

PE1715/C

Fisheries Management Scotland submission of 9 August 2019

Thank you for contacting Fisheries Management Scotland will regard to the above petition on closed containment salmon farming. This is an area that Fisheries Management Scotland, and our member District Salmon Fishery Boards and Rivers and Fisheries Trusts, take a keen interest. Whilst we recognise that there are many sectors which will take a view on this issue from a wide range of perspectives, our focus is limited to issues relating to wild-farmed salmonid interactions. We will not therefore consider wider issues, such as benthic impacts or interactions with predators, but we recognise that these issues will be very important to other stakeholders. We would also emphasise that the issues raised in our response apply equally to the farming of both salmon and trout.

Fisheries Management Scotland is a member of the Scottish Government Interactions Working Group which has been established with the following objectives: to consider the evidence arising from the ECCLR and REC Committee inquiries concerning the impacts of salmon and trout farms on wild salmon and sea trout; to review Scottish Government policy and advice governing wild-farmed interactions; review the actions required to monitor and mitigate the impact of farmed salmon and trout on wild salmon and sea trout so that any impact is reduced in accordance with our international and domestic obligations; and to make recommendations for a future interactions approach.

The North Atlantic Salmon Conservation Organisation (NASCO), of which Scotland is a member, has established and agreed the following international goals:

“100% farmed fish to be retained in all production facilities.”

and,

“100% of 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.”

At a recent NASCO symposium in Tromsø, Norway (Managing the Atlantic salmon in a rapidly changing environment - management challenges and possible responses), it was recommended that compliance to these agreed international goals should be strengthened and that NASCO should establish a new goal to prevent the spread of disease pathogens from fish farms to wild fish.

It is these interactions pathways, sea lice, escapes and disease which represent the main hazards to wild fish and are the key areas for discussion in the Interactions Working Group. We anticipate that the Interactions Working Group will report later in 2019.

These hazards are considered further below.

Sea Lice

Issues relating to sea lice were discussed extensively through the Scottish Parliamentary Inquiries in 2018. It is important to emphasise that any quoted trends in the number of lice per farmed fish are meaningless, unless the overall number of farmed fish is also considered. This is the key factor in relation to the hazard presented to wild fish. By farming salmon and trout in open net cages, the number of potential hosts for these parasites has increased exponentially and the number of hosts is now many times greater than was ever the case for wild fish alone. This point was emphasised in the report by the Scottish Association of Marine Science which was commissioned by the ECCLR Committee and states:

‘In 2014, when Scottish production was about 179 thousand tonnes, about 48 million smolts were ‘put to sea’ and about 34 million salmon harvested (Ellis et al., 2016). In comparison, the stock of spawning salmon in UK rivers was estimated as about 0.6 million in 2012 (Anonymous, 2013).’

This trend is set to continue if the aquaculture industry realise their published growth targets. Sampling of post-smolt sea trout in coastal waters in the aquaculture zone has allowed us to

measure sea lice loads that are considered lethal to wild fish. In some cases, a significant proportion of the sampled wild fish carry such lethal loads, which is indicative of a population-level impact. We are now working through the Interactions Working Group to develop a rigorous system for monitoring impacts of sea lice on wild fish, with feedback mechanisms to farm management (adaptive management). This principle is also being built into Environmental Management Plans, which are now routinely included as a condition of consent for new fish farms, or increased production at existing farms.

Escapes

Despite the NASCO International Goals, escapes of farmed fish remain a common occurrence in Scotland. Most recently 33,000 rainbow trout escaped near the mouth of the River Awe in Argyll. Whilst rainbow trout are unable to interbreed with our native fish, they can outcompete our wild fish for food and resources and have a significant local impact on the fishery. Whilst reported escapes have reduced in recent years the number of escapes (and associated non-native fish in the natural environment) remain significant, particularly when declining wild stocks are considered.

Although escapees display high mortality when in the wild, they have been recorded in rivers throughout the species' native range, such as England, Scotland, North America, and Norway. Escapees have also been observed in rivers located in countries where salmon farming is not practiced. There are therefore global concerns regarding the genetic integrity of wild populations, and it is notable that in Norway, escapes of farmed fish are considered to be the greatest threat to wild salmon.

In 2011/12 Rivers and Fisheries Trusts of Scotland undertook work to develop genetic tools to distinguish farmed vs wild fish in Scotland, as part of a Scottish Government-funded project (Managing Interactions Aquaculture Project). This project demonstrated that farmed fish (which are primarily of Norwegian genetic origin) could be distinguished from wild fish and hybrids. Whilst few pure Norwegian fish were identified, 25.1% of the sampled fish were identified as hybrids. Further work would be required to identify the source of the hybrids (marine or freshwater) and whether the introgression resulted from escapes or deliberate introductions, but the project was not funded further.

In 2018, as part of the National Electrofishing Programme for Scotland, Marine Scotland Science undertook a baseline survey of genetic introgression. The samples are currently being processed and we expect the results within the next few months.

Wild Atlantic salmon have a strong homing instinct to their native river. Highly significant genetic differentiation has been observed among salmon originating from different rivers, and in some cases, also between tributaries within the same river system. Anything which has the potential to alter this genetic differentiation should be avoided.

In addition to genetic impacts on wild fish, there are a range of potential impacts of escapees including predation of wild juveniles, competition for resources, potential to interfere with the homing instincts of salmon and sea trout through masking scent cues, uneaten food being ingested by native trout leading to a build-up of large predators on the migratory routes of wild fish.

Disease transfer

The potential for disease transfer from farmed to wild fish was identified as a research priority in Scotland by the Ministerial Group for Sustainable Aquaculture Science & Research Working Group in 2014¹. This, along with other identified priorities relating to wild-farmed interactions has not yet been taken forward, with the exception of a small, and unfortunately unsuccessful, pilot project undertaken in 2019 in partnership between Fisheries Management Scotland, Marine Scotland Science and MOWI.

Closed containment

¹ <https://www.gov.scot/publications/mgsa-science-research-working-group-aquaculture-science-research-strategy/>

From our perspective there are two key parts of the farmed salmon production cycle which relate to the debate around closed containment: production of juvenile fish in freshwater and production from the post-smolt stage in seawater. These need to be considered separately, as set out below.

Freshwater production

Recirculating aquaculture systems (RAS) are already widely used in Scotland to produce smolts for transfer into seawater. Recently both Mowi (formerly Marine Harvest) and Scottish Sea Farms have made significant investments in large closed-containment units to produce smolts – this is an existing and established technology. However, Scotland is unusual in the North Atlantic in producing a large proportion of smolts in freshwater cages.

Despite no reported escapes from the two smolt-rearing operations on Loch Shin, targeted sampling of smolts by the Kyle of Sutherland DSFB has captured farmed fish in every year in which the trap has been operated, over a period of 15 years. More recently, Marine Scotland Science have undertaken genetic studies and have confirmed that the escaped farmed fish originated from both farms, which are run by different companies. We do not consider that this is a unique situation in Scotland.

As highlighted above, in addition to genetic impacts on wild fish, there are a range of potential impacts of escapees including predation of wild juveniles, competition for resources, potential to interfere with the homing instincts of salmon and sea trout through masking scent cues, uneaten food being ingested by native trout leading to a build-up of large predators on the migratory routes of wild fish.

Wild fisheries managers remain very concerned about the range of potential impacts of open-cage production in freshwater on wild fish and we are of the view that this is a farming method that should be phased out over time, unless or until the industry can demonstrate the sustainability of smolt production in freshwater cages, through:

1. Providing clear evidence that this activity can be undertaken in accordance with the NASCO International Goal of 100% farmed fish to be retained in all production facilities; and
2. Meeting strict environmental standards on issues identified above.

Marine Production

We accept that the technology for closed containment production in the marine environment is not as advanced as that to produce smolts. However, there are huge range of different technologies now being trialled across the world, both on land and in floating tanks in the sea. It is disappointing that none of these technologies are being trialled in Scotland. There are also a range of 'semi-closed' systems under development, which may have benefits for wild and farmed fish in relation to sea lice. However, we are less clear that these technologies will limit escapes or the potential for disease transfer.

We note Recommendation 56 of the REC Committee:

The Committee endorses the ECCLR Committee's recommendation for urgent research on the subject and the consideration of ways to incentivise the industry to explore further use of the technology. However, it is aware that RAS is not the only closed containment option and would encourage wider research on alternative technologies.

We would encourage the Scottish Government to act urgently on this recommendation. Whilst we recognise that the technology is not currently ready to roll out in Scotland, we are aware that significant investment is occurring in Norway, incentivised by the Norwegian Government. We are strongly of the view that incentives should be made available in Scotland in order to facilitate the development of such technology in Scotland.

From a wild-farmed fish interactions perspective, we consider that areas with the following characteristics are of high sensitivity to wild fish and therefore closed or semi-closed production systems should be prioritised in such areas.

1. Likely bottlenecks within salmon migration routes;
2. Long sea lochs with multiple farms;
3. Enclosed sea lochs.

Conclusion

We believe that closed containment production of farmed fish will play an increasingly important part of the 'social license' to farm fish in Scotland. Recent high-profile coverage of significant failings in environmental performance has the clear potential to damage the reputation of the Scottish Industry. A key indicator of the health of the environment is the health of wild salmon and sea trout that share that environment. On that basis we agree with the Scottish Government, who stated in their response to the REC Committee that retaining and protecting Scottish salmon's price premium is dependent on the manner in which it works with the environment and those who share the same space.

With the expected forthcoming changes to the regulatory regime, as recommended by the REC Committee, we have the opportunity to implement mechanisms to assess performance against the range of hazards outlined above. It is important that such mechanisms are put in place for all fish farms in Scotland, both freshwater and marine. Fisheries Management Scotland and our members are strongly of the view that if the aquaculture industry cannot demonstrably manage sea lice to ensure that there is no increase in sea lice loads or lice-induced mortality of wild salmonids attributable to the farms, and ensure that 100% of farmed fish are retained in all production facilities, as required by NASCO, in addition to addressing the other hazards identified above, then a progressive move to closed or semi-closed containment will be required.