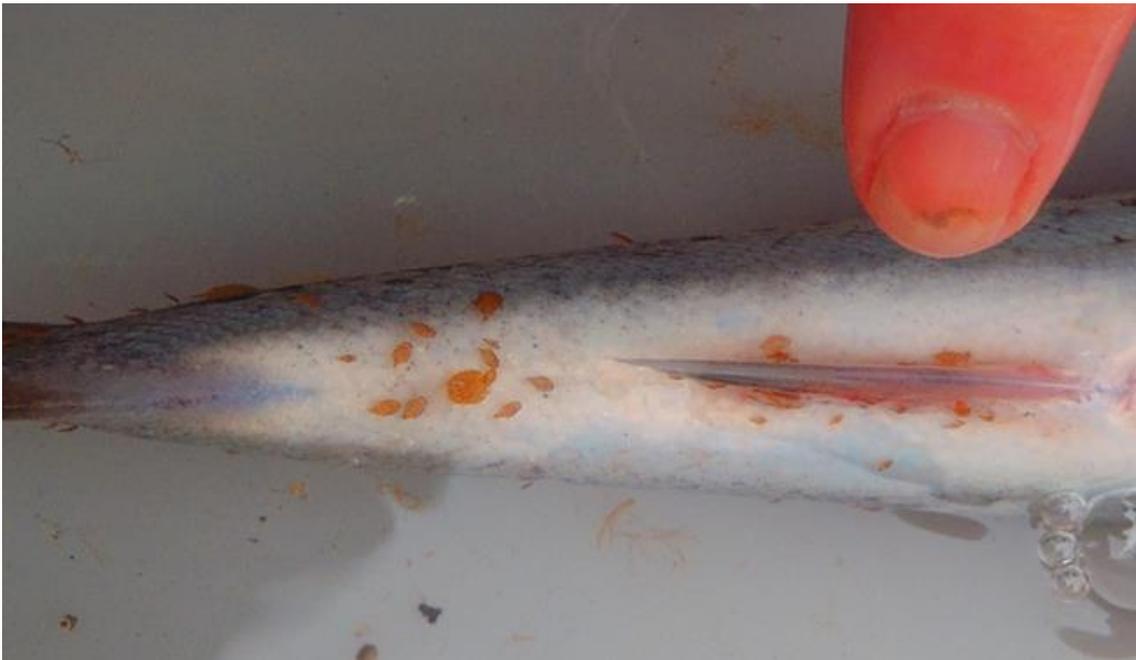




Sea lice on Dawnfresh rainbow trout farms on Loch Etive and the threat to wild salmon and sea trout



Friends of Loch Etive
Scottish Charitable Incorporated Organisation SC043986
c/o Muckairn
Taynuilt
Loch Etive PA35 1JA
August 2016

Executive summary

The wild salmonid fisheries of Loch Etive and surrounds, including the River Awe, support valuable recreational rod and line fisheries, which in turn support the local Etive economy.

Both Atlantic salmon and sea trout are important species for conservation and are listed as a priority species for conservation under both UK and EU law.

The Scottish Government recognises that aquaculture can result in elevated numbers of sea lice and is likely to increase the infestation potential on wild salmonids, in turn potentially having an adverse effect on populations of wild salmonids in some circumstances

Historically, due to its brackish nature, there was no issue with sea lice on fish farms in Loch Etive while fish farming was conducted at a relatively low intensity prior to 2012 - before Dawnfresh's programme of intensification and expansion. Dawnfresh stated in 2012 that none of its sites on Loch Etive had ever required a sea lice treatment.

Since 2011, there has been a 500% increase in the total biomass of farmed rainbow trout held by Dawnfresh on Loch Etive, using the new farm at Etive 6 and employing a greater intensity of farming at its other sites. Further expansion still is planned at Etive 4 (Airds Bay) and Etive 3 (Port na Mine) by Dawnfresh.

Unlike the salmon farming industry, Dawnfresh does not publish its on-farm sea lice data and has refused to provide data to allow assessment of the extent of the problem with sea lice on its farms.

Both Fish Health Inspectorate (FHI) reports and the Scottish Environmental Protection Agency (SEPA) data, published online, shows that Dawnfresh farms have had a sea lice problem in 2014 to 2016, with adult female sea lice levels going above industry thresholds. Dawnfresh has been forced to treat its fish with the full range of chemical treatments of sea lice.

Most salmon farmers attempt to deal with sea lice by loch-wide fallowing, a method supported by Marine Scotland Science (MSS), that lets sea lice levels within a loch to drop back to levels that do not cause problems, but as Dawnfresh confines all its

seawater production to a single loch and operates continuous production, it does not operate a policy of loch-wide simultaneous following.

In 2016, the River Awe has had a very poor grilse run, where it would expect to get weekly runs of 100-150 salmon, the figures for first two weeks of August have been in single figures. Concerns have been raised that this may be linked to the sea lice problems on the Dawnfresh farms.

Sea trout sweep netting carried out in 2015 had the worst sea lice infections ever recorded in wild fish and in 2016, the Argyll District Salmon Fishery Board (ADSFB) has reported that it could not catch any sea trout to sample¹.

The Argyll and Bute Council, the National Marine Plan and Scottish Planning Policy all recognise that fish-farming's wild fish interactions are material planning considerations which are not regulated via SEPA's pollution control powers.

The FHI's powers under the Aquaculture and Fisheries Act 2007 focus on the health and welfare of the farmed fish and cannot be used to protect Etive's wild fish.

Given the apparent collapse in wild salmon and sea trout numbers in 2016, the Council must use planning law to the full to instigate controls on current Dawnfresh operations and impose an effective moratorium on any Dawnfresh plans or applications for any new equipment, larger cages sizes, larger grids, new feed barges or greater tonnages at any of its Etive sites.

¹ The photo on the front cover shows sea lice on wild trout during 2015 ADSFB sweep netting at Dunstaffnage

1) The value of wild salmon and sea trout to the Etive community and to Scotland

There are ten rivers in the Etive catchment that support salmon populations, all of which have a catchment of over 5 square km that flow into Loch Etive, the largest catchments being the Awe/Orchy catchment (827km²), River Etive (161km²), River Kinglass (74km²) and Nant (46km²) that support salmon populations.

Smaller rivers such as the Noe, Liver, Allt Easach, Abhainn Dalach and Esragan are primarily habitats for recruitment of sea trout. Most of the larger rivers are important salmonid fisheries.

The Argyll Fisheries Trust has also reported that Loch Etive traditionally supported net fisheries and some rod fishing for sea trout.

Unsurprisingly, the Loch Etive ICZM Plan recognises the importance of salmonid fisheries to Loch Etive and surrounds, including the River Awe, as managed by the Awe District River Improvement Association (ADRIA) and the ADSFB. Loch Etive and its rivers currently support valuable recreational rod and line fisheries, which in turn supports the local economy, and the potential exists for a resumption in future of small-scale commercial netting for salmon and sea trout, should stocks recover ².

In terms of the conservation of biodiversity, both Atlantic salmon and sea trout are listed as a Priority Species on both the UK and Local Biodiversity Action Plans list and sea trout appears on the list of Marine Priority Features drawn under the Marine (Scotland) Act 2010. Atlantic salmon also enjoy protection under the EU Habitats Directive as a priority species for conservation.

² Loch Etive ICZM Plan at page 30

2) The science behind the impact of sea lice on wild salmon and sea trout

Adult wild salmon and sea trout are perfectly adapted to coping with a few sea lice. Background levels of these parasites occur naturally in the sea. However the advent of salmon and rainbow trout farming at sea, particularly in fjordic sea lochs such as Loch Etive, has led to a fundamental change in the density and occurrence of sea lice in parts of the coastal waters of the west Highlands and Islands.

Even one or two mature female sea lice per farmed fish within a set of cages housing hundreds of thousands of these farmed fish amounts to a massive breeding reservoir producing vast numbers of mobile juvenile sea lice that are released into the local marine environment. Carrying an unnaturally high burden of sea lice is known to compromise severely the survival of juvenile migratory salmonids. Lice feed by grazing on the surface of the fish and eating the mucous and skin. Large numbers of lice soon cause the loss of fins, severe scarring, secondary infections and, in time, death.

The consequences for wild salmon and sea trout smolts, as they migrate from local rivers, is that these smolts do not survive. Adult sea trout may also gather very large sea lice burdens and die.

It is accepted by Scottish Government's MSS that:

“aquaculture can result in elevated numbers of sea lice in open water and hence is likely to increase the infestation potential on wild salmonids. This in turn could have an adverse effect on populations of wild salmonids in some circumstances. The magnitude of any such impact in relation to overall mortality levels is not known for Scotland. However, concerns that there may be a significant impact of aquaculture have been raised due to declines in catches of both salmon and sea trout on the Scottish west coast. There is scientific evidence that individual Scottish sea trout can experience physiological detrimental burdens of salmon lice in areas with salmon aquaculture but the effects on populations in different areas is not known. Scientific evidence from Norway and Ireland indicates that early protection against salmon lice parasitism results in reduced absolute marine mortality, increasing recapture rates of

experimental salmon, and reduces the time spent at sea, indicating that salmon lice can influence the population status of wild salmon.”³

In exactly the same way as for salmon farming, the farming of rainbow trout in Loch Etive raises the serious issue of wild salmon smolts being exposed to massively elevated sea lice numbers, with the result that the local population of wild salmon is suppressed or even driven to local extinction.

In Loch Etive, there is also concern for resident adult sea trout. As recognised by the Council in its response to the Aquaculture and Fisheries Bill consultation in 2013, current Code of Good Practice thresholds (that should trigger treatment for sea lice on fish farms) focusses on the period of the spring smolt migration, but *“as sea-trout can be present in inshore waters all year round, suitable thresholds to safeguard sea-trout should be considered out with the spring migration period”*. Indeed, sea trout are generally accepted to be very susceptible to sea lice infestation from fish farms due to their natural habit of staying in inshore waters, where they remain, rather than going far offshore.

³ MSS Summary of Science, as submitted to the DPEA in the Etive 6 appeal by Marine Scotland Science, 8th June 2016

3) What was the historic position with sea lice on Loch Etive fish farms before the recent Dawnfresh expansion?

Historically, there appears to have been no issue at all with sea lice on fish farms in Loch Etive while fish farming was conducted at a relatively low intensity prior to 2012, before Dawnfresh began its programme of intensification and expansion of production on Loch Etive.

For example, in 2008, when planning permission was first sought from the Council for the Etive 4 fish farm at Airds Bay, this was granted on the basis of an Environmental Statement for Etive 4 which stated that *“sea lice is not considered to pose a major problem at this site given the brackish condition of the water in Loch Etive”*.

This remained the case into 2012. When seeking a brand new 14 cage 2500 tonne farm on Loch Etive, Dawnfresh reported that sea-lice had never been an issue on Loch Etive fish-farms due to the brackish nature of Loch Etive. Dawnfresh was adamant that *“there has **never been an issue with sea lice at any of the Loch Etive sites** due to the low salinity of the loch”*.

Dawnfresh also reported that that was the view of MSS: *“This is confirmed by the MSS in their scoping opinion where they state that there is “no history of sea lice affecting farmed fish health in this area as far as the FHI are aware”⁴*.

As far as Dawnfresh was concerned, in 2012, *“sea lice are not a problem in Loch Etive”⁵*. Indeed, Dawnfresh confirmed in 2012 that no Etive fish farm site had ever treated for sea lice⁶: *“**None of the other Dawnfresh sites on Loch Etive have ever required a sea lice treatment and it is not foreseen that the Etive 6 site should be any different due to its equally low salinity”***.

⁴ Dawnfresh (2012) Environmental Statement for proposed Etive 6 fish pen site, Sailean Ruadh, Loch Etive prepared for Dawnfresh by TransTech Limited, 24th October 2012, at page 17

⁵ Dawnfresh (2012) Environmental Statement for proposed Etive 6 fish pen site, Sailean Ruadh, Loch Etive prepared for Dawnfresh by TransTech Limited, 24th October 2012, at page 34

⁶ Dawnfresh (2012) Environmental Statement for proposed Etive 6 fish pen site, Sailean Ruadh, Loch Etive prepared for Dawnfresh by TransTech Limited, 24th October 2012, at page 54

Thus Dawnfresh reassured planners that they need not be concerned about sea lice impacts on wild fish, even stating that Marine Scotland (MS) had given Dawnfresh special dispensation for reduced sea-lice monitoring on its farms.

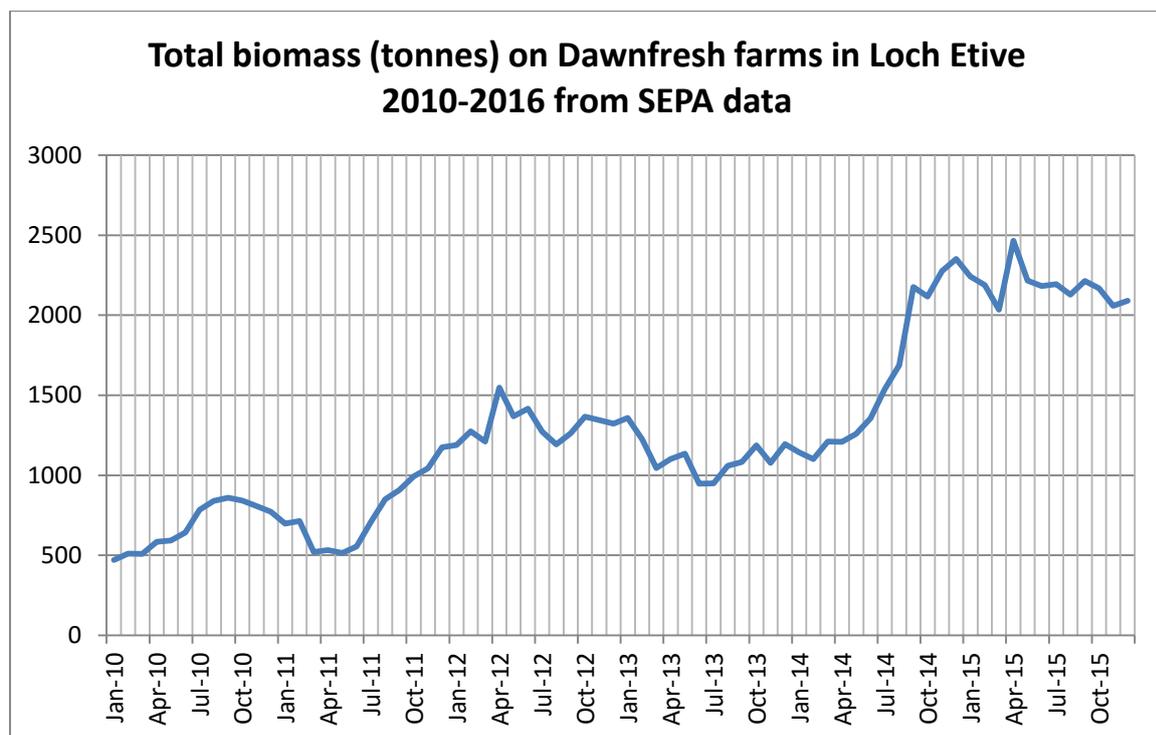
Even as recently as 2014, in relation to the now withdrawn Etive 3 planning application to increase that farm to 16 cages and 2500 tonnes, Dawnfresh still claimed that “*no chemical sea lice treatments will be used at the proposed site because of the reduced salinity being unsuitable for sea lice survival*”.⁷

⁷ Dawnfresh (2014) Supporting Information for the now withdrawn Etive 3 planning application, at section 4.2.2. Modification of existing fin fish farm site comprising 6 additional cages, addition of feed barge and increase of cage sizes from 70 metre circumference to 80 metre circumference and increase in extent of moorings. Port Na Mine Fish Farm (Etive 3) Inverawe Taynuilt Argyll Ref. No: 14/02249/MFF | Received: Mon 15 Sep 2014 | Validated: Mon 06 Oct 2014

4) Recent increases in biomass of farmed fish on Loch Etive 2010-2016

Since 2013/4, there has been a marked increase in total biomass of farmed fish held by Dawnfresh on Loch Etive, brought about both by the new farm at Etive 6 and greater intensity of farming and exploitation of permitted biomass at the other sites.

The graph below, compiled using published SEPA data, shows that the total biomass of farmed rainbow trout held across all Dawnfresh's farms in Etive has increased by nearly 500% since April 2011, Dawnfresh plans revealed at the Planning Hearing in January 2016 shows that the intention is that this will continue to rise well above 3000 tonnes with the increase in tonnage and further expansion planned at Etive 4 (Airds Bay) and the proposed new farm for Etive 3 to submitted in 2016 / 2017.



5) Refusal of Dawnfresh to publish Loch Etive on-farm sea lice data

Unlike the entire Scottish salmon farming industry, Dawnfresh does not publish its on-farm sea lice data, either in farm-specific or aggregated format.

Although weekly sea-lice data must be recorded and kept by Dawnfresh, under The Fish Farming Businesses (Record Keeping) (Scotland) Order 2008, that data is not subject to any form of public access, for example under the Environmental Information (Scotland) Regulations 2004.

Despite this matter being raised with MS – and MS being largely supportive it seems of Dawnfresh publishing its sea lice data in aggregated form⁸ – that data is not yet published.

A recent request made in summer 2016 for Dawnfresh sea lice data relating to 2014 and 2015, made by the ADSFB, has been refused by Dawnfresh which makes it difficult to assess the extent of the problem with sea lice on Dawnfresh farms.

⁸ Email from Head of Aquaculture Health and Welfare Marine Scotland – Performance, Aquaculture and Recreational Fisheries, 29th June 2016

6) Sea lice data reported in FHI reports 2014 to 2016

Despite the refusal from Dawnfresh to publish its 2013-2016 farm-specific sea lice data for the Loch Etive farms, some data on sea lice levels can be gleaned from FHI reports that are now published online⁹.

Recalling that MSS had stated that in 2012 it had no records of sea lice on Loch Etive fish farms, recent FHI inspection reports show that sea lice has indeed become an issue on Loch Etive fish farms in 2014.

In October 2014, only 4 months after the new farm at Etive 6 was first stocked with farmed fish, as FoLE had warned could happen, both Etive 4 and Etive 6 farms had sea lice record levels above the suggested criteria for treatment in the industry's Code of Good Practice.

At the time, there were 274,000 farmed fish in Etive 6 and 229,700 held in Etive 4 – over half a million fish. Even if just a single adult female lice was present on each fish (as the breach of CoGP thresholds recorded by FHI means there must have been as a minimum) this would have resulted in an enormous production of juvenile sea lice and a huge risk to wild salmon and sea-trout in Loch Etive.

At Etive 6, two farmed fish were sampled by the FHI and had lice loads of 10 and 12 respectively, recorded as mixed stages, meaning that these were not just juvenile lice and may well have included adult female (egg-bearing) lice.

The FHI recorded that Etive 3, Etive 4, Etive 6 and Etive 5 (Ardchattan) all needed to be treated for sea lice by Dawnfresh in autumn 2014 using emamectin (Slice). Etive 2 was not treated as it then had no CAR licence that allowed it to use sea lice treatment chemicals.

The problems continued into 2015. Etive 6 was inspected on 6th August 2015, the FHI recording that: "*Slice treatment carried out (23-26/10/14), synchronously with all Etive sites excluding Etive 2 (no medicines licence)...*".

The FHI also recorded at Etive 6 that: "*Adult female and gravid lice avg. numbers rise from 0.5 (09/09/14) to 6.9 (22/10/14). Slice treatment carried out from 23-*

⁹ <http://www.gov.scot/Topics/marine/Fish-Shellfish/FHI/CaseInformation>

26/10/14. Adult female and gravid lice avg. numbers drop to 1.2 (03/11/15) rise to 5.56 (17/12/14), then drop to 0.6 (08/01/15), avg. number then fluctuates between 0.5 and 1 from this point until 07/07/14, rising to a max of 4 (30/07/2015). Treatment with alphasax begins on 03/08/2015, adult female and gravid lice avg. numbers drops to 1.64. The rises post slice treatment follow the trend of rising salinity at the site, rising above 20 ppm at times of highest lice numbers in December, 5 ppm at lowest lice numbers, site salinity currently sits at 12.5 ppm. 2 morts seen on site, one moribund fish observed in cage 1, hanging vertically, with heavy lice load, removed for further observation, diagnostic samples taken. Lice data has been offered to SSPO and sites operating in the CoGP management area, but has been declined by these organisations” and that “During a sea lice inspection, a moribund fish hanging vertically in the water column with sea lice visible on the flank was observed in one cage, a further two dead fish were seen in a separate cage. The site had recently experienced a slight increase in mortality levels, attributed to post treatment losses. The moribund fish was removed for further examination and subsequent diagnostic sampling. External examination of the fish showed a distended abdomen the presence of *Lepeophtheirus salmonis* on the flanks and head. Internal examination of the fish showed clear ascites within the body cavity and a slightly enlarged spleen”. At that time, there were 256,000 farmed fish on site, of a mean weight 4.1kg, with the farm due to fallow out in March 2016.

Ardchattan (Etive 5) was also inspected on 6th August 2015: “Slice treatment carried out (23-26/10/14), synchronously with all Etive sites excluding Etive 2 (no medicines licence), not in conjunction with SSF and MH sites in CoGP management area. Adult female and gravid lice avg. numbers rise from 0.8 (23/10/2014) 1.6 (29/10/2015). Slice treatment carried out from 23 26/10/14. Adult female and gravid lice avg. numbers drop to 0.15 (06/11/2014), remained below 0.3) until 31/07/15, rise to 1.5 (03/08/2015) resulting from a cage split down from Etive 6 (cage 2) to reduce biomass and fish being moved onto Ardchattan. Alphasax treatment 05/08/2015 - Cage 5, treatment to be completed on remaining cages by 14/08/15. Lice data has been offered to SSPO and sites operating in the CoGP management area, but has been declined by these organisations”. At that time, there were 183,320 farmed fish on site, with a mean weight 860g.

Etive 3 was also inspected on 6th August 2015: “*Slice treatment carried out (23-26/10/14), synchronously with all Etive sites excluding Etive 2 (no medicines licence), not in conjunction with SSF and MH sites in CoGP management area. Since stock input, adult female/gravid lice numbers below 0.5 avg. Lice data has been offered to SSPO and sites operating in the CoGP management area, but has been declined by these organisations*”. At that time, there were 161,140 farmed fish on site, with a mean weight 2.5kg, with the site due to fallow in May 2016.

An inspection of Etive 2 on 23rd February 2016 showed that lice levels (all stages) peaked at Etive 2 in November 2015 at 9.8, and only dropped back in December to less than 2 with this being attributed to reduced salinity due to rainfall. Over that period Etive 2 had no CAR licence allowing it to use any sea lice treatment chemicals and so it could not treat at all. This shows that less saline upper Loch Etive is certainly not immune to sea lice.

Etive 4 was inspected again in 2016. The FHI report shows that Etive 4 has been treating for sea lice using azamethiphos in March 2016.

Fisheries scientists emphasize the importance of the host-density effects of farmed salmonids on the population dynamics of sea lice¹⁰, strongly suggesting that the more hosts (farmed fish) are present in a loch, the greater the sea lice problem can become.

The sea lice issue on fish farms in Loch Etive is highly likely to be due to the increase in the biomass of farmed fish held across the loch as a whole since 2012, meaning that many hundreds of thousands of rainbow trout are in the loch at any one time, all of which are potential hosts for the parasitic sea lice, and whose numbers dwarf the numbers of wild salmonids usually present in Loch Etive.

As a result, the sea lice issue on Loch Etive has quickly reached a stage at which it has serious implications for the wild salmonids of Loch Etive, the River Awe and the other rivers flowing into the loch.

¹⁰ For example, see Peder A. Jansen, Anja B. Kristoffersen, Hildegunn Viljugrein, Daniel Jimenez, Magne Aldrin, Audun Stien (2012) Sea lice as a density-dependent constraint to salmonid farming. 8th February 2012. Proceedings of the Royal Society B.

7) Treatments for sea lice reported in SEPA data

As for Dawnfresh's treatment record, data published by SEPA on the Scotland's Aquaculture database shows that Dawnfresh began treating for sea lice in 2014 and has had to intensify that treatment across its farms into 2015.

Before 2014, there is no recorded use of sea lice treatment chemicals at Etive farms. Treatments only began to be required in October 2014, four months after Etive 6 was first stocked with fish in June 2014.

The table below shows when SEPA data records that sea lice treatment chemicals have been used at Etive farms since then:

Farm	Etive 2	Etive 3	Etive 4	Etive 5	Etive 6
Jul-14					.
Aug-14					
Sep-14					
Oct-14		emam	emam	emam	emam
Nov-14				delt	
Dec-14					
Jan-15					
Feb-15					
Mar-15					
Apr-15					
May-15					
Jun-15					
Jul-15					delt
Aug-15				delt	delt
Sep-15				delt, emam	delt
Oct-15		delt		delt	
Nov-15		delt, azam	azam	delt, emam	delt
Dec-15			azam	emam	delt
Jan-16					
Feb-16					
Mar-16			azam		

(emam = emamectin (Slice in-feed treatment), azam = azamethiphos, delt = deltamethrin (both tarpaulin bath-type treatments))

Interestingly, there has been no sea lice treatment used at Etive 2 according to data reported to SEPA (data to March 2016), which calls into question Dawnfresh claims of carrying out synchronous treatments across all its farms.

8) No loch-wide simultaneous fallowing of Dawnfresh farms on Loch Etive

Most salmon farmers attempt to deal with sea lice by loch-wide fallowing, a method supported by MSS which removes all farmed host fish from a sea loch for a long period. This 'breaks the cycle' and lets sea lice levels within a loch to drop back to levels that do not cause problems either for farmed fish or for wild fish, but as Dawnfresh confines all its seawater production to a single loch, Loch Etive and operates continuous production, this presents a significant risk that sea lice numbers could build up over time in Loch Etive.

For the 'business reasons' - that were detailed in its 2014 Etive 6 application and Environmental Statement, when ruling out considering alternative sites for its new farm outside Loch Etive – unlike salmon farmers, Dawnfresh confines all its seawater production to a single loch, Loch Etive.

Although each farm must be fallowed for 6 weeks every two years, Dawnfresh does not fallow all of its Loch Etive farms at the same time and therefore cannot reduce sea lice numbers in the loch as a whole (or address the potential for other diseases of salmonids to build up in the loch).

In its Response to the Environmental Statement from 2013, FoLE warned at the time that *"while Dawnfresh operates continuous production on Loch Etive, this presents a significant risk that sea lice numbers could build up over time in Loch Etive, despite the available chemical treatments, which salmon farmers are increasingly discovering, do not always work to clear sea-lice"*¹¹.

In this context and in response to recent sea lice concerns, the ADSFB has now stated: *"it has been established in the salmon farming industry that it is not sufficient to treat sea lice with drugs and chemicals. **It is also necessary to simultaneously fallow the farm sites within a sea loch every two years** in order to break the reproductive cycle of the lice. Now that sea lice have established themselves on the trout farms in Loch Etive, we expect these farms to be fallowed according to the*

¹¹ FoLE (2013) Response to Environmental Statement re: proposed Etive 6 farm, July 2013

proven system. Further expansion of farms in the loch should not be contemplated until a fallowing regime has been agreed”¹².

Dawnfresh has submitted a Farm Management Agreement Risk Assessment¹³ as part of its August 2016 application for permission to expand the Etive 3 farm.

In that document various claims are made that are not supported by the data published by FHI and SEPA.

For example, Dawnfresh states that: *“Due to its smaller scale the production system for trout in Loch Etive is different from salmon farming elsewhere in Scotland in that it relies on farming with continual inputs of juveniles and does not fallow out on a classic salmon year class, or area basis, in order to control the environmental background level of sea lice in populations of farmed salmonids. Loch Etive has been in continual production for many years and despite this there have been almost no treatments required for sea lice”.*

Firstly, it is not correct that Dawnfresh’s Etive operation are smaller scale than salmon farming elsewhere. Its permitted tonnages at Etive 4 and Etive 6 are in fact comparable with salmon farms in other lochs and, further, it has three other farms in this single loch, which collectively do not synchronously fallow out. This is already a far greater intensity of production than in most west coastal sea lochs.

Patently, SEPA and FHI data show the claims Dawnfresh make about almost no treatments are not true for 2014 and 2015 into 2016.

Dawnfresh also claims that *“weekly monitoring of sea lice numbers has confirmed a fairly stable pattern for the natural occurrence of sea lice in Loch Etive. Between January to August lice numbers are consistently less than one adult female per fish. Lice counts are often absolute zero. Higher counts, particularly L. salmonis, do occur, but these **rarely persist more than a few weeks**. Loch Etive is not immune to sea lice infestations. Dawnfresh Farming recognises a heightened risk towards*

¹² As quoted in FoLE Press Release 6th July 2015

¹³ Dawnfresh (2016) Risk Assessment for the derogation of CoGP 3.5.3.1 Farm Management Area Fallowing, 11th February 2016, in Expansion of fin fish farm to comprise 10 x 80 metre cages and increase in extent of moorings Port Na Mine Fish Farm (Etive 3) Inverawe Taynuilt Argyll Ref. No: 16/01971/MFF | Received: Mon 04 Jul 2016 | Validated: Tue 02 Aug 2016

the end of the summer period, August into October, particularly if rainfall has been below average and water storage levels in Loch Awe are low.

The FHI reports on Etive 5 and Etive 6 from 6th August 2015 comprehensively show these claims to be untrue with sea lice remaining a problem for months at a time, often well above one adult female lice per fish.

Dawnfresh claims that from August to October, inputs of juveniles are treated with Slice - *“Under these conditions and in order to prevent and postpone sea lice settlement, the juveniles inputs during these months are feeding with Slice medicated feed at their arrival to Loch Etive”*. However SEPA data above shows that only fish in Etive 5 was treated with Slice in 2015, despite inputs to Etive 4, which the FHI record was restocked in September 2015. The lack of any report of Slice treatments suggest these fish were not treated on input.

Dawnfresh states that *“by December through into February the salinity of the surface waters is extremely low, which produces the equivalent effect to a whole area/year class fallow. This reliable environmental occurrence is the foundation for Dawnfresh Farming strategy for the control of sea lice”*.

However, through winter 2015/2016, Etive 4, Etive 5 and Etive 6 were all treated for sea lice in December 2015, with Etive 4 treating again by March 2016. In winter 2014/2015, adult female and gravid lice average numbers on Etive 6 had only dropped to 1.2 on 3rd November 2014 but rose to 5.56 by 17th December 2014, and then only dropped to 0.6 by 8th January 2015, with the average number then fluctuating between 0.5 and 1 from this point until 7th July, rising to a maximum of 4 lice per fish at the end of July 2015.

Despite the sea lice figures recorded by FHI above, SEPA data shows that Etive 6 appears to be have been treated only once between October 2014 and June 2015, that being in October 2014, with Slice.

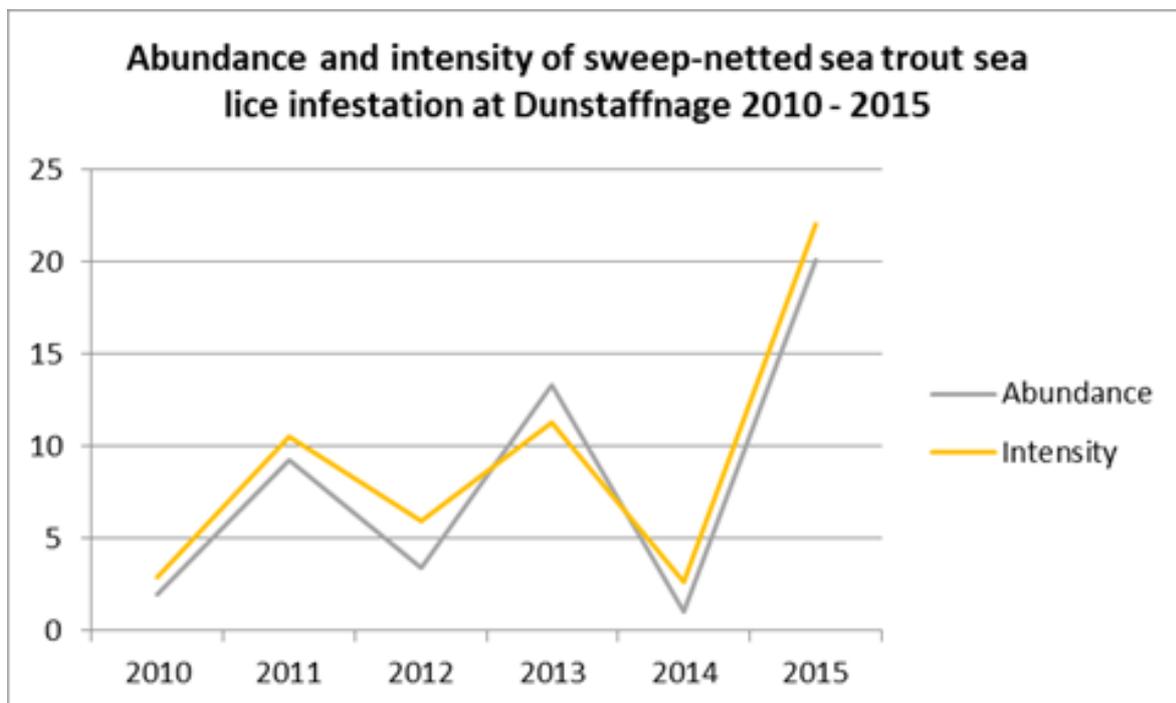
In no way did the December 2014 through February 2015 period on Loch Etive *“produce the equivalent effect to a whole area/year class fallow”* as Dawnfresh claim.

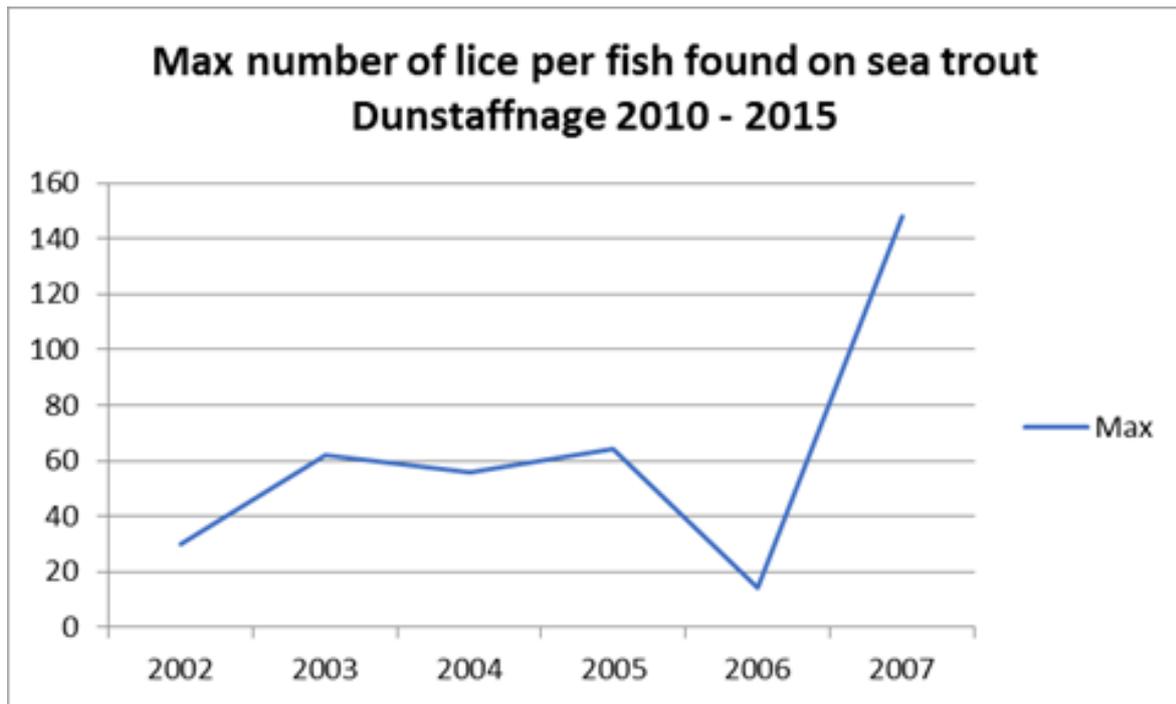
9) Reports of low numbers of wild salmon and sea trout from Loch Etive and River Awe 2016 and record high sea lice infestation of wild sea trout in 2015

The effect on wild salmonids of the increase in biomass allowed for by the planning permission granted for the new 1500 tonne farm at Etive 6, and the intensification of Dawnfresh operations at its other sites, may now be being seen for the first time.

In August 2016, the ADSFB reported a very poor grilse run on the River Awe this year so far. The River Awe would expect to get weekly runs of 100-150 salmon, but the figures for first two weeks of August have been are 2 and 7. The ADSFB is understood to be considering whether this is a local problem to Loch Etive following the reports of sea lice problems on the Dawnfresh farms.

As shown below, sea trout sweep netting carried out by the Board in 2015 had the worst sea lice infections ever recorded in wild fish, but in 2016, the ADSFB has reported that it could not catch many sea trout to sample and the fish were not there to sample.





It is interesting to note that the grilse (one-sea-winter salmon) that should have been seen in the River Awe in 2016, being salmon that have spent one winter at sea before returning to their native rivers, would have left Loch Etive during late winter 2014 and early spring 2015, when Etive 5 and 6 had sea lice problems that the FHI has recorded.

The ADSFB has reported that they had asked Dawnfresh for sea lice data from 2014 and 2015, to analyse the link between sea lice on Etive farms, those seen on sweep netting of wild fish, and that lack of grilse in 2016, but Dawnfresh has refused to release the data.

10) Recommendations to the Argyll and Bute Council going forward

When considering any planning application for new or modified fish farms on Loch Etive, the Council, as a planning authority, *“has to ensure that it has in its possession all relevant environmental information about the likely significant environmental effects of the project before it makes a decision whether to grant planning permission”* (Scottish Government planning guidance).

It falls to the Council to consider the impact of sea-lice from fish-farms on wild fish under the planning regime.

As the Council has recently stated in relation to the 2016 Etive 6 appeal (against the Council’s refusal to grant Dawnfresh permission for two more cages at Etive 6), as confirmed by the National Marine Plan and Scottish Planning Policy, *“wild fish interactions are material planning considerations which are not regulated via SEPA’s pollution control powers”*.¹⁴

Indeed, under imminent proposals (known as Depositional Zone Regulation), SEPA intends to remove upper permitted biomass limits on fish farms, making the role of planning authorities to protect wild fish even more important. As SEPA has no remit to protect wild fish from sea lice, it is solely concerned with deposition of waste and chemical residues on the loch bed.

The FHI’s powers under the Aquaculture and Fisheries Act 2007 focus on the health and welfare of the farmed fish and also cannot be used to protect Etive’s wild fish.

It falls exclusively to the Council to protect Loch Etive’s wild salmon and sea trout from damage caused by fish farms.

When faced with any more planning applications from Dawnfresh, including the one currently submitted to expand grid and cage size at Etive 3, which, if granted, would allow actual biomass on the farm to rise, the Council must consider and take into account both the potential nature conservation and economic effects of any fish-farm related sea lice threat or impact on wild salmon and sea trout populations in Loch Etive, noting that sea lice control on-farm may already be insufficient to control the sea lice impact on wild fish outside the fish farms on Loch Etive.

¹⁴ A&BC letter to DPEA, Etive 6 appeal, 4th July 2016

The Council should also note that the Association of Salmon Fishery Boards (ASFB) recommends that weekly farm-specific sea-lice count data of relevance to any planning application should be requested by planners and are made available to planners and all interested parties, including the public.

Dawnfresh should therefore be required by the Council to provide and publish all its Etive farm sea lice data covering at least the last 5 years (2012-2016) to enable a judgment to be made by the Council and all interested parties on the sea lice issue on Etive farms, the production of any juvenile lice by the farms and the potential for impact of those juvenile sea lice on wild salmonid smolts and sea trout in Loch Etive.

Additionally, loch-wide, simultaneous fallowing of all existing Dawnfresh sites should be required by the Council to address the increasing sea lice issue on Loch Etive. The Council should use planning conditions to require such fallowing to protect wild fish, for which the Council has sole statutory responsibility under the planning system.

Additionally, the Council must also ensure that the Etive 5 site is indeed removed in 2017 as per the section 75 agreement made between the Council and Dawnfresh, to allow for permission to be granted for the Etive 6 farm in 2014.

In 2011, the Loch Etive ICZM Plan recommended that “*a sea lice dispersion model should be developed for Loch Etive to provide spatial guidance for finfish development and management*”. No such model has yet been developed. Without such a model, the granting of planning permission by the Council for any further equipment or larger grids or larger or more cages, that allow more fish to be held in Dawnfresh farms at any one time, with or without a stated increase in SEPA-permitted biomass of farmed fish on Loch Etive would be premature.

Further, as Loch Etive is currently being examined by Scottish Natural Heritage (SNH) for potential designation as a Marine Protected Area under the Marine (Scotland) Act 2010, all such applications must be suspended at least until a full loch-wide assessment of the carrying capacity of Loch Etive for trout farming, as regards the impact on wild fish and the wider ecology of Loch Etive and surrounding waters, has been undertaken by an independent body, with full public consultation..

Overall, given the apparent collapse in wild salmon and sea trout numbers in 2016, (which was predicted when Etive 6 was granted permission in 2014) a precautionary approach must now be adopted by the Council, imposing a complete moratorium on any Dawnfresh plans or applications for any new equipment, larger cages sizes, larger grids, new feed barges or greater tonnages at any of its Etive sites, all of which will effectively increase the actual number of rainbow trout held on Loch Etive.

26th August 2016.

.
. .
. .
. .