

## RURAL ECONOMY AND CONNECTIVITY COMMITTEE

### SALMON FARMING IN SCOTLAND

#### SUBMISSION FROM ROGER COTTIS

**1. Impacts on Wildlife.** Growing concerns about the salmon farming industry over the last two decades from authoritative scientific sources are, in recent years manifesting themselves with increasing regularity. Open nets intended to contain industrial volumes of fish have spectacularly failed, witness the many reported escapes, which give rise to ecological concerns regarding genetic purity of **wild salmon** in west coast waters and elsewhere. The proliferation of sea lice numbers have significantly contributed to the dramatic decline of wild salmon and sea trout through uncontrollable infestations. This has unintended and previously unseen consequences. **Fresh water pearl mussels** populations have declined and many are at critical levels for various reasons in different areas. Rivers and burns draining to west coast waters are under increasing threat. **Fresh water pearl mussels** are listed as Endangered on the International Union for Conservation of Nature Red list. They rely on a symbiotic relationship with juveniles of wild salmonid species, principally **sea trout** and **wild salmon**. Their larvae attach to the gills of the young fish and grow over many months before dropping off to start their next phase of life then maturing over many decades. The diminishing salmonids in Highland waters are likely to severely impact the current conservation status of **fresh water pearl mussels** leading to extinctions.

All **crustaceans** are vulnerable to chemical therapeutants and whilst sea lice are becoming immune to emamectin benzoate administered in salmon farm food pellets, other non-target species are being confronted by lethal doses contained in lost food dropping to the sea floor. The thought that **wrasse** and **lumpsuckers** from farmed stock can adequately control sea lice when there are no adequate farm facilities for these species is naïve. Currently with the industry devastating wild populations of these species from Cornwall to Cape Wrath we are likely to see another ecological disaster unfold for a future generation of concerned people to address. If fish farmers continue to shoot **seals** the USA will boycott Scottish farmed salmon and for the Cabinet Secretary for the Rural Economy and Connectivity, Fergus Ewing to suggest acoustic deterrent devices (ADDs) are appropriate mitigation beggars belief when it is known that there are adverse effects on **cetaceans**. His attention should be drawn to relevant section of the ECCLRC report.

General pollution from fish urine and faeces is conveniently ignored as a problem, yet seafloor smothering occurs, removing all life other than certain worm species. Where dispersion, which certainly occurs beyond the considered acceptable limits, vulnerable important habitats, typically **sea grass** and **maerl beds** are lethally threatened. This has a knock-on effect with these habitats being breeding grounds for multiple species.

**Impacts on the Industry.** The industrial scale of the salmon farming industry as currently practiced has created outbreaks of diseases and the conditions for sea lice to proliferate, leading to the culling of whole production cycles. When almost one quarter of Scotland's farmed fish production can be lost in one year, the message is

loud and clear; wholesale changes need to be implemented as a matter of urgency; but not in the form of 'sticking-plaster' remedies in the vein hope that the next attempt might work.

2. To achieve sustainable growth it is important to understand what sustainable means. In the context of the current industry with all of the detrimental effects highlighted by the Environment, Climate Change and Land Reform Committee (ECCLRC) report into the environmental impacts of salmon farming it is clear what sustainable means to the Industry; how much profit can be achieved. The report confirms the industry is not ecologically sustainable; therefore a different approach is required. Amongst many other concerns the report concluded that ***“Scotland is at a critical point in considering how salmon farming develops in a sustainable way in relation to the environment. The planned expansion of the industry over the next 10-15 years will place huge pressures on the environment. Industry growth targets of 300,000 - 400,000 tonnes by 2030 do not take into account the capacity of the environment to farm that quantity of salmon. If the current issues are not addressed this expansion will be unsustainable and may cause irrecoverable damage to the environment.”*** The important issue of the Precautionary Principle<sup>1</sup> also became apparent: ***“The role, responsibilities and interaction of agencies requires review and agencies need to be appropriately funded and resourced to fully meet their environmental duties and obligations. Scotland’s public bodies have a duty to protect biodiversity and this must be to the fore when considering the expansion of the sector. We need to progress on the basis of the precautionary principle and agencies need to work together more effectively.”***

3. **Alternative strategy.** To achieve the remedies to all of the previously highlighted problems with open-net salmon farming there should be a moratorium on all future expansion and enlargement. In the light of the ECCLRC report it would be irresponsible and unacceptable if current practices are to be allowed to promulgate. Just consider if one quarter of Scotland’s farmed fish production was not lost to diseases and sea lice infestations as is currently the case. Recirculating Aquaculture Systems (RAS) should be developed with funds being currently squandered by inappropriate attempts to prop-up an ailing industry. When Norway<sup>2</sup>, China<sup>3</sup> and in USA at Maine<sup>4</sup> and Miami<sup>5</sup> are developing these systems it is clear that their governments have recognised the deleterious effects of the current open net designs. They could be sited adjacent to suitable transport hubs or indeed on a smaller scale, within remote coastal communities. Controls on all aspects of fish and environmental health would be achieved and reassure an ever increasingly well-

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<sup>1</sup> Principle 15. In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.

<sup>2</sup> <http://salmonbusiness.com/norways-first-commercial-land-based-fish-farm-its-always-tough-to-be-a-frontrunner/>

<sup>3</sup> <http://www.intrafish.com/aquaculture/1399188/norwegian-firm-building-euro-72-million-land-based-salmon-farm-in-china>

<sup>4</sup> <http://www.kuterra.com/>

<sup>5</sup> <https://www.thenextmiami.com/americas-biggest-salmon-farm-begin-construction-near-homestead/>

informed general public. Recirculating water allows fish to swim in an appropriate current, which encourages quality flesh confirmation and a better product. Feed can be generated by farming insects and appropriate species of marine worms and without the need to exploit wild fish stocks, most of which are threatened globally. Faecal matter and any excess food can be safely filtered and then reconstituted as a fertilizer or linked to an aquaponics system to feed fruit and vegetables. The design is scalable and could be developed appropriately for large scale production or small scale for rural communities, both generating sustainable jobs. A variety of these innovative viable sites can be seen at GrowUp<sup>6</sup> in London, Bioaqua<sup>7</sup> in Somerset and Humble by Nature<sup>8</sup> in Wales (supported in the early stages by the Welsh Government). There are aspirations for a community site in south Skye, which could be used as a demonstration site for other coastal communities to see for themselves how a truly sustainable enterprise could deliver high quality fish, fruit and vegetables with the added benefit of food yards, not food miles. Massive benefits accrue in the conservation of vulnerable species and habitats, with sea lice problems being eliminated and wild fish, wrasse and lumpsucker not being exploited as is currently the case. No need for predator control. Power to run plants using solar panels combined with small scale hydro schemes and wind turbines would benefit the national grid by not using polluting diesel. The production of such facilities, especially the larger projects could be manufactured in declining and currently redundant ship building facilities. The smaller versions could be manufactured at suitable local industrial sites and both would generate valuable employment.

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April 2018

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<sup>6</sup> <http://growup.org.uk/>

<sup>7</sup> <http://bioaquafarm.co.uk/>

<sup>8</sup> <https://www.humblebynature.com/team-members/aquaponics/>