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MANAGING THE ATLANTIC SALMON IN A RAPIDLY CHANGING ENVIRONMENT

- MANAGEMENT CHALLENGES AND POSSIBLE RESPONSES

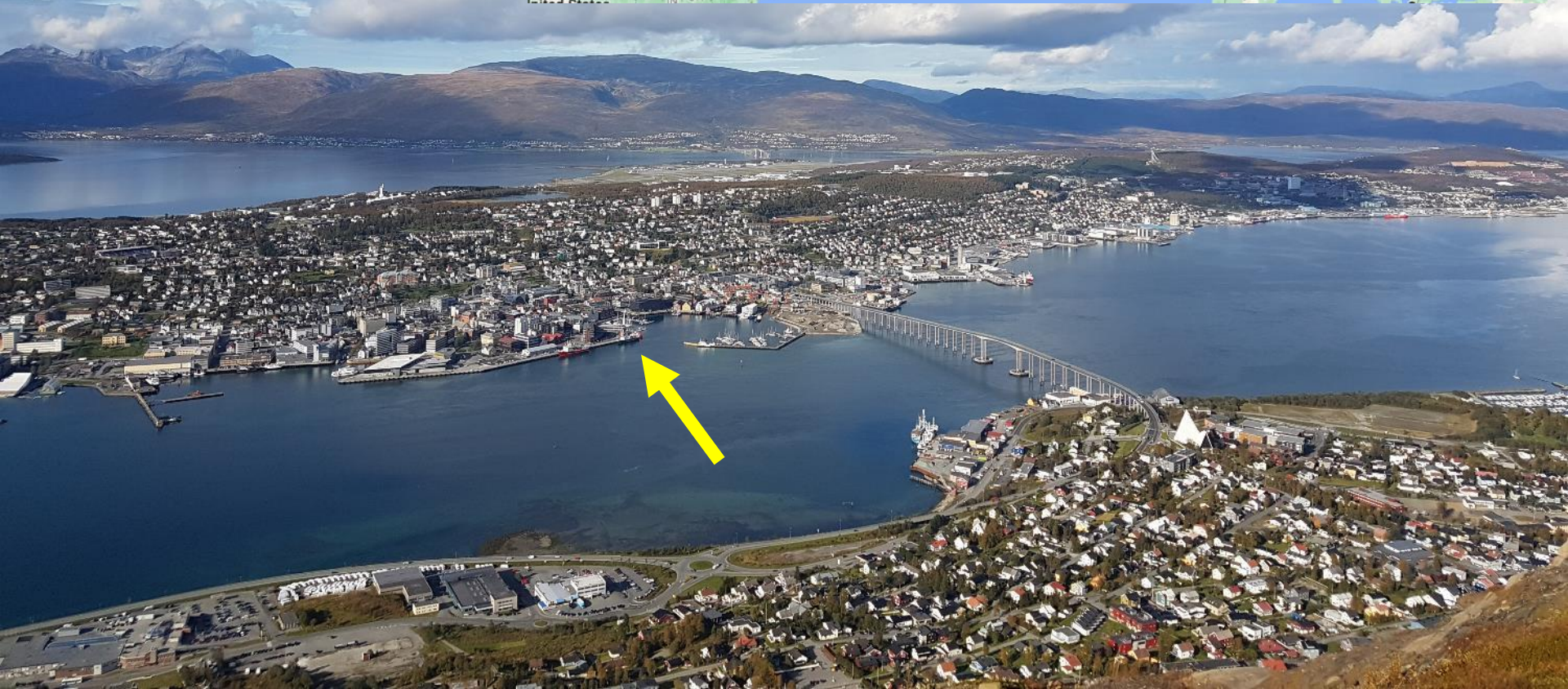
Conclusions and recommendations from the Symposium Steering Committee

Eva B. Thorstad
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Symposium held in Tromsø in 2019



STEERING COMMITTEE



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Maoiléidigh**

**Stephen
Sutton**

**Managing the Atlantic Salmon
in a Rapidly Changing Environment
- Management Challenges and
Possible Responses**



**Report of the NASCO Symposium for the
International Year of the Salmon
3 - 4 June 2019
Tromsø, Norway**

CNL(19)16

**Report from the Tromsø Symposium on the Recommendations
to Address Future Management Challenges**



**Managing the Atlantic Salmon in a Rapidly Changing Environment –
Management Challenges and Possible Responses**

Symposium held in Tromsø, Norway June 3 - 4, 2019
ahead of the North Atlantic Salmon Conservation Organization's (NASCO) Annual Meeting

REPORT FROM THE SYMPOSIUM STEERING COMMITTEE

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VIEWPOINT

WILEY

Atlantic salmon in a rapidly changing environment—Facing the challenges of reduced marine survival and climate change

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Abstract

1. Atlantic salmon populations have declined in recent decades. Many of the threats to the species during its freshwater and coastal residency periods are known, and management approaches are available to mitigate them. The global scale of climate change and altered ocean ecosystems make these threats more difficult to address.

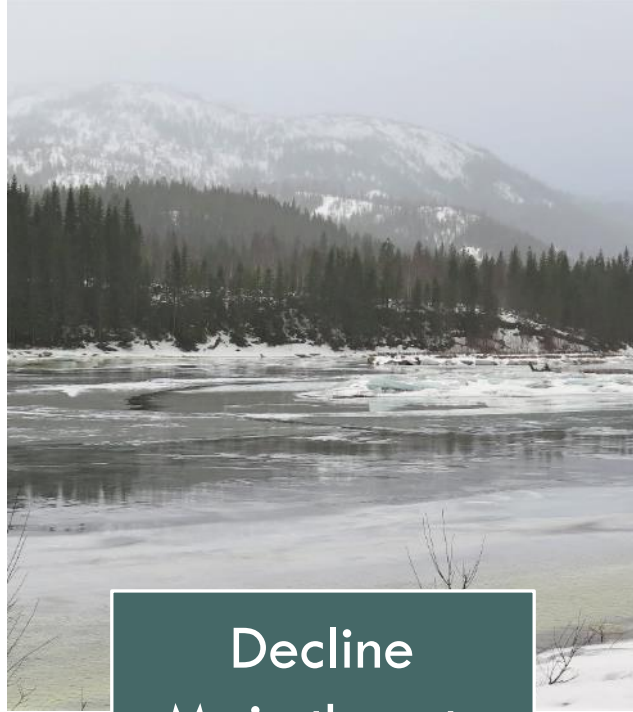


MAIN THEMES

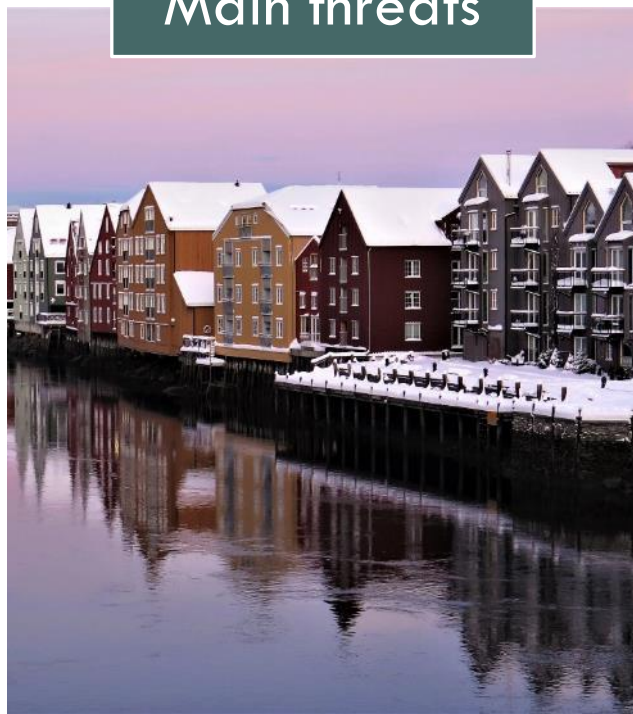
- 1) CLIMATE CHANGE AND STATE OF THE SALMON
- 2) MANAGEMENT CHALLENGES AND SOLUTIONS



ADVICE FOR AGENCIES AND ORGANISATIONS RECOMMENDATIONS TO NASCO



Decline
Main threats





THE SYMPOSIUM

- 1) **Climate change**
- 2) **Fish farming**
- 3) **Stocking**
- 4) **Invasive alien species**
- 5) **Freshwater habitat and water quality**
- 6) **Marine phase**
- 7) **Biological reference points in management**
- 8) **Human dimensions**



THE SYMPOSIUM

- 1) **Climate change**
- 2) Fish farming
- 3) Stocking
- 4) Invasive alien species
- 5) Freshwater habitat and water quality
- 6) **Marine phase**
- 7) Biological reference points in management
- 8) **Human dimensions**



Will worsen
conditions for salmon and
impacts of other stressors

- **Already impacts salmon**
– need to adapt management
- **Must ensure salmon can adapt to rapid changes in environment**

CLIMATE CHANGE



Stocking

OTHER HUMAN ACTIVITIES REDUCE THE SALMON'S RESILIENCE AND ABILITY TO ADAPT TO CLIMATE CHANGE



Genetic impacts from farmed fish

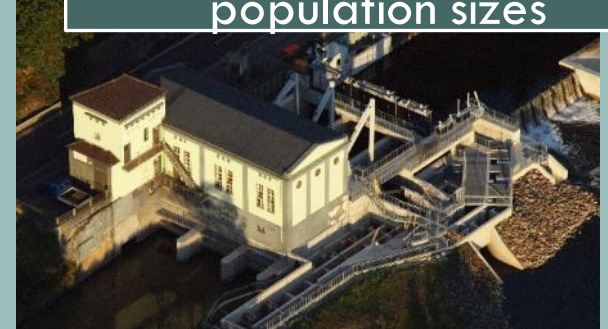


Invasive species



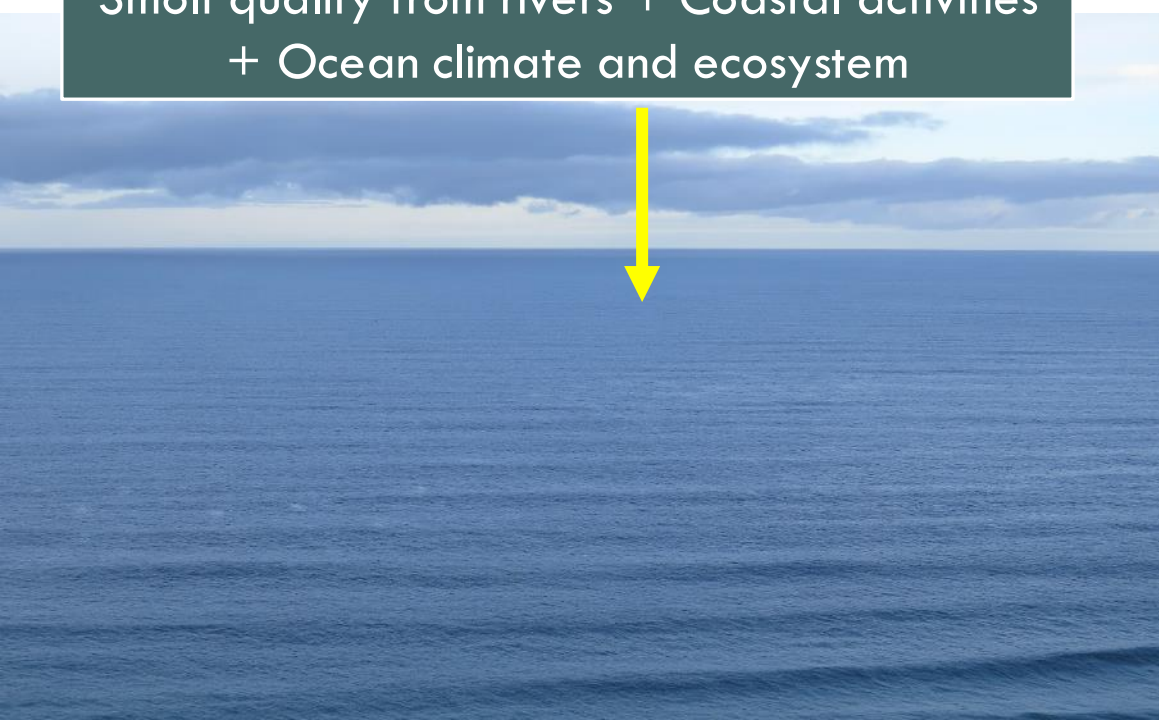
Selective fishing

Activities reducing effective
population sizes





Smolt quality from rivers + Coastal activities
+ Ocean climate and ecosystem



SEA SURVIVAL

Why important for management?

To identify the importance of open ocean versus human impacts in rivers and coastal areas

To predict spawner numbers



**HOW CAN MANAGERS REDUCE
THE IMPACTS OF A RAPIDLY
CHANGING ENVIRONMENT?**

**Promote strong,
healthy and
resilient
populations of
local wild
salmonids**

**Ensure that the
highest number
of wild smolts in
the best
condition leave
from rivers and
coastal areas to
the ocean**



**HOW CAN MANAGERS REDUCE
THE IMPACTS OF A RAPIDLY
CHANGING ENVIRONMENT?**

To achieve this:

- **Protecting genetic integrity**
- **Enhanced water quality**
- **Habitat protection and access to important habitats**
- **Minimizing human impacts reducing growth and survival in rivers and coastal areas**



**CONTROL THE
CONTROLLABLES**

Concentrate on important impact factors that are in the potential control of politicians and managers to actually influence



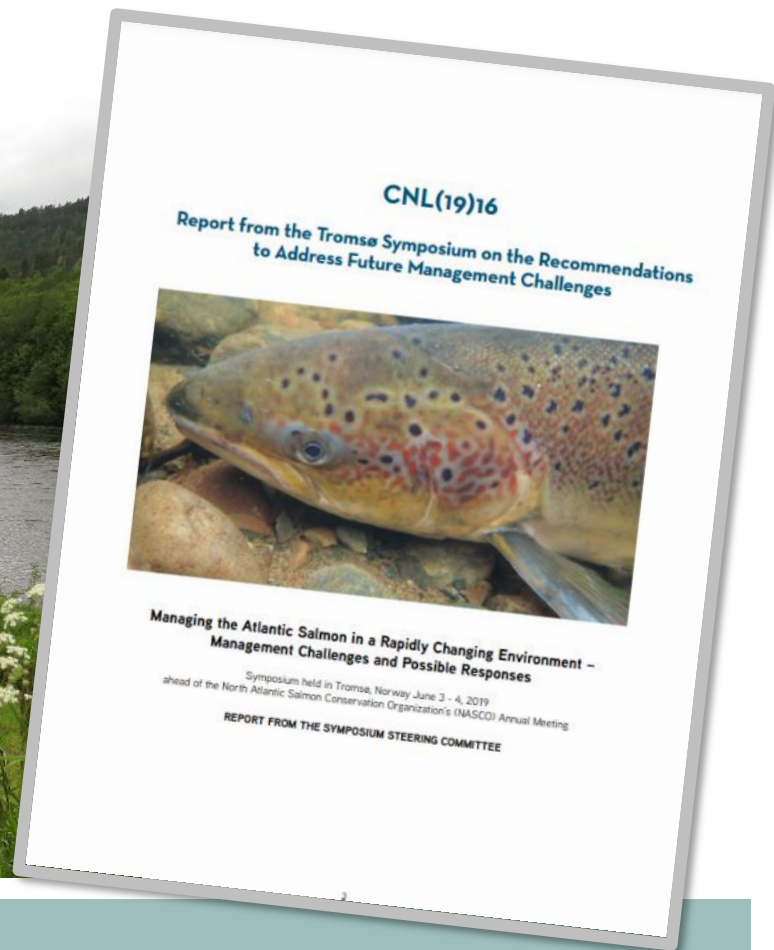
**MANAGING SALMON IS
MANAGING PEOPLE**

**Timely
implementation
and effective
solutions often
hampered by
socio-economic
factors**

- Improve engagement of stakeholders in decision-making
- Build relationships, increase collaborations
- Improve science communication
- Forums to solve management conflicts
- Better public engagement
- Sound use of multiple knowledge systems
- Systematically build public and political will for conservation initiatives

HUMAN DIMENSIONS NEED TO BE INCREASINGLY EMPHASISED BY MANAGERS





ADVICE TO NASCO |



1 CLIMATE

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 identify strategic activities to deal with climate change on salmon and salmon habitat, possibly by updating its *Strategic Approach for NASCO's 'Next Steps'* (2005)

2 STOCKING

Action of last resort, primarily for preserving endangered populations

- **Only use local wild broodfish**
- **Stock early life stages**
- **Conduct in a way that maintains genetic integrity and variation**

Given the advances in understanding genetic effects of stocking, NASCO should immediately update its 2004 Guidelines





3 HABITAT AND WATER QUALITY

- **Given the importance of habitat and water quality in conserving salmon into the future, NASCO should update its *Guidelines for the Protection, Restoration and Enhancement of Atlantic Salmon Habitat* (2010)**
- Updated guidelines should not only consider the **physical environment** and include estuaries but should also seek to optimize water quality by considering the **chemical and biological quality**



Given the advances in the understanding of human dimensions and the importance of incorporating indigenous and local knowledge into salmon conservation, NASCO should update and modernize its *Guidelines for Incorporating Social and Economic Factors in Decisions under the Precautionary Approach* (2004)

NASCO should improve the participation of indigenous people in NASCO

4 & 5 HUMAN DIMENSIONS



6 RAISING AWARENESS
(don't stop now...)

- **NASCO should continue efforts, begun under the IYS**

to raise global awareness about the status of Atlantic salmon, the threats they face, potential solutions, and actions that can be taken



7 INVASIVE ALIEN SPECIES

NASCO should facilitate co-operation between parties when there is a need for international collaboration to prevent or reduce the threat to salmon stocks from invasive species





8 SALMON FARMING

escaped farmed salmon and sea lice

Given the continued impacts of salmon farming on wild salmon, NASCO should strengthen compliance to the agreed international goals of all **farmed fish to be retained in all production facilities** and all farms to have **effective sea lice management** such that there is no increase in sea lice loads or lice-induced mortality of wild salmonids attributable to the farms



9 SALMON FARMING disease pathogens

NASCO should establish a new goal to prevent the spread of disease pathogens from fish farms to wild fish

consistent with the existing goals on containment and sea lice in the

- *Guidance on Best Management Practices to Address Impacts of Sea Lice and Escaped Farmed Salmon (2009)*
- *Theme-based Special Session: Addressing Impacts of Salmon Farming on Wild Atlantic Salmon (2016)*

10 MARINE MORTALITY

NASCO should support and continue to encourage research on mortality for Atlantic salmon at the beginning and the end of the marine phase of their life cycle in estuaries, near-coastal areas and on the high seas

Needed to

- identify the importance of reduced sea survival due to ocean ecosystem effects versus human impacts in rivers and near-coastal areas
- predict spawner numbers for management





11



NASCO should consider hosting similar events in the future

given the success of this Symposium and the positive feedback from the participants





**NASCO HAS AN
IMPORTANT ROLE**

**in bringing
together countries,
non-governmental
organisations, and
indigenous
peoples to work
collaboratively in
support of salmon**



NASCO HAS AN IMPORTANT ROLE

To have an inter-governmental body where

- **people from governments and organisations meet**
- **the parties are reporting to NASCO**

has substantially changed and improved salmon conservation during the last decades



**NEED FOR ADAPTATION
BY SALMON, PEOPLE AND
INSTITUTIONS**

In today's rapidly changing ecological, social, and political environments, it is imperative for NASCO - the world's only international body focused on the conservation and survival of Atlantic salmon - to remain adaptable and engaged in the activities that are necessary to ensure the survival of wild Atlantic salmon



**NEED FOR ADAPTATION
BY SALMON, PEOPLE AND
INSTITUTIONS**

**We urge NASCO to
engage in an on-
going process of
self-reflection and
evolution to ensure
the organization
remains a relevant
and effective forum
for the
conservation of
wild Atlantic
salmon**



THANK YOU FOR LISTENING

Photo: Audun Rikardsen