

## **Proposals for a risk-based framework for managing interaction between sea lice from marine finfish farm developments and wild Atlantic salmon in Scotland: Lochaber Fisheries Trust Consultation Response**

Lochaber Fisheries Trust welcome the chance to comment on this consultation and have attended the consultation engagement session offered by SEPA which was incredibly useful. We are delighted that regulation of the interaction between sea lice and wild fish is being progressed following the Rural Economy and Connectivity Committee report on Salmon Farming in Scotland (November 2018) and the Salmon Interactions Working Group report (May 2020). We thoroughly approve of the principle of using of managing the overall number of infective-stage sea lice in the marine environment at a level below which sea lice would be expected to result in significant impacts on wild salmon. We believe that not only will this approach will make a positive difference to migrating smolts, but also that with the right modelling it should be possible to understand and therefore regulate lice emitting from fish farms.

We do have some concerns about the scope of the framework, we believe that to be successful (and meet the recommendations of the SIWG) the framework needs to

- Include ALL farms, including existing farms, not just new developments. Without the consideration of new farms we are not meeting our international obligations under NASCO, where “**100% of farms** to have effective sea lice management such that there is **no increase in sea lice loads or lice-induced mortality of wild salmonids attributable to the farms**”.
- Consider sea trout as well as salmon

All farms must be included- the strength of this framework is in controlling the overall number of infective- stage sea lice in the marine environment to protect wild fish. This logically includes lice from existing farms, and there may well be areas where the existing farms are already exceeding the lice threshold of 0.7 infective-stage sea lice-days per m<sup>2</sup>. The consultation document states that more information is needed on whether the densities of infective-stage lice resulting from existing farms are posing a hazard to wild fish populations. This is contradictory to the argument that we can use the 0.7 sea-lice days threshold to protect wild fish.

We are hopeful that the apparent exclusion of existing farms from regulation was simply a miscommunication, as in the SEPA consultation engagement session we were reassured that existing farms would be included in the framework. ██████████ stated that new developments would be assessed first, with existing farms following. We would encourage the assessment of all farms to happen as quickly as possible, since we have already been waiting over three years from the findings of the REC committee and SEPA are proposing another year to fully implement the framework.

The exclusion of sea trout from the framework is incredibly disappointing, and goes against the recommendations of the SIWG which were for all migratory salmonids. As sea trout spend longer in the inshore environment they are at more risk from lice than salmon. LFT don't agree that a different framework is needed for sea trout(9.3), rather a longer protection period. The consultation document refers to the sea trout's option of reducing lice load by entering freshwater; however

there is a significant cost to sea trout of entering freshwater- both in terms of the energetic cost of changing between a saltwater and freshwater environment, and the increased risk of infection.

Paragraph 4.3 states that the proposed framework delineates proposed protection zones for each graded salmon river AND for rivers designated as SAC's or SSSI's for the conservation of Atlantic salmon or freshwater pearl mussel. In Lochaber we have an SAC where three of the four rivers designated have trout acting as the host species for pearl mussel glochidia. We also have a pearl mussel SAC where both salmon and sea trout act as hosts. Therefore without protecting sea trout the framework is not protecting the pearl mussels.

The consultation document comments that the interaction of lice emanating from farms with sea trout will continue to be considered as part of local planning. I do not believe that local planners have sufficient knowledge or emphasis on considering sea trout. During the ■ years I have been at the Trust we have never a single planning application turned down due to wild fish interests, even when the sea lice on farms have been consistently over code of good practice levels and the farm was a few kilometres from a freshwater pearl mussel SAC.

The framework uses minimum passage time to calculate exposure of smolts to lice. We do not understand why this is the case and strongly feel that average swim time would be more appropriate. You cannot protect the whole population by basing the risk on the fastest fish. We have good data on swim times for the Lochy from tracking work. The difference between minimum and average passage time was significant through both the Sound of Lorne and Sound of Mull

*Table 1: Preliminary results from the West Coast Tracking Project on passage time and swimming speeds detected by tagged smolts in 2021. Thanks to FMS for compiling this.*

Start	End	Number of smolts detected	Average Rate of Movement (bodylength/s)	Minimum passage time (days)	Maximum passage time (days)	Average passage time (days)
Mouth of River Lochy	Sound of Mull	48	2.08 ± 0.81	1.26	18.87	5.14 ± 3.85
Mouth of River Lochy	Sound of Lorne	26	1.81 ± 0.67	1.62	11.55	4.65 ± 2.61

Additionally, the duration of exposure needs to be considered on a cumulative basis as fish travel through multiple zones. A fish leaving the river Lochy will pass through at least three adjacent protection zones (two in loch Linnhe plus the sound of Mull) before hitting the open sea and at least one immediately after (Ardnamurchan headland). The exposure of a salmon smolt to lice must be considered over its whole journey to sea, not artificially reset as it passes from one protection zone to the next.

We also seek further clarity on how the regulatory framework will work in practice to ensure that sea lice levels remain below the exposure threshold. Presumably the modelling will determine how many lice on a farm it will take to produce the number of infective sea-lice/m<sup>2</sup> to reach the exposure level in each protection area. Once this number of lice per farm has been established how close will a farm be able to get to that number before they are required to take action? We strongly believe that the proposed system of protecting wild fish can make a real difference, but it will need

good enforcement, and we believe that preventing lice from reaching the threshold level is the correct approach, rather than asking for reductions in lice AFTER the thresholds have been reached.

The framework states that gravid female lice will be used to calculate the juvenile sea lice emanating from a farm. Whilst we understand the logic of this we feel that all adult female lice should still be reported by the industry for two reasons. Firstly an adult female can become gravid at any time, so recording the adult females will give a more accurate idea of the risk of sea lice being released in the very near future, and help achieve the preventative approach to reaching damaging thresholds of lice in the environment as mentioned above. Secondly it would be easy for fish farms to miss small egg strings, or females who had recently shed their egg strings. At the recent meeting regarding the Evaluation of the Scientific Basis of the Traffic Light System for Norwegian Salmonid Aquaculture it was highlighted that reporting gravid female lice was problematic.

We do not believe that the protection of April to May is long enough. The aquaculture industry currently use 1<sup>st</sup> Feb- 30<sup>th</sup> June as the sensitive period. Over the past five years we have had dry springs which have delayed smolt runs, and in one case led to a late summer smolt run in at least one catchment. The effect of climate change on rivers and migrating salmonids is not well understood and needs more monitoring. This monitoring could be delivered by local Fishery Trusts. Extending the protection period would also help to protect sea trout populations. LFT believe the protection period should be at least from March-July.

Although we understand that aquaculture companies have modelling capability, we do wonder if it is appropriate for the industry which is being monitored to do the modelling which will determine the sea lice limits needed. Whilst we understand the technology and time strain that modelling will involve we strongly feel that this should be done centrally to ensure consistency across aquaculture companies. At the very least the modelling parameters should be defined.

In paragraph 7.1 the framework comments that SEPA will provide an adaptive approach to the framework, including consideration of technological innovations to reduce sea lice numbers emanating from farms. We encourage this approach but ask that any new technological innovation for sea lice control on farms must be proven to be effective before it can be considered in an adaptive approach to the regulatory framework. Exceptions to the framework should not be made for unproven technological innovations.

Finally we would like the following rivers to be included as we have evidence they contain salmon populations:

Dubh Lighe & Fionnhe Lighe (west end of Loch Eil)

Allt Mhama (at the north east end of Loch nan Uamh) this site is an SAC for freshwater pearl mussels and has a salmon population

**ANNEX 1 – THE QUESTIONS BELOW ARE FROM THE ONLINE CONSULTATION.**

<b>Consultation Questions</b>	
Do you think that there are important areas for wild salmon post-smolt migration that we have	<b>Yes</b> <del>No</del> <del>Not sure</del>

<p>not identified as wild salmon protection zones?</p>	<p>I have included three rivers which I would like to be included in the protection zone modelling.</p> <p>We also believe that some of the protected zones should be merged, or at least acknowledged that fish will have to swim through multiple zones and the cumulative impact of lice exposure must be used when assessing risk.</p> <p>We agree with Fishery Management Scotland that screening models to be used by SEPA should be applied to ALL farms, including existing farms, and if these models demonstrate that infective-stage sea lice are likely to accumulate in areas outside the proposed protection zones, but in areas of the marine environment in which it is reasonable to assume that wild salmon or sea trout are likely to pass through, then those areas should be included in the overall regulatory framework. In particular, during our engagement sessions with SEPA, we highlighted concerns about the apparent exclusion of areas in the Summer Isles, West Sutherland and the Inner Hebrides.</p>
<p><i>Do you think that any of areas we are proposing as wild salmon protection zones should not be so identified?</i></p>	<p><del>Yes</del> <b>No</b> <del>Not sure</del></p>
<p><i>Do you have any scientific evidence that should be considered to ensure the sea lice exposure threshold is effective in protecting wild salmon populations? This includes any evidence for a refinement of the threshold</i></p>	<p>The West coast tracking project has data on average swim speeds which would be more appropriate for calculating passage times than the minimum passage time which will only protect the fastest swimming fish in a population.</p>
<p><i>Which groups and organisations do you think we should include on technical advisory groups to assist us with the development of the detailed working arrangements and methods needed to implement the framework?</i></p>	<p>Fishery Management Scotland co-ordinate with all the Fishery Trusts and Boards and have contributed heavily to the SIWG. We would be very keen that they were on any technical advisory group, so all fishery trusts and boards can feed in.</p> <p>Fisheries Management Scotland are also a member of the Missing Salmon Alliance, and are working with our partners and Marine Scotland Science to deliver the West Coast Tracking Project which has the potential to provide further information on smolt movements and passage time through wild salmon protection zones (as mentioned above).</p>
<p><i>Do you have relevant expertise or experience that you would be happy to share with us during implementation planning to help us</i></p>	<p><b>Yes</b> <del>No</del> <del>Possibly</del></p>

<p><i>develop modelling protocols?</i></p>	<p>Lochaber Fishery Trust, along with other west coast trusts have multiple years of sea lice data from wild fish, mainly sea trout but also some salmon. This could help feed into the risk of existing fish farms on migrating salmonids. We also have some data on smolt timings and would be happy to extend our monitoring of this.</p> <p><i>If you would like to be involved, are you happy for us to contact you by the email address you have provided?</i></p> <p><b>Yes</b> <del>Ne</del></p>
<p><i>Do you have any suggestions for how SEPA could most efficiently and effectively assess compliance?</i></p>	<p>Compliance monitoring against the framework should not be undertaken by operators alone (as alluded to within Section C14 and C18) and SEPA should define a programme of unannounced audit inspections of sites to ensure transparency in this process. This is consistent with our view of SEPA's regulatory responsibilities across all sectors.</p> <p>We believe that adult female lice should be reported as mentioned above, and that regulation must deliver a preventative approach rather than a reactive approach when lice levels have already exceeded thresholds.</p>
<p><i>Do you have any suggestions on how we should develop a monitoring plan to assess the effectiveness of the framework and what it should include?</i></p>	<p><b>Yes</b> <del>Ne</del> <del>Not sure</del></p> <p>The fisheries management sector has a lot of experience of monitoring impacts on wild fish, and are keen to explore options for the monitoring plan to ensure that it is robust and representative of wild fish sea lice infestation pressure. Various methods should be considered including seine netting for early stage infestation of salmon, plankton sampling of sea lice and sentinel cage work to understand better the relationship between lice in the environment and infective pressure.</p>
<p><i>Do you think there are components that should be included in an effectiveness monitoring programme that you would be able to help deliver?</i></p>	<p><b>Yes</b> <del>Ne</del> <del>Not sure</del></p> <p>As mentioned, the fisheries management sector and Fishery Trusts have a lot of experience of monitoring impacts on wild fish, and are well placed to support the delivery of relevant monitoring under this framework.</p>
<p><i>If you would like to be involved in the development of a monitoring plan, are you happy for us to contact you by the email address you have provided?</i></p>	<p><b>Yes</b> <del>Ne</del></p>

<p><i>Are there other types of information that you think could usefully inform the adaptive development of the proposed framework?</i></p>	<p><b>Yes</b>  <del>No</del>  <del>Not sure</del>  If technological innovations are going to be taken into account in the framework then evidence that they work must be provided.</p>
<p><i>Do you think the design of the proposed framework, or how it is implemented, could affect your community or business interests?</i></p>	<p><b>Yes in a positive way</b>  <del>Yes in a negative way</del>  <del>I'm not sure</del>  <del>No</del>  For decades we have been looking for regulation of the marine finfish industry in terms of its sea lice numbers. This framework outlines how this may be achieved and is a crucial first step towards implementing a robust regulatory system which aims to protect wild fish. The principles included in the framework, if delivered appropriately, have the potential to significantly improve the regulation of wild-farmed interactions, thereby contributing to their conservation into the future. This could be further improved by including sea trout.</p>
<p><i>Do you have suggestions how any potential negative effects could be reduced or avoided without compromising the environmental protection purpose of the proposed framework?</i></p>	<p><del>Yes</del>  <b>No</b>  <del>Not sure</del></p>
<p><i>Do you have any suggestions how potential positive effects delivered or enhanced without compromising the environmental protection purpose of the proposed framework?</i></p>	<p><b>Yes</b>  <del>No</del>  <del>Not sure</del>  Include sea trout. Include existing farms as soon as possible</p>
<p><i>Do you have any additional feedback on the proposed framework?</i></p>	<p>See main body of this document</p>