



# Managing interactions between sea lice from finfish farms and wild salmonids

**September 2023**

## Introduction to Scottish Environment LINK

Scottish Environment LINK is the forum for Scotland's voluntary environment community, with over 40 member bodies representing a broad spectrum of environmental interests with the common goal of contributing to a more environmentally sustainable society.

Its member bodies represent a wide community of environmental interest, sharing the common goal of contributing to a more sustainable society. LINK provides a forum for these organizations, enabling informed debate, assisting co-operation within the voluntary sector, and acting as a strong voice for the environment. Acting at local, national and international levels, LINK aims to ensure that the environmental community participates in the development of policy and legislation affecting Scotland.

LINK works mainly through groups of members working together on topics of mutual interest, exploring the issues and developing advocacy to promote sustainable development, respecting environmental limits. This consultation response was written by LINK's Marine Group.

## Response

***Question 1: Do you agree with our revisions to the WSPZ? If not, please explain why you disagree and what would be your alternative.***

Scottish Environment LINK (LINK) support the revisions SEPA has made to the WSPZ, including extending the area of coverage a minimum of 5km from the river mouth and the inclusion of freshwater pearl mussel SACs in WSPZs. In particular, we welcome the inclusion of WSPZ's in rivers that support significant sea trout populations even where salmon populations may be absent.

***Question 2: Do you have any additional information on, or suggestions how we could identify, important sea trout rivers in the West Coast, Western Isles and Northern Isles?***

No Comment

***Question 3: Do you have any suggestions to improve our screening models?***

The presented model is a good starting point, but simulations naturally have their limitations being simplified abstractions of large and complex natural systems. This simulation does require finessing using adaptive management and significant input from other stakeholders, but for screening initial risk is an acceptable starting point, if protocols for incorporating any changes are robust (in terms of an advisory council to approve changes and a protocol for what happens to existing licenses that have been screened using previous versions of the screening model). The data set utilised should also be enhanced as future sea lice counts become available (only 2021 and 2022 have been used in the current pilots).



As length of time spent within the WSPZ (currently simulated at a constant rate of 12.5 cm per second) can affect the cumulative exposure to infective stage lice, any significant barriers to migration should be incorporated within any simulation.

Abiotic factors that can significantly affect migration tactics such as temperature (which can also increase infection risk as temperature increases) should be considered within any model. As the climate emergency becomes more apparent with changes in water flow, flooding and drought events, storms and increasing water temperatures, multiple years and scenarios should be incorporated into simulations to fully account for environmental change. Other factors such as wind forcing, and river flow can strongly influence larval dispersal and distribution within the WSPZ and therefore the effects of physical processes should be included to ensure the model is robust.

Post-smolt migratory routes appear to be equally weighted within the current model (for example in the Loch Fyne simulation there are 11 virtual post-smolts exiting through Kilbrannan Sound and 11 through the Sound of Bute). If evidence exists for post-smolts having a higher probability of taking a particular migratory route any appropriate weighting should be specified within future models to reflect behavioural preferences.

LINK would also like to see model validation on the simulated migratory routes using appropriate methods such as tagging data, otolith trace element analysis or oxygen stable isotope analysis.

***Question 4: Do you have any suggestions on how we could better present the outputs of the models?***

No Comment

***Question 5: Do you agree with our proposed approach to developing a risk assessment framework for sea trout? If not, please explain why you disagree and what would be your alternative?***

Yes, the approach will follow best available scientific evidence and recognises additional risks posed to trout including that they stay close to the mouth of their home river so may face a longer exposure time to sea lice.

***Question 6: Do you agree with our proposed risk assessment methodology? If not, please explain why you disagree and what would be your alternative.***

We have no issues with the proposed risk assessment methodology. However, we would like to highlight that the implementation of this risk assessment will be critical including both monitoring and enforcement. The use of modelling allows for early indications of risk but will not always reflect real life practice. Consequently, data collection, review and subsequent adaptations to the risk assessment are of the utmost importance.

***Question 7: Do you agree with the proposed timetable? If not, please explain why you disagree and what would be your alternative.***

Risks to wild salmon from sea lice is an established risk and so actions taken to mitigate this risk should be implemented as soon as practically possible. LINK agrees with the proposed timetable but would like to ensure that the timetable does not shift and that all efforts are taken to implement these actions in a timely manner.

***Question 8: Do you agree with the proposed workflow for pre-applications? If not, please explain why you disagree and what would be your alternative.***

LINK agree with the proposed workflow for pre-applications.

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**Question 9: Do you agree with the proposed timetable? If not, please explain why you disagree and what would be your alternative.**

LINK does agree with the timetable but would like to ensure that the timetable does not shift, and that all efforts are taken to implement these actions in a timely manner.

**Question 10: Do you agree with the way we have used the risk assessment matrix to identify where we will apply permit conditions for reporting and lice limits? If you disagree, please explain how you would apply the matrix and why this would deliver a better outcome.**

A core purpose of the regulatory framework is to protect against deterioration of the wild salmonid population, and this has been reflected in the risk assessment matrix to identify where permit conditions will apply. We do however have concerns over how the data collection will take place to inform the risk assessment, relying heavily on developer self-reporting. Additionally, following implementation of the matrix, the verification of the data submitted, and the real life impacts the management limits have on sea lice levels need to be reviewed in a timely manner and at regular intervals.

The risk assessment needs to have clearly defined limits for adult female sea lice and plans in place to ensure these numbers aren't exceeded. Where they are, there needs to be a clear and rapid response from SEPA with timelines for expected corrective action from the industry and timelines to gauge whether corrective action has been successful or requires further intervention.

**Question 11: Do you agree with our proposal for setting permit limits on the number of lice on a farm? If not, please explain why you disagree and what would be your alternative.**

LINK agrees with proposal for setting permit limits on the number of lice on a farm.

**Question 12: Do you agree with our proposal for applying a rolling average limit, and a maximum daily limit on the number of adult female sea lice? If not, please explain why you disagree and what would be your alternative.**

LINK supports the proposal of a rolling average and maximum daily limit on adult female sea lice. We seek clarification on what the consequences would be for breaching these limits, including when small daily peaks become more than occasional, and ask that regulation and enforcement be robust and effective in achieving the frameworks primary aim of protecting wild salmonids. We also seek confirmation on the definition of a small peak, i.e., is this anything under 4X the 28-day rolling average?

**Question 13: Do you agree that it is proportionate to require enhanced sea lice counts at high-risk sites and that this should be delivered in due course via automated systems using artificial intelligence? Please give reasons for your answer.**

Yes, high-risk sites recognise the increased risk to wild salmonids from sea lice interactions and therefore increased sea lice counts are a proportional way to manage this risk. The use of artificial intelligence once developed will be a more reliable and timely method for counting sea lice and should allow for remedial action, where required, to be taken as quickly as possible. We would expect validation of the automated systems during their implementation and comparing datasets between a fish farm using manual counts and those using automated counts.



**Question 14: Do you agree with how we propose to provide a level of protection until the end of June for sea trout on the West Coast and around the Western Isles while we develop a new risk framework for sea trout? If you disagree, please explain how you would apply the matrix and why this would deliver a better outcome.**

We agree with the extended level of protection until the end of June for sea trout recognising the increased timeframe of risk from sea lice exposure compared to wild salmon post-smolts.

**Question 15: Do you agree with how we propose to set permit conditions to protect sea trout populations? If not, please explain why you disagree and what would be your alternative.**

In the absence of suitable data, we support the use of the same benchmark of 0.04 infective lice per m<sup>2</sup> to define a “substantial” contribution of a farm to the sea lice population. LINK also accepts the limit of 0.5 average number of adult female lice X maximum number of fish on the farm as a placeholder during the development of the risk framework for sea trout. We would like to see these limits be reassessed in a timely manner and amended as needed.

**Question 16: Do you have any comments or suggestions on how we plan to phase in the framework?**

We support the application of the framework to all applications from the implementation date regardless of submission date of the application as there is a need to act quickly to mitigate an established risk. We would ask that the implementation date be as early as is practically possible ensuring that effective monitoring and enforcement are in place from the start.

**Question 17: Do you agree with the proposed timetable? If not, please explain why you disagree and what would be your alternative.**

LINK does not disagree with the timetable but would like to ensure that the timetable does not shift, and that all efforts are taken to implement these actions in a timely manner.

**Question 18: Do you agree with our approach to monitoring and reporting conditions and the way we have used the risk assessment matrix to identify where we will add lice limits to permits? If you disagree, please explain how you would apply the matrix and why this would deliver a better outcome.**

LINK agrees with the way the risk assessment matrix will identify the need for adding lice limits to permits. The initial lice limits will be set at the typical maximum of farms and are designed to prevent degradation. We support stricter limits designed to reduce impact where further assessment has highlighted a significant impact at the individual farm level.

We are in support of mandatory monitoring and reporting of sea lice numbers across all farms and look forward to the development of the quality assurance standards for sea lice counts to increase confidence in these figures. However, the monitoring should not rely as heavily on industry self-reporting and should include the use of regular SEPA auditing across all risk levels to confirm the industry estimates were accurate and that their predicted levels of impact to the SWPAs match reality. Enforcement measures should be taken where sea lice levels go above defined limits or where data is not reported in a timely manner.

**Question 19: Do you have any existing evidence that could be used to assist assessments of the WSPZs where the sea lice exposure threshold is potentially being exceeded?**

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No, LINK does not collect any primary data that can be provided as evidence.

**Question 20: Would you be interested in collaborating with us in carrying out the assessments required to determine if action is required to reduce infective-stage sea lice concentrations in those WSPZs in which screening suggests the sea lice exposure threshold may be exceeded?**

**If so, how would you be willing to contribute?**

N/A

**Question 21: Do you agree with the proposed timetable? If not, please explain why you disagree and what would be your alternative.**

LINK agrees with the timetable but would like to ensure that the timetable does not shift, and all efforts are taken to implement these actions in a timely manner. Where an exposure threshold has been confirmed as exceeded remedial actions should be implemented swiftly.

**Question 22: Do you agree with the way we are proposing to use the risk assessment matrix to identify where we should focus our regulatory effort. If you disagree, please give your reasons and describe what you would propose instead.**

LINK agrees with the proposed risk assessment to identify where to focus regulatory effort but seeks further clarification on what the regulatory effort will involve, for example spot checks, data verification and enforcement.

Additionally, we are seeking to understand whether regulation will be focused solely on those considered to be high risk or whether there will be minimum levels of regulation effort that all farms, including those deemed low risk, would be subject to?

**Question 23: Do you agree with the proposed timetable? If not, please explain why you disagree and what would be your alternative**

LINK agrees with the proposed timetable but would like to ensure that the timetable does not shift, and that all efforts are taken to implement these actions in a timely manner.

**Question 24: Do you agree with how we propose to prioritise where we target effort under the first environmental monitoring strategy for the framework? If not, please explain your reasons and what you think we should do instead.**

Yes, LINK agrees with the prioritisation of the WSPZs thought to be at the highest risk for refined models and are glad that assessment of the effectiveness of actions taken to protect the wild salmonid population is seen as another priority.

**Question 25: Do you think the focus of the monitoring strategy should be on the types of monitoring listed above? If not, please explain your reasons and what you propose instead or in addition.**

We agree with the inclusion of monitoring the physical characteristics of sea areas but have concerns that the monitoring strategy is short term. We would like to see monitoring done on a multi-annual basis (e.g. 5 years on the same sites) in order to rule out any other effects from physical characteristics of the sea and to validate the modelling. Sea temperature for example has been highly variable in the last few years including this summers



Category 4 (extreme) marine heatwave highlighting that long term monitoring is needed to account for these variables.

**Question 26: Do you think that the proposed collaborative approach is the best mechanism for developing and delivering a monitoring plan? If not, please give your reasons and describe what you would propose instead.**

Yes, LINK supports a collaborative approach for developing a monitoring plan as this follows the basic principle of using the best available scientific evidence.

**Question 27: Are there other bodies and organisations you think would be interested assisting with a collaborative approach to environmental monitoring? If so, please can you say who they are and how you think they could contribute?**

No, LINK is not aware of any other organisations that would be well placed to assist in the development of the approach to environmental monitoring.

**Question 28: Do you agree with the proposed timetable? If not, please explain why you disagree and what would be your alternative**

LINK agrees with the proposed timetable but would like to ensure that the timetable does not shift, and that all efforts are taken to implement these actions in a timely manner.

**Question 29: Do you agree with the proposed timetable for improving accessibility of information collected in implementing the framework? If not, please explain why you disagree and what would be your alternative.**

LINK agrees with the proposed timetable but would like to ensure that the timetable does not shift, and that all efforts are taken to implement these actions in a timely manner.

**This response was compiled on behalf of the Marine Group and is supported by:**

Marine Conservation Society  
National Trust Scotland  
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