

As an environmental charity, Fidra recognises that Scottish salmon farming has the potential to have significant impacts on the marine environment. This briefing makes policy recommendations needed to minimise these impacts through transparency and enforcement of stringent regulation.

Our 'Best Fishes' project highlights the environmental impact of Scottish salmon farming and encourages traceability and transparency throughout the supply chain, specifically through the creation of a dashboard, providing information at individual farm level. Transparency is an important step towards true sustainability, and a vital tool in supporting Scotland's Green Recovery.

We ask that MSPs urge the government to bring in policy and legislation which:

- limits expansion of the industry unless, and until, performance of the farms can be improved;
- prevents siting of salmon farms in Scotland's Marine Protected Areas;
- increases compliance enforcement, with increased monitoring of farms after an 'Unsatisfactory' benthic survey result;
- increases transparency of mandatory reporting through development of a fully accessible central dashboard, in particular of the use and discharge of chemical treatments.

Impacts of salmon farming

Scottish salmon farms use **open net pens** in both the juvenile freshwater and adult marine stages of the salmon life cycle. The use of these structures is associated with several environmental issues of concern:

- Disease/parasite transfer to wild fish;
- Discharge of chemicals to water bodies;
- Build up of food/faecal waste under pens;
- Interaction with wild predators;
- Escapes of farmed fish to the wild.

Appendix 1 and the [Best Fishes](https://www.bestfishes.org.uk/)¹ website further outline the challenges faced. To address the environmental issues Fidra asks that MSPs support policies, regulation and legislation to improve standards in salmon aquaculture through innovation and best practice, effective enforcement of stringent regulations, and increased transparency.

The Scottish Parliament's Environment, Climate Change and Land Reform (ECCLR) committee's [Report on the environmental impacts of salmon farming](#)², calls for:

- restraint on industry expansion until the present challenges are adequately addressed;

¹ <https://www.bestfishes.org.uk/>

² ECCLR Committee (2018) *Report on the environmental impacts of salmon farming*. 81pp. http://www.parliament.scot/S5_Environment/Inquiries/20180305_GD_to_Rec_salmon_farming.pdf

- increased investment in Scottish research and innovation;
- better regulation of and transparency from salmon farms.

Fidra supports these findings and asks for Scottish Government to move forward and commit to the calls on regulation and transparency.

Sustainability dashboard is needed to achieve transparency and accountability

Increased transparency will lead to improved accountability and practice, and can be achieved through an online database or 'sustainability dashboard'. Data associated with individual salmon farms is currently collected for regulators such as the Scottish Environment Protection Agency (SEPA)³. Hosting all the data in a centralised location and comprehensive format will also make it accessible for the use of consumers, retailers, industry and communities.

The report from the subsequent inquiry by the Rural Economy and Connectivity (REC) Committee, [Salmon farming in Scotland](#)⁴, expresses the importance of regulation being in line with accreditation to increase transparency. Accreditation often

³ <https://sectors.sepa.org.uk/media/1155/finfish-aquaculture-sector-plan.pdf>

⁴ REC Committee (2018) *Salmon farming in Scotland*. 146pp. <https://sp-bpr-en-prod-cdnep.azureedge.net/published/REC/2018/11/27/Salmon-farming-in-Scotland/REC-S5-18-09.pdf>

has stricter parameters than present legislation, and stronger enforcement actions. Fidra's [report on the impact of Scottish salmon farming on the benthic \(seabed\) environment](#)⁵, examines benthic surveys conducted to comply with farms' SEPA licences. A significant finding was that a farm can have repeated 'Unsatisfactory' benthic surveys yet still have a 'Good' overall compliance rating. Despite this, lack of compliance is predominantly due to poor benthic survey results. **Compliance of salmon farms in Scotland could be significantly improved by addressing poor benthic survey results with stronger enforcement action such as reducing the salmon produced (biomass), or implementing fallow periods or site closures.** A further report, [Formaldehyde Use in Scottish Salmon Farms](#), highlights the lack of transparency around chemical treatments, in particular in freshwater lochs⁶. The report presents Fidra's concerns about the lack of regulation for formaldehyde and hydrogen peroxide, two widely used chemicals.

Government interventions

Positive environmental change is achieved through collaborative dialogue with NGOs, government and industry. This can be enhanced through effective government legislation and support. Now 3 years on from the parliamentary inquiries, Fidra is seeking detail of how regulatory processes are to improve and a committed timetable to put forward supporting legislation.

As a significant amount of farm data is already collected to meet the requirements of SEPA, the Fish Health Inspectorate (FHI) and Scottish Salmon Producers Organisation (SSPO) Code of Good Practice, a sustainability dashboard would not require the collection of extra information. However, the data is presently stored in several different places, often not in a comprehensive format or easily accessible. A well-designed dashboard would showcase what is already being done at farm level in a clear and

transparent way. Criteria proposed for a sustainability dashboard are detailed in Appendix 2.

Conclusions & recommendations

Information flow and transparency is one of 7 cross cutting workstreams of the [Scottish Government's 10 Year Farmed Fish Health Framework published in 2018](#)⁷. In line with this, Fidra believes there is an urgent requirement to ensure that the processes involved in the farmed salmon industry are transparent and suitably communicated to all stakeholders. With substantial data already collected by farms, investment is now needed in digitising reporting, and in the creation and administration of a central database.

To achieve increased transparency, information flow and regulatory compliance Fidra is asking MSPs to call for:

1. no further development in areas with poorly performing salmon farms, unless, and until, performance of the farms can be improved and sustained to limit damage to the benthic environment;
2. no additional salmon farms in Scotland's Marine Protected Areas (MPAs), or freshwater lochs in Protected Areas, and consideration to moving those already in Protected Areas by 2025;
3. increased monitoring of farms from 2022 after an 'Unsatisfactory' benthic survey result and stricter enforcement actions such as a clear set limit of 3 consecutive failed or non-compliant assessments, after which reduced biomass, a fallow period or site closure is enforced;
4. development of a single central online database by 2022 with data on a wide range of environmental parameters displayed to farm level, including: details of chemical treatments; benthic survey reports; action taken for 'Unsatisfactory' results or compliance failure.

⁵ Fidra (2020) The impacts of Scottish salmon farming on the benthic environment. 17pp. <https://www.bestfishes.org.uk/fidra-report-dives-into-the-burden-on-the-benthos/>

⁶ Fidra (2021) Formaldehyde Use in Scottish Salmon Farms. 26pp. <https://www.bestfishes.org.uk/scottish-salmon-farming-impacts/>

⁷ <https://www2.gov.scot/Topics/marine/Fish-Shellfish/Strategic-Framework>

About Fidra

Fidra shines a light on environmental issues, working with the public, industry and governments to deliver pragmatic, evidence-based solutions to pollution and habitat degradation. Our projects support sustainable societies and healthy ecosystems. The Best Fishes project aims to minimise the environmental impact of salmon farming in Scotland and more information be found here www.bestfishes.org.uk

Appendix 1 - Main environmental concerns with Scottish salmon farming

Issue	Impact
Diseases/Parasites	Open net pens (ONPs) enable infection of farmed salmon by diseases and parasites from the surrounding waters, which in turn can be incubated to increased levels and may then contribute to infection of wild fish. An example of this is sea lice, parasitic crustaceans that affect the adult phase of salmon.
Chemical treatments	Pesticides and treatments used in ONPs to combat sea lice and other diseases may affect wild marine life especially crustaceans.
Food waste and faeces	Waste from uneaten food and fish faeces under and near ONPs can create anoxic conditions and affect wild marine habitats and organisms.
Predator interaction	Acoustic deterrent devices used to deter seals are not restricted by legislation, lose effectiveness over time and can affect cetacean navigation.
Fish escapes	Damage to ONPs from predators (i.e. seals) and bad weather can result in escaped farmed fish interacting with wild populations.
Feed	Fishmeal and fish oil in feed is sourced from wild fish populations which are considered to be at maximum sustainable yield.

Appendix 2 – Environmental criteria proposed for sustainability dashboard concept

A multi-tiered access to data is preferable to enable users to select by geographic area, to individual farm level, by environmental criteria and by company. A user could therefore view how criteria such as sea lice vary, or how an individual farm or company performs in terms of all the listed criteria.

Environmental criteria	Importance and issues	Present source of data	Essential/Desirable
Sea lice	Regulated by Marine Scotland's Fish Health Inspectorate (FHI). Presently reported as monthly on regional level and with time lag.	Scottish Salmon Producers Organisation (SSPO) /Scottish Aquaculture websites	Essential
Mortality	Details of rates, causes and mitigation required.	SSPO /Scottish Aquaculture websites	Essential
Benthic survey details	Reasons for 'Unsatisfactory' results rating and required mitigation required.	Scottish Aquaculture /Scottish Environment websites	Essential
Controlled Activities Regulation (CAR) licences	Details of compliance, breaches and enforcement action required.	Scottish Aquaculture /Scottish Environment Protection Agency (SEPA) websites	Essential
Wildlife interactions	Details of presence and mortalities required for (1) seals, (2) otters, (3) birds.	(1) Scottish Government Seal Licensing site, (2) and (3) Not presently recorded	Essential
Acoustic Deterrent Device use	Numbers, types and positioning detail required, and preventative action.	Not presently recorded	Essential
Medicine use	Application method, dosage and frequency of use details required.	Scottish Aquaculture /Scottish Environment websites	Essential
Chemical use	Application method, dosage and frequency of use details required.	Scottish Aquaculture /Scottish Environment websites	Essential
Planning applications	Details of company, site, biomass and Environmental Impact Assessment should be available.	Local planning authority	Essential
Escape events	Reasons, recovery and mitigation action should be available.	Scottish Aquaculture /Global Salmon Initiative (for Greig Seafood only)	Essential
Production tonnage	Details required from farm to Area Management area and country level.	Not presently reported	Essential
Plastic/other litter	Policies or guidelines to mitigate litter required.	Not presently recorded	Desirable
Climate change	Strategy to deal with climate change impacts e.g. increased water temperatures. Carbon footprint calculation by farm.	Not presently recorded	Desirable
Feed Conversion Ratio	Details desirable from farm to Area Management area and country level.	Not presently reported	Desirable
Accreditation	Details of accreditation including audits	Only Aquaculture Stewardship Council name accredited farms and publish audits	Desirable