

	<p>Council</p> <p><i>Informing a Strategic Approach to Address the Impacts of Climate Change on Wild Atlantic Salmon</i></p>	<p>CNL(23)19</p> <p>Agenda Item: 7a)</p>
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Informing a Strategic Approach to Address the Impacts of Climate Change on Wild Atlantic Salmon

A Theme-based Special Session of the Council of NASCO

Tuesday, 6 June 2023

Background

The objective of NASCO’s Theme-based Special Sessions is to allow for greater exchange of information on a topic related to NASCO’s Resolutions, Agreements and Guidelines.

In 2021 the Council of NASCO agreed that a TBSS would be held in 2023 on the overarching theme of climate change. It agreed that:

‘A Steering Committee would be established to consider the appropriate structure to ensure that tangible recommendations from the TBSS would be available to NASCO’, [CNL\(21\)62](#) (paragraph 5.20).

NASCO and Climate Change

NASCO expressed concern about climate change as early as 1991 when ‘Climate Change and Salmon Stocks’ was on the Agenda of the Council Annual Meeting. The report, [CNL\(91\)45](#), stated that:

‘The Secretary presented a preliminary review, CNL(91)26 (Annex 23) on the possible implications of climate change for the wild salmon stocks. The salmon may be particularly vulnerable to global warming because of its life cycle which includes a phase in cold freshwater. The Council agreed that they should keep the evidence on climate change and its impacts on salmon stocks under review’.

The introduction to the preliminary review referred to above, CNL(91)26, stated:

‘At present detailed predictions of how climate change will affect salmon stocks are not possible. It is clear that all aspects of salmon biology could be affected by the predicted changes with implications for distribution changes in freshwater and in the ocean and for management of the resource. The Council may therefore wish to be kept informed of developments in this field or consider holding a Special Session on this topic in the future.’

In 2012 the second performance review of NASCO reported ([CNL\(12\)11](#)) that ‘in the long-term, the ‘Next Steps’ process should consider cross-cutting issues, such as climate change’. Also in 2012, the Secretary reported on the ‘Salmon Summit’ held in 2011. The Report of the 2012 Annual Meeting, [CNL\(12\)39](#), page 100, stated:

‘... over the last forty years, increased mortality at sea, linked to a warming climate, has resulted in a dramatic decline in the abundance of Atlantic salmon. Since management options in the ocean are limited, the report had concluded that the goal should be to maximise the number of healthy wild salmon that go to sea by focusing actions on impact factors in fresh, estuarine, and coastal waters.’

Two key publications from the ‘Salmon Summit’ are available on the International Atlantic

Salmon Research Board (the Board) [website](#). Some of the scientific findings were published in a symposium issue of the [ICES Journal of Marine Science \(Vol. 69 \(9\)\)](#). A second report, '[Atlantic salmon at sea: Findings from recent research and their implications for management](#)', focused on the management implications and applications of the research presented at the Salmon Summit.

In 2019, a two-day Symposium entitled 'Managing the Atlantic Salmon in a Rapidly Changing Environment – Management Challenges and Possible Responses' was hosted by Norway. This 'Tromsø Symposium' focused on the challenges facing Atlantic salmon and possible responses. It included presentations on climate change and the Tromsø Symposium Steering Committee made a recommendation that:

'To remain relevant in a period of rapid environmental and social change NASCO needs a renewed strategy to respond to the challenges facing wild Atlantic salmon. To begin this process NASCO should specifically identify strategic activities to deal with climate change and its cascading effects on salmon and salmon habitat, possibly by updating its 2005 'Strategic Approach for NASCO's 'Next Steps'.'

This TBSS will be NASCO's first on climate change.

Climate Change and its Cascading Effects on Salmon and Salmon Habitat

In direct response to a question posed by NASCO in 2016, [CNL\(16\)12](#), ICES held a workshop to quantify possible future impacts of climate change on salmon stock dynamics. The full workshop report was published in March 2017, and the findings were presented to the Council as part of the ICES Advice in June 2017, [CNL\(17\)55](#). The report provides an excellent climate change overview, an overview of environmental and biological drivers that impact Atlantic salmon stock dynamics, a discussion of possible projections of climate change effects on these drivers and a comprehensive literature review of papers exploring climate change effects on Atlantic salmon.

However, the science of climate change is rapidly evolving. Since the 2016 ICES workshop and the Tromsø Symposium in June 2019, the Intergovernmental Panel on Climate Change (IPCC) has published several reports assessing the science related to climate change. One of its conclusions of the Sixth Assessment Cycle, published in 2021, is that the scale of recent changes across the climate system is unprecedented over many centuries to many thousands of years. In this era of undoubted anthropogenic impact on the planet, with an already challenged environment for wild Atlantic salmon in both their freshwater and marine life stages, the inability of wild fish to adapt is worrying (<https://livingplanet.panda.org/>). As such, there is an urgent need to update our knowledge base and engage in discussions given the most recent scientific information available.

Objectives of the Theme-based Special Session

The Steering Committee has agreed that the overarching objective for the TBSS is to exchange information on the current and future impacts of climate change on salmon productivity in the North Atlantic and on management measures being implemented by NASCO Parties / jurisdictions, to identify best practices and inform the development of a strategic approach by NASCO.

The TBSS will address this overarching objective through three detailed objectives. The TBSS will:

1. Summarise the current and predicted impacts of climate change on Atlantic salmon productivity across North Atlantic freshwater and marine environments

Invited experts will present information on:

- a summary of existing and forecasted climate change across the north Atlantic relevant to salmon freshwater and marine ecology
- the current and predicted ecological impacts of climate change on salmon productivity in the North Atlantic, in freshwater habitats;
- the current and predicted ecological impacts of climate change on salmon productivity in the North Atlantic, in marine habitats;
- the role of freshwater and marine productivity in defining overall population productivity
- anthropogenic stressors interacting with climate change.

2. (a) Provide an overview of climate adaptive management actions undertaken by Parties / jurisdictions to mitigate the negative impacts of climate change, with an assessment of the effectiveness of these actions, and lessons learned.

Parties / jurisdictions will be requested to:

- describe the climate adaptive management measures that are being enacted, or plan to be enacted, within their relevant Party / jurisdiction;
- provide an assessment of the effectiveness of adopted management measures in mitigating the negative impacts of climate change on salmon productivity; and
- identify knowledge gaps and other factors that hinder progress.

2. (b) Provide an overview of climate adaptive management actions undertaken by other countries to mitigate the negative impacts of climate change, with an assessment of the effectiveness of these actions, and lessons learned.

Other countries will be requested to:

- describe the climate adaptive management measures that are being enacted, or plan to be enacted, within their country;
- provide an assessment of the effectiveness of adopted management measures in mitigating the negative impacts of climate change on salmon productivity; and
- identify knowledge gaps and other factors that hinder progress.

3: Review the effectiveness of management actions, the challenges and knowledge gaps that are hindering climate adaptive management efforts across jurisdictions, to result in a set of tangible recommendations to NASCO

This objective will be delivered through discussion of the presentations under the first and second objectives and finalised through a report of the Special Session.

Programme

The TBSS will take place on Tuesday 6 June 2023, from 11:30 hrs until 18:00 hrs. The Steering Committee (Gemma Cripps, Seamus Howard, Nigel Milner, Isabelle Morisset, Timothy Sheehan, Katie St John Glew and Line Elisabeth Sundt-Hansen) has worked with the Secretariat in planning the Special Session and has developed a Programme (below).

Written papers of the presentations will be distributed prior to the Annual Meeting; these will not be subject to review. The Steering Committee will prepare a report of the Special Session, which will include the papers presented, the transcription of the discussion under Objective 3

and tangible recommendations to NASCO from the Steering Committee.

Presentations

This TBSS programme has been developed around the three objectives set out above.

Presentations have been identified to cover the first and second objectives. The first objective will be addressed by invited speakers each presenting in their area of expertise. The second objective will be addressed by representatives from each Party / jurisdiction (and from Iceland). There will be a period of discussion following the first and second sessions, to address objective three collectively.



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Tuesday 6 June 2023

Programme

Time	Title	Contributors
<i>1. Summary of the impacts of climate change on Atlantic salmon productivity across North Atlantic freshwater and marine environments</i>		
<i>Session Chair: Katie St John Glew</i>		
11:30-11:40	Opening of the Theme-based Special Session	Gemma Cripps, Chair of the TBSS Steering Committee
11:40-12:00	Summary of existing and forecasted climate change across the North Atlantic relevant to salmon marine ecology	Øystein Skagseth, Institute of Marine Research, Norway
12:00-12:20	Current and predicted ecological impacts of climate change to salmon productivity in the North Atlantic, in marine habitats	Kathy Mills, Gulf of Maine Research Institute, USA
12:20-12:40	Current and predicted ecological impacts of climate change to Atlantic salmon freshwater productivity in the North Atlantic	André St-Hilaire, Institut national de la recherche scientifique, Canada
12:40-13:00	Anthropogenic stressors interacting with climate change	Torbjørn Forseth, Norwegian Institute of Nature Research (NINA)
13:00-13:20	The role of freshwater and marine productivity in defining the overall outcome for an Atlantic salmon population	Marie Nevoux, Institut national de la recherche agronomique, France
13:20-14:20	Lunch Break	
<i>2. (a). Overview of adaptive management actions undertaken by Parties / jurisdictions to mitigate the negative impacts of climate change, with an assessment of the effectiveness of these actions, and lessons learned</i>		

<i>Session Chair: Nigel Milner</i>		
14:20-14:35	Canada	Livia Goodbrand, Fisheries and Oceans Canada
14:35-14:50	European Union – North	Seán Kelly, Inland Fisheries Ireland
14:50-15:05	European Union – South	Bénédicte Valadou, French Office for Biodiversity
15:05-15:20	European Union – South	Julián García Baena, Spanish General Secretariat of Fisheries
15:20-15:35	Norway	Peder Fiske, Norwegian Institute for Nature Research
15:35-15:50	United Kingdom	Faye Jackson / Iain Malcolm, Marine Scotland Science & Lawrence Talks, Environment Agency (England)
15:50-16:05	United States of America	Dan Kircheis, National Marine Fisheries Service, United States
2 (b). Overview of adaptive management actions undertaken by invited countries to mitigate the negative impacts of climate change, with an assessment of the effectiveness of these actions, and lessons learned		
16:05-16:20	Iceland	Guðni Guðbergsson, Marine & Freshwater Research Institute, Iceland
16:20-16:35	Coffee Break	
3. Review the effectiveness of management actions, the challenges and knowledge gaps that are hindering climate adaptive management efforts across jurisdictions, to result in a set of tangible recommendations to NASCO		
<i>Session Chair: Gemma Cripps</i>		
16:35-17:50	Summary, recommendations, and discussions	All
17:50-18:00	Thanks and close	Gemma Cripps, Chair of the TBSS Steering Committee