

IN RE A CONSULTATION CONCERNING PROPOSALS FOR A RISK-BASED SPATIAL FRAMEWORK FOR MANAGING INTERACTION BETWEEN SEA LICE FROM MARINE FINFISH FARM DEVELOPMENTS AND WILD ATLANTIC SALMON IN SCOTLAND

RESPONSE OF THE WESTER ROSS AREA SALMON FISHERY BOARD

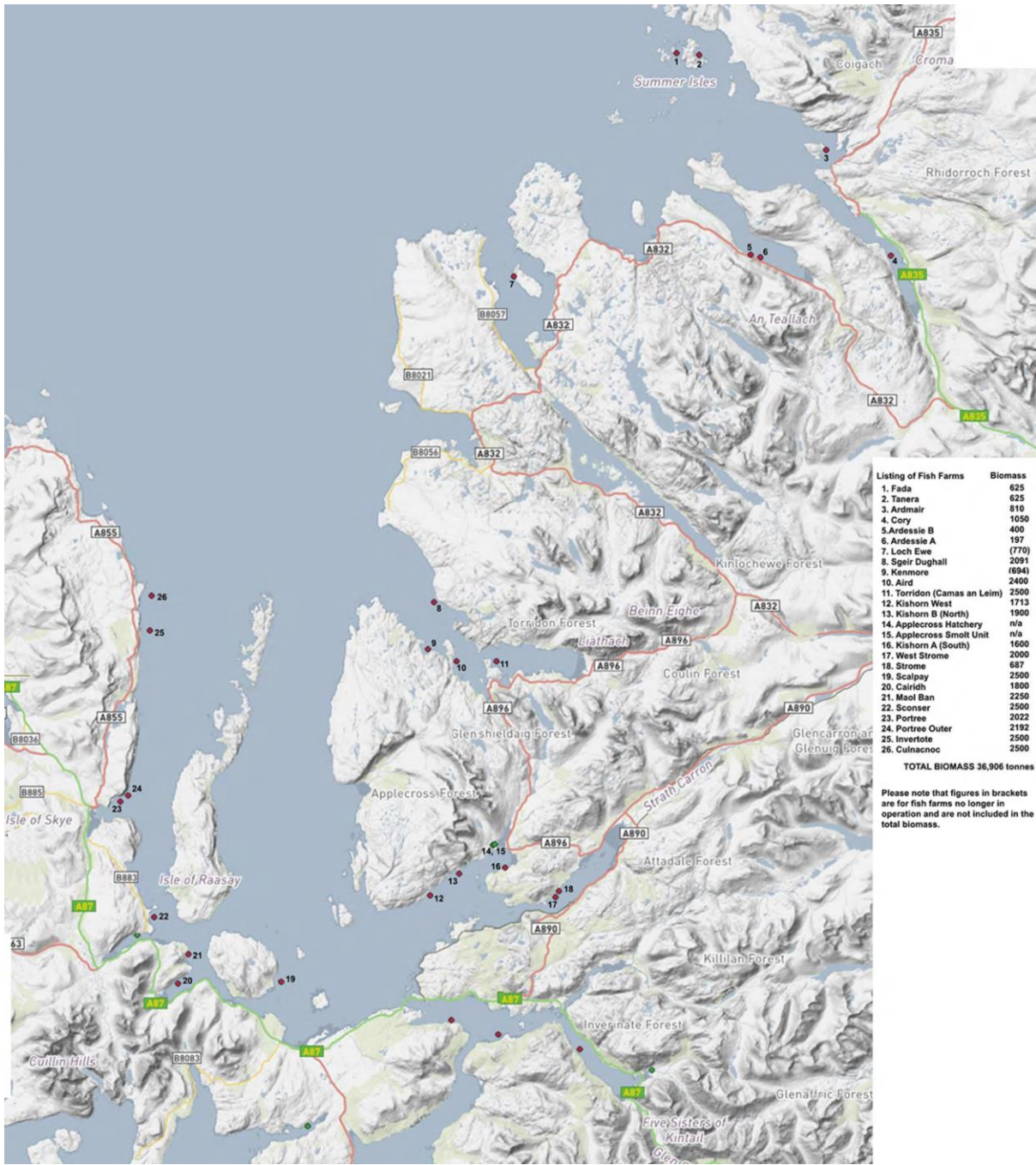
Introduction

1. This is the response of Wester Ross Area Salmon Fishery Board ('the Board' or 'WRASFB') to the consultation on SEPA's proposals for the new, spatially based risk assessment framework for regulating the interaction between sea lice from marine finfish farm developments and wild Atlantic salmon, to be applied through the Water Environment (Controlled Activities) (Scotland) Regulations 2011 ('the SEPA Consultation').
2. WRASFB welcomes the opportunity to respond to this consultation.¹
3. Below are two maps. The first is of Wester Ross,² identifying salmon farms and their maximum consented tonnage. The map shows that aquaculture is concentrated in the southern waters. The second map shows the main river systems with populations of wild salmonids.

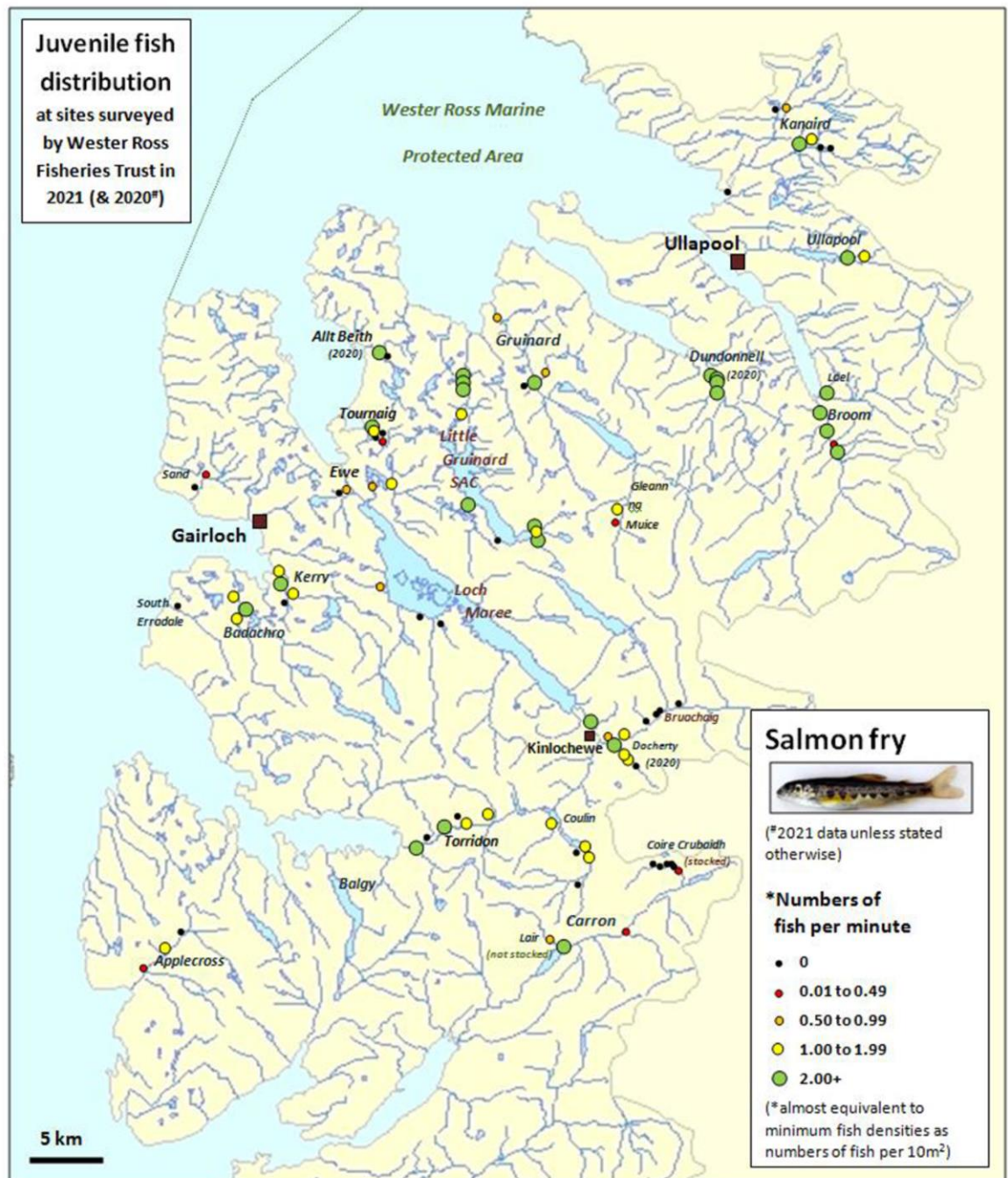
¹ Citizen Space has not been used in view of the nature of this response and to give the necessary flexibility to engage fully with the consultation.

² The Board area does not include the whole of Wester Ross.

FISH FARM SITES IN WESTER ROSS 2022



STATUS OF WILD ATLANTIC SALMON IN THE RIVERS OF WESTER ROSS 2021



Wild Atlantic Salmon in the Board Area

- An important recent report commissioned by the Wester Ross Fisheries Trust ('WRFT') considered the status of local wild Atlantic salmon populations, titled '*The Status of Wild Atlantic Salmon in Wester Ross 2021*'; February 2022, Peter Cunningham and Colin Simpson

(‘the Status Report’)³. The report includes a survey of juvenile salmon in the Wester Ross area in July – September 2021 and information from other sources. The introduction states,

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In Ireland, Norway and in much of the west of Scotland, pressures associated with open cage salmon farming have been a major concern. The threat to populations of wild salmon from open cage salmon farming around Wester Ross and Skye was highlighted in the SWRFT Review September 2020. The most recent review of the Status of wild salmon in Norway 2021 also states that ‘Escaped farm salmon, salmon lice and infections related to salmon farming are the greatest anthropogenic threats to Norwegian wild salmon.’

Wester Ross retains some of the most important wild Atlantic salmon river systems in the northwest mainland of Scotland in terms of the overall size of the accessible ‘wetted area’ and the diversity of freshwater habitats for salmon. These include the Little Gruinard River (including the Fionn Loch), a Special Area of Conservation [SAC] for Atlantic salmon, formerly protected by European Union legislation; the big Gruinard River system (including Loch na Sealga); and the River Ewe system (including Loch Maree).

As wild salmon numbers fall elsewhere within their range, the need to monitor and to protect wild salmon in Wester Ross has become even greater especially given further recent increases in farm salmon production together with the associated increases in cumulative emissions of parasitic sea lice into surrounding waters.

The report summary states -

Over 80 sites were surveyed in 15 rivers using specially designed electro-fishing equipment. Sites were fished under contract for the Scottish Government’s National Electro-fishing Programme of Scotland [NEPS], for hydropower scheme monitoring contracts or supported by [WRASFB]. ...

... Wester Ross retains relatively strong wild juvenile salmon populations in the major rivers flowing into the Wester Ross Marine Protected Area including the rivers Kanaird (Canaird), Ullapool, Broom, Gruinard, Little Gruinard and Ewe. The rivers Kerry and Badachro also retain strong juvenile salmon populations in terms of juvenile fish densities. In contrast, the status

³ info@wrft.org.uk.

of wild juvenile salmon populations in the rivers to the south of Loch Gairloch (rivers Torridon, Applecross) is fragile. ... The River Balgy was not surveyed in 2021.

... Our results generally, but not entirely, concur with the Scottish Government's proposed conservation gradings (based on reported rod catches) of salmon rivers for 2022 They support the contention that wild salmon populations in the south of the area associated with post-smolt migration routes that pass through sea areas exposed to high cumulative emissions of larval sea lice from large, circular open mesh cage salmon farms in the east of Skye and Loch Torridon are at greatest threat of being damaged further or lost in terms of any river-specific genetic adaptations.

5. The following table taken from the Status Report sets out the state of juvenile wild salmon stocks river by river.⁴

STATUS OF WILD ATLANTIC SALMON IN WESTER ROSS 2021

Summary information for major salmon rivers in area covered by the Wester Ross Area Salmon Fishery Board, as at December 2022

Compiled by Peter Cunningham, Wester Ross Fisheries Trust Biologist, info@wrft.org.uk

River system	Estimated potential smolt output ¹	Conservation grade 2022 ²	Genetic status 2021 ³	River system	Sub-catchment	Juvenile fish survey - number of electro-fishing sites surveyed by WRFT in 2021				Comments & Actions needed
						NEPS	WRASFB	Contract	Other	
Kanaird	10500	2	mod	Kanaird	mainstem			4		mod Langwell falls!
				Kanaird	Runie		3			good?
Ullapool	9700	2	good	Ullapool	below loch					
				Ullapool	Rhidorroch	2				mod Catchment sediment management
Lael	1500			Lael			1			
Broom	6900	1		Broom			4			good
Dundonnell	3100	3	mod	Dundonnell						2020 survey fry high; 2019 survey fry low
Gruinard	19700	1	good	Gruinard	mainstem	2	2		(2 SEPA sites)	good? impoverished (not enough food ...)
				Gruinard	ab'v'e L'n' Sealga	1	1			mod Riparian habitat! impoverished
Little Gruinard (SAC)	14600	3		Little Gruinard	mainstem	1	3			good? impoverished (not enough food ...)
				Little Gruinard	above Fionn L.		6			good?
Allt Beith	800			Allt Beith						2020 survey good parr densities
Tournai	600			Tournai				5		poor Low water
Ewe	49800	1		Ewe	mainstem					Fish eating birds ...
			good	Ewe	Kernsary	1	1			good
			good	Ewe	L. Maree burns	2	2			mod
				Ewe	Kinlochewe		1			good? Kinlochewe septic tank?
				Ewe	Bruachaig upper		3	4		poor Bruachaig falls!
				Ewe	Bruachaig lower	2				good?
			mod	Ewe	A' Ghairbhe					Spawning activity, Nov 2021
				Ewe	Coulin		5			good? impoverished (not enough food ...)
Sguod	500			Sguod						
Sand	500			Sand					2	poor Sea lice!
Kerry	4000	3	good	Kerry		1	3			good? Sea lice!
Badachro	3600	3		Badachro			3			good? Sea lice!
Torridon	8300	3	good	Torridon			6			mod Sea lice!
Balgy	5400	3	poor	Balgy						
Cuaig	1600			Cuaig						
Applecross	4200	3		Applecross		1	2			poor Sea lice! Catchment sediment management
(Carron)	(25000)			(Carron)		2	2	5		? Heavily stocked obscuring wild population

Sources / notes: 1. Potential smolt output estimates from habitat based calculations in WRFT Fisheries Management Plans etc.
2. Scottish Government Conservation grading <https://www.gov.scot/publications/salmon-fishing-proposed-river-gradings-for-2022-season/>
3. From Gilby et al 2021 National assessment of influence of farmed salmon escapes to genetic integrity (based on samples collected by WRFT in 2018)
4. Juvenile fish status based on WRFT e-fishing survey 2021 results and other considerations (e.g. growth rates)

The table shows that for the 2022 conservation ratings, there are seven rivers designated under the conservation regulations likely to be in conservation category 3; two in category 2 and three in category 1. The table also shows other rivers supporting small salmon populations. Thus, there is significant fragility to wild salmon stocks in numerous rivers in the Board area. Five of the seven

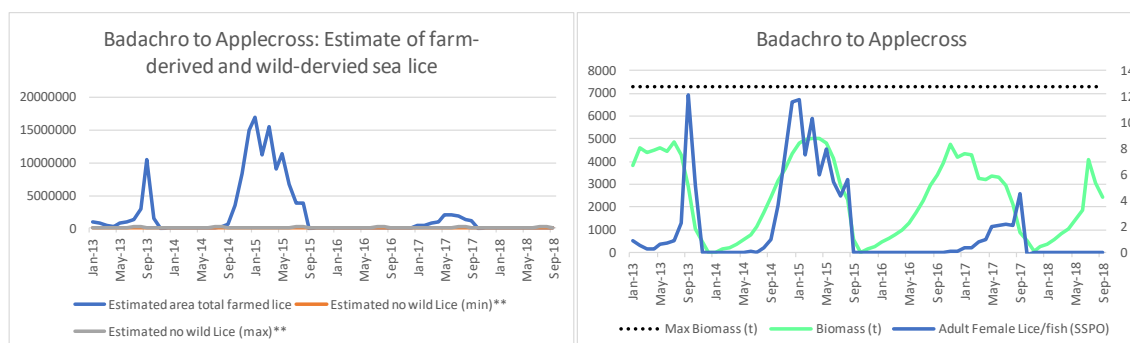
⁴ The River Carron is outwith the Board area.

rivers with what is highest risk grading under the regulations are in the south, and two are in the northern area (the Little Gruinard, SAC for salmon, and the Dundonnell).

Sea-lice from Farms in the Board Area

6. The numbers of sea-lice emanating from the farms in the Loch Torridon system in particular have regularly exceeded (and on many occasions far exceeded) the industry's Code of Good Practice ('CoGP') levels in recent years: see tables below.
7. These tables show average female lice per fish far in excess of CoGP levels for 2013, 2015

Lice populations on salmon farms in Loch Torridon, based on figures reported to SSPO and biomass estimates published by the Scottish Government.



and (though not so high) 2017, the second years of aquaculture production. For the first eight months of 2019, the position was as follows, -

	AIRD	KENMORE ⁵	SGEIR DUGHALL	MOWI/TORRIDON
Jan	0.98	1.60	1.04	0.87
Feb	1.53	1.60	0.81	0.97
Mar	0.41	1.36	1.43	0.62
Apr	1.26	0.87	1.11	1.38
May	1.53	0.33	2.16	F

⁵ Kenmore is no longer operational as a result of the planning conditions imposed on the consent for the new development at North Aird (650 tonnes).

Jun	1.77	1.22	2.22	F
Jul	0.96	1.54	1.49	F
Aug	1.67	1.80	1.15	F

8. 2021 was another bad year for sea lice control on salmon farms in Loch Torridon and on the salmon farms around the Isle of Skye. All of the active salmon farms in Loch Torridon reported figures far above the SSPO Code of Good Practice for sea lice, over a period of several months. High numbers of lice were also reported from many of the salmon farms in the east of Skye, especially very large MOWI sites including the new Scalpay farm (figures from SSPO fish health reports and Scotland's Aquaculture website). The cumulative emissions of sea lice from farms between Wester Ross and the Isle of Skye in the first three months of 2021 is estimated as being as high as in previous years, representing a major, significant pressure for wild salmon smolts in migrating from coastal waters from the rivers in the southern part of the WRASFB area (including those migrating from the rivers Applecross, Balgy, Torridon, Badachro and Kerry).⁶
9. There has been little improvement in sea lice management over recent production cycles, despite industry assurances to those concerned about protection of wild fish. In summary, the situation in 2021 was much as described in the Skye & Wester Ross Fisheries Trust Review September 2020.⁷

Regulation of Existing Salmon Farms

10. As a general principle, the continued existence and future siting of inshore salmon farms near rivers with salmonid populations is incompatible with the safety and wellbeing of those fish due to sea-lice emanations from those farms.⁸

⁶ In addition, those pressures affect smolts migrating from rivers further south, especially rivers Arnisdale, Glen Beag, Glen More, Shiel, Croe, Elchaig, Ling, Carron; and on the Isle of Skye (especially rivers Broadford, Sligachan and Varagill).

⁷ See page 36 onwards.
<https://www.wrft.org.uk/files/Skye%20and%20Wester%20Ross%20Fisheries%20Trust%20Review%20Sept%20%202020.pdf>

⁸See e.g. the Scottish Parliament's Rural Economy

11. Robust regulation of both existing and any new farms, properly enforced, is essential to the preservation of salmonid populations throughout the Board area, to prevent further damage to those populations.
12. Existing inshore salmon farms in the Board area and those to the east of Skye are likely to have damaged populations of salmonids in the Board area and present an immediate threat to the survival of salmon populations in several rivers.
13. One of the authors of the Status Report is the WRFI's biologist,⁹ who has studied the local rivers and associated waters over many years and the interaction of salmonid populations of those rivers with aquaculture. His opinion on the outlook for wild fish interactions is the following.
14. Unregulated sea-lice emanations from existing salmon farms present a real risk to the survival of the salmon populations of up to five rivers in the southern part of the Board area.
15. If sea lice emanations in the Loch Torridon system in particular are not properly regulated, there is a probability that the salmon populations of the Torridon and Balgy rivers will be seriously endangered within the next few years. There is a like threat to the salmon in the Applecross river from neighbouring salmon farms.
16. The Badachro and Kerry (SAC for freshwater pearl mussels) rivers issue into the sea at Gairloch and the threat to them is from the farms in the Loch Torridon system and those located to the eastern side of Skye. There is a real possibility that the salmon populations from those rivers will be seriously endangered in the next few years in the absence of proper regulation of sea lice from these farms.
17. Of course, sea-lice from local salmon farms are not the only factor impacting wild salmonids. The pressures are numerous. However, in circumstances where sea-lice interactions do constitute a significant pressure and are likely to be impacting local wild

& Connectivity ('REC') Committee's report of 27 November 2018, 'Salmon farming in Scotland', esp. **Recommendation 45**, 'The siting of farms in the vicinity of known migratory routes for wild salmon must be avoided.'

⁹ Peter Cunningham.

salmon populations that are in a critical or threatened state, prompt regulation of existing farms is essential.

18. It is appreciated that SEPA needs a regime for the consenting of new developments once called on to exercise its statutory powers. Hence the ability to regulate new development applications is essential. But, if regulation of existing farms were left to follow a regime for consenting new development applications, there might be little or no wild salmon left in the five rivers in particular.

Sea-trout and Regulation

19. Sea-trout must be fully protected by the regulatory framework. WRASFB refers to the representations made by FMS in its response, to those in S&TC's response and the evidence of the damage to sea-trout in the Board area (see below) actually caused by aquaculture.
20. Wester Ross has a sea-trout population that is much reduced and at particular risk from sea lice emanating from current salmon farms: see further below. The once iconic Loch Maree sea-trout fishery has recently benefitted from the cessation of aquaculture operations by Mowi at its Isle Ewe farm.
21. Serious and ongoing damage from aquaculture in the Board area to these populations is clear from the results of the sea-trout project of Marine Scotland Science ('MSS') in the Loch Torridon system, and from field-work conducted in the waters by Gairloch in particular over the past few years.
22. Year- round application of limits on sea lice is essential to protect these fish, for the reasons set out in the response submitted by FMS.
23. Omission of sea-trout from the framework is also likely to undercut what very limited protection exists. There may be little incentive for operators to follow the CoGP on lice level windows or to act on written assurances that have been made by them to local authorities as to lice levels to secure planning consents.

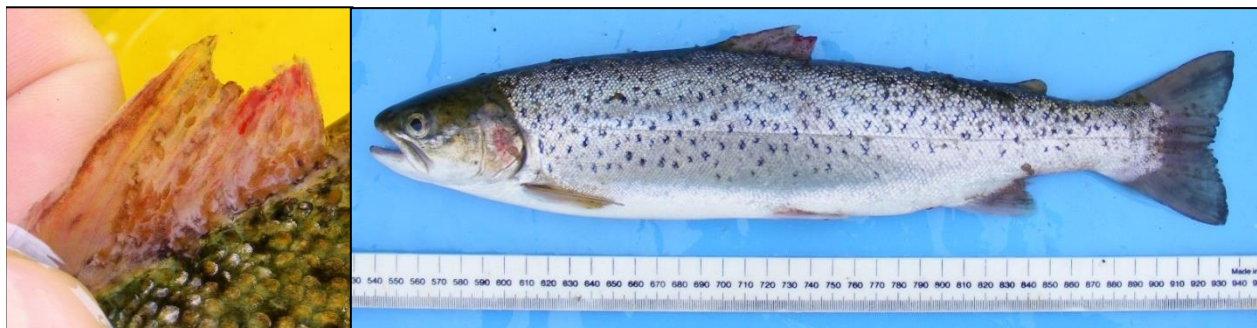
Local Wild Fish Interactions with Aquaculture

24. Research conducted by WRFT and the Skye & Wester Ross Fisheries Trust between 2015 and 2021 at the Flowerdale river estuary (Gairloch) and elsewhere in the Board area (e.g. near the mouth of the Balgy river) has shown levels of sea-lice on sea-trout far in excess of lethal levels and consistent with two year production cycles on neighbouring farms. Sweep-netting has been carried out regularly in the Board area for many years at these locations.
25. The WRFT sweep-netting team sampled finnock and sea trout in that estuary on 30 April 2021. Of the fish relevant to the sampling, 29% exhibited lethal levels of sea lice (i.e. more than 0.3 lice per gram) measured according to the categorisation used by Taranger et al (2015). The most heavily liced fish was a sea trout of 455mm which carried an estimated 800 lice, the majority of which were small early-stage lice indicative of very high concentrations of copepodid lice in nearby waters.
26. The high accumulations of lice in 2021 and earlier years followed a two-year structure associated with the second year of production at neighbouring fish farms. Sweep-netting carried out by WRFT at Flowerdale (e.g. in 2015 and 2017) showed often lethal levels of sea-lice on finnock and sea-trout that accorded with the biennial structure.¹⁰
27. The picture below is of a sea-trout of 395mm, 645g. captured in a sweep net at Flowerdale on 26 June 2017 with 500 copepodid and chalimus lice, 11 pre-adult and adult, 9 ovigerous females (0.806 lice per gram).

¹⁰ See, as to paras. 23-25 wrft.org.uk.

Sea trout 395mm, 645g (c.f. 1.05) Flowerdale, Loch Gairloch, 26th June 2017 with 500 copepodid & chalimus lice, 11 preadult and adult lice, 9 ovigerous females (0.806 lice per gram). Dorsal fin damage 2. The salmon farms in Loch Torridon were the nearest sources of larval sea lice to Loch Gairloch; our assumption is that the lice originated from these farms. Source:

<http://www.wrft.org.uk/files/SWRFT%20Review%20February%202018%20Final%20for%20web%20V2.pdf>



28. In Loch Broom (in the northern section of the Board area), fish farming operations are considerably less intensive than near Flowerdale (which is close to the Torridon system and the waters off the east coast of Skye). Sweep-netting carried out by WRFT in Loch Broom in June 2021 showed considerably lower lice densities. Two sweeps were carried out and 20 trout of up to 540mm in length were caught; all were in good, fin perfect condition with a total of just four sea lice. In contrast to some of the much larger salmon farms further south, the nearby salmon farms in the Loch Broom area have been able to sustain very low sea lice numbers in recent years, except for one count over the Code of Good Practice on the nearby farm in late May 2021.¹¹

29. In contrast, the scientific research conducted by MSS in the Loch Torridon system for approximately 20 years on sea-trout of the river Shieldaig has established the link between the second year of production in nearby finfish farms and very damaging and indeed lethal levels of sea-lice on those sea-trout.

¹¹ See wrft.org.uk

30. MSS identified that damage and linkage in its written response to the planning application of the Scottish Salmon Company ("SSC") for North Aird dated 22 May 2019 as follows.

The proportion of trout sampled in the lower Shieldaig with lice in relation to fish farm production cycle. Green bars are those in the first year of production, blue are in the second year.

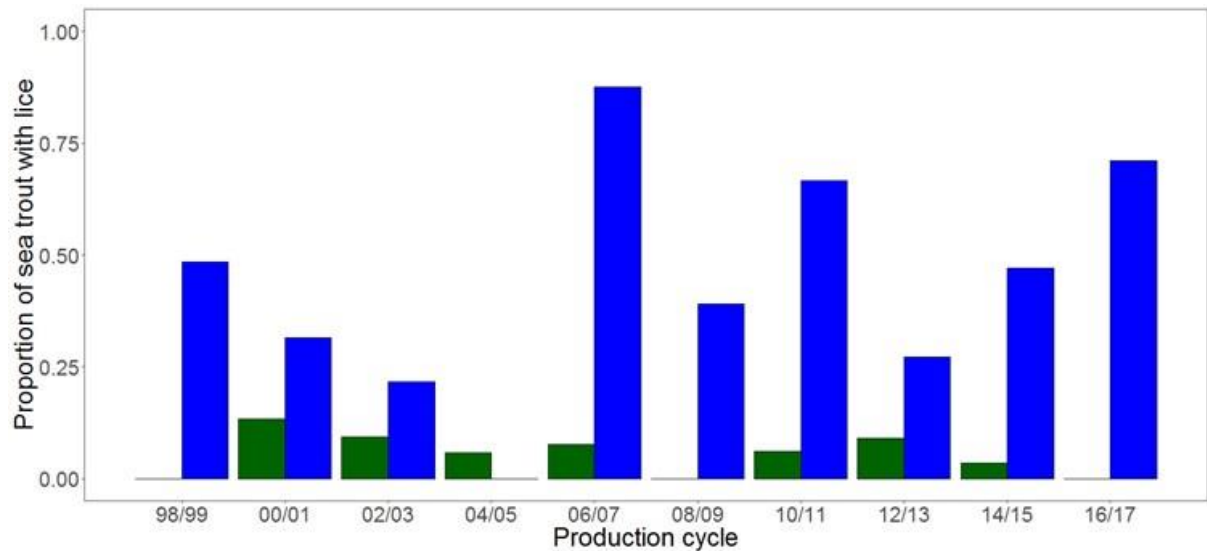
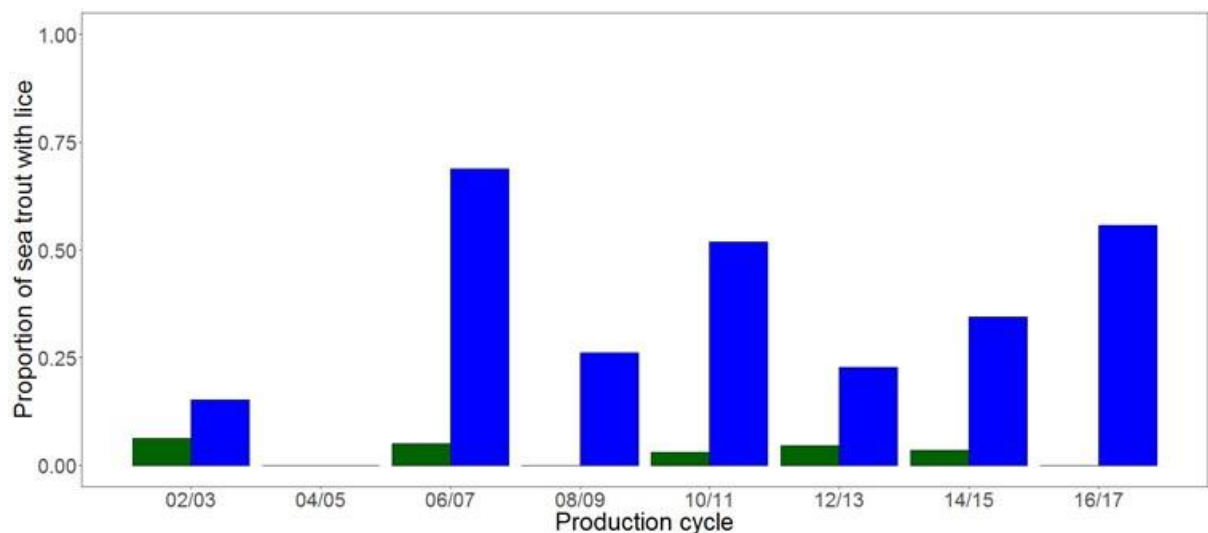


Figure 3b: The proportion of trout sampled in the lower Shieldaig exhibiting lice burdens above the threshold level with respect to fish farm production cycle. Green bars are those in the first year of production, blue are in the second year.



The proportion of sea trout sampled in the lower Shieldaig exhibiting lice burdens above a threshold level which has been suggested to subject them to serious psychological stress and

potentially death. Green bars are those years where local farms are in the first year of production, blue are in the second year.

Current, ongoing, analysis of the data collected at the field station suggests that sea lice produced by the local farms has a significant and potentially substantial impact on the local sea trout population in the river Shieldaig.

31. The table shows that in the second year of production the proportions of returning sea-trout to the Shieldaig river with those damaging lice burdens ranged between just under 25% and approximately 70%, the figure for 2017 being well over 50%. In its response to SSC's appeal to the Reporter dated 27 April 2020, MSS stated -

Given the data available, MSS considers it likely that local farm sites are having a significant impact on the sea trout population from the river Shieldaig (emphasis supplied).

32. Evidence of the interactions between sea lice and sea-trout is also highly relevant to an assessment of risk to wild salmon from interactions with sea lice. At least some Environmental Management Plans (EMPs) accompanying planning consents have used impacts on sea-trout as a proxy for wild salmon. For example, -

Given the relative lack of knowledge of the distribution of migrating salmon smolts in coastal waters, it is recognised that the components of a wild fish monitoring strategy should be designed with the focus on the sampling of juvenile sea trout as a surrogate means of assessing sea lice infestation pressure.¹²

Regulation of Existing Farms – Further Commentary

33. Proposals as to existing farms are set out in paragraphs 6.2 – 6.4 of the SEPA Consultation in particular. What is a 'wait and see' approach is not warranted by the clear evidence of damage already done by salmon farms to salmonid populations in the southern part of the Board area in particular. It is also inappropriate for the following further reasons.
34. **Paragraph 6.2(a)** The Board is most concerned about the proposal for a permit to 'appropriately control the factors determining the number of juvenile sea lice emanating from the farms so that those numbers cannot significantly increase without prior authorisation' (emphasis supplied).

¹² ENVIRONMENTAL MANAGEMENT PLAN: Loch Ainort, Caol Mor and the Inner Sound; p.16.

35. This indicates that the permit would only seek to control increases, whatever the lice levels on a farm, however damaging to wild fish. The proposal also illogically discriminates between operators depending on the lice levels at their farms.
36. **Paragraph 6.2(b)** This acknowledges that the cumulative effects caused by existing finfish farms must be taken into account when consenting new developments. A technical calculation will have to be performed to determine whether or not the area lice loading in a protected inshore area would sustain the development in view of the area lice threshold set for the area, as envisaged by SEPA's proposals. What if the calculation shows that the threshold is being exceeded and no development is allowed? It makes no sense to say that the existing farms in that area should not be regulated. Elevated numbers of lice will be shown to exist that by the logic of SEPA's proposals as to area thresholds present a risk to salmon (and sea-trout).
37. The Board also asks whether SEPA has considered the legal workability of enforcing permits relating to aquaculture in protected zones that include existing farms if unregulated and new developments consented under the SEPA proposals in circumstances where the area lice load is exceeded.
38. As to the information to be provided by the operators on lice numbers in paragraph 6.2(b), if historical records are to be used, these should be supplemented by sea-lice counts properly overseen by SEPA and carried out during the second year of production (see below under 'Regulation of New Developments.')
39. **Paragraphs 6.3 and 6.4** These subparagraphs are of great concern. Postponement of regulation for existing farms is NOT 'necessary because more information is needed to enable an assessment of whether the operation of existing farms is resulting in a hazard to wild salmon populations.'
40. This approach is not only in conflict with the precautionary principle, but with the evidence of damage from interactions in the Board area and also the available evidence from the technical literature in Norway and elsewhere, which show the likelihood of actual damage, particularly where lice levels have been above a minimum.
41. To require the production of future evidence of likely damage or even risk before regulating would also offend the best practice promulgated by aquaculture operators via the Standards set by the Aquaculture Stewardship Council as to the recommendation of

management of interactions at an area level, currently set at a precautionary level 0.1 mature female lice per fish. The Standards state,¹³ -

Requirements under Criterion 3.1, in combination with requirements under Criterion 5.4, seek to address these concerns by establishing best practice in managing potential disease and parasite risks to wild populations. The requirements recognise that the cumulative impacts from a group of farms in an area can become harmful even when an individual farm is operating its own production in a responsible way.

Farms located in areas of wild salmonids, defined as farms situated within 75 km of a migration route or sea trout habitat, have additional requirements because of the transmission of disease between farms and wild salmonids. Area-based management (ABM) is a requirement. Some salmon-growing jurisdictions have begun to require ABM or are considering it because neighbouring farms can achieve significantly improved results when coordinating management of diseases and biosecurity measures. Conversely, a lack of coordination can lead to negative outcomes, such as resistance to treatments.

.....

Under 3.1.7, the requirements also require farms located in areas of wild salmonids to demonstrate precautionary low lice levels near zero during sensitive periods for wild fish, such as during juvenile out-migration and immediately prior.

42. Further, it would be irrational to establish a framework for future development based on risk (as proposed by SEPA) and then require existing farms to be regulated, if at all, at some unspecified point in the future, and only if the likelihood of actual damage can be demonstrated by further, future, evidence.
43. The approach set out in 6.3 and 6.4 is also in conflict with recent planning decisions that have required the setting of lice thresholds the exceedance of which requires biomass reduction, having rejected the need to show a causal connection between on-farm levels and damage to fish before a reduction in biomass is required (see below under 'Transitional Arrangements?').
44. It is illogical, and would present a great risk to salmonid populations, to adopt the proposal (6.4) that, '[O]nce the framework is established, we will work over the longer term to identify any wild

¹³ Pages 26 and 27; see too Appendix II, subsection 2.

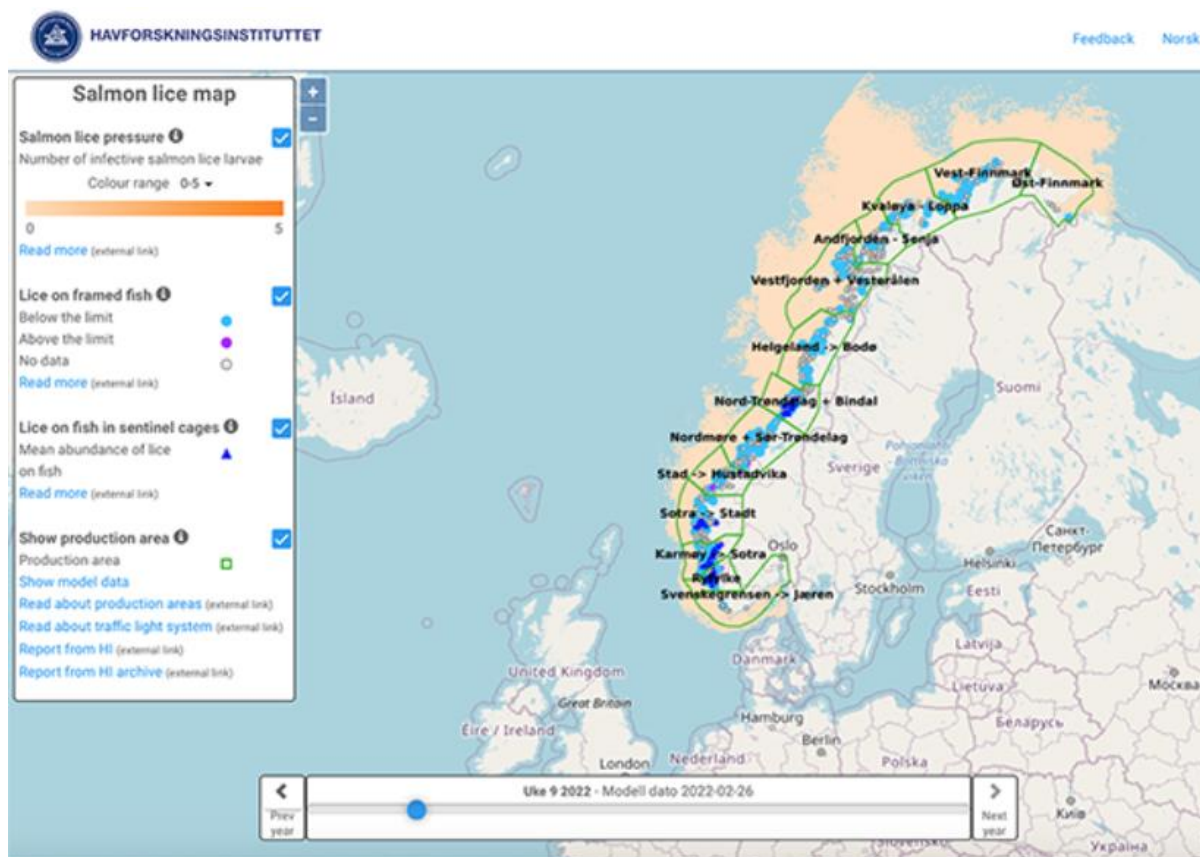
salmon protection zones where the densities of infective-stage lice resulting from the operation of existing farms is posing a hazard to wild salmon populations' followed by a further period of working with operators to address the position, as further envisaged by 6.4. That subparagraph refers to three undefined periods of time, the second of which is 'the longer term'. In practical terms, these proposals would result in a very long and indefinite period before any regulation might conceivably be put in place for existing farms.

45. And if that long-term approach were followed, there is a real risk that some salmonid populations in the Board area may well become extinct or near-extinct, particularly salmon in rivers to be categorised at category 3 (and also 2): see the first part of this response.

Regulation of New Developments

46. The Board welcomes the possibility of regulation by appropriately set area-based sea lice exposure thresholds, subject to the comments made by FMS in its response and the further matters set out below.
47. **Protected areas** Most of the proposed protected areas around river mouths in Wester Ross are much too small to provide adequate protection for post-smolt salmon. To provide adequate control of post-smolt salmon, the **protection areas should be defined by a sea lice dispersal model** to enable appropriate regulation of sea lice on contributory salmon farms to ensure that post-smolts are protected from emissions of sea lice throughout their migration through coastal waters, not just within their first few km around river mouths (random line on map). For post-smolt rivers from Wester Ross rivers, the protection area required to provide adequate safety for post-smolt salmon, is likely to be at least as large as the Minch. To link protection to a sea lice dispersal model is not a technically challenging task if regulators adopt modelling methods developed in Norway.

Screen shot of Norwegian sea louse drift model to show area where infectious sea lice from Norwegian salmon farms may be present based on real-time sea lice data from salmon farms.



48. **Protection window** The Board shares the concerns expressed by FMS in its response. Further, recent evidence from MSS for Torridon indicates that salmon post-smolts do not depart every loch system immediately but stay there for a period (see paragraph 51 below).
49. **Verification of information** It would be inappropriate to rely on the information provided by the operators without robust auditing. This applies to both modelling and compliance. As to sea-lice numbers, spot-checking by the regulator would be essential and even then SEPA would need to be astute to ensure that the lice count is reliable. A robust protocol for sampling is essential to ensure that adequate numbers of fish are sampled from each pen, with the regulator able to stipulate which fish are taken for the sample or more to the point, not excluded (i.e. if unhealthy and deeper in the pen).
50. The methods for counting must be reliable and be adequate. For example, it is understood that the use of hydrogen peroxide can make lice temporarily detach from their host. Available technology should be used, if accessible. For example, it is understood that in Norway, there are developments for the use of underwater counting of lice using cameras.

51. ***Framework modelling*** The recent studies conducted by MSS into migration of salmon post-smolts in the Torridon loch system indicate that salmon are likely to dwell in that loch system for some time before leaving it. Thus, what appears to be a straight-line departure of post-smolts from a loch system envisaged by the SEPA proposals appears not necessarily to be the case.
52. ***Backstop on-farm threshold*** The Board considers that a backstop on-farm lice threshold is necessary to supplement any area-based arrangements. Farm-specific thresholds will be necessary as part of the area-based arrangements: see the response of FMS. This would be necessary in order to fix the individual legal responsibilities of each operator with reference to the overall sea lice exposure threshold. However, an additional 'backstop' threshold is necessary even if the area threshold is not exceeded, for the following reasons.
53. First, it will be unknown for a considerable time whether the area level proposed would be sufficient to prevent threats to salmon populations. The precautionary principle should be applied to impose a backstop level. Second, a backstop level will give further protection against sea-lice concentrations. Thus, even if an area threshold is not exceeded, lice concentrations in a protected area may well damage salmon post-smolts. Third, a backstop on-farm limit would also discourage 'trading' between operators with respect to area levels. Such trading would endanger post-smolts because of the two above-stated concerns. The Board suggests a level of an average of 1.0 lice per fish.

Transitional Arrangements?

54. The SEPA Consultation suggests (para. 8.5) that some form of interim protection might be applied by including within permits for existing farms arrangements reflecting existing EMPs, 'if appropriate'. The regulation of existing farms must be robust whatever the terms of any particular EMPs (see above). EMPs are not a suitable means of regulation. Local authorities do not have the expertise or powers to police EMPs and to date, EMPs have been wholly inadequate to afford worthwhile protection to wild salmonids.
55. Further, it is not appropriate to base any future interim regulation on compliance monitoring by fishery boards, trusts, let alone by other parties appointed by fish farm operators. These are not equipped with the necessary powers and in many cases the resources to perform the functions of a regulator. For example, WRASFB has a very modest income, with one part-time member of staff.

56. The Board area contains farms some of which are consented subject to conditions that include an EMP and some consented without an EMP. Those consented with EMPs are in the Torridon loch system ('the Torridon EMPs') and those consented without an EMP are in Loch Broom. An interim regime based on EMPs would therefore discriminate against the salmonid populations emanating from rivers by Loch Broom.
57. Under the conditional consents for farms in the Torridon Loch system, the terms of the Torridon EMPs are to be settled by the HC imminently according to a framework specified in the planning conditions that have been set.
58. The two recent planning decisions in question (one being an appeal to the DPEA) regarding development in the Torridon loch system have laid down a form of conditional consent that is capable, if complied with, of creating meaningful protection for salmonids.¹⁴ Those decisions require the setting of lice thresholds and an obligation to reduce biomass if the thresholds are exceeded. These conditions are different to those imposed for other consented aquaculture development.
59. It is a key feature of the conditions in those two cases that neither requires a demonstration of cause and effect between sea lice from fish farms and damage to wild salmonids in order to trigger an obligation to reduce biomass. Biomass reduction is tied to sea-lice thresholds. The conditions include the following EMP requirements, -
- (g) details of site-specific sea lice thresholds, the breach of which shall require the implementation of specified mitigation actions, including treatment with sea lice medicines. Details shall include the specific sea lice threshold at which it will be considered necessary to treat on-farm lice during sensitive periods for wild fish;*
- (h) ..*
- (i) ..*
- (j) details of the specified mitigation actions / sea lice treatments referred to in (g). The specified mitigation actions shall include provision for biomass reduction in the event that monitoring demonstrates that prior specified mitigation actions have not addressed a breach of the relevant sea lice threshold.*
60. Therefore, if SEPA were to decide not to regulate existing farms with new developments (contrary to the Board's submission that it should do so), any transitional arrangements

¹⁴ PPA-270-2217 (Planning Permission Appeal) NORTH AIRD ARDHESLAIG LOCH SHIELDAIG IV54 8XH, and Ref. 11/04695/FUL for the Proposed Expansion of Cage Area and Reduction of Moorings Area at Salmon Farm at Camas an Leim, Loch Torridon.

should include binding sea lice thresholds as required by these planning decisions, with enforcement for exceedance under any interim permit or licence of existing farms.

Conclusion

61. For all the reasons set out in this response, prompt regulation is essential for the protection of populations of wild salmon and sea-trout in the Board area, to cover existing farms as well as applications for new development.
62. Wild Atlantic salmon have been recorded as inhabiting the waters in the Board area for more than 1300 years. The famous Pictish Stone in the Gairloch Museum dates from 700AD and bears a prominent carving of a salmon, with an eagle above: see below. Indeed, the salmon is the dominant part of the museum's logo. The Board urges SEPA to do all it can to design and implement a framework that once-and-for-all protects the local wild salmonid populations from the pressures caused by sea lice from salmon aquaculture over many years.



63. WRASFB would be pleased to discuss any of the matters set out in this response and welcomes the opportunity to engage further in the consultation process as appropriate.



Peter Jarosz

(Clerk to the Board).

14.03.22