Environment, Climate Change and Land Reform Committee

Environmental impacts of salmon farming

Written submission from Scottish Salmon Producers Organisation

Scottish Salmon Producers Organisation (SSPO) represents the Scottish salmon farming industry. Its membership currently accounts for more than 85% of the salmon produced in Scotland. Compliance with the *Code of Good Practice for Scottish Finfish Aquaculture* (CoGP) is a prerequisite of membership of the SSPO.

While the salmon farming sector has an aspiration to grow, it is important to state that the current consenting regime for Scottish aquaculture, including the planning system and other regulatory frameworks relevant to environmental protection, will be the over-riding factor that determines sustainable growth into the future.

Overview

On the whole we consider the SAMS report to be a reasonably fair reflection of the literature. However, we have concerns that the report is lacking in a number of important areas.

Firstly, the report does not present a clear representation of the strong regulatory framework relating to salmon farming in Scotland. The sector is highly regulated through numerous legislative instruments which provide a high degree of environmental protection. These come from the EU, UK and Scotland, and are considered by many to be world leading in their implementation. Furthermore, they also introduce a legal basis to the precautionary principle, which has filtered through into day to day regulatory and farming practice.

The report also falls short in its understanding of current farming best practice. For example, integrated fish health management is only briefly presented, but is, in fact, a cornerstone of our sector, with many overlapping, complementary strategies, including area management and synchronised farming practices. Integrated fish health management was first developed in Scotland and as such our approach is both pioneering and an example replicated in other farming nations.

The report makes much of adaptive management. As a relatively young food production sector, our success has been dependent on approaches that could already be termed adaptive management. Examples include our approach to fish health management, predator control, and environmental protection.

The report also draws on research from other countries, specifically Norway. Whilst the authors accept that such comparisons should be made with care, inferences are still repeatedly made. We strongly believe that comparisons should not be made with other countries, since Scotland is different in many regards, for example, in its regulatory framework, farming environment and scale of production.

This response will now follow the main headings in the SAMS report and provide further detail of gaps and comments that the SSPO feel should be considered.

1. Sea lice & disease impacts on wild and farmed stocks

We agree with the findings of the report, that the potential impacts of sea lice are just one of a multitude of factors that might impact wild salmonid populations.

Furthermore, any relationship that may exist between levels of lice on farmed fish and those on wild fish, and, thereafter, any potential impacts on wild fish, are not understood and the science is particularly lacking for Scotland.

For many years the Scottish salmon farming industry has sought to move the debate surrounding farmed/wild interactions forward in a number of ways. It has been involved in numerous local and national engagement activities with the wild fisheries sector and has supported research to better understand the science. For example, SSPO currently co-sponsor a SARF project (SARFSP010) studying return rates of smolts with a view to better understanding the impact of sea lice.

Furthermore, during the passage of the Aquaculture and Fisheries Bill (2013) SSPO committed to publishing aggregated sea lice data for each of 30 regions across Scotland. These regions specifically aligned with areas historically used to publish wild fisheries catch data. The aim was that wild fisheries bodies would supply matched data on fisheries management for these areas, specific issues and problem areas could be identified and discussed with all relevant data present. Although wild fisheries data has not been forthcoming, we are now committing to publishing farm level sea lice data. We would like to emphasise the importance of matched data on wild fisheries management (inc. lice data), in order to better understand possible relationships between the two sectors. To move the debate forward, data from both sectors is needed.

It is very important to note that, despite spurious claims to the contrary, published data and literature demonstrate that sea lice levels on farmed fish are generally well managed and are not on an increasing trajectory across the whole industry.

In 2017 Marine Scotland introduced new regulatory measures relating to sea lice control, implemented under the Aquaculture and Fisheries Act (2007). It is our view that these measures must be given sufficient time to allow any potential improvements in lice levels to be realised.

It is also important to highlight the new initiative between regulators and farmers to develop a 10-year strategy to further improve fish health. Again, this Farmed Fish Health Framework must be given sufficient time to undertake its work.

2. Discharge of waste nutrients and their interaction in the wider marine environment

Atlantic salmon have a fundamental biological need for a high quality environment. It is, therefore, in the industry's best interests to protect the environment in which it operates. For example, the development of sophisticated feeding systems over the last 15 years has greatly reduced the potential for uneaten feed to enter the environment, helping reduce impacts.

The discharge of waste nutrients is highly regulated by SEPA through CAR licencing and locational guidelines. Indeed, SEPA and others consider these regulatory regimes to be world leading in regard to environmental protection. The application process for CAR licences involves an appraisal of potential environmental impacts, including significant modelling work to understand benthic impacts. The model used has recently been updated, and the industry is committed to supporting ongoing development work surrounding modelling, to ensure the models used are the best they can be.

We believe that SEPA's regulatory approach is highly protective of the environment. Proposed changes to the regulatory regime (i.e. DZR) may result in a greater level of environmental monitoring and a focus on measuring actual, rather than modelled, outcomes: something our sector supports.

It is noteworthy that the industry has a long history of supporting applied research on potential environmental impacts (e.g. through SARF / industry projects) and is currently investigating new and innovative approaches to monitoring benthic impacts, such as the use of eDNA techniques.

3. Effect of the discharge of medicines and chemicals from salmon farming

Medicines are one of a number of ways that salmon farmers ensure the health and welfare of their fish. However, importantly, farmers focus on preventative approaches, such as the use of single year class production, fallowing and the use of vaccines. All fish are under the care of a veterinary surgeon, who not only has responsibility for the health of fish, but who also oversees the preparation of company and farm specific veterinary health and biosecurity plans.

All medicines are fully licenced by the Veterinary Medicines Directorate (VMD). A Marketing Authorisation for a medicine requires an appraisal of environmental safety. This provides a strong regulatory framework around the use of medicines. Additionally, the use and discharge of medicines is strictly controlled by SEPA, through CAR licences. This framework incorporates an EQS-based approach to regulation, which is supported through European legislation, and includes high safety margins.

We strongly re-iterate the findings presented in the SAMS report, that antibiotic use in salmon farming is extremely low, due mainly to the development of vaccines and fish health management, and, therefore, such treatments are of extremely limited environmental concern.

4. Escapes from fish farms and potential effects on wild populations

The Scottish salmon farming sector is focused on best practice in all aspects of its production and salmon farmers are committed to reducing the number of escaped fish.

The industry supports the position presented in the SAMS report, that the survival of escapes is low. This is further backed up by fisheries catch statistics that suggest an extremely small percentage of farmed fish that escape are caught by fishermen on the rivers. Furthermore, we also support the view that much of the science surrounding the potential for genetic introgression, and thereafter whether any introgression might have a lasting impact on a population, refers mainly to Norwegian studies which are not directly comparable to the Scottish context. The Scottish situation is highly complex, and further confused by the fact that in the early 1970s and 1980s mutual agreements between farmers and fisheries proprietors promoted the stocking of farmed salmon into various river systems.

We agree that the industry must work to keep escapes to an absolute minimum. The development of the Scottish Technical Standard, by both the salmon farming industry and regulatory authorities (within the Ministerial Group for Sustainable Aquaculture) is highly relevant to any debate regarding minimising escapes.

5. Sustainability of feed supplies including substitution with plant-derived ingredients

The feed manufacturers in Scotland are confident that feed sourcing will not be a bottleneck for sustainable growth of production, either now or in the future. At present ALL marine raw materials used in Scotland are sourced from either the International Fishmeal and Fish Oil Organisation (IFFO) Responsible Sourcing or MSC certified schemes – we are already 'best in class' here. Fish meal can be replaced with specific plant and vegetable alternatives. Options to substitute fish oil are now becoming a reality, as algal oil is already coming into use in salmon diets in the UK. A substantially higher proportion of fish meal derived from processing trimmings from fish caught for human consumption is now used in diets, thus utilising more of an existing resource. A point of differentiation for Scottish salmon is a higher marine oil content in the diet than our competitors and we would seek to maintain that, as we are the most efficient and beneficial user from a health and nutrition perspective of the available products.

6. Emerging environmental impacts: Marine mammals and birds

Salmon farmers have clear legal responsibilities to safeguard the health and welfare of their stocks. Predators can have a significant impact on farmed salmon stocks; killing, injuring or distressing fish. To minimise interactions between potential predators and their fish stocks, all farmers develop, maintain and regularly update predator management plans. It is well recognised that predator management is farm specific: what works on one farm may not necessarily be appropriate for another. Management plans must be tailored to each individual farm, and as such, represent an excellent example of Adaptive Management within the sector.

There is a clear and robust legal framework surrounding the protection of marine mammals and birds. Much of this relates to European regulations, but there is also Scottish law relevant to such animals. Marine Scotland are one of a number of competent authorities, with SNH having a significant advisory role. Failure to comply with its legal obligations at a national level can result in significant sanctions for Scotland.

The legal frameworks also focus on a farm level, for example through the planning system, and where relevant, planning conditions can be applied to farms defining specific caveats or restrictions, such as farm design or monitoring protocols. Often, such restrictions can have significant impacts on the predator management plans being developed.

Finally, it is very important to note that the shooting of seals is strictly controlled in law and is only permitted under licence, and as a last resort. Licences include restrictions on the number of seals that can be shot and other measures, so that there will be no impact on seal population numbers. Shooting is NOT a management option, but is a last resort when management options have not been successful. The sector is working hard to reduce the number of seals being shot, with a stated aspiration to reach zero.

7. Emerging environmental impacts: Wrasse as cleanerfish

Cleanerfish are an important part of integrated sea lice management. All the lumpfish used by salmon farmers are of farmed origin and the supply of those fish is at or near current requirements.

The wrasse currently used are either farmed or wild caught. The sector aims to use predominantly farmed wrasse and is investing heavily in research and infrastructure to achieve that goal. In the meantime, it is necessary to use a proportion of sustainably caught wild wrasse.

Since the sector first started using cleanerfish it has continually developed best farming practice, and has engaged regulatory authorities wherever necessary. In particular, the development of cleanerfish standards by the RSPCA Assured Scheme and CoGP have been a significant driver in developing best practice. This has had clear benefits in terms of sustainability and limiting the number wild caught wrasse needed.

Despite claims to the contrary, evidence suggests that wrasse have been caught, in significant numbers, for many years prior to their use by the salmon farming industry. Typically they have been caught as bycatch, and subsequently used as bait by creel fishermen.

Salmon farmers and wrasse fishermen strongly believe their fishing activities are conducted in a sustainable manner. To support this position, and through regular dialogue with both Marine Scotland Science and Marine Scotland Policy, salmon farmers and fishermen are developing agreed voluntary control measures that will ensure responsible fishing practices, the collection of appropriate data to better understand the fishery, and that agree sector support for research activity to better understand the biology of the wrasse. Such measures will be in place for the beginning of the 2018 fishing season.

Finally, and as with other areas of the SAMS report, we do not believe it is appropriate to draw comparisons between activity and regulatory measures used in other countries. Furthermore, the estimated annual demand of cleanerfish proposed by Powell et al. is not correct for Scotland.

8. Mitigation: Recirculating Aquaculture Systems (RAS)

The SAMS report presents RAS as a possible solution to several issues relating to the environment. RAS is not a new technology for the Scottish salmon farming sector, and it is becoming a significant part of our freshwater production capacity. However, scaling such technology for use in the marine phase is a significant challenge.

RAS use substantial energy to pump and chill water so the carbon footprint of RAS is much greater than for current production methods (as detailed in the SAMS report, P63). Furthermore, moving all current marine salmon farming production onto land would involve sizeable land resources with consequential environmental impact. It would also present major implications for the Scottish planning system. It is worth noting that no commercial scale RAS system for the seawater production of salmon has, to date, been commercially successful.

RAS and closed containment technologies remain an area of interest and future development for the sector, with links to development projects in Norway ensuring

that Scottish salmon farming companies stay abreast of the latest technological advancements.

9. Other important points

Mortalities

Mortalities were not covered in detail within the SAMS report but have been raised by the ECCLR committee during the inquiry process, and, therefore, we have included some comments below.

While, regrettably, mortalities occur in any animal production system, they are not in the industry's interests and it is working hard to reduce the levels. Data on salmon production and mortalities are published by SEPA and Marine Scotland. This reporting shows that the levels are highly variable year to year, which illustrates a range of underlying causes.

The Farmed Fish Health Framework between industry and Government is addressing the issue of mortalities as part of its 10 year fish health strategy.
Management of disposal of mortalities is in accordance with the Animal By-Products regulations.

Standards

The SAMS report does not cover the role of third party standards with regard to environmental protection. We believe that such standards are a key link between producers, retailers and consumers and as such have a considerable role in supporting and driving forward improvements in many aspects of salmon farming, including environmental performance.