Report of the Salmon Interactions Working Group

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Chair's Foreword

Populations of wild salmon and sea trout are at critically low levels. The reasons for this are complex and not yet fully understood. The Scottish Government has identified twelve groups of hazards, including fish farming, that may contribute to the decline of wild salmonids. It is well known that the interaction between aquaculture and wild salmonids is controversial and many strong views are held from different perspectives.

It was against this background that the Interactions Working Group was established. At the outset it was acknowledged by the Group that reaching a consensus position on the way ahead would not be easy. However, all members of the Group recognised the importance of the task in hand and embraced this challenge. The agreed recommendations reflect the professional approach taken by the Group and their determination to address these difficult issues in a constructive manner.

We have deliberately kept our Report short. We saw little point in summarising what has already been said. We focused instead on what could be done to make things better and have accordingly produced 42 recommendations. Although these recommendations cover a large number of issues, we believe they complement each other. To that extent these are presented to the Scottish Government as a package of measures which we believe should be implemented in full. If our recommendations are accepted, then I believe it will be possible to build a robust and durable framework that will minimise the impact of fish farming on wild salmonids**.**

John Goodlad
Chair, Salmon Interactions Working Group

Introduction

The number of Atlantic salmon returning to Scottish rivers has been in decline since at least the 1970's. Best estimates, based on international advice, show that there continues to be a downward trend across the North Atlantic region. Actions taken to address the climate change emergency and the wider biodiversity crisis will be highly relevant to Atlantic salmon conservation.

It is recognised that a range of hazards have contributed to the decline of wild Atlantic salmon and the Scottish Government has identified 12 high level pressure groups[1] that require further investigation. In recognition of the decline the Scottish Government announced in its 2019/20 Programme for Government a commitment to publish a national wild Atlantic salmon strategy.

In 2018, the Scottish Parliament's Environment, Climate Change and Land Reform Committee (ECCLR) and Rural Economy and Connectivity (REC) Committees held two inquiries into Scotland's salmon farming industry. The focus of the first ECCLR inquiry was to investigate the environmental impact of the salmon farming industry, whereas the second REC inquiry focused on identifying opportunities for the future development of the industry and explore the fish health and environmental issues identified in the ECCLR inquiry.

The findings from both inquiries highlighted concerns over the environmental impacts of the industry, particularly with regard to the potential hazard to wild salmonids. Recommendations from the inquiries indicated that the status quo was not an option and that changes to the regulation of the industry were required.

Concurrent with the Parliamentary Inquiries, the Cabinet Secretaries for Environment, Climate Change and Land Reform, Roseanna Cunningham, and Rural Economy and Tourism, Fergus Ewing, established a workstream to examine the 12 high level pressure groups and address the decline in wild Atlantic salmon. The first stage in this process was the establishment of the Salmon Interactions Working Group[2]. The SIWG was tasked with the following:

- Consider the evidence coming from the ECCLR and REC Committee inquiries (including the literature review undertaken by Scottish Association of Marine Science), and any other work, concerning the environmental impacts of salmon and trout farms on wild salmonids;

- Review current Scottish Government policy and advice governing wild/farmed salmon interactions including, but not limited to, sea lice, pathogens and escapes;

[1] https://www2.gov.scot/Topics/marine/Salmon-Trout-Coarse/fishreform/licence/status/Pressures
[2] https://www2.gov.scot/Topics/marine/Salmon-Trout-Coarse/salmon

- Review the actions required to monitor and mitigate the impact of farmed salmon and trout on wild salmonids (including through Environmental Management Plans, or other future regulatory mechanisms) so that any impact is reduced in accordance with our international and domestic obligations;

- Make recommendations, including a delivery plan of agreed actions and timescales, for a future interactions approach, including the need for any further research, changes to the regulatory regime, including planning advice and environmental monitoring; and the potential use of 'adaptive management' techniques, including the management of risk.

The SIWG has considered the conclusions from the Parliamentary Inquiry into salmon farming in Scotland, evaluated current Scottish Government policy and has reviewed existing and planned projects around interactions. At an early meeting the SIWG acknowledged the potential hazard that farmed salmonid aquaculture presents to wild salmonids (Atlantic salmon and sea trout) and agreed to examine measures to minimise the potential risk.

The SIWG met between October 2018 and March 2020. The set of recommendations provided within this report were unanimously agreed upon by all members of the group and presented to Scottish Ministers. All members of the SIWG agree that actions taken forward from these recommendations should be implemented as soon as possible and encourage Ministers to act in a swift manner to provide clarity and direction for regulators, the aquaculture sector and all interested stakeholders.

Recommendations

1. Wild/farmed salmonid interactions

In recognition of the potential hazard that farmed salmonid aquaculture presents to wild salmonids, the SIWG acknowledges that the outcome should be balanced and proportional improvements to fisheries conservation alongside the sustainable development of the salmon and trout aquaculture sector. The SIWG believes that a key component of achieving the recommendations set out below is developing a professional and collaborative working relationship within the shared spaces where wild and farmed fish are present.

1.1 Scotland's finfish aquaculture regulatory regime should be reformed to ensure that it is fit for purpose, comparable with the highest international and domestic regulatory standards and in line with the Scottish Regulators Strategic Code of Practice[3];

1.2 The reformed regulatory system should protect wild migratory salmonids, proactively seek to understand and address any negative impacts detected through monitoring of wild salmonids, be fully resourced and meet the tests of being robust, transparent, enforceable and enforced;

1.3 The Scottish Government should holistically assess and review the approach to sea lice treatment, including access to medicines and the use of controls in their use, to deliver an evidence-based approach to sea lice control, whilst ensuring the protection of the wider environment and wild and farmed fish health and welfare;

1.4 District Salmon Fishery Boards (DSFBs) should continue to be statutory consultees in the future regulatory regime. Where no DSFB is established a suitable alternative should be designated by Scottish Ministers where appropriate for the purpose of protecting wild salmonids;

1.5 In advance of the delivery of a reformed finfish aquaculture regulatory system, Marine Scotland should take an overarching role to ensure consistency with respect to managing interactions at the local level through the use of agreed standards for current, interim delivery of Environmental Management Plans;

1.6 A single lead body (with appropriate competence and capacity) should be assigned responsibility for regulating wild and farmed fish interactions and given appropriate powers for monitoring and enforcement;

1.7 The single lead body identified above, should be required to coordinate its activities with all regulatory bodies with responsibility for the range of pressures that wild salmonids face;

[3] https://www.gov.scot/publications/scottish-regulators-strategic-code-of-practice/

1.8 In managing the impact of aquaculture activities on the environment greater priority should be given to the protection of wild migratory salmonids balanced with more efficient protection of seabed and water quality in line with the Scottish Regulators Strategic Code of Practice;

1.9 The existing legislative framework is used, wherever possible to deliver the required changes relating to wild-farmed interactions. Any changes to primary or secondary legislation necessary to support these changes should be made at the earliest possible opportunity;

1.10 The appropriate scale for monitoring of impacts on wild fish is the farm management area or adjacent farm management areas in which sea lice connectivity modelling suggests that interactions with an existing area are likely. The farm management area is also the appropriate scale for local engagement and sharing of information;

1.11 The review of farm management areas being undertaken through Farmed Fish Health Framework is welcomed but should be informed by the recommendations of the SIWG;

1.12 For the purposes of wild-farmed interactions the farm management agreement / statement should be a mechanism for the collation and coordination of adaptive actions to address adverse impacts on wild salmonids identified in the farm management area, in collaboration with wild fisheries managers;

1.13 Local engagement mechanisms between finfish farmers and wild fishery managers should be established as a minimum, to engage in pre-application consultation, agree joint local management priorities and projects, act as a forum for information and data exchange, identify research priorities and request management action as appropriate;

1.14 For sites where best scientific evidence indicates that an existing site presents an adverse impact on wild salmonids:

- In the first instance, tighter regulatory standards should apply (see section 2 below);
- The consenting regime should be amended to enable efficient relocation of existing biomass to a suitable alternative location, within a spatial planning and area management framework.

2. Licensing and enforcement

The SIWG is of the view that a properly designed, reformed regulatory regime will deliver many of the recommendations that Parliament has sought. The characteristics of such a system, which must apply to all farms, encompasses strengthened licence conditions and associated enforcement measures[4] to deliver the essential regulatory protection that wild salmonids require.

The SIWG recognises the vital importance of ensuring that a wide range of strategies for sea lice control (including medicinal and non-medicinal treatment) are available to the finfish farming industry, in order to ensure wild and farmed fish welfare and sea lice control, whilst ensuring protection of the wider environment.

2.1 Robust conditions, based on an adaptive management approach, to safeguard wild salmonids should be contained within a license rather than through planning consent;

2.2 The licence should contain conditions relating to:

- Requirement for undertaking, recording and reporting of a weekly sea louse count;
- Trigger levels for sea lice intervention action specific to the farm management area (to be reviewed subject to adaptive management);
- Requirement to monitor lice levels in the environment and assess impacts on wild salmonids;
- Requirement to report on the results of such monitoring;
- Requirement to contribute to research to understand the migratory distributions of wild salmonids within the West Coast and Northern Isles context;
- The actions that are required to be taken where monitoring demonstrates adverse impacts on wild salmonids and the timeframe in which demonstrable actions should be successfully delivered;
- Requirement for the farm to be party to a farm management agreement for the farm management area;
- Monitoring for the presence of escaped farmed fish from freshwater open pen farms;
- Requirement for 100% of farmed fish to be retained in all production facilities;
- Minimum technical standards for prevention of escapes of farmed fish;
- Requirement for an Escape Mitigation plan to be in place prior to stocking;
- Notification to all relevant authorities, including to the local DSFB, of escapes or suspected escapes to be made within 24 hours of knowledge of the incident;
- Requirement for recording and reporting of escapes of farmed fish; and,
- Requirement to undertake an end of farm cycle review which informs the next production cycle process.

[4] See for example, SEPA's enforcement policy.

2.3 Scottish Ministers should direct all relevant statutory bodies[5] to discharge their duties such that they fully take into account the health and welfare of wild salmonids and of farmed fish.

2.4 As a priority, the consenting of new developments should be managed within an adaptive spatial planning model which is risk based, of suitable resolution, underpinned by best available scientific evidence, and takes into account the cumulative effect of management practices of existing developments and impacts on wild salmonid fish;

2.5 The SIWG recommends that the Technical Working Group[6] should ensure that these principles are embedded in the spatial planning framework for sea lice which is due for public consultation;

2.6 An enforcement policy should be published, informed by existing controls, to include specific penalties and sanctions for breaching conditions but incorporating some flexibility to respond to specific local conditions;

2.7 Appropriate fines, proportionate to the incident and scale of the escape, should apply to escapes of fish;

2.8 Where direct costs or nuisance resulting from an escape of farmed fish can be demonstrated there should be a legal requirement on the farm operator to fully compensate those costs;

2.9 Enforcement sanctions relating to sea lice and escapes, including the use of fixed and variable monetary penalties, should have a mechanism to allow monies to be invested into wild salmonid conservation work. Alternatively, this could be informed by the approach taken in Norway through OURO[7];

[5] Scottish Environment Protection Agency, Scottish Natural Heritage, Local Authorities, Marine Scotland, Crown Estate Scotland, and Animal, Plant and Health Authority.

[6] The Technical Working Group was tasked by the Scottish Government with developing a practical framework for assessing the level of risk posed to wild salmon and sea trout taking account of the best available scientific understanding and the precautionary principle. The technical group comprises experts from the regulators - Marine Scotland, SEPA, SNH and representatives of local authorities.

[7] In 2015, a new set of rules came into force in Norway to regulate the collective responsibility for recapturing farmed fish that have escaped and ended up in rivers. On the basis of the new rules, OURO, an organisation tasked with removing escapee farmed fish from bodies of water, was formed in the same year. OURO is financed by the industry and involvement is compulsory for farmers.

3. Farmed and wild salmonid data

The SIWG recognises the substantial amount of data relating to finfish aquaculture which is now publicly available, and the continuing progress made by the sector in increasing transparency. This will be further enhanced when the Scottish Government bring forward new sea lice reporting regulations. The forthcoming wild salmon strategy presents an opportunity to put in place the infrastructure to support wild fisheries managers in improving access to a higher resolution of wild fish data which will support a greater understanding of interactions.

3.1 The SIWG recommends that the system for collection and reporting of catch data should be reviewed;

3.2 The SIWG recommends that Scottish Ministers invest in the appropriate infrastructure to collect and report catch and associated data, which maintains, as far as possible, the continuity of data since 1952, whilst allowing catch data to be reported in as close to real time as possible;

3.3 The wild and farmed sectors should publish the following historical data:

- Results of wild fish monitoring including lice count data or observations on lice burden;
- Number of farmed fish per farm;
- Number of lice per farmed fish;
- Counts from fish counters, relevant electrofishing data and any other relevant catch assessment data operating on local rivers; and,
- Wild salmon and sea trout catch statistics and catch effort data.

3.4 The wild and farmed sectors, working collectively will provide a comprehensive package of data which should be placed on a mandatory footing and should include all data currently available on Scotland's Aquaculture website in addition to –

- Results of wild fish monitoring including lice count data or observations on lice burden;
- Farm management area sea lice load;
- Number of farmed fish per farm;
- Number of adult female lice and gravid female lice per farmed fish;
- Medicinal and physical treatments undertaken;
- Water temperature and salinity;
- Counts from fish counters, electrofishing data and any other catch assessment data operating on local rivers;
- Scottish Government assessments of wild fish conservation status (adult and juvenile fish); and,
- Official wild salmon and sea trout catch statistics and catch effort data.

4. Farmed and wild salmonid research

The SIWG recognises that there are a number of gaps in our understanding relating to wild-farmed interactions. However, the SIWG is firmly of the view that filling these knowledge gaps is not a pre-requisite for taking forward regulatory reform. Indeed, the recommendations set out above include monitoring requirements which will be complementary to the strategic priorities set out below.

4.1 Scottish Government should commit resources to review the research priorities identified in the Aquaculture Science and Research Strategy[8] under the Ministerial Group for Sustainable Aquaculture and thereafter set out and commit to deliver a research strategy for wild salmonid research;

4.2 Following an independent peer review, the work undertaken by Marine Scotland Science in 2018 to determine the baseline for current levels of genetic introgression should be expedited for publication;

4.3 Efforts should be made to refine or develop genetic analysis tools to allow recent introgression arising from farmed fish escapes to be distinguished from any introgression arising from historic stocking activities;

4.4 A mechanism should be developed to secure access to biological information from past (if possible), current and future farmed strains, in a secure and safe manner to safeguard commercial and competitive interests, whilst delivering essential support to collaborative genetic monitoring and evaluation work;

4.5 The reforms to the regulatory system should encompass provisions to secure investment into addressing strategic research and innovation questions relating to farmed/ wild salmonid interactions;

4.6 The SIWG acknowledges the importance of sea trout and recommends that further research is undertaken to understand sea and brown trout biology, the factors that influence anadromy in a population and the pressures affecting sea trout populations across Scotland including understanding the impact of sea lice and investigating whether any sea lice burdens are influenced by proximity to established farmed finfish sites.

[8] https://www.gov.scot/publications/mgsa-science-research-working-group-aquaculture-science-research-strategy/

5. Wild salmonids

The SIWG considers that additional resources are required to support management of salmonids, particularly in west coast rivers and welcomes the commitment to produce a wild salmon strategy for Scotland. Large-scale pressures, such as climate change, require international cooperation to address and are therefore beyond the control of fisheries managers. The focus of fisheries management in Scotland is therefore to improve freshwater habitat and address issues that we can control, with a view to ensuring the maximum number of healthy, wild smolts leave our rivers.

The SIWG acknowledges that resources to undertake this work are severely limited and declining. Therefore, the SIWG calls jointly for practical measures to ensure that potential hazards from salmonid aquaculture are maintained at the lowest possible levels and greater investment in conservation and restoration programmes that will demonstrably improve the wellbeing of indigenous populations of wild salmon and sea trout.

5.1 Scottish Ministers should make salmonid conservation a national priority;

5.2 The wild salmon strategy announced in the Programme for Government should explicitly identify and address the range of hazards[9] which wild salmonids (salmon and sea trout) face, and which can be managed. The strategy should direct efforts to move beyond the status quo across the range of hazards which wild salmon face. It should clearly define the role of public bodies and future licensing and regulatory decisions should be made in accordance with the strategy;

5.3 Scottish Ministers should champion the delivery of the wild salmon strategy and ensure that sufficient resources are available to ensure that the range of hazards which wild salmonids face are effectively addressed.

5.4 The SIWG recommends that the wild salmon strategy should urgently consider and recommend the introduction of mechanisms to ensure that riverine and riparian habitat improvements are built into changes to the rural payments system;

5.5 Scottish Ministers should review the potential to further protect salmon within the context of the salmon conservation regulatory framework, particularly in relation to handling fish during catch and release;

[9] https://www2.gov.scot/Topics/marine/Salmon-Trout-Coarse/fishreform/licence/status/Pressures

5.6 The SIWG recommend that the data available for conservation assessments is improved through investment in a strategic network of fish counters, improved information on fecundity and sex ratios, and the integration of juvenile data from the National Electrofishing Programme for Scotland into the conservation assessment process;

5.7 Scottish Ministers should establish a working group, as part of the process of delivering the national salmon strategy to:

- Oversee the delivery of SIWG recommendations and coordinate with working groups established or to be established to oversee interactions with other sectors that may impact upon wild salmonids.
- Assess and review the performance of the reformed regulatory structure;
- Support local engagement structures and consider the results of local wild fish monitoring.

5.8 Scottish Ministers should, in recognition of the lack of resources for salmonid management and conservation in Scottish waters, urgently explore new means to improve investment in Scotland's rivers. Experience from other countries should be used to inform a reformed funding mechanism for fisheries management in Scotland, to deliver restoration and conservation programmes to support natural populations of wild salmon and sea trout;

5.9 Scottish Ministers should, in recognition of the significant resource required to manage wild-farmed interactions appropriately through joint working at a local level, urgently identify means to increase capacity within Fisheries Boards and Trusts in the aquaculture zone and in particular establish an appropriate mechanism for undertaking this function in Orkney and Shetland.

6. Conclusion

The recommendations set out above complement each other and should be considered as a package of measures. Taken together, it is the view of the SIWG that they will improve the regulation of wild-farmed interactions, improve the relationship between the farmed and wild salmonid sectors and support conservation of wild salmonids. Scottish Ministers are encouraged to move swiftly to implement and support the delivery of these recommendations.

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