



[Cross-Party Group on Animal Welfare](#)

Scottish Parliament
Holyrood Road
Edinburgh
EH99 SP

17 May 2018

Welfare Concerns of Scottish Salmon Farming

- Thermoliced to Death: Breach of the Animal Health & Welfare (Scotland) Act 2006?

Scottish Salmon Watch is pleased that 'Farmed Fish' is on the agenda of your meeting on 5 June 2018. As background for that discussion you may wish to read our written submission - ['Hard Evidence: Dossier of Data on Lice, Diseases & Mortalities at Scottish Salmon Farms'](#) - to the Scottish Parliament's salmon farming inquiry.

Compassion In World Farming's [written submission to the Rural Economy & Connectivity Committee's](#) ongoing salmon farming inquiry also included specific reference to welfare concerns regarding the 'Thermolicer' (effectively a heated washing machine for farmed salmon infected with lice).

Use of Thermolicers has raised great concern. There are many reports, from both Scotland and Norway, of high levels of fish mortality following Thermolicer treatments. For example, according to Freedom of Information requests, 95,400 fish died over two weeks ending 08/08/16 following Thermolicer treatment at a farm in Loch Greshornish (Isle of Skye)ⁱⁱ. In Norway, this treatment has likewise caused major fish mortalities^{iii, iv}. Despite these incidents, Thermolicer treatments have not been subjected to a full welfare assessment. The process is highly stressful for the salmon and involves crowding, removal from water, and exposure to much warmer water (up to 34 °C which is not in the salmon's natural range) for 30 seconds which is most likely painful to the fish. Salmon do not experience sudden temperature changes like this in the wild and it is physically challenging – if not life-threatening. During this treatment, salmon also suffer injuries such as gill haemorrhage, degeneration of nasal epithelium, vacuolation of thymic tissue, skin, fin and scale damage, brain haemorrhage, lack of oxygen due to crowding and reduced oxygen content of warmer water. Build-up of ammonia can also be an issue. There are also questions over its effectiveness. This is demonstrated by a Norwegian study which found many of the farms using the Thermolicer were back to pre-treatment levels of lice just 3 weeks later^v.

One Kind's [written submission](#) to the Environment, Climate Change and Land Reform Committee's [salmon farming inquiry](#) in February 2018 also included reference to deaths due to the Thermolicer:

Treatment of parasites and diseases

As well as impacting the environment, treatment of parasites and diseases can have a detrimental impact on fish welfare. FOI data⁸ shows that “treatment” was the most frequently cited reason for the cause of mortality events between January 2016 and September 2017. The below table highlights four treatments that have compromised fish welfare.

Treatment	Method	Welfare Concern	Example
Thermolicer	Uses warm water to remove sea lice.	The warm water may cause severe harm, or death, to the fish.	In 2016, 95,000 fish were killed during the use of thermolicer ⁹
Azamethiphos (Salmosan®)	Fish are exposed to Salmosan® using a bath treatment.	Bath treatments require crowding, which can cause stress. Salmosan® has been shown to cause fish balance problems ¹⁰ .	Salmosan® was listed as a cause of mortality when over 30,000 salmon died on one site ¹¹ .
Hydrogen Peroxide	Exposed using a bath treatment.	Using a chemical irritant compromises the welfare of fish. It can cause them stress ¹² , often to the point that the fish die.	More than 60,000 salmon were killed during treatment for amoebic gill disease ¹³
SkaMic	Using brushes and soft jets of water to remove sea lice.	Can harm and remove the scales of fish.	On one site, fish were descaled following the use of SkaMic ¹⁴ .

Any debate over the use of treatments for diseases and parasites should therefore include consideration of the welfare implications of such treatment, with the aim of minimising suffering.

Scottish Salmon Watch's [written submission to the RECC's salmon farming inquiry in March 2018](#) included:

Other data on mortalities include this '[Mortality Event Report](#)' obtained by GAAIA from the Scottish Government [via FOI](#) detailing 60,000 morts at Marine Harvest's Soay farm in 2016 due to hydrogen peroxide treatment for Amoebic Gill Disease:

Mortality Event Report

Site Name: Soay

Site No: FS0646

Start date of mortality: week 37

Period of mortality: Weekly

Percentage mortality: 60,000 (13%), Post hydrogen peroxide treatment for AGD

Reason (if explained): «If explained, select reasons»

Company: Marine Harvest Scotland - FB0119

Species: SAL

Water Type: SW

Weight (site average): 2.5 kg

Weight (affected population average): 2.5 kg

Age: 2016 Q4

Estimated number of fish lost: 60,000

Additional information: Mortalities have dropped to double figures per cage, a further H₂O₂ treatment is planned for coming weeks.

MS action: PSI conducted and site inspection to be scheduled.

Nearly 100,000 farmed salmon were 'Thermoliced' to death by Marine Harvest during 2016:

Environmental news 06.11.16 29

Revealed: how Scottish fish farm cooked thousands of salmon alive

EXCLUSIVE
BY ROB EDWARDS

ONE of the world's largest fish farming companies has accidentally killed more than 175,000 of its tagged salmon in Scotland while trying to treat them for lice and disease, according to internal Government memos.

Blunders by Norwegian multinational Marine Harvest have cost millions of pounds and led to more than 600 tonnes of salmon having to be incinerated. The losses have contributed to a 10 per cent drop in the company's Scottish salmon production.

Campaigners have accused Marine Harvest of treating salmon cruelly, and warn that lice and diseases are 'choking the Scottish salmon farming industry to death'.

The worst incident took place in July and August on a salmon farm in Loch Geobrainn on the Isle of Skye. Some 95,400 fish were killed by a new device called a thermolicer, which is designed to rid salmon of the sea lice that plague them.

But the way it does this – by suddenly immersing fish in water much warmer than they are used to – can also kill the fish themselves. What happened on Skye was explained in a memo on September 12 from government officials to Rural Economy Minister Fergus Ewing.

The "sudden temperature change" caused by the thermolicer killed 95 per cent of the lice but also caused "significant mortalities" among the salmon. It cost Marine Harvest more than £2.7 million.

This report highlights the ongoing difficulties and costs faced by industry with regards to sea lice management, concluded the memo, which was released under Freedom of Information law.

Another 26,000 salmon were killed at Loch Geobrainn fish farm by other attempts to rid them of sea lice using chemicals. There are concerns that lice are becoming increasingly resistant to chemical treatment.

In a second memo to Ewing on September 26, officials revealed more inadvertent deaths, this time at a Marine Harvest fish farm in Soggy Sound off the Isle of Harris. Earlier that month 60,000 salmon had been killed by hydrogen peroxide used to treat them for amoebic gill disease.

In the last few months, Marine Harvest fish farms in the Hebrides and Wester Ross have suffered a series of outbreaks of gill disease. Hundreds of thousands of dead fish have reportedly been transported to Wigan, near Manchester, to be incinerated.

According to the company's latest quarterly report to investors, its production of salmon in Scotland has dropped by 18 per cent since last year. Costs increased due to "incident-based mortality" that was "mainly related to gill disease and sea lice treatment losses," the report said.

On October 28, the fish farming industry launched a plan to double its business from £1.8 billion this year to £3.6bn by 2030. The plan was backed by Ewing, who promised to set up an "industry leadership group".

But the ambition has been dented by anti-fish farm campaigners. "With lice infestation and gill diseases already plaguing salmon farming, this is sheer madness," said Euan Skedd, director of the Global Alliance Against Industrial Aquaculture.

It was identified who obtained the Government memos revealing the accidental deaths. "The Marine Harvest is desperate enough to resort to a decidedly dodgy thermolicer shows how deepened the industry's disease problems are," he said.

The animal welfare group, Compassion in World Farming, described the thermolicer as "a very brutal form of treatment which clearly causes distress and suffering to the fish". It currently opposes its commercial use.

"Killing fish by overheating, whether accidental or not, is strongly inhumane," said the group's chief executive, Philip Lumley.

The Green MSP Mark Ruskell has lodged a parliamentary question asking for a list of fish farming incidents over the last two years.

Marine Harvest pointed out that the salmon killed in the "unfortunate" thermolicer incident had been weak, used by gill disease. "We regret any loss of fish and are always mindful of the welfare of the fish and aim to continuously improve our methods to address changing environmental circumstances," said the company's manager Steve Bracken.

"We have also faced challenges with amoebic gill disease, which is increasing in this part of the world as a result of climate change."

According to the Scottish Salmon Producers' Organisation, "unexpected incidents" can happen with new treatment technology.

"Any growth will be achieved in a sporting and sustainable way," said chief executive Scott Lindsay.

The Scottish Government welcomes new ways of dealing with sea lice that avoided the use of antibiotics.

"Industry is undertaking research with a number of partners to improve the effectiveness of these innovative treatments and enhance their reliability so that they do not cause accidental killing of fish," said a spokesman.

Lice infestation and gill diseases are plaguing salmon fish farms owned by companies like Norway's Marine Harvest which has operations all over the Western Isles.

Photograph: PA/ David Cheekin



Read more via "['Thermolicer' Back-Fires Killing 95,400 Farmed Salmon](#)"; [Fish farm firm kills 175,000 salmon by accident](#); "[Oops: fish farm firm kills 175,000 of its salmon by accident](#)" and "[Thousands of fish poached alive in lice treatment bungle](#)"

A Thermolicer treatment caused the deaths of 5,794 salmon at Grieg Seafood Shetland's North Havra site in November 2016:



Read more via "[Thermal treatment for lice blamed for salmon deaths](#)" and "[Treatment leads to morts in Shetland](#)"

Mortality events [reported by the Scottish Salmon Company in 2017](#) include eight cases involving 90,000 dead salmon due to using a Hydrolicer:

Site Name	Start date:	End date:	Mortality rate recorded(%)	If explained, select reason(s):	Total mortality during event	Additional information (e.g. action taken):
Druimyeon Bay	13/11/2017	19/11/2017	8.69	post treatment hydrolicer losses, handling, CMS.	45089	further hydrolicer treatment planned, fish on functional feed, harvesting.
Druimyeon Bay	06/11/2017	12/11/2017	4.44	post treatment hydrolicer losses.	25607	further hydrolicer treatment planned, fish on functional feed.
Sgian Dubh	11/12/2017	17/12/2017	1.16	Treatment	8737	2 x hydrolicer treatments have resulted in scale loss. Vet attending on 22/12/17.
Sgeir Dughall	05/06/2017	11/06/2017	1.21	Treatment	3864	Hydrolicer post-treatment losses,
Sgeir Dughall	19/06/2017	25/06/2017	1.15	Treatment	3229	Hydrolicer post-treatment losses
North Uiskevagh	02/10/2017	08/10/2017	1.64	Severe gill health issues, losses post hydrolicer treatment	2,721	Harvesting
Kenmore Loch Torridon	31/07/2017	04/08/2017	1.75	Treatment	1556	Hydrolicer treatment. Harvesting and general handling may have exacerbated mortalities. No action taken, site due to be harvested out by end of August 2017.

Inch Kenneth	25/12/2017	31/12/2017	1.75	Treatment	1,204	Treatment with hydrolicer
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Mortality events reported by [Scottish Sea Farms in 2017](#) include six cases involving over 25,000 dead salmon due to using a Thermolicer:

Site Name	Start date:	End date:	Mortality rate recorded (%):	If explained, select reason(s):	Total mortality during event	Additional information (e.g. action taken):
Nevis C (Ardintigh)	26/06/2017	10/07/2017	1.82	Treatment	5924	Losses arising during sealice treatment using Thermolicer. No underlying condition suspected.
Nevis B	22/05/2017	28/05/2017	1.81	Treatment	5345	Losses from sea lice treatment with thermolicer, no suspected underlying condition
Nevis A	20/02/2017	26/02/2017	1.58	Treatment	4129	Losses following Thermolicer treatment. Thought to be fish weakend by HSMI.
Nevis B	03/07/2017	17/03/2017	1.45	Treatment	3876	Losses arising during sealice treatment using Thermolicer. No underlying condition suspected.
South Sound	01/05/2017	07/05/2017	1.06	Treatment	3460	No action taken. Mortality due to treatment with thermolicer. Mortalities reduced significantly the following week
Nevis B	10/07/2017	17/03/2017	1.23	Treatment	3256	Residual diver clearance of pens related to aboveThermolicer treatment on wk27

Mortality events reported by [Marine Harvest in 2017](#) include three cases involving over 20,000 dead salmon due to using a Thermolicer:

Site Name	Start date	End date	Size of fish	Average weight of affected population	Mortality rate recorded (%)	If explained, select reason(s)	If unexplained, select observations:	Total mortality during event (if applicable)	Additional information (e.g. action taken)
Creag an T'Sagairt (Loch Houm)	19/06/2017	25/06/2017	≥750g	2.75Kg	1.09	Treatment		9331	Thermolicer
Cairidh	05/01/2017	12/01/2017	≥750g	~3kg	1.3	Treatment		8561	Pen 1 and 2 affected post Thermolicer treatment the rest of the site was not treated
Caolas A Deas	21/08/2017	27/08/2017	≥750g	~4.5Kg	1.89	PGD, Treatment		4663	Thermolicer treatment on one cage. Decided not to treat other cages with thermolicer.

Online via: "[Scottish Salmon's Mort Mountain Leaps Over 10 Million - FOI reveals 2.3 million dead salmon at Marine Harvest farms in 2017](#)".

A Parliamentary Question from Donald Cameron also provided the following information:

SCOTTISH PARLIAMENT

WRITTEN ANSWER

15 May 2017

Index Heading: Economy

Donald Cameron (Highlands and Islands) (Scottish Conservative and Unionist Party): To ask the Scottish Government what information it has on how many mortalities of salmon there have been due to the use of mechanical lice treatments on salmon farms in each year since 2007.

S5W-08947

Fergus Ewing:

Information regarding fish farm mortality is collected as part of fish health inspections conducted by Marine Scotland's fish health inspectorate. Case information is published here: <http://www.gov.scot/Topics/marine/Fish-Shellfish/FHI/Caselnformation>

In 2014 the Ministerial Group for Sustainable Aquaculture Farmed Fish Health and Welfare Working Group recommended that mortality over certain thresholds be reported to Marine Scotland's fish health inspectorate. Mortality thresholds were incorporated into the voluntary Code of Good Practice for Scottish Finfish Aquaculture in 2015. The following information provides details of fish mortalities which were reported to the fish health inspectorate and included mechanical lice treatment as one of the reasons for mortality.

Year	Total Mortality
2015	0
2016	115,950
2017	18,995

SCOTTISH GOVERNMENT

You can read more via a "[Thermolicer Backgrounder](#)"

The [Cross-Party Group on Animal Welfare](#) may wish to lodge a Parliamentary Question requesting data on Thermolicer deaths during the whole of 2017 (Donald Cameron MSP's question was filed in May 2017 so obviously missed a mountain of mortalities) and thus far in 2018?

Another question which the deaths and flagrant abuse of animal welfare on Scottish salmon farms raises is whether a prosecution could be made via the [Animal Health and Welfare \(Scotland\) Act 2006](#)?

Looking at the legislation it seems clear that given the suffering on Scottish salmon farms and mass mortalities that a strong case against 'Unnecessary Suffering' and 'Cruel Operations' could be made. Indeed, even [the most rabidly pro-salmon farming MSP](#) would struggle to argue that forcing lice-infested salmon through a heated torture chamber such as the Thermolicer is 'normal behaviour':

Prevention of harm

19 Unnecessary suffering

- (1) A person commits an offence if—
 - (a) the person causes a protected animal unnecessary suffering by an act, and
 - (b) the person knew, or ought reasonably to have known, that the act would have caused the suffering or be likely to do so.
- (2) A person who is responsible for an animal commits an offence if—
 - (a) the person causes the animal unnecessary suffering by an act or omission, and
 - (b) the person knew, or ought reasonably to have known, that the act or omission would have caused the suffering or be likely to do so.
- (3) A person ("person A") who is responsible for an animal commits an offence if—
 - (a) another person causes the animal unnecessary suffering by an act or omission, and
 - (b) person A—
 - (i) permits that to happen, or
 - (ii) fails to take such steps (whether by way of supervising the other person or otherwise) as are reasonable in the circumstances to prevent that happening.
- (4) The considerations to which regard is to be had in determining, for the purposes of subsections (1) to (3), whether suffering is unnecessary include—
 - (a) whether the suffering could reasonably have been avoided or reduced,
 - (b) whether the conduct concerned was in compliance with any relevant enactment or any relevant provisions of a licence or code of practice issued under an enactment,
 - (c) whether the conduct concerned was for a legitimate purpose, for example—
 - (i) the purpose of benefiting the animal, or
 - (ii) the purpose of protecting a person, property or another animal,
 - (d) whether the suffering was proportionate to the purpose of the conduct concerned,
 - (e) whether the conduct concerned was in the circumstances that of a reasonably competent and humane person.

21 Cruel operations

- (1) A person commits an offence if the person performs an operation on a protected animal without due care and humanity.
- (2) A person ("person A") who is responsible for an animal commits an offence if—
 - (a) another person performs an operation on the animal without due care and humanity, and
 - (b) person A—
 - (i) permits that to happen, or
 - (ii) fails to take such steps (whether by way of supervising the other person or otherwise) as are reasonable in the circumstances to prevent that happening.

Promotion of welfare

24 Ensuring welfare of animals

- (1) A person commits an offence if the person does not take such steps as are reasonable in the circumstances to ensure that the needs of an animal for which the person is responsible are met to the extent required by good practice.
- (2) The circumstances to which, for the purposes of subsection (1), regard is to be had include—
 - (a) any lawful purpose for which the animal is kept,
 - (b) any lawful activity undertaken in relation to the animal.
- (3) For the purposes of subsection (1), an animal's needs include—
 - (a) its need for a suitable environment,
 - (b) its need for a suitable diet,
 - (c) its need to be able to exhibit normal behaviour patterns,
 - (d) any need it has to be housed with, or apart from, other animals,
 - (e) its need to be protected from suffering, injury and disease.

The [Cross-Party Group on Animal Welfare](#) should be aware of ongoing research in Norway which is raising worrying conclusions with regard to the welfare problems caused by the Thermolicer.

A [research project by the Norwegian Food Safety Authority \(Mattilsynet\)](#) is investigating the use of the Thermolicer in Norwegian salmon farming:

Forsøksdyr: Effekt av avlusningstemperatur på velferd til laks

🕒 Godkjenningsdato 25.11.2016

🖨️ Skriv ut

🔗 Del denne siden

Prosjektbeskrivelse:

Undersøkelsene sikter på å utrede om selve varmebehandlingen som laksen opplever i en thermolicer er i overensstemmelse med gjeldende reglement for dyrevelferd hos oppdrettsfisk. Bruk av thermolicer har vist en del varierende resultater mht velferd/overlevelse. Noe av denne variasjonen kan skyldes tid på året, og en annen faktor kan være sykdomshistorie. I thermoliceren utsettes laksen for både temperatursjokk og mekanisk belastning. I denne utredningen ønsker vi å fokusere på, og isolere effekten av temperaturøkningen. Verdiene som temperatur og eksponeringstid legges nært inn til det som i dag brukes i avlusning. Fisken vil bli holdt levende etter behandlingen for å se på langtidseffekter på blodparametre og hud/gjeller

The [Cross-Party Group on Animal Welfare](#) may wish to ask the Norwegian Food Safety Authority for an update on this project and it may wish to reach out to MPs in Norway who have similar concerns.

The Fish Site reported in May 2018 via ['Study questions fish welfare in thermal delousing'](#):

Immersing farmed salmon in warmed water as a means of removing sea lice presents serious fish health and welfare issues according to a new study.



The authors of the study, which was led by researchers at [Pharmaq Analytiq](#), suggested that "a better regulatory framework for mechanical treatment of fish in general" is needed and "the present use and technical solutions for thermal de-lousing are inadequate and likely to cause pain and serious lesions in treated fish."

Mechanical treatments that use warm water to remove lice, such as Thermolicers, have been widely adopted by the salmon farming industry – in particular in Norway and Scotland – and have been shown to remove over 95 percent of the parasites. They have been increasingly popular at a time when a number of therapeutants against sea lice are losing their efficacy, or their use is being limited by regulations.

However, as the researchers note, high mortality and serious lesions associated with thermal sea lice treatments are of concern in the aquaculture industry. Lesions most commonly observed include gill haemorrhage, scale and skin loss, haemorrhage and vacuolation of thymic tissue, degeneration of nasal epithelium and brain haemorrhage.

The [new paper](#) – which was published in the *Norsk veterinærtidsskrift* journal – does, the authors argue, demonstrate "beyond doubt that fish can feel pain and that the temperatures used during thermal de-lousing (28–34 °C) are most likely painful to the fish. This pain will also initiate panic reactions where fish are likely to inflict serious self-damage."



Cooke Aquaculture has recently acquired a Thermolicer for its operations on the east coast of Canada

Here's the [English summary of the paper referred to above](#):

ENGLISH SUMMARY

High mortality and serious lesions associated with thermal sea-lice treatments are of concern in the aquaculture industry. Lesions most commonly observed include gill haemorrhage, scale and skin loss, haemorrhage and vacuolation of thymic tissue, degeneration of nasal epithelium and brain haemorrhage. It is demonstrated beyond doubt that fish can feel pain

and that the temperatures used during thermal de-lousing (28-34 °C) are most likely painful to the fish. This pain will also initiate panic reactions where fish are likely to inflict serious self-damage.

The present documentation of thermal sea-lice treatment on welfare is in the opinion of the authors based on a weak scientific basis and not calibrated for the use in field situations. Furthermore, a better regulatory framework for mechanical treatment

of fish in general is called upon. It is concluded that the present use and technical solutions for thermal de-lousing are inadequate and likely to cause pain and serious lesions in treated fish.

In January 2018, a [Norwegian veterinarian also warned](#):

fishfarmingexpert

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Vet warns of head injury risk to fish during delousing

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Fish vet Kristin Ottesen warned that whatever mechanical delousing method is used, it kills some fish. Photo: Linn Therese Skår Hosteland.

A fish vet has highlighted major head injuries she has seen to fish treated with warm water delousing machinery.

By Linn Therese Skår Hosteland

Kristin Ottesen, of Norwegian firm HaVet, addressed lice treatment with warm water and the Thermolicer or Optilicer, during the Fisheries and Aquaculture Industry Research Fund (FHF) conference "Prevention and Control of Lice" in Trondheim.

"No matter what non-drug method you use for delousing, it kills. Same if it's Skamik, FLS, Thermolicer and Optilice. Both the method and the logistics," Ottesen began.

She noted that temperatures of 30-34 degrees that are lukewarm for humans can be searing for farmed salmon.

'Hear the fish panic'

"But we do not know. When you stand with these machines you can still hear that something happens. One can hear that the fish panic. So the thoughts around this are not from out of the blue," she said.

She says they often see apparently healthy fish that just die after treatment, without finding the fish.

"But is it [the fish] fine? Are we looking for the right things when we look at the fish afterwards?" she asked, adding that surviving fish are not necessarily OK.

"Especially 12 to 24 hours after treatment. You will begin to see 'spare tyres' around the eyes and fluid collections in the palate after warm water treatment. This seeps in gradually. Fish farmers often say they see unconscious and lethargic fish."

Bleeding around the brain

Ottesen said that after opening such fish, she saw large bleeding around the brain and the palate of some of the fish.

"Classically, we are coming to a farm that says they have had some mortality, but are satisfied."

What farmers classify as satisfactory mortality, she adds, ranges from maybe 0.2% to 3%.

"A few weeks later we come to the same farm and see that the fish are falling and there are some sick fish. They look wrong, the eyes of the fish look strange."

Also, on fish that look fine two weeks after treatment, she finds major bleeding in the head region.

Stress-induced damage

"The fish health service has tried to document the trends in this, and the analysis companies they work with conclude that there have been major acute injuries in the head region, which can't be explained by anything other than the lice treatment.

"I see a lot of stress-induced damage to the fish after these treatments in addition to handling. I think we should think about how to build these machines. Is warm water treatment safe? It's something we must ask ourselves."

She says that as a fish health worker she has also fought a hard battle to know what the farmers treat the fish in, besides that it is hot water.

Read in full via "[Vet warns of head injury risk to fish during delousing](#)"

Scottish Salmon Watch certainly agrees with the [statement](#) by Philip Lymbery, Chief Executive of Compassion in World Farming, in November 2016:



Factory farming

Farm animals

Take action

Donate

Our mission is to end factory farming

Philip Lymbery, **Compassion** CEO

ABOUT PHILIP

BOOKS

BLOG

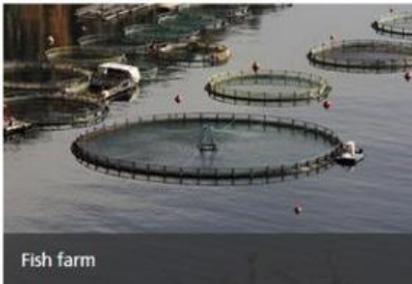
GUEST ARTICLES

SPEAKING DATES



PHILIP LYMBERY > BLOG > 2016 > 11 > SCOTTISH INTENSIVE SALMON FARMING PLUMBS NEW DEPTHS

SCOTTISH INTENSIVE SALMON FARMING PLUMBS NEW DEPTHS



Fish farm

Reports that Scottish salmon farms have killed tens of thousands of fish accidentally by overheating them have sent shockwaves through an industry already under fire for shooting seals.

Seals are all too often shot as part of 'predator control' around intensive fish farms that are effectively factory farms in the sea.

Now nearly a hundred thousand salmon are reported to have been killed after the use of a new device, the 'thermolicer'. The device was used in the latest desperate bid to rid intensively farmed fish from lice, a parasite infestation which is inevitable when so many fish are crammed in a confined space.

Welcome

Compassion in World Farming campaigns to end factory farming. My book, *Farmageddon*, explodes the myths behind our broken food system and sets out an alternative vision that will benefit animals, people and the countryside.

Philip Lymbery

Information from the Scottish Government, received following a **Freedom of Information request**  by the Global Alliance Against Industrial Aquaculture (GAAIA), reveals that 95,000 fish died on a single Scottish fish farm following the use of a thermolicer.

The thermolicer procedure involves crowding the fish used to the cold coastal waters of Scotland, pumping them into heated water and then dumping them back into their seawater cages. Salmon would never normally experience such sudden temperature changes. Little wonder that so many seem to have died as a result.

Killing fish by overheating, whether accidental or not, is simply inhumane.

The use of rough handling and heat treatment to tackle problems of sea lice is unacceptable on welfare grounds.

Moreover:

Here's Compassion in World Farming's scientific assessment of the Thermolicer prepared by Phil Brooke (Scientific Manager - research and education):

Thermolicer:

Scientific Assessment by Compassion in World Farming (6 November 2016)

The Thermolicer appears to be a brutal treatment which has not been subjected to a full and proper welfare assessment. It involves a series of steps which are inherently stressful and will cause poor welfare to the fish.

1. The salmon are crowded in a net
2. They are pumped in water through a tube into a boat with the Thermolicer on board
3. They are taken out of water – the dewaterer is a metal grid which lets the water through. They bounce along a metal grid into the treatment water
4. They then pass into seawater heated to 30-34 degrees centigrade. Salmon would never normally experience sudden temperature changes like this
5. Finally, they are pumped back into their seawater cage

Improved design and management could reduce this stress but cannot be expected to eliminate it.

Background information

We have seen one report from the Norwegian Veterinary Institute ("[Thermal de-licing of salmonid fish - documentation of fish welfare and effect](#)") which documented statistically significant increases in:

- snout injury following treatment. It is suggested that this should be caused by the effects of crowding the fish before pumping onto the Thermolicer vessel
- fin damage
- scale damage following treatment on one of the sites
- cataracts on one site 3 weeks after treatment

In conclusion, Scottish Salmon Watch encourages the [Cross-Party Group on Animal Welfare](#) to investigate the issue of welfare abuses on Scottish salmon (in particular the operation of the Thermolicer). You can find out more about the welfare nightmare on salmon farms [online here](#).

Finally, Scottish Salmon Watch would be happy to present the case against the Thermolicer in person on 5 June. If you have any questions please do not hesitate to contact me.

Yours sincerely,

Don Staniford

Director, Scottish Salmon Watch

