

RURAL ECONOMY AND CONNECTIVITY COMMITTEE SALMON FARMING IN SCOTLAND

SUBMISSION FROM SCOTTISH NATURAL HERITAGE

SNH and Aquaculture

Scottish Natural Heritage (SNH) is a non-departmental public body funded by the Scottish Government through Grant-in-Aid. We are the Scottish Government's advisers on issues relating to nature and landscape. Our statutory purpose is to:

- secure the conservation and enhancement of nature and landscapes;
- foster understanding and facilitate their enjoyment of them; and,
- advise on their sustainable use and management.

SNH supports the sustainable growth of Scotland's aquaculture industry. We are one of four bodies¹ with a statutory role in advising planning authorities on aquaculture development. As part of this, we engage with developers and planners at the pre-application stage to help identify and address potential environmental impacts. We give formal advice to regulators on the potential impacts from fish farms on protected sites and species and on the wider countryside (e.g. landscape and PMFs). We also provide input to strategic plans to help guide developments towards the most appropriate locations, and we undertake research and prepare guidance to support the industry's sustainable development.

Background

We welcome the opportunity to provide a written submission to the committee on this important Inquiry and we are grateful to have been allowed additional time to submit our evidence. SNH provided a written submission to ECCLR committee on their consideration of the environmental impacts of Scottish salmon farming. We provided oral evidence to RECC on 18 April and this written submission reinforces many points made during the oral evidence session. The attached annex responds to a specific request from RECC for further information on SNH research funding to support the aquaculture sector.

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

The farmed salmon industry is very important to Scotland, providing the UK's top food export and an important source of employment (and wider socio-economic benefits) in many fragile Scottish coastal communities. However, like any development on land or sea, fish farming can produce environmental impacts, and we would stress the need to ensure that the industry is carried out to the highest environmental standards possible in order to maximise the competitive advantage (market premium) obtained through high environmental performance, and to safeguard natural assets which are critical for our future prosperity.

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

We support the sustainable development of the Scottish aquaculture industry, but consider that industry growth targets should be set in demonstrable accordance with environmental capacity. Some useful work has been carried out by Marine Scotland in developing an aquaculture spatial planning tool. When finalised, this should help to identify locations with fewest constraints for fish

¹ SNH, SEPA, MSS and DSFBs

farm development, and might inform a strategic planning approach to better define the capacity for sustainable growth. We would welcome a mechanism to consider moving existing farms where environmental impacts are greatest and perhaps consolidation to larger farms in locations with lower environmental sensitivity and thus greater capacity for development. Industry also seems to be keen to explore such mechanisms, and this idea is being discussed at the Farmed Fish Health Framework Group.

Alongside this, there is scope for further industry innovation to identify effective and robust solutions to some of the current environmental issues, which could reduce risks and open up further potential development sites.

Other aspects that would help to support the future growth of the sector include a focus on filling key environmental evidence gaps that currently cause uncertainty in the consenting process and lead to a need for precaution. The ECCLR report contained a useful list of topics where we lack data and understanding. Evidence gaps have also been identified within the Farmed Fish Health Framework Group, of which SNH is a member.

Resourcing for research (and ongoing monitoring to inform adaptive management) is always going to be a challenge, but a new collaborative focus (between industry, government and regulators) on agreeing key research priorities and commissioning work on an annual basis would be helpful. The imminent loss of the Scottish Aquaculture Research Forum (SARF) - which is currently being wound down – creates additional challenges in the coordination of such work. We hope that Scottish Aquaculture Innovation Centre (SAIC) may in future perform a similar role, but this might require greater ability for government and regulatory bodies to influence research priorities alongside industry.

There are also aspects of our current regulatory system that might help be strengthened or amended to help resolve uncertainty and address risk. We cover these further under question 3 and 5 below.

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?

We endorse many of the conclusions within the ECCLR report. From our perspective, the main environmental challenges that require to be addressed are around interaction with wild salmonids; potential long-term impacts of chemicals / waste on sensitive benthic features; wild harvesting of cleaner fish; and management of Acoustic Deterrent Devices (ADDs).

Wild salmonid interactions

The key issues here relate to risk of escapes (competition and genetic introgression) and sea lice transfer. We welcome the 2015 (industry led) introduction of the Scottish Technical Standard to reduce the risk of escapes. Statistics suggest that escapes have reduced over this period but there is a lack of information relating to the uptake of the Standard to allow the success of these measures to be assessed.

In relation to risks to wild salmonids associated with elevated sea lice burdens, SNH has developed guidance to inform our advice when a proposed fish farm development might affect a European protected site where Atlantic salmon or freshwater pearl mussel (which are dependent on salmonids to complete their life cycle) is a protected feature. This is designed to ensure that we have the ongoing ability to monitor pressures and take action to address these if we are concerned about risk to these features. We were concerned that without such safeguards in place, it was not possible to conclude that Natura sites were being adequately safeguarded.

Under this approach, local authorities require the developer to produce a conditioned and enforceable Environmental Management Plan (EMP) that includes a binding requirement for nearby monitoring of wild salmonid populations and sea lice levels on wild fish. If particular risks are identified by this monitoring, and elevated sea lice levels are found on the farmed fish, actions must be taken to further control sea lice, with an ultimate sanction of a cut in production biomass. The detail of the monitoring plans will be overseen by a technical group (recently convened by Marine Scotland) comprising regulators and advisors. Although this is felt to be a proportionate and compliant approach, there are some difficulties in local authorities taking on this regulatory role for sea lice. In addition, the need to consider farms on an individual basis (when they come into the consenting system) rather than this approach being applied to all farms, makes it very difficult to consider and manage potential cumulative impacts on an area (e.g. sea loch) basis.

Benthic impacts

Although we generally consider the current regulatory approach to be robust in terms of identifying and addressing risks to sensitive benthic features, there are some potential issues about the long term effects of chemical / waste deposition on slow growing features like maerl beds.

SNH does not have a formal role in post-consent monitoring and we rely on regulators to oversee monitoring of the impacts of developments after they have been constructed. We would welcome greater emphasis on collaborative analysis of post consent survey / monitoring to develop our understanding of benthic impacts, particularly focussing on Priority Marine Features (PMFs) and protected features, including those outside the modelled impact zone. We also feel that new monitoring protocols are required to improve our ability to detect and assess impacts on PMF habitats and species that associated with hard substrate communities. This will be particularly important if the changes proposed by the new Depositional Zone Regulation (DZR) are to be implemented going forward.

Within Marine Protected Areas (MPAs), SNH undertakes periodic site condition monitoring which focuses on biological aspects such as the extent and condition of a habitat. Features are assessed against common standards to determine whether or not the site is in favourable condition. Areas immediately adjacent to a development are specifically avoided for siting monitoring stations due to the likely impacts and fact that condition is unlikely to be representative of the wider site.

Wild wrasse harvesting

A fishery has recently emerged to harvest wild wrasse as cleaner fish for the salmon farming industry. It is not yet clear what impact this fishery is having on wild populations, but given the continued and growing demands, we consider that formal management measures should be urgently introduced and should include mitigation for potential impacts on protected sites and species. Spatial information on the location and intensity of current fishing and an understanding of stock levels will be required to inform the development of management measures. SNH is proposing to carry out some research on the interactions between the wrasse fishery and protected sites/species in the coming year to inform our future advice.

Acoustic deterrent devices

As the ECCLR report highlighted, there is good evidence that cetaceans are disturbed by ADDs and this is why such devices are being used (for short periods) to deter cetaceans from approaching marine energy construction sites. We are less clear about the impact of long-term use on cetacean populations and are seeking to improve our understanding of these issues, especially in relation to new protected areas for cetaceans such as the Inner Hebrides and the Minches candidate Special Area of Conservation for harbour porpoise. Aquaculture ADD use in existing fish farms is, currently, largely unregulated and unreported. There is growing evidence of increased underwater noise levels in Scottish waters and aquaculture ADDs can contribute

significantly to this. We do not currently consider that the impacts are such that ADDs should never be used, but we do consider there is a need to properly monitor and manage their use, and that restrictions may be needed on certain types of ADDs or in some higher risk locations.

SNH welcomes recent cooperation with industry on voluntary good practice in use of ADDs. We are also drafting guidance on this issue to inform our casework advice. Our draft guidance recommends that alternative approaches are considered before proposing ADD use. If ADD use is considered essential then an ADD deployment plan is required, containing details of devices, planned use and reporting requirements. We recommend that ADDs should never be in continuous use (instead they should be activated in response to a predation threat, and deactivated in line with the ADD deployment plan). Within protected sites for cetaceans there may be narrows and straits where ADD use could form a barrier to use of parts of the site and a strategic ADD plan may be needed with adjacent farms or there may be situations where ADD use would not be appropriate. We are currently involved with PhD projects and SARF research to test new ADD devices with frequency outputs targeted more towards the hearing range of seals and less within the range for most cetaceans.

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

We welcome SSPO's recent commitment to greater transparency in reporting on sea lice levels at the farm level, and would hope this will be extended to other operators outwith SSPO. We would also support data on total number of fish per farm (as opposed to simply reporting a biomass figure) as this would help to better understand the total 'reservoir' of sea lice relating to individual farms.

In order to properly understand and manage the interactions between wild and farmed fish, we have also highlighted the need for better data on the health of wild salmonid populations and on sea lice levels on wild fish. This is now beginning to be progressed through a jointly funded project by MS, SNH and SEPA and by individual companies, but there will be an ongoing need to steer, fund and review the implications of such long-term monitoring in future years. There are also important evidence gaps in relation to the marine migration pathways of post-smolt Atlantic salmon and patterns of estuarine and coastal habitat use by sea trout.

Other data needs

As mentioned above, we consider that there is a lack of data on use of Acoustic Deterrent Devices, which makes assessment of the cumulative effects and potential for effective management more difficult to achieve. In addition, we are not aware of any peer-reviewed research on the efficacy of ADDs as seal deterrents and would encourage industry to undertake work on this, including investigating why ADDs are not considered to be needed in certain locations (where other approaches are used to deter seals), and exploring different types and approaches for ADD use in relation to deterrence outcomes.

Again, as referred to under question 3, we would welcome greater emphasis on collaborative analysis of post consent survey / monitoring to develop our understanding of benthic impacts.

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

In general, we consider the current regulatory regime to be robust. However, there are areas (as described above and in the following points) where we think improvements could be made that

would benefit industry (in speeding up decisions and providing greater certainty) as well as the environment.

We would agree with evidence provided by other respondents that the current regulatory system could be strengthened in relation to wild fish interactions. If a regulator (with adequate knowledge base and resourcing) was given a specific remit for this issue then it would help to ensure that monitoring, reporting and enforcement are effectively managed.

As highlighted above, we consider that adaptive management (e.g. use of Environmental Management Plans) may be a useful tool to enable development to proceed and allow for management to be amended or mitigation enforced if risks are identified (for issues like wild fish interactions and ADD use), but there needs to be effective monitoring and robust enforcement. We would welcome further work on the processes needed to underpin the effective use of EMPs. We would welcome consideration of how the current regulatory system can be better informed by strategic spatial planning, including a mechanism to allow for consolidation and moving farms which are considered to be causing greatest environmental impacts. We also consider that cumulative impacts would be more easily addressed if there was a stronger regulatory focus on area management of fish farms so that issues like sea lice management and ADD use can be considered at the scale of a water body, e.g. at sea loch level.

Although there have been various reviews of the aquaculture consenting process in recent years, we consider that further examination of the interaction between the Controlled Activities Regulation (CAR) and planning consent processes would be useful. This could include the timing of consultation under the two processes and the implications of their different spatial extent. This is particularly relevant for the proposed new Depositional Zone Regulation approach, which could include consideration of environmental impacts on a much wider basis than the immediate footprint of a development that is covered by a planning consent.

Finally, we consider that addressing some of the key knowledge gaps (as listed in the ECCLR report and mentioned above under questions 2 and 4) would provide a stronger evidence base for making robust regulatory decisions.

Annex – SNH input to research and innovation projects relating to salmon farming

SNH has been a Director of the Scottish Aquaculture Research Forum (SARF) since 2004 and over the last five years we have contributed £140k towards SARF research, and commissioned other research and developed guidance on landscape and visual impacts to help support the sustainable growth of the sector. Table 1 highlights SARF research projects in which SNH has had a particularly active role.

Table 1:

SARF010 - Piloting a network for determining spatial and temporal variation in marine survival of Atlantic salmon and effects of anti-sea lice agents	SNH on Expert Steering Group Project concluding 2018
SARF031 - Scoping study of appropriate EIA trigger thresholds for shellfish farms and other non-fish farm aquaculture.	SNH on steering group.
SARF035 Determination of the fate of chemical/faecal material which is transported beyond the Allowable Zone of Effects (AZE).	
SARF036 Establishing the effects of fish farm discharges on Biodiversity Action Plan (BAP) habitats and assessing their recoverability.	SNH on steering group
SARF040a - Review of Marine Fish Farm EIA Thresholds.	SNH on steering group
SARF040b - Potential for Permitted Development Rights and Use Classes for Fin and Shellfish Developments.	SNH on steering group
SARF044 - Assessment of the impacts and utility of acoustic deterrent devices.	SNH on steering group
SARF082 - Scottish Aquaculture's Utilisation of Environmental Resources.	SNH staff external referee
SARF090 - Impacts of salmonid pen aquaculture on hard substrates.	SNH on steering group
SARF098 - PAMP Refreshment Study – A literature review considering the effects of sealice medicines on benthos.	
SARF098C – PAMP Refreshment -The association between emamectin benzoate use and crustacean assemblages around Scottish fish farms	
SARF099 - Survey of Pacific oysters in Scotland	SNH on steering group
SARF110 - Strategic Considerations for Locational Regulation of Shellfish Aquaculture in Scotland.	SNH on steering group
SARF112 – Influences of lower-frequency acoustic deterrent devices (ADDs) on cetaceans in Scottish coastal waters	SNH on steering group currently out for peer review
SARF113 – Feasibility of a single marine Licence development consent for aquaculture in Scotland.	SNH on steering group – ongoing started in Jan 2018

Other research supporting the aquaculture sector:

Landscape: In 2011, we commissioned pilot studies into landscape/seascape capacity for aquaculture for Orkney and the Western Isles. The results informed the development of guidance on landscape and aquaculture.

- [Orkney landscape capacity for aquaculture: Scapa Flow and Wide Firth: SNH Commissioned Report No. 466](#)
- [Landscape/seascape capacity for aquaculture: Outer Hebrides pilot study: SNH Commissioned Report No. 460](#)

ADDs and cetaceans: SNH is currently involved with 2 PhD projects, one considering noise pollution from ADDs and the other focusing on behaviour of harbour porpoise in the vicinity of fin fish farms. Both PhDs are based at the Scottish Association for Marine Science in Oban and commenced in October 2017; due to complete 2020/21. We have a supervisory role in the porpoise behaviour PhD and an informal advisory role for the noise pollution one.

Wrasse harvesting: Planned 2018 SNH research project on the interactions between the wrasse fishery and protected sites/ species to inform our future advice

Wild salmonid populations: SNH contribution in 2018 to first national juvenile electrofishing survey of Atlantic salmon (joint MS/SEPA/SNH project)

We are also involved in wider research which has some relevance to aquaculture issues. This includes:

- FASMOP (Focusing Atlantic Salmon Management On Populations) – Genetic variability research. Partnership Project. SNH provided funds and is on Steering Group.
- Pearls in Pearls – work on freshwater pearl mussels which includes monitoring of wild salmonids – SNH partner and funder.