Northeast Fisheries Science Center Reference Document 24-02

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US DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Northeast Fisheries Science Center
Woods Hole, Massachusetts

January 2024

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

This document may be cited as:

Sheehan TF, Brown B, Ellingson B, Josset Q, Maxwell H, Ravn M, Nygaard R, Bradbury IR, Robertson MJ. 2023. The International Sampling Program: continent of origin and biological characteristics of Atlantic salmon (*Salmo salar*) collected at West Greenland in 2022. US Dept Commer Northeast Fish Sci Cent Ref Doc. 24-02; 54 p.

TABLE OF CONTENTS

ABSTRACT

An Atlantic salmon (*Salmo salar*) mixed-stock fishery operating from August through October exists off the western 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 2022 fishery. The sampling program was coordinated by the U.S. (NOAA Fisheries Service) and involved 5 samplers from 5 countries deployed among 4 communities (Sisimiut, Maniitsoq, Paamiut, and Qaqortoq) located on the west coast of Greenland. Reported landings in 2022 were 29.8 metric tons (t). Data on length, weight, and freshwater and marine age were collected from scale samples, and data on continent and region of origin were collected from genetic analysis of tissue samples. In total, 1,170 salmon were observed by the sampling teams (approximately 11% by weight of the reported landings), and 672 of these were sampled for biological characteristics. As seen since the mid-1990s, a high proportion of the harvested stock was of North American origin (93.7%) with the balance of European origin (6.3%). Primary contributors to the sampled North American origin salmon were the Gaspé Peninsula, the Gulf of St. Lawrence, and the Labrador South reporting groups (60%). Of European origin salmon, 88% were from the United Kingdom/Ireland reporting group. A single individual was identified as having originated from the Kapisillit reporting group, which represents Greenland's only self-sustaining Atlantic salmon population. North American origin fish were primarily freshwater age 2 or 3 years (25% and 39%, respectively). European origin fish were primarily freshwater age 2 (54%). Overall, 94% of the sampled fish were 1SW salmon. The mean length of North American 1SW salmon was 63.9 cm, and the mean whole weight was 2.79 kg; the mean length of European 1SW salmon was 62.4 cm, and the mean whole weight was 2.73 kg. Approximately 9,200 North American salmon (27.2 t) and 900 European salmon (1.8 t) were harvested, not taking into account any unreported catch. The sampling program was successful in adequately sampling the Greenland catch, both temporally and spatially, and provided essential input data to international stock assessment efforts that provide stock status and catch options for subsequent fishery management.

INTRODUCTION

An important mixed-stock Atlantic salmon (*Salmo salar*) fishery exists off the western coast of Greenland. This fishery takes primarily 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 also 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 weren't 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 from the Greenland salmon fishery. From 1969-1981, research vessels were used to obtain samples. Since 1982, international teams of samplers have been deployed throughout West Greenland to obtain samples from fish processing plants (when a commercial fishery 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, lengths, weights, 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 2022 West Greenland internal-use-only fishery.

ATLANTIC SALMON FISHERY AT GREENLAND

The WGC of NASCO has agreed to regulatory measures for the West Greenland fishery for all years from 1984 onward (except 1985, 1991, 1992, and 1996). Since 2006 (with the exception of 2021), these regulations have been applied as multiyear measures. The latest measure was established for the period of 2022-2025 (NASCO 2022a). Previously, multi-annual regulations were set to continue in subsequent years if the Framework of Indicators (FWI) developed and updated by the International Council for the Exploration of the Sea (ICES; ICES 2007, 2018) indicated no significant change, implying a reassessment of the catch advice would not be required. However, starting in 2022, the requirement for applying the FWI within the regulatory measure has been removed.

From 2002-2011, the national quota for commercial landings of Atlantic salmon for export was set to 0 t by the Government of Greenland, 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 was allowed. The internal-use-only fishery was without a quota limit, but landings of Atlantic salmon were previously estimated at 20 t annually. The fishery generally operates during the months of August, September, and October, and from 2005-2014, the fishery opened on 1 August and closed on 31 October. The fishery is currently regulated according to the Government of Greenland Executive Order No. 29 of 28 July 2022 (GoG 2022), an update from previous orders. Starting in 2015, the Government of Greenland has delayed the opening of the fishery until 15 August with a closing date of 31 October.

From 2012-2014, the quota for commercial landings of Atlantic salmon for export remained at 0 t and hence no export of Atlantic salmon was allowed. However, in 2012, the Government of Greenland set a 35 t national quota for landing at fishing processing factories to provide a year-round supply of locally harvested Atlantic salmon within Greenland. The internal-use-only fishery for personal and local consumption remained unaffected as the quota was applied to factory landings only. A factory landings-only quota was again set to 35 t in 2013 but was then reduced to 30 t in 2014. 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 NASCO's WGC (NASCO 2015). The regulatory measure stated that any harvest exceeding the quota within a year would be subtracted from the quota in the following year.

A new multi-annual regulatory measure for the 2018-2020 Atlantic salmon fisheries at West Greenland was adopted by members of NASCO's WGC in 2018 (NASCO 2018). Within the regulatory measure, the Government of Greenland agreed to not export wild Atlantic salmon or its products from Greenland and to prohibit landings and sales to fish processing factories. They also agreed to restrict the fishery from 15 August to no later than 31 October each year. Total allowable catch for all components of the fishery was set at 30 t, and any overharvest in a particular year would result in an equal reduction in the total allowable catch in the following year. The regulatory measure also set out a number of provisions aimed at improving the monitoring, management control, and surveillance of the fishery, including a new requirement for all fishers to obtain a license to fish for Atlantic salmon, an agreement to collect catch and fishing activity data from all licensed fishers, and mandatory reporting requirements for all fishers. The measure also stated that as a condition of the license, all fishers would be required to allow samplers from the NASCO sampling program to take samples of their catches upon request.

In 2021, the Government of Greenland implemented a new "Management plan for Atlantic salmon in Greenland" (GoG 2021). The plan will remain active for the 2021-2025 fishing seasons, and a number of new management approaches are outlined within and have been implemented. A significant change outlined within the new management plan is the allocation of individual quotas for both commercial and recreational fishers for 3 separate 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 was not delineated by user 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 2021). The measure maintained many of the previous provisions of the recent regulatory 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.

In 2022, NASCO's WGC was able to agree to a "Multi-Annual Regulatory Measure for Fishing for Atlantic Salmon at West Greenland" to cover the time period of 2022-2025 (NASCO 2022a; see WGC(22)10). The measure maintained many of the previous provisions of the recent regulatory measures, and the total allowable catch for all components of the fishery at West Greenland was set to 27 t, with an additional 3 t set for East Greenland. A new provision included within the regulatory measure stated that in the first year of the measure, the fishery at West Greenland would close when the registered catch had reached no more than 49% of the overall total allowable catch. In subsequent years, the percentage may change in consultation with members of the WGC based on previous experience and the expected effect of new management measures.

INTERNATIONAL SAMPLING PROGRAM

Under NASCO's Statement of Cooperation on the West Greenland Fishery Sampling Program for 2022 (NASCO 2022b; see WGC(22)11), parties to NASCO's WGC agreed to provide staff to sample Atlantic salmon catches from the West Greenland internal-use-only fishery during the 2022 season.

The objectives of the sampling program were to:

- continue the time series of data (1969-2021) 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 agreement, the European Union agreed to provide staff to sample the fishery for a minimum of 6 person-weeks (which would amount to 6 weeks of sampling), and the United Kingdom, United States and Canada all agreed to provide staff for a minimum of 2 person-weeks each. Unfortunately, 2 of the samplers (Canada and European Union) were unable to participate due to budgetary or travel related issues. In addition, as conducted in 2021, a contract was arranged with a local resident of Qaqortoq to collect samples from the local fish market on a daily basis.

The coordination of this effort was handled by the U.S. (NOAA Fisheries Service) with assistance from the Greenland Institute of Natural Resources (GINR). Individual samplers were deployed during the course of the fishing season to provide the best possible spatial and temporal coverage of the fishery.

SAMPLING PROGRAM RESULTS

In 2022, a total of 5 samplers were stationed in 5 communities located within 4 Northwest Atlantic Fisheries Organization (NAFO) divisions (Figure 2): Sisimiut (1B), Maniitsoq (1C), Paamiut (1E) and Qaqortoq (1F). One of the samplers destined for Paamiut remained in Nuuk (1D) for the entirety of the trip due to travel complications and was able to sample salmon from that community. Participating samplers from various countries involved in the program are outlined in Table 1. Factory landings have not been authorized by the Government of Greenland since 2015 and therefore no factory landing samples were collected.

Reported landings in 2022 were 29.8 t (29.0 t for West Greenland and 0.8 t for East Greenland ICES Statistical Area XIV). The 2021 reported landings data were also adjusted from 41 t to 43.2 t as additional landings reports were located in 2022. In the past, underreporting of harvest was identified by comparing the reported landings to the weight of salmon documented as having been harvested by the sampling program. 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. Sampling of factory landings, 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.

In 2022, no such discrepancy was detected (Table 2; Figure 3). From 2002-2022, discrepancies were noted in 13 of the 21 years, but no discrepancies have been identified since 2018. 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.

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 [cwts]).

Sampling teams observed 1,170 salmon representing approximately 11% of the reported landings. Of this total, 672 were sampled for biological characteristics. A total of 178 fish were only checked for an adipose clip, and an additional 320 were documented as being landed but were not sampled or examined further. Biological characteristics data and samples were collected as follows:

- 672 fork lengths;
- 632 gutted weights;
- 40 whole weights;
- 631 scale samples; and
- 670 genetic samples.

In total, 4 adipose-clipped fish were documented, and a single cwt was detected and retrieved. Unfortunately, the tag was damaged and un-readable, and no released related information is available. No other tags were detected by the samplers, and no other internal or external tags were provided directly by a fisher to a sampler or the GINR (Table 3).

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 4. A total of 153 tags have been recovered by the sampling program since 2003, not including the single recovery in 2022 listed in Table 3.

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 access issues in some years in Nuuk (Sheehan et al. 2013). Similar issues were noted in 2014 when samplers were denied access to fish in Maniitsoq and Qaqortoq. No issues had occurred since 2015, but in 2022, access to landed salmon was denied to the sampler in Qaqortoq after only a few days of sampling occurred. Intervention by the Government of Greenland was initiated, but the situation was not remedied. Intervention continued after the fishing season, and access is expected to be restored in 2023.

Since 2015, it has been a condition of the commercial fishing license to allow samplers access to landed salmon. However, given the commitments made by the Government of Greenland, in cooperation with the GINR, to sample Atlantic salmon from the city of Nuuk since 2019, samplers have not been deployed to Nuuk. In 2022, however, a sampler destined for Paamiut remained in Nuuk during their entire sampling slot. This sampler did obtain samples from the local market and therefore it was unnecessary for staff from the GINR to collect any additional samples.

The limitation of the fishery to internal-use-only caused some practical problems for the sampling teams. However, the sampling program provided adequate representation of the Greenland catch, both temporally and spatially.

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 670 usable samples were collected in 2022 from 5 communities in 5 NAFO divisions: Sisimiut in 1B (n = 29), Maniitsoq in 1C (n = 308), Nuuk in 1D (n = 280), Paamiut in 1E (n = 31), and Qaqortoq in 1F (n = 22). All samples were processed and only a single sample from Maniitsoq was unable to be properly assigned to continent or region of origin (Figure 4). In total, 669 samples were processed and assigned from the 5 communities: Sisimiut (n = 29), Maniitsoq (n = 307), Nuuk (n = 280), Paamiut (n = 31), and Qaqortoq in 1F (n = 22).

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 the subsequent microsatellite analyses were performed according to standardized protocols (King et al. 2001; Sheehan et al. 2010). A database of approximately 5,000 Atlantic salmon genotypes of known origin 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 been revised, resulting in 21 North American and 10 European reporting groups (Table 5; Figure 5; 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-iT™ PicoGreen™ (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, 93.7% of the salmon sampled in 2022 were of North American origin, and 6.3% were of European origin (Figure 6). The NAFO division-specific continent of origin assignments are presented in Table 6, and the time series of the proportion of sampled (by continent of origin) and unsampled harvest is shown in Figure 7. These findings show that high proportions of fish from the North American stock complex continue to contribute to the fishery. 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 1982-2022 are shown in Table 7 and in Figure 8. The 2022 North American weighted contribution (94%) is the highest value in the time series and above the long-term mean (1982-2022, 70%). The European weighted contribution (6%) to the 2022 fishery is the lowest in the time series and below the long-term mean (1982-2022, 30%). In terms of numbers of fish, the 2022 fishery caught approximately 9,200 North American salmon (27.2 t) and 900 European salmon (1.8 t). The 2022 total number of fish harvested (10,100) is below the previous 10-year mean (2012-2021, 12,410) but is only 3% of the maximum estimate of 336,000 fish 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 (Table 8; Figure 9). These 3 groups accounted for approximately 60% of the North American contributions in 2022. Another 35% of the North American contribution was from the Labrador Central, Lake Melville, St. Lawrence North Shore-Lower, Québec City Region, Ungava Bay, Maine (U.S.), and Western Newfoundland reporting groups. The Northeast Atlantic contributions were dominated by the United Kingdom/Ireland reporting group with 88% of the European contributions in 2022. A single individual was identified as having originated from the Kapisillit reporting group, which represents Greenland's only self-sustaining Atlantic salmon population. This is only the second Greenlandic fish identified from the sampled harvest since the expansion of the SNP baseline in 2018. The first was sampled from the 2018 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 9; Figure 10). 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 2022, the mean length of North American 1SW salmon was 63.9 cm, and the mean whole weight was 2.79 kg; the mean length of European 1SW salmon was 62.4 cm, and the mean whole weight was 2.73 kg. All figures represent a decrease from the previous year's values (66.2 and 65.9 mean fork length and 3.34 and 3.34 mean whole weight for North American and European salmon respectively in 2021) and from the previous 10-year mean values (65.5 and 64.4 mean fork length and 3.23 and 3.13 mean whole weight for North American and European salmon respectively from 2012-2021). A summary of the mean fork lengths and whole weights in the 2022 fishery by sea age, continent of origin, and NAFO division is presented in Table 10. 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 (i.e., river age) distribution of the sampled catch by continent of origin and NAFO division is presented in Table 11. The smolt age distributions by origin for all North American and European origin salmon caught (1968-2022) are provided in Tables 12 and 13.

The mean smolt age of the 2022 North American origin samples was 3.2 years. Age-1 smolts historically represent a small proportion of the catch (10-year mean of 0.5%, 2012-2021), and the 2022 values were slightly lower. There has been a consistent trend over the past 2 decades of decreased contributions of age-1 smolts as the overall (1968-2019) mean contribution of age-1 smolts equals 2.2%. 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 2022 fishery (24.9%) decreased from the 2021 value (27.3%) and is slightly below the previous 10-year mean (2012-2021, 28.5%). Age-3 and older smolts accounted for 74.8% of the 2022 harvest of North American salmon, which is above the previous 10-year mean (71.0%, 2012-2021) and the overall mean for the 55-year time series (1968-2022 excluding data gaps in 1977 and 1993-1994, 66.9%).

The mean smolt age of the European salmon in 2019 was 2.1 years. The percentage of age-1 smolts (17.9%) increased from the 2021 value (15.6%) and is above the previous 10-year mean of 8.6% (2012-2021). The percentage of age-2 smolts (53.8%) in the 2022 fishery is slightly lower than in 2021 (58.2%) and the previous 10-year mean (2012-2021, 63.8%). The contribution of age-3 and older European origin smolts (28.2%) is slightly greater than the previous 10-year mean (2012-2021, 27.5%).

The sea age distribution of the sampled catch by continent of origin and NAFO division is presented in Table 14. As expected, the 1SW age group was dominant (94.4%) in the 2022 fishery. This value is within the range of historical values (Table 15). Concerns have been raised over recent difficulty with discerning winter annuli from apparent "checks" in the marine zone of Atlantic salmon multi-sea winter scales. Care should be taken to properly discern true marine annuli from growth checks, and 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 Atlantic salmon 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 the Atlantic salmon harvested at 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(s) have been identified for each instance.

Sea Lice Sampling

Mark Fast (Atlantic Veterinary College, University of Prince Edward Island, Canada)

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 harvested at Greenland. A total of 86 samples were collected from 3 communities in 2022. Samples were split evenly and provided to 3 different researchers in support of 3 different 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 all studies.

Persistent Organic Pollutants sampling

Marta Assunção (Centre for Environment, Fisheries and Aquaculture Science, UK)

A total of 24 paired samples of adipose fin and muscle (~30 g) from individual Atlantic Salmon harvested in Sisimiut were collected and frozen in 2022. These samples will be analyzed to measure persistent organic pollutants on both tissues, aiming at assessing if the adipose fin is a suitable non-lethal surrogate tissue for muscle. This work aims to further previous work, which reported on concentrations of polybrominated diphenylethers (PBDEs), polychlorinated biphenyls (PCBs), dichlorodiphenyldichloroethylene (p,p′-DDE), and hexachlorobenzene (HCB) measured in the adipose fins of returning adult Atlantic salmon and sea trout (*Salmo trutta*) to the river Tees in the Northeast of England (Assunção et al. 2020). The hypothesis is that migrating Atlantic salmon could be bio-accumulating persistent organic pollutants from their diets during their migration in addition to some level of remobilization of these compounds in U.K. eastern coastal areas, which may be decreasing individual fitness.

Characterizing Gene Expression using RNA-Sequencing

Brandon Ellingson (University of Texas at Tyler)

A total of 31 liver samples from individual Atlantic salmon harvested in Paamiut were collected and preserved in RNA*later*™ in 2022. In total, 23 samples had sufficient RNA integrity numbers and will be sequenced at the Duke University Sequencing Lab. Differential gene expression analysis will be performed on the resulting data to compare the gene expression across different North American stocks of Atlantic salmon. Differentially expressed genes and their associated pathways will be analyzed using pathway enrichment and overrepresentation analyses with a focus on those that relate to metabolism, inflammation, and the immune/stress response. Transcriptome responses have been documented in Atlantic salmon previously in relation to temperature-related stressors (Beemelmanns et al. 2021), sea louse-induced stressors (Skugor et al. 2008), infection-related stressors (e.g., infectious salmon anemia virus [Dettleeff et al. 2017], salmonid alpha virus subtype-3 [Xu et al. 2012]), and heavy metal contamination (Olsvik et al. 2015). Additionally, Krasnov (2020) has developed a multigene expression assay to evaluate the immune status of Atlantic salmon, which may be useful in determining the immune system condition. The study aims to characterize gene expression profiles in several wild populations of North American Atlantic salmon, and compare transcriptome responses at the shared feeding grounds at West Greenland. Genetic origin is likely to account for the largest source of transcriptome variation, although signals from previously experienced stressors encountered in freshwater or in early marine habitats have the potential to be unique for each North American stock. Acute transcriptome responses to the environmental conditions experience at West Greenland may indicate the metabolic and immune status of these wild fish and have the potential to predict survival.

ACKNOWLEDGEMENTS

We would like to acknowledge the Greenland Institute of Natural Resources and the fishers and residents of Greenland who provided access to their fish. We would also like to thank the various laboratories and agencies for supporting the program, providing the samplers, and for the funding necessary to support the sampling at Greenland. Funding support for the samplers was provided by the Centre for Environment, Fisheries and Aquaculture Science (for Bregan Brown), NOAA Fisheries Service (for Brandon Ellingson), the Office français de la biodiversité and Pôle Gestion des Migrateurs Amphihalins dans leur Environnement (for Quentin Josset), the Marine Institute (for Hugo Maxwell), 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 2022 sampling program by country, home institution, sampling period, and community/Northwest Atlantic Fisheries Organization (NAFO) division sampled. The second sampler in Paamiut remained in Nuuk for the entirety of the trip due to travel complications and sampled salmon from that community.

Sampler	Country	Home Institution	Sampling Period	Community (NAFO Division)
Malu Ravn	Greenland	-	01 Aug – 15 Sep	Qaqortoq (1F)
Brandon Ellingson	USA	NOAA Fisheries Service	02 Aug – 15 Aug	Paamiut (1E)
Quentin Josset	France	Office Français de la Biodiversité	16 Aug – 29 Aug	Paamiut (1E)/ Nuuk (1D)
Bregan Brown	UK (Wales)	Natural Resources Wales	01 Sep – 14 Sep	Maniitsoq (1C)
Hugo Maxwell	Ireland	Marine Institute	02 Sep – 15 Sep	Sisimiut (1B)

Table 2. Reported landings (kg) for the Greenland Atlantic salmon (*Salmo salar*) fishery (2002-2022) 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 2022. 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 (2002–2019) 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 2022. 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							
2022	Reported	1,359	3,033	5,291	8,196	4,123	6,996	28,998
	Adjusted							

Table 3. Reported tag recaptures (n = 1) at the Greenland Atlantic salmon (*Salmo salar*) fishery in 2022. Northwest Atlantic Fisheries Organization (NAFO) division refers to NAFO or International Council for the Exploration of the Sea statistical areas. A single tag was recovered from sampled fish by the sampling team and no tags were provided directly by a fisher or consumer to the Greenland Institute of Natural Resources. In previous years, tags provided directly by a fisher or consumer were sometimes from historical recoveries. Empty cells identify incomplete recapture or release information.

Tag type	Tag code (Seq. code)	Release country	River released	Place released	Release year	Recapture Community (NAFO Division)	Recapture year
cwt						Maniitsoq	2022

Table 4. Reported tag recaptures (n = 153) from 2003-2021 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 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
2004	PIT	00302243	Canada	Miramichi	17-May-03	smolt	Qaqortoq	1F	2004		6-Oct-04				est.

Table 4 continued. Reported tag recaptures (n = 153) from 2003-2021 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 statistical areas. Empty cells identify incomplete recapture or release information.

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.
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

Table 4 continued. Reported tag recaptures (n = 153) from 2003-2021 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 statistical areas. Empty cells identify incomplete recapture or release information.

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.
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.

Table 4 continued. Reported tag recaptures (n = 153) from 2003-2021 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 statistical areas. Empty cells identify incomplete recapture or release information.

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
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.

Table 4 continued. Reported tag recaptures (n = 153) from 2003-2021 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 statistical areas. Empty cells identify incomplete recapture or release information.

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.
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					

Table 4 continued. Reported tag recaptures (n = 153) from 2003-2021 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 statistical areas. Empty cells identify incomplete recapture or release information.

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						
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						
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						

Table 4 continued. Reported tag recaptures (n = 153) from 2003-2021 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 statistical areas. Empty cells identify incomplete recapture or release information.

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.
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 4 continued. Reported tag recaptures (n = 153) from 2003-2021 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 statistical areas. Empty cells identify incomplete recapture or release information.

2021	carlin	green (USA-271907)	USA	Penobscot	4-May-81	smolt	Napasoq	1C	1970-80					
2021	carlin	green (USA 181.228)	USA	Union	12-May-79	smolt	Napasoq	1C	1970-80					
2021	carlin	green (P.Q. 50.191)	Canada	Aux Rochers	1977	smolt	Napasoq	1C	1970-80					
2021	carlin	blue (RDH M87483)	Canada				Napasoq	1C	1970-80					
2021	carlin	light blue (YY43.129)	Canada	Miramichi	20-Jul-19	adult	Sisimiut	1B	2020	17-Sep-20				
2021	carlin	blue (H97364)	Canada				Sisimiut	1B	~1990					
2021	carlin	blue (RDH P70480)	Canada				Sisimiut	1B	~1990			4.50	GW	est.
2021	carlin	light blue (YY58.326)	Canada	Margaree	2020	adult	Narsaq	1F	2021		70			est.
2021	PIT	190216279					Ilulissat	1A	2021					
2021	acoustic	Lotek MCFT2-3LM (MC043904 CODE: 94)					Sisimiut	1B	2021	5-Sep-21				

Table 5. Reporting groups identified within the North Atlantic-wide Atlantic salmon (*Salmo salar*) single nucleotide polymorphism genetic baseline. See Figure 5 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 6. The continental proportions of North American (NA) and European (E) Atlantic salmon (*Salmo salar*) caught at West Greenland in 2022 by Northwest Atlantic Fisheries Organization (NAFO) division.

NAFO Div.	Fishing dates	Number		Totals	Percentages	
		NA	E		NA	E
1B	Sep 1 - Sep 13	27	2	29	93.1	6.9
1C	Sep 5 - Sep 14	282	25	307	91.9	8.1
1D	Aug 19 - Aug 22	271	9	280	96.8	3.2
1E	Aug 17 - Aug 19	29	2	31	93.5	6.5
1F	Aug 1 - Aug 3	18	4	22	81.8	18.2
TOTAL		627	42	669	93.7	6.3

Table 7. The estimated number, weighted by catch, of North American (NA) and European (E) Atlantic salmon (*Salmo salar*) caught at West Greenland by year from 1982-2022 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 7 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 1982-2022 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	9,600	3,200
2021	82	18	10,300	2,000
2022	94	6	9,200	900

Table 8. Bayesian proportional mean mixture composition estimates for the West Greenland Atlantic salmon (*Salmo salar*) fishery by Northwest Atlantic Fisheries Organization (NAFO) division sampled in 2022 using the single nucleotide polymorphism range-wide baseline. Regions of origin (ROO) correspond to reporting groups identified in Table 5 and Figure 5. 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	ROO	NAFO 1B	NAFO 1C	NAFO 1D	NAFO 1E	NAFO 1F	Overall
Baltic Sea	EUR	0.0	0.0	0.0	0.0	0.0	0.0
Barents-White Seas	EUR	0.0	0.0	0.0	0.0	0.0	0.0
European Broodstock	EUR	0.0	0.0	0.0	0.0	0.0	0.0
UK/Ireland	EUR	0.0	7.8 (5.1, 11.1)	2.5 (1.1, 4.7)	9.7 (2.2, 21.7)	13.5 (3.1, 29.8)	5.6 (4, 7.5)
France	EUR	0.0	0.0	0.0	0.0	0.0	0.0
Greenland	EUR	0.0	0.0	0.4 (0, 1.3)	0.0	0.0	0.2 (0.0, 0.6)
Iceland	EUR	0.0	0.3 (0, 1.2)	0.0	0.0	4.3 (0.1, 15.2)	0.3 (0.0, 0.8)
Northern Norway	EUR	0.0	0.0	0.0	0.0	0.0	0.0
Southern Norway	EUR	3.8 (0.1, 12.8)	0.0	0.0	0.0	0.0	0.2 (0.0, 0.8)
Spain	EUR	3.4 (0.1, 12.2)	0.0	0.0	0.0	0.0	0.0
Anticosti	NA	0.0	0.0	0.0	0.0	0.0	0.0
Avalon Peninsula	NA	0.0	0.0	0.0	0.0	0.0	0.0
Burin Peninsula	NA	3.2 (0, 12.2)	0.4 (0, 1.6)	0.0	0.0	0.0	0.3 (0.0, 1)
Eastern Nova Scotia	NA	0.0	0.8 (0.1, 2.2)	0.0	0.0	0.0	0.6 (0.1, 1.5)
Fortune Bay	NA	0.0	1.2 (0.2, 2.7)	0.0	0.0	0.0	0.4 (0, 1.2)
Gaspé Peninnsula	NA	15.9 (4.1, 32.5)	22.2 (17.3, 27.5)	32 (25.9, 38.5)	20.4 (7.5, 36.6)	22.9 (6.9, 45.2)	26.9 (23.2, 30.7)
Gulf of St Lawrence	NA	24.2 (9.9, 42)	12.7 (8.6, 17.2)	13.5 (9.3, 18.1)	26.4 (12.5, 44.2)	22.1 (5.7, 42.7)	14.5 (11.7, 17.6)

Table 8 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 2022 using the single nucleotide polymorphism range-wide baseline. Regions of origin (ROO) correspond to reporting groups identified in Table 5 and Figure 5. 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	ROO	NAFO 1B	NAFO 1C	NAFO 1D	NAFO 1E	NAFO 1F	Overall
Inner Bay of Fundy	NA	0.0	0.0	0.0	0.0	0.0	0.0
Labrador Central	NA	0.0	5.3 (2.5, 8.8)	7 (3.8, 10.8)	0.0	0.0	5.3 (3.3, 7.7)
Labrador South	NA	15.5 (4.3, 30.9)	17.2 (12.8, 22.1)	12.3 (8.3, 16.9)	18.6 (6.7, 33.9)	4.6 (0.1, 15.9)	14.2 (11.3, 17.4)
Lake Melville	NA	3.9 (0.1, 13.4)	1.2 (0.2, 3)	7.5 (4.5, 11.1)	3.5 (0, 13.5)	0.0	4.5 (2.9, 6.4)
Newfoundland 1	NA	0.0	0.0	1.5 (0.4, 3.3)	0.0	0.0	0.7 (0.1, 1.6)
Newfoundland 2	NA	3 (0, 11.9)	0.4 (0, 1.3)	0.0	0.0	0.0	0.2 (0.0, 0.9)
Northern Newfoundland	NA	3.5 (0.1, 12.3)	3.8 (1.9, 6.3)	0.0	0.0	0.0	2.4 (1.3, 3.7)
St. Lawrence North Shore-Lower	NA	0.0	4.8 (2.6, 7.6)	3.9 (1.9, 6.6)	2.8 (0, 11.1)	0.0	4.2 (2.7, 5.9)
Québec City Region	NA	19.4 (6.6, 36.3)	3.2 (1.3, 5.8)	6 (2.5, 10)	0.0	0.0	3.9 (2.3, 6)
Saint John River & Aquaculture	NA	0.0	0.0	0.0	0.0	0.0	0.0
Ungava Bay	NA	0.0	11.7 (8.4, 15.6)	2.5 (1, 4.6)	9.4 (2.1, 21.3)	8.8 (1.2, 22.7)	7.2 (5.4, 9.3)
Maine, United States	NA	0.0	1.3 (0.3, 2.9)	4.4 (2.3, 7.1)	3.3 (0.1, 12.1)	8.7 (1.1, 22.7)	3 (1.8, 4.5)
Western Newfoundland	NA	0.0	5.4 (3, 8.3)	5.6 (3.1, 8.7)	0.0	5.3 (0, 18.7)	5.1 (3.5, 7.1)
Western Nova Scotia	NA	0.0	0.0	0.0	0.0	0.0	0.0

Table 9. 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 1969-2022. No samples were collected in 1977, 1993, or 1994. Note that some estimates may be 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
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

Table 9 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 1969-2022. No samples were collected in 1977, 1993, or 1994. Note that some estimates may be 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
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
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	-
2022	2.79	2.73	6.51	6.05	3.25	-	2.83	3.05	2.85	63.9	62.4	80.9	81.5	81.5	-

Table 10. 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 2022 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	67.2	2.85	-	-	67.4	2.51	67.2	28	2.82	28
	(2.5)	(0.47)	-	-	(2.3)	(0.26)	(2.4)		(047)	
1C	63.6	2.9	84.7	7.33	68.8	3.30	64.1	304	2.96	304
	(3.0)	(0.44)	(1.1)	(0.56)	(5.0)	(0.67)	(3.8)		(0.59)	
1D	64	2.62	87.4	7.40	71.2	3.28	64.3	237	2.68	237
	(3.0)	(0.40)	(1.6)	(0.50)	(11.0)	(1.25)	(4.0)		(0.63)	
1E	61.5	2.94	65.0	4.28	-	-	61.6	31	2.98	31
	(2.4)	(0.48)	-	-	-	-	(2.5)		(0.53)	
1F	64.5	2.76	79.5	5.21	71.0	3.50	66.1	22	3.02	22
	(3.1)	(0.37)	(6.4)	(0.56)	-	-	(5.6)		(0.81)	
All Areas	63.8	2.78	81.2	6.31	69.0	3.25	64.3	622	2.85	622
	(3.1)	(0.45)	(8.3)	(1.41)	(5.4)	(0.72)	(3.9)		(0.62)	
	North American									
1B	66.8	2.81	-	-	67.4	2.51	66.9	26	2.79	26
	(2.2)	(0.46)	-	-	(2.3)	(0.26)	(2.1)		(0.46)	
1C	63.7	2.91	83.9	6.94	68.8	3.30	64.2	279	2.95	279
	(3.0)	(0.45)	-	-	(5.0)	(0.67)	(3.6)		(0.53)	
1D	64.0	2.62	87.4	7.40	71.2	3.28	64.3	230	2.67	230
	(2.9)	(0.40)	(1.6)	(0.50)	(11.0)	(1.25)	(3.8)		(0.61)	

Table 10 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 2022 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.
1E	61.6	2.97	65.0	4.28	71.0	-	61.8	29	3.01	29
	(2.4)	(0.47)	-	-	-	-	(2.4)		(0.53)	
1F	65.2	2.82	-	-	-	3.50	65.6	18	2.86	18
	(2.0)	(0.30)	-	-	-	-	(2.4)		(0.33)	
All Areas	63.9	2.79	80.9	6.51	69.0	3.25	64.3	582	2.83	582
	(3.0)	(0.45)	(10.8)	(1.53)	(5.4)	(0.72)	(3.7)		(0.57)	
European										
1B	71.8	3.27	-	-	-	-	71.8	2	3.27	2
	(1.8)	(0.50)	-	-	-	-	(1.8)		(0.50)	
1C	62.5	2.80	85.5	7.73	-	-	63.4	25	2.99	25
	(3.0)	(0.39)	-	-	-	-	(5.4)		(1.06)	
1D	61.5	2.53	-	-	-	-	64.1	7	2.93	7
	(3.4)	(0.30)	-	-	-	-	(7.5)		(1.09)	
1E	59.7	2.54	-	-	-	-	59.7	2	2.54	2
	(3.3)	(0.57)	-	-	-	-	(3.3)		(0.57)	
1F	58.0	2.25	79.5	5.21	-	-	68.8	4	3.73	4
	(4.2)	(0.64)	(6.4)	(0.56)	-	-	(13.2)		(1.78)	
All Areas	62.5	2.73	81.5	6.05	-	-	64.3	40	3.05	40
	(3.9)	(0.43)	(5.7)	(1.50)	-	-	(6.9)		(1.09)	

Table 11. 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 2022. 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	0.0	30.8	30.8	23.1	15.4	0.0	0.0	26
	E	0.0	50.0	0.0	50.0	0.0	0.0	0.0	2
		0.0	32.1	28.6	25.0	14.3	0.0	0.0	28
1C	NA	0.4	23.5	36.9	26.2	11.2	1.9	0.0	260
	E	25.0	45.8	20.8	4.2	4.2	0.0	0.0	24
		2.5	25.4	35.6	24.3	10.6	1.8	0.0	284
1D	NA	0.0	24.8	41.3	24.3	8.3	1.4	0.0	218
	E	14.3	71.4	0.0	0.0	14.3	0.0	0.0	7
		0.4	26.2	40.0	23.6	8.4	1.3	0.0	225
1E	NA	0.0	27.6	37.9	17.2	17.2	0.0	0.0	29
	E	0.0	100.0	0.0	0.0	0.0	0.0	0.0	2
		0.0	32.3	35.5	16.1	16.1	0.0	0.0	31
1F	NA	5.6	33.3	44.4	5.6	5.6	5.6	0.0	18
	E	0.0	50.0	50.0	0.0	0.0	0.0	0.0	4
		4.5	36.4	45.5	4.5	4.5	4.5	0.0	22
All Areas	NA	0.4	24.9	38.7	24.1	10.3	1.6	0.0	551
	E	17.9	53.8	17.9	5.1	5.1	0.0	0.0	39
		1.5	26.8	37.3	22.9	10.0	1.5	0.0	590

Table 12. River age distribution (%) for North American origin Atlantic salmon (*Salmo salar*) caught at West Greenland from 1968-2022. 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 12 continued. River age distribution (%) for North American origin Atlantic salmon (*Salmo salar*) caught at West Greenland from 1968-2022. 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
2022	0.4	24.9	38.7	24.1	10.3	1.6	0	0
10-year mean	0.5	28.0	37.8	23.4	9.5	0.8	0.0	0.0
Overall mean	2.3	30.9	39.3	19.2	7.2	1.0	0.1	0.0

Table 13. River age distribution (%) for European origin Atlantic salmon (*Salmo salar*) caught at West Greenland, 1968-2022. 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, 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 13 continued. River age distribution (%) for European origin Atlantic salmon (*Salmo salar*) caught at West Greenland from 1968-2022. 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, 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
2022	17.9	53.8	17.9	5.1	5.1	0	0	0
10-year mean	9.5	62.9	21.9	4.5	1.2	0.0	0.0	0.0
Overall mean	16.1	61.2	19.2	3.1	0.5	0.0	0.0	0.0

Table 14. The sea age (1SW = 1 sea-winter, 2SW = 2 sea-winter, 3SW = 3 sea-winter and PS = 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 2022. 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	PS	Total No.
1B	NA	92.3	0.0	0.0	7.7	26
	E	100.0	0.0	0.0	0.0	2
		92.9	0.0	0.0	7.1	28
1C	NA	92.1	0.4	0.0	7.5	280
	E	96.0	4.0	0.0	0.0	25
		92.5	0.7	0.0	6.9	305
1D	NA	97.8	0.9	0.0	1.3	230
	E	85.7	0.0	14.3	0.0	7
		97.5	0.8	0.4	1.3	237
1E	NA	96.6	3.4	0.0	0.0	29
	E	100.0	0.0	0.0	0.0	2
		96.8	3.2	0.0	0.0	31
1F	NA	94.4	0.0	0.0	5.6	18
	E	50.0	50.0	0.0	0.0	4
		86.4	9.1	0.0	4.5	22
All areas	NA	94.7	0.7	0.0	4.6	583
	E	90.0	7.5	2.5	0.0	40
	Overall	94.4	1.1	0.2	4.3	623

Table 15. 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 1985-2022. 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 15 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 1985-2022. 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
2022	94.7	0.7	4.6	90.0	10.0	0.0
10-year mean	94.5	1.1	4.4	96.0	3.2	0.9
Overall mean	95.2	1.9	2.9	96.5	2.6	0.9

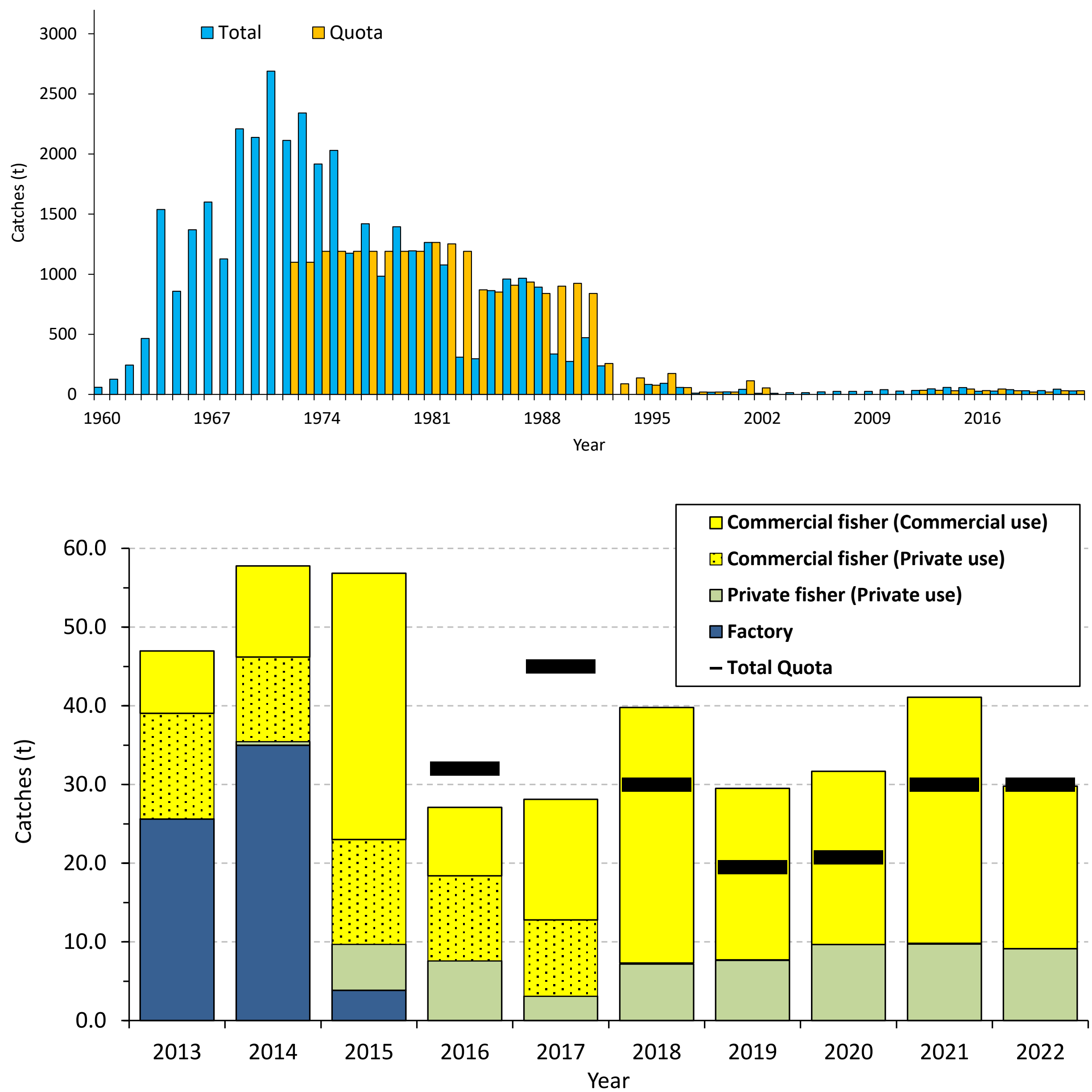

Figure 1. Nominal catches and commercial quotas (metric tons, round fresh weight) of Atlantic salmon (*Salmo salar*) at West Greenland for 1960-2022 (top panel) and 2013-2022 (bottom panel). Total reported landings from 2013-2022 are displayed by landings type. From 2012-2014, an annual quota was set and applied to factory landings only. Starting in 2015, a single quota was set for all components of the fishery.

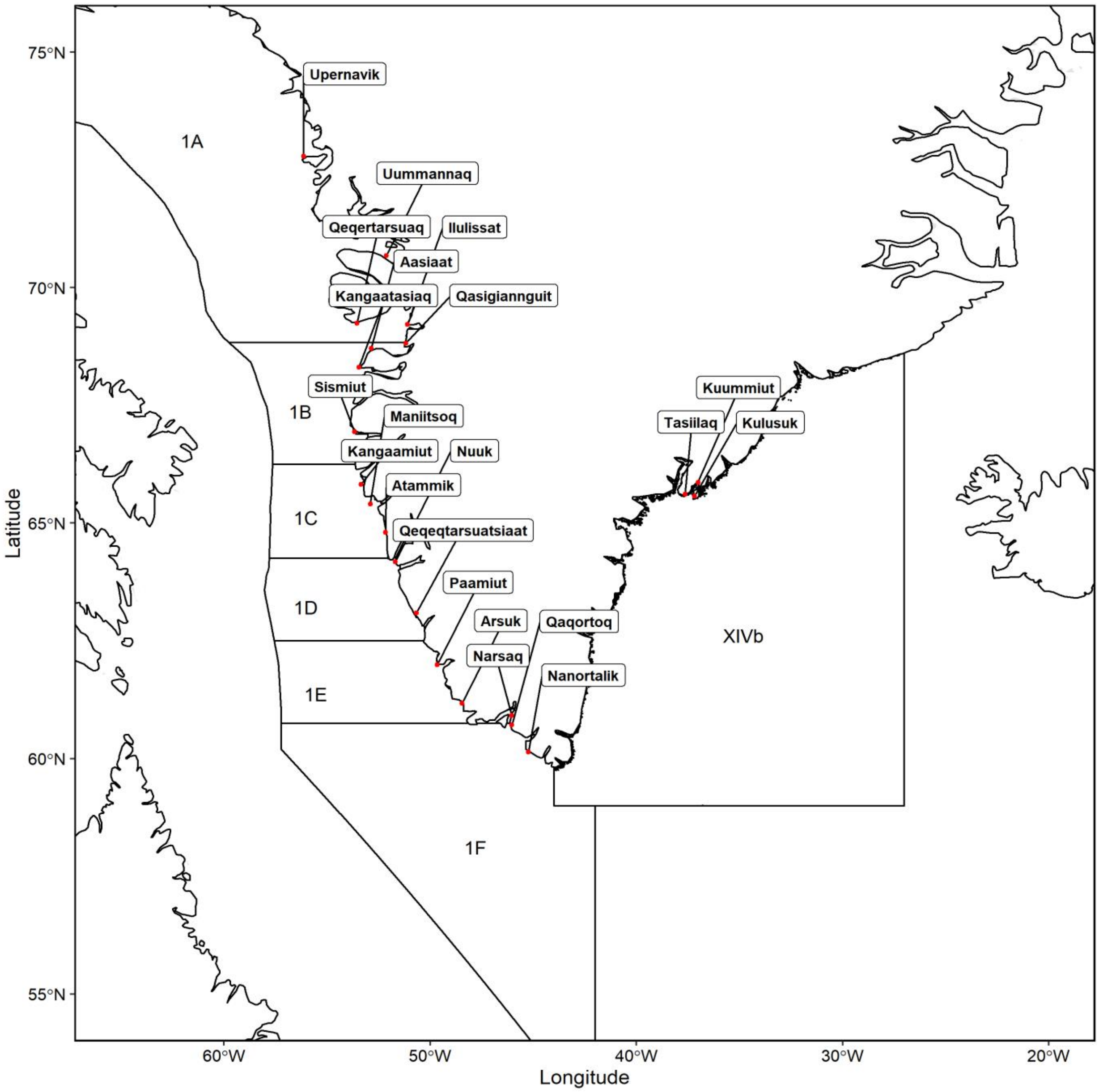

Figure 2. Map of southwest Greenland showing communities at which Atlantic salmon (*Salmo salar*) have historically been landed. Northwest Atlantic Fisheries Organization (NAFO) divisions (1A-1F) and International Council for the Exploration of the Seas Statistical Area XIV are also shown.

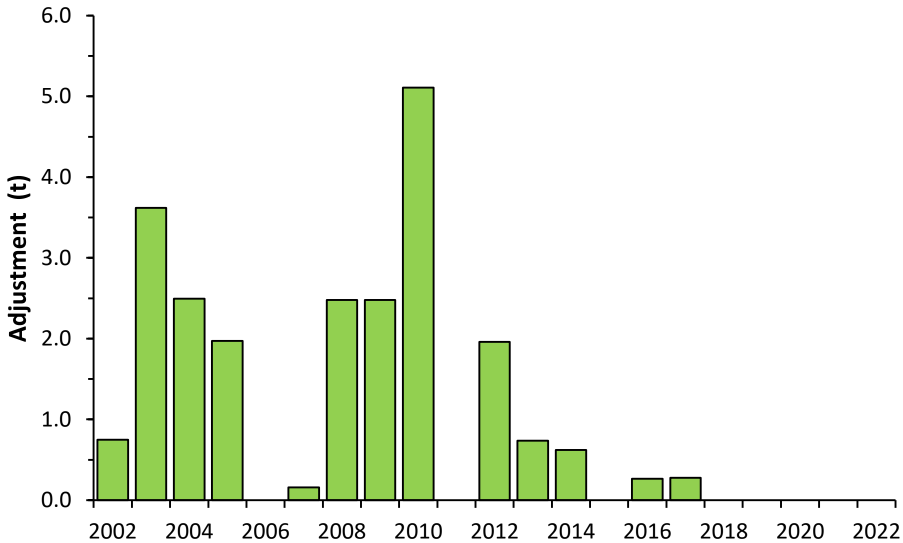

Figure 3. Time series (2002-2022) of adjusted landings resulting from the total weight of Atlantic salmon (*Salmo salar*) documented by the sampling teams exceeding the total reported weight of harvested salmon for a community. When this occurs, the excess tonnage is added to the reported landings for assessment purposes.

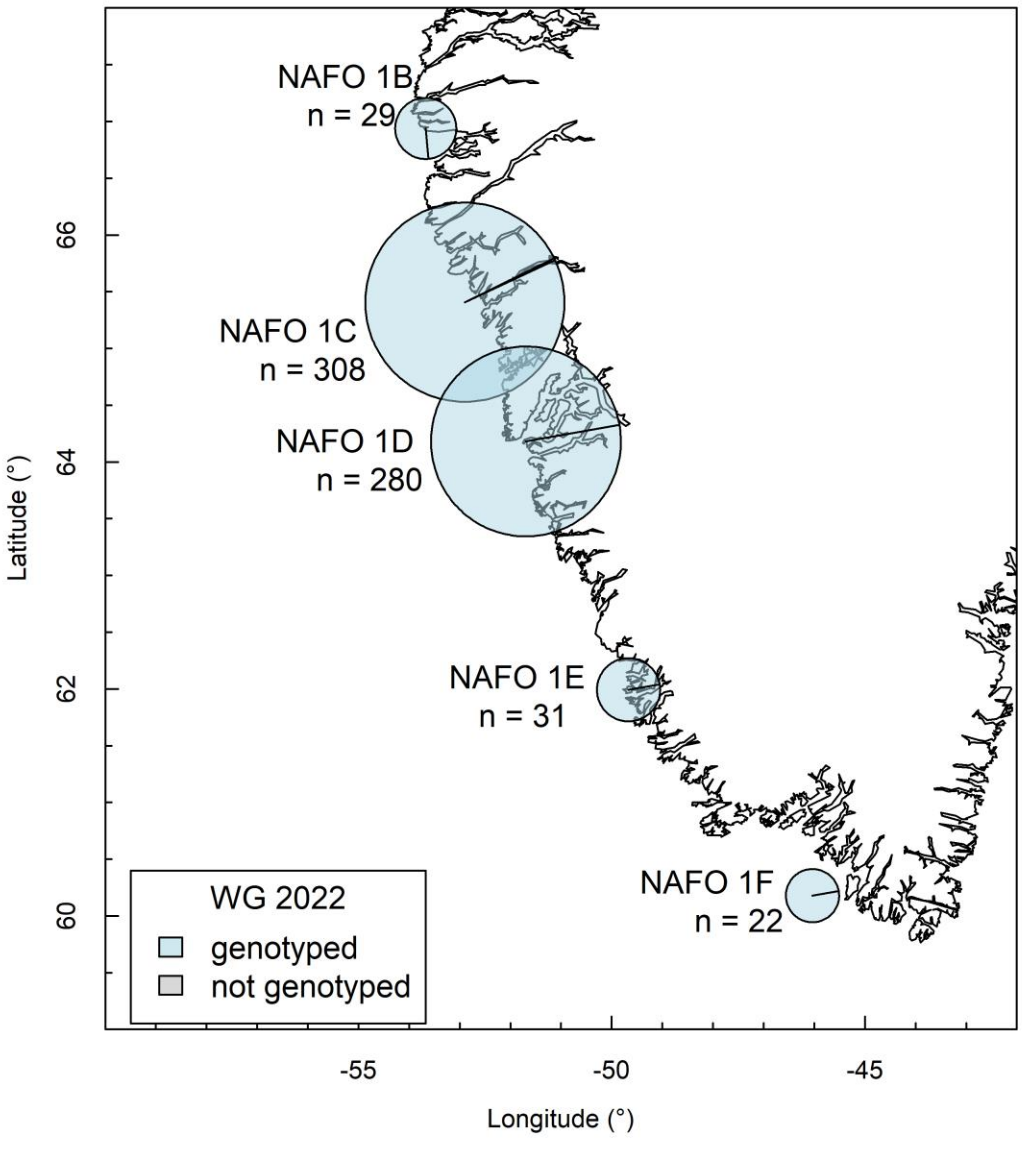

Figure 4. Map showing total samples (gray circles) and analyzed subsamples (blue circles) from 2022 at the West Greenland Atlantic salmon (*Salmo salar*) fishery for the single nucleotide polymorphism analysis. Sample locations from north to south are Sisimiut, Maniitsoq, Nuuk, Paamiut and Qaqortoq located in Northwest Atlantic Fisheries Organization (NAFO) divisions 1B, 1C, 1D, 1E and 1F, respectively.

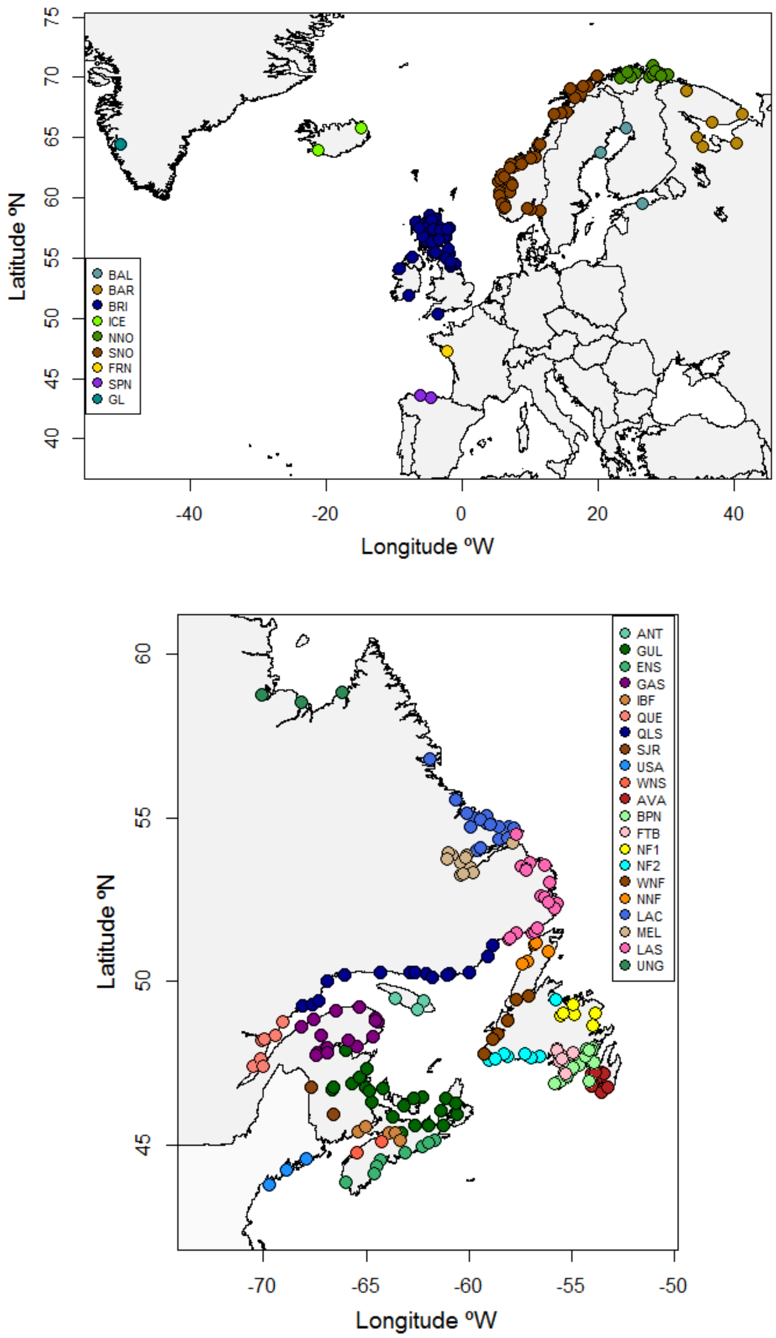

Figure 5. Map of sample locations for the single nucleotide polymorphism range-wide genetic baseline for European (top) and North American (bottom) regional groupings. See Table 5 for location information: ANT=Anticosti, AVA=Avalon Peninsula, BPN=Burin Peninsula, ENS=Eastern Nova Scotia, FTB=Fortune 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 & 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.

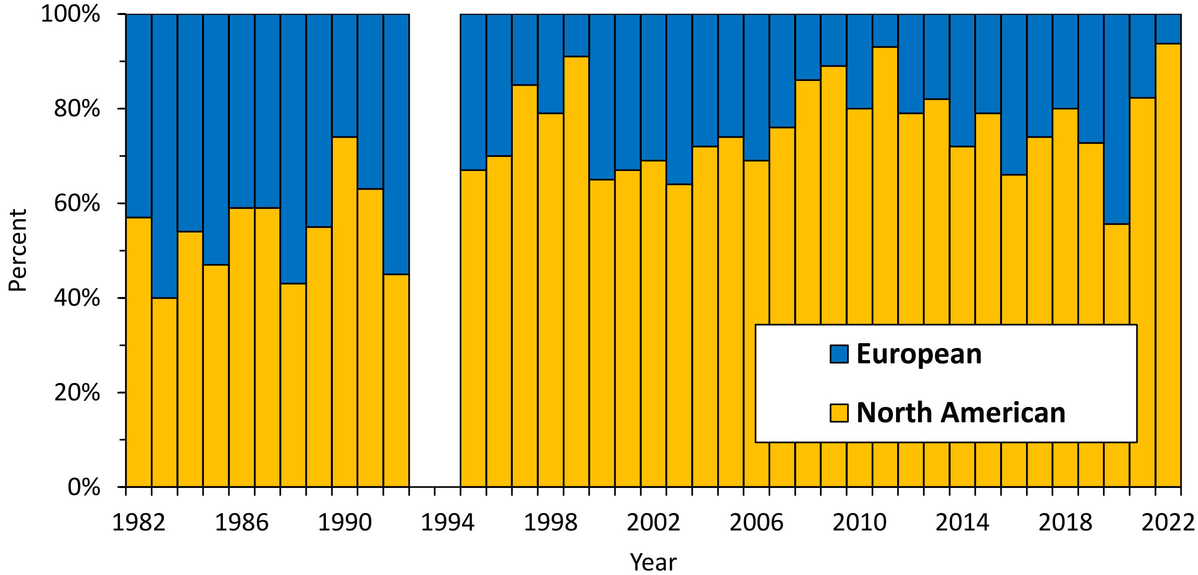

Figure 6. The weighted proportions of North American and European Atlantic salmon (*Salmo salar*) caught at West Greenland from 1982-2022. Proportions were weighted by the estimated numbers of salmon by origin for each division according to the adjusted landings.

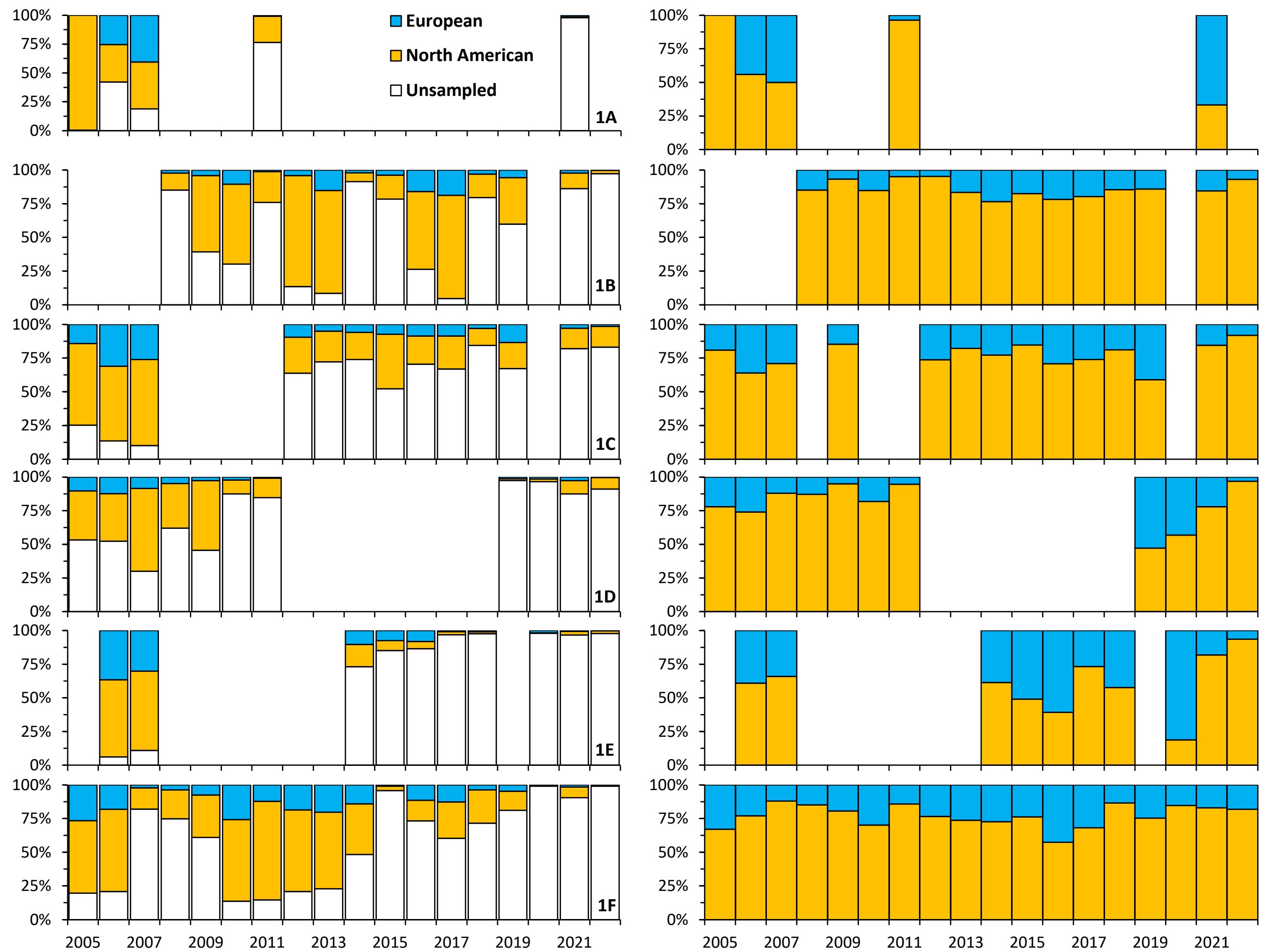

Figure 7. Proportions of unsampled adjusted landings of North American origin and European origin Atlantic salmon (*Salmo salar*; left panels) and of sampled adjusted landings or North American origin and European origin Atlantic salmon (right panels) by North Atlantic Fisheries Organization (NAFO) division (top row represents division 1A and bottom row represents division 1F) sampled at West Greenland from 2005-2022. 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.

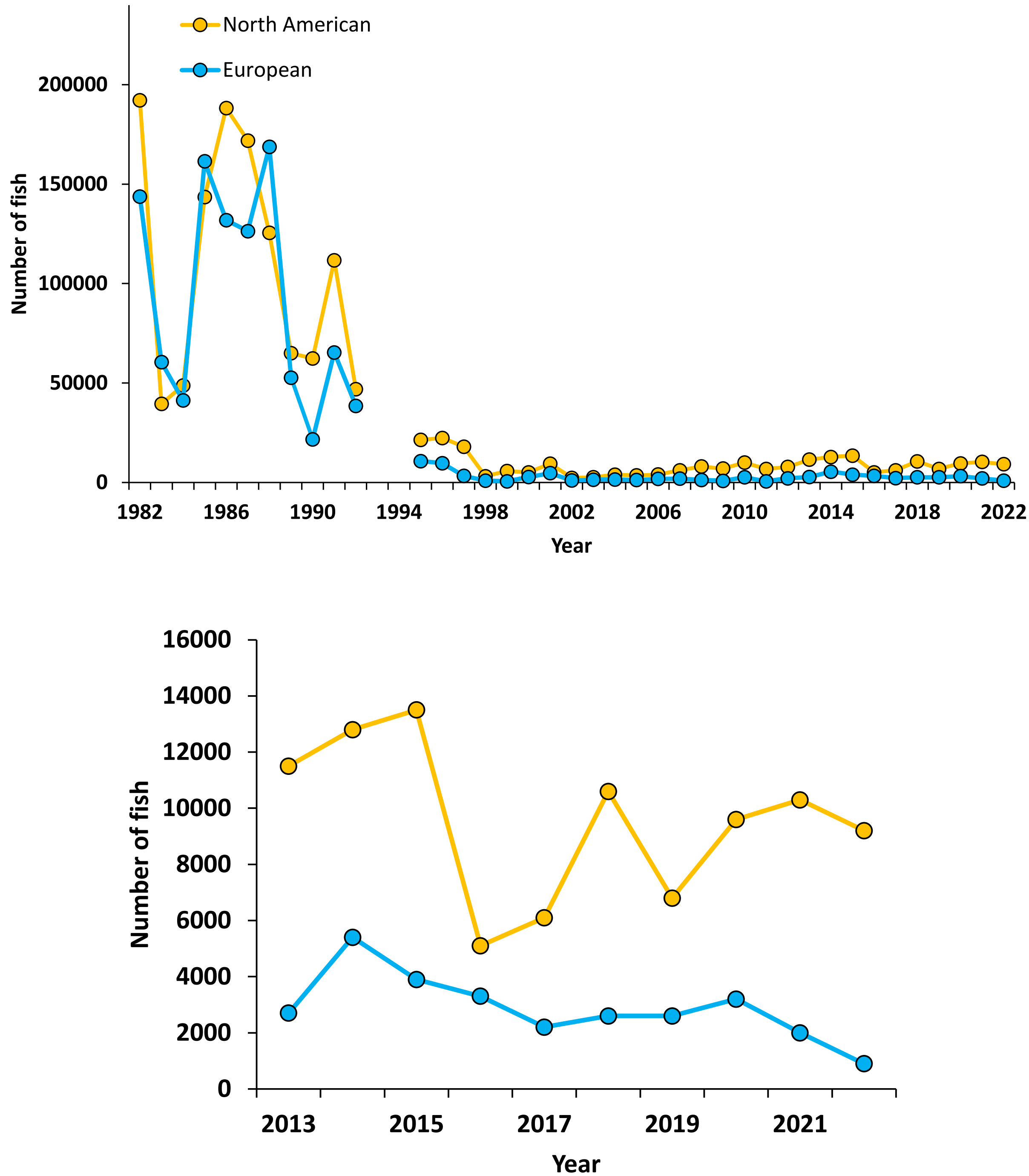

Figure 8. The weighted numbers of North American and European Atlantic salmon (*Salmo salar*) caught at West Greenland from 1982-2022 (top) and 2013-2022 (bottom). Numbers are rounded to the nearest hundred fish. In 2022, it is estimated that approximately 9,200 North American origin and 900 European origin fish were harvested.

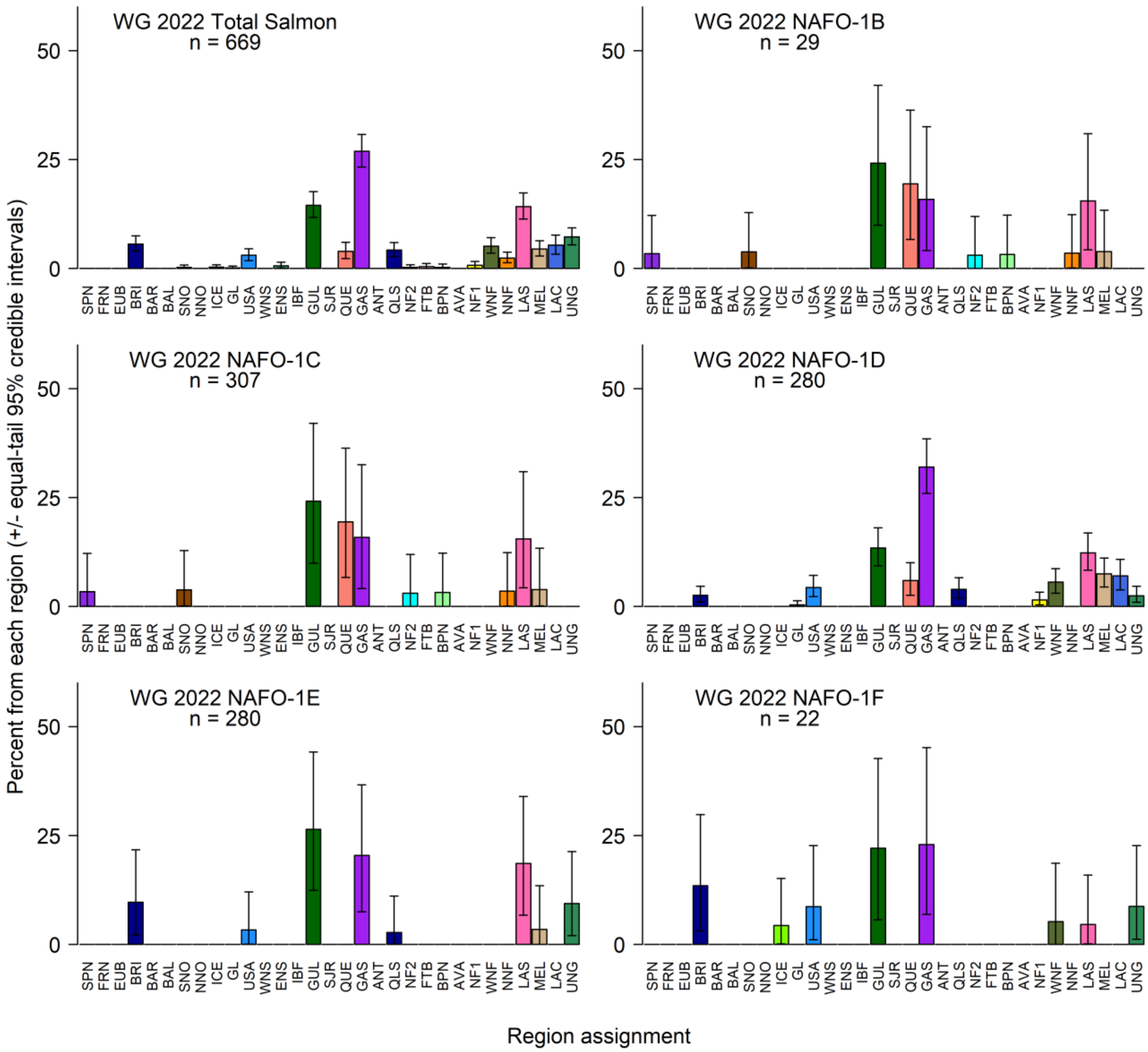

Figure 9. Bayesian estimates of mixture composition of samples from the West Greenland Atlantic salmon (*Salmo salar*) fishery for 2022 using the single nucleotide polymorphism (SNP) baseline overall and by Northwest Atlantic Fisheries Organization (NAFO) division. See Figure 5 for reporting group locations 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 & 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.

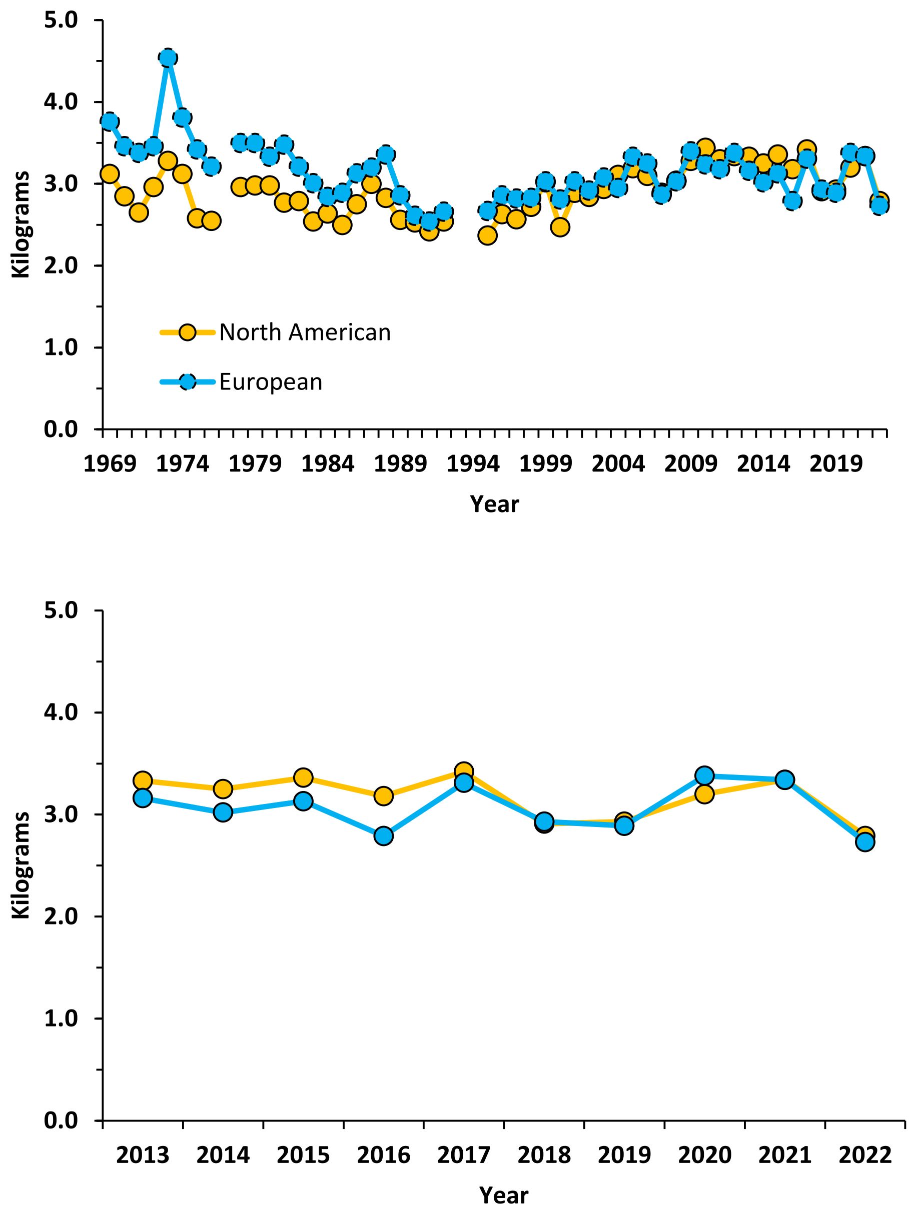

Figure 10. Mean whole weight (kg) of European and North American 1 sea-winter Atlantic salmon (*Salmo salar*) sampled at West Greenland from 1969-2022 (top panel) and 2013-2022 (bottom panel). These data have not been adjusted for the period of sampling, and it is known that salmon grow quickly during the period of feeding and while in the fishery at West Greenland. Caution is urged when interpreting these uncorrected data.

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