Atlantic Salmon Federation  Fédération du Saumon Atlantique

Marine Protected Areas in Canada:

A Wild Atlantic Salmon Perspective

Prepared for:

National Advisory Panel on Marine Protected Area Standards
Fisheries and Oceans Canada

Prepared by:

Atlantic Salmon Federation (ASF)
P.O. Box 5200
St. Andrews, NB
E5B 3S8
www.asf.ca

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Introduction

The Atlantic Salmon Federation (ASF) welcomes this opportunity to submit a brief to the National Advisory Panel on Marine Protected Area Standards. We are pleased that the Government of Canada views MPAs as an important tool to safeguard coastal and ocean ecosystems and wildlife, while protecting community and cultural values. We are also pleased that the government is exploring options for setting guidelines and protection standards to guide the development and management of Canada's MPA system. ASF believes that a properly designed and managed MPA network would make a significant contribution to the conservation, protection, and restoration of Canada's wild Atlantic salmon. Consequently, we encourage the federal government to be thorough in this process.

ASF's Mission

The Atlantic Salmon Federation is a non-profit organization dedicated to the conservation and restoration of wild Atlantic salmon and their ecosystems. We work to achieve our goals through a combination of science, advocacy, and education. ASF has a long history of working closely with federal and provincial governments on legislation and regulation to ensure wild Atlantic salmon populations and underlying ecosystems are protected and wisely managed.

Wild Atlantic Salmon

Wild Atlantic salmon is an iconic species that has long been revered for its power, endurance, beauty and mystery. Its storied existence has fed generations of indigenous and non-indigenous peoples physically, culturally, and socially. Wild Atlantic salmon also provide significant economic benefit to eastern Canada through recreational and Aboriginal fisheries. Gardner Pinfold Consultants (2011) estimated that recreational fisheries for Atlantic salmon contributed $155M to Canada's GDP in 2010 and provided over 3800 full-time job equivalents in primarily rural regions.

Wild Atlantic salmon are an anadromous species, meaning they spawn, hatch, and spend their juvenile life stages in freshwater, usually in remote headwater reaches of river systems. They migrate from the rivers as smolt through Canadian marine waters to the distant ocean waters of the Labrador Sea and off the coast of West Greenland to grow and mature for their return to the rivers to spawn. Atlantic salmon are capable of spawning multiple times during their life.

Over the past 40 years, there has been a significant trend of declining wild Atlantic salmon populations throughout Canada, with populations in the Bay of Fundy (NB & NS), Southern Upland and Eastern Cape Breton (NS), Anticosti Island (QC), and the South Coast (NL) assessed as Endangered or Threatened by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). Populations in the Inner Bay of Fundy have been listed as Endangered under the Species at Risk Act (SARA) and decisions are pending regarding the others.

Wild Atlantic salmon face numerous threats throughout their range including habitat loss, reduction of water quality, loss of connectivity between key habitats, disturbances to migration patterns, overfishing, and direct and indirect impacts from open net pen salmon aquaculture. The underlying factor currently limiting the health and recovery of wild salmon is unusually high levels of mortality in the ocean related to changes in water temperature and productivity in the North Atlantic that began in the early 1990s. ASF

and our partners are currently conducting research to better understand the causes of the low marine survival and whether it can be influenced through human intervention. In the meantime, the health and survival of wild Atlantic salmon depend on our ability to reduce preventable sources of mortality caused by human activity to ensure salmon populations are maintained and able to recover if/when marine survival rates improve. In the marine environment, the most concerning human activities are aquaculture and, to a lesser extent, fishing.

Wild Atlantic Salmon and Open Net Pen Aquaculture

Whereas marine based fisheries for wild Atlantic salmon have been largely brought under control, the negative impacts of open net pen (ONP) salmon aquaculture continue unabated throughout eastern Canada. An extensive and still growing body of science has demonstrated that ONP salmon farms can negatively impact wild salmon through a number of mechanisms: 1) Farm salmon escape and interbreed with wild populations; 2) Escaped farm salmon have negative ecological interactions with wild salmon; 3) Sea lice and other parasites become concentrated in salmon farms and are transmitted to wild fish; 4) Salmon farms alter the local environment thereby changing the selective pressures to which locally-adapted wild populations are subjected (Mc Ginnity et al. 1997; McGinnity et al. 2003; Naylor et al. 2005; Krkosek et al. 2006; Krkosek et al. 2007; Bourrett et al. 2011; Gargan et al. 2012; Glover et al. 2013; ICES 2016; Shepherd and Gargan 2017). Collectively, these impacts have been correlated with significant declines in wild salmon populations. A global study by scientists at Dalhousie University found a reduction in survival or abundance of wild populations (of both salmon and sea trout) of more than 50% per generation on average, associated with salmon farming (Myers and Ford 2008).

In Canada, there is a strong correlation between the presence of ONP salmon aquaculture and the status of wild Atlantic salmon populations. Everywhere in eastern Canada where ONP salmon farms exist, wild Atlantic salmon populations have been assessed as either Threatened or Endangered. And with one small exception (Anticosti Island), everywhere that wild Atlantic salmon have been assessed as Threatened or Endangered ONP salmon aquaculture exists and has been implicated in wild salmon declines.

On Canada's east coast, the environmental impacts of aquaculture are regulated primarily by the provinces. A recent analysis conducted by Gardner Pinfold Consultants (2016) revealed that aquaculture management regimes in NL, NB, and NS do not meet minimum international standards and do not offer adequate protection to wild Atlantic salmon. Both NL and NS have indicated intentions to further expand the ONP industry into areas where it does not currently exist. Given the pervasiveness of the impacts and the weak regulatory regimes, it is likely that negative impacts from ONP aquaculture will spread to wild populations that are currently not experiencing those impacts and into areas where significant recovery efforts are underway.

MPAs and Wild Atlantic Salmon Conservation

Within the context described above, ASF believes MPAs would be a valuable tool for ensuring that wild Atlantic salmon are adequately protected from damaging impacts of human activity (particularly ONP salmon aquaculture) in the marine environment. As under-regulated ONP aquaculture expands across the range of wild salmon, it will become increasingly important to ensure key areas of wild salmon marine habitat are kept free of these damaging impacts to protect and conserve remaining healthy populations

and to aid in restoration of those that have been depleted. Currently, Canada has no formal mechanism for spatially segregating damaging human activities from key wild salmon marine habitat.

ASF has reviewed the IUCN categories and guidelines (Day et al. 2012; Dudley 2008; Kelleher 1999) and we believe that these provide a strong framework for developing MPA standards in support of efforts to increase the protection of Canada's marine environment generally and the marine habitat of wild Atlantic salmon specifically. We note the following strengths of the IUCN framework that we believe should be incorporated into Canadian MPA standards:

- A strong focus on long-term environmental protection/conservation/restoration and ecosystem health as the overriding priorities.
- A clear definition of what is (and what is not) a "protected area."
- A strong and relevant set of principles to support the application of the protected area framework.
- A range of clearly defined management objectives for protected areas that inform decisions about MPA design.
- A range of protection levels (i.e., categories) that permit flexibility, a targeted approach to achieving objectives, and the possibility of nested levels of protection where appropriate.
- The ability to tailor protection to individual species or habitats.
- Prohibition of aquaculture and fishing in the most highly protected areas (prohibited in Categories I-III and situation dependent in IV).
- Recognition that human environmental values and uses are an important component of MPAs and should be encouraged (under proper management) when such uses do not conflict with management objectives.
- Recognition that management must be adaptive, responding to evolving environmental and human needs.
- Recognition that monitoring programs are necessary to ensure objectives are being met.
- Recognition that governance structures can be flexible and include local communities and indigenous people.

In addition to recommending that Canada's MPA framework and standards incorporate the above elements, ASF also offers the following general principles that we believe should underlie the design of Canada's MPA system:

- Selection of areas must be based on conservation priorities and needs, and the level of protection must be consistent with the identified goals.
- MPAs must have the ability to reduce or remove key human impacts from areas that have been identified as priorities for conservation/protection. That is, MPAs should be placed where they are needed, not simply where they are convenient (i.e., not placed only in where human activities and impacts are currently minimal).
- Canada's MPA system must include provisions for species-based conservation areas (e.g., Wild Salmon Conservation Areas) with appropriate levels of protection and with a priority for species at risk.

- There should be provisions for integrating MPAs with conservation/protection/restoration efforts in estuaries, on land, and in freshwater. This will be particularly important for diadromous species such as Atlantic salmon (and numerous others, e.g., Atlantic sturgeon, river herring, American shad) which depend on habitats outside of the marine environment. These provisions should be considered as part of MPA networks, where watersheds are also included in protection efforts.
- The design of Canada's MPA system should be based on the Precautionary Approach and supported by the best available science and Indigenous and local knowledge where it is made available for use in conservation.

Conclusion

Canada's Atlantic salmon conservation and restoration efforts are hampered by a lack of formal protection from key human impacts in the salmon's marine environment. ASF believes a strong network of MPAs that includes objectives for the conservation and protection of wild Atlantic salmon would make an important contribution to remedying that situation. Indeed, MPAs that are integrated with current or future salmon conservation efforts in terrestrial and freshwater environments will be a vital for ensuring that key salmon populations remain resilient in the face of a changing climate and increasing human impacts.

ASF appreciates the opportunity to have input into the development of standards for Canada's MPA system and we look forward to seeing the Panel's recommendations.

Respectfully submitted,

Dr. Stephen Sutton

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