	Council *ICES Advice*	CNL(25)06 Agenda item: 5.b)(ii)

ICES Advice on fishing opportunities, catch, and effort Northeast and Northwest Atlantic ecoregions
Published 02 May 2025

North Atlantic salmon (*Salmo salar*) stocks

Introduction

Main tasks

ICES approved the Terms of References for the Working Group on North Atlantic Salmon (WGNAS, chaired by Alan Walker, UK) to meet in Rennes, France from 17–27 March 2025 to consider questions posed to ICES by the North Atlantic Salmon Conservation Organization (NASCO) (2024/AT/FRSG19).

The table below identifies the sections of the report (ICES, 2025) that provide response to the questions posed by NASCO in the Terms of Reference (ToR).

ToR	Question	Section
1	With respect to Atlantic salmon in the North Atlantic area:	sal.oth.all
1.1	provide an overview of salmon catches and landings by country, including unreported catches and catch and release, and production of farmed and ranched Atlantic salmon in 2024[1];	
1.2	report on significant new or emerging threats to, or opportunities for, salmon conservation and management[2];	
1.3	provide a compilation of tag releases by country in 2024;	
1.4	identify relevant data deficiencies, monitoring needs and research requirements;	
2	With respect to Atlantic salmon in the Northeast Atlantic Commission area:	sal.neac.all
2.1	describe the key events of the 2024 fishery[3];	
2.2	review and report on the development of age-specific stock conservation limits, including updating the time-series of the number of river stocks with established CLs by jurisdiction;	
2.3	describe the status of the stocks, including updating the time-series of trends in the number of river stocks meeting CLs by jurisdiction;	
3	With respect to Atlantic salmon in the North American Commission area:	sal.nac.all
3.1	describe the key events of the 2024 fishery (including the fishery at St Pierre and Miquelon)[3];	
3.2	update age-specific stock conservation limits based on new information as available, including updating the time-series of the number of river stocks with established CLs by jurisdiction; and,	
3.3	describe the status of the stocks, including updating the time-series of trends in the number of river stocks meeting CLs by jurisdiction;	
4	With respect to Atlantic salmon in the West Greenland Commission area:	sal.wgc.all
4.1	describe the key events of the 2024 fishery[3];	
4.2	describe the status of the stocks[4];	
5	Generic ToRs	

[1] With regard to ToR 1.1, for the estimates of unreported catch the information provided should, where possible, indicate the location of the unreported catch in the following categories: in-river; estuarine; and coastal. Numbers and weight of salmon caught and released in recreational fisheries should be provided.
[2] With regard to ToR 1.2, ICES is requested to include reports on any significant advances in understanding of the biology of Atlantic salmon that is pertinent to NASCO.
[3] In the responses to ToRs 2.1, 3.1 and 4.1, ICES is asked to provide details of catch, gear, effort, composition and origin of the catch and rates of exploitation. For homewater fisheries, the information provided should indicate the location of the catch in the following categories: in-river; estuarine; and coastal. Information on any other sources of fishing mortality for salmon is also requested. For ToR 4.1, if any new surveys are conducted and reported to ICES, ICES should review the results and advise on the appropriateness of incorporating resulting estimates into the assessment process.
[4] In response to ToR 4.2, ICES is requested to provide a brief summary of the status of North American and North-East Atlantic salmon stocks. The detailed information on the status of these stocks should be provided in response to ToRs 2.3 and 3.3.

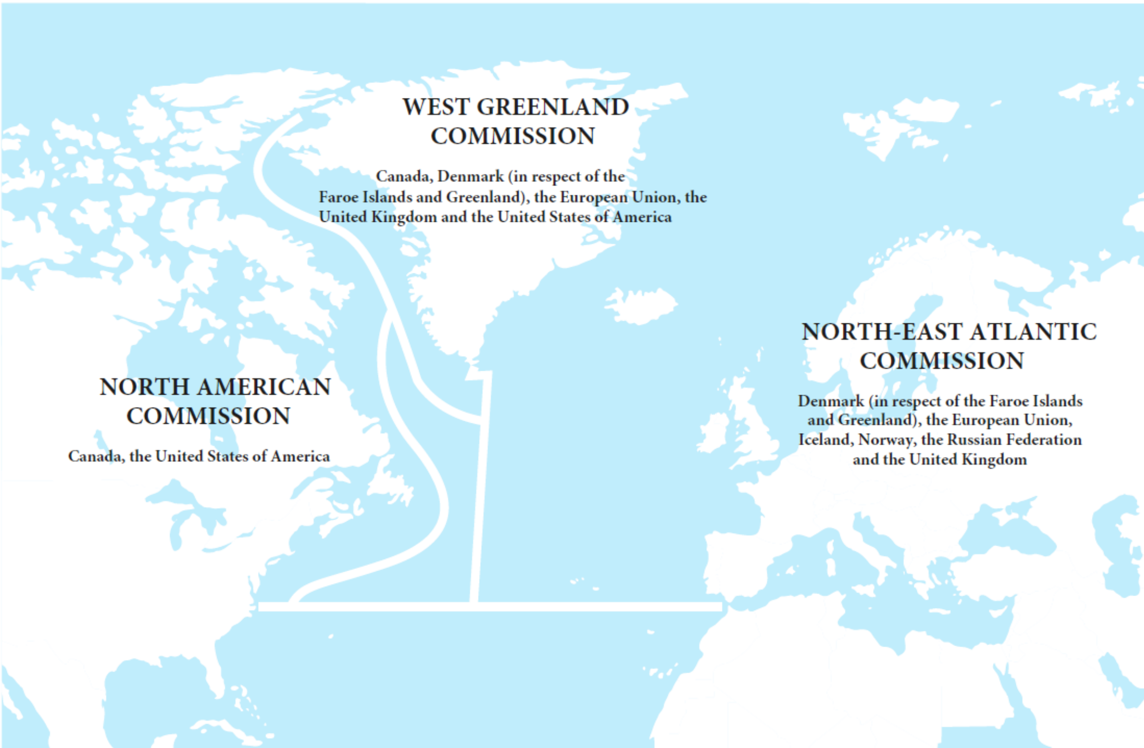
In response to the ToRs, the ICES Working Group on North Atlantic Salmon (WGNAS) considered 21 working documents. A complete list of acronyms and abbreviations used in this advice is provided in Annex 2.

Please note that for practical reasons, several tables (A1.1–A1.4) are provided in Annex 1.

Management framework for Atlantic salmon in the North Atlantic

This advice has been generated by ICES in response to the request for advice posed by NASCO, pursuant to its role in international management of Atlantic salmon. NASCO was set up in 1984 by international convention (the Convention for the Conservation of Salmon in the North Atlantic Ocean) with a responsibility for the conservation, restoration, enhancement, and rational management of wild Atlantic salmon in the North Atlantic. Although sovereign states retain their role in the regulation of Atlantic salmon fisheries for Atlantic salmon originating in their own rivers, distant-water Atlantic salmon fisheries – such as those at Greenland and the Faroes which take Atlantic salmon originating in rivers of another Party – are regulated by NASCO under the terms of the Convention. NASCO now has eight Parties that are signatories to the Convention, including the EU, which represents its Member States.

NASCO's three commission areas – the North American Commission (NAC), the West Greenland Commission (WGC), and the North East Atlantic Commission (NEAC) – are shown in the map below. The islands of St Pierre and Miquelon, located off the southern coast of Newfoundland, are not members of the NAC, but France (in respect of St Pierre and Miquelon) participates as an observer to NASCO. The mid-Atlantic area is not covered by any of the three NASCO commissions; however, under Article 4 of its Convention, NASCO provides a forum for consultation and cooperation on matters concerning the Atlantic salmon stocks in this area.



Management objectives

NASCO's objective is:

"..to contribute through consultation and co-operation to the conservation, restoration, enhancement and rational management of salmon stocks… taking into account the best scientific evidence available…".

NASCO further states that "the Agreement on the Adoption of a Precautionary Approach states that an objective for the management of salmon fisheries is to provide the diversity and abundance of salmon stocks", and the organization's Standing Committee on the Precautionary Approach interprets this as being "to maintain both the productive capacity and diversity of salmon stocks" (NASCO, 1998).

NASCO's Action Plan for Application of the Precautionary Approach (NASCO, 1998) provides an interpretation of how this is to be achieved:

> "Management measures should be aimed at maintaining all stocks above their conservation limits by the use of management targets".
>
> "Socio-economic factors could be taken into account in applying the precautionary approach to fisheries management issues".
>
> "The precautionary approach is an integrated approach that requires, *inter alia*, that stock rebuilding programmes (including as appropriate, habitat improvements, stock enhancement, and fishery management actions) be developed for stocks that are below conservation limits".

Basis of reference points and application of precaution

Atlantic salmon have characteristics of short-lived fish stocks. Mature abundance is sensitive to annual recruitment because the adult spawning stock consists of only a few age groups. Incoming recruitment is often the main component of the fishable stock. For such fish stocks, the ICES maximum sustainable yield (MSY) approach is aimed at achieving a target escapement (MSY $B_{escapement}$, the minimum amount of biomass left to spawn). No catch should be allowed unless this escapement can be achieved. The escapement level should be set so there is a low risk of future recruitment being impaired.

For Atlantic salmon, this approach has led to defining river-specific Conservation Limits (CLs) as equivalent to MSY $B_{escapement}$. Conservation Limits for North Atlantic salmon stock complexes have been defined by ICES as the level of a stock (number of spawners) that will achieve long-term average MSY. ICES considers that, to be consistent with the MSY and precautionary approaches, fisheries should only take place on Atlantic salmon from rivers where stocks have been shown to be at full reproductive capacity. Furthermore, due to differences in the status of individual stocks within stock complexes, mixed-stock fisheries present particular threats.

In many countries/jurisdictions, CLs are now defined using stock and recruitment relationships, and the corresponding CLs are not updated annually. In the other jurisdictions where such relationships are not available, stock–recruitment proxies are used to define the CLs, and these may vary from year to year as new data are added. NASCO has adopted the CLs as limit reference points (NASCO, 1998). Conservation Limits are used in reference to spawners. When referring to abundance prior to fisheries in the ocean (pre-fishery abundance [PFA]), the CLs are adjusted to account for natural mortality, and the adjusted value is referred to as the spawner escapement reserve (SER).

ICES benchmarked the life-cycle model (LCM) in 2023 and it was used for the first time for all North Atlantic salmon catch advice in 2024 to describe and forecast stock status (ICES, 2023, 2024a). This model uses a risk analysis framework that considers CLs. The risk analysis framework makes full use of the outputs from the LCM. The LCM outputs include estimates of returns and spawners (1SW and MSW), that are in line with run-reconstruction estimates and eggs (1SW and MSW). This model is used to evaluate the status relative to the reference points.

Management targets have not yet been defined for all North Atlantic salmon stocks. Where there are no specific management objectives, the MSY approach shall apply:

- ICES considers that if the lower bound of the 90% confidence interval of the current estimate of spawners is above the CL, then the stock is at full reproductive capacity (equivalent to a probability of at least 95% of meeting the CL).
- When the lower bound of the confidence interval is below the CL, but the median is above, then ICES considers the stock to be at risk of suffering reduced reproductive capacity.
- Finally, when the median is below the CL, ICES considers the stock to suffer reduced reproductive capacity.

For catch advice on the mixed-stock fishery at West Greenland (catching non-maturing one-sea-winter [1SW] fish from North America and non-maturing 1SW fish from southern NEAC [S-NEAC]), NASCO has adopted a risk level (probability) of 75% of simultaneous attainment of management objectives in seven assessment regions (ICES, 2003) as part of an agreed management plan. NASCO uses the same approach for catch advice for the mixed-stock fishery, affecting six assessment regions for the North American stock complex. ICES notes that the choice of a 75% probability for simultaneous attainment of six or seven stock assessment regions is approximately equivalent to a 95% probability of attainment for each individual unit (ICES, 2013).

There is no formally agreed management plan for the fishery at the Faroes. However, ICES has developed a risk-based framework for providing catch advice for fish exploited in this fishery (mainly multi-sea-winter [MSW] fish from NEAC countries). Catch advice is provided at both the stock complex and country level, with catch options tables providing the probability of meeting CLs in the individual stock complexes or countries, as well as in all the stock complexes or countries simultaneously. ICES has recommended (ICES, 2013) that management decisions should be based principally on a 95% probability of attainment of CLs in each stock complex/country individually. The simultaneous attainment probability may also be used as a guide, but managers should be aware that this probability will generally be quite low when large numbers of management units are used.

NASCO 1.1 Catches of North Atlantic salmon

Nominal catches of Atlantic salmon

In this document, nominal catches (landings) are equivalent to harvest. These nominal catches do not include Atlantic salmon that have been caught and released (these are reported separately) nor do they include post-release mortalities, although the latter are included in the spawner estimates by some countries/jurisdictions. For clarity, detailed data are provided in Annex 1, tables A1.1–A1.4.

Total nominal catches of Atlantic salmon in four North Atlantic regions from 1960 to 2024 are shown in Figure 1. Catches reported by country or jurisdiction are given in Table A1.1. Catch statistics in the North Atlantic include fish-farm escapees and, in some Northeast Atlantic countries, ranched fish. The data for 2024 are provisional and exclude nominal catch data from Russian Federation.

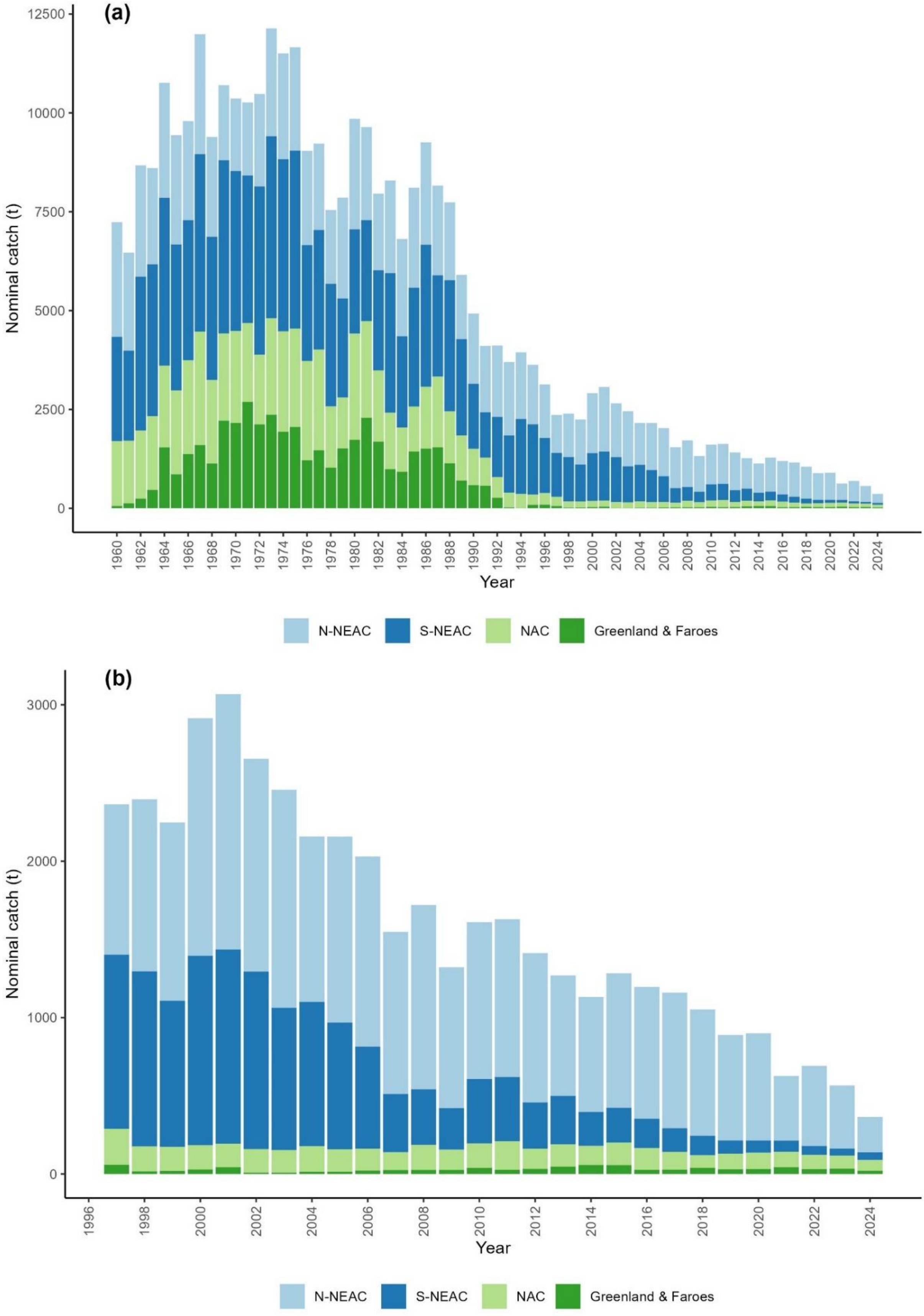


Figure 1 North Atlantic salmon stocks. Total nominal catch of Atlantic salmon (tonnes; round fresh weight) in four North Atlantic regions, 1960–2024 (top) and 1997–2024 (bottom). Nominal catch for 2024 from Russian Federation are not available and therefore omitted from 2024 provisional catch data.

Icelandic catches are separated into wild and ranched, reflecting the fact that Iceland has been the main North Atlantic country where large-scale ranching has been undertaken, with the specific intention of harvesting all returns at the release site and with no prospect of wild spawning success. The release of smolts for commercial ranching purposes ceased in Iceland in 1998, but ranching for angling fisheries in two Icelandic rivers continued into 2024 (Table A1.1). Catches in Sweden are also separated into wild and ranched over the entire time-series. The latter fish represent adult Atlantic salmon originating from hatchery-reared smolts that have been released under programmes to mitigate hydropower. These fish are also exploited very heavily in home waters and have no possibility to spawn naturally in the wild. While ranching does occur in some other countries, it is on a much smaller scale. The ranched components in Iceland and Sweden have therefore been included in the nominal catch.

Table 1 North Atlantic salmon stocks. Nominal catches (in tonnes) for the three NASCO commission areas for 2015–2024. Nominal catch for 2024 from the Russian Federation are not available and therefore omitted from 2024 provisional catch data.

Area	Year									
	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
NEAC	1081	1028	1015	928	756	761	487	569	448	276
NAC	144	140	113	80	101	105	100	91	83	69
WGC	57	28	28	40	29	32	43	31	33	20
Total	1282	1196	1156	1048	886	898	630	691	564	364

The provisional total nominal catch was 364 tonnes in 2024, the lowest in the time-series since 1960. NASCO requested that the nominal catches in homewater fisheries be partitioned according to whether the catch is taken in coastal, estuarine, or in-river fisheries (Table 2).

Table 2 North Atlantic salmon stocks. The 2024 nominal catches (in tonnes) for the NEAC and NAC commission areas. Nominal catch for 2024 from Russian Federation are not available and therefore omitted from 2024 provisional catch data. (Note that weights are reported rounded to the nearest tonne, and any minor discrepancies between the overall total and the sum of the individual totals within each fishery zone displayed below are an effect of rounding.)

Area	Coastal		Estuarine		In-river		Total
	Weight	% of total catch	Weight	% of total catch	Weight	% of total catch	Weight
NEAC	75	27	16	6	184	67	276
NAC	8	12	38	55	23	33	69

Coastal, estuarine, and in-river catch data aggregated by commission area are presented in Figure 2. In Northern NEAC (N-NEAC), catches in coastal fisheries have declined from 306 t in 2009 to 75 t in 2024, and in-river catches have declined from 586 t in 2009 to 146 t in 2024 (see Figure 3 and Table A.1.2 for details). There are no coastal fisheries in Iceland or Denmark. At the beginning of the time-series, about half the nominal catch was from coastal fisheries and half from in-river fisheries, whereas, since 2009, coastal fisheries catches have represented around 33–44% of the total.

In Southern NEAC (S-NEAC), catches in coastal and estuarine fisheries have declined dramatically since 2009. While coastal fisheries have historically made up the largest component of the catch, these fisheries have declined the most, reflecting widespread measures to reduce exploitation in a number of countries; there have been no coastal catches since 2018. Estuarine fisheries have also declined, from 48 t in 2009 to 16 t in 2024. Since 2009, the majority of the nominal catch in this area is from in-river fisheries.

In NAC, the proportion of in-river fisheries catch has dropped to below 50% since 2018, while the proportion of estuarine catch has increased over the same time period and in 2024 constituted 55% of the total catch. The catch in coastal fisheries has been relatively small throughout the time-series (10 t or less).

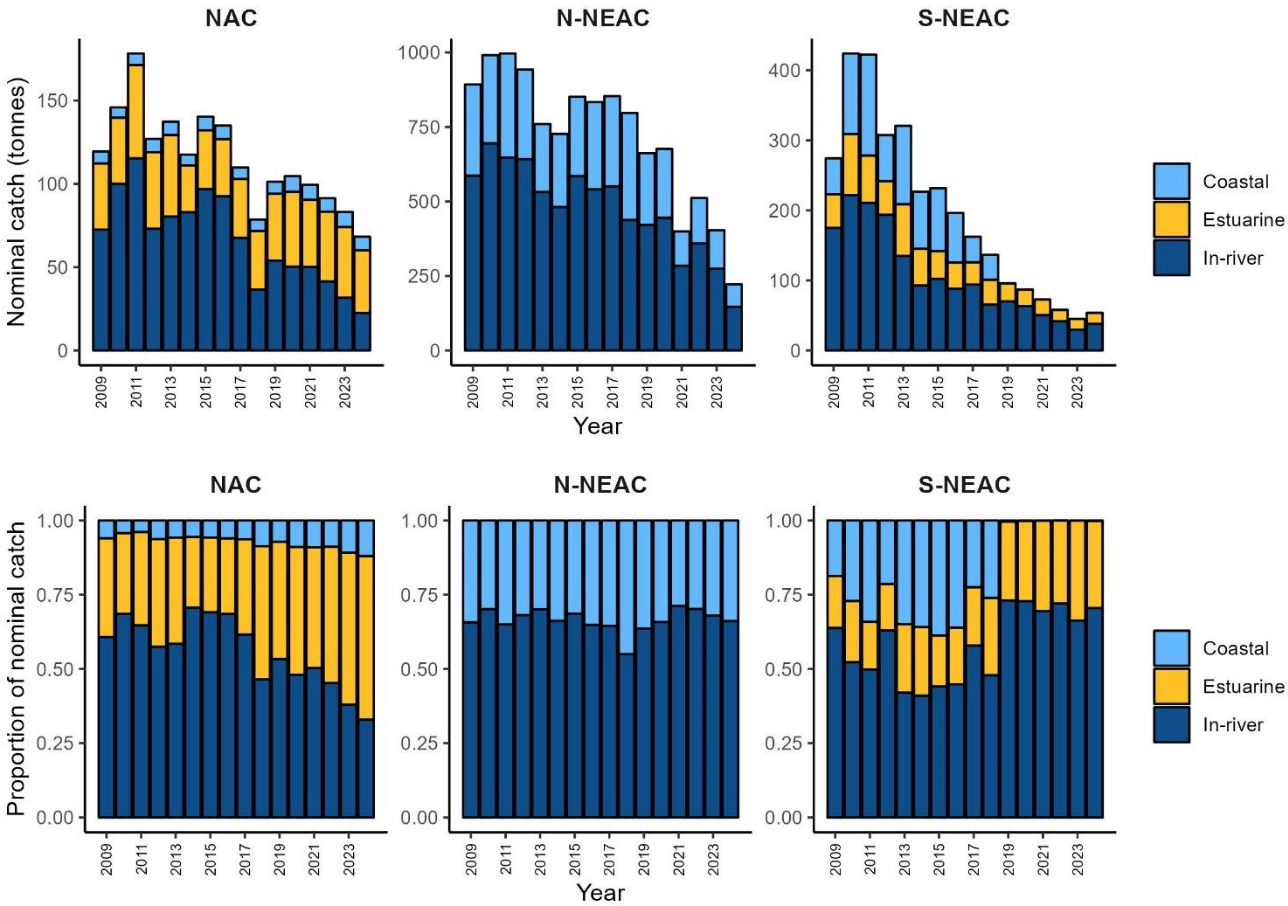


Figure 2 North Atlantic salmon stocks. Nominal catches (tonnes; top panels) and proportions of the retained catches (bottom panels) from coastal, estuarine, and in-river fisheries for the NAC area, and for the Northern (N-NEAC) and Southern (S-NEAC) NEAC areas from 2009–2024. Note that scales of vertical axes in the top panels vary. Nominal catch for 2024 from Russian Federation are not available and therefore omitted from 2024 provisional catch data.

There is considerable variability in the distribution of the catch among individual countries (Figure 3; Table A1.2). In most countries, the majority of the catch is now retained in in-river fisheries, and across the time-series the coastal catches have declined markedly. Nominal catches (harvests) from rivers have also declined in many countries, as more of the fish caught are returned through catch-and-release (C&R) schemes in angling fisheries and a few net fisheries.

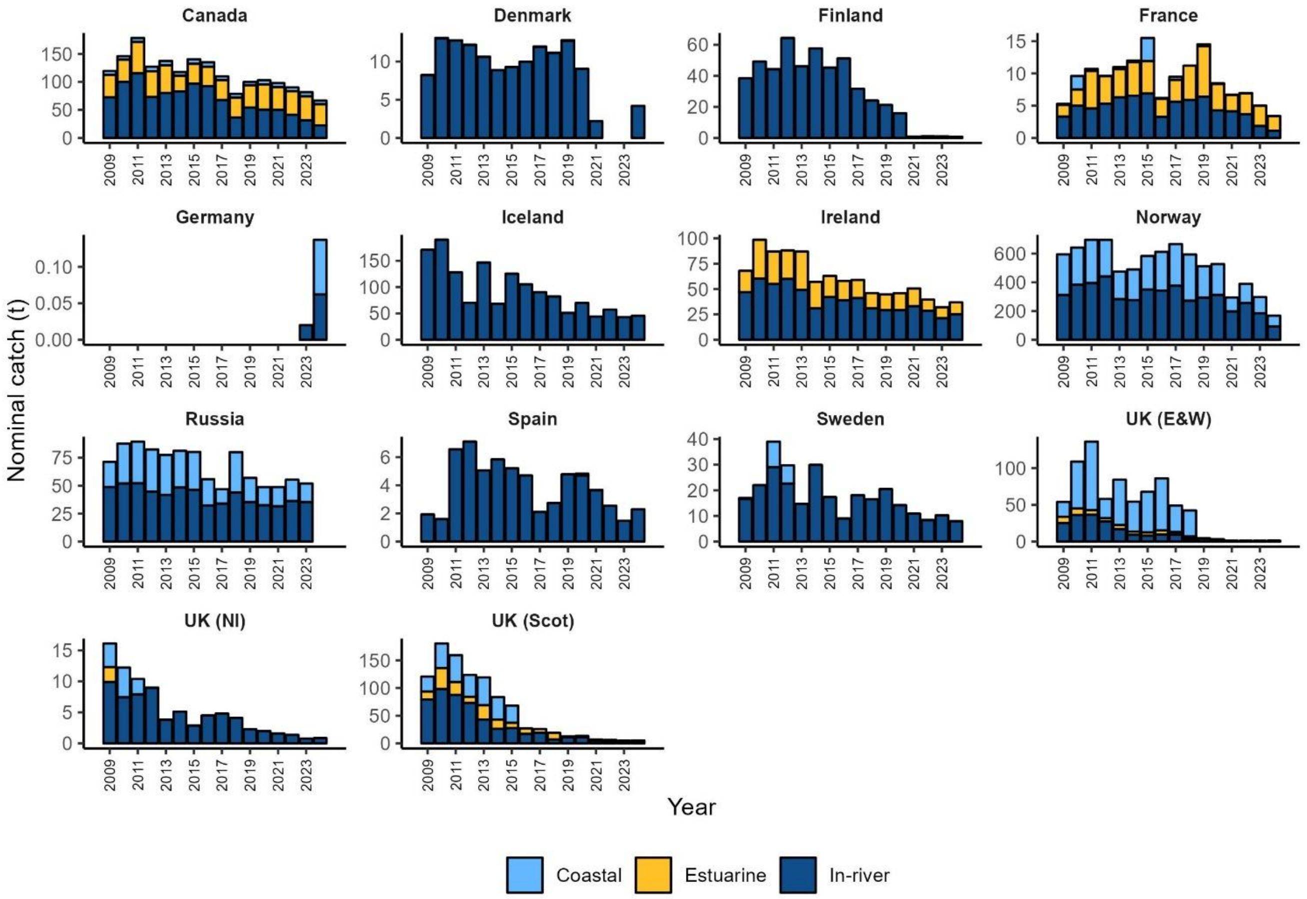


Figure 3 North Atlantic salmon stocks. Nominal catch (tonnes) by country taken in coastal, estuarine, and in-river fisheries, 2009–2024. Note that scales on the *y*-axes vary. The US is not included because there has been no catch. One-hundred percent of the fishery at St Pierre and Miquelon and at West Greenland occurs in coastal areas. These catches are not shown. For Germany, catch data was only available for 2023 and 2024 and annual values prior to this are unknown. For Denmark, no catch weight data was provided for 2022 to 2023. For the Russian Federation, no catch data was available for 2024.

Unreported catch

The total unreported catch in NASCO areas was estimated at 101 t in 2024 (NEAC 78 t, NAC 13 t, and WGC 10 t). No estimates were provided for Russia, France, Spain, or St Pierre and Miquelon in 2024.

Table 3 North Atlantic salmon stocks. Unreported catch (in tonnes) by NASCO commission area in the last 10 years.

Year	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
NEAC	299	297	318	278	238	238	134	174	133	78
NAC	17	27	25	24	12	27	19	18	16	13
WGC	10	10	10	10	10	10	10	10	10	10
Total	326	335	353	312	259	275	164	201	159	101

The 2024 unreported catches by country are provided in Table A1.3. Unreported catch estimates were not provided by category (coastal, estuarine, and in-river). Over recent years, efforts have been made to reduce the level of unreported catch in a number of countries.

Catch and release

The practice of catch and release (C&R) in angling fisheries has become increasingly common as an Atlantic salmon management/conservation measure in light of the widespread decline in Atlantic salmon abundance in the North Atlantic. In some areas of Canada and US, mandatory C&R became widely applied as a management measure in 1984, and many European countries have introduced this in recent years, both as a result of statutory regulation and through voluntary practice. The nominal catches do not include Atlantic salmon that have been caught and released, nor do they include post-release mortalities. Post-release mortality has not been estimated by every country. Table A1.4 presents C&R information from 1991 to 2024 for countries that provide records; C&R may also be practised in other countries while not being formally recorded. There are large differences in the percentage of the total angling catch that is released. In 2024, it ranged from 8% (France) to 98% (UK [Scotland]), reflecting varying management practices and angler attitudes among countries. Within countries, the percentage of released fish has increased over time. There is also evidence from some countries that larger MSW fish are released in higher proportions than smaller fish. Overall, approximately 145 000 Atlantic salmon (483 t) were reported to have been caught and released in the North Atlantic area in 2024.

Farming and sea ranching of Atlantic salmon

The provisional estimate of farmed Atlantic salmon production in the North Atlantic area for 2024 was 1 956 012 t (Figure 4). The production of farmed Atlantic salmon in this area has exceeded one million tonnes since 2009. Norway and UK (Scotland) continue to produce the majority of the farmed Atlantic salmon in the North Atlantic (79% and 9.5%, respectively). Farmed Atlantic salmon production in 2024 was above the previous five-year mean in all countries, with the exception of Canada and Ireland. Data for UK (Northern Ireland) since 2001 and data for the east coast of the US are not publicly available; this is also the case for some regions within countries in some years.

Worldwide production of farmed Atlantic salmon has been in excess of one million tonnes since 2001 and over two million tonnes since 2012. Reliable production figures for countries outside the North Atlantic were not available for 2023 and 2024; for these years, 2022 data was assumed (retrieved from the Food and Agricultural Organisation's Fisheries and Aquaculture Department database). Worldwide production in 2024 was provisionally estimated at 2 880 804 t (Figure 4), which is higher than 2023 and higher than the previous five-year mean (2 787 766 t). Production outside the North Atlantic, which is dominated by Chile, is estimated to have accounted for almost one third of the total worldwide production in 2024.

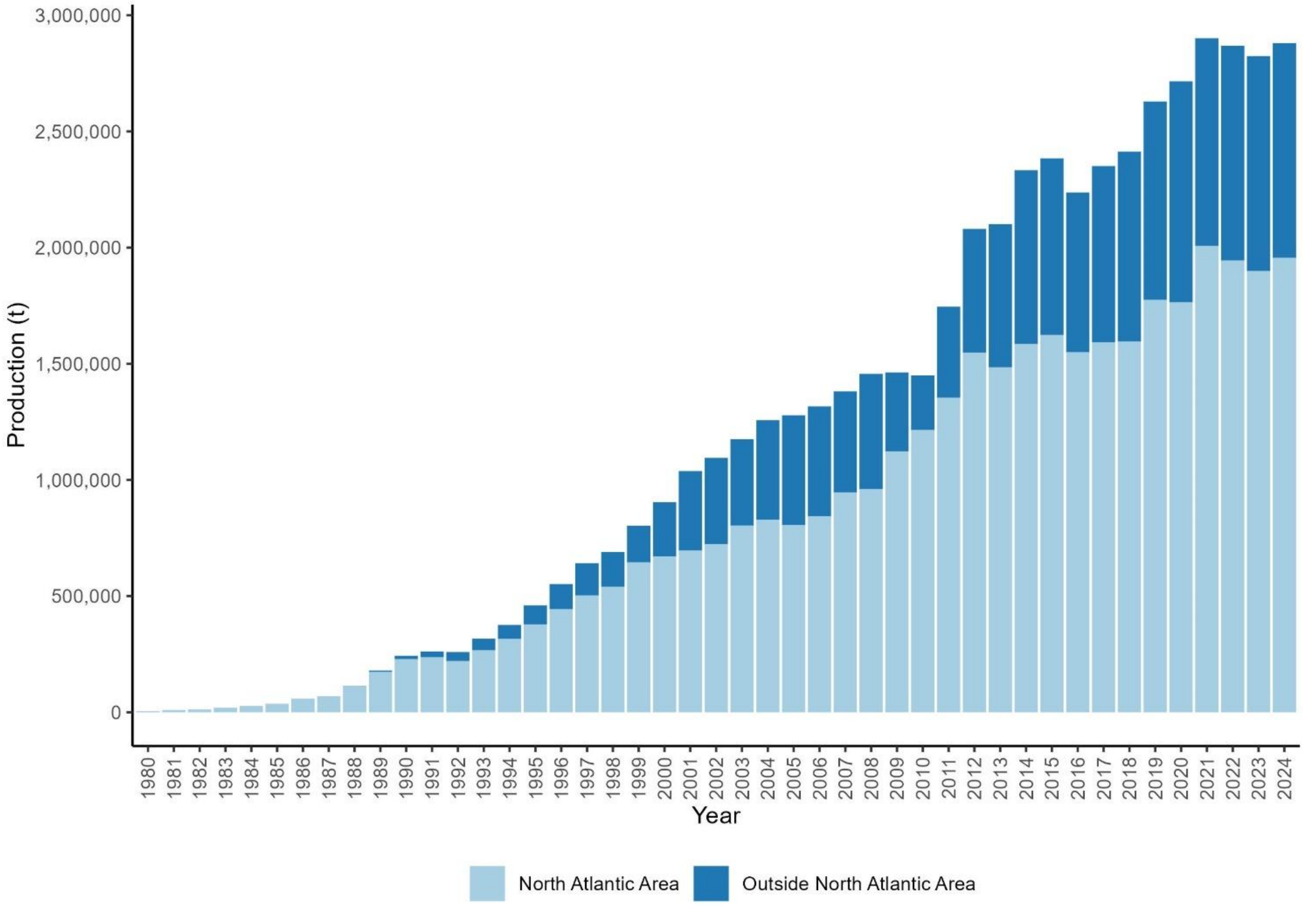


Figure 4 North Atlantic salmon stocks. Worldwide production of farmed Atlantic salmon, 1980–2024. Reliable production figures for countries outside the North Atlantic were not available for 2023 and 2024; for these years, 2022 data was assumed (retrieved from the Food and Agricultural Organisation's Fisheries and Aquaculture Department database).

Worldwide production of farmed Atlantic salmon in 2024 was almost 8 000 times the nominal catch of wild Atlantic salmon in the North Atlantic.

The total harvest of ranched Atlantic salmon in countries bordering the North Atlantic was 19 t in 2024, all taken in Iceland and Sweden (Figure 5), with the majority of the catch taken in Iceland (79% in 2024). No estimate was made of the ranched Atlantic salmon production in Norway in 2024, where such catches have been very low in recent years (< 1 t); nor in UK (Northern Ireland), where the proportion of ranched fish has not been assessed since 2008; nor in Ireland, where ranching is carried out in only nine rivers on a small scale.

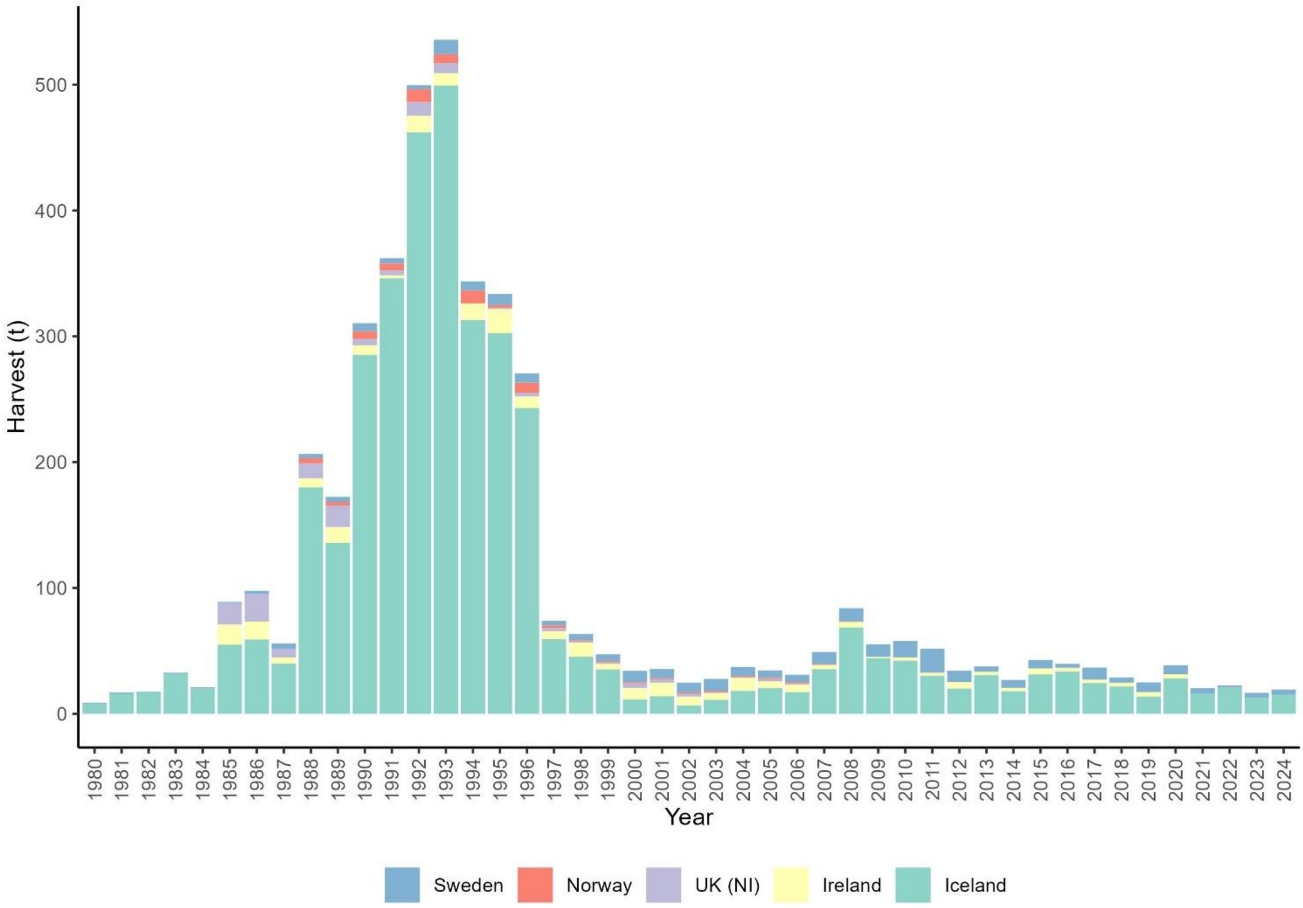


Figure 5 North Atlantic salmon stocks. Harvest of ranched Atlantic salmon (tonnes; round fresh weight) in the North Atlantic, 1980–2024. No estimates of ranched salmon harvest in Norway, UK (Northern Ireland), or Ireland have been made in recent years, as salmon ranching in these countries has been at a very low level.

NASCO 1.2 Significant, new, or emerging threats to, or opportunities for, Atlantic salmon conservation and management

A number of new or emerging threats to or opportunities for salmon conservation are considered by ICES (2025); a summary of these is presented here.

Threats

- Declines and/or sustained low abundances of salmon have been reported in many countries. Low abundances are particularly evident in NEAC for 1SW salmon in the recent decade, and in the recent three decades for MSW salmon from S-NEAC and NAC. Record or near-record low returns of 1SW and MSW salmon were reported in the majority of countries/jurisdictions in 2023 or 2024 (Figure 6). Prohibitions, or important reductions, in retention fisheries have been maintained or introduced in several countries/jurisdictions in response to these patterns. Some countries/jurisdictions have implemented unprecedented closures of recreational fisheries. However, recent low abundances, declines in estimated post-smolt survival, and a general absence of any improvements in abundance across stocks in the North Atlantic highlight the concern that large-scale marine stressors at the North Atlantic scale are impacting salmon. Notably, record-breaking sea-surface temperature anomalies were observed in the North Atlantic in 2023 and 2024 (Terhaar *et al*., 2025), most especially in subarctic regions of the Atlantic (Timmermans and Labe, 2024). While direct mitigation of the impacts of ocean warming on salmon is challenging, improving survival in, and production from, the freshwater phase of the life cycle can offset high marine mortality and increase population resilience.

- Lough Neagh, the largest freshwater lake in UK and Ireland, has been subject to zebra mussel (*Dreissena polymorpha*) invasion, which has increased water clarity, providing better conditions for sight-feeding predators, such as landlocked river lampreys (*Lampetra fluviatilis*; Kennedy *et al*., 2020). In 2024, 25.3% of smolts sampled in the lake outflow were classed as heavily damaged by lamprey, an increase on the previous year when 18.7% of smolts were heavily damaged.

- An investigation into a substantial mass mortality event of over 1 000 adult Atlantic salmon in the Ballisodare River in Ireland during summer 2024 concluded that a cumulation of several contributing factors led to the fish kill (Millane *et al*., 2024). Significant gill pathology was observed in a number of sampled fish and was considered consistent with exposure to a marine phytoplankton species, shown to be present in high levels in nearby coastal waters. The event occurred during very low water conditions and many salmon showed abrasive damage, likely sustained through mechanical damage during upriver migration.The congregation of large numbers of stressed fish with external abrasions increased susceptibility to infection by *Saprolegnia* and opportunistic bacterial infections, which ultimately caused the large number of mortalities observed.

Opportunities

- Quebec's environment ministry (MELCCFP) is developing an approach to forecast salmon returns based on the positive relationship between 1SW returns for a given year and the returns of 2SW the following year (Cauchon and April, 2025). Following the 2023 record low returns of 1SW salmon throughout Quebec (except the Ungava Bay populations), MELCCFP predicted and subsequently confirmed the low 2SW returns in 2024 (MELCCFP, 2025). As a proactive management measure, MELCCFP prohibited the retention of large salmon in most rivers before the 2024 angling season. This approach not only helped conserve the salmon population by reducing 2SW harvest during a low-return year, but it will also provide insights into marine mortality. Early investigations suggest that a significant portion of marine mortality occurs during the initial stages of the marine migration.

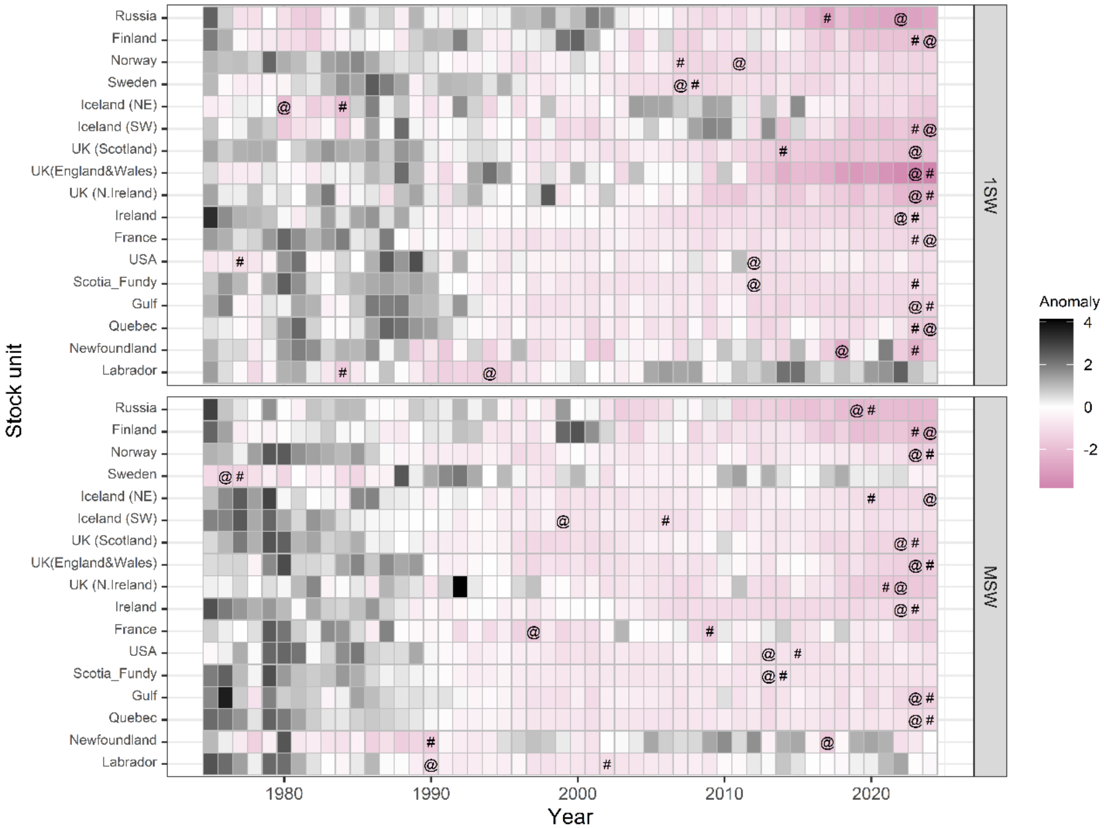


Figure 6 Anomalies (standard deviations from baseline period 1975 to 2014, i.e. excluding the most recent ten years) of Life Cycle Model estimated returns to coastal waters (medians) of Atlantic salmon to stock units of NAC and NEAC, 1975-2024. The stock units along the *y*-axis (top to bottom) are arranged from north to south for N-NEAC (Russian Federation to Iceland NE) and S-NEAC (Iceland SW to France) and from south to north for NAC (US to Labrador). The anomalies are in standard deviation units and calculated as annual abundance minus the mean divided by the standard deviation, for stock unit–specific means and standard deviations estimated for the base period 1975 to 2014. The labels are the years when the lowest (@) and second lowest (#) abundances over the entire time period occurred for the stock unit. The anomalies for 2024 are based on the forecast returns from the model.

NASCO 1.3 Provision of a compilation of tag releases by country in 2024

Data on releases of tagged, finclipped, and other marked Atlantic salmon in 2024 are compiled as a separate report (ICES, 2025). In summary (Tables 4) and noting that no recent data were available from the Russian Federation (where large tagging programmes have taken place in recent years):

- 1.16 million Atlantic salmon were marked, an increase from the 1.07 million Atlantic salmon marked in 2023.
- The adipose clip was the most commonly used primary marker (797 327), with coded wire microtags (CWT) (261 358) being the next-most common.
- Most marks were applied to hatchery-origin juveniles (1 073 722), while 81 898 wild juveniles, 4 563 wild adults and 3 165 hatchery adults were marked.
- 60 895 Atlantic salmon were tagged with other internal tags (e.g. passive integrated transponder [PIT] tags, data storage tags [DSTs], radio, and sonic transmitting tags [pingers]; Table 4), a marginal increase compared to 2023 (60 726).

Table 4 North Atlantic salmon stocks. Summary of Atlantic salmon tagged and marked in 2024. “Hatchery” and “Wild” juvenile refer to smolts and parr.

Country	Origin	Primary tag or mark				
		Microtag	External mark *	Adipose clip	Other internal†	Total
Canada	Hatchery adult	0	1026	10	24	1060
	Hatchery juvenile	0	0	705	0	705
	Wild adult	0	515	8	1537	2060
	Wild juvenile	0	18 230	22 821	1910	42 961
	Total	**0**	**19 771**	**23 544**	**3471**	**46 786**
Denmark	Hatchery adult	0	0	0	0	0
	Hatchery juvenile	0	0	168 000	665	168 665
	Wild adult	0	0	0	0	0
	Wild juvenile	0	0	0	0	0
	Total	**0**	**0**	**168 000**	**665**	**168 665**
France	Hatchery adult	0	0	0	0	0
	Hatchery juvenile	0	0	0	0	0
	Wild adult	0	0	157	157	157
	Wild juvenile	0	0	1 645	1 645	1 645
	Total	**0**	**0**	**1 802**	**1 802**	**1 802**
Iceland	Hatchery adult	0	0	0	0	0
	Hatchery juvenile	0	0	0	0	0
	Wild adult	0	941	0	0	941
	Wild juvenile	2 480	0	0	1 411	3 891
	Total	**2 480**	**941**	**0**	**1 411**	**4 832**
Ireland	Hatchery adult	0	0	0	0	0
	Hatchery juvenile	103 425	0	0	0	103 425
	Wild adult	0	0	0	0	0
	Wild juvenile	1 512	0	0	2 150	3 662
	Total	**104 937**	**0**	**0**	**2 150**	**107 087**
Norway	Hatchery adult	0	0	0	0	0
	Hatchery juvenile	0	0	0	20 297	20 297
	Wild adult	0	193	0	9	202
	Wild juvenile	0	0	0	11 811	11 811
	Total	**0**	**193**	0	**32 117**	**32 310**
Russian Federation	Hatchery adult					
	Hatchery juvenile					
	Wild adult					
	Wild juvenile					
	Total					
Spain	Hatchery adult	0	0	0	0	0
	Hatchery juvenile	141 012	0	162 921	1 512	305 445
	Wild adult	0	0	0	138	138
	Wild juvenile	0	0	0	0	0
	Total	**141 012**	**0**	**162 921**	**1 650**	**305 583**
Sweden	Hatchery adult	0	0	0	0	0
	Hatchery juvenile	0	0	186 573	0	186 573
	Wild adult	0	0	0	0	0
	Wild juvenile	0	0	0	100	100
	Total	**0**	**0**	**186 573**	**100**	**186 673**

Country	Origin	Primary tag or mark				
		Microtag	External mark *	Adipose clip	Other internal†	Total
UK (England & Wales)	Hatchery adult	0	0	0	0	0
	Hatchery juvenile	0	0	0	0	0
	Wild adult	0	364	0	22	386
	Wild juvenile	2 689	0	0	4 779	7 468
	Total	**2 689**	**364**	**0**	**4 801**	**7 854**
UK (N. Ireland)	Hatchery adult	0	0	0	0	0
	Hatchery juvenile	10 240	0	60 336	0	70 576
	Wild adult	0	0	0	0	0
	Wild juvenile	0	0	0	0	0
	Total	**10 240**	**0**	**60 336**	**0**	**70 576**
UK (Scotland)	Hatchery adult	0	0	0	0	0
	Hatchery juvenile	0	0	34 116	0	34 116
	Wild adult	0	6	0	0	6
	Wild juvenile	0	0	0	10 360	10 360
	Total	**0**	**6**	**34 116**	**10 360**	**44 482**
Germany	Hatchery Adult	0	0	0	0	0
	Hatchery Juvenile	0	22 285	50 000	89	72 374
	Wild Adult	0	0	0	0	0
	Wild Juvenile	0	0	0	0	0
	Total	**0**	**22 285**	**50 000**	**89**	**72 374**
Greenland^	Hatchery adult	0	0	0	0	0
	Hatchery juvenile	0	0	0	0	0
	Wild adult	0	0	0	3	3
	Wild juvenile	0	0	0	0	0
	Total	**0**	**0**	**0**	**3**	**3**
US	Hatchery adult	0	70	0	2 035	2 105
	Hatchery juvenile	0	0	111 832	379	112 211
	Wild adult	0	0	5	0	5
	Wild juvenile	0	0	0	0	0
	Total	**0**	**70**	**111 837**	**2 414**	**114 321**
All countries	Hatchery adult	0	1 096	10	2 059	3 165
	Hatchery juvenile	254 677	22 285	774 483	22 277	1 073 722
	Wild adult	0	2 019	13	2 393	4 563
	Wild juvenile	6 681	18 230	22 821	34 166	81 898
	Total	**261 358**	**43 630**	**797 327**	**60 895**	**1 163 348**

* Includes Carlin, spaghetti, streamers, VIE, etc.
† Includes other internal tags (PIT, ultrasonic, radio, DST, etc.)
^ Individuals tagged in Greenland by the Atlantic Salmon Federation, details within Canada's tagging programme.

NASCO 1.4 Identify relevant data deficiencies, monitoring needs, and research requirements

This advice is generated from data provided for all salmon-producing jurisdictions throughout the North Atlantic, except for Denmark, Spain, Portugal, and the Inner Bay of Fundy. Time-series of sufficient duration are not available for these areas, but ICES continues to work to close these data gaps. The abundances of salmon in these areas are relatively small when compared to the total abundance in the North Atlantic area, and therefore these data gaps are not considered to have a material effect on the advice.

ICES recommends that WGNAS should meet in 2026 (chaired by Alan Walker, UK). Unless otherwise notified, the working group intends to convene 16-26 March 2026, location to be confirmed.

Recommendations

The following relevant data deficiencies, monitoring needs, and research requirements were identified:

North Atlantic

- An increase of management actions restricting fishing activity, including C&R, will require a shift towards a greater reliance on fishery-independent datasets and methods in the assessment of stock status. Methods for estimating stock abundance are changing in some cases to account for this evolution and use an array of best available information in statistical models suited to extrapolation to un-monitored areas based on the patterns seen across monitored areas from data-rich to data-poor areas. However, annual monitoring remains increasingly relevant in the context of responses of salmon populations to rapid changes in the ecosystem;
- An ICES data call submission was not received from the Faroe Islands. Equivalent data from the Faroe Islands were received via a national report to WGNAS. A submission was received from Portugal during the working group meeting but was too late to be included in the 2025 report. ICES recommends complete and timely reporting of catch statistics from all fisheries for all areas through the ICES data call process.

North American Commission

- Sampling of all aspects of the Labrador and SPM fishery across the fishing season will improve the information on biological characteristics and stock origin of Atlantic salmon caught in these mixed-stock fisheries. A sampling rate of at least 10% of catches across the fishery season would be required to achieve a relatively unbiased estimate;
- Additional monitoring in Labrador should be considered to estimate stock status for this region. Additionally, efforts should be undertaken to evaluate the utility of other available data sources (e.g. Indigenous and recreational catches and effort) to describe stock status in Labrador.

Northeast Atlantic Commission

- Data on catch numbers, exploitation rates and unreported catch rates were not available to ICES for the stock years 2021-2024 for any of the four Russian Federation stock units. ICES recommends that these be provided in 2026. The alternative is that ICES would discount the historical Russian Federation data from the models and catch advice, and not report on the status of stocks for the Russian Federation.
- No river-specific CLs have been established for the Russian Federation, Denmark, Germany, Portugal and Spain. Iceland has developed provisional CLs and continues to work towards finalising an assessment process for determining CL attainment. ICES recommends that all countries and jurisdictions establish river-specific CLs.

West Greenland Commission

- No recommendations specific to WGC are provided.

References

Cauchon, V., and April, J. 2025. Suivi des populations témoins de saumon atlantique au Québec : Rapport scientifique 2024. Ministère de l’Environnement, de la Lutte contre les changements climatiques, de la Faune et des Parcs. Direction principale de l’expertise sur la faune aquatique. 53 p.

ICES. 2003. Report of the Working Group on North Atlantic Salmon (WGNAS), 31 March–10 April 2003, Copenhagen, Denmark. ICES CM 2003/ACFM:19. 297 pp. https://doi.org/10.17895/ices.pub.5172

ICES. 2013. Report of the Working Group on North Atlantic Salmon (WGNAS), 3–12 April 2013, Copenhagen, Denmark. ICES CM 2013/ACOM:09. 379 pp. https://doi.org/10.17895/ices.pub.5173

ICES. 2023. Benchmark Workshop on Atlantic salmon in the North Atlantic (WKBSALMON). ICES Scientific Reports. 5:112. 85 pp. https://doi.org/10.17895/ices.pub.24752079

ICES. 2024a. Working Group on North Atlantic Salmon (WGNAS). ICES Scientific Reports. 6:36. 415 pp. https://doi.org/10.17895/ices.pub.25730247

ICES. 2024b. ICES Compilation of Microtags, Finclip and External Tag Releases 2023 by the Working Group on North Atlantic Salmon (WGNAS 2024 Addendum). ICES Scientific Reports. 6:36. 63 pp. http://doi.org/10.17895/ices.pub.25730247

ICES. 2024c. Salmon (*Salmo salar*) in the Northeast Atlantic. ICES Stock Annexes. 112 pp. http://doi.org/10.17895/ices.pub.25737180

ICES. 2025. Working Group on North Atlantic Salmon (WGNAS). ICES Scientific Reports. 7:44. 435 pp. https://doi.org/10.17895/ices.pub.28777226

Kennedy, R. J., Campbell, W., Gallagher, K., and Evans, D. 2020. River lamprey present an unusual predation threat to Atlantic salmon smolts in Lough Neagh, Northern Ireland. Journal of Fish Biology, 97, 1265– 1267. https://doi.org/10.1111/jfb.14477

MELCCFP- Ministère de l'Environnement, de la Lutte contre les changements climatiques, de la Faune et des Parcs du Québec. 2025. Exploitation du saumon au Québec : bilan 2024. Quebec Government. Direction principale de l'expertise sur la faune aquatique. 302 p. ISBN 978-2-555-00678-2

Millane, M., Donegan, A., Geoghegan, F., Kelly, S., Walsh, M., White, S., and Wilson, M. 2024. Report on investigations into wild Atlantic salmon mortalities in the lower Ballisodare catchment in late June to mid-July 2024. Inland Fisheries Ireland, 3044 Lake Drive, Citywest Business Campus, Dublin 24. 52 pp. https://www.fisheriesireland.ie/sites/default/files/2024-09/issued-report-on-investigations-into-wild-atlantic-salmon-mortalities-in-the-lower-ballisodare-catchment-in-late-june-to-mid-july-2024_0.pdf

NASCO. 1998. Agreement on Adoption of the Precautionary Approach. Report of the Fifteenth Annual Meeting of the Council, Edinburgh, UK, June 1998. CNL(98)46. https://nasco.int/resolutions-agreements-and-guidelines/

NASCO. 2025. Third Reporting Cycle (2019–2024). NASCO, Edinburgh, Scotland. https://nasco.int/conservation/third-reporting-cycle-2/

Terhaar, J., Burger, F.A., Vogt, L., Frölicher, T.L., and Stocker, T.F. 2025. Record sea surface temperature jump in 2023–2024 unlikely but not unexpected. Nature 12 March 2025. https://doi.org/10.1038/s41586-025-08674-z

Timmermans, M.-L., and Labe, Z.M. 2024. Sea Surface Temperature. Arctic Report Card 2024. NOAA Technical Report OAR ARC ; 24-07. https://doi.org/10.25923/9z96-aq19

Recommended citation: ICES. 2025. North Atlantic salmon (*Salmo salar*) stocks. *In* Report of the ICES Advisory Committee, 2025. ICES Advice 2025, sal.oth.all. https://doi.org/10.17895/ices.advice.28342943

Annex 1 Tables

Table A1.1 North Atlantic salmon stocks. Total nominal catch of Atlantic salmon by country/jurisdiction@ (in tonnes, round fresh weight), 1960–2024 (2024 data are provisional).

Year	NAC area			NEAC–N (Northern area)								NEAC–S (Southern area)						Faroes & Greenland				Total catch	
	CA *	USA	SPM	NO **	RU ***	IS Wild	IS Ranched^	SE Wild	SE Ranched ^^	DK*^	FI	IE ^^^ $	UK E/W	UK NI $ $$	UK SO	FR $$$	ES #	FO ##	East GL	West GL ###	Other £	Nominal	Unreported catch £ £
1960	1636	1	-	1659	1100	100	-	40	0	-	-	743	283	139	1443	-	33	-	-	60	-	7237	-
1961	1583	1	-	1533	790	127	-	27	0	-	-	707	232	132	1185	-	20	-	-	127	-	6464	-
1962	1719	1	-	1935	710	125	-	45	0	-	-	1459	318	356	1738	-	23	-	-	244	-	8673	-
1963	1861	1	-	1786	480	145	-	23	0	-	-	1458	325	306	1725	-	28	-	-	466	-	8604	-
1964	2069	1	-	2147	590	135	-	36	0	-	-	1617	307	377	1907	-	34	-	-	1539	-	10759	-
1965	2116	1	-	2000	590	133	-	40	0	-	-	1457	320	281	1593	-	42	-	-	861	-	9434	-
1966	2369	1	-	1791	570	104	2	36	0	-	-	1238	387	287	1595	-	42	-	-	1370	-	9792	-
1967	2863	1	-	1980	883	144	2	25	0	-	-	1463	420	449	2117	-	43	-	-	1601	-	11991	-
1968	2111	1	-	1514	827	161	1	20	0	-	-	1413	282	312	1578	-	38	5	-	1127	403	9793	-
1969	2202	1	-	1383	360	131	2	22	0	-	-	1730	377	267	1955	-	54	7	-	2210	893	11594	-
1970	2323	1	-	1171	448	182	13	20	0	-	-	1787	527	297	1392	-	45	12	-	2146	922	11286	-
1971	1992	1	-	1207	417	196	8	17	1	-	-	1639	426	234	1421	-	16	-	-	2689	471	10735	-
1972	1759	1	-	1578	462	245	5	17	1	-	32	1804	442	210	1727	34	40	9	-	2113	486	10965	-
1973	2434	3	-	1726	772	148	8	22	1	-	50	1930	450	182	2006	12	24	28	-	2341	533	12670	-
1974	2539	1	-	1633	709	215	10	31	1	-	76	2128	383	184	1628	13	16	20	-	1917	373	11877	-
1975	2485	2	-	1537	811	145	21	26	0	-	76	2216	447	164	1621	25	27	28	-	2030	475	12136	-
1976	2506	1	3	1530	542	216	9	20	0	-	66	1561	208	113	1019	9	21	40	<1	1175	289	9327	-
1977	2545	2	-	1488	497	123	7	9	1	-	59	1372	345	110	1160	19	19	40	6	1420	192	9414	-
1978	1545	4	-	1050	476	285	6	10	0	-	37	1230	349	148	1323	20	32	37	8	984	138	7682	-
1979	1287	3	-	1831	455	219	6	11	1	-	26	1097	261	99	1076	10	29	119	<05	1395	193	8118	-
1980	2680	6	-	1830	664	241	8	16	1	-	34	947	360	122	1134	30	47	536	<05	1194	277	10127	-
1981	2437	6	-	1656	463	147	16	25	1	-	44	685	493	101	1233	20	25	1025	<05	1264	313	9954	-
1982	1798	6	-	1348	364	130	17	24	1	-	54	993	286	132	1092	20	10	606	<05	1077	437	8395	-
1983	1424	1	3	1550	507	166	32	27	1	-	58	1656	429	187	1221	16	23	678	<05	310	466	8755	-
1984	1112	2	3	1623	593	139	20	39	1	-	46	829	345	78	1013	25	18	628	<05	297	101	6912	-
1985	1133	2	3	1561	659	162	55	44	1	-	49	1595	361	98	913	22	13	566	7	864	-	8108	-
1986	1559	2	3	1598	608	232	59	52	2	-	37	1730	430	109	1271	28	27	530	19	960	-	9255	315
1987	1784	1	2	1385	564	181	40	43	4	-	49	1239	302	56	922	27	18	576	<05	966	-	8159	2788
1988	1310	1	2	1076	420	217	180	36	4	-	36	1874	395	114	882	32	18	243	4	893	-	7737	3248
1989	1139	2	2	905	364	141	136	25	4	-	52	1079	296	142	895	14	7	364	-	337	-	5904	2277
1990	911	2	2	930	313	141	285	27	6	13	60	567	338	94	624	15	7	315	-	274	-	4925	1890
1991	711	1	1	876	215	129	346	34	4	3	70	404	200	55	462	13	11	95	4	472	-	4106	1682
1992	522	1	2	867	167	174	462	46	3	10	77	630	171	91	600	20	11	23	5	237	-	4119	1962
1993	373	1	3	923	139	157	499	44	12	9	70	541	248	83	547	16	8	23	-	-	-	3696	1644
1994	355	0	3	996	141	136	313	37	7	6	49	804	324	91	649	18	10	6	-	-	-	3945	1276
1995	260	0	1	839	128	146	303	28	9	3	48	790	295	83	588	10	9	5	2	83	-	3629	1060

Year	NAC area			NEAC–N (Northern area)								NEAC–S (Southern area)						Faroes & Greenland				Total catch	
	CA *	USA	SPM	NO **	RU ***	IS		SE		DK*^	FI	IE ^^^ $	UK E/W	UK NI $ $$	UK SO	FR $$$	ES #	FO ##	East GL	West GL ###	Other £	Nominal	Unreported catch ££
						Wild	Ranched^	Wild	Ranched ^^														
1996	292	0	2	787	131	118	243	26	7	2	44	685	183	77	427	13	7	-	0	92	-	3136	1123
1997	229	0	2	630	111	97	59	15	4	1	45	570	142	93	296	8	4	-	1	58	-	2364	827
1998	157	0	2	740	131	119	46	10	5	1	48	624	123	78	283	8	4	6	0	11	-	2395	1210
1999	152	0	2	811	103	111	35	11	5	1	62	515	150	53	199	11	6	0	0	19	-	2247	1032
2000	153	0	2	1176	124	73	11	24	9	5	95	621	219	78	274	11	7	8	0	21	-	2912	1269
2001	148	0	2	1267	114	74	14	25	7	6	126	730	184	53	251	11	13	0	0	43	-	3069	1180
2002	148	0	2	1019	118	90	7	20	8	5	93	682	161	81	191	11	9	0	0	9	-	2654	1039
2003	141	0	3	1071	107	99	11	15	10	4	78	551	89	56	192	13	9	0	0	9	-	2457	847
2004	161	0	3	784	82	111	18	13	7	4	39	489	111	48	245	19	7	0	0	15	-	2157	686
2005	139	0	3	888	82	129	21	9	6	8	47	422	97	52	215	11	13	0	0	15	-	2155	700
2006	137	0	3	932	91	93	17	8	6	2	67	326	80	29	192	13	11	0	0	22	-	2028	670
2007	112	0	2	767	63	93	36	6	10	3	58	85	67	30	171	11	9	0	0	25	-	1548	475
2008	158	0	4	807	73	132	69	8	10	9	71	89	64	21	161	12	9	0	0	26	-	1721	443
2009	126	0	3	595	71	126	44	7	10	8	36	68	54	16	121	4	2	0	0.8	26	-	1318	343
2010	153	0	3	642	88	147	42	9	13	13	49	99	109	12	180	10	2	0	1.7	38	-	1610	393
2011	179	0	4	696	89	98	30	20	19	13	44	87	136	10	159	11	7	0	0.1	27	-	1629	421
2012	126	0	3	696	82	50	20	21	9	12	64	88	58	9	124	10	7	0	0.5	33	-	1412	403
2013	138		5	475	78	116	31	10	4	11	46	87	84	4	119	11	4	0	0	47	-	1269	306
2014	118		4	490	81	50	18	24	6	9	58	56	54	5	84	12	6	0	<0.5	58	-	1133	287
2015	140		4	583	80	94	31	11	7	9	45	63	68	3	68	16	5	0	1	56	-	1284	326
2016	135		5	612	56	71	34	6	3	9	51	58	86	5	27	6	5	0	2	26	-	1196	335
2017	110		3	667	47	66	24	9	10	12	32	59	49	5	27	10	2	0	<0.5	28	-	1159	353
2018	79		1	594	80	60	22	12	4	11	24	46	42	4	19	10	3	0	1	39	-	1052	312
2019	100		1	513	57	37	14	13	8	13	21	45	5	2	13	15	5	0	1	28	-	889	259
2020	103		2	527	49	42	28	7	7	9	16	46	3	2	14	8	5	0	1	31	-	899	275
2021	98		2	295	49%	41	16	6	5	2	1	51	1	2	7	7	4	0	1	42	-	627	164
2022	90		1	389	55%	37	20	7	2		1	40	1	1	6	7	3	0	1	30	-	691	201
2023	82		1	297	52%	30	13	6	4		1	32	1	1	5	5	1	0	1	33	-	566	149
2024	67		2	168		31	15	4	4	4	1	37	1	1	5	3	2	0	1	20	-	364	101
2019-2023	95		1	404	52	37	18	8	5	8	8	43	2	2	9	8	3	0	1	33	-	735	212
2014-2023	105		2	497	61	53	22	10	5	9	25	50	31	3	27	9	4	0	1	37	-	950	267

@ Country/Jurisdiction codes: CA (Canada), US (United States of America), SPM (Saint Pierre and Miquelon), NO (Norway), RU (Russian Federation), IS (Iceland), SE (Sweden), DK (Denmark), FI (Finland), IE (Ireland), UK E/W (United Kingdom England & Wales), UK NI (Northern Ireland), UK SO (Scotland), FR (France), ES (Spain), FO (Faroes), GL (Greenland).
* Includes estimates of some local sales and, prior to 1984, bycatch.
** Before 1966, sea trout and sea charr included (5% of total).
*** Figures from 1991 to 2001 do not include catches taken in the recreational (rod) fishery; 2021, 2022, and 2023 data extracted from NASCO website (NASCO, 2025). No data available to the Working Group in 2024; totals therefore do not include Russian catch in most recent year.
^ From 1990, catch includes fish ranched for both commercial and angling purposes.

[^^] Catches from hatchery-reared smolts released under programmes to mitigate for hydropower development.
[^^^] Improved reporting of rod catches in 1994 and data derived from carcase tagging and logbooks from 2002.
[$] Catch on River Foyle allocated 50% to Ireland and 50% to Northern Ireland.
[$$] Angling catch (derived from carcase tagging and logbooks) first included in 2002.
[$$$] Data for France include some unreported catches.
[#] Spanish data until 2018 (inclusive), weights estimated from mean weight of fish caught in Asturias (80–90% of Spanish catch); weight for 2019 and 2020 for all Spain, supplied via data call.
[##] Between 1991 and 1999, there was only a research fishery at Faroes. In 1997 and 1999, no fishery took place; the commercial fishery was resumed in 2000, but has not operated since 2001.
[###] Includes catches made in the West Greenland area by Norway, Faroes, Sweden, and Denmark in 1965–1975.
[£] Includes catches in Norwegian Sea by vessels from Denmark, Sweden, Germany, Norway, and Finland.
[££] No unreported catch estimate available for Canada in 2007 and 2008. Data for Canada in 2009, 2010, and 2019 are incomplete. No unreported catch estimates available for Russian Federation since 2008.
[%] Russian Federation data extracted from NASCO website (NASCO, 2025).
[*^] Catch weight data not provided by Denmark for 2022 nor 2023.

Table A1.2 North Atlantic salmon stocks. Nominal catches (tonnes, round fresh weight) and % of the reported catches by country taken in coastal, estuarine, and in-river fisheries, 2000–2024. Data for 2024 include provisional data.

Country	Year	Coastal		Estuarine		In-river		Total
		Weight (t)	% of total	Weight (t)	% of total	Weight (t)	% of total	Weight (t)
Canada	2000	2	2	29	19	117	79	148
	2001	3	2	28	20	112	78	143
	2002	4	2	30	20	114	77	148
	2003	5	3	36	27	96	70	137
	2004	7	4	46	29	109	67	161
	2005	7	5	44	32	88	63	139
	2006	8	6	46	34	83	60	137
	2007	6	5	36	32	70	63	112
	2008	9	6	47	32	92	62	147
	2009	7	6	40	33	73	61	119
	2010	6	4	40	27	100	69	146
	2011	7	4	56	31	115	65	178
	2012	8	6	46	36	73	57	127
	2013	8	6	49	36	80	58	137
	2014	7	6	28	24	83	71	118
	2015	8	6	35	25	97	69	140
	2016	8	6	34	25	93	69	135
	2017	7	6	35	32	68	62	110
	2018	7	9	35	45	36	46	79
	2019	6	6	40	40	54	54	100
	2020	8	7	45	44	50	49	103
	2021	7	8	40	41	50	51	98
	2022	7	8	42	46	41	46	90
	2023	8	9	43	52	32	39	82
	2024	6	10	38	56	23	34	67
Denmark*^	2008	0	1	0	0	9	99	9
	2009	0	0	0	0	8	100	8
	2010	0	1	0	0	13	99	13
	2011	0	0	0	0	13	100	13
	2012	0	0	0	0	12	100	12
	2013	0	0	0	0	11	100	11
	2014	0	0	0	0	9	100	9
	2015	0	0	0	0	9	100	9
	2016	0	0	0	0	10	100	10
	2017	0	1	0	0	12	99	12
	2018	0	1	0	0	11	99	11
	2019	0	1	0	0	13	99	13
	2020	0	0	0	0	9	100	9
	2021	0	0	0	0	2	100	2
	2022							0

Country	Year	Coastal		Estuarine		In-river		Total
		Weight (t)	% of total	Weight (t)	% of total	Weight (t)	% of total	Weight (t)
	2023							0
	2024	0	0	0	0	4	100	4
Finland	1996	0	0	0	0	44	100	44
	1997	0	0	0	0	45	100	45
	1998	0	0	0	0	48	100	48
	1999	0	0	0	0	63	100	63
	2000	0	0	0	0	96	100	96
	2001	0	0	0	0	126	100	126
	2002	0	0	0	0	94	100	94
	2003	0	0	0	0	75	100	75
	2004	0	0	0	0	39	100	39
	2005	0	0	0	0	47	100	47
	2006	0	0	0	0	67	100	67
	2007	0	0	0	0	59	100	59
	2008	0	0	0	0	71	100	71
	2009	0	0	0	0	38	100	38
	2010	0	0	0	0	49	100	49
	2011	0	0	0	0	44	100	44
	2012	0	0	0	0	64	100	64
	2013	0	0	0	0	46	100	46
	2014	0	0	0	0	58	100	58
	2015	0	0	0	0	45	100	45
	2016	0	0	0	0	51	100	51
	2017	0	0	0	0	32	100	32
	2018	0	0	0	0	24	100	24
	2019	0	0	0	0	21	100	21
	2020	0	0	0	0	16	100	16
	2021	0	0	0	0	1	100	1
	2022	0	0	0	0	1	100	1
	2023	0	0	0	0	1	100	1
	2024	0	0	0	0	1	100	1
France*^	1996			4	31	9	69	13
	1997			3	38	5	62	8
	1998	1	12	2	25	5	62	8
	1999	0	0	4	35	7	65	11
	2000	0	4	4	35	7	61	11
	2001	0	4	5	44	6	53	11
	2002	2	14	4	30	6	56	12
	2003	0	0	6	44	7	56	13
	2004	0	0	10	51	9	49	19
	2005	0	0	4	38	7	62	11
	2006	0	0	5	41	8	59	13

Country	Year	Coastal		Estuarine		In-river		Total
		Weight (t)	% of total	Weight (t)	% of total	Weight (t)	% of total	Weight (t)
	2007	0	0	4	42	6	58	11
	2008	1	5	5	39	7	57	12
	2009	0	4	2	34	3	62	5
	2010	2	22	2	26	5	52	10
	2011	0	3	6	54	5	43	11
	2012	0	1	4	44	5	55	10
	2013	0	3	4	40	6	57	11
	2014	0	2	5	43	7	55	12
	2015	4	23	5	32	7	45	16
	2016	0	2	3	45	3	52	6
	2017	0	5	3	36	6	59	10
	2018	0	0	5	47	6	53	11
	2019	0	2	8	54	6	44	15
	2020	0	2	4	48	4	50	8
	2021	0	1	3	38	4	61	7
	2022	0	0	3	47	4	53	7
	2023	0	1	3	63	2	37	5
	2024	0	0	2	67	1	33	3
Germany	2023	0	0	0	0	<1	100	0
	2024	<1	55	0	0	<1	45	0
Iceland^^^	1996	10	9	0	0	111	91	122
	1997	0	0	0	0	156	100	156
	1998	0	0	0	0	164	100	164
	1999	0	0	0	0	146	100	146
	2000	0	0	0	0	85	100	85
	2001	0	0	0	0	88	100	88
	2002	0	0	0	0	97	100	97
	2003	0	0	0	0	110	100	110
	2004	0	0	0	0	130	100	130
	2005	0	0	0	0	149	100	149
	2006	0	0	0	0	111	100	111
	2007	0	0	0	0	129	100	129
	2008	0	0	0	0	200	100	200
	2009	0	0	0	0	171	100	171
	2010	0	0	0	0	190	100	190
	2011	0	0	0	0	128	100	128
	2012	0	0	0	0	70	100	70
	2013	0	0	0	0	146	100	146
	2014	0	0	0	0	68	100	68
	2015	0	0	0	0	125	100	125
	2016	0	0	0	0	105	100	105
	2017	0	0	0	0	90	100	90

Country	Year	Coastal		Estuarine		In-river		Total
		Weight (t)	% of total	Weight (t)	% of total	Weight (t)	% of total	Weight (t)
	2018	0	0	0	0	82	100	82
	2019	0	0	0	0	51	100	51
	2020	0	0	0	0	70	100	70
	2021	0	0	0	0	44	100	44
	2022	0	0	0	0	57	100	57
	2023	0	0	0	0	43	100	43
	2024	0	0	0	0	46	100	46
Ireland	1996	440	64	134	20	110	16	684
	1997	380	67	100	18	91	16	571
	1998	433	69	92	15	99	16	624
	1999	335	65	83	16	97	19	515
	2000	440	71	79	13	102	16	621
	2001	551	75	109	15	70	10	730
	2002	514	75	89	13	79	12	682
	2003	403	73	92	17	56	10	551
	2004	342	70	76	16	71	15	489
	2005	291	69	70	17	60	14	421
	2006	206	63	60	18	61	19	327
	2007	0	0	31	37	52	63	83
	2008	0	0	29	33	60	67	89
	2009	0	0	21	31	47	69	68
	2010	0	0	38	39	60	61	98
	2011	0	0	32	37	55	63	87
	2012	0	0	28	32	60	68	88
	2013	0	0	38	44	49	56	87
	2014	0	0	26	46	31	54	57
	2015	0	0	21	33	42	67	63
	2016	0	0	19	33	39	67	58
	2017	0	0	18	31	41	69	59
	2018	0	0	15	33	31	67	46
	2019	0	0	15	35	29	65	45
	2020	0	0	17	36	29	64	46
	2021	0	0	17	35	33	65	51
	2022	0	0	11	28	29	72	40
	2023	0	0	11	34	21	66	32
	2024	0	0	12	32	25	68	37
Norway	1996	520	66	0	0	267	34	787
	1997	394	63	0	0	235	37	629
	1998	410	55	0	0	331	45	741
	1999	483	60	0	0	327	40	810
	2000	619	53	0	0	557	47	1176
	2001	696	55	0	0	570	45	1266

Country	Year	Coastal		Estuarine		In-river		Total
		Weight (t)	% of total	Weight (t)	% of total	Weight (t)	% of total	Weight (t)
	2002	596	58	0	0	423	42	1019
	2003	597	56	0	0	474	44	1071
	2004	469	60	0	0	316	40	785
	2005	463	52	0	0	424	48	888
	2006	512	55	0	0	420	45	932
	2007	427	56	0	0	340	44	767
	2008	382	47	0	0	425	53	807
	2009	284	48	0	0	312	52	595
	2010	260	41	0	0	382	59	642
	2011	302	43	0	0	394	57	696
	2012	255	37	0	0	440	63	696
	2013	192	40	0	0	283	60	475
	2014	213	43	0	0	277	57	490
	2015	233	40	0	0	350	60	583
	2016	269	44	0	0	343	56	612
	2017	290	44	0	0	376	56	666
	2018	323	54	0	0	271	46	594
	2019	219	43	0	0	293	57	513
	2020	215	41	0	0	312	59	527
	2021	98	33	0	0	197	67	295
	2022	134	34	0	0	256	66	389
	2023	113	38	0	0	185	62	297
	2024	75	45	0	0	92	55	168
Russian Federation$	1996	64	49	21	16	46	35	130
	1997	63	57	17	15	32	28	111
	1998	55	42	2	2	74	56	131
	1999	48	47	2	2	52	51	102
	2000	64	52	15	12	45	36	124
	2001	70	61	0	0	44	39	114
	2002	60	51	0	0	58	49	118
	2003	57	53	0	0	50	47	107
	2004	46	56	0	0	36	44	82
	2005	58	70	0	0	24	30	82
	2006	52	57	0	0	39	43	91
	2007	31	50	0	0	31	50	62
	2008	33	45	0	0	40	55	73
	2009	22	31	0	0	49	69	71
	2010	36	41	0	0	52	59	88
	2011	37	42	0	0	52	58	89
	2012	38	46	0	0	44	54	82
	2013	36	46	0	0	42	54	78
	2014	33	41	0	0	48	59	81

Country	Year	Coastal		Estuarine		In-river		Total
		Weight (t)	% of total	Weight (t)	% of total	Weight (t)	% of total	Weight (t)
	2015	34	42	0	0	46	58	80
	2016	24	42	0	0	32	58	56
	2017	13	28	0	0	34	72	47
	2018	36	45	0	0	44	55	80
	2019	22	38	0	0	35	62	57
	2020	16	34	0	0	32	66	49
	2021	17	35	0	0	32	65	49
	2022	19	35	0	0	36	65	55
	2023	17	32	0	0	35	68	52
Spain^^	1996	0	0	0	0	7	100	7
	1997	0	0	0	0	4	100	4
	1998	0	0	0	0	4	100	4
	1999	0	0	0	0	6	100	6
	2000	0	0	0	0	7	100	7
	2001	0	0	0	0	13	100	13
	2002	0	0	0	0	9	100	9
	2003	0	0	0	0	7	100	7
	2004	0	0	0	0	7	100	7
	2005	0	0	0	0	13	100	13
	2006	0	0	0	0	10	100	10
	2007	0	0	0	0	9	100	9
	2008	0	0	0	0	9	100	9
	2009	0	0	0	0	2	100	2
	2010	0	0	0	0	2	100	2
	2011	0	0	0	0	7	100	7
	2012	0	0	0	0	7	100	7
	2013	0	0	0	0	5	100	5
	2014	0	0	0	0	6	100	6
	2015	0	0	0	0	5	100	5
	2016	0	0	0	0	5	100	5
	2017	0	0	0	0	2	100	2
	2018	0	0	0	0	3	100	3
	2019	0	0	0	0	5	100	5
	2020	0	0	0	3	5	97	5
	2021	0	0	0	1	4	99	4
	2022	0	0	0	0	3	100	3
	2023	0	0	0	0	1	100	1
	2024	0	0	0	0	0	100	2
Sweden***	1996	19	58	0	0	14	42	33
	1997	10	56	0	0	8	44	18
	1998	5	33	0	0	10	67	15
	1999	5	31	0	0	11	69	16

Country	Year	Coastal		Estuarine		In-river		Total
		Weight (t)	% of total	Weight (t)	% of total	Weight (t)	% of total	Weight (t)
	2000	10	30	0	0	23	70	33
	2001	9	27	0	0	24	73	33
	2002	7	25	0	0	21	75	28
	2003	7	28	0	0	18	72	25
	2004	3	16	0	0	16	84	19
	2005	1	7	0	0	14	93	15
	2006	1	7	0	0	13	93	14
	2007	0	1	0	0	16	99	16
	2008	0	1	0	0	18	99	18
	2009	0	3	0	0	17	97	17
	2010	0	0	0	0	22	100	22
	2011	10	26	0	0	29	74	39
	2012	7	24	0	0	23	76	30
	2013	0	0	0	0	15	100	15
	2014	0	0	0	0	30	100	30
	2015	0	0	0	0	17	100	17
	2016	0	0	0	0	9	100	9
	2017	0	0	0	0	18	100	18
	2018	0	0	0	0	17	100	17
	2019	0	0	0	0	20	100	20
	2020	0	0	0	0	14	100	14
	2021	0	0	0	0	11	100	11
	2022	0	0	0	0	8	100	8
	2023	0	0	0	0	10	100	10
	2024	0	0	0	0	8	100	8
UK (England & Wales)	1996	83	45	42	23	58	31	183
	1997	81	57	27	19	35	24	142
	1998	65	53	19	16	38	31	123
	1999	101	67	23	15	26	17	150
	2000	157	72	25	12	37	17	219
	2001	129	70	24	13	31	17	184
	2002	108	67	24	15	29	18	161
	2003	42	47	27	30	20	23	89
	2004	39	35	19	17	53	47	111
	2005	32	33	28	29	36	37	97
	2006	30	37	21	26	30	37	80
	2007	24	36	13	20	30	44	67
	2008	22	34	8	13	34	53	64
	2009	20	37	9	16	25	47	54
	2010	64	59	9	8	36	33	109
	2011	93	69	6	5	36	27	136
	2012	26	45	5	8	27	47	58

Country	Year	Coastal		Estuarine		In-river		Total
		Weight (t)	% of total	Weight (t)	% of total	Weight (t)	% of total	Weight (t)
	2013	61	73	6	7	17	20	84
	2014	41	75	4	8	9	17	54
	2015	55	82	4	6	8	12	68
	2016	71	82	6	6	10	11	86
	2017	36	73	3	7	10	19	49
	2018	36	84	3	8	4	8	42
	2019	0	0	1	12	4	88	5
	2020	0	0	0	0	3	100	3
	2021	0	0	0	0	1	100	1
	2022	0	0	0	0	1	100	1
	2023	0	0	0	0	1	100	1
	2024	0	0	0	1	1	99	1
UK (Northern Ireland)**	1999	44	83	9	17			53
	2000	63	82	14	18			77
	2001	41	77	12	23			53
	2002	40	49	24	29	18	22	81
	2003	25	45	20	35	11	20	56
	2004	23	48	11	22	14	29	48
	2005	25	49	13	25	14	26	52
	2006	13	45	6	22	9	32	28
	2007	6	21	6	20	17	59	30
	2008	4	19	4	22	12	59	21
	2009	4	24	2	15	10	62	16
	2010	5	39	0	0	7	61	12
	2011	2	24	0	0	8	76	10
	2012	0	0	0	0	9	100	9
	2013	0	1	0	0	4	99	4
	2014	0	0	0	0	5	100	5
	2015	0	0	0	0	3	100	3
	2016	0	0	0	0	4	100	4
	2017	0	0	0	0	5	100	5
	2018	0	0	0	0	4	100	4
	2019	0	0	0	0	2	100	2
	2020	0	0	0	0	2	100	2
	2021	0	0	0	0	2	100	2
	2022	0	0	0	0	1	100	1
	2023	0	0	0	0	1	100	1
	2024	0	0	0	0	1	100	1
UK (Scotland)	1996	129	30	80	19	218	51	427
	1997	79	27	33	11	184	62	296
	1998	60	21	28	10	195	69	283
	1999	35	18	23	11	141	71	199

Country	Year	Coastal		Estuarine		In-river		Total
		Weight (t)	% of total	Weight (t)	% of total	Weight (t)	% of total	Weight (t)
	2000	76	28	41	15	157	57	274
	2001	77	30	22	9	153	61	251
	2002	55	29	20	10	116	61	191
	2003	86	45	23	12	83	43	193
	2004	67	27	20	8	160	65	247
	2005	62	29	27	12	128	59	217
	2006	57	30	17	9	119	62	193
	2007	40	24	17	10	113	66	171
	2008	38	24	11	7	112	70	161
	2009	27	22	14	12	79	66	121
	2010	44	25	38	21	98	54	180
	2011	48	30	23	15	87	55	159
	2012	40	32	11	9	73	59	124
	2013	50	42	26	22	43	36	119
	2014	41	49	17	20	26	31	84
	2015	31	45	9	14	28	41	68
	2016	0	0	10	37	17	63	27
	2017	0	0	7	27	19	73	26
	2018	0	0	12	63	7	37	19
	2019	0	0	2	13	11	87	13
	2020	0	0	3	19	11	81	14
	2021	0	0	2	30	5	70	7
	2022	0	0	2	30	4	70	6
	2023	0	0	1	24	4	76	5
	2024	0	0	2	34	3	66	5

* An illegal net fishery operated from 1995 to 1998, catch unknown in the first three years but thought to be increasing. Fishery ceased in 1999. 2001–2002 catches from the illegal coastal net fishery in Lower Normandy are unknown.
** Rod catch data for river (rod) fisheries in UK (N. Ireland) from 2002.
*** Estuarine catch included in coastal catch.
^ Coastal catch included in estuarine catch.
^^ Spain catch to 2018 was Asturias catch raised, 2019 data for all Spain.
^^^ Iceland total catch includes ranched fish.
$ 2021, 2022, and 2023 data extracted from NASCO website (NASCO, 2025). No data available to ICES in 2024
*^ Catch weight data not provided by Denmark for 2022 nor 2023.

Table A1.3 North Atlantic salmon stocks. Estimates for 2024 of unreported catches by various methods, in tonnes by country/jurisdiction in the North East Atlantic, North American, and West Greenland commissions of NASCO.

Commission area	Country/Jurisdiction	Unreported catch (tonnes)	Unreported as % of total North Atlantic catch (unreported + nominal)	Unreported as % of total country/jurisdiction catch (unreported + nominal)
NEAC	Finland	0	0.0	12
NEAC	Iceland	1	0.1	2
NEAC	Ireland	4	0.9	9
NEAC	Norway	72	15.4	30
NEAC	Sweden	1	0.2	9
NEAC	UK (England & Wales)	0	0.0	9
NEAC	UK (N. Ireland)	0	0.0	19
NEAC	UK (Scotland)	<1	0.1	9
NAC	Canada	13	2.8	16
WGC	Greenland	10	2.1	33
Total unreported catch *		101	22	
Total nominal catch of North Atlantic salmon		364		

* No unreported catch estimates are available for France, Spain, St. Pierre and Miquelon, or the Russian Federation in 2024.

Table A1.4 North Atlantic salmon stocks. Numbers of fish caught and released (C&R) in angling fisheries along with the % of the total angling catch (released + retained) for countries in the North Atlantic where records are available, 1991–2024. Data for 2024 are provisional.

Year	Canada $		US		Iceland		Russia *		UK (E and W)		UK (Scotland)		Ireland		France		UK (N. Ireland) **		Denmark		Sweden		Norway ***		Total C&R
	% rod catch	C&R total	% rod catch	C&R total	% rod catch	C&R total	% rod catch	C&R total	% rod catch	C&R total	% rod catch	C&R total	% rod catch	C&R total	% rod catch	C&R total	% rod catch	C&R total	% rod catch	C&R total	% rod catch	C&R total	% rod catch	C&R total	
1991	28	2216	50	239			51	3211																	2561
1992	29	3780	67	407			73	1012																	4833
1993	36	4480	77	507			82	1124	10	1448															5800
1994	43	5288	95	249			83	1205	13	3227	8	6595													7501
1995	46	4602	100	370			84	1190	20	3189	14	1215													7364
1996	41	5216	100	542	2	669	73	1074	20	3428	15	1041													7729
1997	50	5000	100	333	5	1558	87	1482	24	3132	18	1094													7924
1998	53	5628	100	273	7	2826	81	1277	30	4378	18	1346													8718
1999	50	4872	100	211	10	3055	77	1145	42	4382	28	1484													7961
2000	56	6448		0	11	2918	74	1291	42	7470	32	2107													1059
2001	55	5938		0	12	3611	76	1694	43	6143	38	2772													1101
2002	52	5092		0	18	5985	80	2524	50	7658	41	2405													1078
2003	55	5364		0	16	5361	81	3386	56	6425	55	2917													1231
2004	57	6231		0	16	7362	76	2467	48	1321	50	4627							19	255					1467
2005	62	6300		0	17	9224	87	2359	56	1198	55	4616	12	2553					27	606					1479
2006	62	6048	100	1	19	8735	82	3338	56	1095	55	4766	22	5409	18	302			65	794					1590
2007	58	4119	100	3	18	9691	90	4434	55	1091	61	5567	44	1511	16	470			57	959					1686
2008	53	5488	100	61	20	1717	86	4188	55	1303	62	5336	38	1356	20	648			71	2033			5	5512	1849
2009	59	5215			24	1751			58	9096	67	4843	39	1142	21	847			53	1709			6	6696	1303
2010	53	5589			29	2147	56	1458	60	1501	70	7845	40	1514	25	823			60	2512			12	1504	1974
2011	57	7135			32	1859			62	1440	73	6533	38	1268	36	1197			55	2153	5	424	12	1430	1818
2012	57	4328			28	9752	43	4743	65	1195	74	6362	35	1189	59	5014			55	2153	6	404	14	1861	1616
2013	59	5063			34	2313	39	3732	70	1045	80	5400	37	1068	64	1507			57	1932	9	274	15	1595	1491
2014	54	4161			40	1361	52	8479	78	7992	82	3735	37	6537	50	1065			61	1918	15	982	19	2028	1262
2015	64	6544			31	2191	50	7028	79	8113	84	4683	37	9383	100	111			70	2989	16	690	19	2543	1660

Year	Canada [$]		US		Iceland		Russia [*]		UK (E and W)		UK (Scotland)		Ireland		France		UK (N. Ireland) [**]		Denmark		Sweden		Norway [***]		Total C&R
	% rod catch	C&R total	% rod catch	C&R total	% rod catch	C&R total	% rod catch	C&R total	% rod catch	C&R total	% rod catch	C&R total	% rod catch	C&R total	% rod catch	C&R total	% rod catch	C&R total	% rod catch	C&R total	% rod catch	C&R total	% rod catch	C&R total	
2016	65	6892			43	2275	76	1079	80	9700	90	5018	43	1093	100	280			72	3801	17	362	21	2519	1801
2017	66	5735			42	1966	77	1011	83	1125	90	4565	45	1256	100	126			69	4435	15	680	20	2592	1681
2018	82	5601			43	1940	73	1079	88	6857	93	3506	43	9249	49	3247			79	4613	18	806	22	2202	1486
2019	72	6063			52	1518			89	8171	91	4382	48	9790	85	5000			70	3913	15	747	20	2117	1532
2020	72	5661			51	2127	65	9508	93	1189	92	4285	53	1217	89	7333	8	72	67	4375	16	587	23	2875	1741
2021	75	6705			54	1873	71	1072	95	5534	95	3485	54	1427	89	5132	4	43	70	4016	21	680	27	2135	1636
2022	76	5212			53	2302	64	1032	96	6110	96	4157	56	1362	86	3578	1	10	73	4344	28	730	28	2718	1596
2023	78	4279			63	2056	70	1098	95	4929	96	3189	58	1068	86	1771	4	18	69	3015	29	941	27	1887	1259
2024	79	30776			70	30268			96	5678	98	45882	53	10375	92	3540	8	20	78	2932	34	1001	33	14769	145241
Average [$$]	75	55846			55	19759	68	10387	94	7327	94	39000	54	12109	87	4563	4	36	70	3933	22	737	25	23471	157409
% change [$$$]	4	-45			15	53			2	-23	4	18	-1	-14	5	-22	4	-44	8	-25	12	36	8	-37	-8

[*] Since 2009, data have been either unavailable or incomplete; however, catch and release is understood to have remained at similar high levels as before. Data extracted from NASCO website (NASC0, 2025)
[**] UK (Northern Ireland) Data for 2006–2009. 2014 is for the DCAL area only; the figures from 2010 are a total for UK (Northern Ireland). Data for 2015, 2016, and 2017 are for River Bush only.
[***] The statistics were collected on a voluntary basis; the numbers reported must be viewed as a minimum.
[$] The numbers of released fish in the kelt fishery of New Brunswick are not included in the totals for Canada.
[$$]The average value (2019–2023).
[$$$]% change in 2024 from them 2019-2023 average.

Annex 2 Glossary

1SW *one-sea-winter*; maiden adult Atlantic salmon that has spent one winter at sea.

2SW *two-sea-winter*; maiden adult Atlantic salmon that has spent two winters at sea.

CL(s) *conservation limit(s)*, **i.e. S_{lim}**; *d*emarcation of undesirable stock levels or levels of fishing activity; the ultimate objective of fisheries management will be to ensure a high probability of undesirable levels being avoided.

C&R *catch and release;* catch and release is a practice within recreational fishing intended as a technique of conservation. After capture, the fish are unhooked and returned to the water before experiencing serious exhaustion or injury. Using barbless hooks, it is often possible to release the fish without removing it from the water (a slack line is frequently sufficient).

CWT *coded wire tag;* the CWT is a length of magnetized stainless steel wire 0.25 mm in diameter. The tag is marked with rows of numbers denoting specific batch or individual codes. Tags are cut from rolls of wire by an injector that hypodermically implants them into suitable tissue. The standard length of a tag is 1.1 mm.

DST *data storage tag;* a miniature data logger that is attached to fish and other marine animals, measuring salinity, temperature, and depth.

EEZ *Exclusive Economic Zone;* EEZ is a concept adopted at the Third United Nations Conference on the Law of the Sea, whereby a coastal state assumes jurisdiction over the exploration and exploitation of marine resources in its adjacent section of the continental shelf, taken to be a band extending 200 miles from the shore.

FWI *Framework of Indicators;* the FWI is a tool used to indicate if any significant change has occurred in the status of stocks used to inform the previously provided multiannual management advice.

ICES *International Council for the Exploration of the Sea*; a global organization that develops science and advice to support the sustainable use of the oceans through the coordination of oceanic and coastal monitoring and research, and advising international commissions and governments on marine policy and management issues.

MSY *maximum sustainable yield*; the largest average annual catch that may be taken from a stock continuously without affecting the catch of future years. A constant long-term MSY is not a reality in most fisheries, where stock sizes vary with the strength of year classes moving through the fishery.

MSW *multi-sea-winter*; an MSW Atlantic salmon is an adult Atlantic salmon that has spent two or more winters at sea and may be a repeat spawner.

NAC *North American Commission*; the North American Atlantic Commission of NASCO or the North American Commission area of NASCO.

Nominal catch the catch of a fishery, defined as the round, fresh weight of fish, that are caught and retained and reported.

NASCO *North Atlantic Salmon Conservation Organization*; an international organization, established by an inter-governmental convention in 1984. The objective of NASCO is to conserve, restore, enhance, and rationally manage the fisheries of Atlantic salmon through international cooperation, taking account of the best available scientific information.

NEAC *North-East Atlantic Commission*; the North-East Atlantic Commission of NASCO or the North-East Atlantic Commission area of NASCO.

N-NEAC *Northern area - North-East Atlantic Commission*; the northern portion of the North-East Atlantic Commission area of NASCO.

S-NEAC *Southern area - North-East Atlantic Commission*; the southern portion of the North-East Atlantic Commission area of NASCO.

PFA *pre-fishery abundance;* the numbers of Atlantic salmon estimated to be alive in the ocean from a particular stock at a specified time. In the previous version of the stock complex Bayesian PFA forecast model two productivity parameters are calculated, for the *maturing* (PFAm) and *non-maturing* (PFAnm) components of the PFA. In the updated version only one productivity parameter is calculated; this parameter is used to calculate total PFA, which is then split into PFAm and PFAnm based upon the *proportion of PFAm* (p.PFAm).

PIT *passive integrated transponder;* PIT tags use radio frequency identification technology. PIT tags lack an internal power source. They are energized on encountering an electromagnetic field emitted from a transceiver. The tag's unique identity code is programmed into the microchip's nonvolatile memory.

SER *spawner escapement reserve;* the CL increased to take account of natural mortality between the recruitment date (assumed to be 1st of January) and the date of return to home waters

ToR *terms of reference*

Unreported catch the derivation differs by country and this is explained in ICES (2024c). It may include the estimated catch from illegal fisheries directed at salmon, legal under-reporting, non-reporting, and illegal catch.

WGC *West Greenland Commission*; the West Greenland Commission of NASCO or the West Greenland Commission area of NASCO

WGNAS *Working Group on North Atlantic Salmon*; ICES working group responsible for the annual assessment of the status of Atlantic salmon stocks across the North Atlantic and formulating catch advice for NASCO

Atlantic salmon (*Salmo salar*) from the Northeast Atlantic

Summary of advice for fishing seasons 2025/26 and 2026/27

ICES advises that, in the absence of specific management objectives and when the maximum sustainable yield (MSY) approach is applied, the catch on both the Northern and Southern North-East Atlantic Commission (NEAC) area complexes at the Faroe Islands should be zero in each of the fishing seasons 2025/26 and 2026/27. This is the same catch advice that was issued for 2024/25.

ICES advises that when the MSY approach is applied, fishing should only take place on Atlantic salmon from rivers where stocks are at full reproductive capacity. Mixed-stock fisheries present particular threats and should be managed based on the individual status of all stocks exploited in the fishery.

Non-fisheries conservation considerations

ICES advises that: i) all non-fisheries -related anthropogenic mortalities should be minimized (direct effects on Atlantic salmon survival) and ii) the quantity and quality of Atlantic salmon habitats, connectivity, and the physical, chemical, and biological properties of those habitats should be restored (indirect effects).

NASCO 2.1 Describe the key events of the 2024 fisheries

No significant changes in gear type used in the home-water fisheries were reported in the NEAC area in 2024.

No fishery for Atlantic salmon has operated at the Faroe Islands since 2000.

The nominal catch in the NEAC area in 2024 was 276 t, with 49 t reported in the Southern NEAC area and 227 t in the Northern NEAC area. Estimates of unreported catches across the NEAC area were estimated at 78 t. As in previous years, the location of the nominal catches differed between the Southern and Northern areas (Table 1). In 2024, in-river and estuarine fisheries accounted for 67% and 33%, respectively, of the catches in the Southern NEAC area. In the Northern NEAC area, coastal fisheries accounted for 33% of the catches, with the remaining 67% coming from in-river fisheries.

Table 1 Atlantic salmon from the Northeast Atlantic. Catch by area and location in the NEAC area in 2024. Catches of NEAC origin Atlantic salmon at Greenland are reported in the West Greenland Commission area. For Iceland, all catches are reported under "Northern NEAC". All weights are in tonnes.

Catches	Southern NEAC	Northern NEAC	Faroe Islands	Total NEAC
2024 nominal catch (tonnes)	49	227	0	276
Catch as % of NEAC total	18	82	0	
Unreported catch (tonnes)	78		-	78
Location of catches	Southern NEAC	Northern NEAC	Faroe Islands	Total NEAC
% in-river	67	67	-	67
% in estuaries	33	0	-	6
% coastal	0	33	-	27

The NEAC area has seen a general reduction in catches since the 1980s (Figure 1; Table 2). This reflects a decline in fishing effort as a consequence of management measures and a reduction in the size of stocks. The nominal total catch for 2024 (276 t) was lower than for 2023 (448 t) and was below the previous five-year (by 54%) and ten-year (by 66%) means. The nominal catch was the lowest in the time-series in Northern NEAC and the second lowest in Southern NEAC (marginal increase over 2023 catch). The catch in Southern NEAC, which constituted around two-thirds of the total NEAC catch in the early 1970s, has been lower than that in Northern NEAC area since 1999 (Figure 1).

1SW Atlantic salmon constituted 68% of the total catch in the Northern NEAC area in 2024 (Figure 2; no sea-age split-catch data available for the Russian Federation for 2021-2024). For Southern NEAC countries, the overall percentage of 1SW fish in the catch in 2024 was estimated at 78%.

The contribution of escaped farmed Atlantic salmon in national catches in the NEAC area in 2024 was generally low in most countries and was similar to the values that have been reported in previous years. The estimated proportion of farmed Atlantic salmon in Norwegian angling catches in 2024 (4%) was the lowest value in the time-series; the proportion in samples taken from Norwegian rivers in autumn (3%) was also among the lowest values in the time-series. No current data are available for the proportion of farmed Atlantic salmon in coastal fisheries in Norway. In Norway, targeted fisheries for escaped farm salmon are not included in the catch statistics. A small proportion of the catch in UK (Scotland; 1.7% of retained, 0.04% of all catch including catch and released Atlantic salmon) in 2024 was reported to be of farmed origin.

Estimated exploitation rates, i.e. the proportion of returning salmon that are harvested, have decreased since the early 1980s in both the Northern and Southern NEAC areas (Figure 3). The exploitation rate on 1SW Atlantic salmon in the Northern NEAC area was 22% in 2024, which was below the previous five-year (33%) and ten-year (36%) means. Exploitation on 1SW fish in the Southern NEAC complex was 6% in 2024, which was lower than the previous five-year (7%) and ten-year (9%) means. Exploitation on MSW Atlantic salmon in the Northern NEAC area was 28% in 2024, which was lower than the previous five-year (39%) and ten-year (42%) means. Exploitation on MSW fish in Southern NEAC was 4% in 2024, which was at the same level as the previous five-year (4%) mean but lower than the ten-year (6%) mean.

Estimates of the number of Atlantic salmon caught and released in angling fisheries are not complete for all NEAC countries. There are large differences between countries in the percentage of the total angling catch that is released – in 2024 this ranged from 8% in France to 98% in UK (Scotland) – reflecting varying management practices and angler attitudes among these countries. Catch and release mortality is also estimated for some countries, but these data are not included in the nominal catch.

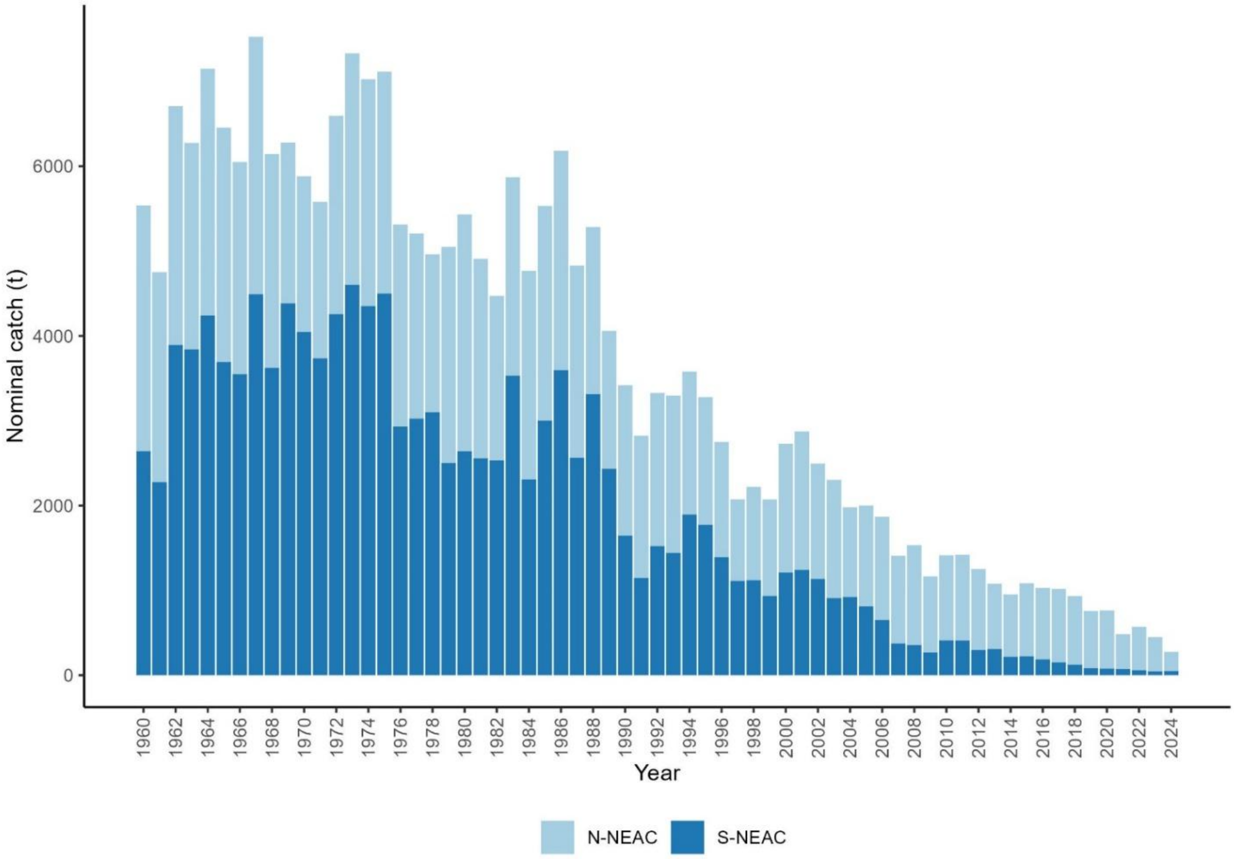


Figure 1 Atlantic salmon from the Northeast Atlantic. Nominal catches of Atlantic salmon in the Southern and Northern NEAC areas (1960–2024). No catch data available from Russian Federation for 2024.

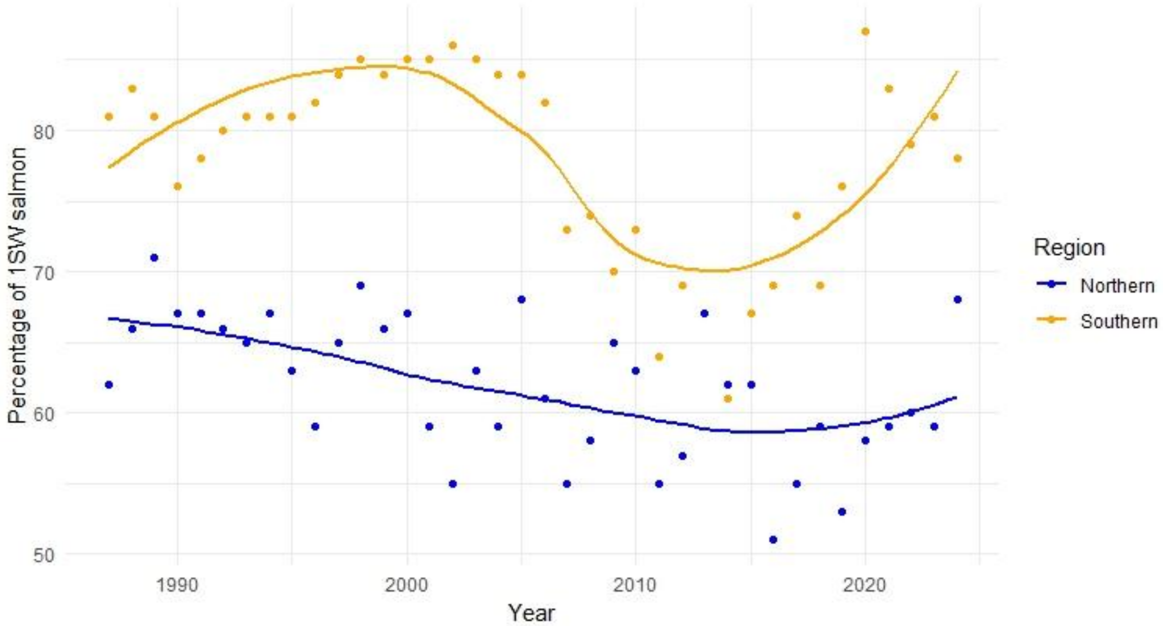


Figure 2 Atlantic salmon from the Northeast Atlantic. Percentage of 1SW salmon in the nominal catch for the Northern NEAC (blue dots) and Southern NEAC (orange dots) countries 1987–2024. Curves represent northern (blue line) and southern (orange line) countries with a Loess smoother (span = 85%) applied to the data. The 2024 values for Russian Federation contributing to this figure are the mean from the period 2019-2023. The time series differ from those presented in 2023 and before, because of new data provided for Ireland and Northern Ireland.

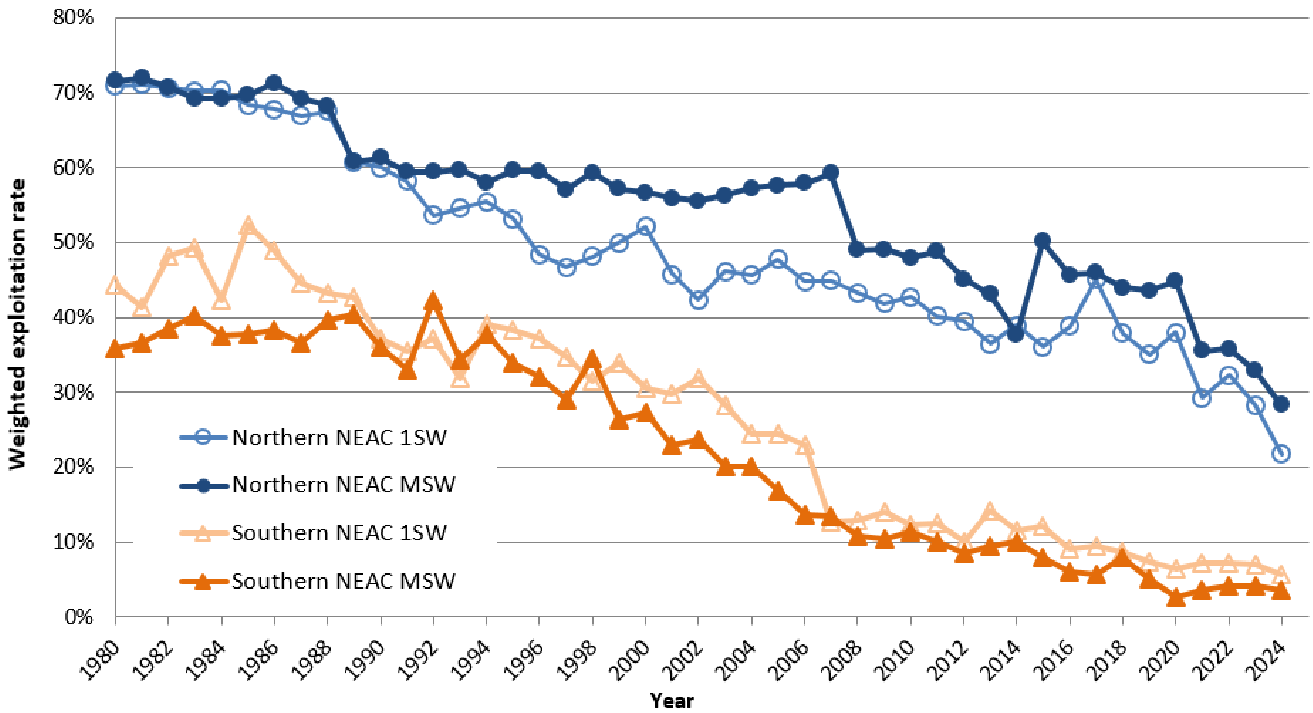


Figure 3 Atlantic salmon from the Northeast Atlantic. Mean annual exploitation rate of wild 1SW and MSW Atlantic salmon by fisheries in the Northern and Southern NEAC areas. National exploitation rates are an output of the NEAC run reconstruction model (RRM). These were combined as appropriate by weighting each individual country/jurisdiction's exploitation rate to the reconstructed returns.

Table 2 Atlantic salmon from the Northeast Atlantic. Nominal catch of Atlantic salmon in the NEAC area (in tonnes round fresh weight), 1960–2024. The 2024 values are provisional. No catch data available from Russian Federation for 2024.

Year	Southern NEAC countries	Northern NEAC countries*	Faroe Islands**	Other catches in international waters	Total nominal catch	Unreported catch	
						NEAC area ***	International waters^
1960	2641	2899	-	-	5540	-	-
1961	2276	2477	-	-	4753	-	-
1962	3894	2815	-	-	6709	-	-
1963	3842	2434	-	-	6276	-	-
1964	4242	2908	-	-	7150	-	-
1965	3693	2763	-	-	6456	-	-
1966	3549	2503	-	-	6052	-	-
1967	4492	3034	-	-	7526	-	-
1968	3623	2523	5	403	6554	-	-
1969	4383	1898	7	893	7181	-	-
1970	4048	1834	12	922	6816	-	-
1971	3736	1846	-	471	6053	-	-
1972	4257	2340	9	486	7092	-	-
1973	4604	2727	28	533	7892	-	-
1974	4352	2675	20	373	7420	-	-
1975	4500	2616	28	475	7619	-	-
1976	2931	2383	40	289	5643	-	-
1977	3025	2184	40	192	5441	-	-
1978	3102	1864	37	138	5141	-	-
1979	2572	2549	119	193	5433	-	-
1980	2640	2794	536	277	6247	-	-
1981	2557	2352	1025	313	6247	-	-
1982	2533	1938	606	437	5514	-	-
1983	3532	2341	678	466	7017	-	-

Year	Southern NEAC countries	Northern NEAC countries*	Faroe Islands**	Other catches in international waters	Total nominal catch	Unreported catch	
						NEAC area ***	International waters^
1984	2308	2461	628	101	5498	-	-
1985	3002	2531	566	-	6099	-	-
1986	3595	2588	530	-	6713	-	-
1987	2564	2266	576	-	5406	2554	-
1988	3315	1969	243	-	5527	3087	-
1989	2433	1627	364	-	4424	2103	-
1990	1645	1775	315	-	3735	1779	180–350
1991	1145	1677	95	-	2917	1555	25–100
1992	1524	1806	23	-	3353	1825	25–100
1993	1443	1853	23	-	3319	1471	25–100
1994	1895	1685	6	-	3586	1157	25–100
1995	1775	1504	5	-	3284	942	-
1996	1392	1358	-	-	2750	947	-
1997	1112	961	-	-	2073	732	-
1998	1120	1099	6	-	2225	1108	-
1999	934	1139	0	-	2073	887	-
2000	1211	1518	8	-	2737	1135	-
2001	1242	1633	0	-	2875	1089	-
2002	1135	1361	0	-	2496	946	-
2003	909	1395	0	-	2304	719	-
2004	921	1059	0	-	1980	575	-
2005	811	1189	0	-	2000	605	-
2006	651	1216	0	-	1867	604	-
2007	373	1036	0	-	1409	465	-
2008	356	1179	0	-	1535	433	-
2009	266	899	0	-	1165	317	-
2010	412	1003	0	-	1415	357	-
2011	410	1009	0	-	1419	382	-
2012	297	954	0	-	1251	363	-
2013	309	771	0	-	1080	272	-
2014	217	736	0	-	953	256	-
2015	223	860	0	-	1083	298	-
2016	187	842	0	-	1029	298	-
2017	152	867	0	-	1019	318	-
2018	124	807	0	-	931	279	-
2019	85	676	0	-	761	237	-
2020	78	685	0	-	763	238	-
2021	72	415	0	-	487	135	-
2022	58	511	0	-	569	174	-
2023	45	403	0	-	448	133	-
2024	49	227	0		276	78	
Mean							
2019–2023	67	538	0	-	605	184	-
2014–2023	124	680	0	-	804	237	-

* All Icelandic catches have been included in Northern NEAC countries.
** Since 1991, fishing carried out at the Faroe Islands has only been for research purposes.
*** No unreported catch estimates are available for the Russian Federation since 2008.
^ Estimates refer to season ending in given year.

NASCO 2.2 Review and report on the development of age-specific stock Conservation Limits

National stocks within the NEAC area are combined into two geographic groups (Southern and Northern) for the provision of management advice for the distant-water fisheries at West Greenland and the Faroe Islands. The Northern group consists of Finland, Norway, the Russian Federation, Sweden, and Iceland (north and east). The Southern group consists of France, Ireland, UK (England and Wales), UK (Northern Ireland), UK (Scotland), and Iceland (south and west). Four stock complexes are then defined, each comprising one of the two sea ages (1SW or MSW) per geographic group (Northern (N-)NEAC and Southern (S-)NEAC).

River-specific conservation limits (CLs; expressed in terms of either egg or spawner requirements) have been estimated for Atlantic salmon stocks in most countries/jurisdictions in the NEAC area (France, Ireland, UK [England and Wales], UK [Northern Ireland], UK [Scotland], Finland, Norway, and Sweden), and these, apart from France, are used in national assessments. In these cases, CL estimates for individual rivers are summed to provide estimates at the national level for these countries/jurisdictions. River-specific CLs have also been estimated for a number of rivers in the Russian Federation and Iceland, but these are not yet used in national assessments. An interim approach has been developed for countries/jurisdictions that do not use river-specific CLs in their national assessments. This approach is based on a model for Atlantic salmon stocks (pseudo-stock–recruitment relationships) that is updated annually and, as a result, the CLs may change slightly from year to year.

To provide catch advice to NASCO, CLs are required for stock complexes. These have been derived either by summing individual river CLs to country/jurisdiction level or by taking overall the CLs provided by the model and summing to the level of the four NEAC stock complexes.

CLs are provided for the four stock complexes (Table 3) by summing country/jurisdiction CLs to the level of the four NEAC stock complexes.

Table 3 Atlantic salmon from the Northeast Atlantic. Conservation limits (CLs) for the Atlantic salmon stock complexes in the NEAC area in 2024. Values are in numbers of fish.

Geographic group	Age group	CL
Northern NEAC	1SW	167 763
	MSW	114 276
Southern NEAC	1SW	450 460
	MSW	185 679

For the nine countries/jurisdictions where river-specific CLs are available, time-series indicating the development in the definition of these CLs, the number of rivers annually assessed against CLs, and the number of rivers that annually meet or exceed CLs (based on the number of spawners after fisheries have taken place) are provided in Figure 4. In addition, Iceland has set provisional CLs for all Atlantic salmon-producing rivers and continues to work towards finalizing an assessment process for determining CL attainment. In France, river-specific CLs were initially established in 2001. However, compliance with CLs has not been assessed to date.

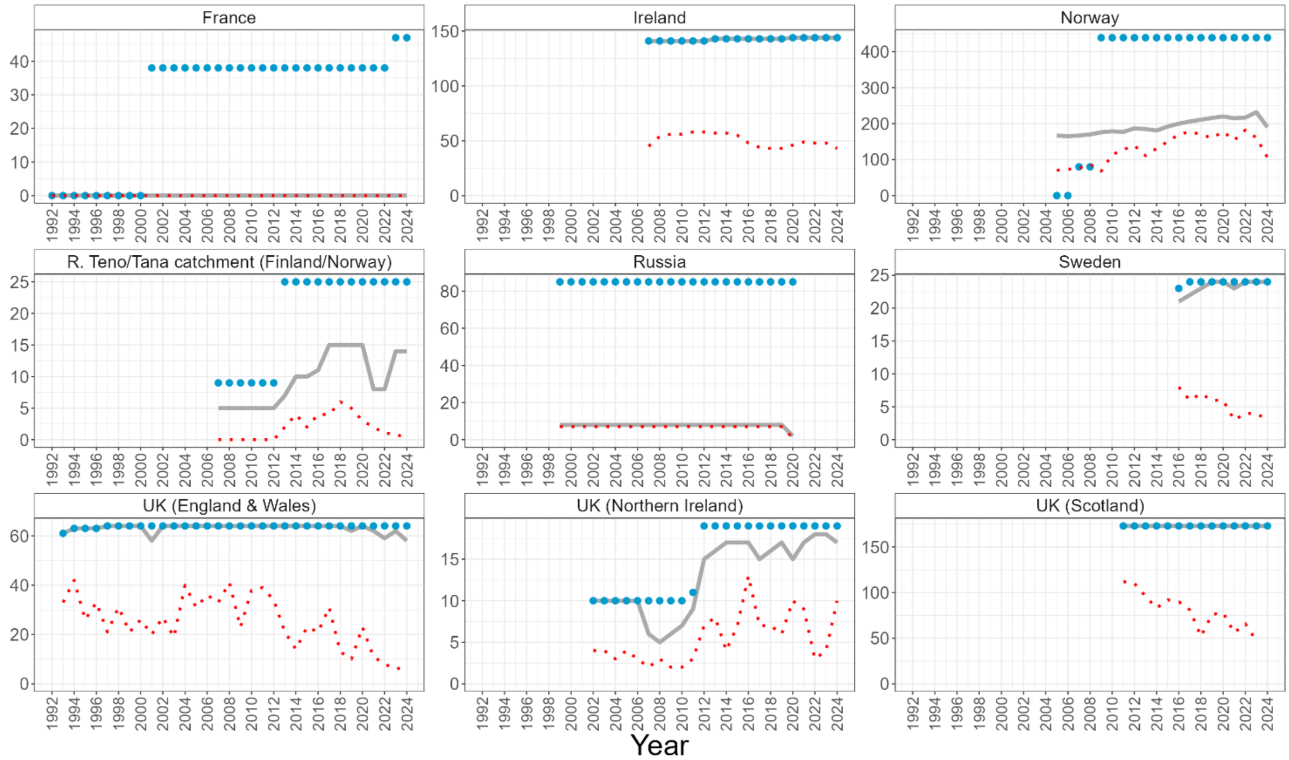


Figure 4 Atlantic salmon from the Northeast Atlantic. Time-series showing the number of rivers with established Conservation limits (CLs; dotted blue lines), the number of rivers assessed annually (solid grey lines), and the number of rivers meeting CLs annually (dotted red lines) for countries/jurisdictions in the NEAC area. The River Teno/Tana (Finland/Norway) has multiple tributaries with separate CLs.

NASCO 2.3 Describe the status of the stocks

Trends in rivers meeting CLs

In the NEAC area, all jurisdictions except Iceland (northeast) and France currently assess Atlantic salmon stocks using river-specific CLs (Figure 4, Table 4). The attainment of CLs is assessed based on the number of spawners after fisheries have taken place.

Although for some countries/jurisdictions a large proportion of the rivers with CL are not assessed for compliance, most of the biomass in the NEAC is from rivers that are assessed for compliance.

Table 4 Atlantic salmon from the Northeast Atlantic. Summary of the attainment of Conservation limits (CLs) in 2024 (2023 for UK [Scotland]) and trends based on all available data in the NEAC area.

Country /Jurisdiction	Rivers with CLs (number)	Rivers assessed for compliance (number)	Rivers attaining CL (number)	Assessed rivers attaining CL (%)	Trend in the last 10 years
Northern NEAC					
Russian Federation	*	*	*	*	Unknown
Norway/Finland (Tana/Teno)	25	14	0	0	Decreasing
Norway	439	190	106	56	Decreasing
Sweden	24	24	3	12	Decreasing
Southern NEAC					
UK (Scotland)	173	173	47	27	Decreasing
UK (Northern Ireland)	19	17	10	59	Variable
UK (England & Wales)	64	58	7	12	Decreasing
Ireland	144	144	48	33	Minor variability
France	47	0	n/a	n/a	n/a

* No data available.

Return rates

Return rate estimates, used as proxies for marine survival, are derived for a limited number of rivers, have time-series of different durations and can be confounded with estuarine and freshwater survival depending on how salmon are estimated. Return rates of wild and hatchery smolts to Northern NEAC are variable. They have generally decreased since 1980, although rates of 1SW returns of wild smolts have stabilized since 2010, while those of hatchery smolts have increased since 2015. Rates of 2SW returns of wild and hatchery smolts to the Northern NEAC area are highly variable but have continued to decline since 2010 and 2005 for wild and hatchery smolts, respectively. Mean return rates of wild and hatchery smolts to the Southern NEAC are less variable, primarily because they are estimated from more rivers. They too have generally decreased since 1980, although rates of 2SW returns of wild smolts have started to increase since 2005, and rates of 1SW returns from hatchery smolts have stabilized since 2015 (Figure 5).

The low return rates in recent years highlighted in these analyses are broadly consistent with the trends in estimated returns and spawners as derived from the run reconstruction (RRM) and life-cycle (LCM) models, and indicates that adult abundance is strongly influenced by factors in the marine environment.

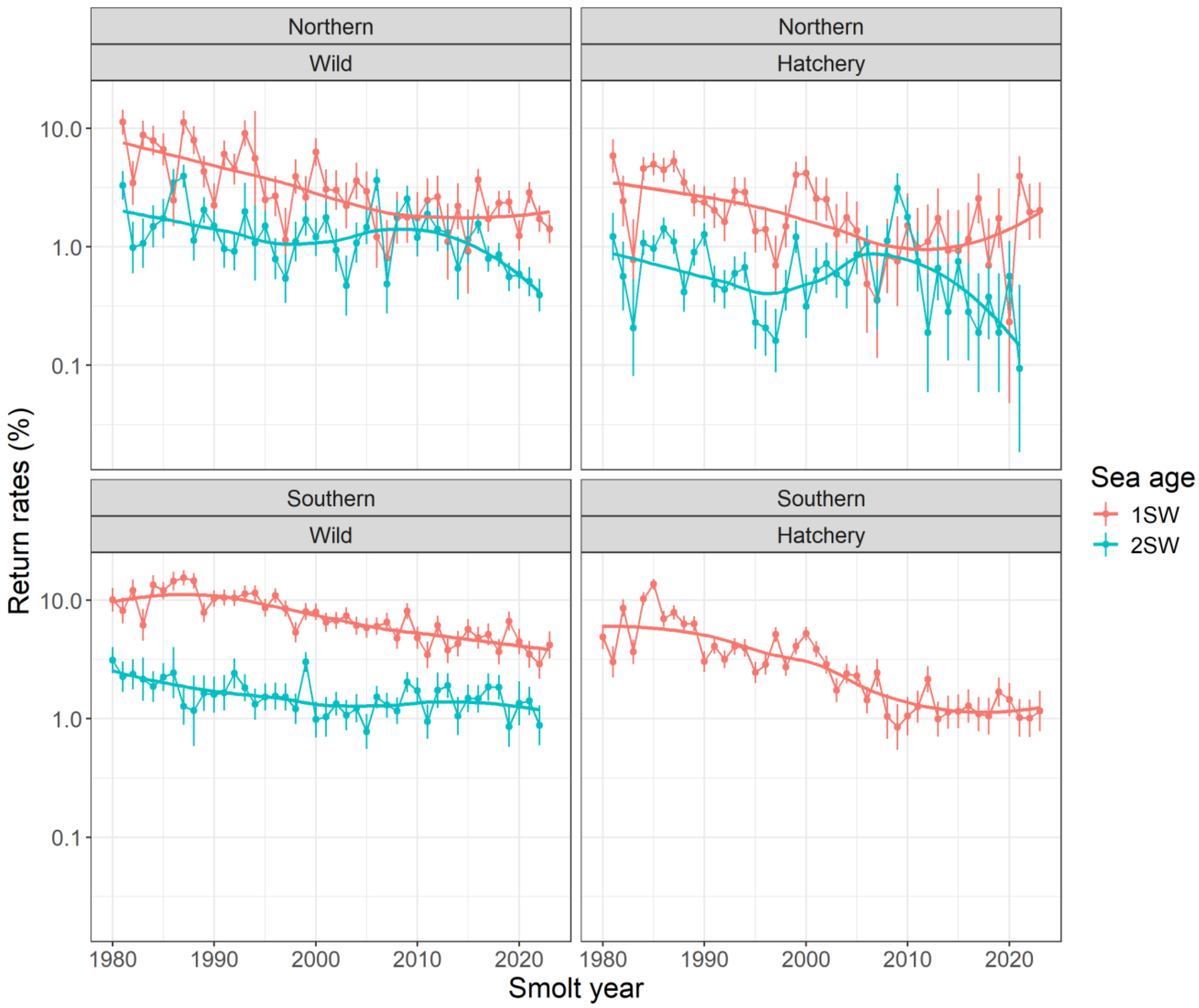


Figure 5 Atlantic salmon from the Northeast Atlantic. Modelled estimates of average return rates (in %) of wild (left-hand panels) and hatchery origin smolts (right-hand panels) of 1SW and 2SW Atlantic salmon to Northern (top panels) and Southern NEAC areas (bottom panels). In Southern NEAC the number of 2SW salmon from hatcheries is too small to be shown in the plot. For most rivers in Southern NEAC, the values represent returns to the coast prior to the home-water coastal fisheries. Mean annual return rates for each origin and area were estimated from a general linear model assuming quasi-Poisson errors (log-link function). Error bars represent standard errors. Trend lines are from locally weighted polynomial regression (LOESS) and are meant to be a visual interpretation aid. Following details in ICES (2021), the analyses included estimated return rates (in %) for 1SW and 2SW returns by smolt year. Note that the *y*-axis is on a log 10 scale.

Stock status

The status of stocks in the Northeast Atlantic was assessed relative to the probability of returns and spawners exceeding CLs at the stock complex and national levels according to the three ICES stock status designations: **full** (at full reproductive capacity: the 5th percentile of the spawner estimate is above the CL); **at risk** (at risk of suffering reduced reproductive capacity: median spawner estimate is above the CL, but the 5th percentile is below); and **suffering** (suffering reduced reproductive capacity: median spawner estimate is below the CL). This is summarized in Figure 6. Differences in CL attainment between returns and spawners are due to exploitation in homewater fisheries. Figures 7 and 8 show the hindcast of the abundance of stocks at the complex level. These estimates provide an index of the current status of, and historical trends in, stocks based on fisheries-dependent and -independent data and model assumptions. Note that the results for the full time-series can change when the assessment is re-run from year to year and as the input data are refined.

The assessment of 1SW and MSW returns and spawners against CLs for all countries in Northern and Southern NEAC can be found in Table 5 and Figure 6. There is a clear pattern whereby more stocks in Southern NEAC countries were either suffering or at risk of suffering reduced reproductive capacity compared to Northern NEAC countries in 2024. This was true for both 1SW and MSW stock components.

Hindcast estimates of 1SW returns to Northern NEAC showed a decline over the time series (Figure 7). In 2024, 1SW returns were considered to be at full reproductive capacity. The estimate was the third lowest in the time series (totaling 54 years) and 9% below the previous five-year mean (Table 5 and Figure 6). Hindcast estimates of MSW returns to Northern NEAC showed a decline over the time series (Figure 7). In 2024, MSW returns were considered to be at full reproductive capacity (Figure 6). However, the estimate was the lowest in the time series and 37% below the previous five-year mean (Table 5). In 2024, 1SW spawners were considered to be at full reproductive capacity. The estimate was the fourteenth lowest in the time series and 5% above the previous five-year mean (Table 5). Hindcast estimates of MSW spawners in Northern NEAC showed no clear trend over the time series (Figure 7). In 2024, MSW spawners were considered to be at risk of suffering reduced reproductive capacity. The estimate was the fifth lowest in the time series and 26% below the previous five-year mean (Table 5 and Figure 6).

Hindcast estimates of 1SW returns to Southern NEAC showed a decline over the time-series (Figure 8). In 2024, 1SW returns were considered to be at risk of suffering reduced reproductive capacity. The estimate was the fifth lowest in the time-series and the same as the previous five-year mean (Table 5 and Figure 6). Hindcast estimates of MSW returns to Southern NEAC showed a decline until around 2000 (Figure 8). In 2024, MSW returns were considered at risk of suffering reduced reproductive capacity. The estimate was the second lowest in the time-series and 9% below the previous five-year mean (Table 5 and Figure 6). Hindcast estimates of 1SW spawners in Southern NEAC showed a decline over the time-series (Figure 8). In 2024, 1SW spawners were considered to be suffering reduced reproductive capacity. The estimate was the fifth lowest in the time series and the same as the previous 5-year mean (Table 5 and Figure 6). Hindcast estimates of MSW spawners in Southern NEAC showed no clear trend since the early 1980s (Figure 8). In 2024, MSW spawners were considered to be at risk of suffering reduced reproductive capacity. The estimate was the fifth lowest in the time series and 9% below the previous five-year mean (Table 5 and Figure 6).

Within Northern NEAC countries, returning 1SW stocks in Norway, Sweden, and Iceland were at full reproductive capacity in 2024. However, 1SW returns in the remaining countries were either suffering, or at risk of suffering, reduced reproductive capacity (Figure 6). Returning MSW stocks in Norway and Russian Federation were at full reproductive capacity in 2024. However, MSW returns in the remaining countries were either suffering, or at risk of suffering, reduced reproductive capacity (Figure 6). There were changes to stock status between returns and spawners in Iceland (north and east; 1SW and MSW), Sweden (MSW) and Russian Federation (1SW and MSW) indicating the effect of homewater exploitation on CL attainment in those countries (Figure 6). In most Northern NEAC countries, 1SW and MSW return estimates in 2024 were among the lowest in the time-series (Table 5). Ranks were more variable for spawning estimates, ranging from the lowest value on record (River Tana/Teno [Norway/Finland]), 1SW) to 37th lowest (north and east Iceland, 1SW; Table 5). Note that from 2021, estimates from Russian Federation are derived from total nominal catches provided in tonnes and should be interpreted with caution.

With respect to Southern NEAC countries, all 1SW and MSW returns and spawners were suffering reduced reproductive capacity in 2024 except UK (Scotland; Figure 6). In all Southern NEAC countries, 1SW and MSW return estimates were among the lowest in the time series. Ranks were more variable for spawning estimates, ranging from the lowest value on record (France, 1SW; UK [Northern Ireland], MSW) to twenty-fourth lowest (UK [Northern Ireland], 1SW; Table 5).

Table 5 Atlantic salmon from the Northeast Atlantic. Summary of national- and complex-level returns and spawners within NEAC. For each country or complex, a rank of the estimate over the time-series is given (1 as the highest) along with the per cent change for the most recent value versus the previous five-year mean (e.g. 2024 versus 2019–2023 mean). All numbers are in thousands.

Returns	1SW				MSW			
	Median (90% CI)	% change	Rank	Status*	Median (90% CI)	% change	Rank	Status
River Tana/Teno (Norway/Finland)	2.9 (2.7–3.1)	−71	54/54	Suffering	5.9 (5.5–6.4)	−45	54/54	Suffering
Iceland (north & east)	10.8 (7.2-–22.6)	28	36/54	Full*	2.6 (1.5–10.5)	−20	53/54	Full*
Norway	188.2 (175.8–201.4)	−16	50/54	Full	109.8 (102.2–117.9)	−48	54/54	Full
Russian Federation	75.4 (33.8–170.4)	14	48/54	At risk	58.4 (38.3–98.3)	6	49/54	Full
Sweden	3.7 (2.6–5.9)	−10	46/54	Full	3.2 (2.3–5.2)	−55	33/54	At risk
Northern NEAC	283.4 (238–378.3)	−9	52/54	Full	181.7 (159.4–222.6)	−37	54/54	Full
UK (England & Wales)	19.2 (13.9–26.7)	−29	53/54	Suffering	22.2 (16–30.9)	−22	54/54	Suffering
France	1.2 (0.8–2.7)	−83	54/54	Suffering	3.5 (2.6–5)	−49	51/54	Suffering
Iceland (south & west)	25.7 (20.5–34.7)	11	50/54	Suffering	3.8 (3.2–4.5)	−11	48/54	Suffering
Ireland	116.5 (83.5–210.5)	−20	54/54	Suffering	18.9 (14.9–27.2)	0	50/54	Suffering
UK (Northern Ireland)	27.8 (25.8–29.9)	29	48/54	Suffering	1.2 (1.2–1.4)	−42	54/54	Suffering
UK (Scotland)	261.9 (176.2–392.4)	15	46/54	Full	157.4 (103.2–244.3)	−5	49/54	Full
Southern NEAC	466 (360.5–612.3)	0	50/54	At risk	208.7 (153.6–296)	−9	53/54	At risk
Spawners	1SW				MSW			
	Median (90% CI)	% change	Rank	Status	Median (90% CI)	% change	Rank	Status
River Tana/Teno (Norway/Finland)	2.8 (2.6–3)	−66	54/54	Suffering	5.8 (5.3–6.3)	−33	52/54	Suffering
Iceland (north and east)	9.4 (5.7–21.2)	51	18/54	At risk*	2.5 (1.3–10.3)	−11	35/54	At risk*
Norway	142.9 (130–156.7)	3	20/54	Full	88.6 (80.8–96.8)	−33	38/54	Full
Russian Federation	62.9 (25.1–136)	14	44/54	Suffering	28.2 (12.5–53.4)	8	48/54	Suffering
Sweden	3 (2–5.3)	−10	44/54	Full	2.6 (1.7–4.7)	−55	26/54	Suffering
Northern NEAC	223.4 (181.9–297.6)	5	41/54		129.5 (110.9–156.2)	−26	50/54	
UK (England & Wales)	19.1 (13.8–26.5)	−29	53/54	Suffering	22.1 (15.8–30.7)	−22	53/54	Suffering
France	1.1 (0.6–2.5)	−83	54/54	Suffering	2.4 (1.6–4)	−49	50/54	Suffering
Iceland (south & west)	16.7 (11.5–25.6)	22	44/54	Suffering	2.2 (1.7–3)	−12	36/54	Suffering
Ireland	108.1 (75.2–202)	−20	53/54	Suffering	16.8 (12.9–25.2)	−2	47/54	Suffering
UK (Northern Ireland)	27.2 (25.2–29.4)	31	30/54	Suffering	1.2 (1.1–1.3)	−41	54/54	Suffering
UK (Scotland)	235.8 (157.8–354.5)	16	44/54	Full	139.6 (90.2–218.8)	−5	41/54	Full
Southern NEAC	421.7 (322.5–558.1)	0	50/54	Suffering	186.2 (135.7–265.7)	−9	50/54	At risk

*Status results for Iceland are reported at the national level for the northeast and southwest combined (see Figure 6).

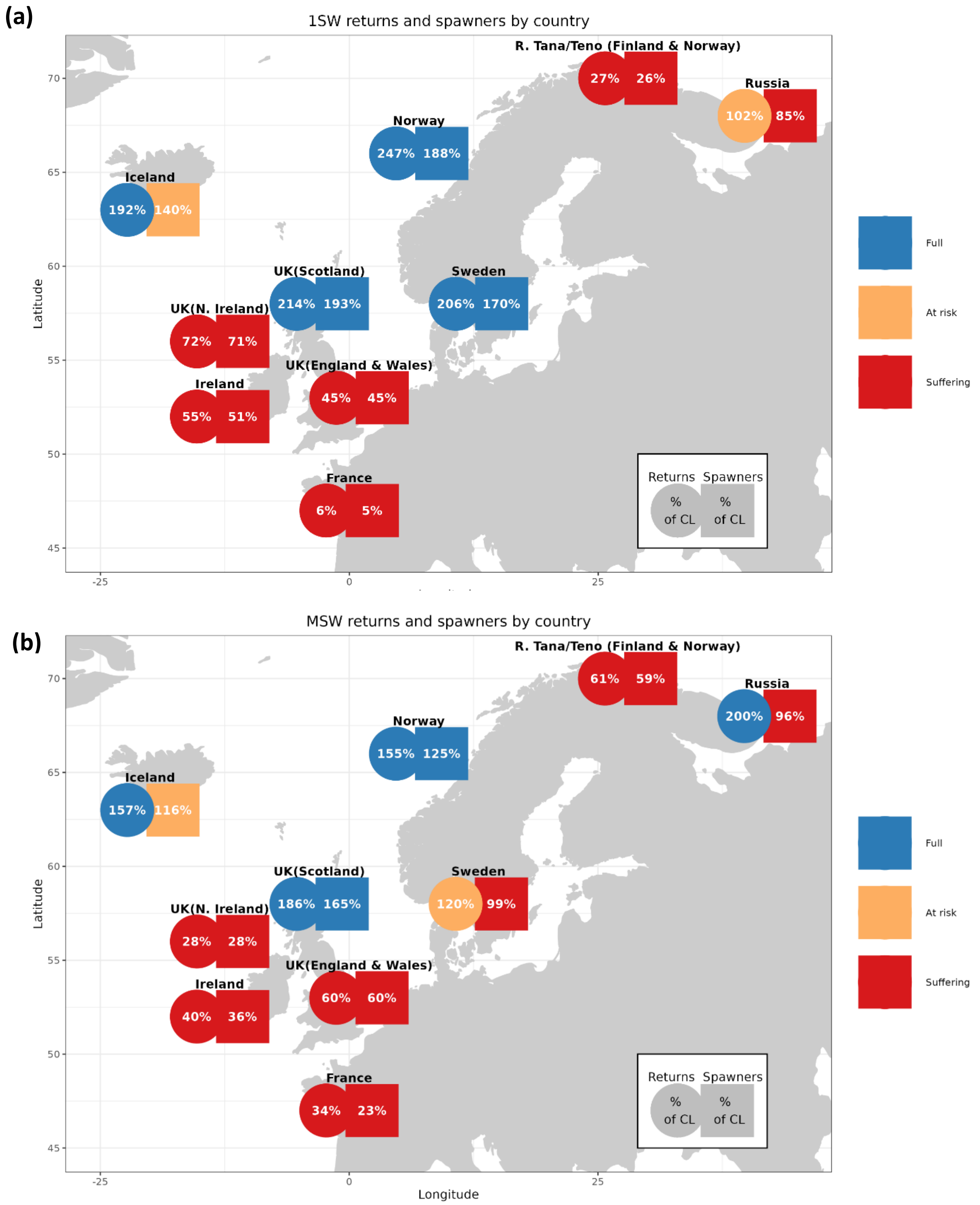


Figure 6 Atlantic salmon from the Northeast Atlantic. **(a)** 1SW and **(b)** MSW returns and spawners in percent of conservation limit (% of CL) for 2024. The percent of CL is based on the median of the Monte Carlo distribution as derived from the run reconstruction model (RRM). The coloured shading represents the three ICES stock status designations: **Full** (at full reproductive capacity: the 5th percentile of the spawner estimate is above the CL); **At Risk** (at risk of suffering reduced reproductive capacity: median spawner estimate is above the CL, but the 5th percentile is below); and **Suffering** (suffering reduced reproductive capacity: median spawner estimate is below the CL).

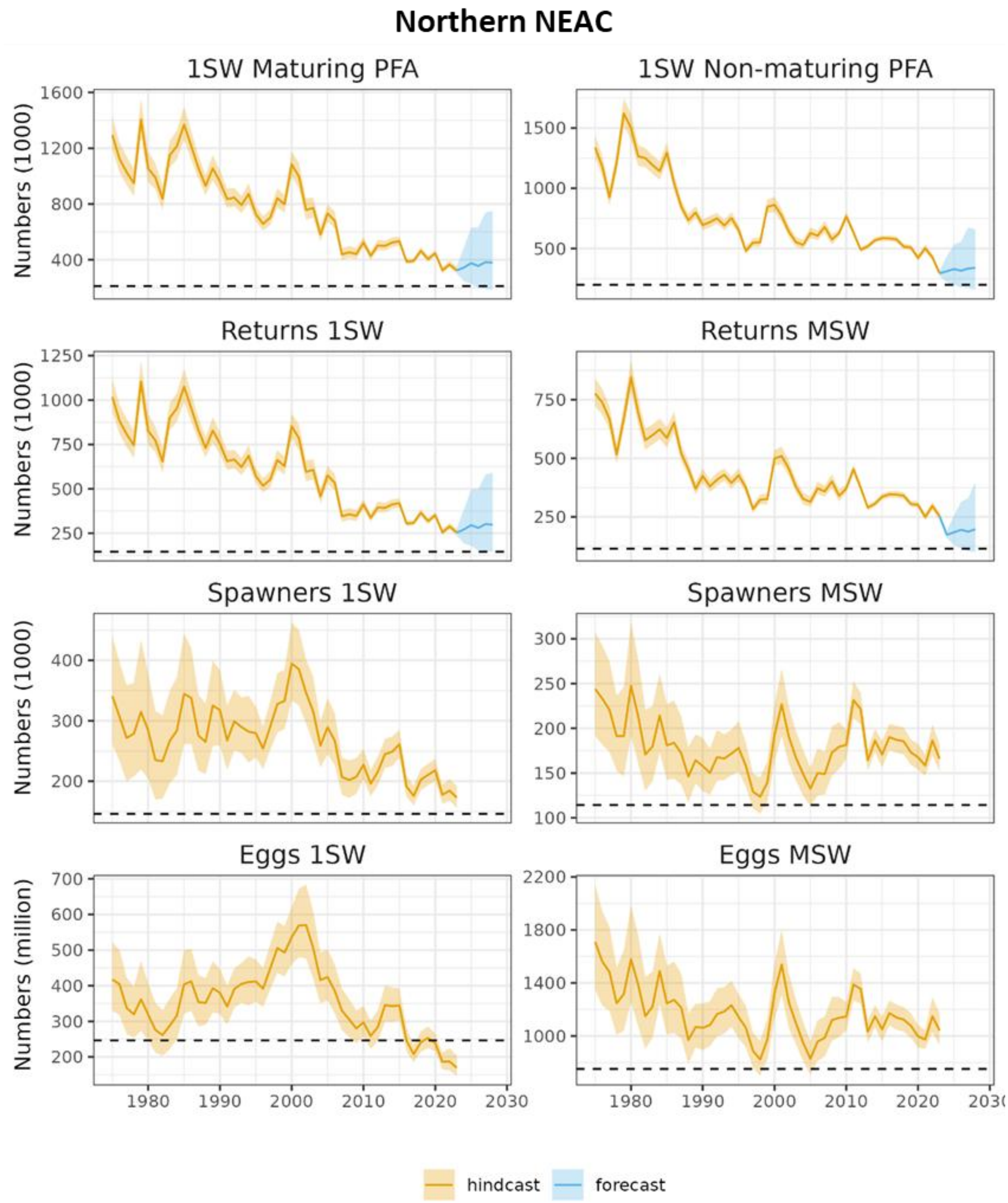


Figure 7 Atlantic salmon from the Northeast Atlantic. Northern NEAC (aggregate). 1SW maturing and 1SW non-maturing pre-fishery abundance (PFA), returns of 1SW and MSW fish, 1SW and MSW spawners, and egg deposition from 1SW and MSW spawners derived from the life-cycle model (LCM). Solid line: median of the marginal posterior distributions; shaded area: 90% Bayesian credibility interval; orange shaded area: hindcasting on the historical time-series; blue shaded area (for PFA and returns): forecasting obtained under a scenario with zero catches in all fisheries. The horizontal dotted black lines are the age-specific SER values (in number of fish; PFA panels), the age-specific conservation limits (CLs; in number of fish; spawner and return panels) and the age-specific CLs (in eggs; eggs panels). Years refer to year of return, with the exception of PFA non-maturing, which is year of return minus one.

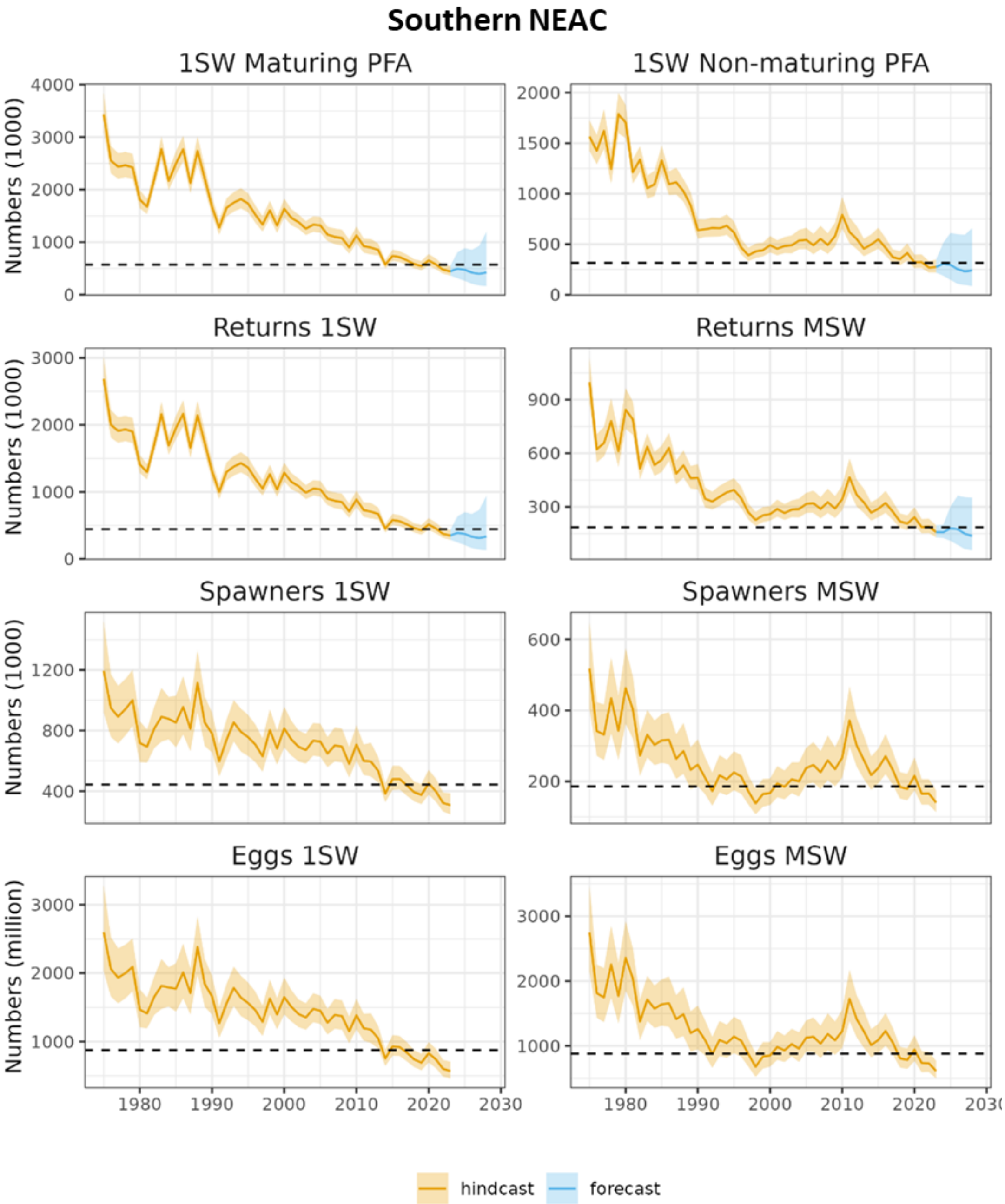


Figure 8 Atlantic salmon from the Northeast Atlantic. Southern NEAC (aggregate). 1SW maturing and 1SW non-maturing PFA, returns of 1SW and MSW fish, 1SW and MSW spawners, and egg deposition from 1SW and MSW spawners derived from the life-cycle model (LCM). Solid line: median of the marginal posterior distributions; shaded area: 90% Bayesian credibility interval; orange shaded area: hindcasting on the historical time-series; blue shaded area (for PFA and returns): forecasting obtained under a scenario with zero catches in all fisheries; the horizontal dotted black lines are the age-specific SER values (in number of fish; PFA panels), the age-specific conservation limits (CLs; in number of fish; spawner and return panels) and the age-specific CLs (in eggs; eggs panels). Years refer to year of return, with the exception of PFA non-maturing, which is year of return minus one.

Conservation status

Atlantic salmon (*Salmo salar*) was assessed for the IUCN Red List of Threatened Species in 1996, for Europe in 2014, and globally in 2022, and it is listed globally as "Near Threatened" under criteria A2bd (Darwall, 2023). In addition, there are regional and national Red List assessments for this species.

This is for information purposes, and ICES does not formally endorse the methods used by third parties to create lists.

Scientific basis

Table 10 Atlantic salmon in the Northeast Atlantic. The basis of the assessment.

ICES stock data category	1 (ICES, 2023a)
Assessment type	A run reconstruction model (RRM) and a Bayesian life-cycle model (LCM), taking into account uncertainties in data and process error; results presented in a risk analysis framework (ICES, 2025, 2024a)
Input data	Nominal catches (by sea-age class) for commercial and recreational fisheries; estimates of returns; estimates of unreported/illegal catches; estimates of exploitation rates; biological characteristics
Discards and bycatch	No Atlantic salmon discards in the directed Atlantic salmon fishery. Atlantic salmon bycatch is known to occur, but it is not included in the assessment.
Indicators	None
Other information	Last benchmarked in 2023 (ICES, 2023b)
Working group	Working Group on North Atlantic Salmon (WGNAS)

Issues relevant for the non-fisheries conservation considerations

The abundance of Atlantic salmon is affected by similar non-fishing influences throughout the North Atlantic. Despite major changes in fisheries management two to three decades ago and increasingly restrictive fisheries measures since then, returns of most Atlantic salmon stocks are at near historic lows. The continued low and declining abundance of many Atlantic salmon stocks, despite significant fishery reductions, strengthens the conclusion that factors acting on survival in the first and second years at sea, at both local and broad ocean scales, are constraining abundance of Atlantic salmon. Declines in smolt production in some rivers are now being observed and are also contributing to lower adult abundance.

Environmental conditions in both freshwater and marine environments have a marked effect on the status of Atlantic salmon stocks. There are a range of problems in the freshwater environment across the North Atlantic that play a significant role in explaining the poor status of stocks. In many cases, river damming and habitat deterioration have had a negative effect on freshwater environmental conditions. In the marine environment, return rates of adult Atlantic salmon have been declining since the 1980s and are now at the lowest levels in the time-series for some stocks, even after the closure of marine fisheries. Climatic factors modifying ecosystem conditions and the impact of predators of Atlantic salmon at sea are considered to be the main contributory factors to lower productivity, which is expressed almost entirely in terms of lower marine survival.

Identify relevant data deficiencies, monitoring needs, and research requirements

This advice is generated from data provided for all salmon-producing jurisdictions throughout the management area (NEAC). The 2024 catch data were reported in time for inclusion in reporting and assessment from all jurisdictions except Russian Federation and Portugal. Sufficient additional data required to conduct an assessment of the status of stocks was available from all jurisdictions except for the Russian Federation, Denmark, Germany, Spain, and Portugal. Except for the Russian Federation, time-series of sufficient duration for the current LCM model implementation are not available for these four countries, but ICES continues to work with these countries to close these data gaps. The expected abundance of salmon in Denmark, Germany, Spain, and Portugal is relatively small when compared to the total abundance of the NEAC area, and therefore these data gaps are not considered to have a significant effect on the current advice.

An ICES data call submission was not received from the Faroe Islands. Equivalent data from the Faroe Islands were received via a national report to WGNAS. A data call submission was received from Portugal during the working group meeting butwas too late to be included in the 2025 report. ICES recommends complete and timely reporting of catch statistics from all fisheries for all areas through the ICES data call process.

Data on catch numbers, exploitation rates, and unreported catch rates were not available to ICES for the stock years 2021–2024 for any of the four Russian Federation stock units. Total catch from the years 2021–2023 were retrieved from reports published on the NASCO website (NASCO, 2025). Data on the total catch in the Russian Federation in 2024 was not available to the WGNAS in 2025 so the mean of the total annual catch 2019-2023 was used as input. In the absence of updated information, exploitation rates and unreported catch rates, together with their associated errors, were assumed unchanged from previous years of available data. A method for partitioning catch and estimating abundance in the four Russian Federation stock units was developed in 2023 (ICES, 2024a). If the true data cannot be provided in future years, the levels of uncertainty in the derived data will increase and at some point in the near future the propagating uncertainty will render the estimates unreliable. ICES recommends that data on catch numbers, exploitation rates and unreported catch rates from the four Russian Federation stock units is provided to ICES in 2026. The alternative is that WGNAS would not report on the status of the stocks for Russian Federation.

No river-specific CLs have been established for Russian Federation, Denmark, Germany, Portugal, or Spain. CLs for those countries included in WGNAS stock assessments (Russian Federation and Iceland) are derived from a pseudo stock-recruitment relationship (ICES, 2024a), which is sensitive to annual data updates and consequently the CL may change from year-to-year. Iceland has developed provisional CLs and continues to work towards finalising an assessment process for determining CL attainment. ICES recommends that all countries and jurisdictions establish river-specific CLs.

The full list of data deficiencies, monitoring needs, and research requirements for North Atlantic salmon is presented in Section 2.4 of ICES (2025b).

References

Darwall, W. R. T. 2023. *Salmo salar*. *The IUCN Red List of Threatened Species* 2023: e.T19855A67373433. https://dx.doi.org/10.2305/IUCN.UK.2023-1.RLTS.T19855A67373433.en

ICES. 2021. Working Group on North Atlantic Salmon (WGNAS). ICES Scientific Reports, 3:29. 407 pp. https://doi.org/10.17895/ices.pub.7923

ICES. 2023a. Advice on fishing opportunities. *In* Report of the ICES Advisory Committee, 2023. ICES Advice 4 Section 1.1.1. https://doi.org/10.17895/ices.advice.22240624

ICES. 2023b. Benchmark Workshop on Atlantic salmon in the North Atlantic (WKBSALMON). ICES Scientific Reports. 5:112. 85 pp. https://doi.org/10.17895/ices.pub.24752079

ICES. 2024a. Salmon (*Salmo salar*) in the Northeast Atlantic. ICES Stock Annexes. 112 pp. http://doi.org/10.17895/ices.pub.25737180

ICES, 2024b. Salmon (*Salmo salar*) in Subarea 14 and NAFO division 1 (east and west of Greenland). In Report of the ICES Advisory Committee, 2024. ICES Advice 2024, sal.wgc.all. https://doi.org/10.17895/ices.advice.25019642

ICES. 2025. Working Group on North Atlantic Salmon (WGNAS). ICES Scientific Reports. 7:44. 435 pp. https://doi.org/10.17895/ices.pub.28777226

NASCO. 2025. Third Reporting Cycle (2019–2024). NASCO, Edinburgh, Scotland. https://nasco.int/conservation/third-reporting-cycle-2/

Recommended citation: ICES. 2025. Atlantic salmon (*Salmo salar*) from the Northeast Atlantic. *In* Report of the ICES Advisory Committee, 2025. ICES Advice 2025, sal.neac.all. https://doi.org/10.17895/ices.advice.28342859

Annex 1 Glossary of acronyms and abbreviations

1SW *one-sea-winter;* maiden adult Atlantic salmon that has spent one winter at sea

2SW *two-sea-winter*; maiden adult Atlantic salmon that has spent two winters at sea

CL(s) *conservation limit(s),* i.e. S_{lim}; demarcation of undesirable stock levels or levels of fishing activity; the ultimate objective when managing stocks and regulating fisheries will be to ensure that there is a high probability that undesirable levels are avoided

ICES *International Council for the Exploration of the Sea*

LCM *life-cycle model*

MSY *Maximum Sustainable Yield*; the largest average annual catch that may be taken from a stock continuously without affecting the catch of future years. A constant long-term MSY is not a reality in most fisheries, where stock sizes vary with the strength of year classes moving through the fishery.

MSW *multi-sea-winter*; an MSW Atlantic salmon is an adult Atlantic salmon which has spent two or more winters at sea and may be a repeat spawner

NASCO *North Atlantic Salmon Conservation Organization;* an international organization, established by an inter-governmental convention in 1984. The objective of NASCO is to conserve, restore, enhance, and rationally manage Atlantic salmon through international cooperation, taking account of the best available scientific information.

NEAC *North-East Atlantic Commission*; the commission within NASCO with responsibility for Atlantic salmon in the Northeast Atlantic

PFA *pre-fishery abundance*; the numbers of Atlantic salmon estimated to be alive in the ocean from a particular stock at a specified time

fSER *spawner escapement reserve*; the CL increased to take account of natural mortality between the recruitment date (assumed to be 1st January) and the date of return to home-waters

TAC *total allowable catch*; the TAC is the quantity of fish that can be taken from each stock each year

Annex 2 General considerations

Management plans

The North Atlantic Salmon Conservation Organization (NASCO) has adopted an Action Plan for Application of the Precautionary Approach, which stipulates that management measures should be aimed at maintaining all stocks above their CLs through the use of management targets. CLs for North Atlantic salmon stock complexes have been defined by ICES as the level of a stock (number of spawners) that will achieve long-term average MSY. NASCO has adopted the region-specific CLs as limit reference points (S_{lim}); having populations fall below these limits should be avoided with high probability. Advice for the Faroe Islands fishery (which historically harvested both 1SW and MSW Atlantic salmon) is currently based upon all NEAC area stocks. The advice for the West Greenland fishery (ICES, 2024b) is based upon the Southern NEAC non-maturing 1SW stock and the non-maturing 1SW Atlantic salmon from North America. A 75 % risk level (probability) of achieving the management objectives (CLs) simultaneously in four regions (Labrador, Newfoundland, Quebec, and Gulf), as well as being above the management objectives for Scotia–Fundy and USA, has been agreed by NASCO for the provision of catch advice at West Greenland. No specific risk level has so far been agreed by NASCO for the provision of catch advice for the Faroe Islands fishery; in the absence of this, ICES uses a 95% probability of meeting individual CLs, applied at the level of the European stock complexes (two areas and two age classes) and for the ten NEAC countries and two age classes.

Biology

Atlantic salmon (*Salmo salar*) is an anadromous species found in rivers of countries bordering the North Atlantic. In the Northeast Atlantic area, its current distribution extends from the Lima River (41°69') in northern Portugal to the Pechora River (68°20') in the northwest of the Russian Federation and west to Iceland (66°44'). Juveniles migrate to the ocean at the ages of one to eight years (dependent on latitude) and generally return after one or two years at sea. Long-distance migrations to ocean feeding grounds take place, with adult Atlantic salmon from the Northeast Atlantic stocks being exploited in waters near Greenland and previously the Faroe Islands.

Environmental and other influences on the stock

Environmental conditions in both freshwater and marine environments have a marked effect on the status of Atlantic salmon stocks. Across the North Atlantic, a range of problems in the freshwater environment play a significant role in explaining the poor status of stocks. In many cases, river damming and habitat deterioration have had a devastating effect on freshwater environmental conditions. In the marine environment, return rates of adult Atlantic salmon have declined since the 1980s and, for some stocks, are now amongst their lowest levels in the time-series, even after closure of marine fisheries. Climatic factors modifying ecosystem conditions and the impact of predators of Atlantic salmon at sea are considered to be the main contributing factors of lower productivity, which is expressed almost entirely in terms of lower return rates.

Effects of the fisheries on the ecosystem

Atlantic salmon fisheries have no, or only minor, influence on the marine ecosystem. The exploitation of Atlantic salmon in freshwater may affect the riverine ecosystem through changes in species composition. There is limited knowledge of the magnitude of these effects.

Quality considerations

Uncertainties in input variables to the stock status and stock forecast models are incorporated in the assessment. Data on catch numbers, exploitation rates and unreported catch rates were not available to ICES for the years 2021, 2022, 2023 and 2024 for any of the four Russian Federation stock units. In the absence of data, exploitation rates and unreported catch rates together with their associated errors were assumed unchanged from previous years. With respect to catches, the total catch for the Russian Federation in wet mass for all stock units and sea ages combined was available for 2021 (48.82 t), 2022 (55.38 t), 2023 (51.93 t; NASCO, 2023 and 2024). The ratios of the total catch for the Russian Federation to the mean total catch for the last five years of available stock unit data (2016–2020) were used to scale the mean catches by sea age and stock unit for the same five-year period to derive estimated catches for 2021, 2022, 2023 and 2024.

A variance adjustment parameter was added to the data for each Russian Federation stock unit and sea age. This parameter captures the necessary increase in the variance in return estimates to ensure that they reflect the expected uncertainty arising from the method of estimating catches as described above. The scaling parameters were derived numerically by considering the error between the returns derived from observed catches and the returns derived from catches estimated using the above method applied to the period 2016–2020. Additional details on the estimation of catches in 2021, 2022, 2023 and 2024 and the adjustment to the uncertainty in the returns can be found in ICES (2025).

Atlantic salmon (*Salmo salar*) from North America

Summary of the advice for 2026 and 2027

ICES advises that, in line with the management objectives (MOs) agreed by the North Atlantic Salmon Conservation Organization (NASCO) and according to the maximum sustainable yield (MSY) approach, the catch of one-sea-winter (1SW) non-maturing Atlantic salmon and two-sea-winter (2SW) Atlantic salmon in mixed-stock fisheries in North America should be zero in each of the years 2026 and 2027. This is the same catch advice that was issued for 2024 and 2025.

ICES advises that when the MSY approach is applied, fishing should only take place on Atlantic salmon from rivers where stocks are at full reproductive capacity. Mixed-stock fisheries present particular threats and should be managed based on the individual status of all stocks exploited in the fishery.

Non-fisheries conservation considerations

ICES advises that: i) all non-fisheries-related anthropogenic mortalities should be minimized (direct effects on Atlantic salmon survival) and ii) the quantity and quality of Atlantic salmon habitats, connectivity, and the physical, chemical, and biological properties of the habitats should be restored (indirect effects).

NASCO 3.1 Describe the key events of the 2024 fisheries (including the fishery at Saint Pierre and Miquelon)

The provisional nominal catch of Atlantic salmon in eastern North America (NAC), including Canada, the French territory of Saint Pierre and Miquelon (SPM, islands located off the southern coast of Newfoundland), and the United States of America (US), was estimated at 68.3 tonnes (t) in 2024 (Canada: 66.6 t, SPM: 1.7 t, and US: 0 t; tables 1 and 2; Figure 1). Commercial fisheries in Canada have remained closed since 2000. There have been no commercial or recreational fisheries for anadromous Atlantic salmon in the US since 1999.

Unreported catch for Canada in 2024 was 13 t and for US 0 t. France (SPM) did not provide an unreported catch value. Three groups of fishers exploited Atlantic salmon in Canada in 2024: Indigenous, Labrador resident subsistence, and recreational. The fishery in SPM included professional and recreational fishers.

The six stock units assessed for North America are shown in Figure 2.

For Canada, 10% of the catch in 2024 was taken in coastal areas (entirely from Labrador), 34% were taken in-river and 56% in estuaries. The catches from SPM were entirely from coastal areas. For eastern North America overall, 33% of the 2024 catch was in-river, 55% was estuarine, and 12% was coastal (Table 1).

Exploitation rates of both large (≥ 63 cm; multi-sea-winter [MSW] including maiden and repeat spawners) and small (mostly 1SW) Atlantic salmon remained relatively stable until 1984 and 1992, respectively. They then declined sharply with the introduction of restrictive management measures (Figure 3) and continued to decline in the 1990s. In the last few years, exploitation rates have remained among the lowest in the time-series.

The estimated number of Atlantic salmon caught and released in the recreational fisheries of Canada was 30 776 in 2024 representing about 78% of the total catch by number. Of these caught and released individuals, 18 673 were small and 12 103 large in 2024.

Table 1 Atlantic salmon from North America. Atlantic salmon catches and catch locations in the North American Commission (NAC) area in 2024. Catches of NAC-origin Atlantic salmon at Greenland are reported in the West Greenland Commission area.

	Canada					St Pierre & Miquelon	US	North America
	Commercial	Indigenous	Labrador resident	Recreational	Total			
2024 nominal catch (t)	0	51	1	14	67	2	0	68
% of NAC total	0	75	2	21	98	2	0	100
Unreported catch (t)					13	n/a	0	13
Location of catches								
% in-river					34	0	-	33
% in estuaries					56	0	-	55
% coastal					10	100	-	12

Table 2 Atlantic salmon from North America. Total nominal catch (in tonnes, round fresh weight) of Atlantic salmon in homewaters in North America for Canada (small (< 63 cm) and large (≥ 63 cm), and total Atlantic salmon), US, and France (Saint Pierre and Miquelon) from 1990 to 2024. The 2024 figures include provisional data.

Year	Canada			US	St Pierre & Miquelon
	Small Atlantic salmon	Large Atlantic salmon	Total		
1990	425	486	911	2	2
1991	341	370	711	1	1
1992	199	323	522	1	2
1993	159	214	373	1	3
1994	139	216	355	0	3
1995	107	153	260	0	1
1996	138	154	292	0	2
1997	103	126	229	0	2
1998	87	70	157	0	2
1999	88	64	152	0	2
2000	95	58	153	0	2
2001	86	61	148	0	2
2002	99	49	148	0	2
2003	81	60	141	0	3
2004	94	68	161	0	3
2005	83	56	139	0	3
2006	82	55	137	0	3
2007	63	49	112	0	2
2008	100	57	158	0	4
2009	74	52	126	0	3
2010	100	53	153	0	3
2011	110	69	179	0	4
2012	74	52	126	0	3
2013	72	66	137	0	5
2014	77	41	118	0	4
2015	86	54	140	0	4
2016	79	56	135	0	5
2017	55	55	110	0	3
2018	39	39	79	0	1
2019	53	47	100	0	1
2020	52	51	103	0	2
2021	58	40	98	0	2
2022	45	45	90	0	1
2023	36	52	88	0	1
2024	31	35	67	0	2

Published 02 May 2025

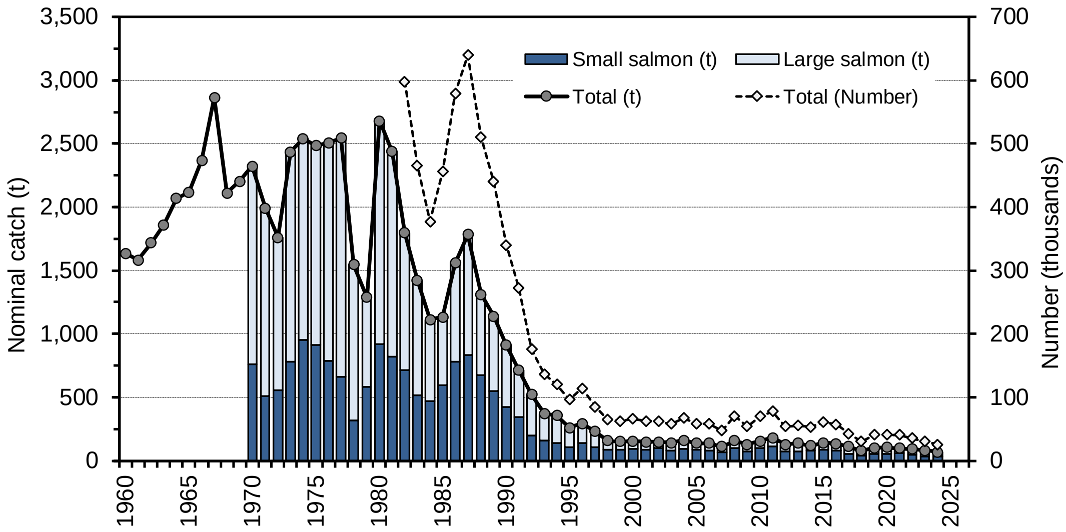


Figure 1 Atlantic salmon from North America. Nominal catch (tonnes [t] and number in thousands) of small (< 63 cm; one-sea-winter [1SW]) and large (≥ 63 cm; multi-sea-winter [MSW] including maiden and repeat spawners) Atlantic salmon in Canada (combined catches in US and Saint Pierre and Miquelon are ≤ 6 t in any year) from 1960 to 2024.

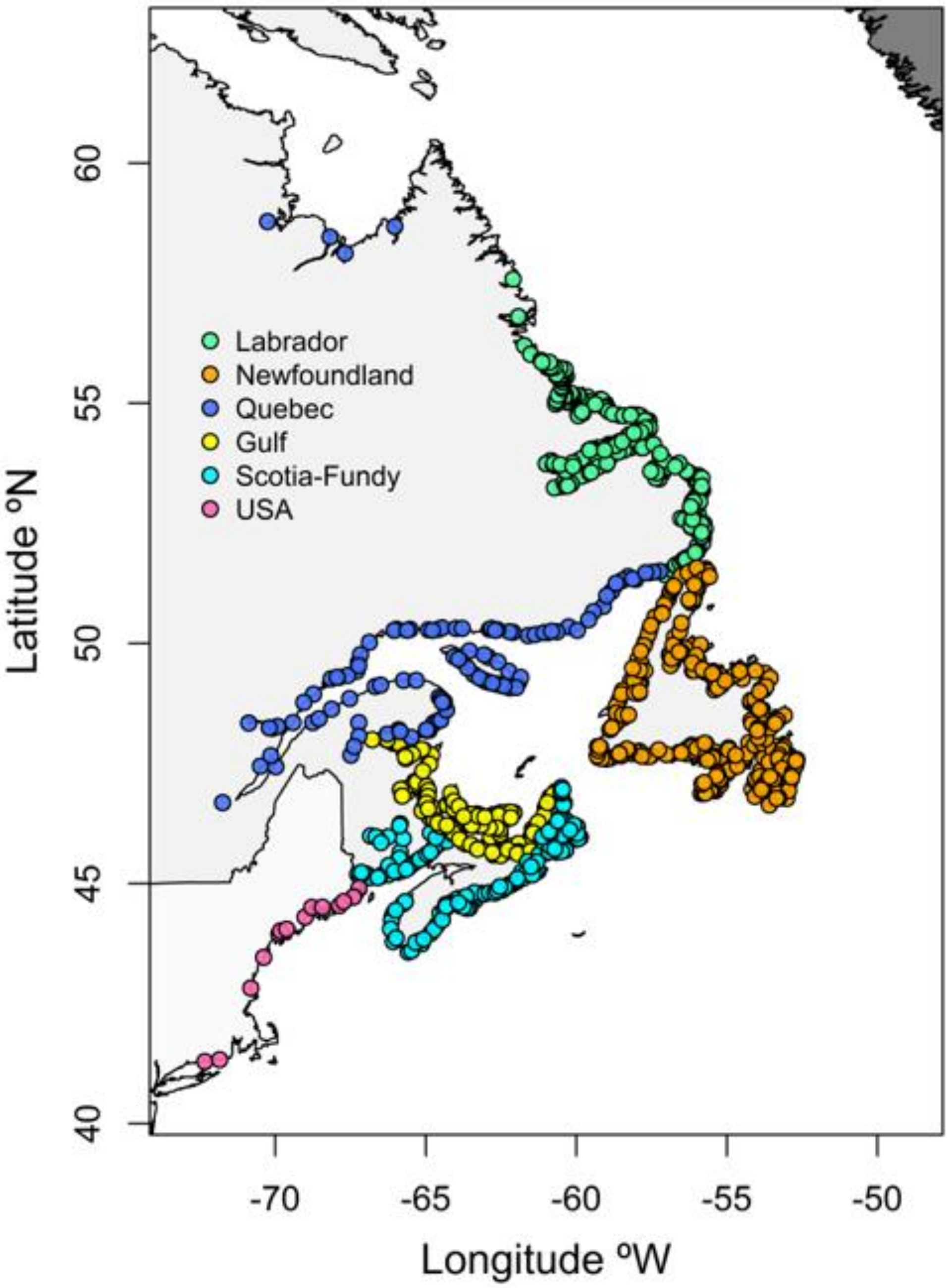


Figure 2 Atlantic salmon from North America. Stock units for Atlantic salmon (*Salmo salar*) in the North American Commission (NAC) area. Dots indicate locations of Atlantic salmon rivers.

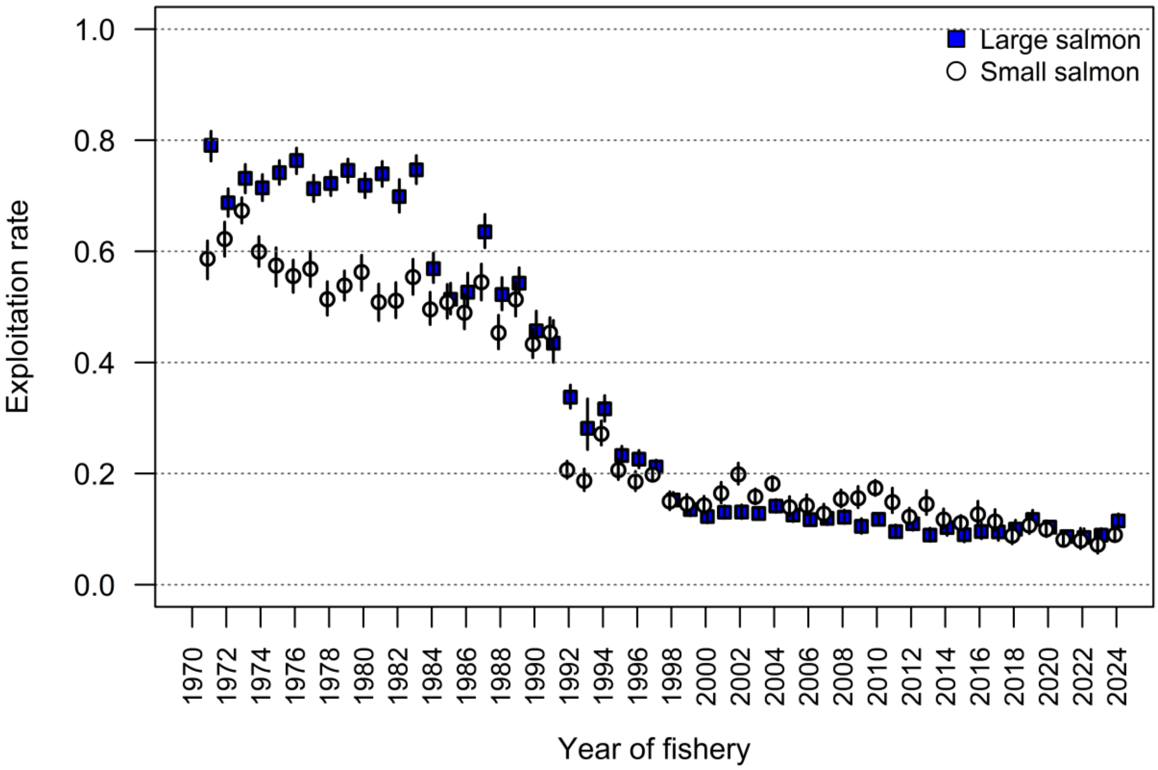


Figure 3 Atlantic salmon from North America. Exploitation rates (total nominal catch in the North American Commission [NAC] area divided by total returns to the coast of NAC) in North America on small (< 63 cm; one-sea-winter [1SW]) and large (≥ 63 cm; multi-sea-winter [MSW] including maiden and repeat spawners) Atlantic salmon from 1971 to 2024.

Origin and composition of catches

In the past, salmon from both Canada and US were taken in the commercial fisheries of eastern Canada. Sampling programmes of current marine fisheries (Labrador; SPM) are used to determine the region of origin of caught salmon (ICES, 2025).

In 2024, 772 samples were collected from the Labrador Indigenous and subsistence fisheries for genetic analyses; the sampling rate was 6%, and 726 samples were successfully analysed. As in previous years, the estimated origin of the samples was dominated (≥ 95%) by the Labrador genetic reporting groups. No fish of US origin were detected in 2024.

Genetic analyses were also conducted on the 45 tissue samples (8% of the catch) collected in the SPM fishery in 2024. Samples were dominated (97%) by the genetic reporting groups in Quebec, Gulf, and Newfoundland. Large Atlantic salmon were mainly from the Gulf (85%), while small Atlantic salmon were mainly from groups in Newfoundland (94%).

NASCO 3.2 Update age-specific stock conservation limits (CLs) based on new information as available, including updating the time-series of the number of river stocks with established CLs by jurisdiction

Limit reference points in terms of 2SW conservation limits (CLs) have been defined for all six stock units in North America (MFFP, 2016; DFO, 2018; ICES, 2020). For Scotia–Fundy and US stocks, which are far below the established CLs, rebuilding Management Objectives (MOs) are used to assess stock status. The MOs were developed specifically to support the provision of catch advice. For Quebec, the 2SW CLs have been updated based on revised biological characteristics and the limit reference points used for domestic fishery management (MFFP, 2016). No other changes to the 2SW CLs or MOs were made from those identified previously (ICES, 2020; Table 3). Total egg requirements by stock unit are presented in support of analysis and advice using the life-cycle model (LCM).

River-specific assessments were provided for 76 rivers in 2024. CLs exceeded or equaled the river-specific CLs in 25 of the 76 assessed rivers (33%) but were less than 50% of CLs in 39 rivers (51% as shown on the map in Figure 14, Figure 4). Large deficiencies (< 10% CLs) were noted in 18 assessed rivers (24%).

In Canada, CLs were first established in 1991 for 74 rivers. Since then, the number of rivers with defined CLs increased to 266 in 1997 and to 498 in 2018 (Figure 4). The number of Canadian rivers assessed annually has ranged from 57 to 91, and the annual percentages of these rivers achieving CL has ranged from 26% to 70% with no temporal trend. CLs have been established for 33 river stocks in US since 1995 (Figure 4). One additional US river (Kennebec River) was monitored, but CL attainment was not reported because a recovery programme transfers adult salmon into inaccessible habitat not considered within the established CL.

Table 3 Atlantic salmon from North America. The two-sea-winter (2SW) conservation limits (CLs), 2SW rebuilding management objectives, and total egg requirements for the stock units in North America.

Country and commission area	Region	2SW spawner requirement (number of fish)	2SW rebuilding management objective (number of fish)	Total egg requirement (million eggs)
Canada	Labrador	34746		239.14
	Newfoundland	4022		417.78
	Quebec	17245		124.60
	Southern Gulf of St Lawrence	18737		171.82
	Scotia–Fundy	24705	10976	253.53
Canada total		99574		1206.87
US total		29199	4549	105.08
North America total		128773	15 525	1311.95

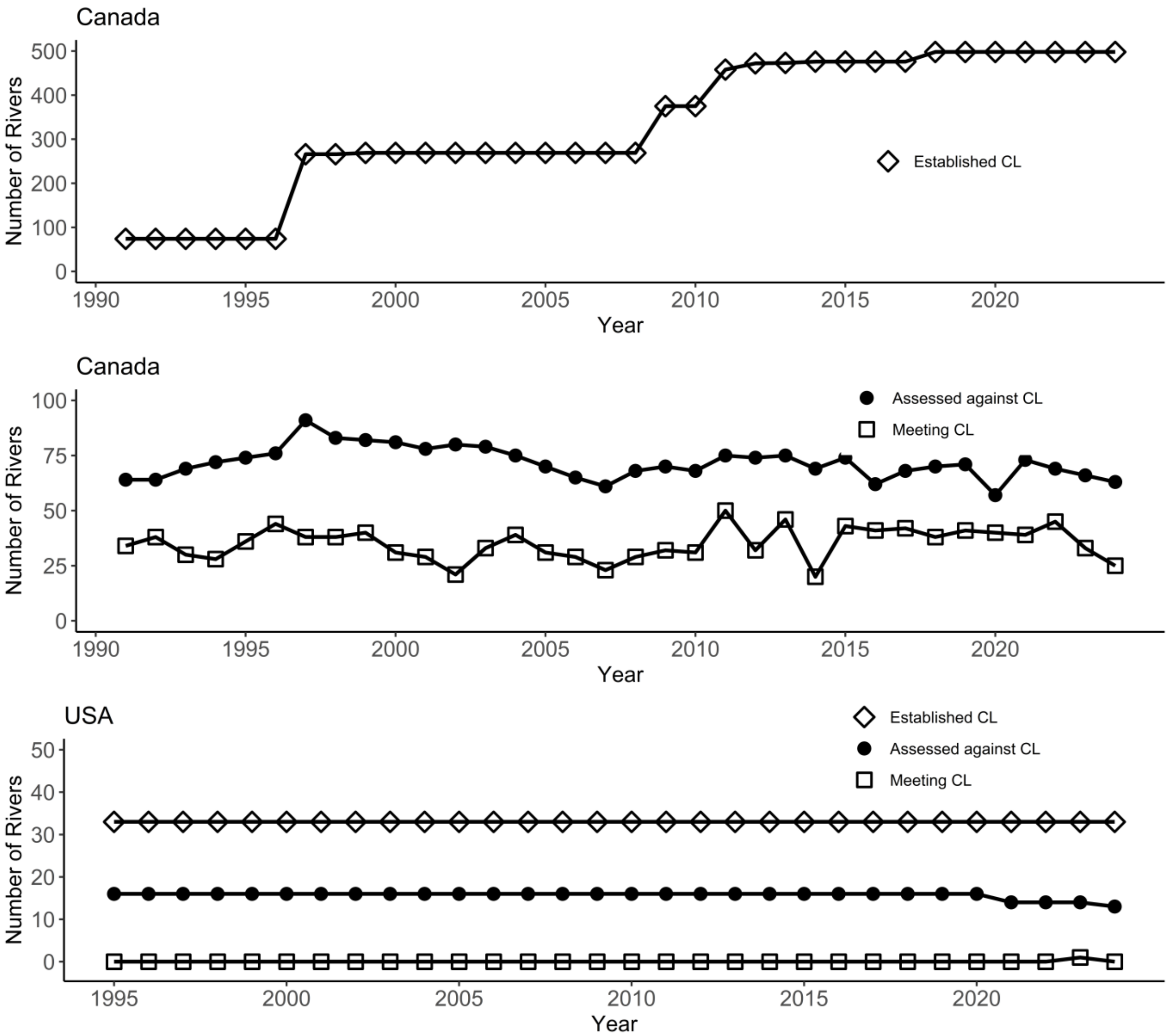


Figure 4 Atlantic salmon from North America. Time-series for Canada and US showing the number of rivers with established conservation limits (CLs), the number of rivers assessed, and the number of assessed rivers meeting CLs for the period 1991 to 2024. Due to differences in scale, data for Canada are split, with the number of established CL on a separate panel

NASCO 3.3 Describe the status of the stocks, including updating the time-series of trends in the number of river stocks meeting CLs by jurisdiction

Stock status is presented for the six stock units identified in Figure 2 and overall for the North American Commission area (NAC).

Returns of 1SW (small Atlantic salmon), MSW (large Atlantic salmon including maiden and repeat spawners), and 2SW (a subset of MSW) Atlantic salmon to each stock unit were estimated by the run-reconstruction methods reported in ICES (1993). Returns are the number of Atlantic salmon that returned to each geographic region, including fish caught by homewater commercial fisheries, except for the Newfoundland and Labrador regions, where returns do not include catches in commercial, Indigenous, or subsistence fisheries.

ICES benchmarked the LCM in 2023 and it was used for the first time in 2024 to describe and forecast stock status (ICES, 2024a). This model uses a risk analysis framework that considers CLs or alternate MOs of the NAC and NEAC areas. The risk analysis framework makes full use of the outputs from the LCM. For each of the six stock units, and overall for NAC, the LCM provided estimates of the pre-fishery abundance (PFA) for maturing 1SW, non-maturing 1SW, and maturity groups combined (total PFA) as of 01 January of the first winter at sea for the time-series 1971 to 2023 and forecasts of abundance for the 2024–2028 PFA years. Pre-fishery abundance estimates account for returns to rivers and fisheries at sea in North America and West Greenland and are corrected for natural mortality. Catches of North American–origin Atlantic salmon in the fishery at the Faroes are not included. The LCM outputs also include estimates of returns and spawners (1SW, MSW, and 2SW), that are in line with run-reconstruction estimates and eggs (1SW and MSW). Outputs from the LCM for NAC and by stock unit are shown in Figure 5 (total area) and figures 6 to 11 (by stock unit).

The total number of 1SW Atlantic salmon returning to NAC in 2024 was 288 300, which is amongst the lowest of the 55-year time-series. The 1SW returns were amongst the lowest of the time-series for Gulf, Quebec, and Scotia–Fundy. The returns of 1SW decreased from the previous five-year mean for all regions (−25% to −86%), except for US (37%), which remained at low levels. Labrador and Newfoundland combined accounted for 94% of the total 1SW Atlantic salmon returns for NAC.

The total number of MSW Atlantic salmon returning to NAC in 2024 was 92 000, the second lowest of the 55-year time-series. MSW Atlantic salmon returns were the lowest of the time-series for Gulf and Quebec and decreased from the previous five-year mean for all regions (−0.1% to −52%). Labrador and Newfoundland combined accounted for 61% of the total MSW Atlantic salmon returns for NAC.

The total number of 2SW Atlantic salmon (subset of MSW) returning to NAC in 2024 was 54 400, the second lowest of the 55-year time-series. The 2SW Atlantic salmon returns decreased from the previous five-year mean for all regions (−5% to −52%). On average (2020-2024), the majority of 2SW Atlantic salmon returns (93%) for NAC were from Labrador (43%), Quebec (28%), and Gulf (22%). There are few 2SW Atlantic salmon returns to Newfoundland (5%), as the majority of the large Atlantic salmon returns to that region are comprised of previously spawned 1SW Atlantic salmon. On average (2020–2024), Scotia–Fundy and US each represent 1% of NAC 2SW returns.

In 2024, the median estimates of 2SW Atlantic salmon returns and spawners to rivers were below the respective 2SW CLs (i.e. at full reproductive capacity) in all stock units of NAC (Figure 12). Total eggs from returns and spawners exceeded the CLs only in Labrador (Figure 13). Particularly large deficits relative to CLs and rebuilding management objectives are noted in the Scotia–Fundy region.

Estimates of PFA (defined as the number of maturing and non-maturing 1SW Atlantic salmon) indicate continued low abundance of North American Atlantic salmon in the ocean. The total PFA in the Northwest Atlantic has shown an overall declining trend since the 1970s, with a period of persistent low abundance since the early 1990s. From 1993 to 2024, the mean total PFA was 796 000 fish, about half the mean abundance (1 606 600 fish) from 1971 to 1992.

Despite major changes in fisheries, returns to the southern regions of NAC (Scotia–Fundy and US) remain near historical lows and many populations are currently at risk of extirpation. All Atlantic salmon stocks within the US and the Scotia–Fundy regions have been or are being considered for listing under country specific species at risk legislation. The continued low abundance of Atlantic salmon stocks across North America, despite significant fishery reductions, strengthens the conclusions that factors acting on survival in the first and second years at sea, at both local and broad ocean scales, are constraining abundance of Atlantic salmon. Declines in smolt production in some rivers of eastern North America are now being observed and are also contributing to lower adult abundance.

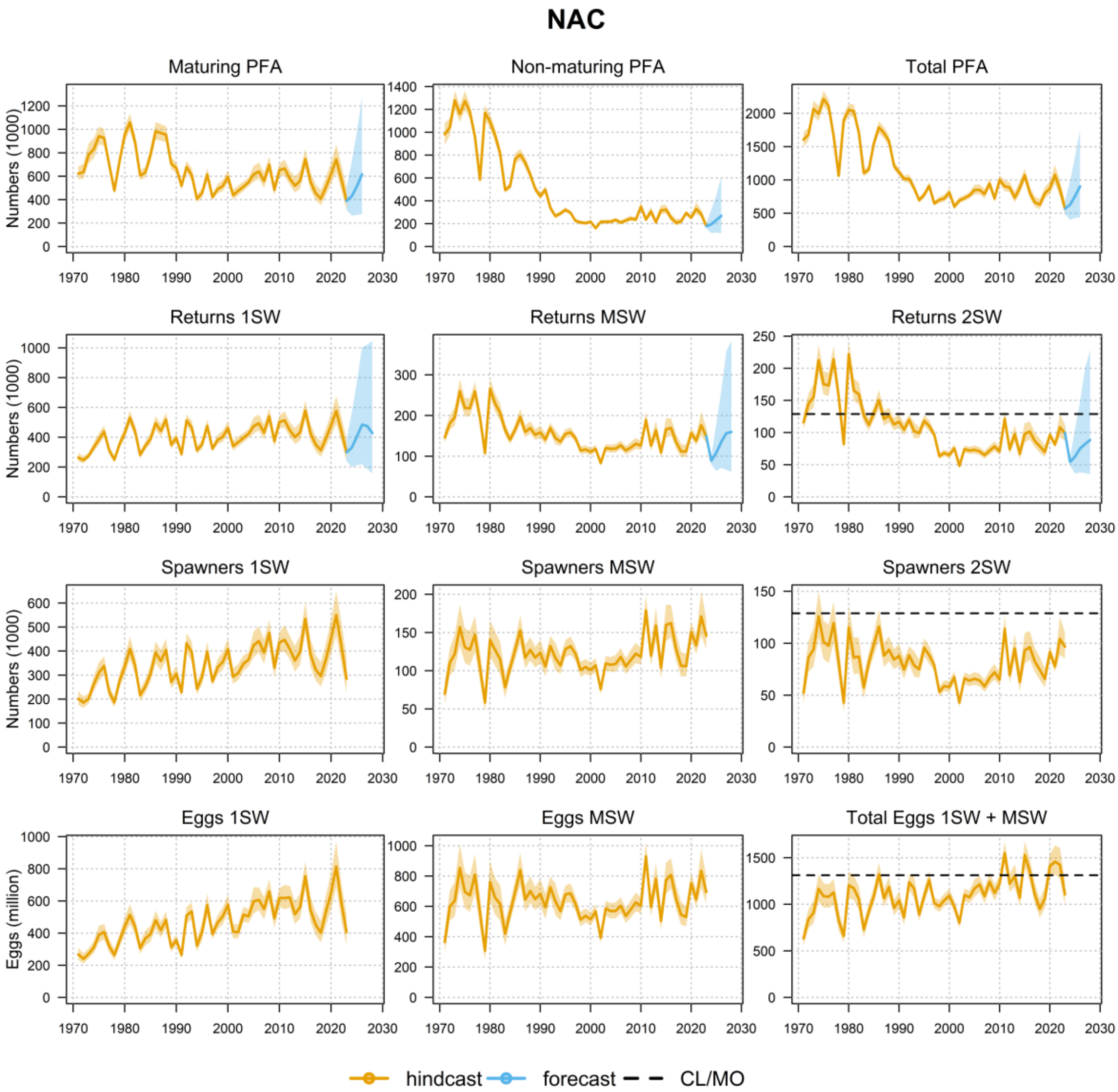


Figure 5 Atlantic salmon from North America. Estimated (median 5th to 95th percentile range) pre-fishery abundance (PFA) for one-sea-winter (1SW) maturing and 1SW non-maturing salmon, returns of 1SW, multi-sea-winter (MSW; mostly maiden MSW and repeat spawners) and 2SW, spawners of 1SW, MSW (mostly maiden MSW and repeat spawners) and 2SW and egg contribution from 1SW, MSW and total (1SW/MSW) for North American Commission (NAC) as derived from the life-cycle model (LCM). Solid line: median of the marginal posterior distributions. Yellow shaded area: hindcasting on the historical time-series. Blue shaded area (for PFA and returns): forecasting obtained under a scenario with 0 catches in all fisheries. The dashed line corresponds to the CL for NAC. Forecasts of PFA and returns are provided for years 2024 to 2028.

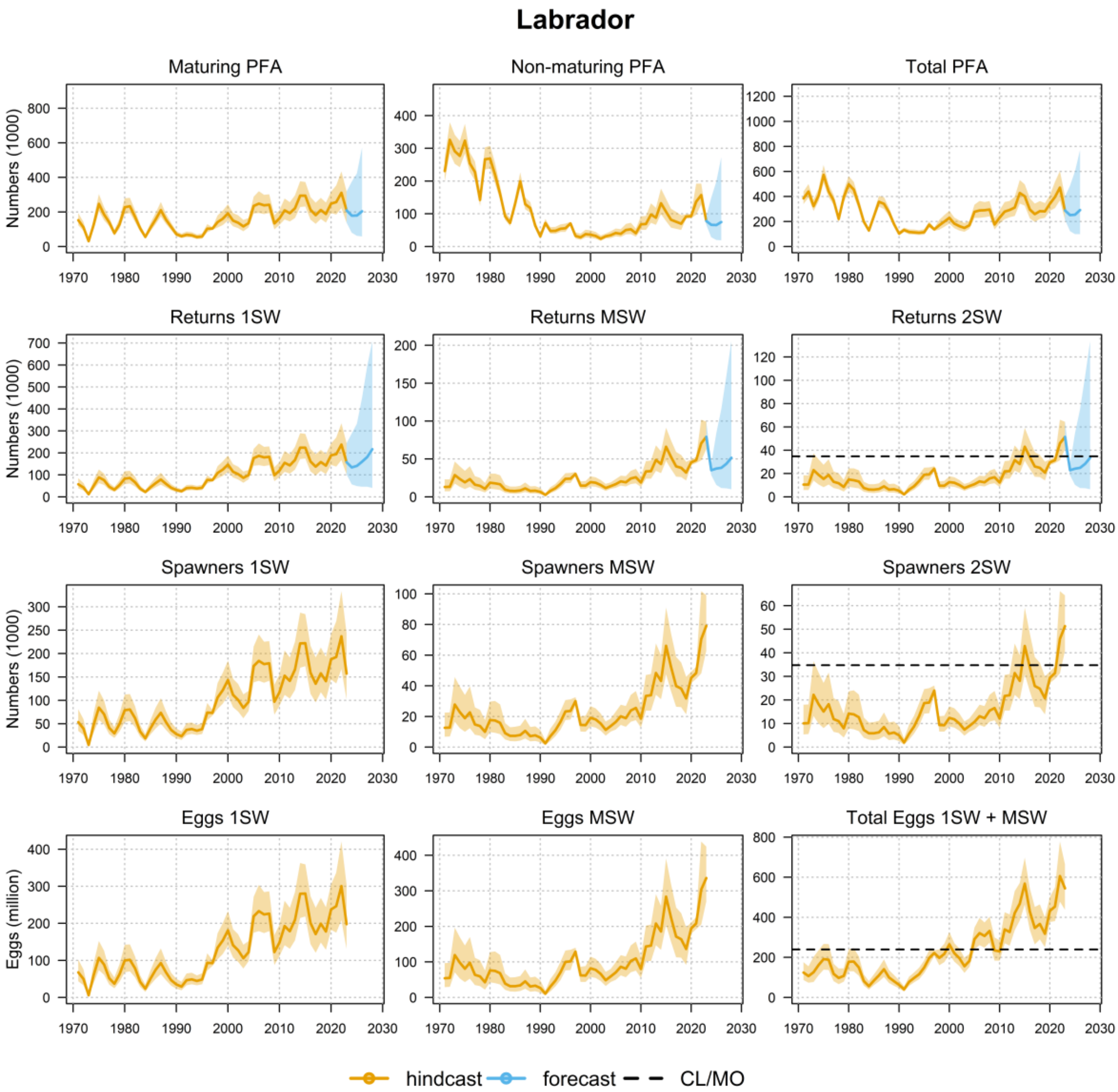


Figure 6 Atlantic salmon from North America. Estimated (median 5th to 95th percentile range) pre-fishery abundance (PFA) for one-sea-winter (1SW) maturing and 1SW non-maturing salmon, returns of 1SW, multi-sea-winter (MSW; mostly maiden MSW and repeat spawners) and 2SW, spawners of 1SW, MSW (mostly maiden MSW and repeat spawners) and 2SW and egg contribution from 1SW, MSW and total (1SW/MSW) for Labrador as derived from the life-cycle model (LCM). Solid line: median of the marginal posterior distributions. Yellow shaded area: hindcasting on the historical time-series. Blue shaded area (for PFA and returns): forecasting obtained under a scenario with 0 catches in all fisheries. The dashed line corresponds to the CL for Labrador. Forecasts of PFA and returns are provided for years 2024 to 2028.

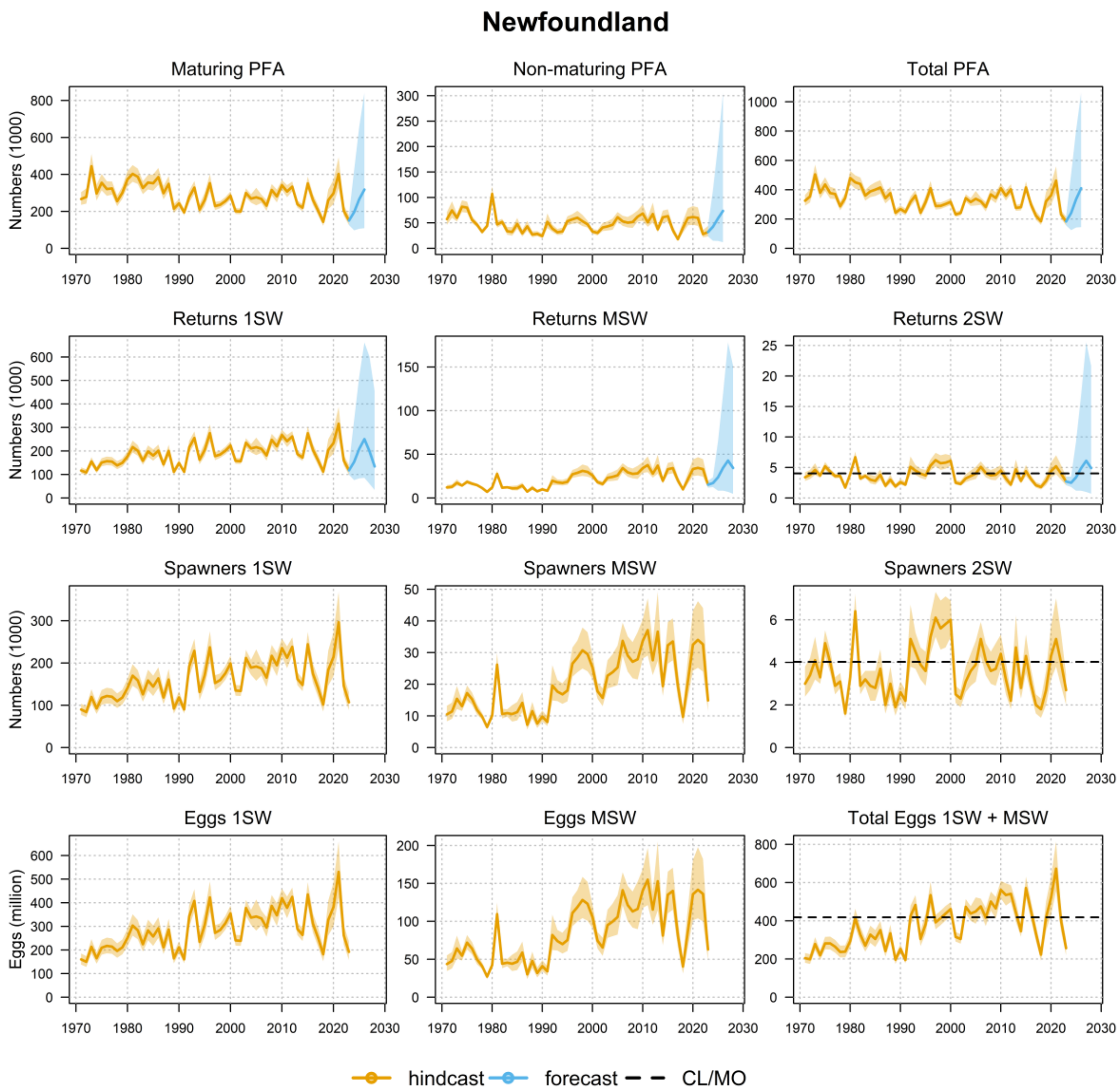


Figure 7 Atlantic salmon from North America. Estimated (median 5th to 95th percentile range) pre-fishery abundance (PFA) for one-sea-winter (1SW) maturing and 1SW non-maturing salmon, returns of 1SW, multi-sea-winter (MSW; mostly maiden MSW and repeat spawners) and 2SW, spawners of 1SW, MSW (mostly maiden MSW and repeat spawners) and 2SW and egg contribution from 1SW, MSW and total (1SW/MSW) for Newfoundland as derived from the life-cycle model (LCM). Solid line: median of the marginal posterior distributions. Yellow shaded area: hindcasting on the historical time-series. Blue shaded area (for PFA and returns): forecasting obtained under a scenario with 0 catches in all fisheries. The dashed line corresponds to the CL for Newfoundland. Forecasts of PFA and returns are provided for years 2024 to 2028.

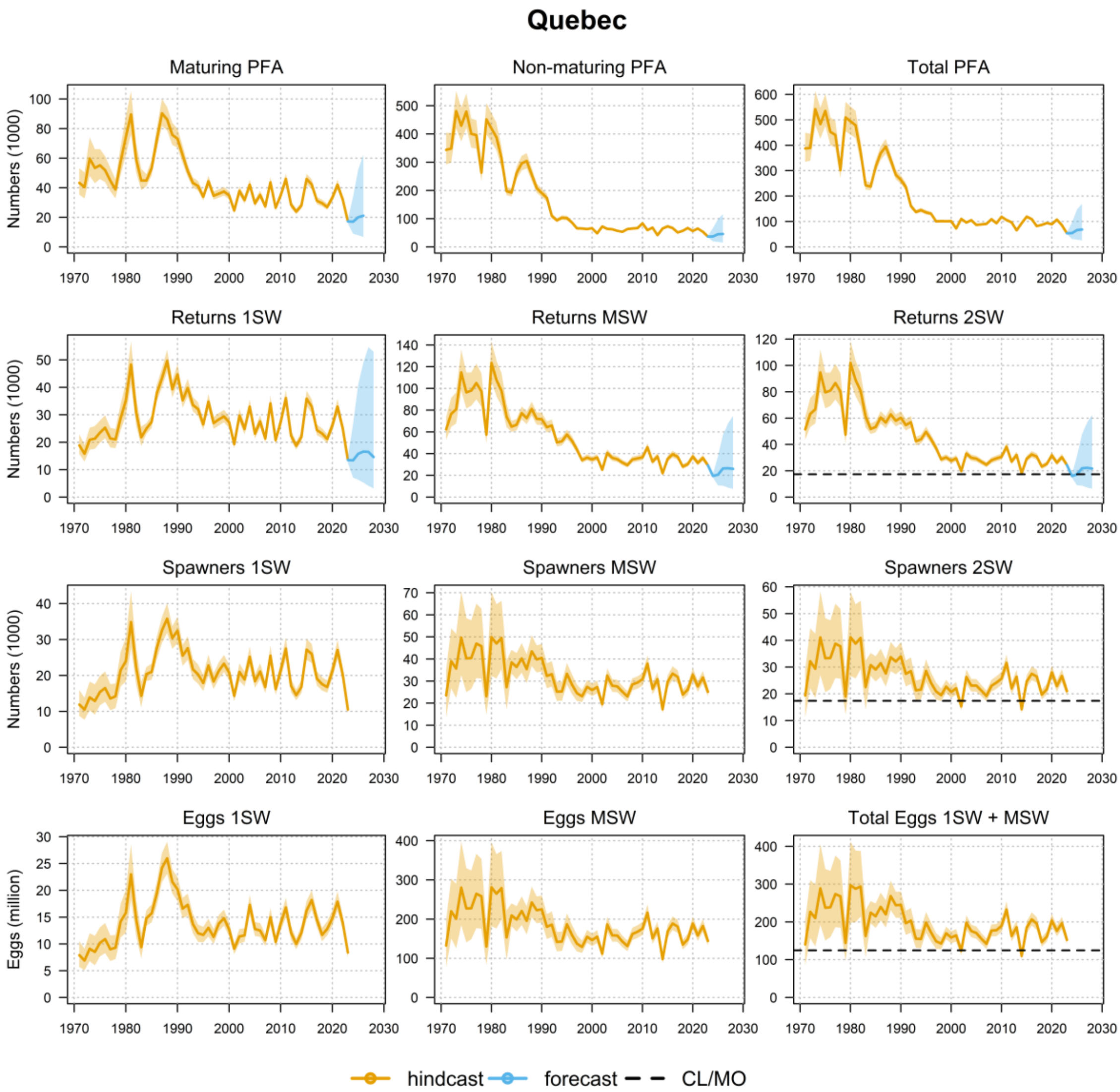


Figure 8 Atlantic salmon from North America. Estimated (median 5th to 95th percentile range) pre-fishery abundance (PFA) for one-sea-winter (1SW) maturing and 1SW non-maturing salmon, returns of 1SW, multi-sea-winter (MSW; mostly maiden MSW and repeat spawners) and 2SW, spawners of 1SW, MSW (mostly maiden MSW and repeat spawners) and 2SW and egg contribution from 1SW, MSW and total (1SW/MSW) for Quebec as derived from the life-cycle model (LCM). Solid line: median of the marginal posterior distributions. Yellow shaded area: hindcasting on the historical time-series. Blue shaded area (for PFA and returns): forecasting obtained under a scenario with 0 catches in all fisheries. The dashed line corresponds to the CL for Quebec. Forecasts of PFA and returns are provided for years 2024 to 2028.

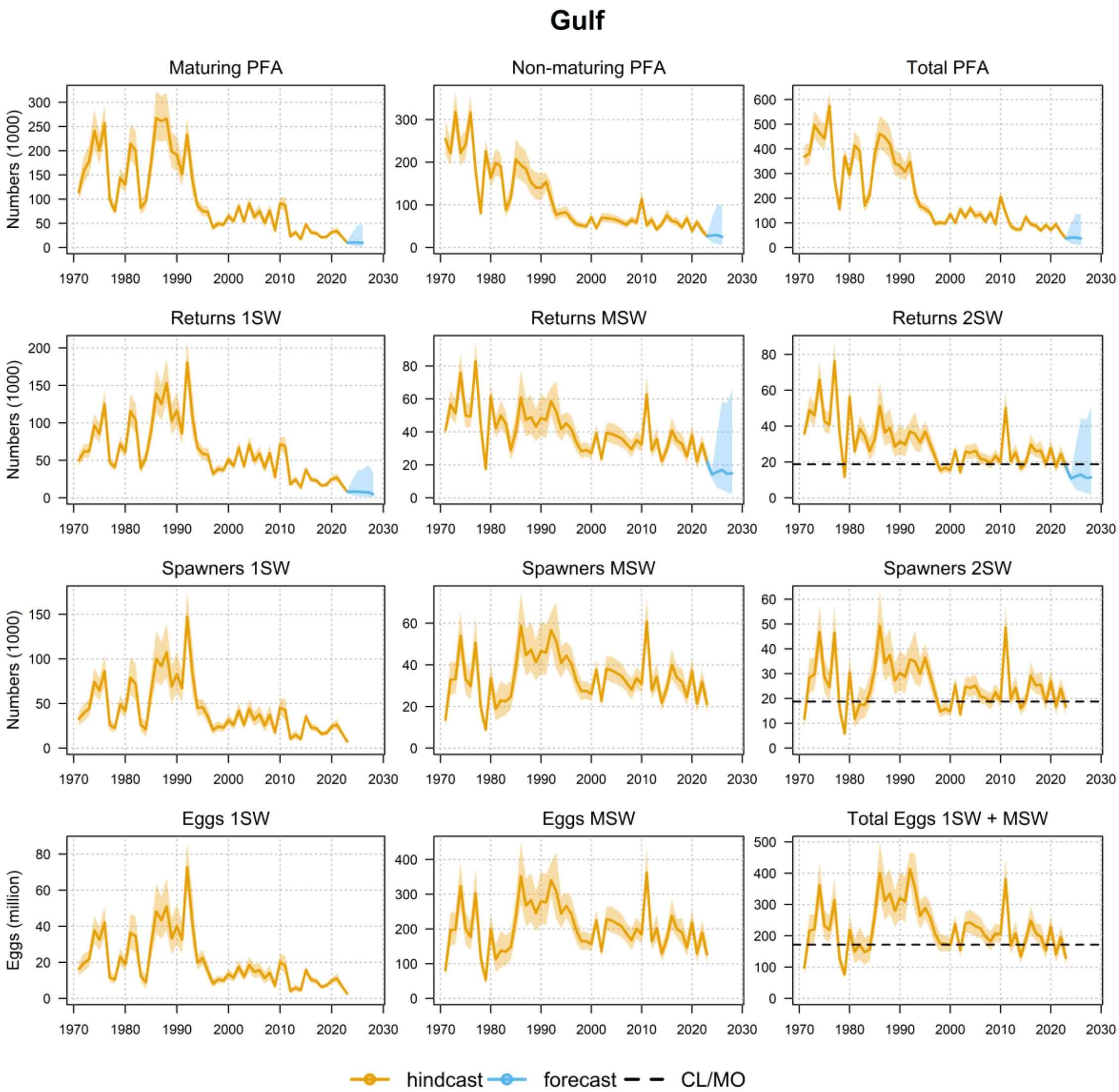


Figure 9 Atlantic salmon from North America. Estimated (median 5th to 95th percentile range) pre-fishery abundance (PFA) for one-sea-winter (1SW) maturing and 1SW non-maturing salmon, returns of 1SW, multi-sea-winter (MSW; mostly maiden MSW and repeat spawners) and 2SW, spawners of 1SW, MSW (mostly maiden MSW and repeat spawners) and 2SW and egg contribution from 1SW, MSW and total (1SW/MSW) for Gulf as derived from the life-cycle model (LCM). Solid line: median of the marginal posterior distributions. Yellow shaded area: hindcasting on the historical time-series. Blue shaded area (for PFA and returns): forecasting obtained under a scenario with 0 catches in all fisheries. The dashed line corresponds to the CL for Gulf. Forecasts of PFA and returns are provided for years 2024 to 2028.

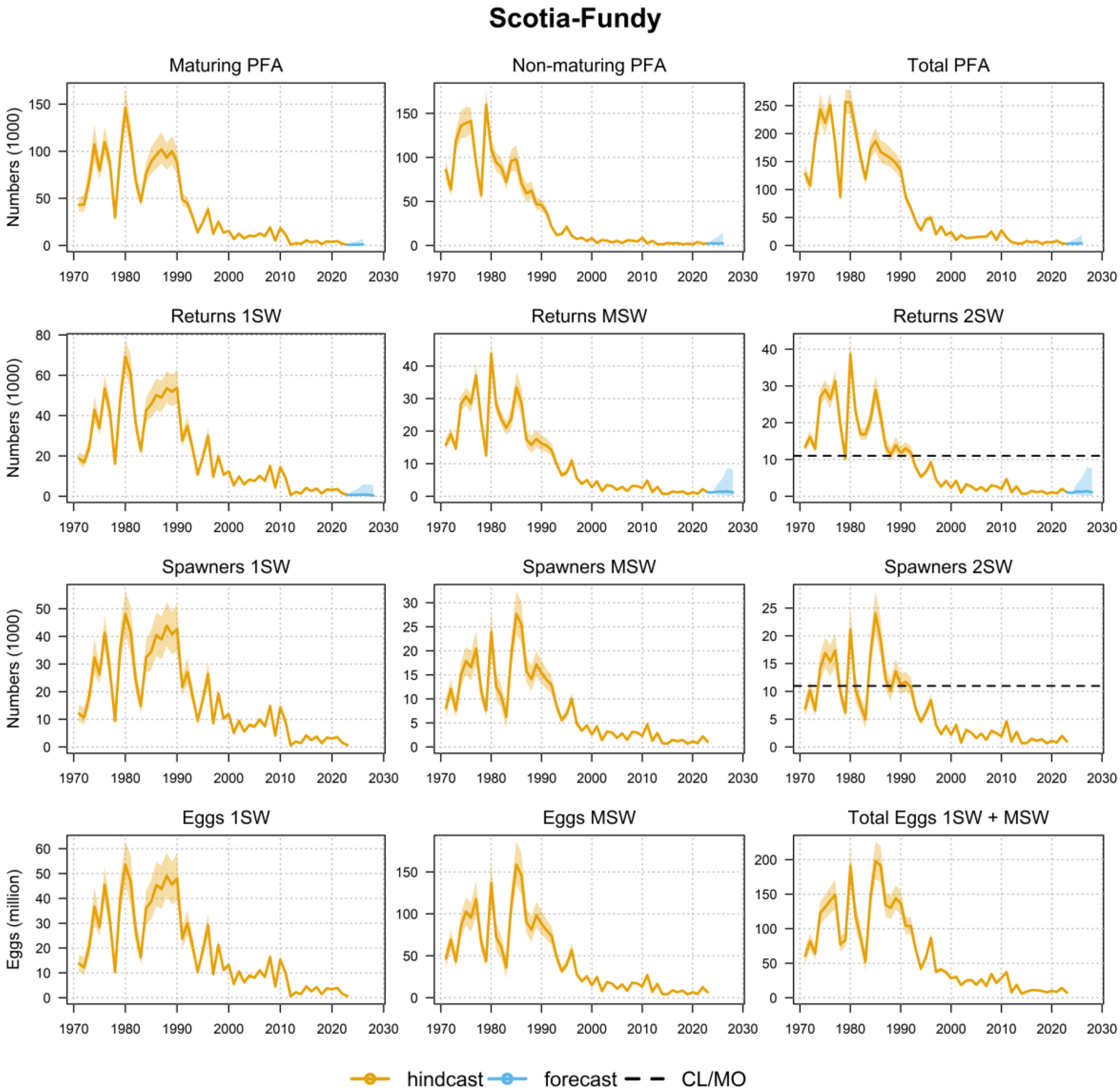


Figure 10 Atlantic salmon from North America. Estimated (median 5th to 95th percentile range) pre-fishery abundance (PFA) for one-sea-winter (1SW) maturing and 1SW non-maturing salmon, returns of 1SW, multi-sea-winter (MSW; mostly maiden MSW and repeat spawners) and 2SW, spawners of 1SW, MSW (mostly maiden MSW and repeat spawners) and 2SW and egg contribution from 1SW, MSW and total (1SW/MSW) for Scotia–Fundy as derived from the life-cycle model (LCM). Solid line: median of the marginal posterior distributions. Yellow shaded area: hindcasting on the historical time-series. Blue shaded area (for PFA and returns): forecasting obtained under a scenario with 0 catches in all fisheries. The dashed line corresponds to the CL for Scotia–Fundy. Forecasts of PFA and returns are provided for years 2024 to 2028.

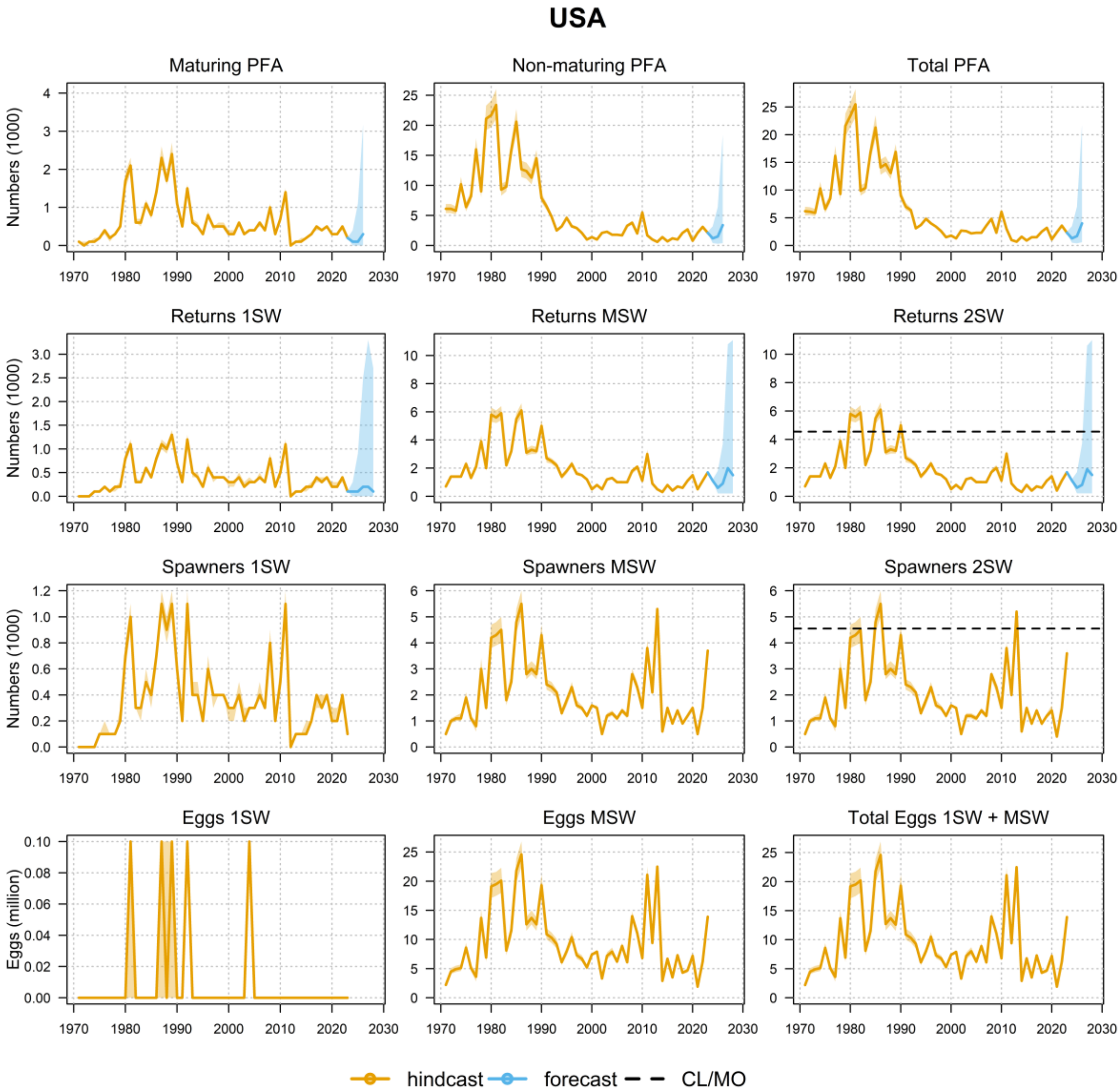


Figure 11 Atlantic salmon from North America. Estimated (median 5th to 95th percentile range) pre-fishery abundance (PFA) for one-sea-winter (1SW) maturing and 1SW non-maturing salmon, returns of 1SW, multi-sea-winter (MSW; mostly maiden MSW and repeat spawners) and 2SW, spawners of 1SW, MSW (mostly maiden MSW and repeat spawners) and 2SW and egg contribution from 1SW, MSW and total (1SW/MSW) for US as derived from the life-cycle model (LCM). Solid line: median of the marginal posterior distributions. Yellow shaded area: hindcasting on the historical time-series. Blue shaded area (for PFA and returns): forecasting obtained under a scenario with 0 catches in all fisheries. The dashed line corresponds to the management objective for US. Forecasts of PFA and returns are provided for years 2024 to 2028. The 2SW CL for US (29 990 fish) is off the scale in the plot. For US, estimated spawners exceed the estimated returns in the later years due to adult stocking restoration efforts; therefore, 2SW returns are assessed relative to the management objective for US.

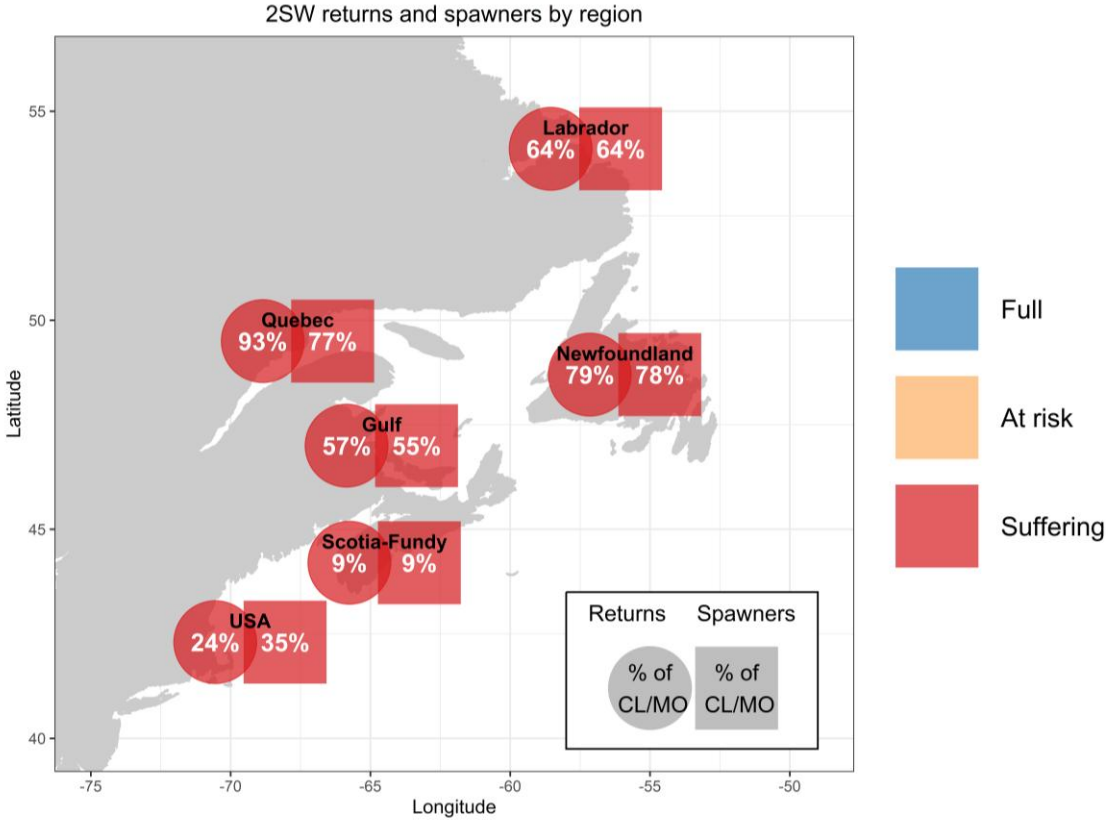


Figure 12 Atlantic salmon from North America. Estimated returns (circle symbol) and spawners (square symbol) of 2SW Atlantic salmon in 2024 to six stock units of North America relative to ICES stock status categories. The percentage of the 2SW conservation limits (CLs) for the four northern regions and to the rebuilding management objectives (MOs) for the two southern areas are shown based on the median of the Monte Carlo distributions from the run reconstruction. The colour shading is interpreted as follows: blue refers to the stock being at full reproductive capacity (median and 5th percentile of the Monte Carlo distributions are above the CL), orange refers to the stock being at risk of suffering reduced reproductive capacity (median is above but the 5th percentile is below the CL), and red refers to the stock suffering reduced reproductive capacity (the median is below the CL).

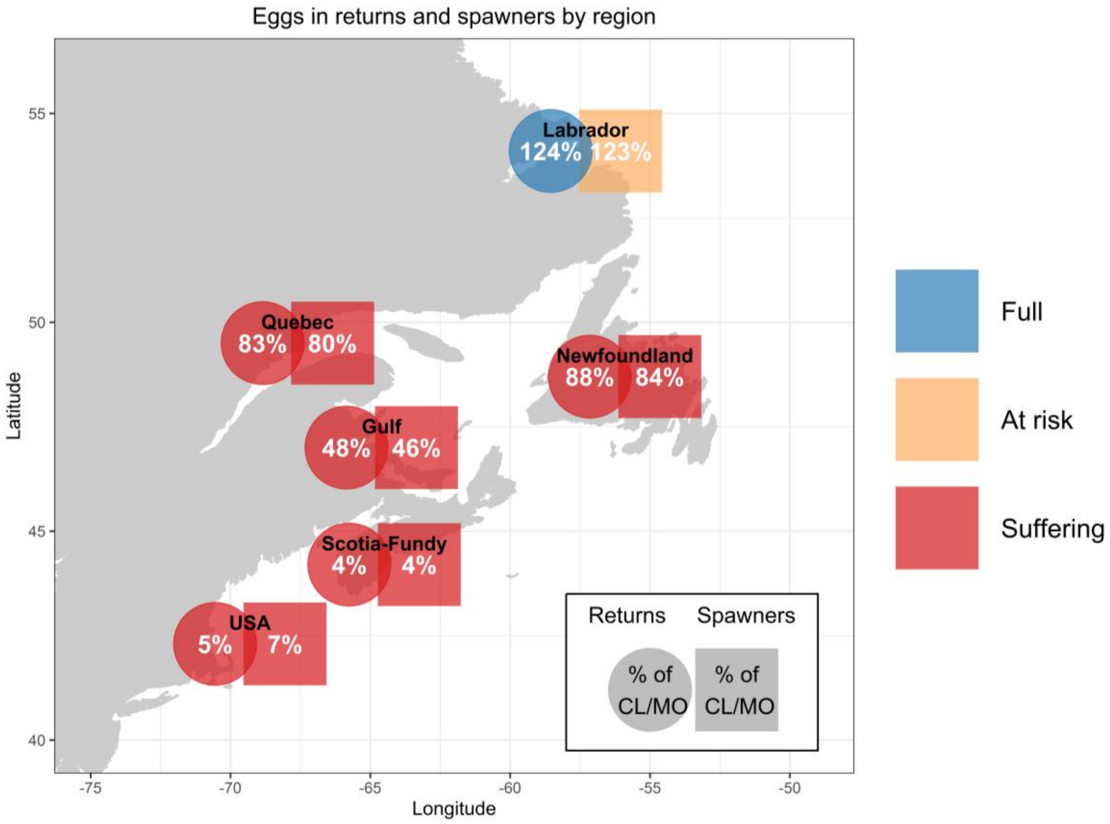


Figure 13 Atlantic salmon from North America. Estimated total eggs in the returns (circle symbol) and spawners (square symbol) of Atlantic salmon in 2024 to six stock units of North America relative to ICES stock status categories. The percentage of the conservation limits (CLs) for the four northern regions and to the rebuilding management objectives (MOs) for the two southern areas are shown based on the median of the Monte Carlo distribution from the run reconstruction. The colour shading is interpreted as follows: blue refers to the stock being at full reproductive capacity (median and 5th percentile of the Monte Carlo distributions are above the CL), orange refers to the stock being at risk of suffering reduced reproductive capacity (median is above but the 5th percentile is below the CL), and red refers to the stock suffering reduced reproductive capacity (the median is below the CL).

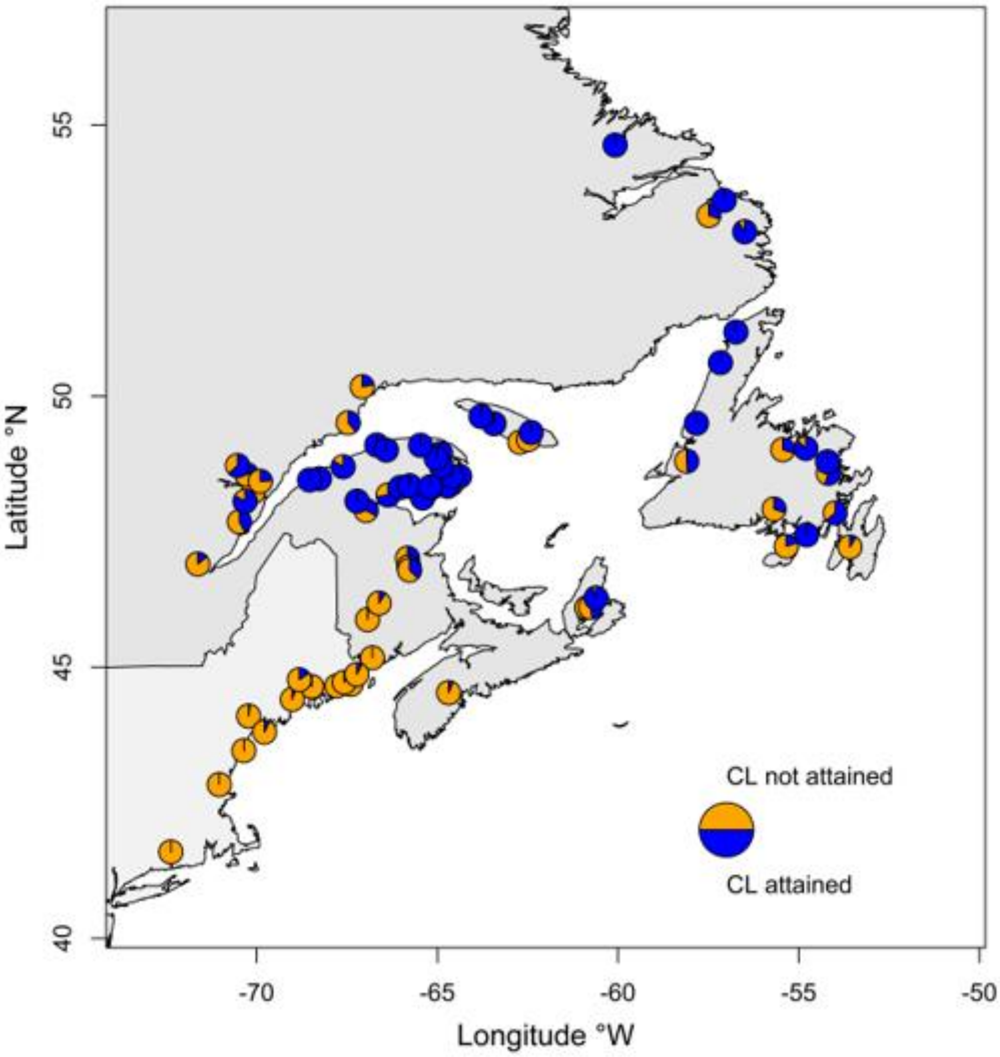


Figure 14 Atlantic salmon from North America. Degree of attainment for the river-specific conservation limit (CL) egg requirement in 76 assessed rivers in 2024. The blue proportion in each pie diagram indicates the degree of attainment of the CL for each assessed river.

Issues relevant for the non-fisheries conservation considerations

Abundance of Atlantic salmon is affected by similar non-fishing influences throughout the North Atlantic. Despite major changes in fisheries management two to three decades ago and increasingly restrictive fisheries measures since then, returns of most Atlantic salmon stocks are at near-historical lows. The continued low and declining abundance of many Atlantic salmon stocks, despite significant fishery reductions, strengthens the conclusion that factors acting on survival in the first and second years at sea, at both local and broad ocean scales, are constraining abundance of Atlantic salmon. Declines in smolt production in some rivers are now being observed and are also contributing to lower adult abundance.

Environmental conditions in both freshwater and marine environments have a marked effect on the status of Atlantic salmon stocks. There are a range of problems in the freshwater environment across the North Atlantic that play a significant role in explaining the poor status of stocks. In many cases, river damming and habitat deterioration have had a negative effect on freshwater environmental conditions. In the marine environment, return rates of adult Atlantic salmon are now at the lowest levels in the time-series for some stocks, even after the closure of marine fisheries. Climatic factors modifying ecosystem conditions and the impact of predators of Atlantic salmon at sea are considered to be the main contributory factors to lower productivity, which is expressed almost entirely in terms of lower marine survival.

Conservation status

Atlantic salmon (*Salmo salar*) was assessed for the IUCN Red List of Threatened Species in 1996, for Europe in 2014, and globally in 2022, and it is listed globally as Threatened under criteria A2bd (Darwall, 2023). In addition, there are also regional and national Red List assessments for this species.

This is for information purposes, and ICES does not formally endorse the methods used by third parties to create lists.

Basis of the assessment

Table 4 Atlantic salmon from North America. The basis of the assessment.

ICES stock data category	1 (ICES, 2023a)
Assessment type	A run reconstruction model and a Bayesian life-cycle model (LCM), taking into account uncertainties in data and process error. Results presented in a risk analysis framework (ICES, 2024a, 2024b, 2025).
Input data	Nominal catches (by sea-age class) for commercial, Indigenous, subsistence, and recreational fisheries; estimates of unreported/illegal catches; estimates of exploitation rates; natural mortalities (from earlier assessments); run reconstructions of returns and spawners to six stock units of the North American Commission (NAC)
Discards and bycatch	It is illegal to retain Atlantic salmon that are incidentally captured in fisheries not directed at Atlantic salmon (i.e. bycatch). In the directed recreational fishery, mortality from catch and release is accounted for in the regional assessments to estimate spawners. There is no accounting of discarding mortality in non-Atlantic salmon directed fisheries.
Indicators	None
Other information	Last benchmarked in 2023 (ICES, 2023b)
Working group	Working Group on North Atlantic Salmon (WGNAS)

Identify relevant data deficiencies, monitoring needs, and research requirements

This advice is generated from data provided from the six geographic regions of NAC (Quebec, Newfoundland, Labrador, Gulf, Scotia–Fundy, and US). Salmon stocks in the Inner Bay of Fundy area have been federally listed as endangered under the Canadian Species at Risk Act and, with the exception of one stock, have a localized migration strategy while at sea and a high incidence of maturity after one winter at sea. Information on the Inner Bay of Fundy stocks is not included in this advice.

The following data deficiencies, monitoring needs, and research requirements were identified as relevant to the NAC area:

- Sampling of all aspects of the Labrador and SPM fishery across the fishing season will improve the information on biological characteristics and stock origin of Atlantic salmon caught in these mixed-stock fisheries. A sampling rate of at least 10% of catches across the fishery season would be required to achieve a relatively unbiased estimate.

- Additional monitoring in Labrador should be considered to estimate stock status for that region. Additionally, efforts should be undertaken to evaluate the utility of other available data sources (e.g. Indigenous and recreational catches and effort) to describe stock status in Labrador.

The full list of data deficiencies, monitoring needs, and research requirements for North Atlantic salmon is presented in Section 1.5 of ICES (2025).

References

Darwall, W. R. T. 2023. *Salmo salar*. The IUCN Red List of Threatened Species 2023: e.T19855A67373433. https://dx.doi.org/10.2305/IUCN.UK.2023-1.RLTS.T19855A67373433.en.

DFO. 2018. Limit Reference Points for Atlantic Salmon Rivers in DFO Gulf Region. DFO Canadian Science Advisory Secretariat Science Response, 2018/015. https://publications.gc.ca/pub?id=9.856161&sl=0

ICES. 1993. Report of the North Atlantic Salmon Working Group, 5–12 March 1993, Copenhagen, Denmark. ICES CM 1993/Assess:10. 216 pp. https://doi.org/10.17895/ices.pub.5171

ICES. 2020. Working Group on North Atlantic Salmon (WGNAS). ICES Scientific Reports. 2:21. 358 pp. http://doi.org/10.17895/ices.pub.5973

ICES. 2023a. Advice on fishing opportunities. *In* Report of the ICES Advisory Committee, 2023. ICES Advice 2023, section 1.1.1. https://doi.org/10.17895/ices.advice.22240624

ICES. 2023b. Benchmark Workshop on Atlantic salmon in the North Atlantic (WKBSALMON). ICES Scientific Reports. 5:112. 85 pp. https://doi.org/10.17895/ices.pub.24752079

ICES. 2024a. Working Group on North Atlantic Salmon (WGNAS). ICES Scientific Reports, 6:36. 415 pp. https://doi.org/10.17895/ices.pub.25730247

ICES. 2024b. Salmon (*Salmo salar*) in the Northeast Atlantic. ICES Stock Annexes. 112 pp. http://doi.org/10.17895/ices.pub.25737180

ICES. 2025. Working Group on North Atlantic Salmon (WGNAS). ICES Scientific Reports. 7:44. 435 pp. https://doi.org/10.17895/ices.pub.28777226

MFFP (Ministère des Forêts, de la Faune et des Parcs). 2016. Plan de gestion du saumon Atlantique 2016–2026, ministère des Forêts, de la Faune et des Parcs, Direction générale de l'expertise sur la faune et ses habitats, Direction de la faune aquatique, Québec, 40 pp. https://mffp.gouv.qc.ca/nos-publications/plan-de-gestion-saumon-atlantique-2016-2026/. https://mffp.gouv.qc.ca/faune/peche/pdf/PG_saumon_FR.pdf Accessed 24 April 2023.

Recommended citation: ICES. 2025. Atlantic salmon (*Salmo salar*) from North America. *In* Report of the ICES Advisory Committee, 2025. ICES Advice 2025, sal.nac.all. https://doi.org/10.17895/ices.advice.28342826

Annex 1 Glossary of acronyms and abbreviations

1SW *one-sea-winter*; maiden adult Atlantic salmon that have spent one winter at sea.

2SW *two-sea-winter*; maiden adult Atlantic salmon that have spent two winters at sea

CL(s) *conservation limit(s)*, i.e. S_{lim}; demarcation of undesirable stock levels or levels of fishing activity; the ultimate objective when managing stocks and regulating fisheries will be to ensure that there is a high probability that undesirable levels are avoided

ICES *International Council for the Exploration of the Sea*

LCM *Life-cycle model*

MSW *multi-sea-winter. A MSW Atlantic salmon is an adult Atlantic salmon which has spent two or more winters at sea and may be a repeat spawner.*

NAC *North American Commission*. A commission under NASCO.

NASCO *North Atlantic Salmon Conservation Organization*

PFA *pre-fishery abundance;* the numbers of Atlantic salmon estimated to be alive in the ocean from a particular stock at a specified time

SFA *Salmon Fishing Area***;** the 23 areas for which Fisheries and Oceans Canada (DFO) manages the Atlantic salmon fisheries

SPM *the islands of Saint Pierre and Miquelon (France)*

Annex 2 General considerations

Management plans

The North Atlantic Salmon Conservation Organization (NASCO) has adopted an Action Plan for Application of the Precautionary Approach, which stipulates that management measures should be aimed at maintaining all stocks above their CLs through the use of management targets. Conservation limits for North Atlantic salmon stock complexes have been defined by ICES as the level of a stock (number of spawners) that will achieve long-term average MSY. NASCO has adopted the region-specific CLs as limit reference points (S_{lim}); having populations fall below these limits should be avoided with high probability. Within the management plan for the NAC, the following has been agreed for the provision of catch advice on 2SW Atlantic salmon exploited in North America (as non-maturing 1SW and 2SW Atlantic salmon): a risk level (probability) of 75% for simultaneous attainment of the 2SW CLs for the four northern regions (Labrador, Newfoundland, Quebec, Gulf); management objectives defined as achieving a 25% increase in 2SW returns relative to a baseline period (average returns in the period 1992–1996) for the Scotia–Fundy region; and the achievement of 2SW adult returns of 4549 fish or greater for the US region of NAC.

Biology

Atlantic salmon (*Salmo salar*) is an anadromous species found in rivers of countries bordering the North Atlantic. In the Northwest Atlantic it ranges from the Connecticut River (US, 41.6°N) northwards to the Ungava Bay rivers (58.8°N; Quebec, Canada). Juveniles emigrate to the ocean at ages of between one and eight years (dependent on latitude) and generally return after one or two years at sea. Long-distance migrations to ocean feeding grounds are known to take place, with adult Atlantic salmon from both the North American and Northeast Atlantic stocks migrating to West Greenland to feed in their second summer and autumn at sea. Recent genetic information has demonstrated that fish from North America were also exploited in the historical Faroes fishery in the North East Atlantic Commission (NEAC) area.

Environmental and other influences on the stock

Environmental conditions in both freshwater and marine environments have a marked effect on the status of Atlantic salmon stocks. Across the North Atlantic, a range of problems in the freshwater environment play a significant role in explaining the poor status of stocks. In many cases, river damming and habitat deterioration have had a devastating effect on freshwater environmental conditions. In the marine environment, return rates of adult Atlantic salmon have declined through the 1980s and are now at the lowest levels in the time-series for some stocks, even after the closure of marine fisheries. Climatic factors modifying ecosystem conditions and the impact of predators of Atlantic salmon at sea are considered to be the main contributory factors to lower productivity, which is expressed almost entirely in terms of lower marine survival.

Effects of the fisheries on the ecosystem

The current Atlantic salmon fisheries probably have no influence, or only a minor influence, on the marine ecosystem. The exploitation rate on Atlantic salmon, however, may affect the riverine ecosystem through changes in species composition. Knowledge on the magnitude of these effects is limited.

Quality considerations

Uncertainties in input variables to the stock status and stock forecast models are incorporated in the assessment. The reliability of catch statistics could be improved in all areas of eastern North America. Estimates of abundance of adult Atlantic salmon in some areas, Labrador in particular, are based on a small number of counting facilities raised to a large production area. In 2020, some regions were affected by the COVID-19 global pandemic and had to either modify the way returns estimates were produced (e.g. SFA15 using snorkel counts of spawners instead of angling data) or could not provide returns estimates (e.g. SFA 16, 17, 18, 19–21 and 23). When no data were available, the previous five-year mean was used for all SFAs, except for Newfoundland where the previous six-year mean was used.

Atlantic salmon (*Salmo salar*) at West Greenland

ICES advice on fishing opportunities for 2026

ICES advises that, in line with the management objectives agreed by the North Atlantic Salmon Conservation Organization (NASCO) and consistent with the MSY approach, there should be zero catch at West Greenland in 2026. This is the same catch advice that was issued for 2024 and 2025.

ICES advises that when the MSY approach is applied, fishing should only take place on Atlantic salmon from rivers where stocks are at full reproductive capacity. Mixed-stock fisheries present particular threats and should be managed based on the individual status of all stocks exploited in the fishery.

Non-fisheries conservation considerations

ICES advises that: i) all non-fisheries-related anthropogenic mortalities should be minimized (direct effects on Atlantic salmon survival) and ii) the quantity and quality of Atlantic salmon habitats, connectivity, and the physical, chemical, and biological properties of the habitats should be restored (indirect effects).

NASCO 4.1 Describe the key events of the 2024 fishery

Fishing for Atlantic salmon using hooks and fixed gillnets is currently allowed along the entire coast of Greenland. Commercial fishers are allowed to use up to 20 gillnets at a time as single gillnets fixed to the shore. The use of driftnets has been banned since 2020. Recreational licensed fishers can only use one gillnet fixed to the shore or rod and reel. Gillnets are the preferred gear in Greenland, but rod and reel catches and bycatch in poundnets are also noted in small amounts within the catch reports.

The commercial fishery for export has been closed since 1998, with the exception of 2001; the fishery for internal use, however, continues to this day. There are two landing categories reported for the fishery: commercial landings, where professional fishers can sell Atlantic salmon to hotels, institutions, and local markets, and recreational landings, where both professionals and non-professionals fish for private consumption. Since 2002, only licensed commercial fishers have been permitted to sell Atlantic salmon to hotels, institutions, and local markets, as well as to factories (when factory landings were allowed). People fishing for private consumption only were not required to have a licence until 2018 and are prohibited from selling Atlantic salmon.

In 2021, the Government of Greenland published a “Management Plan for Atlantic Salmon in Greenland” (GoG, 2021), which is to remain in force from 01 July 2021 through 31 December 2025. The management plan identifies two different user groups and three separate management areas (Figure 1), specifying fishing seasons for each; and it sets how the established total allowable catches (TAC) are to be distributed among regions/user groups.

In 2022, a multi-year regulatory measure was agreed at NASCO (NASCO, 2022) that stipulated a TAC of 27 t for the fishery at West Greenland for the years 2022–2025. The regulatory measure maintained many of the provisions from the preceding measures, such as a continuation of the ban on the export of wild Atlantic salmon, restricting the fishery to August through October, requiring all fishers to have a license, requiring fishers to allow samplers access to their catch, and requiring fishers to report their catch even when zero. The agreement outlined a new measure to minimize the likelihood of overharvest. At least for the first year of the agreement, it was agreed that the fishery would be closed when the registered catch had reached no more than 49% of the overall TAC to help ensure that the TAC would not be exceeded. In subsequent years, the percentage could be adjusted, in consultation with NASCO, based on previous experiences and the expected effect of new management measures. The percentage has remained at 49% in subsequent years. As outlined within the management plan, the Government of Greenland also allocated an additional 3 t TAC for the fishery at East Greenland.

Nominal catches of Atlantic salmon at Greenland (Table 1; Figure 2) increased through the 1960s, reached a peak of approximately 2 700 t in 1971, then decreased until the closure of the commercial fishery for export in 1998. Catches are reported from all six NAFO divisions and ICES Subarea 14.b, and proportions vary annually (Table 2). A total Atlantic salmon catch of 20.8 t was reported for the 2024 fishery with 19.9 t reported for the fishery at West Greenland. Unreported catch is assumed to have been at the same level (10 t) as historically reported by the Greenlandic authorities. The 10 t estimate was meant to account for recreational fishers in smaller communities fishing for private use, not for non-reporting by commercial fishers. Commercial landings represented the majority of the harvest at 15.7 t (75.4%), and the remaining 5.1 t (24.6%) was taken in recreational fisheries (Table 3). The number of licences issued, the number of fishers that reported, and the number of reports received have all increased greatly since 2017, a result of the new regulatory requirements both for all fishers to obtain a licence and for mandatory reporting (Figure 3).

The nominal landings in West Greenland were adjusted for the assessment in some years using port sampling and/or telephone surveys (Table 4).

The sampling programme continued in 2024. Five international samplers participated. No samples were collected from the city of Nuuk (NAFO Division 1D) by the Greenland Institute of Natural Resources (GINR) and the GINR did not conduct a Citizen Science Programme. In total, 617 Atlantic salmon were sampled, which represents 10% of nominal landings by weight. Of these, a small number of samples were collected from ICES Subarea 14.b via an external collaboration.

A summary of the biological characteristics and continent of origin for the 2024 fishery is presented in Table 5. In 2024 (Figures 4 and 5), North American contribution to the fishery was 61%, while the European contribution was 39% (excluding ICES Subarea 14.b) and approximately 5 800 (3 500 North American and 2 300 European) Atlantic salmon were harvested. The origin of Atlantic salmon harvested at West Greenland in the 2024 fishery has been estimated based on an updated genetic range-wide baseline using Single Nucleotide Polymorphisms (SNPs). This baseline, based on samples from 189 rivers from across the North Atlantic (Jeffery *et al.*, 2018), was updated in 2018 (ICES, 2018) and can discriminate Atlantic salmon from 21 North American and 10 European genetic reporting groups (Table 6, Figure 6).

As in previous years, the North American contributions to the West Greenland fishery are dominated by the Gaspe Peninsula, the Gulf of St Lawrence, Labrador Central and the Labrador South reporting groups (Table 7). These four groups accounted for 56% of the North American contributions. The Northeast Atlantic contributions were dominated by the UK and Ireland reporting group (97% of the European contribution). From North America, there are smaller contributions to the harvest for a number of other reporting groups (e.g. Lake Melville, St. Lawrence North Shore-Lower and Maine, US). These results are similar to those reported previously. Of particular note is the 9.6% overall contribution (16% of the North American contribution) by the Ungava Bay reporting group whose overall contribution has remained above 7% since 2021. No fish from the Kapisillit River, Greenland's only self-sustaining Atlantic salmon population, were identified in 2024. The SNP baseline, which includes fish from the Kapisillit, has only been used since 2017 and since that time only two Greenlandic fish have been identified (2018 and 2022).

Table 1 Atlantic salmon at West Greenland. Nominal catches of Atlantic salmon at Greenland since 1960 (tonnes, round fresh weight) by participating nations. For Greenlandic vessels specifically, all catches up to 1968 were taken with set gillnets only; catches 1968–2019 were taken with both set gillnets and driftnets; and catches from 2020 to the present were taken with set gillnets only. All non-Greenlandic vessel catches 1969–1975 were taken with driftnets. The quota figures apply to Greenlandic vessels only, and entries in parentheses identify when quotas did not apply to all sectors of the fishery.

Year	Norway	Faroe Islands	Sweden	Denmark	Greenland	Total	Quota	Comments
1960	-	-	-	-	60	60		
1961	-	-	-	-	127	127		
1962	-	-	-	-	244	244		
1963	-	-	-	-	466	466		
1964	-	-	-	-	1539	1539		
1965	-	36	-	-	825	858		Norwegian harvest figures not available but known to be less than Faroese catch
1966	32	87	-	-	1251	1370		
1967	78	155	-	85	1283	1601		
1968	138	134	4	272	579	1127		
1969	250	215	30	355	1360	2210		
1970	270	259	8	358	1244	2139		Greenlandic catch includes 7 t caught by longlines in the Labrador Sea
1971	340	255	-	645	1449	2689	-	
1972	158	144	-	401	1410	2113	1100	
1973	200	171	-	385	1585	2341	1100	
1974	140	110	-	505	1162	1917	1191	
1975	217	260	-	382	1171	2030	1191	
1976	-	-	-	-	1175	1175	1191	
1977	-	-	-	-	1420	1420	1191	
1978	-	-	-	-	984	984	1191	
1979	-	-	-	-	1395	1395	1191	
1980	-	-	-	-	1194	1194	1191	
1981	-	-	-	-	1264	1264	1265	Quota set to a specific opening date for the fishery
1982	-	-	-	-	1077	1077	1253	Quota set to a specific opening date for the fishery
1983	-	-	-	-	310	310	1191	
1984	-	-	-	-	297	297	870	
1985	-	-	-	-	864	864	852	
1986	-	-	-	-	960	960	909	
1987	-	-	-	-	966	966	935	
1988	-	-	-	-	893	893	840	Quota for 1988–1990 was 2 520 t with an opening date of 1 August. Annual catches were not to exceed an annual average (840 t) by more than 10%
1989	-	-	-	-	337	337	900	Quota adjusted to 900 t for later opening date
1990	-	-	-	-	274	274	924	Quota adjusted to 924 t for later opening date
1991	-	-	-	-	472	472	840	
1992	-	-	-	-	237	237	258	
1993	-	-	-	-			89	The fishery was suspended. NASCO adopt a new quota allocation model
1994	-	-	-	-			137	The fishery was suspended and the quota was bought out
1995	-	-	-	-	83	83	77	
1996	-	-	-	-	92	92	174	
1997	-	-	-	-	58	58	57	Private (non-commercial) catches to be reported after 1997
1998	-	-	-	-	11	11	20	Fishery restricted to catches used for internal consumption in Greenland
1999	-	-	-	-	19	19	20	Same as previous year
2000	-	-	-	-	21	21	20	Same as previous year
2001	-	-	-	-	43	43	114	Final quota calculated according to the *ad hoc* management system

Year	Norway	Faroe Islands	Sweden	Denmark	Greenland	Total	Quota	Comments
2002	-	-	-	-	9	9	55	Quota bought out; quota represented the maximum allowable catch (no factory landing allowed)
2003	-	-	-	-	9	9		Quota set to nil (no factory landing allowed); fishery restricted to catches used for internal consumption in Greenland
2004	-	-	-	-	15	15		Same as previous year
2005	-	-	-	-	15	15		Same as previous year
2006	-	-	-	-	22	22		Same as previous year
2007	-	-	-	-	25	25		Same as previous year
2008	-	-	-	-	26	26		Same as previous year
2009	-	-	-	-	26	26		Same as previous year
2010	-	-	-	-	40	40		Same as previous year
2011	-	-	-	-	28	28		Same as previous year
2012	-	-	-	-	33	33	(35)	35 t quota for factory landings only
2013	-	-	-	-	47	47	(35)	Same as previous year
2014	-	-	-	-	58	58	(30)	Quota for factory landings only
2015	-	-	-	-	57	57	45	Quota for all sectors (private and commercial) of the fishery
2016	-	-	-	-	27	27	32	Same as previous year
2017	-	-	-	-	28	28	45	Same as previous year
2018	-	-	-	-	40	40	30	Same as previous year
2019	-	-	-	-	30	30	19.5	Same as previous year
2020	-	-	-	-	32	32	21	Same as previous year
2021	-	-	-	-	43	43	30	Overall quota segregated across three management areas and two user groups with 27 t allocated for the fishery at West Greenland
2022	-	-	-	-	30	30	30	Same as previous year
2023	-	-	-	-	34	34	30	Same as previous year
2024	-	-	-	-	21	21	30	Same as previous year

Table 2 Atlantic salmon at West Greenland. Annual distribution of nominal catches (in tonnes) at Greenland by NAFO division (where known). NAFO divisions and ICES Subarea 14.b (East Greenland) are shown in Figure 1. Since 2005, gutted weights have been reported and converted to total weight by a factor of 1.11. Rounding issues are evident for some totals. No landings are reported for 1993 and 1994 as the fishery was suspended. From 1960-2007, entries of '+' represent nominal catches of < 0.5 t and '-' indicate no nominal catch. Post-2007, nominal landings provide more specificity and exact nominal values are provided.

Year	NAFO division						Unknown	West Greenland	ICES Subarea 14.b (East Greenland)	Total
	1A	1B	1C	1D	1E	1F				
1960	-	-	-	-	-	-	60	60	-	60
1961	-	-	-	-	-	-	127	127	-	127
1962	-	-	-	-	-	-	244	244	-	244
1963	1	172	180	68	45		-	466	-	466
1964	21	326	564	182	339	107	-	1539	-	1539
1965	19	234	274	86	202	10	36	861	-	861
1966	17	223	321	207	353	130	87	1338	-	1338
1967	2	205	382	228	336	125	236	1514	-	1514
1968	1	90	241	125	70	34	272	833	-	833
1969	41	396	245	234	370	-	867	2153	-	2153
1970	58	239	122	123	496	207	862	2107	-	2107
1971	144	355	724	302	410	159	560	2654	-	2654
1972	117	136	190	374	385	118	703	2023	-	2023
1973	220	271	262	440	619	329	200	2341	-	2341
1974	44	175	272	298	395	88	645	1917	-	1917
1975	147	468	212	224	352	185	442	2030	-	2030
1976	166	302	262	225	182	38		1175	-	1175
1977	201	393	336	207	237	46	-	1420	6	1426
1978	81	349	245	186	113	10	-	984	8	992
1979	120	343	524	213	164	31	-	1395	+	1395
1980	52	275	404	231	158	74	-	1194	+	1194
1981	105	403	348	203	153	32	20	1264	+	1264
1982	111	330	239	136	167	76	18	1077	+	1077
1983	14	77	93	41	55	30	-	310	+	310
1984	33	116	64	4	43	32	5	297	+	297
1985	85	124	198	207	147	103	-	864	7	871
1986	46	73	128	203	233	277	-	960	19	979
1987	48	114	229	205	261	109	-	966	+	966
1988	24	100	213	191	198	167	-	893	4	897
1989	9	28	81	73	75	71	-	337	-	337
1990	4	20	132	54	16	48	-	274	-	274
1991	12	36	120	38	108	158	-	472	4	476
1992	-	4	23	5	75	130	-	237	5	242
1993	-	-	-	-	-	-	-	-	-	-
1994	-	-	-	-	-	-	-	-	-	-
1995	+	10	28	17	22	5	-	83	2	85
1996	+	+	50	8	23	10	-	92	+	92
1997	1	5	15	4	16	17	-	58	1	59
1998	1	2	2	4	1	2	-	11	-	11
1999	+	2	3	9	2	2	-	19	+	19
2000	+	+	1	7	+	13	-	21	-	21
2001	+	1	4	5	3	28	-	43	-	43
2002	+	+	2	4	1	2	-	9	-	9
2003	1	+	2	1	1	5	-	9	-	9
2004	3	1	4	2	3	2	-	15	-	15
2005	1	3	2	1	3	5	-	15	-	15
2006	6	2	3	4	2	4	-	22	-	22
2007	2	5	6	4	5	2	-	25	-	25
2008	4.9	2.2	10.0	1.6	2.5	5.0	0	26.2	0	26.2
2009	0.2	6.2	7.1	3.0	4.3	4.8	0	25.6	0.8	26.3
2010	17.3	4.6	2.4	2.7	6.8	4.3	0	38.1	1.7	39.6
2011	1.8	3.7	5.3	8.0	4.0	4.6	0	27.4	0.1	27.5
2012	5.4	0.8	15.0	4.6	4.0	3.0	0	32.6	0.5	33.1
2013	3.1	2.4	17.9	13.4	6.4	3.8	0	47.0	0.0	47.0

Year	NAFO division						Unknown	West Greenland	ICES Subarea 14.b (East Greenland)	Total
	1A	1B	1C	1D	1E	1F				
2014	3.6	2.8	13.8	19.1	15.0	3.4	0	57.8	0.1	57.9
2015	0.8	8.8	10.0	18.0	4.2	14.1	0	55.9	1.0	56.8
2016	0.8	1.2	7.3	4.6	4.5	7.3	0	25.7	1.5	27.1
2017	1.1	1.7	9.3	6.9	3.2	5.6	0	27.8	0.3	28.0
2018	2.4	5.7	13.7	8.2	4.2	4.8	0	39.0	0.8	39.9
2019	0.8	3.0	4.4	8.0	4.8	7.3	0	28.3	1.4	29.8
2020	0.9	3.6	6.6	9.7	3.0	7.1	0	30.9	0.8	31.7
2021	1.3	5.1	13.8	10.5	3.4	7.4	0.3	41.8	1.4	43.2
2022	1.4	3.0	5.3	8.2	4.1	7.0	0.8	29.0	0.8	29.8
2023	1.4	5.0	8.0	4.8	7.3	6.3	0.2	33.0	1.3	34.3
2024	1.3	1.8	3.8	5.5	3.6	4.0	0.1	19.9	0.9	20.8

Table 3 Atlantic salmon at West Greenland. Nominal landings (in tonnes and percentage) from West Greenland and East Greenland and by landings type (commercial and recreational fishers) from 2022 to 2024.

Year	Nominal landings					Landings type			
	West Greenland		East Greenland		Total	Commercial		Recreational	
	Tonnes	%	Tonnes	%	Tonnes	Tonnes	%	Tonnes	%
2022	29.0	97.3	0.8	2.7	29.8	20.6	69.3	9.2	30.7
2023	33.0	96.2	1.3	3.8	34.3	25.2	73.5	9.1	26.5
2024	19.9	95.6	0.9	4.4	20.8	15.7	75.4	5.1	24.6

Table 4 Atlantic salmon at West Greenland. Nominal and adjusted landings (in tonnes) for the assessment of Atlantic salmon at West Greenland 2002–2024. The total adjusted landings do not include the unreported catch (10 tonnes per year since 2000).

Year	Nominal landings (West Greenland)	Total adjusted landings
2002	9.0	9.8
2003	8.7	12.3
2004	14.7	17.2
2005	15.3	17.3
2006	23.0	23.0
2007	24.6	24.8
2008	26.1	28.6
2009	25.5	28.0
2010	37.9	43.1
2011	27.4	27.4
2012	32.6	34.6
2013	46.9	47.7
2014	57.7	70.5
2015	55.9	60.9
2016	25.7	30.2
2017	27.8	28.0
2018	39.0	39.0
2019	28.3	28.3
2020	30.9	30.9
2021	41.8	41.8
2022	29.0	29.0
2023	33.0	33.0
2024	19.9	19.9

Table 5 Atlantic salmon at West Greenland. Summary of biological characteristics of catches of Atlantic salmon at West Greenland in 2024.

River age distribution (%) by origin								
Continent of origin	1	2	3	4	5	6	7	8
North America	0.9	24.1	29.0	23.8	19.1	3.1	0	0
Europe	5.3	46.7	25.6	13.7	6.6	2.2	0	0

Length and weight by origin and sea age								
Continent of origin	1 SW		2 SW		Previous spawners		All sea ages	
	Fork length (cm)	Whole weight (kg)	Fork length (cm)	Whole weight (kg)	Fork length (cm)	Whole weight (kg)	Fork length (cm)	Whole weight (kg)
North America	64.5	2.97	86.7	7.64	76.5	4.67	67.0	3.38
Europe	63.8	3.04	77.2	5.36	79.9	5.17	65.2	3.24

Sea age composition (%) by continent of origin			
Continent of origin	1SW	2SW	Previous spawners
North America	82.2	3.4	14.4
Europe	90.1	2.3	7.5

Table 6 Atlantic salmon at West Greenland. Correspondence between ICES regions used for the assessment of North American Atlantic salmon stock status and the genetic reporting groups defined using the SNP range-wide baseline (Jeffery *et al.*, 2018). See Figure 6 for map of genetic reporting groups.

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

Table 7 Atlantic salmon at West Greenland. Bayesian estimates of mixture composition for the West Greenland Atlantic salmon fishery, by region and overall, for 2024. Baseline locations refer to regional reporting groups identified in Table 6 and Figure 6. Sample locations are identified by NAFO divisions or ICES Subarea 14.b. Mean estimates are provided with 95% confidence intervals. 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. Areas with no potential representation in the overall catch are not included in the table (i.e. areas with credible intervals with a lower bound of zero as this indicates little support for the mean assignment value). COO = continent of origin; EUR = Europe; NoA = North America.

Reporting group	COO	NAFO 1B			NAFO 1C			NAFO 1F			ICES 14.b			Overall		
		2.5%	Mean	97.5%	2.5%	Mean	97.5%	2.5%	Mean	97.5%	2.5%	Mean	97.5%	2.5%	Mean	97.5%
UK/Ireland	EUR	27.3	37.7	48.7	35.0	39.6	44.2	22.4	32.6	43.7	48.8	69.1	86.1	36.1	39.9	43.8
France	EUR	0	0	0	0.1	0.5	1.3	0	1.4	5.1	0	0	0	0.1	0.5	1.2
Eastern Nova Scotia	NoA	0	1.6	5.7	0.4	1.3	2.6	0	0	0	0	0	0	0.4	1.1	2.2
Gaspé Peninsula	NoA	4.2	10.0	17.8	5.8	8.5	11.6	1.1	5.4	12.2	0	0	0	5.8	8.0	10.4
Gulf of St Lawrence	NoA	3.1	8.1	15.1	4.6	7.1	9.9	2.9	8.1	15.4	0	0	0	5.1	7.2	9.5
Labrador Central	NoA	5.7	13.5	23.0	4.6	7.2	10.3	0.9	8.5	18.2	0	0	0	5.8	8.3	11.1
Labrador South	NoA	0.6	4.7	12.2	6.5	9.4	12.8	10.2	20.1	31.8	0	0	0	7.0	9.6	12.4
Lake Melville	NoA	1.8	6.7	13.7	2.9	4.9	7.3	1.5	5.9	13.0	0	0	0	3.1	4.9	6.9
Newfoundland 1	NoA	0	0	0	0.4	1.2	2.5	0	0	0	0	0	0	0.3	1.0	2.0
Northern Newfoundland	NoA	0	0	0	0.3	1.0	2.2	0	0	0	0	0	0	0.2	0.9	1.9
St. Lawrence North Shore-Lower	NoA	1.4	5.2	11.2	1.7	3.2	5.1	2.5	7.2	14.3	0.7	7.9	21.7	2.6	4.1	5.8
Québec City Region	NoA	0	0	0	0.1	1.1	2.6	0	0	0	0	0	0	0.0	0.8	2.1
Ungava Bay	NoA	2.9	7.8	14.7	8.0	10.7	13.8	0.8	4.1	9.6	1.0	8.4	22.0	7.4	9.6	12.1
Maine, United States	NoA	0	2.1	6.7	0.8	1.9	3.4	0.2	2.8	7.7	0	0	0	1.0	2.0	3.3
Western Newfoundland	NoA	0	0	0	0.2	0.8	2.0	0	0	0	0	0	0	0.1	0.6	1.5

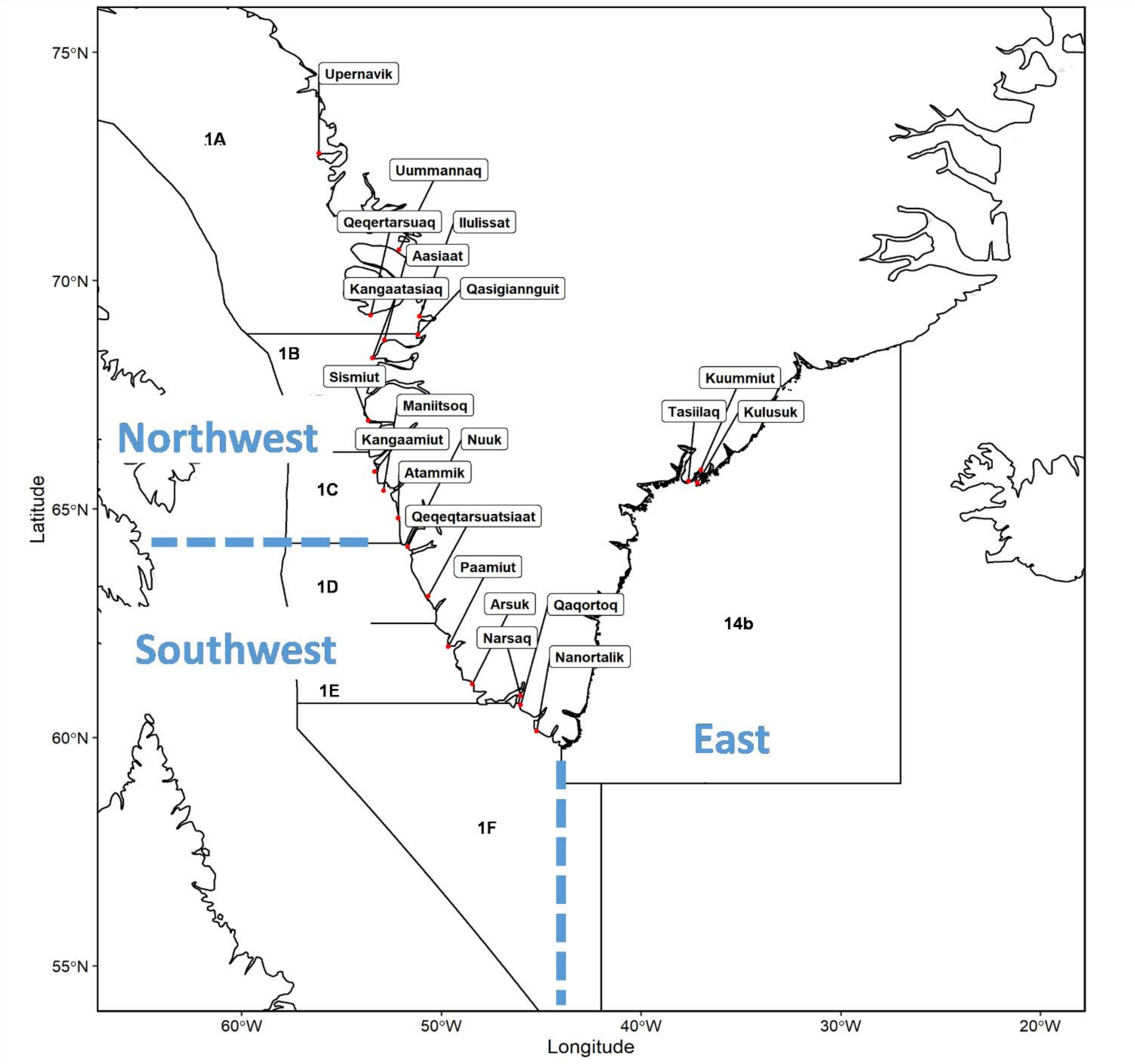


Figure 1 Atlantic salmon at West Greenland. Map of communities in south Greenland where Atlantic salmon have historically been landed and the corresponding NAFO divisions (1A–1F) and ICES subareas.

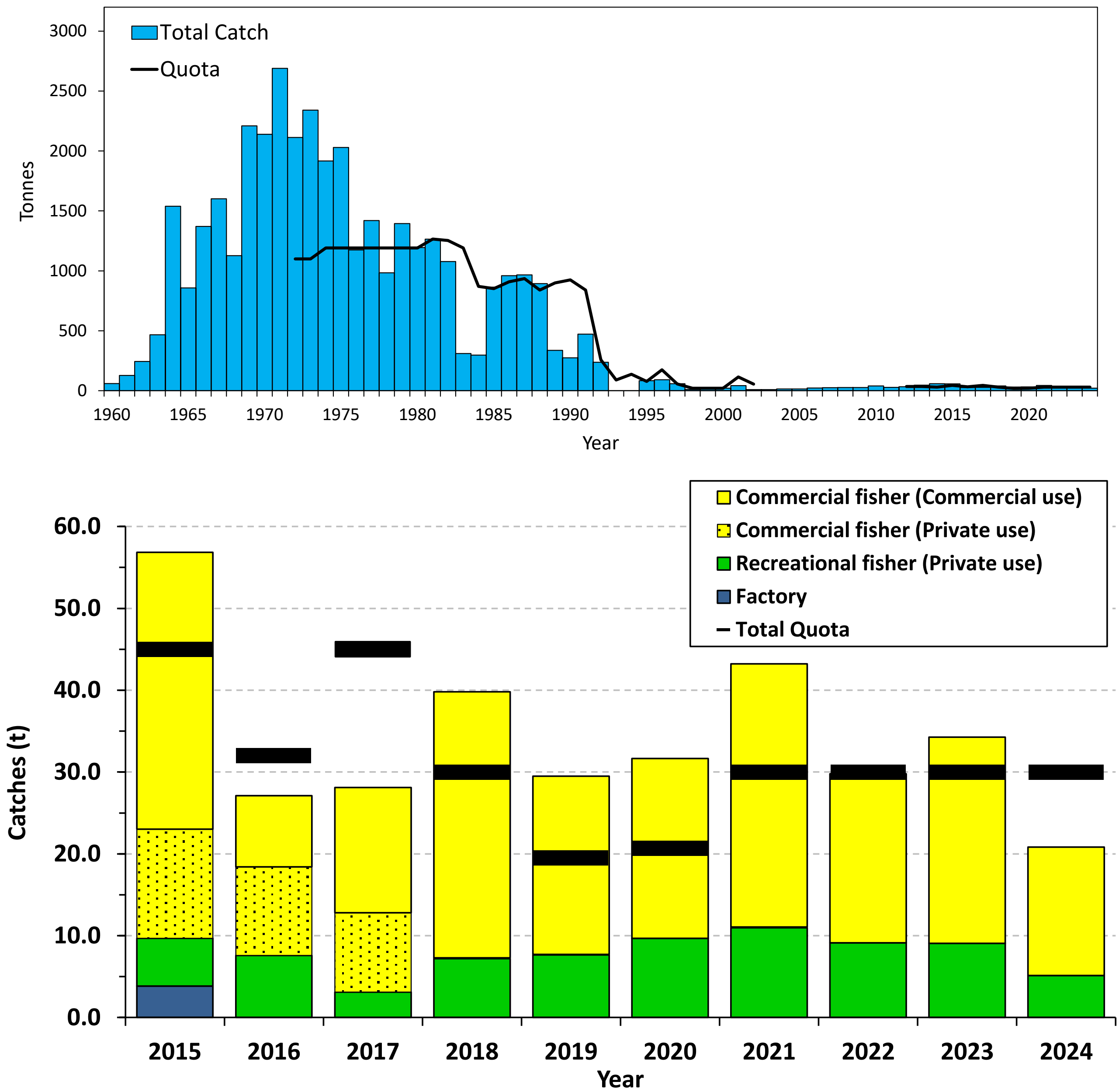


Figure 2 Atlantic salmon at West Greenland. Nominal catches and quotas (tonnes, round fresh weight) of Atlantic salmon at West Greenland from 1960 to 2024 (upper panel). Landings from 2015 to 2024 are also displayed by landing type (lower panel). Quotas have been established from 1972 to 2002 and from 2012 to the present.

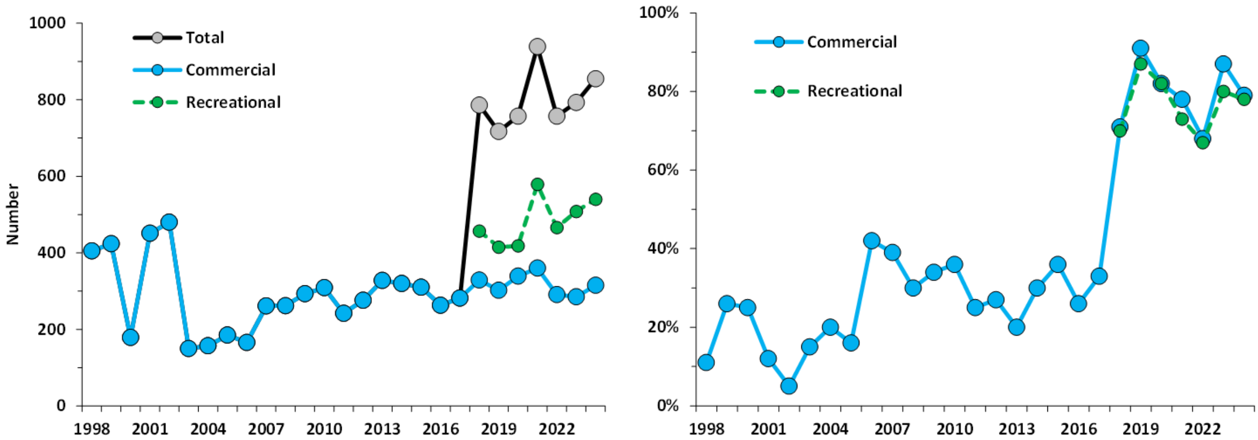


Figure 3 Atlantic salmon at West Greenland. Number of licences issued by licence type (left panel) and percent of licensed fishers reporting by licence type (right panel). Starting in 2018, all fishers were required to have a licence.

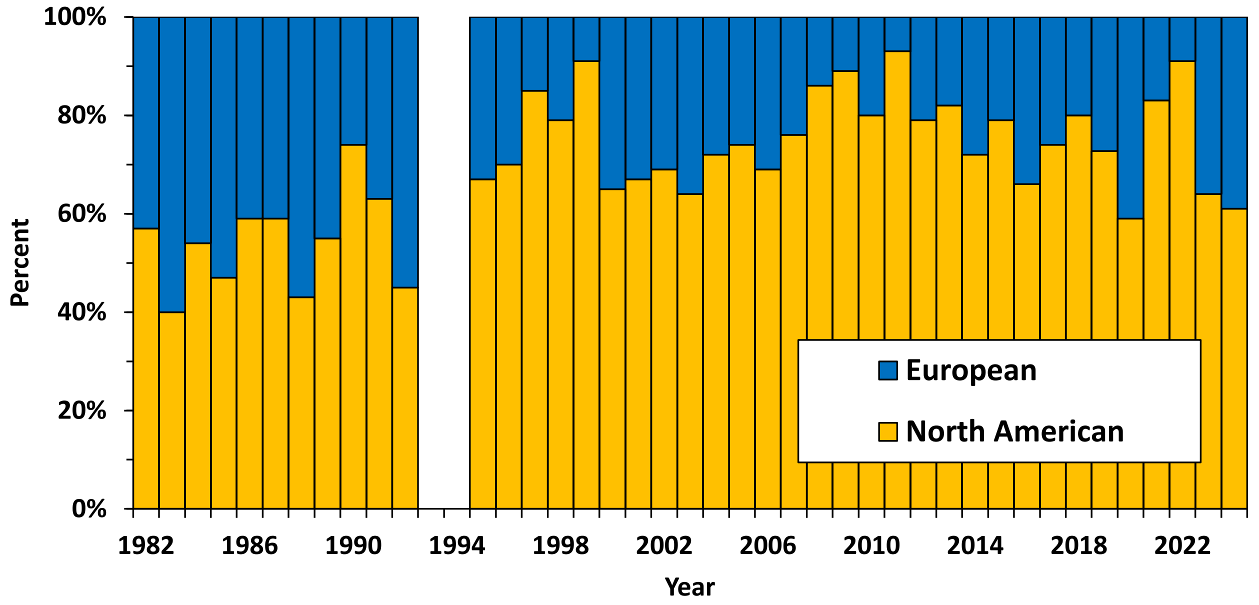


Figure 4 Atlantic salmon at West Greenland. Percentage of catch by continent of origin. Total continental contributions are weighted by division-specific nominal landings. There was no fishery in 1993 or 1994.

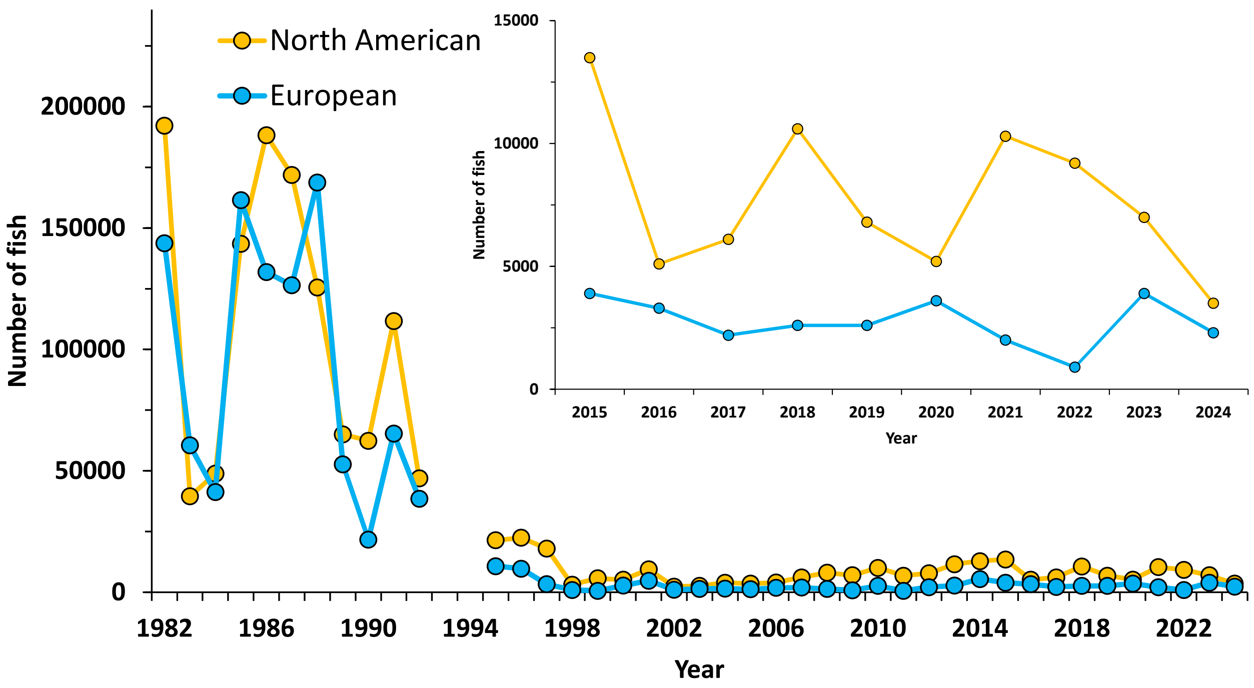


Figure 5 Atlantic salmon at West Greenland. Number of North American and European Atlantic salmon caught at West Greenland in 1982–2024 (main figure) and 2015–2024 (inset). Estimates are based on continent of origin by NAFO division, weighted by catch (weight) in each division. Unreported catch is not included. There was no fishery in 1993 or 1994.

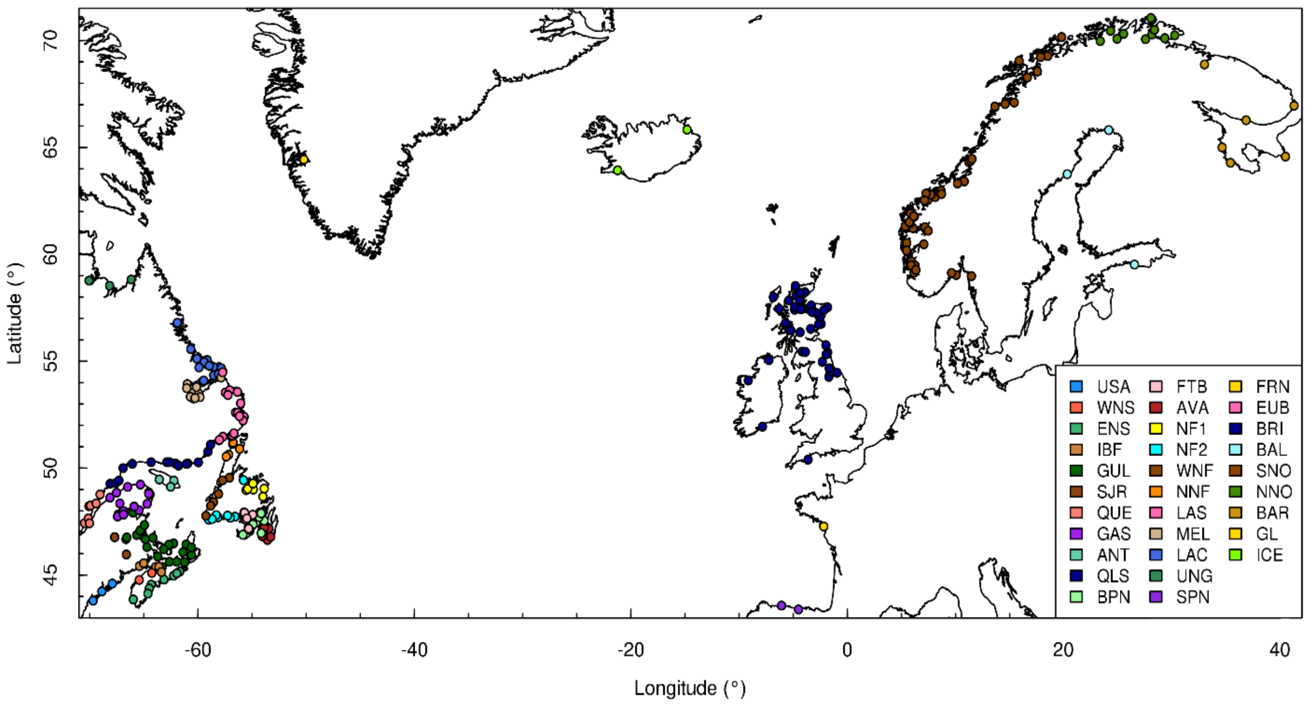


Figure 6 Atlantic salmon at West Greenland. Map of sample locations used in the range-wide genetic baseline (single nucleotide polymorphisms [SNPs]) for Atlantic salmon. The SNP provided assignment of individual Atlantic salmon to 21 North American and 10 European genetic reporting groups (labelled and identified by colour). The full names of the genetic reporting groups and the corresponding ICES assessment regions are provided in Table 6. The European Broodstock (EUB) reporting group is not represented on the map.

NASCO 4.2 Describe the status of the stocks

In 2024, the estimates (median) of spawner abundance for six of the seven stock complexes exploited at West Greenland were below conservation limits (CLs)/management objectives (MOs). Estimated spawners were below CLs for four NAC regions (Labrador, Quebec, Newfoundland, and Gulf), below the MOs for the Scotia–Fundy and US regions and are therefore suffering reduced reproductive capacity. The S-NEAC (Southern North-East Atlantic Commission area) is considered to be at risk of suffering reduced reproductive capacity. The percentage of the CL/MO attained ranged from 9% in Scotia–Fundy to 100% in S-NEAC (Figure 7). Particularly large deficits are noted in the Scotia–Fundy and US regions.

The exploitation rate (catch in Greenland divided by Pre-Fishery Abundance [PFA]) in 2023 was 6.8% for NAC (North American Commission area) fish and 2.6% for S-NEAC fish (Figure 8). Despite major changes in fisheries management in the past few decades and increasingly restrictive fisheries measures, returns have remained low compared to historical levels. It is likely, therefore, that other factors besides fisheries are constraining production.

Figure 7 Atlantic salmon at West Greenland. Summary of 2SW (NAC regions) and MSW (southern NEAC) 2024 median (from the Monte Carlo posterior distributions) spawner estimates in relation to conservation limits (CLs) or management objectives (MOs; only for US and Scotia–Fundy). The colours used as shading represent the three ICES stock status designations: blue = Full (at full reproductive capacity; the 5th percentile of the spawner estimate is above the CL); orange = At risk (at risk of suffering reduced reproductive capacity; the median spawner estimate is above but the 5th percentile below the CL); red = Suffering (suffering reduced reproductive capacity; the median spawner estimate is below the CL).

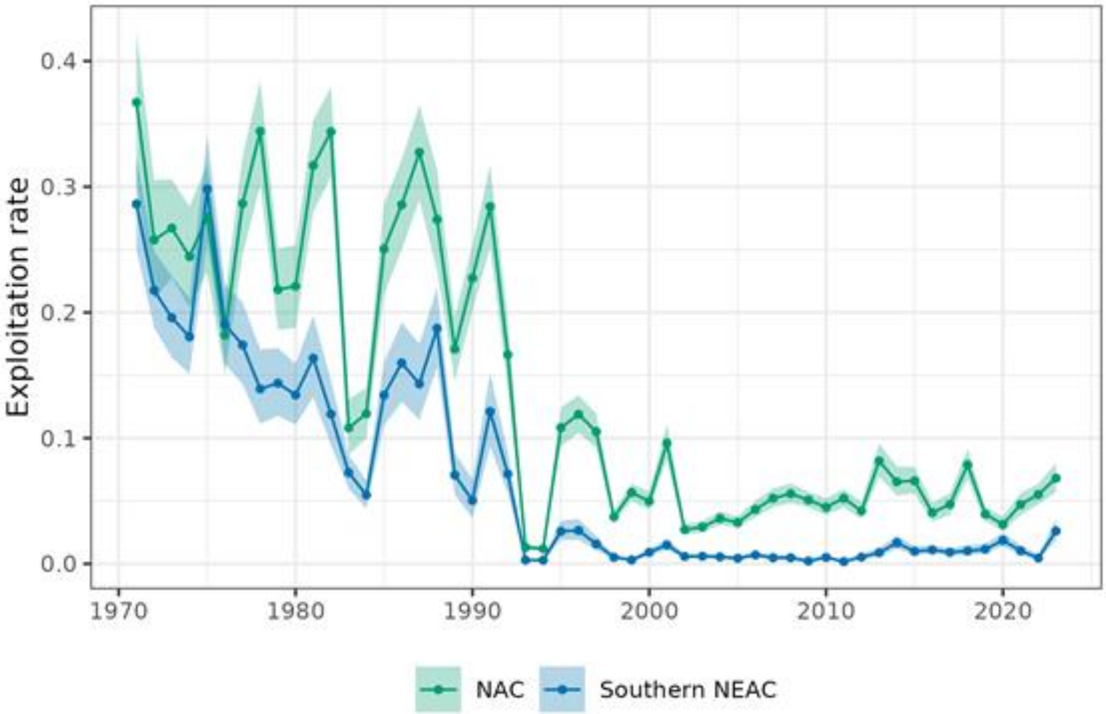


Figure 8 Atlantic salmon at West Greenland. Exploitation rate for NAC 1SW non-maturing and Southern NEAC non-maturing Atlantic salmon at West Greenland in 1971–2023. Exploitation rate estimates are only available up to 2023, as 2024 exploitation rates are dependent on 2025 returns.

Conservation status

Atlantic salmon (*Salmo salar*) was assessed for the IUCN Red List of Threatened Species in 1996, for Europe in 2014, and globally in 2022, and it is listed globally as Threatened under criteria A2bd (Darwall, 2023). In addition, there are regional and national Red List assessments for this species.

This is for information purposes and ICES does not formally endorse the methods used by third parties to create lists.

Scientific basis

Table 8 Atlantic Salmon at West Greenland. The basis of the assessment.

ICES stock data category	1 (ICES, 2023a)
Assessment type	Run reconstruction model and Bayesian life-cycle model taking into account uncertainties in data and process error. Results presented in a risk analysis framework (ICES, 2024a, 2024b, 2025).
Input data	Nominal catches (by sea age class and continent of origin) for internal use fisheries; estimates of returns; estimates of unreported/illegal catches; estimates of exploitation rates; biological characteristics
Discards and bycatch	No Atlantic salmon discards in the directed Atlantic salmon fishery. Atlantic salmon bycatch is known to occur, but it is not included in the assessment.
Indicators	None
Other information	Last benchmarked in 2023 (ICES, 2023b)
Working group	Working Group on North Atlantic Salmon (WGNAS)

Issues relevant for the non-fisheries conservation considerations

Abundance of Atlantic salmon is affected by similar non-fishing influences throughout the North Atlantic. Despite major changes in fisheries management two to three decades ago and increasingly more restrictive fisheries measures since then, returns of most Atlantic salmon stocks are at near-historical lows. The continued low and declining abundance of many Atlantic salmon stocks, despite significant fishery reductions, strengthens the conclusion that factors acting on survival in the first and second years at sea – at both local and broad ocean scales – are constraining abundance of Atlantic salmon. Declines in smolt production in some rivers are now being observed and are also contributing to lower adult abundance.

Environmental conditions in both freshwater and marine environments have a marked effect on the status of Atlantic salmon stocks. There are a range of problems in the freshwater environment across the North Atlantic that play a significant role in explaining the poor status of stocks. In many cases, river damming and habitat deterioration have had a negative effect on freshwater environmental conditions. In the marine environment, return rates of adult Atlantic salmon have declined through the 1980s and are now at the lowest levels in the time-series for some stocks, even after closure of marine fisheries. Climatic factors modifying ecosystem conditions and the impact of predators of Atlantic salmon at sea are considered to be the main contributory factors to lower productivity, which is expressed almost entirely in terms of lower marine survival.

Identify relevant data deficiencies, monitoring needs, and research requirements

This advice is generated from data provided for all salmon-producing jurisdictions throughout the NASCO convention area with the exception of three NEAC countries: Denmark, Spain, and Portugal. Time-series of sufficient length are not available from these countries for their inclusion into the life-cycle model (LCM), but ICES continues to work with these countries to close these data gaps. The abundances of salmon in these three countries are relatively small when compared to the total abundance of the S-NEAC area, and therefore these data gaps are not considered to have a material effect on the advice

No data deficiencies, monitoring needs, or research requirements of relevance to the West Greenland Commission were identified. The full list of data deficiencies, monitoring needs, and research requirements for North Atlantic salmon is presented in Section 1.7 of ICES (2025).

References

Darwall, W. R. T. 2023. *Salmo salar*. The IUCN Red List of Threatened Species 2023: e.T19855A67373433. https://dx.doi.org/10.2305/IUCN.UK.2023-1.RLTS.T19855A67373433

Government of Greenland. 2021. Management Plan for Atlantic salmon in Greenland. 21 pp. https://nasco.int/wp-content/uploads/2021/05/WGCIS2116_Draft-Management-plan-for-salmon-fishery-in-West-Greenland-version-2.pdf

ICES. 2018. North Atlantic Salmon Stocks. *In* Report of the ICES Advisory Committee, 2018. ICES Advice 2018, Book 14, sal.oth.nasco. 33 pp. https://doi.org/10.17895/ices.pub.4335

ICES. 2023a. Advice on fishing opportunities. In Report of the ICES Advisory Committee, 2023. ICES Advice 4 Section 1.1.1. https://doi.org/10.17895/ices.advice.22240624

ICES. 2023b. Benchmark Workshop on Atlantic salmon in the North Atlantic (WKBSALMON). ICES Scientific Reports. 5:112. 85 pp. https://doi.org/10.17895/ices.pub.24752079

ICES. 2024a. Working Group on North Atlantic Salmon (WGNAS). ICES Scientific Reports, 6:36. 415 pp. https://doi.org/10.17895/ices.pub.25730247

ICES. 2024b. Salmon (*Salmo salar*) in the Northeast Atlantic. ICES Stock Annexes. 112 pp. http://doi.org/10.17895/ices.pub.25737180

ICES. 2025. Working Group on North Atlantic Salmon (WGNAS). ICES Scientific Reports. 7:44. 435 pp. https://doi.org/10.17895/ices.pub.28777226

Jeffery, N. W., Wringe, B. F., McBride, M. C., Hamilton, L. C., Stanley, R. R. E., Bernatchez, L., Kent, M., *et al.* 2018. Range-wide regional assignment of Atlantic salmon (*Salmo salar*) using genome wide single-nucleotide polymorphisms. Fisheries Research, 206: 163–175. https://doi.org/10.1016/j.fishres.2018.05.017

North Atlantic Salmon Conservation Organization (NASCO). 2022. Report of the Thirty-Ninth Annual Meeting of the West Greenland. 6–9 June 2022. Edinburgh, Scotland. https://nasco.int/wp-content/uploads/2022/08/WGC2212_Report-of-the-Thirty-Ninth-Annual-Meeting-of-the-West-Greenland-Commission.pdf

Recommended citation: ICES. 2025. Atlantic salmon (*Salmo salar*) at West Greenland. *In* Report of the ICES Advisory Committee, 2025. ICES Advice 2025, sal.wgc.all. https://doi.org/10.17895/ices.advice.28342898

Annex 1 Glossary of acronyms and abbreviations

1SW *one-sea-winter;* maiden adult Atlantic salmon that has spent one winter at sea
2SW *two-sea-winter;* maiden adult Atlantic salmon that has spent two winters at sea
MSW multi-*sea-winter*; *a*dult Atlantic salmon that has spent two or more winters at sea
CL(s) *conservation limits(s)*, i.e. S_{lim}; demarcation of undesirable stock levels or levels of fishing activity; the ultimate objective when managing stocks and regulating fisheries is to ensure that there is a high probability that undesirable levels are avoided
ICES *International Council for the Exploration of the Sea*
LCM *life-cycle model*
NAC *North American Commission;* a commission under NASCO
NAFO *Northwest Atlantic Fisheries Organization*; an intergovernmental fisheries science and management organization that ensures the long-term conservation and sustainable use of fishery resources in the Northwest Atlantic
NASCO *North Atlantic Salmon Conservation Organization*
NEAC *North-East Atlantic Commission*; a commission under NASCO
PFA *pre-fishery abundance*; the numbers of Atlantic salmon estimated to be alive in the ocean from a particular stock at a specific time.

Annex 2 General considerations

Management plans

The North Atlantic Salmon Conservation Organization (NASCO) has adopted an Action Plan for Application of the Precautionary Approach, which stipulates that management measures should be aimed at maintaining all stocks above their CLs by the use of management targets. CLs for North Atlantic salmon stock complexes have been defined by ICES as the level of a stock (number of spawners) that will achieve long-term average maximum sustainable yield (MSY). NASCO has adopted the region-specific CLs as limit reference points (S_{lim}); having populations fall below these limits should be avoided with high probability. Within the management plan, a simultaneous risk level (probability) of 75% has been agreed for the provision of catch advice on the stock complexes exploited at West Greenland (non-maturing 1SW fish from North America and Southern NEAC). The management objectives are (a) to meet the Southern NEAC MSW CL, (b) to meet the 2SW CLs for the four northern areas of the NAC (Labrador, Newfoundland, Quebec, and Gulf), (c) to achieve a 25% increase in returns of 2SW Atlantic salmon from the average returns in the period 1992–1996 for the Scotia–Fundy region of NAC, and (d) to achieve 2SW adult returns of 4549 fish or greater for US region of NAC.

Biology

Atlantic salmon (*Salmo salar*) is an anadromous species found in rivers of countries bordering the North Atlantic. In the Northeast Atlantic area its current distribution extends from the Lima River (41°69’) in northern Portugal to the Pechora River (68°20’) in Northwest Russia and Iceland (66°44’). In the Northwest Atlantic distribution ranges from the Connecticut River (US, 41°.6°’N) northwards to 60°29’ N in the Ungava Bay (Quebec, Canada). Juveniles migrate to the ocean at ages of between one and eight years (dependent on latitude) and generally return after one or two years at sea. Long-distance migrations to ocean feeding grounds are known to take place, with adult Atlantic salmon from both the North American and Northeast Atlantic stocks migrating to Greenland to feed during their second summer and autumn at sea.

Environmental and other influences on the stock

Environmental conditions in both freshwater and marine environments have a marked effect on the status of Atlantic salmon stocks. Across the North Atlantic, a range of problems in the freshwater environment play a significant role in explaining the poor status of stocks. In many cases river damming and habitat deterioration have had a devastating effect on freshwater environmental conditions. In the marine environment, return rates of adult Atlantic salmon have declined through the 1980s and are now at the lowest levels in the time-series for some stocks, even after closure of marine fisheries. Climatic factors modifying ecosystem conditions, and the impact of predators of Atlantic salmon at sea, are considered to be the main factors contributing to lower productivity, which is expressed almost entirely in terms of lower marine survival.

Effects of the fisheries on the ecosystem

The current Atlantic salmon fishery uses nearshore surface gillnets. There is no information on bycatch of other species with this gear. The fisheries probably have no influence, or only a minor influence, on the marine ecosystem.

Quality considerations

Uncertainties in input variables to the stock status and stock forecast models are incorporated in the assessment. Catch reporting at Greenland is considered to be incomplete.