmo salar*) fishery. NAFO Division/ICES Area refers to Northwest Atlantic Fisheries Organization or International Council for the Exploration of the Sea (ICES) statistical areas. Empty cells identify incomplete recapture or release information.

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YEAR ENTERED	TAG TYPE	TAG CODE (SEQ. CODE)	COUNTRY	RIVER	DATE	LIFE STAGE	COMMUNITY (AREA)	NAFO DIVISION/ ICES AREA	YEAR	ENV. NO.	DATE	LENGTH (CM)	WEIGHT (KG)	GW OR WW	EXACT OR EST.
2017	carlin	blue (RDH W95477)	Canada	Tobique River	2-May-80	smolt	Arsuk	1E	circa 2010			570	3.1	WW	est.
2017	carlin	light blue (YY42,764)	Canada	Northwest Miramichi	19-Jul-16	adult	Sisimiut	1B	10/19/2017			82	8	WW	est.
2018	carlin	blue (X87060 RDH)	Canada	Middle	27-May-81	smolt	Arsuk	1E	1975						
2018	spaghetti	blue (AR4535)	Canada				Nanortalik	1F	2018		19-Sep-18		5.8	WW	est.
2019	spaghetti	blue (S1011)	Canada	Hunt	27-Aug-17	adult	Maniitsoq	1C	2019		25-Sep-19	60			est.

Table 7. Reporting groups identified within the North Atlantic-wide Atlantic salmon (*Salmo salar*) single nucleotide polymorphism genetic baseline. See Figure 9 for reporting group locations.

North America		Europe	
Reporting Group	**Code**	**Reporting Group**	**Code**
Anticosti	ANT	Baltic Sea	BAL
Avalon Peninsula	AVA	Barents-White Seas	BAR
Burin Peninsula	BPN	United Kingdom/Ireland	BRI
Eastern Nova Scotia	ENS	European Broodstock	EUB
Fortune Bay, Newfoundland	FTB	France	FRN
Gaspé Peninsula	GAS	Greenland	GL
Gulf of St. Lawrence	GUL	Iceland	ICE
Inner Bay of Fundy	IBF	Northern Norway	NNO
Labrador Central	LAC	Southern Norway	SNO
Labrador South	LAS	Spain	SPN
Lake Melville	MEL		
Newfoundland 1	NF1		
Newfoundland 2	NF2		
Northern Newfoundland	NNF		
St. Lawrence North Shore – Lower	QLS		
Quebec City Region	QUE		
St. John River & Aquaculture	SJR		
Ungava Bay	UNG		
Maine, United States	USA		
Western Newfoundland	WNF		
Western Nova Scotia	WNS		

Table 8. The continental proportions of North American (NA) and European (E) Atlantic salmon (*Salmo salar*) caught at West Greenland in 2020 by Northwest Atlantic Fisheries Organization (NAFO) division.

NAFO Division	Sampling Dates	Number			Percentages	
		NA	E	Totals	NA	E
1D	Sep 03 – Sep 22	95	72	167	56.9	43.1
1E	Sep 07 – Sep 11	3	13	16	18.8	81.3
1F	Sep 09	11	2	13	84.6	15.4
TOTAL		109	87	196	55.6	44.4

Table 9. The continental proportions of North American (NA) and European (E) Atlantic salmon (*Salmo salar*) caught at West Greenland in 2021 by Northwest Atlantic Fisheries Organization (NAFO) division. Samples were also collected from East Greenland (International Council for the Exploration of the Seas [ICES] Statistical Area XIV) and are presented below the total but not included in the total.

NAFO Division	Sampling dates	Number			Percentages	
		NA	E	Totals	NA	E
1A	Aug – Sep 15	2	4	6	33.3	66.7
1B	Aug 6 – Oct 12	158	29	187	84.5	15.5
1C	Aug 7 – Sep 23	594	108	702	84.6	15.4
1D	Aug 11 – Sep 8	318	90	408	77.9	22.1
1E	Aug 4 – Sep 9	27	6	33	81.8	18.2
1F	Aug 7 – Sep 22	151	31	182	83.0	17.0
TOTAL		1250	268	1518	82.3	17.7
ICES XIV	*Aug 16 – Sep 29*	*10*	*4*	*14*	*71.4*	*28.6*

Table 10. The estimated number, weighted by catch, of North American (NA) and European (E) Atlantic salmon (*Salmo salar*) caught at West Greenland by year from 1982-2021 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 until 2001, and DNA only from 2002 onwards. No samples were collected in 1993 or 1994.

	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 10 continued. The estimated number, weighted by catch, of North American (NA) and European (E) Atlantic salmon (*Salmo salar*) caught at West Greenland by year from 1982-2021 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 until 2001, and DNA only from 2002 onwards. No samples were collected in 1993 or 1994.

	Proportion weighted by catch		Numbers of salmon caught	
	NA	E	NA	E
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
2015	79	21	13,500	3,900
2016	64	36	5,100	3,300
2017	74	26	6,100	2,200
2018	80	20	10,600	2,600
2019	72	28	6,800	2,600
2020	56	44	5,200	3,600
2021	84	16	10,300	2,000

Table 11. Bayesian proportional mean mixture composition estimates for the West Greenland Atlantic salmon (*Salmo salar*) fishery by Northwest Atlantic Fisheries Organization (NAFO) division sampled in 2020 using the single nucleotide polymorphism range-wide baseline. Regions correspond to reporting groups identified in Table 7 and Figure 9. Mean estimates provided with 95% credible interval in parentheses. Estimates of mixture contributions not supported by significant individual assignments (P>0.8) are represented as zero and therefore all columns may not add up to 100. Credible intervals with a lower bound of zero, or close to zero, may indicate little support for the mean assignment value.

Reporting Group	COO	NAFO 1D	NAFO 1E	NAFO 1F	Overall
Baltic Sea	EUR	0.0	0.0	0.0	0.0
Barents-White Seas	EUR	0.0	0.0	0.0	0.0
European Broodstock	EUR	0.0	0.0	0.0	0.0
UK/Ireland	EUR	39.9 (32.4, 47.5)	77.3 (55.6, 93.4)	14.9 (1.9, 37.4)	41.7 (34.9, 48.8)
France	EUR	0.0	0.0	0.0	0.0
Greenland	EUR	0.0	0.0	0.0	0.0
Iceland	EUR	0.0	0.0	0.0	0.0
Northern Norway	EUR	0.0	0.0	0.0	0.0
Southern Norway	EUR	4 (1.4, 7.7)	0.0	0.0	3.3 (1.1, 6.4)
Spain	EUR	0.0	0.0	0.0	0.0
Anticosti	NA	0.0	0.0	0.0	0.0
Avalon Peninsula	NA	0.0	0.0	0.0	0.0
Burin Peninsula	NA	0.0	0.0	0.0	0.0
Eastern Nova Scotia	NA	0.0	0.0	0.0	0.0
Fortune Bay	NA	0.0	0.0	0.0	0.0
Gaspé Peninnsula	NA	21 (14.7, 27.8)	12.1 (1.7, 30.7)	25 (6.3, 51.1)	20.4 (14.8, 26.7)
Gulf of St Lawrence	NA	7.8 (3.7, 13)	0.0	0.0	7.3 (3.7, 11.8)
Inner Bay of Fundy	NA	0.0	0.0	0.0	0.0
Labrador Central	NA	1.1 (0, 3.5)	0.0	0.0	0.7 (0.0, 2.7)
Labrador South	NA	14.6 (9.5, 20.7)	0.0	16.7 (0, 42.5)	13.5 (8.9, 18.8)
Lake Melville	NA	1.5 (0.1, 4.1)	0.0	17.9 (0.9, 46)	2.9 (0.9, 6)
Newfoundland 1	NA	0.0	0.0	0.0	0.0
Newfoundland 2	NA	0.0	0.0	0.0	0.0
Northern Newfoundland	NA	0.0	0.0	6.5 (0, 24)	0.0
St. Lawrence North Shore-Lower	NA	3.6 (1.2, 7.1)	0.0	7.5 (0.2, 25.2)	3.6 (1.4, 6.8)
Québec City Region	NA	0.0	0.0	0.0	0.0
Saint John River & Aquaculture	NA	0.0	0.0	0.0	0.0
Ungava Bay	NA	3.7 (1.3, 7)	5.9 (0.2, 20.6)	0.0	3.6 (1.5, 6.7)
Maine, United States	NA	0.6 (0, 2.2)	0.0	0.6 (0, 2.2)	0.5 (0.0, 1.9)
Western Newfoundland	NA	0.0	0.0	0.0	0.0
Western Nova Scotia	NA	0.0	0.0	0.0	0.0

Table 12. Bayesian proportional mean mixture composition estimates for the West Greenland Atlantic salmon (*Salmo salar*) fishery by Northwest Atlantic Fisheries Organization (NAFO) division sampled in 2021 using the single nucleotide polymorphism range-wide baseline. Regions correspond to reporting groups identified in Table 7 and Figure 9. Mean estimates provided with 95% credible interval in parentheses. Estimates of mixture contributions not supported by significant individual assignments (P>0.8) are represented as zero and therefore all columns may not add up to 100. Credible intervals with a lower bound of zero, or close to zero, may indicate little support for the mean assignment value.

Reporting Group	COO	NAFO 1A	NAFO 1B	NAFO 1C	NAFO 1D	NAFO 1E	NAFO 1F	ICES XIV	Overall
Baltic Sea	EUR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Barents-White Seas	EUR	0.0	0.0	0.0	0.2 (0, 0.9)	0.0	0.0	0.0	0.1 (0, 0.2)
European Broodstock	EUR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
UK/Ireland	EUR	58.9 (23.6, 89.5)	14.9 (10.2, 20.4)	14.8 (12.2, 17.5)	18.3 (14.6, 22.3)	17.8 (6.8, 32.2)	16.9 (11.8, 22.7)	28.7 (9.3, 54)	16.3 (14.5, 18.2)
France	EUR	0.0	0.0	0.3 (0, 0.8)	0.0	0.0	0.0	0.0	0.1 (0, 0.4)
Greenland	EUR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Iceland	EUR	0.0	0.0	0.1 (0, 0.5)	0.2 (0, 0.9)	0.0	0.0	0.0	0.1 (0.0, 0.4)
Northern Norway	EUR	0.0	0.0	0.3 (0, 0.9)	0.0	0.0	0.0	0.0	0.0
Southern Norway	EUR	0.0	0.6 (0, 2.2)	0.0	3.1 (1.6, 5.1)	0.0	0.0	0.0	1 (0.5, 1.5)
Spain	EUR	0.0	0.0	0.1 (0, 0.5)	0.0	0.0	0.0	0.0	0.2 (0.0, 0.4)
Anticosti	NA	0.0	1 (0, 2.9)	0.9 (0.3, 1.8)	1.9 (0.7, 3.5)	0.0	1.1 (0.1, 3.2)	0.0	1.1 (0.6, 1.8)
Avalon Peninsula	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table 12 continued. Bayesian proportional mean mixture composition estimates for the West Greenland Atlantic salmon (*Salmo salar*) fishery by Northwest Atlantic Fisheries Organization (NAFO) division sampled in 2021 using the single nucleotide polymorphism range-wide baseline. Regions correspond to reporting groups identified in Table 7 and Figure 9. Mean estimates provided with 95% credible interval in parentheses. Estimates of mixture contributions not supported by significant individual assignments (P>0.8) are represented as zero and therefore all columns may not add up to 100. Credible intervals with a lower bound of zero, or close to zero, may indicate little support for the mean assignment value.

Reporting Group	COO	NAFO 1A	NAFO 1B	NAFO 1C	NAFO 1D	NAFO 1E	NAFO 1F	ICES XIV	Overall
Burin Peninsula	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 (0.0, 0.2)
Eastern Nova Scotia	NA	0.0	0.0	1 (0.3, 1.8)	0.6 (0.1, 1.6)	0.0	0.0	0.0	0.7 (0.3, 1.2)
Fortune Bay	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 (0.0, 0.2)
Gaspé Peninnsula	NA	0.0	19.9 (13.6, 26.7)	23.2 (19.9, 26.7)	18.3 (14.3, 22.7)	18.2 (7.1, 32.9)	13 (7.8, 18.9)	28 (0.7, 56.4)	20.3 (18, 22.6)
Gulf of St Lawrence	NA	12.7 (0, 45.7)	18.8 (12.9, 25.7)	17.6 (14.5, 20.7)	11.4 (8.2, 15.1)	14.6 (4.7, 28.7)	23 (16.6, 30.1)	0.0	15.9 (13.8, 18)
Inner Bay of Fundy	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Labrador Central	NA	0.0	1.5 (0, 4.5)	3.3 (1.8, 5.1)	7.3 (4.4, 10.7)	6.6 (0.6, 17.7)	0.0	0.0	3.8 (2.6, 5.2)
Labrador South	NA	0.0	16.7 (11.6, 22.6)	10.9 (8.5, 13.4)	15.4 (11.7, 19.6)	25.6 (12.3, 41.4)	22.9 (16.9, 29.5)	15.7 (0, 41)	14.5 (12.7, 16.5)
Lake Melville	NA	0.0	6 (2.8, 10.2)	3.8 (2.3, 5.4)	3.8 (1.9, 6.2)	0.0	4.5 (1.7, 8.5)	0.0	3.9 (2.9, 5.1)

Table 12 continued. Bayesian proportional mean mixture composition estimates for the West Greenland Atlantic salmon (*Salmo salar*) fishery by Northwest Atlantic Fisheries Organization (NAFO) division sampled in 2021 using the single nucleotide polymorphism range-wide baseline. Regions correspond to reporting groups identified in Table 7 and Figure 9. Mean estimates provided with 95% credible interval in parentheses. Estimates of mixture contributions not supported by significant individual assignments (P>0.8) are represented as zero and therefore all columns may not add up to 100. Credible intervals with a lower bound of zero, or close to zero, may indicate little support for the mean assignment value.

Reporting Group	COO	NAFO 1A	NAFO 1B	NAFO 1C	NAFO 1D	NAFO 1E	NAFO 1F	ICES XIV	Overall
Newfoundland 1	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2 (0.0, 0.6)
Newfoundland 2	NA	0.0	0.0	0.0	1.1 (0, 2.7)	0.0	0.0	0.0	0.5 (0.1, 1.1)
Northern Newfoundland	NA	0.0	0.5 (0, 1.9)	0.0	0.6 (0.1, 1.7)	0.0	0.6 (0, 2.1)	0.0	0.5 (0.2, 0.9)
St. Lawrence North Shore-Lower	NA	15 (0.5, 47.5)	4.5 (1.8, 8.1)	8.4 (6.4, 10.6)	4.8 (2.8, 7.3)	6 (0.7, 16.2)	4.1 (1.5, 7.7)	0.0	6.6 (5.4, 8)
Québec City Region	NA	0.0	0.0	2.6 (1.3, 4.2)	2.3 (0.8, 4.5)	0.0	0.0	0.0	2.7 (1.7, 3.8)
Saint John River & Aquaculture	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 (0.0, 0.4)
Ungava Bay	NA	0.0	8 (4.6, 12.2)	7.5 (5.7, 9.6)	6.6 (4.3, 9.2)	8.8 (2, 20.4)	7.6 (4.3, 11.8)	6.7 (0.2, 23.3)	7.4 (6.1, 8.7)
Maine, United States	NA	0.0	4.4 (1.9, 7.9)	2.1 (1.2, 3.4)	1.8 (0.7, 3.3)	0.0	1.7 (0.4, 4.1)	0.0	2.1 (1.4, 3)
Western Newfoundland	NA	0.0	2 (0.4, 4.5)	2.1 (1, 3.4)	2 (0.8, 3.7)	0.0	2.3 (0.4, 5.1)	0.0	2 .0 (1.3, 2.8)
Western Nova Scotia	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table 13. Annual mean fork lengths and whole weights by continent of origin (NA = North American and E = European) and sea age (1SW = 1 sea-winter, 2SW = 2 sea-winter, and PS = previous spawner) of Atlantic salmon (*Salmo salar*) caught at West Greenland from 1969-2021. No samples were collected in 1977, 1993, or 1994. Note that some estimates maybe derived from a small number of samples and that the mean fork lengths and weights have not been corrected to adjust for the annual variation in the timing of the sampling program.

	Whole weight (kg) Sea age and origin						All sea ages			Fork length (cm) Sea age and origin					
	1SW		2SW		PS					1SW		2SW		PS	
	NA	E	NA	E	NA	E	NA	E	Total	NA	E	NA	E	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

Table 13 continued. Annual mean fork lengths and whole weights by continent of origin (NA = North American and E = European) and sea age (1SW = 1 sea-winter, 2SW = 2 sea-winter, and PS = previous spawner) of Atlantic salmon (*Salmo salar*) caught at West Greenland from 1969-2021. No samples were collected in 1977, 1993, or 1994. Note that some estimates maybe derived from a small number of samples and that the mean fork lengths and weights have not been corrected to adjust for the annual variation in the timing of the sampling program.

	Whole weight (kg) Sea age and origin						All sea ages			Fork length (cm) Sea age and origin					
	1SW		2SW		PS					1SW		2SW		PS	
	NA	E	NA	E	NA	E	NA	E	Total	NA	E	NA	E	NA	E
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	6.9	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	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
2015	3.36	3.13	7.52	7.10	4.53	3.81	3.42	3.18	3.37	65.6	64.4	84.1	82.5	74.2	67.2
2016	3.18	2.79	7.77	5.18	4.03	4.12	3.32	2.89	3.18	65.2	62.6	85.1	76.0	72.2	70.9

Table 13 continued. Annual mean fork lengths and whole weights by continent of origin (NA = North American and E = European) and sea age (1SW = 1 sea-winter, 2SW = 2 sea-winter, and PS = previous spawner) of Atlantic salmon (*Salmo salar*) caught at West Greenland from 1969-2021. No samples were collected in 1977, 1993, or 1994. Note that some estimates maybe derived from a small number of samples and that the mean fork lengths and weights have not been corrected to adjust for the annual variation in the timing of the sampling program.

	Whole weight (kg) Sea age and origin						All sea ages			Fork length (cm) Sea age and origin					
	1SW		2SW		PS					1SW		2SW		PS	
	NA	E	NA	E	NA	E	NA	E	Total	NA	E	NA	E	NA	E
2017	3.42	3.31	6.50	3.69	4.94	8.00	3.50	3.36	3.46	66.6	64.8	85.1	72.4	76.7	81.8
2018	2.91	2.93	9.27	5.59	4.53	-	2.97	3.00	2.97	63.8	63.9	87.5	76.3	77.1	-
2019	2.93	2.89	6.62	6.27	4.01	2.76	3.01	2.83	2.96	63.9	63.4	78.4	76.8	72.1	6.21
2020	3.20	3.38	-	-	7.90	-	3.59	3.38	3.50	66.6	65.6	-	-	85.0	-
2021	3.34	3.34	7.92	4.02	4.72	-	3.44	3.35	3.42	66.2	65.9	86.9	70.1	74.7	-

Table 14. Mean fork lengths (cm) and whole weight (kg) by sea age (1SW = 1 sea-winter and 2SW = 2 sea-winter), continent of origin and Northwest Atlantic Fisheries Organization (NAFO) division for Atlantic salmon (*Salmo salar*) caught at West Greenland in 2020 with corresponding standard deviation (S.D.). Table does not include salmon of unknown age, origin, fork length, or weight and some estimates may be derived from a small number of samples.

	1 SW		2 SW		Previous spawners		All sea ages			
NAFO Div.	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.)	Fork length (cm) (S.D.)	No.	Whole weight (kg) (S.D.)	No.
	North American and European									
1D	64.9	3.43	-	-	89.5	7.90	66.5	31	3.95	17
	(3.8)	(0.47)	-	-	(3.5)	(0.57)	(7.2)		(1.55)	
1E	66.3	3.21	-	-	-	-	66.3	15	3.21	15
	(2.9)	(0.40)	-	-	-	-	(2.9)		(0.40)	
1F	68.9	3.18	-	-	76.0	-	69.5	13	3.18	11
	(5.1)	(0.55)	-	-	-	-	(5.2)		(0.55)	
All Areas	66.1	3.28	-	-	85.0	7.90	67.1	59	3.50	43
	(4.1)	(0.47)	-	-	(8.2)	(0.57)	(6.0)		(1.09)	
	North American									
1D	65.5	3.35	-	-	89.5	7.90	68.0	19	4.11	12
	(3.9)	(0.53)	-	-	(3.5)	(0.57)	(8.5)		(1.84)	
1E	67.6	3.17	-	-	-	-	67.3	3	3.17	3
	(3.7)	(0.06)	-	-	-	-	(3.7)		(0.06)	
1F	68.4	3.03	-	-	76.0	-	69.0	11	3.03	9
	(5.3)	(0.49)	-	-	-	-	(5.6)		(0.49)	
All Areas	66.6	3.20	-	-	85.0	7.90	68.3	33	3.59	24
	(4.5)	(0.48)	-	-	(8.2)	(0.57)	(7.2)		(1.41)	
	European									

Table 14 continued. Mean fork lengths (cm) and whole weight (kg) by sea age (1SW = 1 sea-winter and 2SW = 2 sea-winter), continent of origin and Northwest Atlantic Fisheries Organization (NAFO) division for Atlantic salmon (*Salmo salar*) caught at West Greenland in 2020 with corresponding standard deviation (S.D.). Table does not include salmon of unknown age, origin, fork length, or weight and some estimates may be derived from a small number of samples.

	1 SW		2 SW		Previous spawners		All sea ages			
NAFO Div.	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.)	Fork length (cm) (S.D.)	No.	Whole weight (kg) (S.D.)	No.
1D	64.0	3.58	-	-	-	-	64.0	12	3.58	5
	(3.5)	(0.30)	-	-	-	-	(3.5)		(0.30)	
1E	66.1	3.23	-	-	-	-	66.1	12	3.23	12
	(2.9)	(0.45)	-	-	-	-	(2.9)		(0.45)	
1F	71.8	3.85	-	-	-	-	71.8	2	3.85	2
	(2.5)	(0.21)	-	-	-	-	(2.5)		(0.21)	
All Areas	65.6	3.38	-	-	-	-	65.6	26	3.38	19
	(3.7)	(0.44)	-	-	-	-	(3.7)		(0.44)	

Table 15. Mean fork lengths (cm) and whole weight (kg) by sea age (1SW = 1 sea-winter and 2SW = 2 sea-winter), continent of origin and Northwest Atlantic Fisheries Organization (NAFO) division for Atlantic salmon (Salmo salar) caught at West Greenland in 2021 with corresponding standard deviation (S.D.). Table does not include salmon of unknown age, origin, fork length, or weight and some estimates may be derived from a small number of samples.

	1 SW		2 SW		Previous spawners		All sea ages			
NAFO Div.	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.)	Fork length (cm) (S.D.)	No.	Whole weight (kg) (S.D.)	No.
	North American and European									
1B	66.3	3.36	-	-	69.9	3.92	66.4	129	3.37	128
	(2.9)	(0.54)	-	-	(4.1)	(1.88)	(3.0)		(0.54)	
1C	66.0	3.37	83.3	7.08	75.3	4.88	66.5	636	3.47	634
	(3.0)	(0.54)	(10.4)	(2.55)	(8.5)	(1.88)	(4.3)		(0.83)	
1F	66.9	3.13	78.3	5.83	75.6	4.70	67.4	117	3.24	116
	(3.4)	(0.56)	(15.2)	(3.37)	(7.8)	(1.69)	(4.5)		(0.85)	
All Areas	66.1	3.34	82.4	6.86	74.7	4.72	66.6	882	3.42	878
	(3.1)	(0.55)	(10.7)	(2.57)	(7.9)	(1.71)	(4.2)		(0.80)	
	North American									
1B	66.2	3033	-	-	69.9	3.92	66.3	105	3.35	104
	(3.0)	(0.52)	-	-	(4.1)	(1.88)	(3.0)		(0.53)	
1C	66.0	3.36	86.7	7.88	75.3	4.88	66.5	540	3.47	538
	(3.1)	(0.54)	(8.8)	(2.27)	(8.5)	(1.88)	(4.5)		(0.88)	
1F	67.4	3.20	89.0	8.21	75.6	4.70	68.1	93	3.34	92
	(3.2)	(0.55)	-	-	(7.8)	(1.69)	(4.5)		(0.89)	
All Areas	66.2	3.34	87.0	7.92	74.7	4.72	66.7	738	3.44	734
	(3.1)	(0.54)	(8.2)	(2.11)	(7.9)	(1.71)	(4.3)		(0.84)	
	European									

Table 15 continued. Mean fork lengths (cm) and whole weight (kg) by sea age (1SW = 1 sea-winter and 2SW = 2 sea-winter), continent of origin and Northwest Atlantic Fisheries Organization (NAFO) division for Atlantic salmon (Salmo salar) caught at West Greenland in 2021 with corresponding standard deviation (S.D.). Table does not include salmon of unknown age, origin, fork length, or weight and some estimates may be derived from a small number of samples.

	1 SW		2 SW		Previous spawners		All sea ages			
NAFO Div.	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.)	Fork length (cm) (S.D.)	No.	Whole weight (kg) (S.D.)	No.
1B	66.7	3.47	-	-	-	-	66.7	24	3.47	24
	(2.9)	(0.60)	-	-	-	-	(2.9)		(0.60)	
1C	66.0	3.43	71.5	4.31	-	-	66.1	96	3.44	96
	(2.9)	(0.50)	(6.4)	(1.07)	-	-	(3.0)		(0.53)	
1F	64.8	2.85	67.5	3.45	-	-	65.0	24	2.87	24
	(3.5)	(0.52)	-	-	-	-	(3.4)		(0.53)	
All Areas	65.9	3.34	70.2	4.02	-	-	66.0	144	3.35	144
	(3.0)	(0.56)	(5.1)	(0.90)	-	-	(3.1)		(0.58)	

Table 16. The river age (smolt 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 at West Greenland in 2020. Some estimates may be derived from a small number of samples.

		River age (%)							
NAFO Division	Origin	1	2	3	4	5	6	7	Total No.
1D	NA	4.0	32.0	24.0	24.0	16.0	0.0	0.0	24
	E	11.8	58.8	17.6	5.9	5.9	0.0	0.0	17
		7.1	42.9	21.4	16.7	11.9	0.0	0.0	42
1E	NA	0.0	66.7	0.0	0.0	33.3	0.0	0.0	3
	E	8.3	91.7	0.0	0.0	0.0	0.0	0.0	12
		6.7	86.7	0.0	0.0	6.7	0.0	0.0	15
1F	NA	0.0	9.1	27.3	45.5	18.2	0.0	0.0	11
	E	0.0	100.0	0.0	0.0	0.0	0.0	0.0	2
		0.0	23.1	23.1	38.5	15.4	0.0	0.0	13
All Areas	NA	2.6	28.2	23.1	28.2	17.9	0.0	0.0	39
	E	9.7	74.2	9.7	3.2	3.2	0.0	0.0	31
	Overall	5.7	48.6	17.1	17.1	11.4	0.0	0.0	70

Table 17. The river age (smolt 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 at West Greenland in 2021. Some estimates may be derived from a small number of samples.

		River age (%)							
NAFO Division	Origin	1	2	3	4	5	6	7	Total No.
1B	NA	1.0	25.7	26.7	30.7	11.9	3.0	1.0	100
	E	18.2	50.0	27.3	0.0	4.5	0.0	0.0	22
		4.1	30.1	26.8	25.2	10.6	2.4	0.8	123
1C	NA	0.4	28.3	42.2	18.8	8.7	1.7	0.0	538
	E	13.7	56.8	21.1	7.4	1.1	0.0	0.0	95
		2.4	32.5	39.0	17.1	7.6	1.4	0.0	633
1F	NA	0.0	23.7	28.0	29.0	16.1	3.2	0.0	93
	E	20.8	70.8	4.2	4.2	0.0	0.0	0.0	24
		4.3	33.3	23.1	23.9	12.8	2.6	0.0	117
All Areas	NA	0.4	27.3	38.3	21.7	10.1	2.0	0.1	732
	E	15.6	58.2	19.1	5.7	1.4	0.0	0.0	141
	Overall	2.9	32.3	35.2	19.1	8.7	1.7	0.1	873

Table 18. River age distribution (%) for North American origin Atlantic salmon (Salmo salar) caught at West Greenland from 1968-2021. Table does not include salmon of unknown age or origin. Because of rounding, not all rows add to 100. No samples were collected in 1977, 1993, or 1994. Some estimates may be derived from a small number of samples.

YEAR	1	2	3	4	5	6	7	8
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	2.0	40.8	34.7	18.4	2.0	2.0	0	0
1974	0.9	36	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
1977	-	-	-	-	-	-	-	-
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
1993	-	-	-	-	-	-	-	-
1994	-	-	-	-	-	-	-	-
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	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

Table 18 continued. River age distribution (%) for North American origin Atlantic salmon (*Salmo salar*) caught at West Greenland from 1968-2021. Table does not include salmon of unknown age or origin. Because of rounding, not all rows add to 100. No samples were collected in 1977, 1993, or 1994. Some estimates may be derived from a small number of samples.

YEAR	1	2	3	4	5	6	7	8
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	1.0	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
2015	0.1	31.6	40.6	21.6	6.0	0.2	0	0
2016	0.1	21.3	43.3	26.8	7.3	1.1	0	0
2017	0.3	31.0	41.6	19.6	7.2	0.3	0	0
2018	0.5	29.8	38.4	24.1	6.5	0.7	0	0
2019	0.6	26.9	32.5	25.4	13.7	0.8	0	0
2020	2.6	28.2	23.1	28.2	17.9	0	0	0
2021	0.4	27.3	38.3	21.7	10.1	2.0	0.1	0
10-year mean	0.5	28.5	37.9	23.3	9.1	0.7	0.0	0.0
Overall mean	2.3	31.0	39.3	19.2	7.2	1.0	0.1	0.0

Table 19. River age distribution (%) for European origin Atlantic salmon (*Salmo salar*) caught at West Greenland, 1968-2021. Table does not include salmon of unknown age or origin. Because of rounding, not all rows add to 100. No samples were collected in 1993 or 1994, and some estimates may be derived from a small number of samples.

YEAR	1	2	3	4	5	6	7	8
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
1977	-	-	-	-	-	-	-	-
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
1993	-	-	-	-	-	-	-	-
1994	-	-	-	-	-	-	-	-
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	0
1998	28.6	60.0	7.6	2.9	0.0	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

Table 19 continued. River age distribution (%) for European origin Atlantic salmon (*Salmo salar*) caught at West Greenland from 1968-2021. Table does not include salmon of unknown age or origin. Because of rounding, not all rows add to 100. No samples were collected in 1993 or 1994, and some estimates may be derived from a small number of samples.

YEAR	1	2	3	4	5	6	7	8
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	0
2009	14.3	59.5	23.8	2.4	0.0	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	0	0	0
2014	4.5	60.7	30.8	4.0	0	0	0	0
2015	9.2	54.9	28.8	5.8	1.2	0	0	0
2016	2.5	63.3	29.6	4.3	0.3	0	0	0
2017	10.0	73.0	15.4	1.7	0	0	0	0
2018	13.7	62.1	19.0	5.2	0	0	0	0
2019	7.5	60.5	24.2	7.5	0.4	0	0	0
2020	9.7	74.2	9.7	3.2	3.2	0	0	0
2021	15.6	58.2	19.1	5.7	1.4	0	0	0
10-year mean	8.6	63.8	22.5	4.3	0.7	0.0	0.0	0.0
Overall mean	16.0	61.3	19.2	3.0	0.4	0.0	0.0	0.0

Table 20. The sea age (1SW = 1 sea-winter, 2SW = 2 sea-winter, and Previous Spawners) 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 2020. Table does not include salmon with unknown age or origin. Because of rounding, not all rows add to 100 and some estimates may be derived from a small number of samples.

		Sea-age composition (%)			
NAFO	Origin	1SW	2SW	Previous Spawners	Total No.
1D	NA	92.0	0.0	8.0	25
	E	95.0	0.0	5.0	20
		93.3	0.0	6.7	45
1E	NA	100.0	0.0	0.0	3
	E	100.0	0.0	0.0	12
		100.0	0.0	0.0	15
1F	NA	90.9	0.0	9.1	11
	E	100.0	0.0	0.0	2
		92.3	0.0	7.7	13
All areas	NA	92.3	0.0	7.7	39
	E	97.1	0.0	2.9	34
	Overall	94.5	0.0	5.5	73

Table 21. The sea age (1SW = 1 sea-winter, 2SW = 2 sea-winter, and Previous Spawners) 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 2021. Table does not include salmon with unknown age or origin. Because of rounding, not all rows add to 100, and some estimates may be derived from a small number of samples.

		Sea-age composition (%)				
NAFO	Origin	1SW	2SW	3SW	Previous Spawners	Total No.
1B	NA	97.1	0.0	0.0	2.9	105
	E	100.0	0.0	0.0	0.0	24
		97.7	0.0	0.0	2.3	129
1C	NA	95.6	1.3	0.2	3.0	540
	E	97.9	2.1	0.0	0.0	96
		95.9	1.4	0.2	2.5	636
1F	NA	93.5	1.1	0.0	5.4	93
	E	95.8	4.2	0.0	0.0	24
		94.0	1.7	0.0	4.3	117
All	NA	95.5	1.1	0.1	3.3	738
areas	E	97.9	2.1	0.0	0.0	144
	Overall	95.9	1.2	0.1	2.7	882

Table 22. Sea age (1SW = 1 sea-winter, 2SW = 2 sea-winter, and PS = Previous Spawners) distribution (%) for North American and European origin Atlantic salmon (*Salmo salar*) caught at West Greenland from 1985-2021. Table does not include salmon of unknown age or origin. Not all rows add to 100 because of rounding errors. No samples were collected in 1993 or 1994, and some estimates may be derived from a small number of samples.

	North American			European		
	1SW	2SW	PS	1SW	2SW	PS
1985	92.5	7.2	0.3	95.0	4.7	0.4
1986	95.1	3.9	1.0	97.5	1.9	0.6
1987	96.3	2.3	1.4	98.0	1.7	0.3
1988	96.7	2.0	1.2	98.1	1.3	0.5
1989	92.3	5.2	2.4	95.5	3.8	0.6
1990	95.7	3.4	0.9	96.3	3.0	0.7
1991	95.6	4.1	0.4	93.4	6.5	0.2
1992	91.9	8.0	0.1	97.5	2.1	0.4
1993	-	-	-	-	-	-
1994	-	-	-	-	-	-
1995	96.8	1.5	1.7	97.3	2.2	0.5
1996	94.1	3.8	2.1	96.1	2.7	1.2
1997	98.2	0.6	1.2	99.3	0.4	0.4
1998	96.8	0.5	2.7	99.4	0.0	0.6
1999	96.8	1.2	2.0	100.0	0.0	0.0
2000	97.4	0.0	2.6	100.0	0.0	0.0
2001	98.2	2.6	0.5	97.8	2.0	0.3
2002	97.3	0.9	1.8	100.0	0.0	0.0
2003	96.7	1.0	2.3	98.9	1.1	0.0
2004	97.0	0.5	2.5	97.0	2.8	0.2
2005	92.4	1.2	6.4	96.7	1.1	2.2
2006	93.0	0.8	5.6	98.8	0.0	1.2
2007	96.5	1.0	2.5	95.6	2.5	1.5
2008	97.4	0.5	2.2	98.8	0.8	0.4
2009	93.4	2.8	3.8	89.4	7.6	3.0
2010	98.2	0.4	1.4	97.5	1.7	0.8
2011	93.8	1.5	4.7	82.8	12.1	5.2
2012	93.2	0.7	6.0	98.0	1.6	0.4
2013	94.9	1.4	3.7	96.6	2.4	1.0
2014	91.3	1.1	7.6	96.1	2.4	1.5
2015	97.0	0.7	2.3	98.2	1.2	0.6
2016	93.5	2.5	4.0	95.5	3.5	1.0
2017	92.5	1.5	6.0	93.1	5.7	1.2
2018	97.4	0.4	2.2	97.4	2.6	0.0

Table 22 continued. Sea age (1SW = 1 sea-winter, 2SW = 2 sea-winter, and PS = Previous Spawners) distribution (%) for North American and European origin Atlantic salmon (*Salmo salar*) caught at West Greenland from 1985-2021. Table does not include salmon of unknown age or origin. Not all rows add to 100 because of rounding errors. No samples were collected in 1993 or 1994, and some estimates may be derived from a small number of samples.

	North American			European		
	1SW	2SW	PS	1SW	2SW	PS
2019	95.9	1.4	2.7	97.9	1.7	0.3
2020	92.3	0.0	7.7	97.1	0.0	2.9
2021	95.5	1.2	3.3	97.9	2.1	0.0
10-year mean	94.4	1.1	4.5	96.8	2.3	0.9
Overall mean	95.2	1.9	2.8	96.7	2.4	0.9

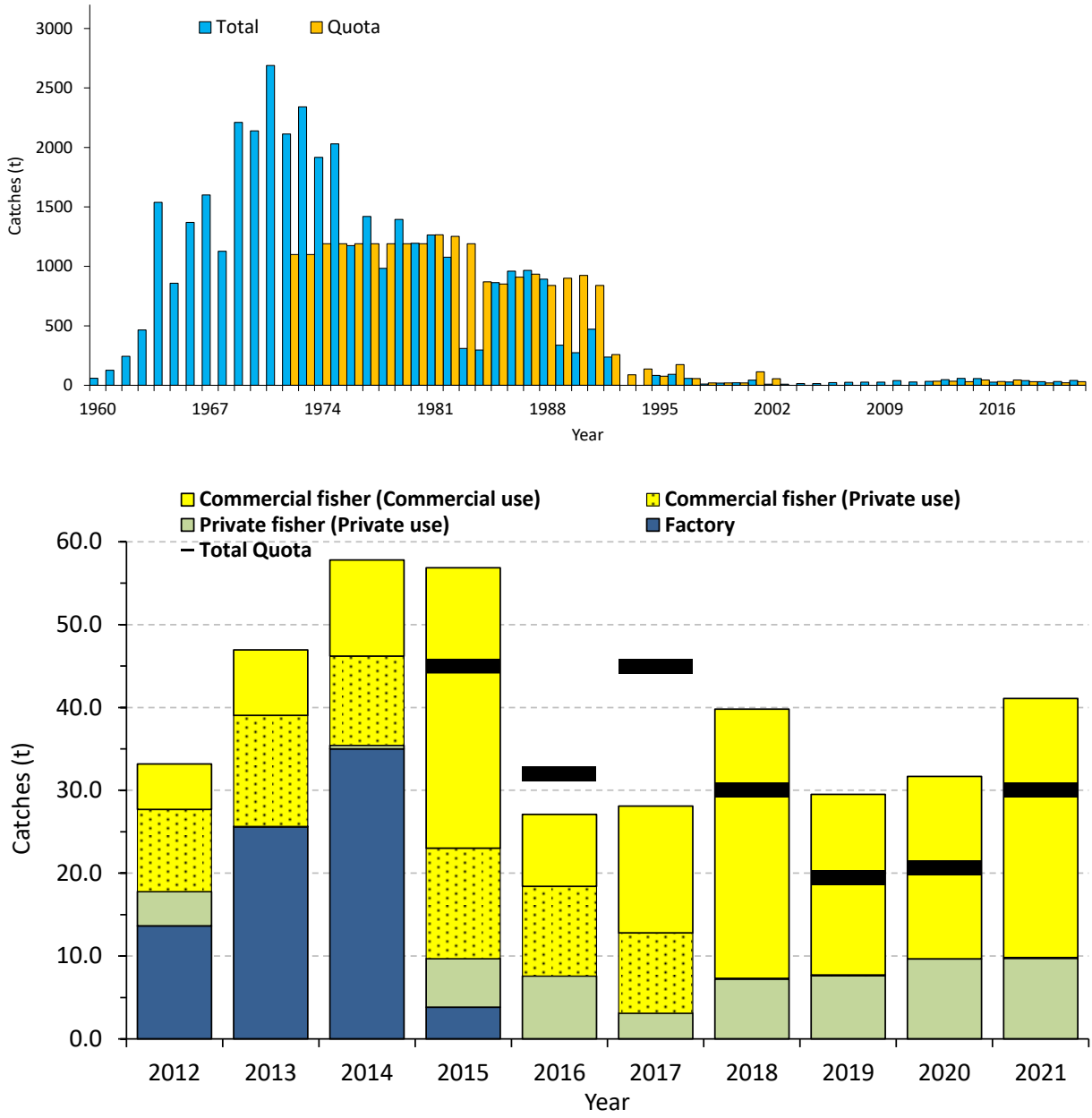

Figure 1. Nominal catches and commercial quotas (metric tons [t], round fresh weight) of Atlantic salmon (*Salmo salar*) at West Greenland from 1960-2021 (top panel) and from 2012-2021 (bottom panel). Total reported landings from 2012-2021 are displayed by landings type. From 2012-2014, an annual quota was set and applied to factory landings only. Starting in 2015, a single quota was set for all components of the fishery.

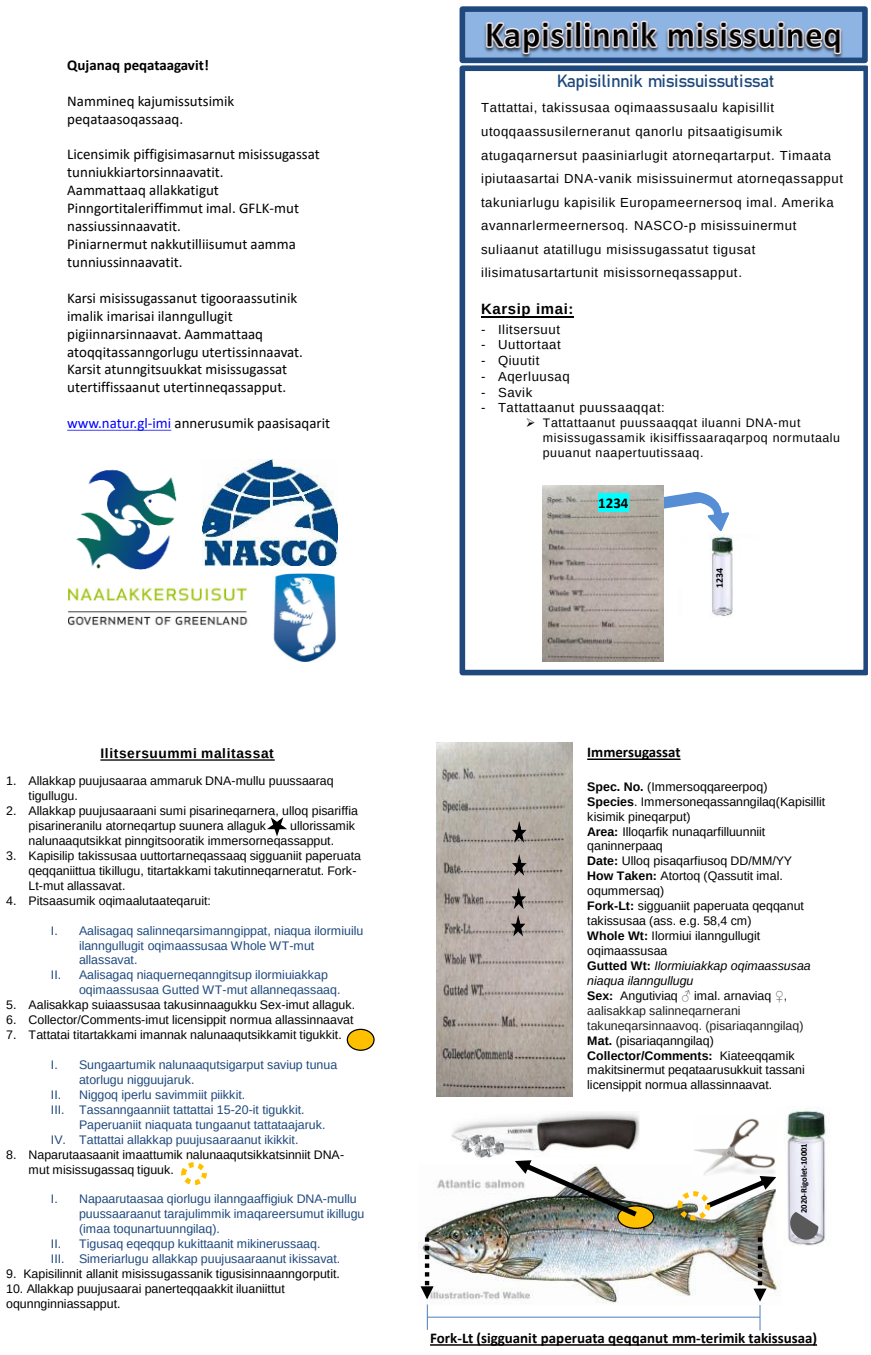

Figure 2. Image of the instructional placard (in Greenlandic) provided in support of the Atlantic Salmon Contingency Sampling Program undertaken in 2020. The placard provides instructions on how to collect and record the requested biological characteristics data and samples.

Tak for din deltagelse!

Deltagelsen er frivillig.

Du kan afleverer prøverne ved kommunen, hvor du fik udleveret din licens.
Du kan også sende prøverne med posten til Naturinstituttet eller GFLK.
Du kan også afleverer dem til din lokale jagtbetjent.

Kassen med prøvetagnings udstyr må du beholde. Du kan også afleverer den til genanvendelse. Ubrugte kasser afleverers på same måde som prøverne.

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NAALAKKERSUISUT
GOVERNMENT OF GREENLAND

NASCO

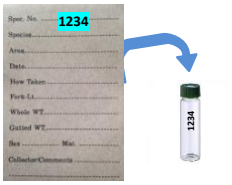
Prøvetagning af laks

Kasse til prøvetagning af Laks

Skællene, længden og vægten anvendes til at aldersbestemme laksen og bestemme hvor godt den er vokset. Vævsprøven bruges til DNA analyse og viser om laksen kommer fra Europa eller Nord Amerika. Prøverne analyseres af forskere under NASCO indsamlins programmet.

Prøvetagnings boxen indeholder:

- Vejledning
- Målebånd
- Saks
- Blyant
- Kniv
- Et antal Skælkonvolutter:
  - Hver skælkonvolut indeholder 1 DNArør med matchende nr.

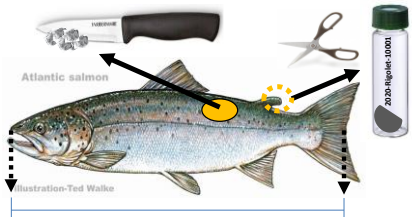


Prøvetagning trin for trin

1. **Åben en kuvert og tag røret ud.**
2. **Udfyld kuverten med oplysninger om sted, dato redskab. Felter med★ Skal udfyldes.**
3. **Laksens længde måles fra snude til centrum af halen til nærmeste mm, som på tegningen. Skriv det under rubrikken Fork-Lt.**
4. **Hvis du har en god vægt:**
   - I. Er fisken ikke renset så skriv vægten med hoved og indvolde under Whole WT.
   - II. Er fisken renset og med hoved, så skriv vægten under Gutted WT.
5. **Skriv fiskens køn, hvis du kan se det når du renser fisken.**
6. **Skrive evt. dit licensnr. under kommentarfeltet.**
7. **Tag skælprøven i området markeret med** .
   - I. Rens området markeret med gult for slim med bagsiden af kniven.
   - II. Fjern slim og skidt fra kniven.
   - III. Skrab 15-20 skæl af området markeret med gult. Skrab fra hale mod hovedet for at løsne skællene.
   - IV. Tør skællene af kniven inden i konvolutten.
8. **Tag DNA prøven af fedtfinnen markeret med** .
   - I. Klip et stykke af fedtfinnen med saksen og læg det ned I røret med konserverende saltopløsning (RNA later, ikke giftigt).
   - II. Stykket skal være mindre end en lillefingernegl.
   - III. Skru låget på røret og læg det ind i konvolutten sammen med skællene.
9. **Du kan nu tage en ny prøve af den næste fisk.**
10. **Lad konvolutterne ligge tørt et par timer, så skællene ikke rådner.**

Udfyld felterne på konvolutten.

Spec. No. (Allerede udfyldt)
Species. Udfyldes ikke (Kun prøver fra laks. tak)
Area: Navn på nærmeste by eller bygd
Date: Dato hvor fisken blev fanget DD/MM/YY
How Taken: Redskab (Garn eller krog)
Fork-Lt: længde fra snude til centrum af halen (f.eks e.g. 58,4 cm)
Whole Wt: Vægt med indvolde i kg
Gutted Wt: *Renset vægt med hoved*
Sex: Han ♂ eller hun ♀, kan ses når fisken renses. (ikke nødvendig)
Mat. (Ikke nødvendig)
Collector/Comments: Her kan du skrive dit licens nr., hvis du vil være med I lodtrækning om en T-shirt.



Fork-Lt (længde fra snude til centrum af hale I mm)

Figure 3. Image of the instructional placard (in Danish) provided in support of the Atlantic Salmon Contingency Sampling Program undertaken in 2020. The placard provides instructions on how to collect and record the requested biological characteristics data and samples.

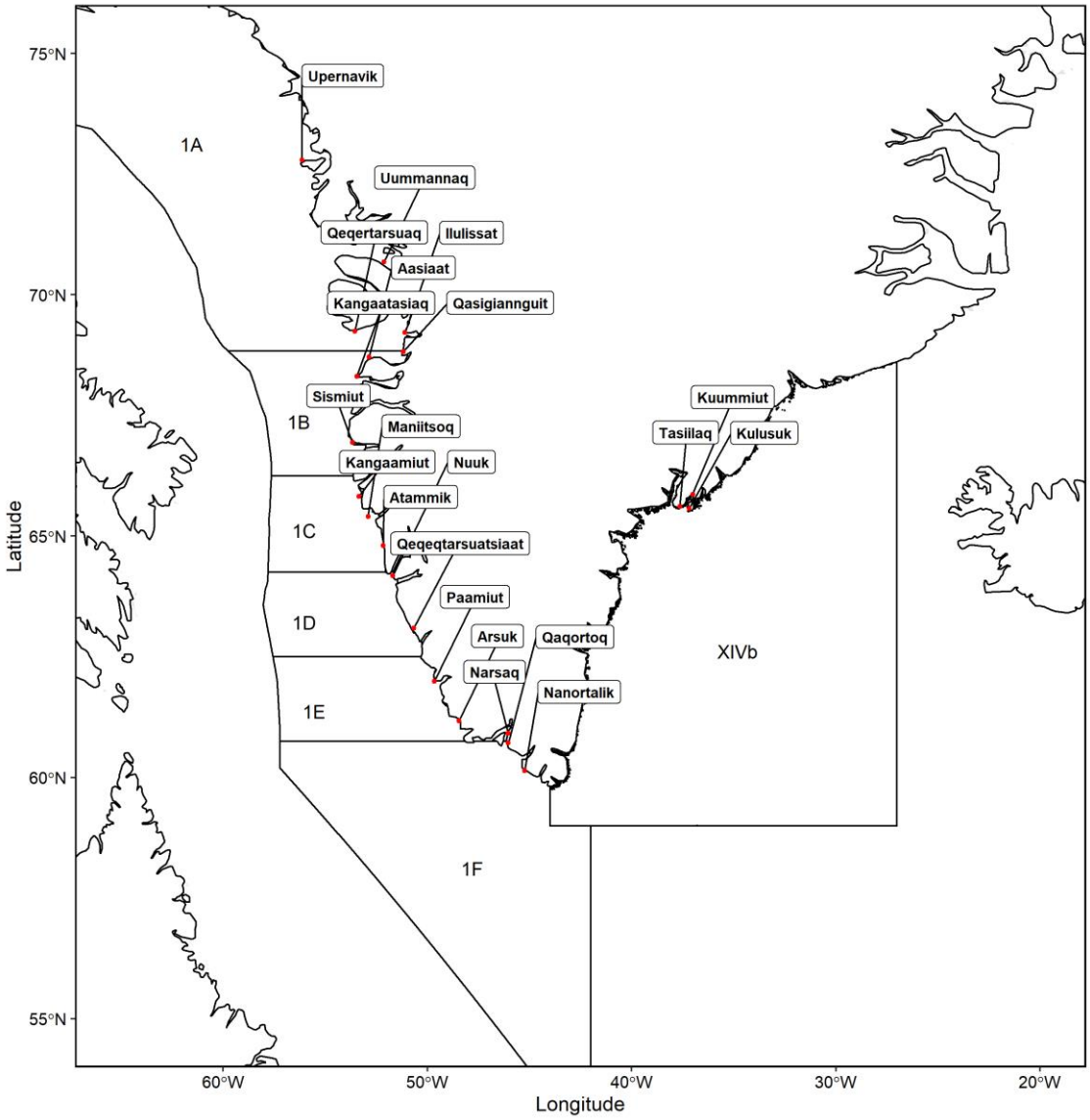
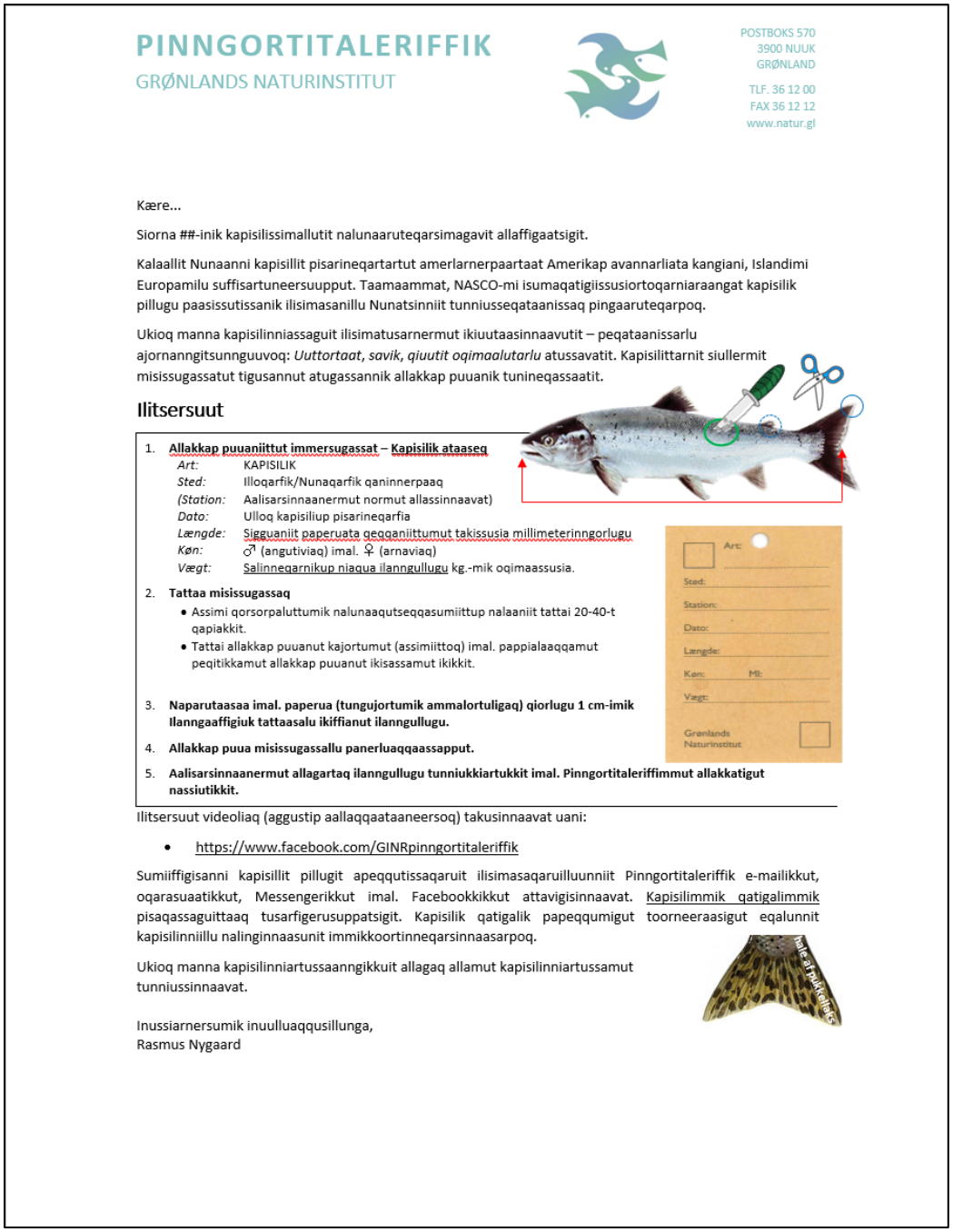


Figure 4. Map of southwest Greenland showing communities at which Atlantic salmon (*Salmo salar*) have historically been landed. Northwest Atlantic Fisheries Organization (NAFO) divisions 1A-1F and International Council for the Exploration of the Seas Statistical Area XIVb are also shown.



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Kære...

Siorna ##-inik kapisilissimallutit nalunaaruteqarsimagavit allaffigaatsigit.

Kalaallit Nunaanni kapisillit pisarineqartartut amerlarnerpaartaat Amerikap avannarliata kangiani, Islandimi Europamilu suffisartuneersuupput. Taamaammat, NASCO-mi isumaqatigiissusiortoqarniaraangat kapisilik pillugu paasissutissanik ilisimasanillu Nunatsinniit tunniusseqataanissaq pingaaruteqarpoq.

Ukioq manna kapisilinniassaguit ilisimatusarnermut ikiuutaasinnaavutit – peqataanissarlu ajornanngitsunnguuvoq: *Uuttortaat*, *savik*, *qiuutit oqimaalutarlu* atussavatit. Kapisilittarnit siullermit misissugassatut tigusannut atugassannik allakkap puuanik tunineqassaatit.

Ilitsersuut

1. **Allakkap puuaniittut immersugassat – Kapisilik ataaseq**
   Art: KAPISILIK
   Sted: Illoqarfik/Nunaqarfik qaninnerpaaq
   (Station: Aalisarsinnaanermut normut allassinnaavat)
   Dato: Ulloq kapisiliup pisarineqarfia
   Længde: Sigguaniit paperuata qeqqaniittumut takissusia millimeterinngorlugu
   Køn: ♂ (angutiviaq) imal. ♀ (arnaviaq)
   Vægt: Salinneqarnikup niaqua ilanngullugu kg.-mik oqimaassusia.
2. **Tattaa misissugassaq**
   - Assimi qorsorpaluttumik nalunaaqutseqqasumiittup nalaaniit tattai 20-40-t qapiakkit.
   - Tattai allakkap puuanut kajortumut (assimiittoq) imal. pappialaaqqamut peqitikkamut allakkap puuanut ikisassamut ikikkit.
3. **Naparutaasaa imal. paperua (tungujortumik ammalortuligaq) qiorlugu 1 cm-imik ilanngaaffigiuk tattaasalu ikiffianut ilanngullugu.**
4. **Allakkap puua misissugassallu panerluaqqaassapput.**
5. **Aalisarsinnaanermut allagartaq ilanngullugu tunniukkiartukkit imal. Pinngortitaleriffimmut allakkatigut nassiutikkit.**

Ilitsersuut videoliaq (aggustip aallaqqaataaneersoq) takusinnaavat uani:

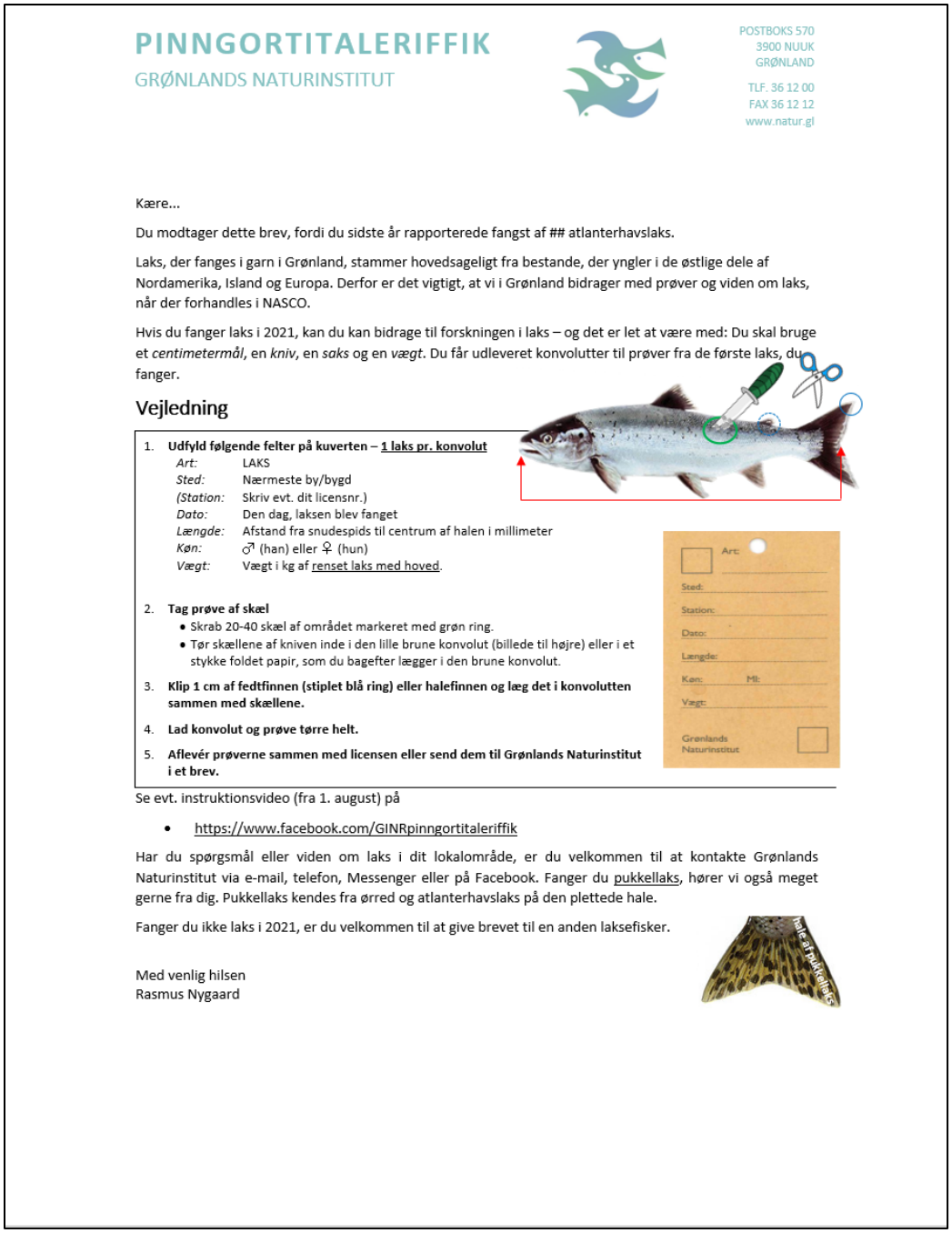
- https://www.facebook.com/GINRpinngortitaleriffik

Sumiiffigisanni kapisillit pillugit apeqqutissaqaruit ilisimasaqaruilluunniit Pinngortitaleriffik e-mailikkut, oqarasuaatikkut, Messengerikkut imal. Facebookkikkut attavigisinnaavat. Kapisilimmik qatigalimmik pisaqassaguittaaq tusarfigerusuppatsigit. Kapisilik qatigalik papeqqumigut toorneeraasigut eqalunnit kapisilinniillu nalinginnaasunit immikkoortinneqarsinnaasarpoq.

Ukioq manna kapisilinniartussaanngikkuit allagaq allamut kapisilinniartussamut tunniussinnaavat.

Inussiarnersumik inuulluaqqusillunga,
Rasmus Nygaard

Figure 5. Example letter (in Greenlandic) provided to all licensed fishers in 2021 requesting their participation in the volunteer Citizen Science sampling program for Atlantic salmon (*Salmo salar*). The letter contains instructions on how to collect and record the requested biological characteristics data as well as the required sampling supplies.



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Kære...

Du modtager dette brev, fordi du sidste år rapporterede fangst af ## atlanterhavslaks.

Laks, der fanges i garn i Grønland, stammer hovedsageligt fra bestande, der yngler i de østlige dele af Nordamerika, Island og Europa. Derfor er det vigtigt, at vi i Grønland bidrager med prøver og viden om laks, når der forhandles i NASCO.

Hvis du fanger laks i 2021, kan du kan bidrage til forskningen i laks – og det er let at være med: Du skal bruge et *centimetermål*, en *kniv*, en *saks* og en *vægt*. Du får udleveret konvolutter til prøver fra de første laks, du fanger.

Vejledning

1. **Udfyld følgende felter på kuverten – 1 laks pr. konvolut**
   - *Art:* LAKS
   - *Sted:* Nærmeste by/bygd
   - *(Station:* Skriv evt. dit licensnr.)
   - *Dato:* Den dag, laksen blev fanget
   - *Længde:* Afstand fra snudespids til centrum af halen i millimeter
   - *Køn:* ♂ (han) eller ♀ (hun)
   - *Vægt:* Vægt i kg af renset laks med hoved.

2. **Tag prøve af skæl**
   - Skrab 20-40 skæl af området markeret med grøn ring.
   - Tør skællene af kniven inde i den lille brune konvolut (billede til højre) eller i et stykke foldet papir, som du bagefter lægger i den brune konvolut.
3. **Klip 1 cm af fedtfinnen (stiplet blå ring) eller halefinnen og læg det i konvolutten sammen med skællene.**
4. **Lad konvolut og prøve tørre helt.**
5. **Aflevér prøverne sammen med licensen eller send dem til Grønlands Naturinstitut i et brev.**

Art:
Sted:
Station:
Dato:
Længde:
Køn: Mi:
Vægt:
Grønlands Naturinstitut

Se evt. instruktionsvideo (fra 1. august) på

- https://www.facebook.com/GINRpinngortitaleriffik

Har du spørgsmål eller viden om laks i dit lokalområde, er du velkommen til at kontakte Grønlands Naturinstitut via e-mail, telefon, Messenger eller på Facebook. Fanger du pukkellaks, hører vi også meget gerne fra dig. Pukkellaks kendes fra ørred og atlanterhavslaks på den plettede hale.

Fanger du ikke laks i 2021, er du velkommen til at give brevet til en anden laksefisker.

Hale af pukkellaks

Med venlig hilsen
Rasmus Nygaard

Figure 6. Example letter (in Danish) provided to all licensed fishers in 2021 requesting their participation in the volunteer Citizen Science sampling program for Atlantic salmon (*Salmo salar*). The letter contains instructions on how to collect and record the requested biological characteristics data as well as the required sampling supplies.

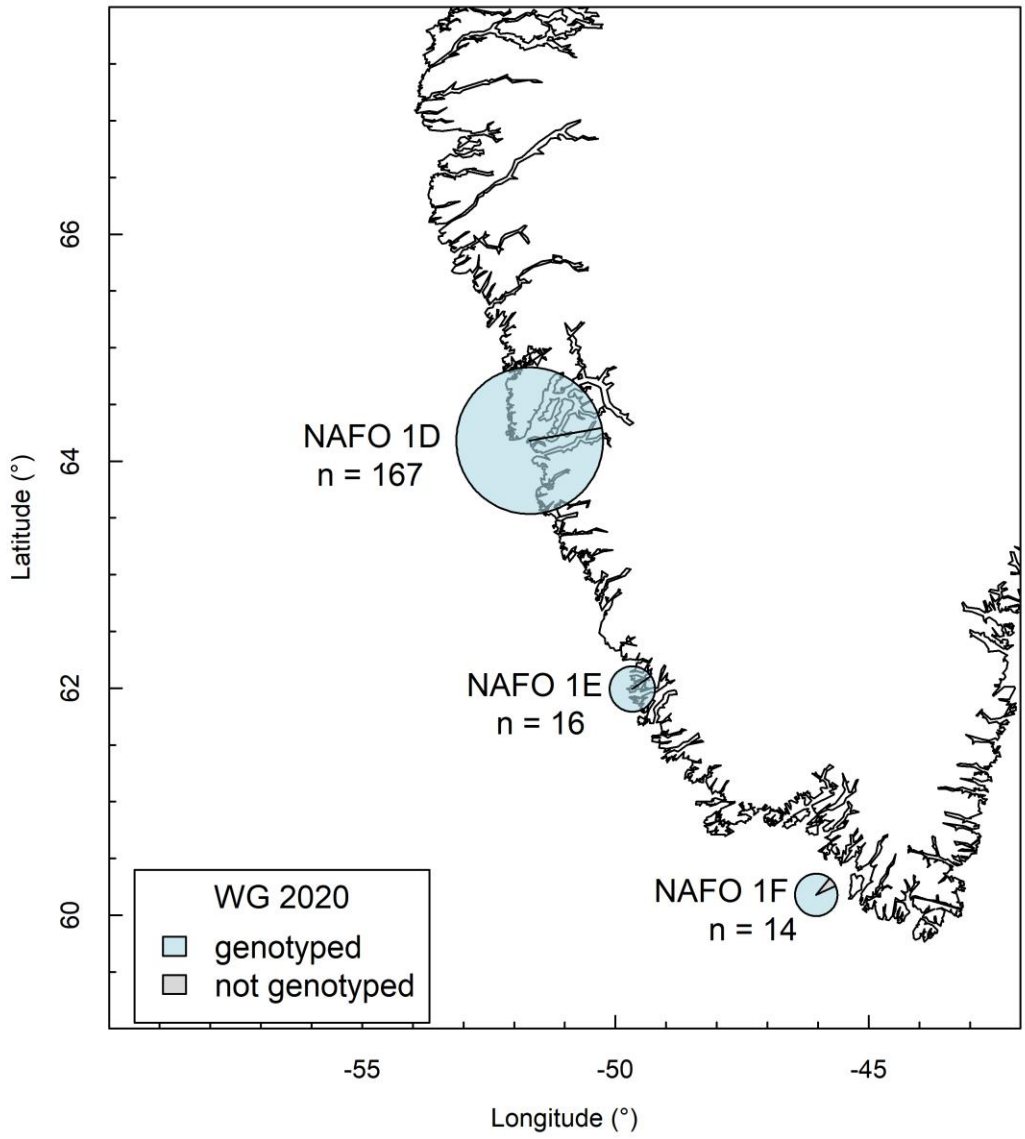

Figure 7. Map showing total samples (circles) and analyzed (blue) and unanalyzed (grey) subsamples during 2020 at the West Greenland Atlantic salmon (*Salmo salar*) fishery for the single nucleotide polymorphism analysis. Samples were collected from 4 communities in 3 Northwest Atlantic Fisheries Organization (NAFO) divisions from north to south: Nuuk (1D), Paamiut (1E), Narsaq (1F), and Qaqortoq (1F).

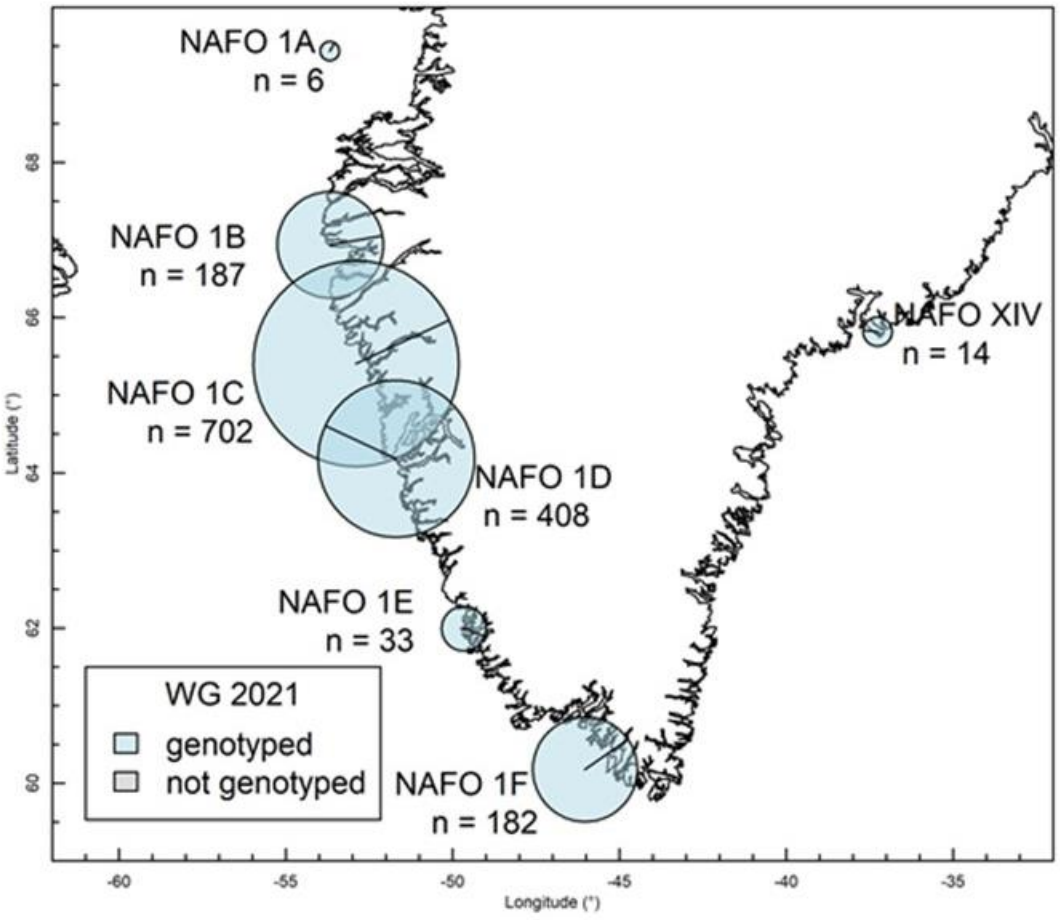

Figure 8. Map showing total samples (circles) and analyzed (blue) and unanalyzed (grey) subsamples during 2021 at the West Greenland Atlantic salmon (*Salmo salar*) fishery for the single nucleotide polymorphism analysis. Samples were collected from numerous communities across all Northwest Atlantic Fisheries Organization divisions (1A-1F) and from the International Council for the Exploration of the Seas Statistical Area XIV.

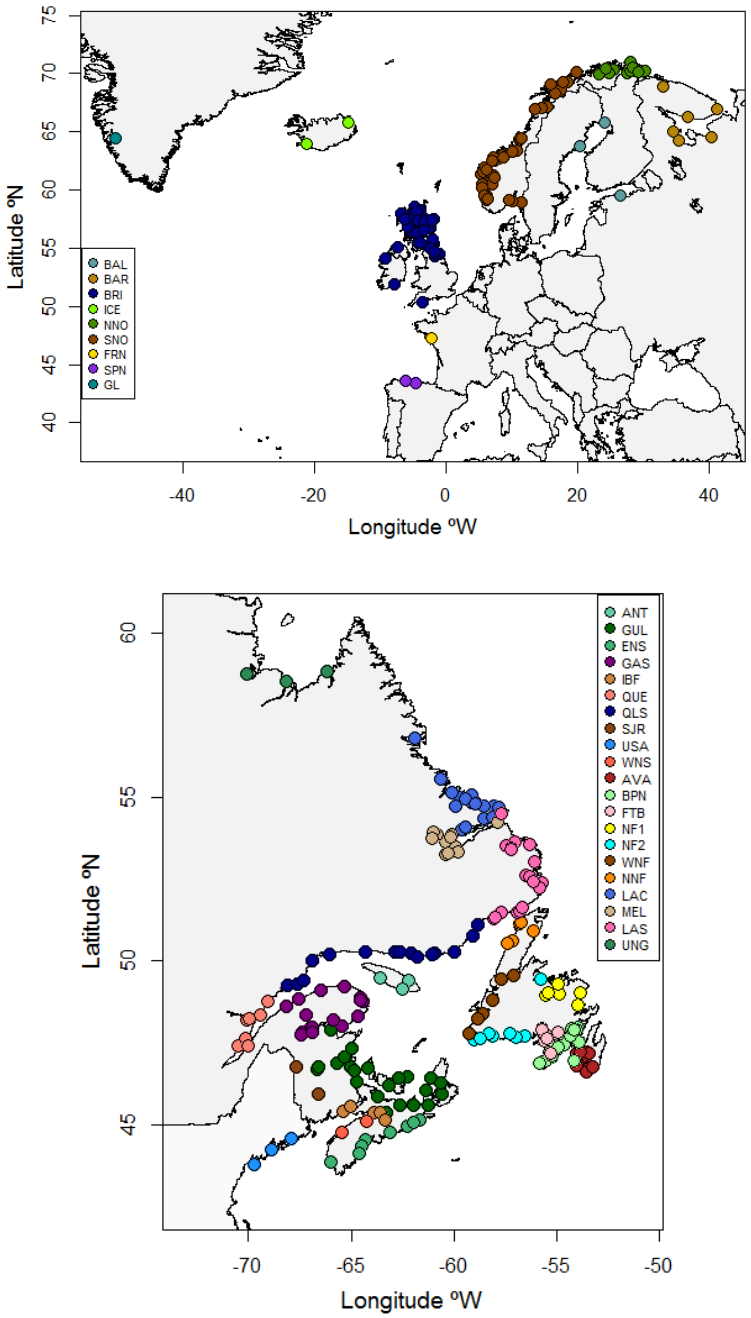

Figure 9. Map of sample locations for the single nucleotide polymorphism range-wide genetic baseline for European (top) and North American (bottom) regional groupings. See Table 7 for location information: ANT=Anticosti; AVA=Avalon Peninsula; BPN=Burin Peninsula; ENS=Eastern Nova Scotia; FTB=Fortune Bay; Newfoundland; GAS=Gaspé Peninsula; GUL=Gulf of St. Lawrence; IBF=Inner Bay of Fundy; LAC=Labrador Central; LAS=Labrador South; MEL=Lake Melville; NF1=Newfoundland 1; NF2=Newfoundland 2; NNF=Northern Newfoundland; QLS=St. Lawrence North Shore – Lower; QUE=Quebec City Region; SJR=St. John River and Aquaculture; UNG=Ungava Bay; USA=Maine, United States; WNF=Western Newfoundland; WNS=Western Nova Scotia; BAL=Baltic Sea; BAR=Barents-White Seas; BRI=United Kingdom/Ireland; EUB=European Broodstock; FRN=France; GL=Greenland; ICE=Iceland; NNO= Northern Norway; SNO=Southern Norway; and SPN=Spain.

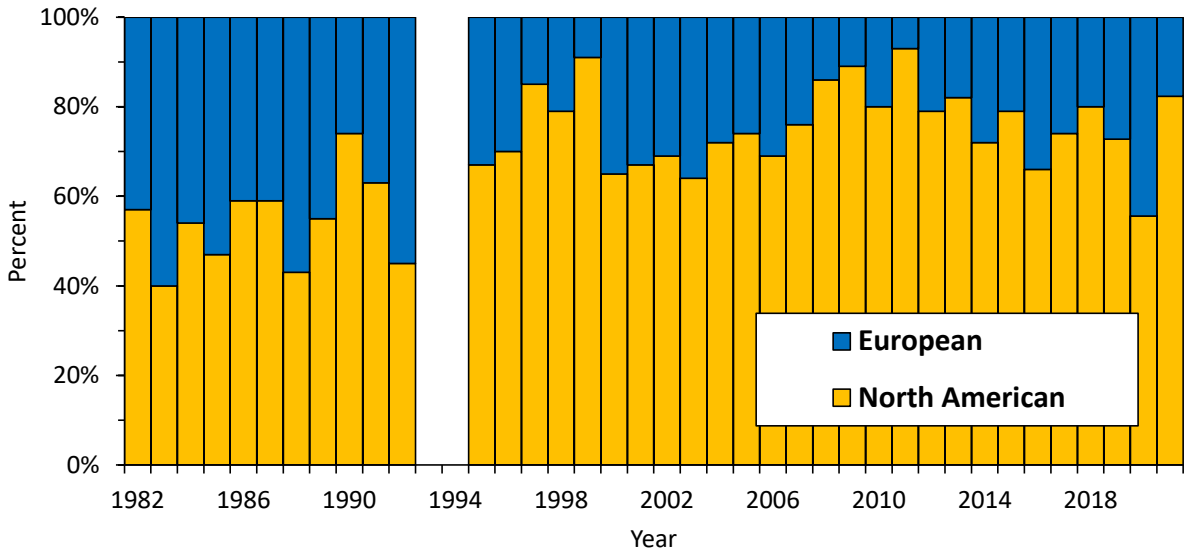

Figure 10. The weighted proportions of North American and European Atlantic salmon (*Salmo salar*) caught at West Greenland from 1982-2021. Proportions were weighted by the estimated numbers of salmon by origin for each division according to the adjusted landings.

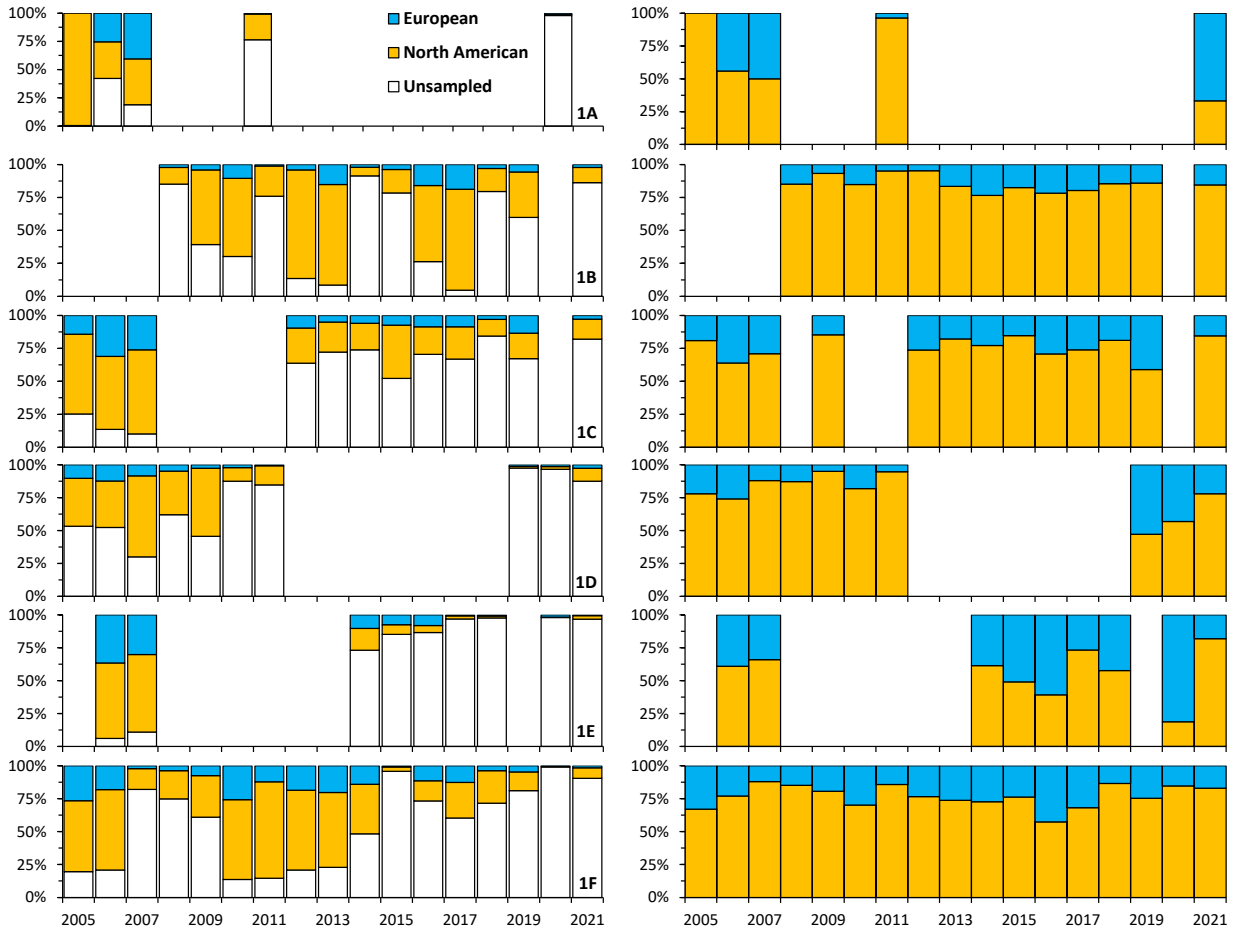

Figure 11. Proportions of unsampled adjusted landings of North American origin and European origin Atlantic salmon (*Salmo salar*; left panels) and of sampled adjusted landings or North American origin and European origin Atlantic salmon (right panels) by North Atlantic Fisheries Organization (NAFO) division sampled at West Greenland from 2005-2021. Top row represents division 1A and bottom row represents division 1F. Year-division combinations with data identify when and where sampling occurred, although in some regions and years, the number of samples collected may be low.

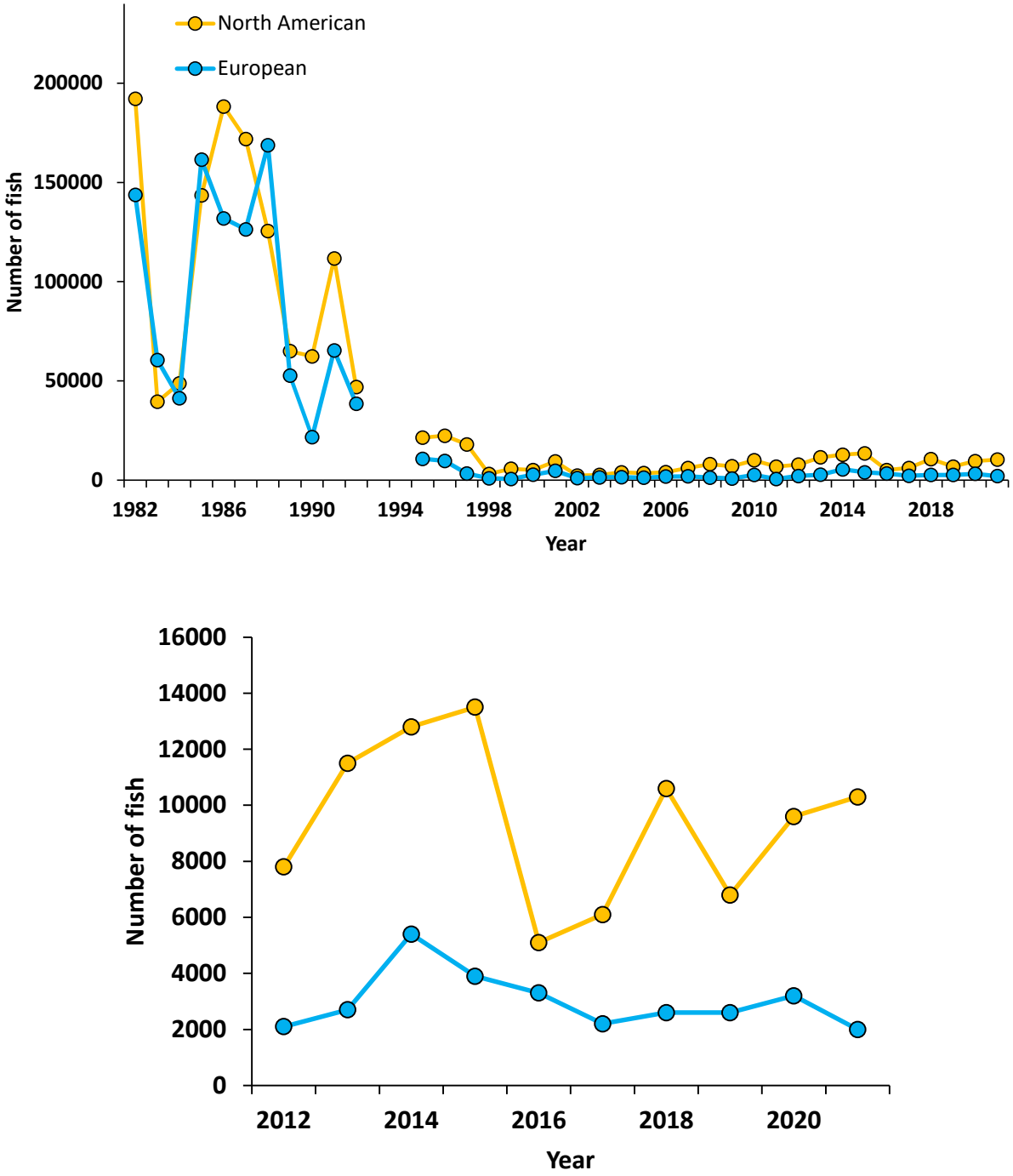

Figure 12. The weighted numbers of North American and European Atlantic salmon (*Salmo salar*) caught at West Greenland from 1982-2021 (top) and from 2012-2021 (bottom). Numbers are rounded to the nearest hundred fish. In 2020, approximately 5,200 North American origin and 3,600 European origin fish were harvested. In 2021, approximately 10,300 North American origin and 2,000 European origin fish were harvested.

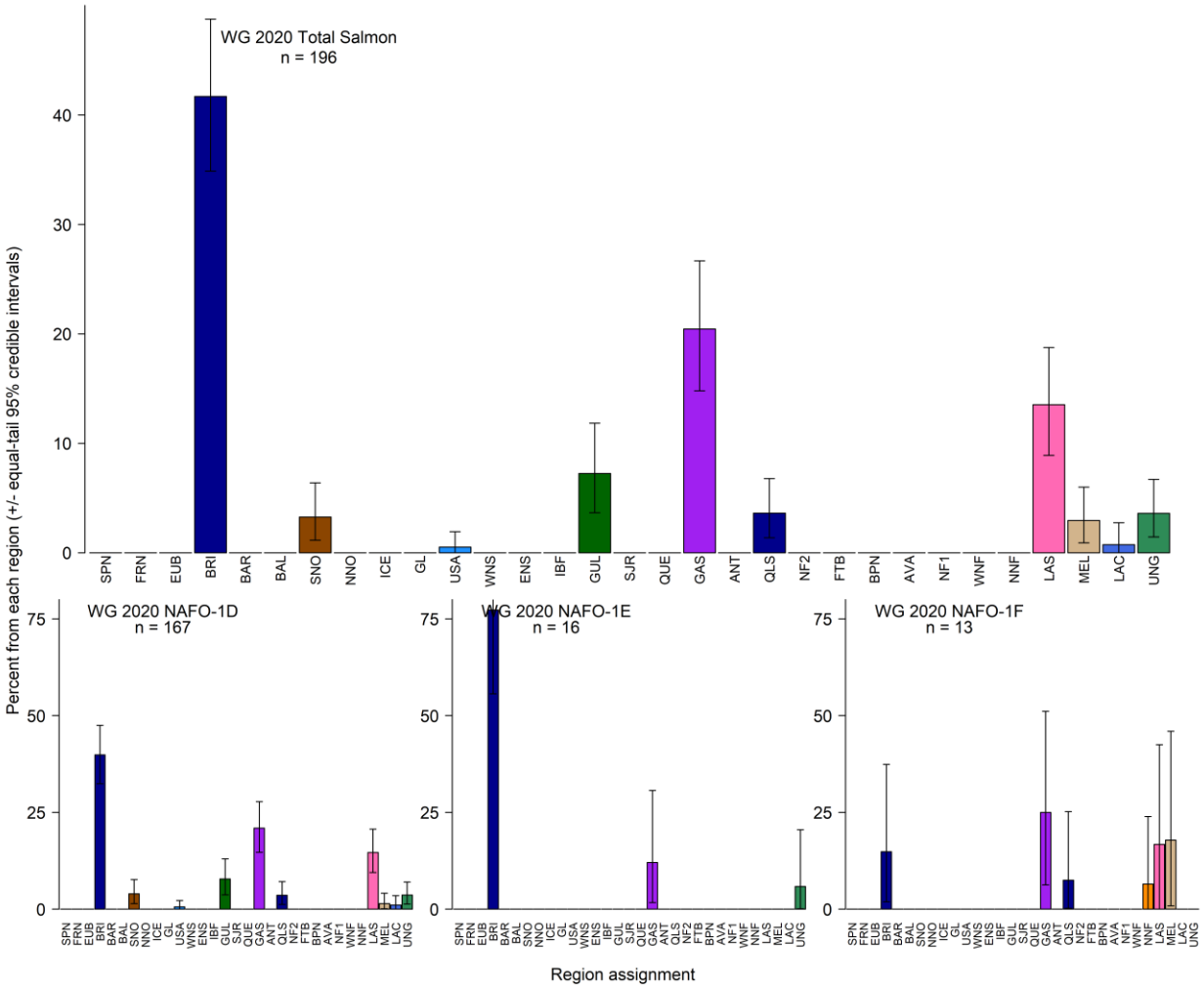

Figure 13. Bayesian estimates of mixture composition of samples from the West Greenland Atlantic salmon (*Salmo salar*) fishery for 2020 using the single nucleotide polymorphism (SNP) baseline overall and by Northwest Atlantic Fisheries Organization (NAFO) division. See Figure 5 for reporting group locations and Table 5 for location information: ANT=Anticosti; AVA=Avalon Peninsula; BPN=Burin Peninsula; ENS=Eastern Nova Scotia; FTB=Fortune Bay; Newfoundland; GAS=Gaspé Peninsula; GUL=Gulf of St. Lawrence; IBF=Inner Bay of Fundy; LAC=Labrador Central; LAS=Labrador South; MEL=Lake Melville; NF1=Newfoundland 1; NF2=Newfoundland 2; NNF=Northern Newfoundland; QLS=St. Lawrence North Shore – Lower; QUE=Quebec City Region; SJR=St. John River and Aquaculture; UNG=Ungava Bay; USA=Maine, United States; WNF=Western Newfoundland; WNS=Western Nova Scotia; BAL=Baltic Sea; BAR=Barents-White Seas; BRI=United Kingdom/Ireland; EUB=European Broodstock; FRN=France; GL=Greenland; ICE=Iceland; NNO= Northern Norway; SNO=Southern Norway; and SPN=Spain.

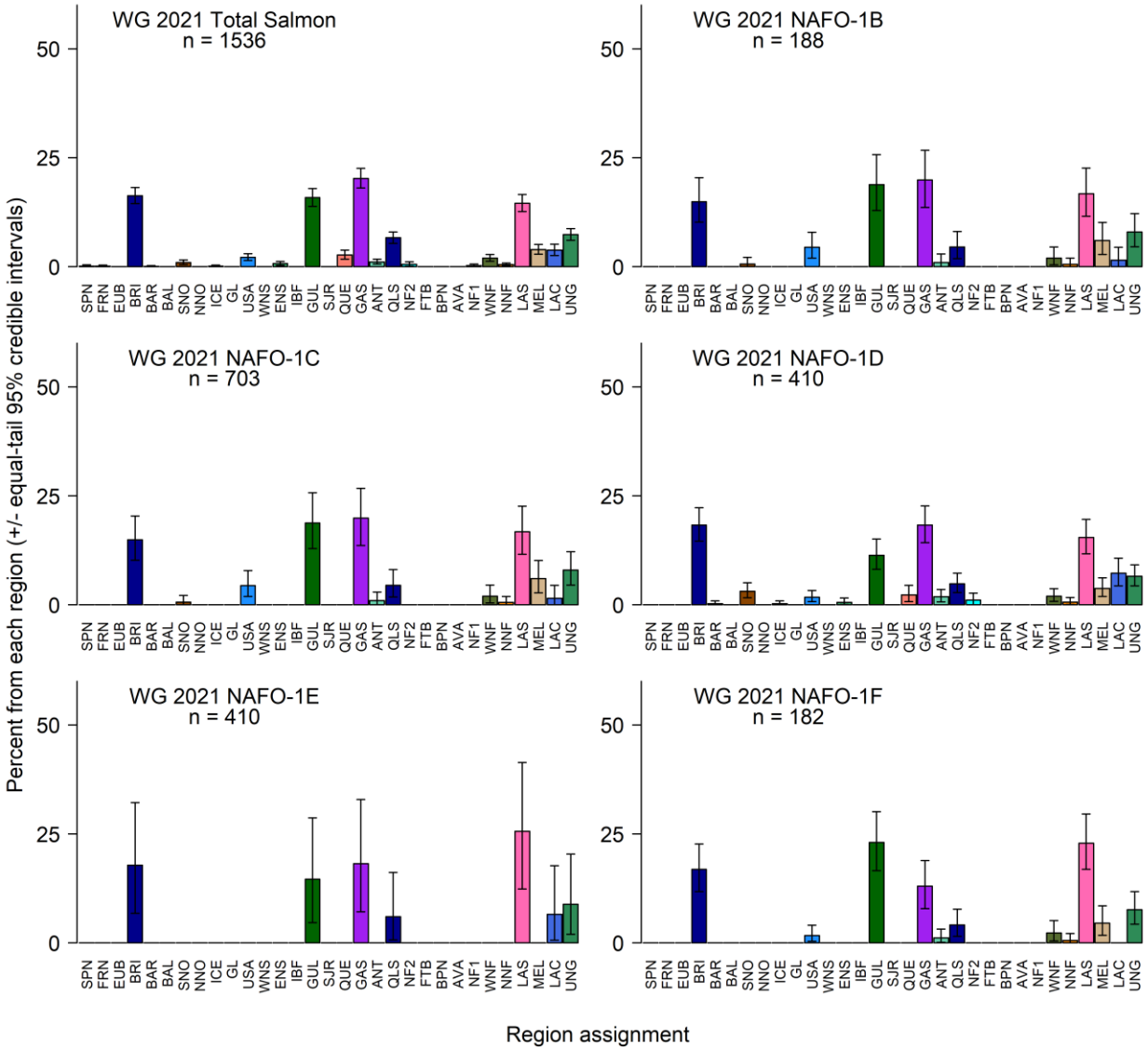

Figure 14. Bayesian estimates of mixture composition of samples from the West Greenland Atlantic salmon (*Salmo salar*) fishery for 2021 using the single nucleotide polymorphism (SNP) baseline overall and by Northwest Atlantic Fisheries Organization (NAFO) division. See Figure 5 for reporting group locations and Table 5 for location information: ANT=Anticosti; AVA=Avalon Peninsula; BPN=Burin Peninsula; ENS=Eastern Nova Scotia; FTB=Fortune Bay; Newfoundland; GAS=Gaspé Peninsula; GUL=Gulf of St. Lawrence; IBF=Inner Bay of Fundy; LAC=Labrador Central; LAS=Labrador South; MEL=Lake Melville; NF1=Newfoundland 1; NF2=Newfoundland 2; NNF=Northern Newfoundland; QLS=St. Lawrence North Shore – Lower; QUE=Quebec City Region; SJR=St. John River and Aquaculture; UNG=Ungava Bay; USA=Maine, United States; WNF=Western Newfoundland; WNS=Western Nova Scotia; BAL=Baltic Sea; BAR=Barents-White Seas; BRI=United Kingdom/Ireland; EUB=European Broodstock; FRN=France; GL=Greenland; ICE=Iceland; NNO= Northern Norway; SNO=Southern Norway; and SPN=Spain.

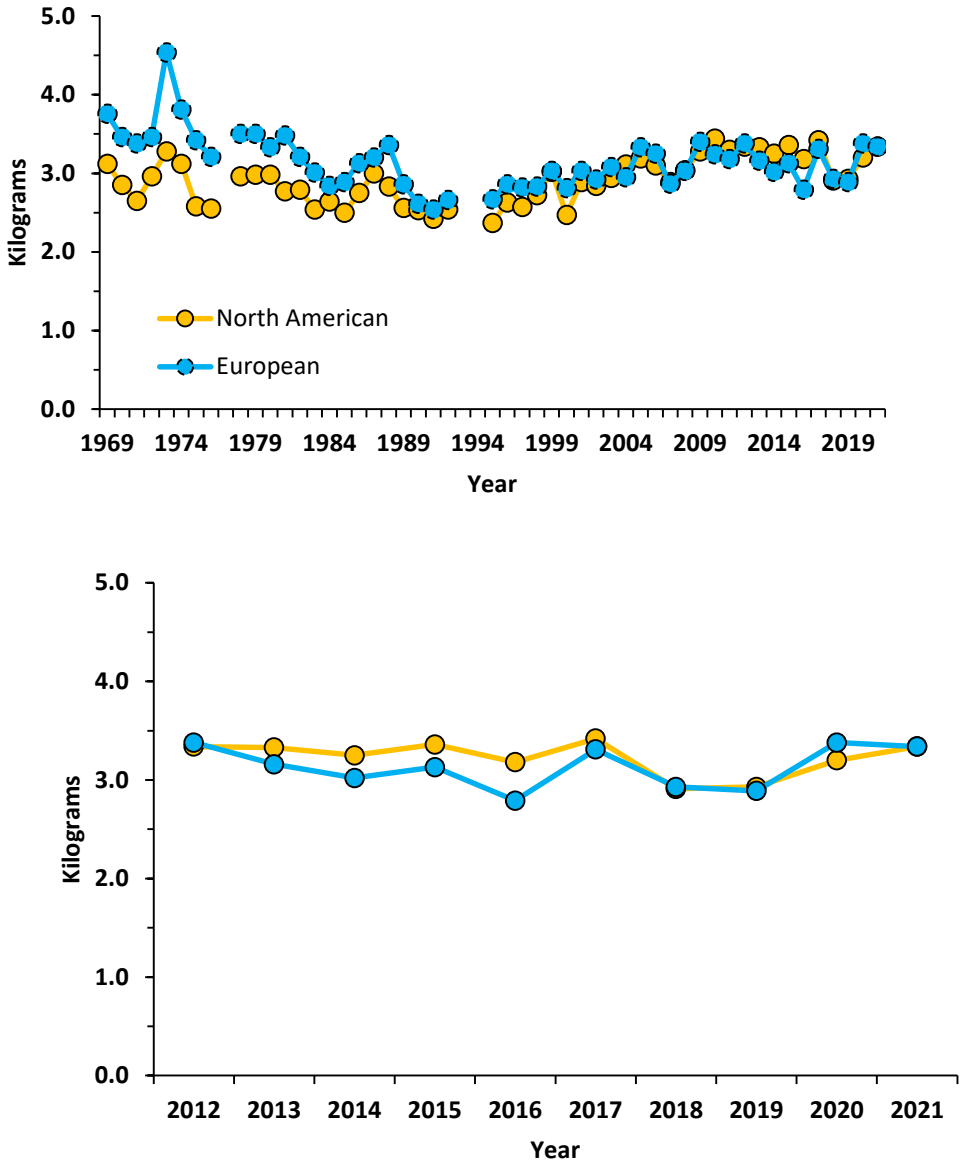

Figure 15. Mean whole weight (kg) of European and North American 1 sea-winter (fish that have spent 1 winter at sea) Atlantic salmon (*Salmo salar*) sampled at West Greenland from 1969-2021 (top panel) and from 2012-2021 (bottom panel). These data have not been adjusted for the period of sampling, and it is known that salmon grow quickly during the period of feeding and while in the fishery at West Greenland. Caution is urged when interpreting these uncorrected data.

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