



January 17, 2020

Ministry of Industries and Innovation  
Skulagata 4  
101 Reykjavík

Dear Sir or Madam:

I am writing to urge the Fisheries Ministry to adopt the model aquaculture standards published by the North Atlantic Salmon Conservation Organization. I am a scientist and Vice President of Research and Environment at the Atlantic Salmon Federation (ASF) in New Brunswick, Canada. I have more than 25 years of research experience in the management, restoration and conservation of wild fish, including endangered and threatened populations. Much of my research has focused on interactions between wild and escaped farmed salmon.

The Atlantic Salmon Federation was deeply involved in helping to draft the NASCO model standards. In doing so, we drew on decades of experience with the environmental impacts of fish farms. During this time, we have witnessed the exponential growth of an underregulated aquaculture industry with devastating impacts on wild Atlantic salmon across the North Atlantic.

It is absolutely critical that Iceland codify rigorous sea lice, drug use, pollution, escapee, and oversight standards in the regulations that are currently under review. Without clear, codified regulations aimed at preventing impacts on wild salmon the industry will operate as it does in other jurisdictions (i.e., unsustainably) and it will not be possible to hold the industry accountable for its environmental impacts. This is a problem we have seen time and again here in Canada, particularly related to fish farm escapes. For example, a recent study by government scientists found extensive interbreeding between wild and escaped farmed salmon in 17 of 18 studied rivers on the south coast of Newfoundland (see Wringe et al. 2018). These rivers have shown drastic declines in adult salmon returns since the aquaculture industry moved in, with some rivers showing

**Jonathan Carr, MSc**  
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declines of 95% over that time. Similar problems exist in every nation with large-scale industrial aquaculture (see ICES 2016).

We urge you not to repeat their mistakes - adopt the NASCO model standards to ensure that proper regulations are in place to protect wild Atlantic salmon from the scientifically documented impacts of open net pen salmon aquaculture.

Sincerely,

A handwritten signature in black ink, appearing to read 'Jonathan Carr', is written over a light blue rectangular background.

Jonathan Carr

References:

ICES. 2016. Report of the Workshop to address the NASCO request for advice on possible effects of salmonid aquaculture on wild Atlantic salmon populations in the North Atlantic (WKCULEF), 1–3 March 2016, Charlottenlund, Denmark. ICES CM 2016/ACOM:42. 44 pp.

Wringe, B.F., Jeffery, N.W., Stanley, R.R.E. et al. 2018. Extensive hybridization following a large escape of domesticated Atlantic salmon in the Northwest Atlantic. *Commun Biol* 1, 108.

**Dr. Alan Wells, CEO, Fisheries Management Scotland (FMS), Edinburgh, Scotland**

Drafted 15.01.20

I am the chief executive of Fisheries Management Scotland, the representative body for the managers of salmon and sea trout fisheries in Scotland. I previously worked as a post-doctoral research fellow at the University of St Andrews on an EU-funded project investigating interactions between aquaculture and wild salmonid fish. The project partners were drawn from Scotland, Ireland, Norway and the Netherlands.

In my current role I represent Fisheries Management Scotland on a range of Scottish Government stakeholder groups relating to salmon farming in Scotland, including the Salmon Interactions Working Group and the Farmed Fish Health Framework Working Group. Following two Scottish Parliamentary Inquiries in 2018, these working groups were convened, to put the recommendations of the committees into action. There is now a widespread recognition in Scotland that the status quo is not an option and that the regulatory system for aquaculture is confusing, poorly coordinated and must be reformed.

As a scientist, who helped draft the model standards on behalf of the NASCO NGO group, I drew on extensive first-hand experience with the environmental impacts of open net pen farming. Members of Fisheries Management Scotland have been engaged in monitoring the impacts of sea lice and escapes on wild salmonids for many years and we are strongly of the view that the principles outlined in the model standards must be underpinned by a robust and enforceable regulatory regime. These principles are fundamental to protecting our iconic wild fish and ensuring that the open-pen farming industry develops sustainably, and we are working hard to ensure that this is the case in Scotland.

**Andy Walker MSc, PhD, Vice Chairman of Scottish Anglers National Association (SANA)  
Migratory Fish Committee, Kinross, Scotland**

COMMENTS ON AQUACULTURE re NASCO NGOs (Drafted 17.01.20)

SANA strongly supports the internationally-agreed aquaculture model standards drafted and presented by the NGOs last year [NASCO 19\(43\)](#). However, we want to see more evidence at home and abroad of radical improvements made internationally to protect wild salmonid fish stocks. Currently, in Scotland, the continued survival of many naturally maintained populations is heavily threatened by finfish (mainly salmon) farming, widely supported by individual governments for economic reasons. They seem to forget that the protection of our wild stocks should be pre-eminent. Certifications of fish farm 'sustainability' (not of wild fish sustainability) are lauded and fresh promises are made by government and Aquaculture Industry of major improvements in aquaculture standards, 'in the pipeline.'

In Scotland, mainly situated in the North West, in the Hebrides and the Northern Isles, the now massive coastal cultivation of farmed salmon, dwarfing the wild stocks, continues to provide the same basic risks to our historically heavily reduced numbers of wild salmon and sea trout. Diseases and parasite levels (mainly sea lice) still flourish in many salmon farms that rely upon floating, meshed cages, although the Industry claims otherwise and continues to expand. Now the frequency and intensity of violent storms more clearly than ever are associated with climatic and oceanic warming. It may also be the case with increasingly catastrophic algal blooms. There are deep public concerns about farmed fish health and welfare status and massive rearing mortalities far worse than would be acceptable in land-based farming without government intervention. Fortunately, major escape events of farmed salmon now appear to be less common, although the potential for these may intensify. Also, there is critical concern about escaped farmed salmon breeding with and further reducing the sustainability of wild salmon populations. The current extent of genetic introgression from Scottish salmon farming has not yet been fully assessed, although the equivalent data are widely available information for Norwegian rivers, where the same overall problems exist within the salmon farming zones. Albeit belatedly, we believe our Aquaculture Industry should only be allowed to use non-breeding, sterile stocks. The bottom line is 'Farmed and wild stocks MUST be kept apart.' Scottish anglers need to see evidence of significant movement to address the negative pressures of salmon farming on wild salmonid fish populations. We want as soon as possible to see most or all of the industry confined to land-based closed containment farms.

**Paul Knight, CEO, Salmon & Trout Conservation UK (STCUK), Salisbury, England**

Drafted 15.01.20

I have been an advocate for salmon farming reform for more than 20 years, including as CEO of Salmon & Trout Conservation, a UK fisheries charity protecting wild fish and their habitats and a fierce proponent of moving the salmon farming industry from open-net culture into closed containment units, so providing a physical barrier between farmed and wild fish – and the surrounding environment. For the last 7 years, I have served as Co-Chair of the NGOs at NASCO and as a member of the Review Group assessing all NASCO Jurisdictions' 5-year plans for managing the impact on wild Atlantic salmon from their open-net salmon farms.

Norway, Scotland, Ireland and Canada all suffer significant impacts from these farms on their wild salmon populations, yet they seem more intent on supporting the industry than protecting precious natural resources. I strongly recommend that Iceland does not follow a similar route, otherwise the wild salmon stocks, for which the country is justly famous, are in serious jeopardy, along with the valuable economy which depends on these fish for its survival.

If salmon farming is based on closed containment units, then the industry can flourish with minimal impact on wild fish or the environment, and so Iceland's vibrant wild salmon fishery can continue unaffected. Until industry transitions into closed containment, it is imperative that environmental impacts be minimized by adopting standards created to protect natural resources. The model standards created by the NASCO NGOs and published last summer (CNL(19)43) were created after extensive consultation with scientists and experts from NGOs that make up our 41-member group. They provide minimum safeguards for wild fish populations and the environment, and I strongly suggest that Iceland adopt them in full.