Global Alliance Against Industrial Aquaculture, 6 November 2016

'Thermolicer' Back-Fires Killing 95,400 Farmed Salmon - £2.7 million up in flames for Marine Harvest on Isle of Skye

Information obtained from the Scottish Government via FOI reveals that 95,400 farmed salmon were killed during July and August this year by a 'Thermolicer' at Marine Harvest's salmon farm in Loch Greshornish on the Isle of Skye. A briefing note to the Cabinet Secretary for Rural Economy and Connectivity in September reported that the mass mortalities (460 tonnes) cost Marine Harvest £2.7 million and "highlights the ongoing difficulties and costs faced by industry with regards to sea lice management". In an embarrassing twist the Thermolicer was described as "a recent £4 million investment by Scottish Sea Farms rented by Marine Harvest" **[1]**.

Read an Exclusive by Rob Edwards in today's Sunday Herald newspaper: "Oops: fish farm firm kills 175,000 of its salmon by accident"

Other documents obtained by GAAIA via Freedom of Information detail other mortality and disease problems at Marine Harvest salmon farms during 2016 totalling ca. 350,000 dead farmed salmon - the incidents include:

- 60,000 farmed salmon (13% mortality) killed by Hydrogen peroxide treatment for AGD at Soay on Harris (with a further 17,226 morts earlier in the year due to Peroxide/Salmosan treatment in well boat)

- "Lorries loads of dead fish removed for destruction on almost daily basis" in Lewis

- 84,820 dead salmon (15% mortality) at Grey Horse Channel (Sound of Harris) due to AGD and Pancreas Disease

- 77,884 dead salmon (11 mortality) at Invasion Bay (Loch Sunart) due to "maturation"

- 23,854 dead salmon due to Pancreas Disease at Ardintoul (Loch Alsh)

"The sky's the limit to the cruelty and stupidity of the salmon farming industry," said Don Staniford, Director of the Global Alliance Against Industrial Aquaculture. "Serious questions must now be asked how thousands of farmed salmon became overheated, suffocated or even boiled alive by the Thermolicer. Sea lice infestations and infectious diseases such as Amoebic Gill Disease are quite literally choking the Scottish salmon farming industry to death. That Marine Harvest is desperate enough to resort to a decidedly dodgy 'Thermolicer' shows how deep-rooted the industry's disease problems are. The Thermolicer should be renamed The Terminator and be sent back to Norway along with the rest of the disease-ridden Norwegian-owned salmon farming industry plaguing Scottish waters."

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," reported The Sunday Herald (6 November 2016). "It currently opposes its commercial use." "Killing fish by overheating, whether accidental or not, is simply inhumane," said the group's chief executive, Philip Lymbery. "All current forms of treating sea lice entail problems."

The Sunday Herald also reported (6 November 2016): "The Green MSP, Mark Ruskell, has lodged a parliamentary question asking for a list of fish farming incidents over the last two years. He questioned whether the industry could double production "without disastrous consequences".

BBC News reported in July 2016 that farmed salmon were "unharmed" by the Thermolicer. "It works by bathing fish briefly in lukewarm water, capitalising on the parasite's low tolerance for sudden changes in temperature" gushed the BBC. Ralph Bickerdike, head of fish health for Scottish Sea Farms, told BBC News: "The Thermolicer is the latest step in developing alternative tools to maintain a sustainable solution to fish health management." **[2]**

Photo: Scotland's First Thermolicer delivered to Scottish Sea Farms in July 2016

This is not the first time that the use of a Thermolicer has caused mortalities for Marine Harvest - in March it was reported that 32,700 farmed salmon had been killed at a Marine Harvest salmon farm in Norway. Another Norwegian media report in *Bergens Tidende* in April suggested further mass mortalities following treatment with the Thermolicer **[3]**.

In July, Marine Harvest Scotland claimed that a new Thermolicer and two Hydrolicers "are proving highly effective" but their use still needs to be refined. Steve Bracken, Business Support Manager at Marine Harvest Scotland, told Fish Farming Expert (26 July): "The Hydrolicers are giving good results but as with all new systems it takes time to achieve optimum results." In September, Marine Harvest advertised for 'Hydrolicer Technicians' which were "based on a workboat that has the potential to cover all our sites in Scotland".

"The role is focused on operating and maintaining equipment that removes and captures sea lice," said the job advert.

The damning revelations could not come at a more inopportune time for the Scottish Government who just last week unveiled a 'Roadmap to 2030' in a bid to double the size of Scotland's aquaculture sector within 15 years. "The strategy states that almost £30m has recently been spent in each of the past five years on tackling sea lice," reported BBC Scotland Business/Economy Editor Douglas Fraser (29 October) . "Think about that for a moment - £150 million".

The 'Aquaculture Growth to 2030' report includes:

Recommendation 13: Approaches to sea lice

Sea lice are currently one of the factors limiting growth in salmon production in Scotland – not just through lost production, but by impacting regulatory confidence and therefore, investment in the sector. The aquaculture industry recognises the imperative to address the sea lice challenge and has been investing almost £30 million annually over the past five years to enhance and add new techniques to its longstanding approach to integrated pest management strategies.

We support the industry's continuing commitment to investing in innovative methods to control sea lice, including biological and engineering-based solutions. The industry should consider sea lice as a pre-competitive issue.

Regulators must also work in collaboration with industry to fully understand sea lice and other fish health challenges and to support industry in its work on dealing with these. Producers should continue to provide the comprehensive information published by the Scottish Salmon Producers Organisation (SSPO) on a quarterly basis and Marine Scotland should work with SSPO to ensure that a supportive narrative comes from government.

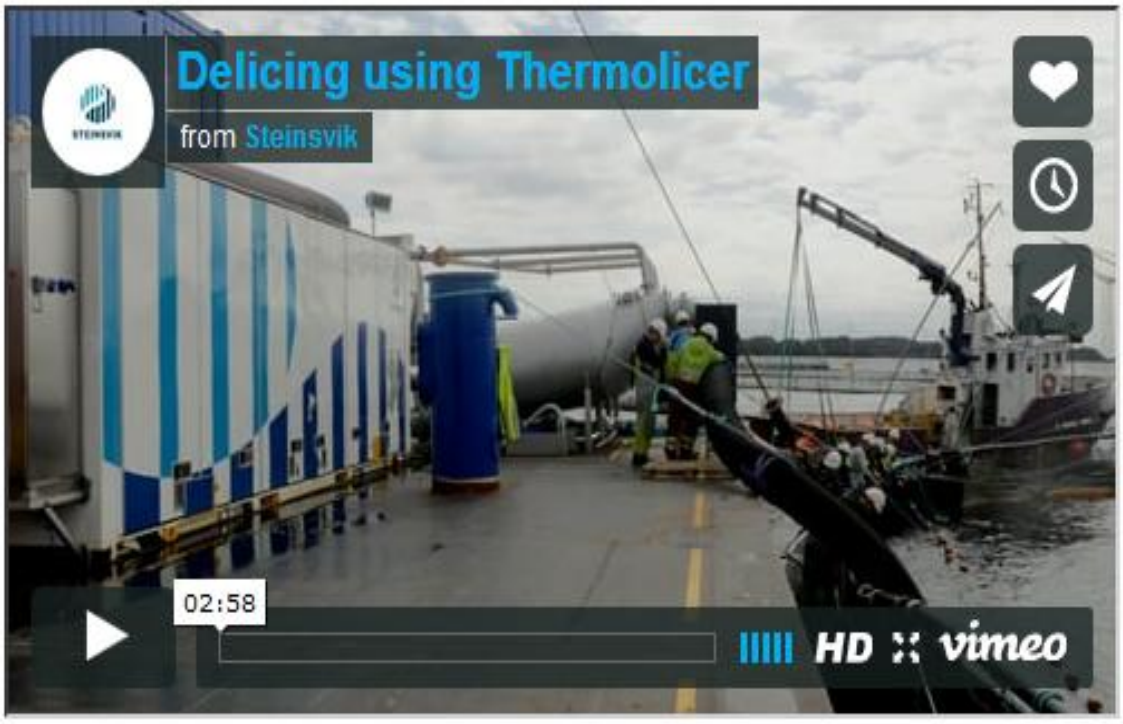
Lastly, regulators, industry and researchers in Scotland should continue to share information on sea lice control with other jurisdictions and continue to draw on the best international knowledge and expertise.

Lead responsibility: Industry
Co-responsibility: SSPO, SAIC, SEPA, Marine Scotland Science
Timeframe: Ongoing

Last month, the Scottish Government, Scottish Aquaculture Innovation Centre and Highlands & Islands Enterprise were all also keen to point to £2.5 million in European funding - including £1.76 million for novel approaches to sea lice control. "Amongst the alternative solutions being trialled is hydrolicer technology which uses low pressure water jets to dislodge sea lice; an innovative 'bundle' of technologies that brings best practice approaches into a single system; and a Thermolicer device which capitalises on the parasite's low tolerance to sudden changes in temperature by briefly bathing fish in warmer water," stated a SAIC press release (28 October).

“Aquaculture is one of our real economic success stories and the industry is on track to grow to a value of well over £2 billion annually to the Scottish economy by 2020, supporting 10,000 jobs," trumpeted Rural Economy Secretary Fergus Ewing in a press release (29 October). "I am committed to supporting continued growth to 2020 and beyond as part of my wider priorities to build growth in the rural economy. This is a great example of how essential EU funding is, helping to encourage further innovation and supporting the sustainable growth of aquaculture, in turn benefiting rural communities which depend on this industry."

A press release issued by Highlands & Island Enterprise (28 October) included a video of the Thermolicer in action:



The video claims: "Steinsvik Thermolicer in action. Kills salmon lice with hot water. No harm to the fish".

Watch online via "Delicing using Thermolicer"

"With lice infestation and gill diseases already plaguing salmon farming, it is sheer lunacy for the Scottish Government to sanction a doubling of aquaculture by 2030," continued Staniford. "Increasing production is a recipe for both ecological and economic ruin. Common sense would dictate a drastic reduction in production to reduce the lice and disease burden. Sadly, common sense is not a currency this Government is used to dealing in. Perhaps Fergus Ewing should go down to the Parliamentary library and read a copy of 'Limits to Growth' in order to learn the basic concepts of carrying capacity?"

"Faced with such endemic disease problems how on earth can the Scottish Government sanction a doubling of aquaculture by 2030?" concluded Staniford. "Perhaps Fergus Ewing has been zapped by the Thermolicer boiling his brain and rendering him in a zombie-like state? Or maybe the Thermolicer works by wiping out people's memories? That might go

some way to explaining Prince Charles's recent visit and support to Marine Harvest's 'sustainable' salmon farming operation."

Today (6 November 2016), GAAIA wrote to the Norwegian Stock Exchange (Oslo Bors) asking them to investigate whether Marine Harvest, Leroy & SalMar (as owners of Scottish Sea Farms) and Bremnes Fryseri/Steinsvik (manufacturer of the Thermolicer) have failed to disclose significant disease, mortality and financial issues regarding the operation of the Thermolicer.

Contact:

Don Staniford: 07771 541826 (dstaniford@gaaia.org)

Notes to Editors:

[1] Download the FOI reply in full as a PDF (42 pages) online here

Read a FOI Backgrounder online via: Mortalities & Disease at Marine Harvest during 2016 - FOI reply from Scottish Government (28 October 2016)

Includes:

From:	Barber J (Jill)
Sent:	12 September 2016 16:55
To:	Cabinet Secretary for the Rural Economy and Connectivity
Cc:	Cabinet Secretary for the Environment, Climate Change and Land Reform; Communications Rural Economy & Environment; Director of Marine Scotland Mailbox; Cowan WJ (Willie); Mitchell A (Alastair); Haddon P (Paul); Allan C (Charles) (MARLAB); Smith K (Kate); Higgins K (Kate); Miller D (David); Meiklem PJ (Peter John); Purvis N (Neil) (MARLAB)
Subject:	Fish Farm Mortality ~ 115,000 4Kg fish - sea lice treatment - Skye

PS Cabinet Secretary for Rural Economy and Connectivity

The Minister will wish to be aware of mortalities reported at Greshornish salmon farm in Skye (Marine Harvest).

- Total: 115, 283 fish @ 4Kg fish lost since July [est. 460T]
- Cause: Failed sea lice treatments - 95,400 mortalities occurred during weeks of 31/07 and 07/08 following operational issues using a thermolicer.
- Action: Mortality levels have returned to 'background' levels. Accelerated harvest at site – to be fallow by end of September. FHI to remain updated with weekly mortality on site.

Further information

The Skye and Loch Torridon area suffered algal blooms in July [linked to mortality reports of 19 Aug and 2 September] which led to delayed sea lice treatments across the area. Greshornish fish farm has reported having a sea lice issue since Februrary 2016. They have been treating ineffectively on a monthly basis since.

The site made the decision to treat with a new thermolicer (a recent £4million investment by Scottish Sea Farms rented by Marine Harvest) - the device works by shocking lice with a sudden temperature change - which gave 95% lice clearance but also caused significant mortalities. As such, the treatment was stopped.

This report highlights the ongoing difficulties and costs (we estimate the financial loss of this mortality event was over £2.7 million) faced by industry with regards to sea lice management.

A fish health inspector is in the area this week. We will keep the Minister informed with any additional relevant information and/ or media interest.

Jill Barber
Aquaculture Policy Advisor
Marine Scotland – Performance, Aquaculture and Recreational Fisheries
Tel: +44 (0)131 244 7007
E-mail: jill.barber@gov.scot
Web: http://www.scotland.gov.uk/marinescotland
Mail: Scottish Government, 1B North, Victoria Quay, Edinburgh EH6 6QQ

From:	Walker A (Amanda) (MARLAB)
Sent:	12 September 2016 13:44
To:	Barber J (Jill); Smith K (Kate)
Cc:	Fraser D I (David) (MARLAB); Allan C (Charles) (MARLAB); Smith R (Ronald) (MARLAB); Purvis N (Neil) (MARLAB); Mckay P (Paul) (MARLAB)
Subject:	FW: Mortality figures for Greshornish

Hello,

Following on from my request for further details about the mortalities at Loch Greshornish last week the site manager, Bill Wright has forwarded the figures detailed below.

You will see from the figures the losses post Thermolicer use is about 95,400.

Mort levels at the site are now low (0.12%/site/wk) but I plan to call the manager on Wednesday to ensure mortality levels remain low.

Amanda

Amanda Walker
Senior Fish Health Inspector
Marine Scotland - Science

Scottish Government | Marine Laboratory | 375 Victoria Road| Aberdeen | AB11 9DB

From: Manager, Greshornish [mailto:manager.greshornish@marineharvest.com]
Sent: 12 September 2016 11:39
To: Walker A (Amanda) (MARLAB)
Cc: Hall, Jackie; MacLennan, Alasdair
Subject: RE: Mortality figures for Greshornish

As requested:

W/e 03/07/2016 – 3621 morts., **W/e 10/07/2016 – 8055 morts.**, W/e 17/07/2016 – 5051 morts., W/e 24/07/2016 – 2719 morts., **W/e 31/07/2016 – 40986 morts., W/e 07/08/2016 – 44019 morts., W/e 14/08/2016 – 4778 morts.**, W/e 21/08/2016 – 1641 morts., **W/e 28/08/2016 – 4005 morts.**, W/e 04/09/07/2016 – 260 morts., W/e 11/09/2016 – 148 morts.

Weeks 1% mortality exceeded are in red – the 1% is calculated against stock number at start of the week.

All morts are due to treatment losses – w/e 10/07 were following bath treatments and from 31/07 following Thermolicer treatments.

Best regards,
Bill Wright

Site Manager
MARINE HARVEST SCOTLAND LTD

MOBILE: +44 07766365439
DIRECT: +44 01470 582 344
MAIL: greshornish@marineharvest.com
OFFICE: Greshornish, Edinbane, Isle of Skye IV51 9PN. UK

From: Amanda.Walker@gov.scot [mailto:Amanda.Walker@gov.scot]
Sent: 09 September 2016 12:48
To: Manager, Greshornish
Subject: Mortality figures for Greshornish

Hello William,

Thank you for providing information with regards to the mortality issues at Loch Greshornish. Following on from our conversation I am writing for some more detailed mortality figures that you mentioned would be available on Aqua-farmer.

Could you provide weekly mortality figures (% for site and numbers) for the period 28 July until end August. Also details of mortalities for any other period when the figures were more than 1% for the site for a week.

Many thanks

Amanda

Amanda Walker
Senior Fish Health Inspector
Marine Scotland - Science

Scottish Government | Marine Laboratory | 375 Victoria Road| Aberdeen | AB11 9DB

Tel: +44 (0)1224 295642
S/B: +44 (0)1224 876544
Mob:+44 (0)7467 447354
Fax: +44 (0)1224 295620
e: amanda.walker@gov.scot
w: http://www.gov.scot/marinescotland

Mortality Event Report

Site Name: Loch Greshornish

Site No: FS0015

Start date of mortality: 42579

Period of mortality: 5 weeks

Percentage mortality: 9, Explained

Reason (if explained): Treatment

Company: Marine Harvest (Scotland) Ltd (FB0119)

Species: SAL

Water Type: S

Weight (site average): ≥750g

Weight (affected population average): 4kg

Age: 2015 Q2

Estimated number of fish lost: 47000

Additional information: Morts occurred following treatment with theromolicer. Treatment was stoped when extent of mortality was realised. Lice tested as 60% resisitant to chemical treatments. Have been carrying out 3 hour salmosan treamtent in a well boat but this is causing increased morts. Harvest plan has been accelerated and site will be fallow by end of September 2016

MS action: PSI case 20160379 Mort levels have dropped, currently 0.132%/site/wk. Awaiting further details on mortality figures for the cycle.Site manager to be contacted next week to ensure mort figures remain low.

[2] Read more via a Thermolicer Backgrounder (6 November 2016)

[3] Intrafish reported in March 2016:

De-lousing kills 32,700 fish at Marine Harvest operation

Company says it is 'fine tuning' its operations to avoid future problems.

by **Vegard Solsletten**
March 30th, 2016 08:10 GMT Updated May 12th, 2016 06:14 GMT

Marine Harvest recently reported 32,700 fish died during a de-lousing procedure.

The incident occurred when the company carried out a de-lousing of all the cages at one of its farm sites, the company wrote in a report to the Norwegian Food Safety Authority (NFSA).

"Unfortunately we had excessive mortalities with this treatment," Eivind Naevdal-Bolstad, communications director at Marine Harvest, told **IntraFish**.

"The reason was the fish that were being treated were far weaker than had been anticipated."

Around 19,620 fish died immediately after treatment, but this figure increased to a total of 32,700 fish a week later.

"Even though we attempted to solve this as gently as possible, we figure it was the handling and overcrowding that led to the mortalities," Marine Harvest said in the report.

The fish groups had both a pancreatic disease (PD) diagnosis and circulatory system collapse. Retrieval of the dead fish was executed as quickly as was practicably possible, the company said.

Used Thermolicer

In the report the company also stressed a critical assessment would be made of the problems associated with Thermolicer usage.

The company said it will "fine tune" its best practices with the method.

"It's only a few months since we started treating with Thermolicer, and we are working continuously to optimize the treatment process to reduce mortalities," the company wrote.

Naevdal-Bolstad said lice figures in the area are fortunately low and under good control.

"From now on we will be working further with preventive measures to reduce the need for treatments, in that all handling of fish carries a level of risk. Therefore we have several initiatives ongoing with cleaner fish, lice skirts, deep-water feeding and lasers," he said.

Bergens Tidende reported in April 2016 (translated via Google Translate):

Debug: More livestock companies report increased mortality after the use of water treatment and so-called Thermolicer. Now IMR examine fish health. PHOTO: FRED IVAR UTSI KLEMETSEN

Much salmon die in alternative lice treatment

Driving salmon through hot water treatment is introduced as the new solution to louse problem. Now it turns out that the method not only kills the lice, but also a lot of fish.

Sysla reported (25 April 2016) - translation via Google Translate:

Much salmon die in alternative lice treatment

Driving salmon through hot water treatment is introduced as the new solution to louse problem. Now it turns out that the method not only kills the lice, but also a lot of fish.

By Einar Aarre

Several fish farming companies with hatchery report "increased mortality" under the alternative sea lice treatment, which avoids using chemicals in their cages.

FSA is responsible for fish welfare, and is concerned. They have asked IMR to consider their use.

- Tough treatment for fish

- The fish subjected to rough handling and applied a lot of stress when it is needed together and pumped into the hot water treatment. Experience so far suggests that the fish must be robust to withstand handling, says senior advisor Inger embankment FSA to BT (requires login).

Marine Harvest reports including the increased mortality of plants Syltøy and Bull on the west side of Sotra. Of around 29,000 death of fish was reported in the first nine weeks, a ratio set in the context of the use of Thermolicer .

The company also reports the same problem at the plant on Haverøy outside Solsvik in Sotra. In the seven cages was report about 14.300 death fish for delousing.

- We've got more experience with Thermoliceren and see that it can be advantageously made some adjustments to be even more gentle to the fish, the company reported.

Increasingly resistance

The explosive growth of various chemical delousing agents in cages has led to increasingly lice are resistant to drugs, while concern for the consequences for the environment increases. The various delousing agents released in the fjord system after use.

Many people have had great expectations that Thermoliceren should be the solution.

This is a machine that performs bath treatment of fish. The fish is pumped up through the pipes, and bathed in water of between 30 and 34 degrees. The sudden rise in the water temperature kills lice. Each fish treated at 25 to 30 seconds before it is returned to sea.

Full story on BT.no (requires login)