

RURAL ECONOMY AND CONNECTIVITY COMMITTEE

SALMON FARMING IN SCOTLAND

SUBMISSION FROM THE ATLANTIC SALMON TRUST

The Atlantic Salmon Trust was established in 1967. It is a registered charity in Scotland, England and Wales with the primary objective “To promote the conservation, protection and improvement of wild Atlantic salmon and sea trout stocks in the countries bordering the North Atlantic Ocean for the public benefit”. (<http://www.atlanticsalmontrust.org/the-ast/about-the-trust/>)

1. Do you have any general views on the current state of the farmed salmon industry in Scotland?

The Atlantic Salmon Trust (AST) is committed to the protection of wild migratory salmonids and the ecosystems that sustain them. We believe that any industry can only claim to be sustainable if it protects and safeguards the surrounding natural habitat. This is particularly true in the case of salmon farming, where the welfare of the industry itself is in the longer term totally dependent on the quality and integrity of the surrounding aquatic environment.

AST recognises the economic and social importance of fish farming in remote rural areas of Scotland but it is our view that this must not be allowed to override the need to conserve natural ecosystems and maintain the high conservation status of wild salmonids. Recognition should be given to the economic and social importance of the wild salmonids to local communities and tourism, and how this has been affected by the decline of wild salmon and sea trout on the West Coast of Scotland.

AST believes that the three major sources of risk from the salmon farming industry to wild salmon and sea trout, that are not suitably controlled by the industry. These are:

1. Sea lice,
2. Farm escapes, and
3. Disease and Pollution Risks from Salmon Cages.

Reducing sea lice infestation levels, treating/eradicating diseases from fish farms and preventing the escape of fertile farmed salmon should be goals shared by both the wild and farmed sectors. There may be significant costs involved in combating and reducing these risks to both government and industry. However, we believe that these are costs that must be met because if sea lice, disease and farmed escapes are not better controlled they will threaten the viability of both the salmon farming industry and the survival of wild migratory salmonid stocks.

There is compelling scientific evidence that sea lice emanating from salmon farms can pose a very dangerous risk to wild migratory salmonid populations. Research

and presentations delivered at the NASCO Special Session on Aquaculture¹ in June 2016 provided evidence of both direct impacts and major risks from open cage salmon aquaculture on wild salmon and sea trout stocks, in terms of both sea lice loadings and genetic introgression from escaped farmed fish.

Marine Scotland Science's online Summary of Science for Aquaculture Interactions '*Summary of information relating to impacts of salmon lice from fish farms on wild Scottish sea trout and salmon*'², reviewed the current body of available peer reviewed published evidence to assess the scale of impact of salmon lice from salmon farms on Scottish wild salmonids. It states: '*Salmon aquaculture can result in elevated numbers of sea lice in open water and hence is likely to increase the infestation potential on wild salmonids. This in turn could have an adverse effect on populations on wild salmonids in some circumstances*'.

Based on current research and identified impacts of open cage salmon farming on wild salmonids and the environment the AST does not believe that the current practices of the industry are sustainable.

2. There have been several recent reports which suggest how the farmed salmon might be developed. Do you have any views on action that might be taken to help the sector grow in the future?

Research and innovation is on-going particularly in Scandinavia and North America to develop systems for growing Atlantic salmon in closed containment, right through the marine stage of production, to harvest. Such a system would result in the separation of farmed fish from wild salmonids (and from the environment) by a physical barrier. Both land-based recirculating (RAS) and floating marine closed containment systems are undergoing trials at present.

Future development of salmon farming, and ideally in the longer term all production, should move to closed containment systems. Such systems could resolve many of the other problems affecting caged farms (such as disease, escapes, and faecal waste). The development of closed systems should be a priority for both governments and the industry. Major advances are also likely in the development of offshore closed containment units for salmon farming and AST would support urgent Government subsidised investment in R&D in Scotland to bring closed containment systems to commercial viability.

¹ [Report of the 2016 Theme-based Special Session: Addressing impacts of salmon farming on wild Atlantic salmon: Challenges to, and developments supporting, achievement of NASCO's international goals](#)

² www.gov.scot/Topics/marine/Salmon-Trout-Coarse/Freshwater/Research/Aqint/troutandlice

3. The farmed salmon industry is currently managing a range of fish health and environmental challenges. Do you have any views on how these might be addressed?

3.1 Sea Lice Control and Management

Despite the current level of expenditure from the salmon farm industry on sea lice control it is clear that wild salmonids are being impacted by excessive infestations of sea lice arising from local salmon farms.

Action needed:

- Introduction of effective mandatory following and treatment regimes, including:
 - o Single generation management areas
 - o Synchronised following of management areas
 - o Minimum following periods
 - o Synchronised lice treatments
 - o Rotation of sea lice treatments
 - o Adoption of appropriate treatment triggers, including data from wild salmonid lice loadings – Adaptive management
- Introduction of officially validated lice monitoring regimes, the results of which are publicly available
- The maximum sea lice densities and upper-tier sea lice thresholds currently adopted (3 and 8) should be reviewed and brought in line with other recommended thresholds e.g. *The Aquaculture Stewardship Council standards for salmon farming*³ requirement 3.1.7 stipulates - *In areas of wild salmonids, maximum on-farm lice levels during sensitive periods for wild fish - 0.1 mature female lice per farmed fish*
- Voluntary Codes of Good Practice should be put on a statutory basis.
- Consideration should then be given to closing/relocating sites which consistently fail to reach the minimum statutory standards for sea lice control.

3.2 Farm Escapes

High levels of interbreeding between farmed and wild salmonids pose serious risks, which can result in genetic introgression, a significant drop in overall fitness and poor survival of wild salmon stocks. In Norway one third of the major salmon rivers have been seriously affected by interbreeding between wild and farmed stocks and they consider it to be one of the greatest threats to wild Atlantic salmon stocks.

Action needed:

- Adoption of appropriate regulatory and penalty systems to ensure strict compliance with containment protocols.

³ https://www.asc-aqua.org/wp-content/uploads/2017/07/ASC-Salmon-Standard_v1.1.pdf

- Timeline set to phase out all open rearing systems for juvenile stages of salmon, both raceway and freshwater cage culture.
- Government support provided for salmon farmers to invest in modern closed containment rearing systems for juvenile salmon.
- Confidential access to genetic profiles of farmed salmon strains used in freshwater and marine cages, to help identify the source of escapes.
- A Government subsidised move towards the use of sterile triploid stocks, with an eventual ban on the use of fertile stocks for rearing in open cage culture.

3.3 Disease and Pollution Risks from Salmon Cages

Since the expansion of salmon farming in the 1980s the industry has suffered serious and persistent problems from a range of virulent diseases and disease syndromes. The presence of disease organisms poses a serious threat to farmed salmon and wild migratory salmonids within the vicinity of the cages. Assessment should be made of bay/loch holding capacity along each area of the coast where salmon farming is taking place.

Action needed:

- Farm salmon densities in each bay should be reduced to a level which minimises risk from heavy sea lice infestation and the occurrence of chronic disease outbreaks.
- A move towards off-shore sites containing low densities of sterile farm salmon should be encouraged.
- A phasing out of freshwater cage culture over a three to five year period, ideally followed by the phasing out of open cage marine farming, with Government support provided for fish farmers to invest in modern, closed containment rearing systems.

4. Do you feel that the current national collection of data on salmon operations and fish health and related matters is adequate?

The current national collection of data is not adequate. AST would like to see:

- Acoustic tracking of wild salmon smolts to identify migration routes and sea trout to understand more about their behaviour in coastal habitats used by salmon farms.
- The development of quantitative methods, such as those used in Norway, which could measure the level and impact of genetic introgression in wild salmon stocks and feed directly into responsive management systems.
- Monitoring and modelling of sea lice burdens and distribution patterns to advise fish farm locations and locations of potentially greatest risk to wild salmonids. Again supporting real time management approaches.

5. Do you have any views on whether the regulatory regime which applies to the farmed salmon industry is sufficiently robust?

The currently regulatory regime is not sufficiently robust.

Urgent action is required to cooperatively create a robust regulatory framework in order to build a sustainable aquaculture industry, which will have a minimal impact on all the stocks of wild salmon and sea trout. The roles and responsibilities of those dealing with the regulation of aquaculture in relation to the conservation of wild migratory salmonids are exceptionally poorly defined.

AST believes that with strengthened legislation and regulation, statutory and enforceable codes of practice, and the application of new technological developments, it will be possible to make very significant progress in providing a suite of practical management options to ensure the future development of a sustainable fin fish aquaculture industry in Scotland.

6. Do you have any comments on how the UK's departure from the European Union might impact on the farmed salmon sector?

No.

Further information

To view the AST's full position statement of salmon aquaculture which expands upon some of the points made above and provides a useful bibliography of references please go to: <http://s331874360.websitehome.co.uk/atlanticsalmontrust/wp-content/uploads/2016/11/16.11.16-AST-Aquaculture-Position-Paper.pdf>

The Atlantic Salmon Trust
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