

## Environment, Climate Change and Land Reform Committee

### Environmental impacts of salmon farming

#### Written submission from Scottish Sea Farms

Scottish Sea Farms (SSF) welcome the opportunity to give evidence to the Environment, Climate Change and Land Reform Committee in relation to the published SAMS report.

The report considers specific areas of potential concern in relation to the marine environment but it is important to also consider the sustainability of salmon farming in the wider context. The table below illustrates that salmon farming as a form of high quality protein production is extremely efficient in terms of a range of sustainability principles, resource use and carbon footprint.

	<b>Cattle</b>	<b>Chicken</b>	<b>Pigs</b>	<b>Salmon</b>
Feed conversion	4-10	2.2	3	1.2
Energy retention	27%	10%	14%	27%
Protein retention	15%	21%	18%	24%
Edible yield	41%	46%	52%	68%
Edible meat per 100kg feed	4-10kg	21kg	17kg	57kg
Carbon footprint (kg CO <sub>2</sub> /kg edible meat)	Up to 30kg	3.4kg	5.9kg	2.9kg
Water consumption (litre/kg edible meat)	15400	4300	6000	1400

#### **General comments about the report**

In a number of sections the report fails to identify improvements in management, regulation, and operational measures since the original Scottish Government review in 2002. Furthermore, when describing existing mitigation for potential environmental issues the SAMS report does not always accurately describe the number and diversity of regulatory processes which are relevant to the salmon farming industry, suggesting a lack of knowledge or understanding of the current regulatory framework. The industry is currently regulated by 10 statutory bodies and subject to more than 60 pieces of legislation, 43 European directives, 3 European regulations & 12 European Commission decisions. The report frequently identifies further research as additional mitigation for environmental impacts which while relevant in some cases, often overlooks potential new technical or operational measures.

In looking toward future growth of salmon farming and a potential doubling in production, the report infers that significant environmental effects will be inevitable, without acknowledging that the salmon farming industry has continued to innovate and find new ways to manage existing and emerging environmental challenges. There is no basis for the conclusion of inevitability.

The ongoing review of the current aquaculture consenting regime in Scotland identified a number of recommendations which if implemented may present the opportunity to further improve the regulation and mitigation of environmental effects and assist in maximising continued sustainable growth of the aquaculture industry. In considering whether changes may be needed to the current regulating regime it is important to consider which regulator and regulatory process is best suited in terms of considering evidence and decision making, and monitoring and enforcement of the specific environmental issue.

The report focusses in many areas on potential environmental effects rather than measured and proven impacts. While examples of specific impacts can be useful in describing interactions with the environment, care needs to be taken in making assumptions that effects or evidence seen in individual locations is likely to be replicated across the salmon farming industry. Every farm location is different in its conditions and environmental sensitivity and there will be differences in the effectiveness of mitigation in different locations and by different operators.

Closed containment (RAS) has been proposed in the report as potential mitigation for some potential environmental impacts. This is not an environmentally or economically viable option and is not proven technology anywhere in the world. The report fails to recognise a lack of suitable sites on land, detriment to fish welfare (increased stocking density/growth rate, less natural conditions), increased energy use and carbon footprint, reduced marketability and economic impact of relocating production from remote rural communities and possibly even Scotland as a whole.

### **Disease impacts on wild and farmed fish**

It is important to consider potential interactions between farmed and wild salmonids within the context of wider environmental pressures on wild fish, including climate change, predation, availability of suitable riverine habitats and food availability in the north east Atlantic. Declines of wild salmonids have been observed across the UK as a whole in areas with and without marine salmon farming production.

The industry is investing significant time and resources into new measures to manage sea lice and is not expecting any single measure to be 100% effective, as the report and some of the discussion during the evidence session suggested. Experience has demonstrated the importance of having a suite of different management measures which can be employed at different times or in different situations throughout a production cycle. This allows the industry to adapt management as appropriate and prevent reliance on specific measures which may in turn promote further resistance.

Section 2.1.4 of the report identifies some significant knowledge gaps but fails to mention gaps in knowledge about wild fish populations, including the likely migration routes of salmon to and from marine feeding grounds to their native river; and the number of smolts leaving individual rivers.

### **Sections 3&4 – Discharge of waste nutrients, medicines and chemicals**

The case study in section 3 defines the area of impact from the Loch Creran farm as 0.5km<sup>2</sup>. This is not borne out by empirical evidence, and we would question the methodology and therefore conclusion reached for this and other sites. Based on depositional modelling and routine monitoring this is likely to be a significant overestimation of the depositional footprint at this site.

Section 4.9 of the report incorrectly focusses on impacts to UK BAP habitats and species when the focus of marine nature conservation in Scotland is on Priority Marine Features, identified by SNH in 2014. Impacts are inferred where the benthic footprint of a farm is in proximity to a protected feature but actual impacts will depend on the sensitivity of the features to the environmental pressures from aquaculture activity and the intensity of these pressures.

The report describes potential impacts from the use of Teflubenzuron and Diflubenzuron which are not currently authorised for use in Scotland and therefore not relevant.

In the last five years there has been significant investment in alternative non-medicinal lice management, comprising 85% of the overall fish health spend by SFF. These measures will reduce reliance on medicinal treatments and include (but are not limited to) the development of hydrolicers, thermolicers, optilicer and fresh water baths and biological control (cleaner fish).

### **Escapes from fish farms and potential effects on wild populations**

The SAMS report identifies average annual escapes from fish farms in Scotland as around 140,000 per year. Taken from the Aquaculture Scotland website average annual escapes over the past ten years (2007-2017) were approximately 90,000 fish, with a much lower average of just over 19,000 for the past three years. This demonstrates a trend in overall reduction in escaped fish.

### **Emerging environmental impacts**

SSF recognise the pressure that use of wild caught wrasse will have on the fishery and are committed to sourcing 100% of cleanerfish from farmed stocks. Currently 100% of lumpfish used at SSF sites are from farmed stocks and the percentage of wild caught wrasse is decreasing year on year. SSF have invested £7.2 million in the last 5 years (2013-17) on the farming of wrasse and further investment is planned in relation to a new wrasse hatchery at Machrihanish.

### **Mortalities**

Salmon farming mortality compares favourably with other types of farming and we would challenge the 25% figure as being truly representative. For example SSF mean mortality was 12.9% from 2012-15.

The evidence session on 6<sup>th</sup> February discussed the disposal of fish mortalities and gave the impression that all mortalities were transported off-site for disposal. This is not the case. In exceptional circumstances large scale mortalities may be disposed of by road via licenced waste carriers to dedicated disposal facilities. All other mortalities are typically disposed of through licenced on-site small capacity incinerators.

### **Adaptive management**

The SAMS report identifies adaptive management as key mitigation to enable future growth but doesn't adequately acknowledge that the industry is already working with adaptive management strategies for many of the environmental aspects described namely:

- Seabed impact – CAR licence and SEPA’s CAR licence review policy
- Industry Code of Good Practice
- Welfare and control of sea lice – FHI regime, management plans
- Predator management – seal licence process, predator control plans
- Environmental Management Plans