



## DEPARTMENT OF BIOLOGICAL AND ENVIRONMENTAL SCIENCES

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Mr Finlay Carson MSP,  
Convener Rural Affairs and Islands Committee,  
Scottish Parliament,  
Edinburgh,  
EH99 1SP.

Dear Mr Carson MSP,

As a proud Scot I was delighted to act as an expert witness at the Rural Affairs and Islands Committee Inquiry into the Scottish salmon farming industry in 2024. Thank you for inviting me to share my expert insights. I first discovered nociceptors (receptors for pain) in fish in 2002 and have continued to drive the science behind fish welfare since then. I am the recognised world expert on fish welfare and have won global awards for the impact my research has had on improving the treatment of fishes.

I was pleased to see that the Committee acknowledged concerns about the long-term viability of the farmed salmon industry in its current state, as well as the suggested positive changes in its interim statement in September 2025 that improvements to fish welfare were on the agenda. Obviously, it has been over four months since that statement and in the meantime the English Parliament has made a firm commitment towards improving the welfare of farmed fishes during production and specifically at the time of killing or slaughter in its Animal Welfare Strategy.

While I am pleased to hear that the Scottish Government also intends to introduce official guidance, I am concerned by the lack of detail and failure to provide specific timelines. This is an ambitious task; it took many years for guidance to be introduced for farmed fish at the time of killing and guidance for the entire life cycle is a far larger body of work. Farmed fishes including salmon will continue to be at risk of suffering while this guidance is considered and implemented. So I urge the Committee to please act quickly in its endeavours to improve the health and welfare of salmon.

There have been massive mortalities again in salmon farming in Scotland in 2025 with sometimes up to 100% mortality and a total of 12 million deaths last year, over 1.5 million more than the year before, when the committee was already expressing concern about high death rates on farms during the inquiry. Of course, these figures do not include many additional deaths, including those who die during transport, are culled, or die during the first six weeks following transfer into saltwater. Such high death rates would be unacceptable in terrestrial farming, so what provisions will be put in place for

monitoring and acting on these problems? Will the Committee reduce the industry expectation from 25% mortality to 10% as used in terrestrial farming or indeed 5%, as is the case in Norwegian salmon farming? Will substantial fines be imposed and will farms be closed if the problem persists?

The industry often blames environmental factors such as climate change-related warming, El Nino, jellyfish blooms and salmon lice thriving in warmer temperatures. Climate change and its associated effects on our environment are not going away anytime soon so in effect this means that many of the farms are situated in unsuitable locations. The areas are too shallow and thus are affected by warming more profoundly so in reality these farms need to be located in deeper, cooler water further North or away from coastal areas. In light of this I would also encourage the committee to continue to urge for *all* mortalities to be reported to the Scottish Government; it is certainly not a 'burden' - as has been suggested by the Cabinet Secretary - for the industry to provide comprehensive death or mortality reports, as this data is already provided to accreditation schemes (such as RSPCA Assured) and investors, and is also required in other jurisdictions such as Norway.

The salmon lice problem continues to be a major source of poor welfare and mortality in salmon farms, with nearly one-quarter of active sites breaching the industry's own Code of Good Practice. Will the committee suggest limits to the number of lice per fish as other countries have done and will there be recommendations on treatment that non-painful methods should be employed? The use of heat and mechanical methods such as the thermolicer and hydrolicer that damage the fish and cause pain should be avoided. However, the use of "cleaner fishes" is currently ineffective, unsustainable and these sentient animals are treated with little regard for their welfare. What provisions will the committee make for the welfare of these animals?

I am deeply concerned by the apparent lack of scrutiny on Scottish salmon farms. Despite over 35 million deaths in around three years, I understand there were just two unannounced inspections carried out by government regulators, and indeed none of the 20 sites with the highest mortalities (combining 10 million deaths) saw any inspections at all. This is very worrying indeed - no doubt you share the same sentiment.

I am pleased, however, the committee is also focusing on the wider environmental impacts that salmon farming is causing. The income from salmon farming largely owned by Norwegian companies is rather short term compared to the loss of vital fish nursing grounds that enable us to have wild fish stocks for fisheries in the long term.

Whilst my main concern is with the welfare of the salmon, the cleaner fishes and the impact that escapees have on wild fishes, there are substantial environmental problems associated with salmon farms being located in shallow areas and in proximity to ancient maerl beds which are vital nursery grounds for fishes and other animals. These maerl beds are slow growing thus when destroyed the capacity for recovery is exceptionally low (centuries) yet these areas are being destroyed by nearby salmon farms which blanket the maerl with faeces, waste, uneaten food and chemicals used in salmon farming. Will these important ecosystems that maintain biodiversity be protected?

I hope my comments are useful and I thank you for considering them. I look forward to improved guidance and legislation on the farming of salmon in Scotland and I hope this is extrapolated to other farmed fish species. It is satisfying that Scotland will lead the way in enhancing fish farming and aquaculture practices. In the meantime, while such promises are turned into policies, I would personally recommend a pause on the industry's expansion.

Yours sincerely,

Lynne U. Sneddon (Professor)