

Environment, Climate Change and Land Reform Committee**Environmental impacts of salmon farming****Written submission from****Community of Arran Seabed Trust (COAST)****Opening Statement**

The Community of Arran Seabed Trust (COAST.) is based in Lamlash Bay, on the Isle of Arran, North Ayrshire. We are a 23 year old, community-led charity with the aim of restoring an abundant marine environment around the Isle of Arran, and the wider Clyde region, for the benefit of all. COAST have been successful in establishing the first marine No Take Zone (NTZ) in Scotland (which is the first community-led NTZ in the UK) and achieving the statutory designation of the South Arran Marine Protected Area (MPA).

We are also members of the Coastal Communities Network and the Salmon Aquaculture Reform Network. This issue of environmental impacts is of crucial importance to our community as we have a salmon farm in the South Arran MPA, which the Scottish Salmon Company have stated that they wish to double in size in the near future.

The environmental impacts from salmon farms are harming Scotland's reputation for quality, the health of our seas and reducing industry profits. It is sensible and responsible that these problems are solved before contemplating any expansion, let alone fast-tracking to double production by 2030.

While the SAMS scientific review is thorough in the topics covered, we all need to be rigorous in holding all research findings to be accurate and objective. In this regard the report states that for the foreseeable future fish farming will be in open cages, and that the deliberate overuse of chemicals is very limited. However, the amount of private investment that we know is going into land-based RAS systems and the number of recorded EQS breaches and SEPA's internal 'PAMP 2 response options' paper¹, indicate that the reality is somewhat different.

Our position on salmon aquaculture is that open cage salmon farms are significant non-paying polluters, who use the sea and seabed as a free dumping ground for salmon sewage and, which are hubs for infection and dispersal of infection; effective independent environmental monitoring of them is absent.

We call for an immediate moratorium on expansion, with lowering of stocking densities, and adequate industry investment and Government incentives to transition to land-based, closed containment/RAS facilities.

COAST are also clear that open cage salmon aquaculture does not belong in marine protected areas and we agree with 'Prof. Callum Roberts, University of York and Academic Consultant for Blue Planet II in this regard:

'The multiple environmental problems associated with open-cage salmon farming have been thoroughly established by scientific research. Individually, many impacts represent a serious risk to the conservation objectives of marine protected areas. Collectively, they guarantee an unacceptable level of impact. Open cage salmon farms are incompatible with the conservation objectives of protected areas and should not be sited within them.'

The following specific sections of the SAMS report are commented upon herein:

2. SEA LICE & DISEASE IMPACTS ON WILD AND FARMED STOCKS

The SAMS report states that *'A clear relationship between the increased abundance of sea lice due to salmon farming and presence of wild hosts in the sea has been demonstrated outwith Scotland'*. It is therefore highly probable that all the known sea lice infestations and mortalities which occur in Scotland are having the same effect here and will be killing off wild migrating smolts. The SAMS report clearly states that in **Section 2.1.5** that even without further expansion in Scottish salmon production that the risk to wild salmonids (salmon and sea trout) can be expected to rise.

We agree with and support the submission by Salmon and Trout Conservation Scotland on the impacts on wild salmon and sea trout, as detailed in the independent review commissioned by them from NINA (2018)². Both species are Priority Marine Features and both are suffering harm at population levels from sea lice and escaped farmed fish.

Scotland is legally obliged to apply the precautionary principle and no further expansion should be allowed because we need adequate independent data available in Scotland to fully understand the potential and actual environmental damage to wild salmon stocks.

There is no agency directly responsible for the protection of wild salmonids, although SEPA do have their protection under their remit and can be using biomass reduction to protect wild fish from infestation by sea lice; this can be done immediately.

Levies on the industry, innovation investment from the Scottish Government and regulation from SEPA to encourage the accelerated development of the technologies to transition from marine-based open cages to closed containment/RAS systems will also protect the wild populations from further risk while there is a moratorium on expansion.

The lack of data on sites or the cumulative effects of multiple sites means that the local authorities have no information available to them when they approve planning applications. In addition that fact that the SEPA CAR license application runs in parallel but is disconnected from the planning process means that data gaps and cumulative environmental risks are not examined and the precautionary principle is not applied. Our understanding is that SEPA themselves would like to see a joined

up planning/licensing process for salmon farms to ensure that the environment is protected from damaging developments.

In **Section 2.2.2** the report states that 'salmon farming is young' and that 'it is **probably safe to assume** that all its diseases originated in wild populations of salmonid. This quotes a year 2000 report and the industry cannot be considered young in 2018 (now over 30 years old) and may I suggest that using 'probably safe' and 'assume' in a scientific report is inappropriate if SAMS are to take an objective approach throughout.

4. EFFECT OF THE DISCHARGE OF MEDICINES AND CHEMICALS FROM SALMON FARMING

The WRC Review of EQS for Emamectin Benzoate (EMB) 2017, commissioned by SEPA², does draw attention to the extent of use on Scottish fish farms of EMB. The total loading of EMB to the marine environment increased six-fold between 2002 and 2015 with salmon production doubling over the same period. This increase in widespread use, due to increase in sea-lice resistance, is disturbing as it is now understood that this affects the other arthropods, including prawns, lobsters and crabs, which are key economic contributors to the viability of marine coastal communities in west Scotland.

SEPA commissioned the 'PAMP 2' study^{3,4} into the environmental impact of EMB and, according to SEPA, it breaks down so slowly that some can remain active in the seabed for 4-5 years. The study found a correlation between EMB use and a c.60% decline in crustaceans, at sea loch scales and at levels too low to detect under standard monitoring practises.

SEPA has defined lower interim EQS for EMB use in some protected areas, however they did not apply the standard to the CAR licence issued for a farm expansion in an MPA and SAC, with qualifying species, at Loch Duich. Choices like this have negatively impacted the public's perception of SEPA in that the appropriate regulations are not used appropriately to control polluting industries, and thereby protect ecosystems which sustain jobs and communities.

On 26 June 2017 Terry A'Hearn (CEO SEPA), when announcing the consultation into draft proposals for new salmon farming regulations stated *that " ..it's SEPAs job to make sure that that industry operates responsibly with minimal environmental impact"*. He has invited the water sector to hold SEPA to account <https://utilityweek.co.uk/scottish-water-sector-must-hold-sepa-to-account/> and west coast communities will also be holding him and SEPA to account over their regulation of the salmon aquaculture sector.

3. THE DISCHARGE OF WASTE NUTRIENTS AND THEIR INTERACTION IN THE WIDER MARINE ENVIRONMENT

As the SAMS report states ‘Scotland’s target of producing 200,000 tonnes of salmon in 2020 will likely emit organic waste equivalent to that of about half of Scotland’s human population of 5.3 million’. This is entering our seas through open cages completely untreated.

The eutrophic effects of salmon sewage and fish feed below and around salmon farms are well documented and show the ‘dead’ sulphur-rich, oxygen starved, bacterial mat which is inimical to all but nematode worms:

<https://vimeo.com/198482651> .

A growing number of marine biologists believe there is a strong link between the tonnage of protein waste dumped into the sea in the form of dead salmon, salmon faeces and uneaten salmon food, and the increased outbreaks in Chile of deadly Red Tide (a highly toxic algae that kills marine mammals, molluscs and fish, including salmon). We have experienced a widespread eutrophic, toxic algal bloom in the Clyde which resulted in the wiping out of sea squirts within our No-Take-Zone; we do not know what the full effects of this bloom are on our ecosystem.

There are also documented concerns regarding the biotoxins associated with algal blooms and the potential for diarrheal seafood poisoning (DSP) from wild and farmed shellfish, which take them in when feeding. A local mussel farm had repeated failures to harvest, when inspected by the Food Standards Agency, as a result of DSP biotoxins being present and eventually closed down after a 4-5 year period. To mitigate against harmful toxic algal blooms we expect to see regulation in place which excludes salmon farm expansion in bodies of water which are not fit for successful shellfish aquaculture.

7. EMERGING ENVIRONMENTAL IMPACTS

7.1 Effects on Marine Mammals

Fish farms have devised a number of methods to reduce seal predation. These methods include the use of ADDs, intended to scare seals away from farms. Because ADDs are not consistently effective and ironically may have a ‘dinnerbell’ effect, farms which rely on the use of ADDs, rather than the more effective technology available, may also shoot seals. However, as discussed below, ADDs also have the potential to injure and disturb porpoise and other cetaceans.

Harbour porpoise are acoustic predators using echolocation clicks to locate and capture prey, they are warm-blooded marine mammals with a relatively high surface-to-volume ratio. Therefore, even a small decrease in foraging opportunity or efficiency due to disturbance and exclusion from fishing grounds will have

detrimental effects on individuals. Hearing damage will lead to further reduced ability to find food and probable reduction in life expectancy.

Rather than using ADDs and shooting to deter and kill seals, in our opinion, the industry needs to be responsible and spend money to ensure that storm-proof netting is fit for purpose in excluding predators and this will have the additional benefit of stopping escapees.

7.2 The use of Wrasse as Cleaner Fish

Rather than use wild caught wrasse from an unmonitored and effectively unregulated fishery we require that the salmon farm industry must fix their lice problems and its known, unsustainable impacts on wild salmonids, before considering any further expansion. We want to see an industry being responsible. Instead of investing £40m in a wrasse breeding plant that can only fulfil 10% of the predicted demand for sea lice cleaners, why does industry not invest that money in developing closed containment/RAS technology?

References:

- 1 SARF098 PAMP Refreshment Study – SEPA Response Options Paper. SEPA Aquaculture Strategic Management Group. 'Doc 131.pdf' in 'Final Response' to FOI FO187415 at <http://apps.sepa.org.uk/disclosurelog>
- 2 <https://www.salmon-trout.org/wp-content/uploads/2018/01/Thorstad-Finstad-2018-Impacts-of-salmon-lice-NINA-Report-1449-2.pdf>
- 3 SARF098: Towards Understanding of the Environmental Impact of a Sea Lice Medicine – the PAMP Suite,
- 4 SARF098C PAMP Refreshment: Wilding TA Hughes D and Black KD (2017). The Association between emamectin benzoate use and crustacean assemblages around Scottish fish farms.