

NASCO ANNUAL MEETING, 3-7th JUNE 2024

REPORT TO IFM

Nigel Milner (IFM Observer)



The NASCO Commission areas



Pink salmon with Atlantic Salmon. From Hostmark, M.S. and Froiland, E. Measures to Control Pink Salmon in Northern Norway CNL(24)78.

HEADLINES

- 1. ICES reported record low catches in 2023. Their assessment for 2024 shows that salmon stocks remain in poor condition and advise that no harvest is permissible in interceptory fisheries or individual rivers unless stocks exceed the Conservation Limit.**
- 2. Regulatory measures for the Faroes and West Greenland fisheries. No change from last year. WG catch was 32.5mt (vs quota of 27mt)**
- 3. Iceland rejoined NASCO in 2024.**
- 4. A Special Session on Parties' Implementation Plans and Annual Progress Reports made important proposals to improve the reporting and assessment of their actions to restore and protect salmon. This begins with the next (4th) reporting cycle (2025-2030). Crucially, this involves standardised pressures analysis to prioritise future actions, streamline and simplify reporting.**
- 5. NASCO has considered External Performance Review recommendations through a Working Group on the Future of NASCO (WGFON) and developed a revised Strategy and Action Plan, to which the NGOs made input. This important change brings opportunities to reverse the decline of salmon and progress their restoration, but a lot of developments are required to implement the changes and it will not be quick.**
- 6. A Theme-based Special Session on pink salmon described the massive increase and range expansion of this invasive species in Norway in 2023 (350,000 caught) and described the major and largely successful efforts to remove them from rivers.**
- 7. NASCO Stocking guidelines have been revised and will be an important source of advice.**
- 8. The NGO Group is revising its organisation, evaluating capacity and, through a proactive intersessional programme, to engage with the next reporting cycle, to help NASCO achieve its goals for salmon.**

1. INTRODUCTION

This report describes key events and outcomes of the 41st Annual Meeting of NASCO, held in Westport, Ireland, 3-7th June 2024, as seen through the Non-Governmental Group (NGO) on which the IFM has a formal observer representation. It covers generic North Atlantic topics but focuses on matters relating to salmon in UK and Ireland.

As usual in this report, reference is made to reports that are available on the NASCO website. The meetings schedule is in CNL(24)03, the annotated agenda in CNL(24)03A) and a summary of all the business is in CNL(24)88. Note that much NASCO business is done during the year between the annual meetings, particularly in this year to progress recommendations of the External Performance Review (EPR) through the Working Group on the Future of NASCO (WGFON) and to conclude the Stocking Guidelines revisions.

NASCO annual meetings conform to a fixed agenda revolving around the routine work of the three commissions (American, West Greenland and Northeast Atlantic) NASCO's support committees and boards, notably the International Salmon Research Board (IASRB), and task focussed working groups, with Special Sessions on selected topics. Four topics this year were (i) Recommendations of WGFON on NASCO's future Strategy and Action Plan, (ii) The

revisions to the IP/APR process and preparation of the next reporting cycle (2025-2030), (iii) Revisions to Stocking Guidelines and (iv) the Pink Salmon threat.

2. INTERNATIONAL ATLANTIC SALMON RESEARCH BOARD (CNL(24)08)

Future research proposals for NASCO's support have been reviewed (ICR(24)01 and ICRIS(24)023), being (with ranked priority, 1 high, in brackets):

1. Basin-wide patterns of marine growth and survival of Atlantic salmon (1).
2. Migration of salmon at sea (2).
3. The impact of freshwater environment on mortality occurring at sea (2).
4. Potential interactions between pink salmon and Atlantic salmon (3).
5. Quantification of the mortality of Atlantic salmon caught as bycatch in pelagic and coastal fisheries (3).

Priority 1 (Marine growth and survival) will consider the possibility of examining genetics through the scales might also offer insights into control of maturation. This will be done using scales in extensive archives and targeted sampling.

The board received updates on several projects of interest to it including estuarine, coastal and offshore tracking of salmon migrations, including the various incarnations of SMOLTtrack and the Missing Salmon Alliance's Likely Suspects Framework led by Colin Bull for the Atlantic Salmon Trust

3. ICES (WGNAS) ASSESSMENT AND ADVICE

See also full WGNAS report. ICES. (2024). Working Group on North Atlantic Salmon (WGNAS). ICES Scientific Reports. 6:36. 477 pp. 415 pp. <https://doi.org/10.17895/ices.pub.25730247>. Summary advice to NASCO Council and the Commissions is in CNL(24) 06.

The ICES Advice process

NASCO asks ICES for annual advice through a formal agreement and a list of pre-agreed questions. Salmon is just one of many marine fisheries on which ICES provides advice through a prescribed and strongly QA'd process. The salmon assessment and advice are assembled by the Working Group on North Atlantic Salmon (WGNAS). Many of us routinely refer to "ICES advice" or "NASCO advice" possibly without being aware of the process. This summarised in CNL(24)07, which is worth a read.

In 2024 a new approach was introduced. 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 (the CLs, where available).

West Greenland Commission (WGC)

The multi-year regulations for WG continued to apply by which an early warning system triggers fishery closure at 49% of the TAC (TAC is 27t). However, the final declared catch across the four fishery segments (two management areas (north and south) and two fishery types (professional and recreational) was 32.5tonnes in 2023. Various measures will seek to improve the reporting (see WGC(24)08).

Northeast Atlantic Commission (NEAC) Catch Advice (CNL(24)06)

The 2024 advice

ICES advises that, in the absence of specific management objectives and when the 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 2024/25, 2025/26, and 2026/27. 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.

Catch trends

Southern NEAC catches continue to decline despite greatly reduced exploitation (Figure 1).

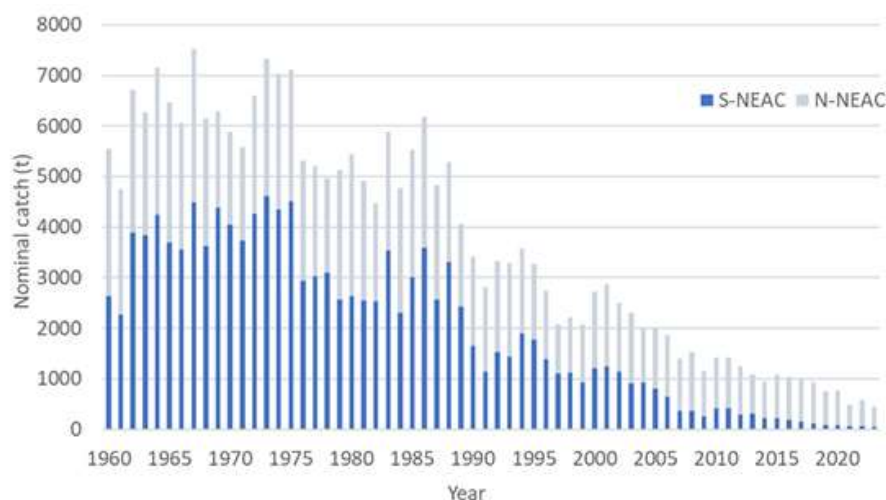


Figure 1. Atlantic salmon from the Northeast Atlantic. Reported catches of Atlantic salmon in the Southern and Northern NEAC areas (1970–2023). From CNL (24)06.

The 2023 annual catch apportionment (Table N) show that The Northern part of NEAC returns most (89%) of the catch and in both parts most fish are now taken in rivers. Bycatch is not included in these figures.

Table 1. Atlantic salmon from the Northeast Atlantic. Catch by area and location in the NEAC area in 2023. 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. From CNL(24)06.

| Catches | Southern NEAC | Northern NEAC | Faroe Islands | Total NEAC |
|------------------------------|---------------|---------------|---------------|------------|
| 2023 reported catch (tonnes) | 47 | 405 | 0 | 452 |
| Catch as % of NEAC total | 11 | 89 | 0 | |
| Unreported catch (tonnes) | 95 | | - | 95 |
| Location of catches | Southern NEAC | Northern NEAC | Faroe Islands | Total NEAC |
| % in-river | 68 | 68 | - | 68 |
| % in estuaries | 32 | 0 | - | 3 |
| % coastal | 0 | 32 | - | 29 |

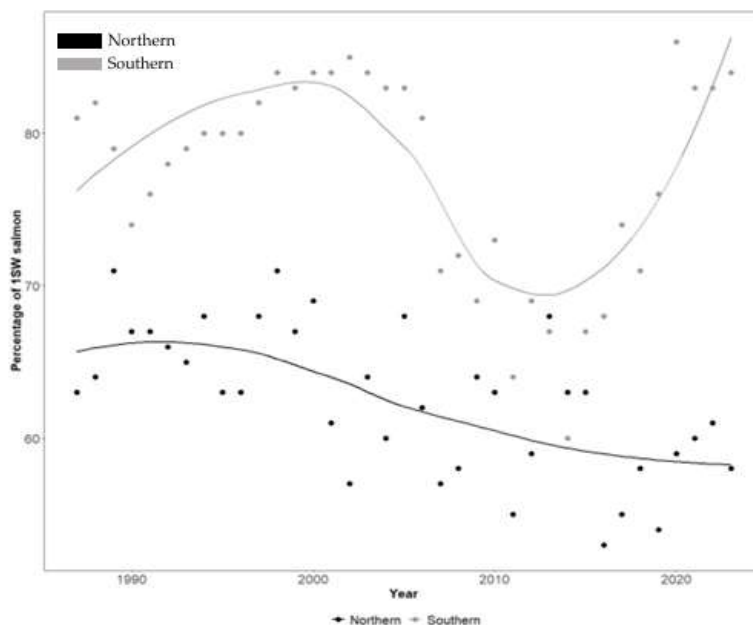


Figure 2. Percentage of 1SW salmon in reported catch for the Northern (black dots and line) and Southern (Grey dots and line) stock complexes, with Loess smoother (span = 85%). From CNL (24)06.

Stock Status

Fluctuations in sea age composition continue. The proportion of 1SW in the catch has increased since 2013 after 10 years of decline (Figure 2), although the long term pattern is different from that reported in 2023.

For NEAC(S) countries the % of rivers attaining CL were UK(Scotland) 37%; UK (Northern Ireland) 12%; UK (England and Wales) 8%; and Ireland 33%. NI and Ireland show minor temporal variability in contrast to declines in the others.

Return rates

Smolt return rates are surrogates for marine survival, as returns to the coast, but note that they can be confounded by changes in maturation rates that affect sea age returns (Figure 2) without necessarily reflecting survival. They are reported for wild and hatchery fish in Northern and Southern parts of NEAC (Figure 3). In summary, NEAC(S) 1SW wild returns have continued to decrease whilst 2SW have increased since around 2005 and stabilised.

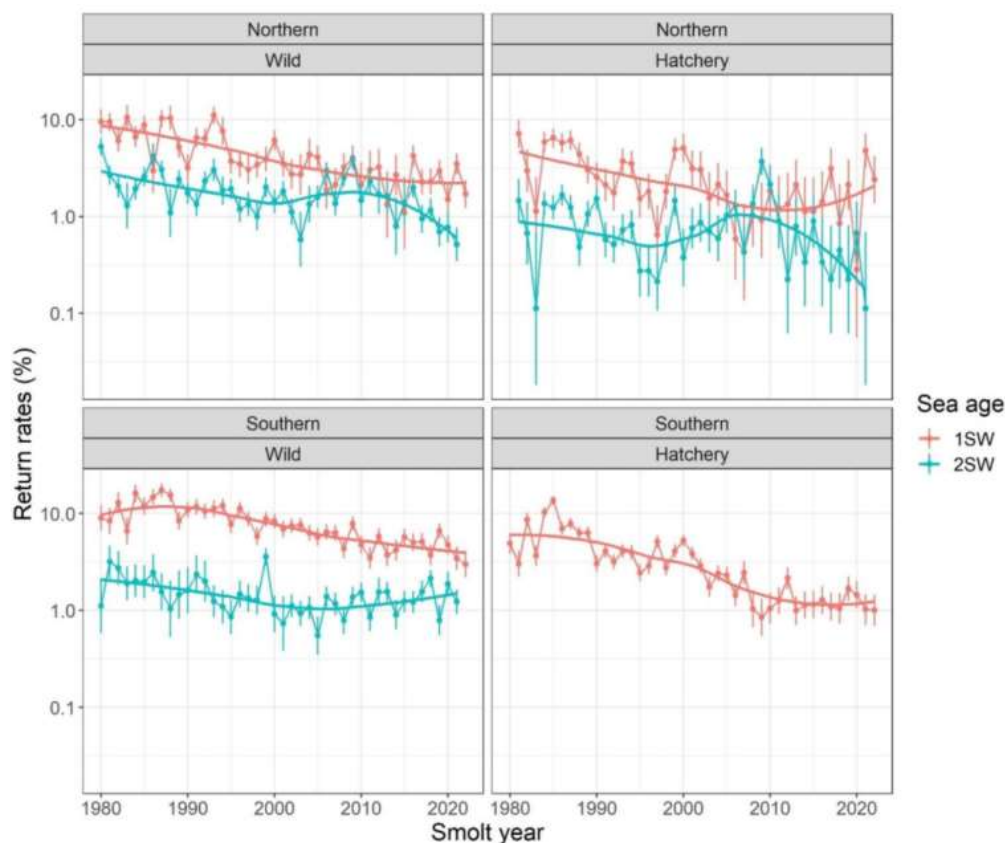


Figure 3. Atlantic salmon from the Northeast Atlantic. Modelled estimates of average return rates (in %) of wild (left-hand panels) and hatchery origin smolts (right-hand panels) of 1SW and 2SW Atlantic salmon to Northern (top panels) and Southern NEAC areas (bottom panels). For most rivers in Southern 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; tables 3.3.2.1 and 3.3.2.2), 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. From CNL(24)06.

In all NEA(S) countries 1SW stocks suffered reduced reproductive capacity in 2023 with returns and spawners being the lowest on record. For MSW fish returns and spawners were lowest of 2nd lowest on record, except for UK (England and Wales), where returns and spawners were down on 5year mean at -11% and -10% respectively, and were assessed as at full reproductive capacity, although they are on a current decreasing phase (Figure 4).

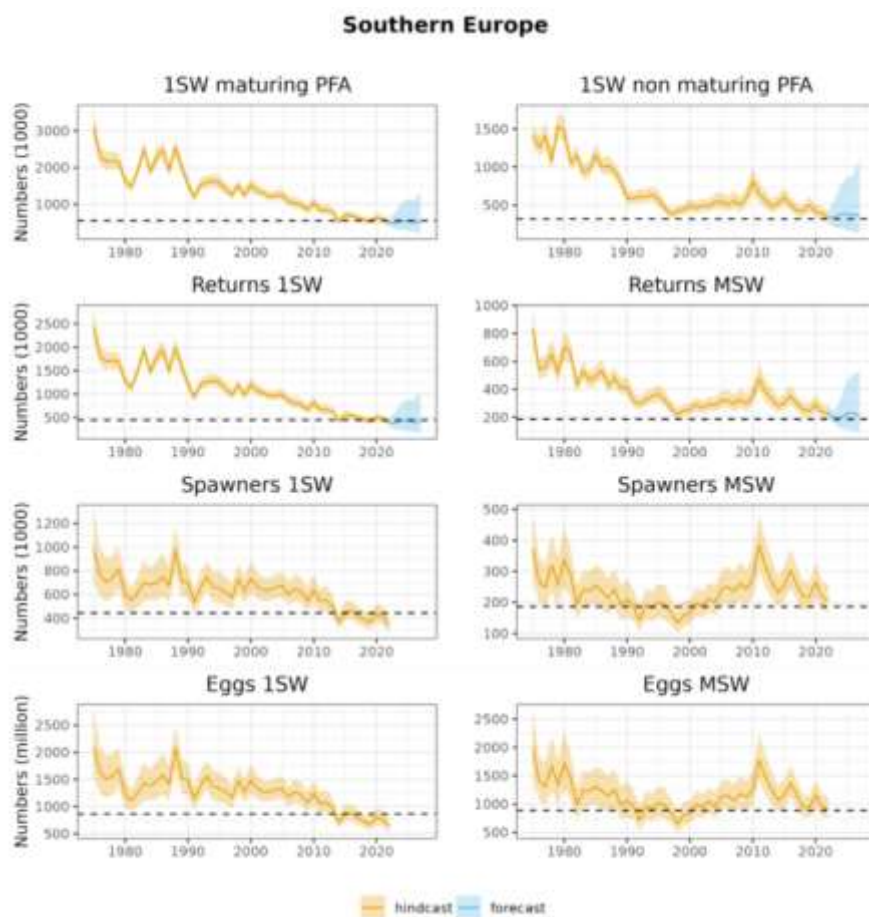


Figure 3. Southern NEAC (aggregate). 1SW maturing and 1SW non-maturing PFA, returns of 1SW and MSW fish, 1SW and MSW spawners, and egg deposition from 1SW and MSW spawners derived from the Life-cycle Model (LCM). Solid line: median of the marginal posterior distributions; shaded area: 90% Bayesian credibility 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 (in number of fish; spawner and return panels) and the age-specific Conservation Limits (in eggs; eggs panels). Years refer to year of return, with the exception of PFA non-maturing, which is year of return minus one. From CNL(24)06.

Emerging Threats

Offshore aquaculture farming in Norway. Proposed development of offshore salmon net farming is being evaluated in three areas and, depending on location and practice, is considered to present numerous threats to smolts and post smolts on their migration and to their ecosystems.

Urban runoff mortality syndrome (URMS). This is caused by 6PPD-quinone describes a phenomenon whereby exposure to stormwater can lead to acute mortality as high as 60–90% in Pacific salmonids. While a study investigating the acute toxicity of 6PPD-quinone exposure on early-life stages (alevins) of Atlantic salmon showed no obvious effect in terms of

mortalities or substantial behavioural changes, the sensitivity of adult Atlantic salmon to 6PPD-quinone exposure (mortality, sublethal effects, or reproductive impairment) are unknown.

Marine Bycatch. This potentially important pressure on salmon was reviewed by ICES following a specific request by NASCO stimulated by a question from the NGO group in 2022 (See ICES. 2022. Working Group on Bycatch of Protected Species (WGBYC). ICES Scientific Reports. 4:91. 265 pp. <https://doi.org/10.17895/ices.pub.21602322>). Several recommendations were made but progress with these is slow. The main outcome is that ICES have been asked by NASCO to include bycatch estimates in their next annual assessment. The IARSB placed bycatch as priority 3 in their list of research topics (see above). Other investigations, principally to get robust estimates of true salmon bycatch levels in all fishing fleets, are being pursued through various routes including an ICES Working Group (*WKSALMON II*), the Missing Salmon Alliance's Likely Suspects Framework (PI, Colin Bull, AST) and Sophie Elliott of WGCT.

Gyrodactylus Salaris. This parasite is a notifiable infectious disease and its eradication in Norwegian rivers and preventing its spread elsewhere remains an important preoccupation in NEAC. There is an agreed "road map" for its control and countries report against this (NEA(24)03); NEA(24)06). No infections were reported beyond Sweden (where it endemic in many rivers) and Norway (where it has been effectively eradicated in many infected rivers).

4. REVISED NASCO STOCKING GUIDELINES

The Guidelines (originally an Annex 4 of to the Williamsburg Resolution, 2006) have been reviewed by a NASCO working group with a view to revision and the review (CNL(24)10) was discussed at the Annual meeting. The tasks of the Group were to:

- Consider the biological / ecological risks and benefits arising from stocking.
- Evaluate new approaches and perspectives and / or policies to stocking that could minimise negative effects or risks associated with some hatchery operations.
- Recommend to Council, for agreement at the 2024 Annual Meeting, an updated document 'Guidelines for Stocking Atlantic Salmon' (Annex 4 of the Williamsburg Resolution) which provides guidance to NASCO's Parties on applying the Precautionary Approach to the authorisation and conduct of any stocking of Atlantic salmon into the wild.

The Working group was further asked to update 'Guidelines on the Use of Stock Rebuilding Programmes in the Context of the Precautionary Management of Salmon Stocks' (originally in CNL(04)55), and to consider new guidelines on gene banking. These and the Stocking Guidelines will be increasingly valuable for all involved in salmon fisheries if/as salmon stocks continue to decline and may require such interventions.

5. PINK SALMON

A special session on pink salmon demonstrated the significant increase in the presence of this invasive species and its spread from subpolar regions to more southerly parts of Atlantic salmon range. It was introduced by Russia to the Murmansk / White Sea region as a potential food source. As an odd-year breeding strain, these fish were expected to be abundant in 2023 and were present in huge numbers in the Teno/Tana river (Finland/Norway) and in Norwegian rivers further west (Figure 4). A good presentation on Norwegian control measures by

Hostmark, M.S. and Froiland, E. (CNL(24)78) described the intensive efforts to keep pinks out and prevent them from breeding. 350,000 were taken in various fisheries

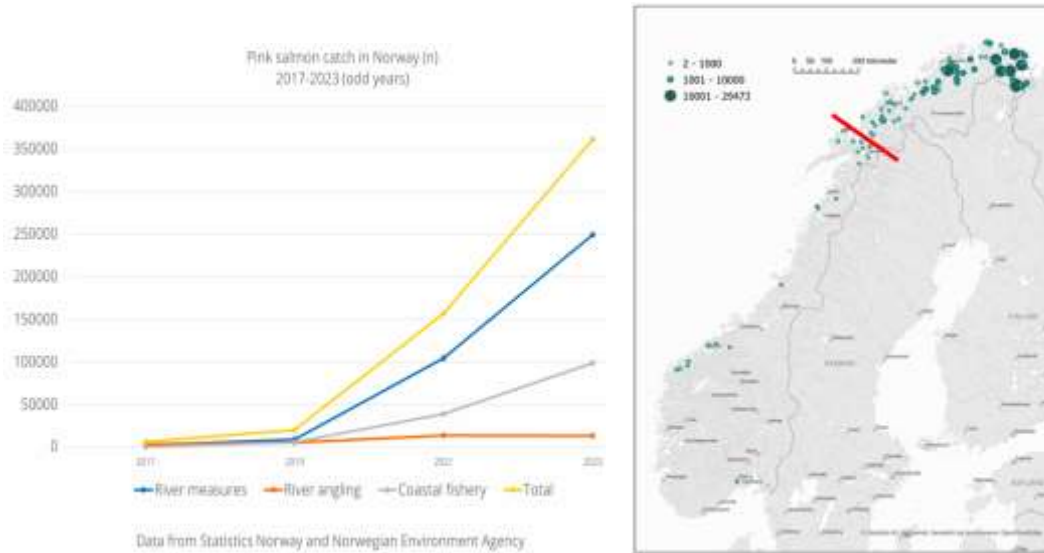


Figure 4 Left: Pink salmon taken in various fisheries during 2023. Right distribution of catches in the special measures traps. From CNL(24)78.

Special measures taken by state and county groups in 94 rivers removed 250,000 pinks of which 68% were taken in traps ranging from significant major structures, including picket traps and resistance board weirs to small scale home-made trap (Figure 5). Seine nets deployed in some estuaries also took large numbers (Figure 6).



Figure 5. Methods used to catch pink salmon in Northern Norway. Left: Picket trap, Right: resistance board weirs. From CNL(24)78.



Figure 5. Methods used to catch pink salmon in Northern Norway. seine net. From CNL(24)78.

These measures were estimated to take 97% of pinks out of the rivers, for which the Norwegians should be thanked because this is to the benefit of all salmon stocks further south in the Atlantic.

The disposal of carcasses poses a problem. Pink salmon characteristically decay rapidly during and after spawning but the fish are used variously for sale as food when suitable, as pet food, fertiliser, biogas and crab bait. The balance is to achieve disposal during this control stage without developing a commercial or recreational fisheries that might lobby for their continuation (as in Russia).

A NASCO statement on the concern and control approaches to adopt was agreed by all parties except Russia.

6. REVIEW OF THE EFFECT OF SALMON AQUACULTURE ON WILD ATLANTIC SALMON POPULATIONS

Given the continuing concern about the effects of marine salmon aquaculture on wild salmon in 2021, coupled with continuing failures reported in the APRs to manage it effectively, NASCO initiated a State of Knowledge paper where the goal is to conduct a systematic review and potential meta-analysis of the effect of (1) salmon lice and (2) escaped farmed salmon on wild Atlantic salmon. This split into two work streams (i) the effects of sea lice and the Effects of Genetic introgression, each aiming to produce peer-reviewed papers. Both are nearing completion. the Sea Lice programme has involved rigorous systematic review, followed by meta-analysis and to produce a scientific manuscript by mid-2024, led by Paddy Gargan.

The farm escapes/ introgression component was considered to already have a robust review (in 2017) and did not require systematic review. The introgression paper will review the large body of work evaluating the impact of escaped farmed salmon on wild salmon populations, focusing on the presence of escapees in the wild, evidence for hybridisation and introgression

and the consequences for wild populations and, where possible, focusing on the mechanisms and magnitude of effect.

7. THE FUTURE OF NASCO

A major review of NASCO's organisation, roles and performance reported in 2023 (https://nasco.int/wp-content/uploads/2023/03/CNL2317_Report-of-the-Third-NASCO-Performance-Review.pdf). The EPR made 46 recommendations that were reviewed through a Working Group on the Future of NASCO (WGFN) and presented as a draft 10 year strategy and Action Plan at the 2024 meeting. The background to this is the shift from NASCO's initial focus on control of high seas fisheries to dealing with the wider range of factors behind salmon decline throughout its lifecycle, coupled with the 2023 IUCN classification of Atlantic salmon as "Near Threatened" throughout its global range and "Endangered" in the UK.

The NASCO Mission is: to support and promote urgent and transformative actions directed at the protection, conservation and restoration of wild Atlantic salmon throughout the species' range.

Its Strategic Goal is: Within the next 10 years, NASCO's goal is to prioritise and drive actions necessary to slow the decline of wild Atlantic salmon populations and demonstrate that restoration is possible.

There are 5 objectives:

1. Ensure the best evidence-based information is compiled and accessible to address the critical challenges and threats to wild Atlantic salmon at the North Atlantic scale, which are amplified by the climate crisis.
2. Use the information gathered through Objective 1 to ensure that guidance reflecting best management practice is produced and readily available to those seeking to take action to protect wild Atlantic salmon.
3. Actively promote sustainable conservation and management practices by sharing best practice and holding Parties and jurisdictions accountable in implementing NASCO recommendations and guidance.
4. Communicate information on wild Atlantic salmon to educate, raise public and political awareness and foster broad collaborative efforts with other international organizations and civil society to encourage decision-makers, the public, private sector and the scientific community to work towards solutions that overcome the challenges wild Atlantic salmon face.
5. Improve its organizational practices and work in an efficient, effective, inclusive, and transparent manner.

The details of how these will be delivered are still evolving, but include:

- Four Working Groups that focus on technical delivery of NASCO's Themes, revisions and updates of guidelines on: (i) Protection and restoration of Atlantic salmon habitat, (ii) Fisheries Management to promote diversity and abundance and maintain all stocks above their CLs, (iii) Aquaculture and Introductions and Transfers, to minimise adverse effects on wild stocks (iv) Climate change, the all-pervasive threat.
- Revised IP/APRs process to streamline and simplify, revolving around standardised pressures analysis in the fourth reporting cycle starting in 2025.
- Strengthened engagement with and direct participation of Indigenous Peoples.

- Increased activity on outreach and communication to raise public and political awareness regarding the plight of wild Atlantic salmon and advise on tools / products that NASCO could pursue. This, with advice from a consultancy to be appointed.
- More collaboration with other Regional Fisheries and Management organisations (RFMOs) and / international conservation organisations, to explore options beneficial to salmon.

These will be improvements, but the timescale is long. The Working Groups will report their agreed objectives to Council in 2025. Disappointingly, the plan is to revise and to implement the NASCO Guidance on the themes consecutively, so the last will be done in 2028. This doesn't convey urgency but is attributed to limited resources of the Parties and NASCO Secretariat. The current proposals from the WGFON omit change to the NASCO Convention which is seen by some to be a fundamental block on getting parties to conform to delivery of Implementation Plans. This is to be considered again intersessionally.

9. NGO GROUP REORGANISATION

The Group of 47 organisations is revising its organisation, evaluating capacity and, through a proactive intersessional collaboration between NGOs, plans to engage proactively with the next reporting cycle, to help NASCO achieve its goals for salmon. This will begin during 2024 and is a chance to ensure that IPs are focussed on salmon needs. IFM will be involved in this, which is an important means to lobby Government departments and regulators in their formulation of the UK Implementation Plan.

Nigel Milner

06/07/2024