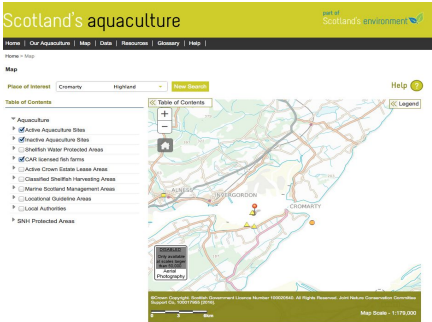


Environment, Climate Change and Land Reform Committee

Environmental impacts of salmon farming

Written submission from THE SAVESEILSOUND CAMPAIGN GROUP

Figure 7. Distribution of Active Salmon Farms in Scotland during 2000



The top image, taken from the SAMS Review, indicates the concentration of fish farms on Scotland's western Aquaculture Coast. The second one, from [www.aquaculture.scotland.gov.uk](http://www.aquaculture.scotland.gov.uk), shows that the three shellfish farms and two finfish farms are all disused, so there are in fact none at all on the East coast.

This is in line with Scottish Government planning policy, currently described as:

- Presumption against development on North & East coasts should continue.
- The presumption was introduced in 1999, to take account of NASCO<sup>22</sup> obligations to protect wild salmonids, and the Salmon Strategy Task Force's recommendations. The presumption applies to all types of aquaculture, not all of which may pose a threat to wild salmonids.
- Pending scientific advice on the implications of new species on wild salmonids and their habitats, the presumption will remain in place.

Matters were not always thus. On 1 June 1999 the Secretary of State for Scotland approved an application for a fish farm at Avoch Bay, after three years in the planning process, but it seems that soon after a private agreement was made between the Scottish Government and the

Scottish Salmon Producers Organisation to the effect that members of the latter would avoid the East coast. Evidence for this has come out over the years, for example here are extracts from an exchange between Lesley Riddoch and Brian Simpson, the chair of the SSPO, that went out on BBC Radio sixteen years ago:

**Simpson:** Just a little point I would like to clarify here. We actually have agreed many years ago that the whole east coast of Scotland should not be allowed to develop salmon farming, that it should in fact be confined to the west.

**Riddoch:** Why was that?

**Simpson:** Well, remember that we have got very big important salmon rivers over here, and again with the potential concerns of them, a decision was taken that we would not develop salmon farming on the whole east coast of Scotland. ...

**Riddoch:** But unfortunately, Brian, by telling us that, you expose a lack of logic, in insisting that you want to be at the mouth [of the Snizort] of a migratory salmon run?

**Simpson:** No, no I...

**Riddoch:** You know, if the logic is to avoid the whole east coast because it's got, you know, all the big rivers that we know about, then perhaps the logic would be that you just avoid them everywhere? ...

**Riddoch:** Lets try it again, Brian, just go for it, you can answer. The logic is if you are avoiding, if you are effectively already doing prudent avoidance of the Spey, The Tay, you know, whatever, if you are already doing that, the Tweed, then why not just extend it to all the river mouths? They may be smaller, they may be not have such large vested interests arguing for them, but you know, the Snizort is as important to folk in Skye as the Spey is to folk in the North East. So why not just avoid those river mouths? All of them.

**Simpson:** And it is possible we may do, but there are of course a lot of rivers. I mean, you are comparing some rivers with four or five fish, compared to some very major rivers like the Tay, Tweed and so on, so we are hardly in the same comparison, logic-wise here...."

We submit that the presumption has nothing whatever to do with any difference in migratory habits between East coast and West coast wild salmon, but has everything to do with the knowledge on the part of the aquaculture industry and government that the increasing sea lice levels from the containment of huge populations of salmon in cages in coastal waters was deadly to wild fish.

Studies produced by the Norwegian Institute for Nature Research over the years have indicated that in Norway, at least, the problem of sea lice impacting on salmon production was known about since as early as the 1970s, with the impacts on wild salmonids becoming clear from at latest the early 1990s. We refer to the NINA paper submitted by S&TC Scotland, but scientists from the Institute have been writing on this since at least 2000 (Finstad, B., Bjoern, P. A., Grimnes, A. and Hvidsten, N.A. *Aquaculture Research*, 31: 795-803.

**It is a great pity that when the opportunity was there to do so, during the passage of the Aquaculture and Fisheries (Scotland) Bill in 2013, the Scottish Parliament declined to require fish farms to file details of sea lice infestations on a farm by farm basis.**

As the SAMS researchers say, para 2.1.3

"Currently data on certain aspects of Scottish Aquaculture production are published on Scotland's Aquaculture website. However, this website does not present any details for sea lice on the farms. The only publicly available data for sea lice on farms at present for Scotland are those which are published in an aggregated format in the SSPO Health reports. Thus, it is

difficult to report with any certainty, and in any detail, on the general or location-specific nature and extent of the problem of sea lice on salmon farms in Scotland.”

**Our MSPs now have the chance to rectify this. Please take it.**

Members of the Committee should be forewarned that the industry will do what it can to deflect blame for the current catastrophic decline in wild salmon and sea trout populations on the West coast. In 2012 Professor Phil Thomas, representing the industry, in evidence to the Scottish Parliament’s RACCE Committee, said:

*“For many fish farmers, the most problematic issue is when a run of mature wild fish come in, as they bring in sea lice—there is a sea lice strike on farms. In that situation, there can be rapid increases in sea lice numbers....*

*The difficulty is that, when wild runs of salmon come in from the sea with heavy infestations of lice, the transfer of lice from the wild salmon to the farmed salmon tends to be a mixture of lice of different stages, including lice that are quite close to mature as well as lice that are at the free swimming stage.”*

Strangely the Review makes a similar claim, at para 2.1.1

“Wild salmon can potentially infect farmed stocks when the former return from the ocean.”

We investigated this in 2012 and discovered that it is nonsense. In their earliest stage as plankton sea lice are propelled by water movements until if successful in finding a host they become anchored to it by a filamentous thread. In later stages they suck onto the surface of the fish only through being dorso-ventrally flattened. Although the pre-adult and adult stages are called “mobiles” that word refers to their grazing activity on the host fish and not their ability to swim around at liberty. They are very weak swimmers and stand more chance of being eaten by big fish than getting aboard them. It has also been shown that mature sea lice only survive in sea water for very brief periods after being separated from the host.

That a mature sea louse, firmly attached by suction to a returning salmon, travelling at speed, could suddenly decide to jump ship in the vicinity of a fish farm and make a break for it to another host seems inherently improbable and we challenge the industry to provide proof. For it to happen to such an extent that it would represent a major threat to the farmed fish seems even more unlikely.

According to recent statements in the Press, the industry is now blaming global warming for the decline in stocks of wild salmon and salmonids such as sea trout. There seems to be no support for this in the Review. Over the last twenty years average UK coastal sea temperatures have risen by about one degree, which one would not expect directly to affect the health of free swimming wild salmon. An unknown factor is the extent to

which hydrographic conditions may be changing far out to sea, with potential impacts on mortality levels and the length of time before onset of maturation and return migration.

There may be an indirect impact, in that slightly warmer coastal water may be improving the survival of sea lice. While deadly for salmon this would be worse for sea trout, which remain in shallow coastal shelf waters and are in marked decline in the aquaculture coast. It is likely that the same factors affect both species.

Of course we accept that sea lice originated in wild fish stocks, that being historically the only source. We suggest that after half a century of fish farming the industry is now almost certainly the greater source. It can only get worse, as the sea lice become immune to treatments.

We quote the highly regarded Dr Mark Fast of the University of Prince Edward Island:

*“1999 was the year the aquaculture industry gained what would be its most powerful tool in the fight against sea lice. It’s called SLICE.... It’s an in-feed treatment that, for a time, acted like a silver bullet. It was so effective that as a researcher studying sea lice, I found it difficult to harvest sea lice from salmon in an aquaculture environment. I just couldn’t find them. It worked that well....SLICE’s effectiveness started to seriously wane around 2008. The sea lice were adapting. The previous two summers had been worse than ever. Sea lice were partying even harder than they were in 1999.”*

SLICE is fatal not only to sea lice but to all crustaceans. Recently a report commissioned by SEPA recommended that emamectin benzoate treatments such as SLICE be phased out altogether, due to the damage that residues cause in the aquatic environment, where it stays active for up to 200 days, but that report is currently being revisited following threats of legal action by the manufacturers Merck & Co.

The industry is currently promoting other solutions to the sea lice problem, as described in the Review. These will be addressed in detail in submissions from other members of the Salmon Aquaculture Reform Network Scotland, of which saveiseilsound is a member. At a recent conference we discussed our joint approach to the ECCLR's call for information and agreed that each would deal with a particular topic, on agreed lines. Accordingly please record us as supporting their comments in full.





