SCOTTISH SALMON WATCH

WELFARE

Media Backgrounder (March 2020)

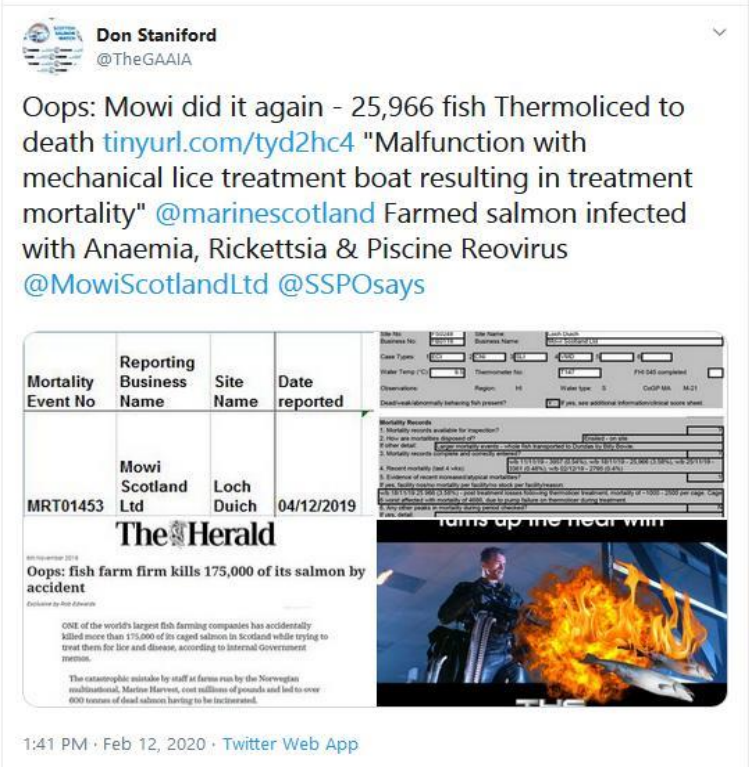
The Welfare Case Against the Thermolicer, Hydrolicer & Optilicer

- Evidence Sourced from the Scottish Government's Fish Health Inspectorate

2019-0135 North Papa – Fish 2 exophthalmia

In February 2020, the Scottish Government's Fish Health Inspectorate published damning new evidence of mass mortalities due to the Thermolicer and disease problems.

'Case Information' for December 2019 published by the Scottish Government on 7 February 2020 details a mass mortality of 25,966 dead salmon due to the Thermolicer at Mowi's farm in Loch Duich (a contentious site which Mowi has pledged to close down).



The mass mortality at Mowi in Loch Duich was reported via the Scottish Government's new mortality data for December 2019 (published online on 7 February 2020):

Mortality Event No	Reporting Business Name	Site Name	Date reported	Mortality rate recorded (%)	Explained reasons	Total mortality during event
MRT01453	Mowi Scotland Ltd	Loch Duich	04/12/2019	3.58	Malfunction with mechanical lice treatment boat resulting in treatment mortality	25966

5. Evidence of recent increased/atypical mortalities?	Y
If yes, facility nos/no mortality per facility/no stock per facility/reason:	
w/b 18/11/19 25 966 (3.58%) - post treatment losses following thermolicer treatment, mortality of ~1000 - 2500 per cage. Cage 6 worst affected with mortality of 4686, due to pump failure on thermolicer during treatment.	
6. Any other peaks in mortality during period checked?	N
If yes, detail:	
7. Have increased (unexplained) mortalities been reported to vet or FHI?	Y
If yes, detail action:	Reported to FHI, pump fixed on thermolicer, thermolicer has been treating again since 08/12/19, with no increased mortality observed so far.
8. Have 'mortality events' been reported to FHI? If no, add MRT case and enter on mortality events sheet.	Y

Mowi (who changed their name on 1 January 2019 due to negative consumer perception in the name Marine Harvest) is no stranger to mass mortalities due to the Thermolicer. In 2016, over 95,000 farmed salmon died after a deadly Thermolicer treatment in Loch Greshornish with a total of 115,283 dead salmon (460 tonnes) in July and August.

Read more via:
Fish farm firm kills 175,000 salmon by accident
Thousands of fish poached alive in lice treatment bungle that could hit Christmas salmon prices
'Thermolicer' Back-Fires Killing 95,400 Farmed Salmon
FOI Backgrounder: Mortalities & Disease at Marine Harvest during 2016

Mortality information published on 7 February 2020 by the Scottish Government detailed over 50 cases involving over 343,000 dead farmed salmon where mechanical treatments such as the Thermolicer, Hydrolicer and Optilicer were cited between 2017 and 2019 - including:

Mortality Event No	Reporting Business Name	Site Name	Date reported	Mortality rate recorded (%)	Explained reasons	Total mortality during event
MRT00529	The Scottish Salmon Company	Druimyeon Bay	23/11/2017	8.69	post treatment hydrolicer losses, handling, CMS.	45089
MRT01453	Mowi Scotland Ltd	Loch Duich	04/12/2019	3.58	Malfunction with mechanical lice treatment boat resulting in treatment mortality	25966
MRT00514	The Scottish Salmon Company	Druimyeon Bay	13/11/2017	4.44	post treatment hydrolicer losses.	25607
MRT01244	Mowi Scotland Ltd	Shuna SW (Rubh'an Trilleachain)	20/09/2019	4.07	Suspect recent environmental gill insult involving gill bleeding. Mortalities with recent hydrolicer treatment, with fish with poor gills not surviving treatment	22136
MRT01148	Grieg Seafood Shetland Ltd	West of Burwick	05/08/2019	3.63	Post treatment (optilicer)	16500
MRT01151	Grieg Seafood Shetland Ltd	West of Burwick	05/08/2019	3.46	Post treatment (optilicer)	14529
MRT01282	Mowi Scotland Ltd	Shuna SW (Rubh'an Trilleachain)	03/10/2019	3.08	Suspect recent environmental gill insult involving gill bleeding. Mortalities with recent hydrolicer treatment, with fish with poor gills not surviving treatment	13920
MRT01447	Mowi Scotland Ltd	Ardintoul	04/12/2019	1.83	Compromised gill health, anaemia due to gill bleeding + piscirickettsia infection. Fish also treated with mechanical lice system.	12858
MRT01451	Mowi Scotland Ltd	Ardintoul	04/12/2019	1.49	Compromised gill health, anaemia due to gill bleeding + piscirickettsia infection. Fish also treated with mechanical lice system.	10252
MRT01240	Mowi Scotland Ltd	North Shore	20/09/2019	1.09	Fish have complex gill disease incuding gill bleeding, with associated mild anaemia. Recent thermolicer treatment - fish with poor gills/anaemia did not survive treatment.	9933
MRT01320	Mowi Scotland Ltd	Shuna SW (Rubh'an Trilleachain)	10/10/2019	3.25	Complex gill disease + hydrolicer treatments	9557
MRT01452	Mowi Scotland Ltd	Loch Alsh (Sron)	04/12/2019	1.11	Compromised gill health + mechanical lice treatment	9306
MRT01149	Grieg Seafood Shetland Ltd	West of Burwick	05/08/2019	2.06	Post treatment (optilicer)	9025
MRT00850	Scottish Sea Farms Ltd	Lismore North	18/10/2018	4.27	Complex gill issues and sea lice treatment (physical treatment)	8585
MRT01358	Mowi Scotland Ltd	Ardintoul	25/10/2019	1.02	Complex gill disease with significant gill bleeding and resultant anaemia + thermolicer treatment losses	7,601
MRT00751	The Scottish Salmon Company	Vacasay	05/09/2018	2.56	Post treatment losses (hydrolicer)	7516
MRT01150	Grieg Seafood Shetland Ltd	West of Burwick	05/08/2019	1.74	Post treatment (optilicer)	7468
MRT01171	The Scottish Salmon Company	Portree Outer	19/08/2019	1.20	Post treatment (mechanical)	6686
MRT01318	Mowi Scotland Ltd	Poll na Gille	10/10/2019	1.10	Complex gill disease + hydrolicer treatments	6079
MRT01375	The Scottish Salmon Company	Druimyeon Bay	01/11/2019	1.04	Post treatment (Thermolicer) and challenged gills	5586
MRT01153	Grieg Seafood Shetland Ltd	West of Burwick	05/08/2019	1.7	Post treatment (thermolicer)	5584
MRT01345	Cooke Aquaculture Scotland Ltd	Flaeshins	15/10/2019	1.06	Post treatment mortality (Thermolicer)	5414
MRT01236	Mowi Scotland Ltd	Cairidh	20/09/2019	4.03	Anaemia due to bleeding from gills. Losses were exacerbated by thermal sea lice treatment in week 36.	5398
MRT01212	The Scottish Salmon Company	Maragay Mor	08/09/2019	1.36	Mechanical lice treatment, low level PD myopathy	5117
MRT01152	Grieg Seafood Shetland Ltd	West of Burwick	05/08/2019	1.26	Post treatment (optilicer)	5112
MRT01211	The Scottish Salmon Company	Maaey	08/09/2019	1.32	Mechanical lice treatment, low level PD myopathy	4858
MRT01217	Mowi Scotland Ltd	Cairidh	13/09/2019	3.36	Anaemia due to bleeding from gills. Attempted thermal sea lice treatment and losses exacerbated.	4654
MRT00584	Scottish Sea Farms Ltd	South Sound	29/01/2018	2.19	Physical damage, thermolicer post-treatment	4253
MRT00513	The Scottish Salmon Company	Strome	13/11/2017	1.83	post treatment hydrolicer losses.	3546
MRT01276	Mowi Scotland Ltd	Port na Cro	03/10/2019	1.23	Suspect recent environmental gill insult involving gill bleeding. Mortalities (fish with poor gills) with recent hydrolicer treatment	3184
MRT00402	The Scottish Salmon Company	North Uiskevagh	10/10/2017	1.64	Severe gill health issues, losses post hydrolicer treatment	2,721
MRT00492	The Scottish Salmon Company	Loch Odhairn/Gravir	06/11/2017	1.45	post treatment hydrolicer losses.	2652
MRT01216	Mowi Scotland Ltd	Sconser Quarry	13/09/2019	1.42	Losses incurred following thermal sealice treatment	2147

'Case Information' published by the Scottish Government in February 2020 detailing Fish Health Inspectorate site visits during 2019 included the following cases where the Thermolicer, Hydrolicer and/or Optilicer were cited (see Appendix for more details):

Mowi - Ardintoul (17 October 2019):

5. Evidence of recent increased/atypical mortalities?	Y
If yes, facility nos/no mortality per facility/no stock per facility/reason:	
SAL: Mortality starting to increase across the site 28/29 September between 0-500 per pen over two days. 30/9/19 5,600 morts pen 1, 1,700 morts each in pen 3, 5, 7. 1/10/19 1,750 pen 7, 1,500 morts pen 9, 1,850 morts pen 10, 2,500 morts pen 11, 2,250morts pen 12. 2/10/19 2,125 morts pen 2, 2,825 morts pen 4, 1,065 morts pen 6, 3,500 pen 8, 3,150 morts pen 12. 3/10/19 2,100 morts pen 9. 3/10/19 and following days morts sharply drop off to mid-low hundreds or double digit figures. Occasional higher numbers : 9/10/19 pen2 900 morts, 11/10/19 1,250 morts pen 3, 12/10/19 1,400 morts pen 6, 13/10/19 1,610 morts pen 7, 1,090 morts pen 10. But overall decreased to low hundreds (occasional mid hundred) and double digits per pen per day. Over the last month (9/9-13/10) most mortalities attributed to anaemia (48,879 morts) and peroxide treatment (10,700 morts total from pen 1,3,5 and 7 only). 10/10/2019 5,220 morts attributed to thermolicer treatments. This is due to gill issues and the fish being slightly too small. Normally considerable lower post treatment morts.	
6. Any other peaks in mortality during period checked?	Y
If yes, detail:	SAL: On input slight increase in pen 6 and pen 10 due to fungus. Some mortality attributed to seal predation. Seal targeting very small fish in specific pens repeatedly (pen 10). Persistently increasing morts from seal predation 1,365 morts in June 2019. July 2019 3,221 morts due to concussions due to increased Caligus burdens. Slice treatment administered. August 2019 6,380 morts attributed to Salmosan treatment, 2,185 morts attributed to thermolicer. Total morts for September 29,065 attributed to anaemia, two peroxide treatments, thermolicer and decomposed.
7. Have increased (unexplained) mortalities been reported to vet or FHI?	Y

Cooke Aquaculture - Flaeshins (16 October 2019):

Mortality event in week 18 2019 (1.06%) - was not reported to FHI - event was due to post treatment mortality following a thermolicer treatment.

Week 18 2019 (5414 - 1.06%) Post treatment mortality - Thermolicer

Scottish Sea Farms - Kishorn B (North) (10 September 2019):

Visit conducted following reported mort events; wk24 - 1.14% CGI; wk32 - 2.5% CGI, wk33 4.12% CMS and post treatment, Thermolicer.

Fish observed in cage with white heads.

Additional comments:	
F1 -red head lice damage	F3 white head, lice damage. Fish 4 : Head damage -red head- lice.

Grieg Seafood - West of Burwick (5 August 2019):

. Treated two cages last week using optilicer, but mortality levels increased due to physical damage so decided not to use optilicer on further cages.

w/b 28/1/19 through to 3/3/19 - 52,634 physical damage following treatment with optilicer (see mortality event sheet for weekly details)

Case No: 2019-0380 Site No: FS0937 Date of visit: 05/08/2019

Start date:	End date: (if applicable)	Size of fish:	Average weight of affected population:	Species:	If explained, select reason(s):	Total mortality during event (if available):
28/01/19	03/02/2019	≥750g	2.9Kg	SAL	Post treatment (optilicer)	16,500
04/02/19	10/02/2019	≥750g	2.9Kg	SAL	Post treatment (optilicer)	9,025
11/02/19	17/02/2019	≥750g	3Kg	SAL	Post treatment (optilicer)	7,468
18/02/19	24/02/2019	≥750g	3Kg	SAL	Post treatment (optilicer)	14,529
25/02/19	03/03/2019	≥750g	3Kg	SAL	Post treatment (optilicer)	5,112
06/05/19	12/05/2019	≥750g	3.8Kg	SAL	Post treatment (thermolicer)	5,584

Mowi - Bagh Dail Nan Ceann (26 June 2019):

Currently treating on site with a thermolicer. Treatment abandoned today as fish were not taking to it very well. (Hot weather) Fish in the pen that had been treated looked very lethargic, the fish were visible a brighter shade of blue (probably due to the stress of crowd, water temperature). The weather was very hot on the day of inspection which probably contributed to the abandoning of the treatment.

Mowi - Port Na Cro (26 June 2019):

Thermolicer treatment. 15th of June. Good clearance reported after treatment. Pens that had been treated with the thermolicer more recently had some lethargic fish visible in the pens, some of which had obvious mechanical damage from the thermolicer treatment.

MOWI when fish are bellow 2 kilos their trigger level for treatment is 0.2 lice / fish. This is a new adaptation to their sea lice policy so treatments are occurring more regularly and a lot earlier in the initial stages of sea lice settlement.

Scottish Sea Farms - Kishorn West (12 June 2019):

Current salmon mort levels; wk21 0.25%/site/week, wk22;0.88% (post treatment - thermolicer), wk23 0.2%, wk24 0.04%

Thermolicer treatment resulted in increased morts - reported Monday 15th April -21 April 1.29% - 4233.

The Scottish Salmon Company - Aird (Loch Shieldaig) (13 June 2019):

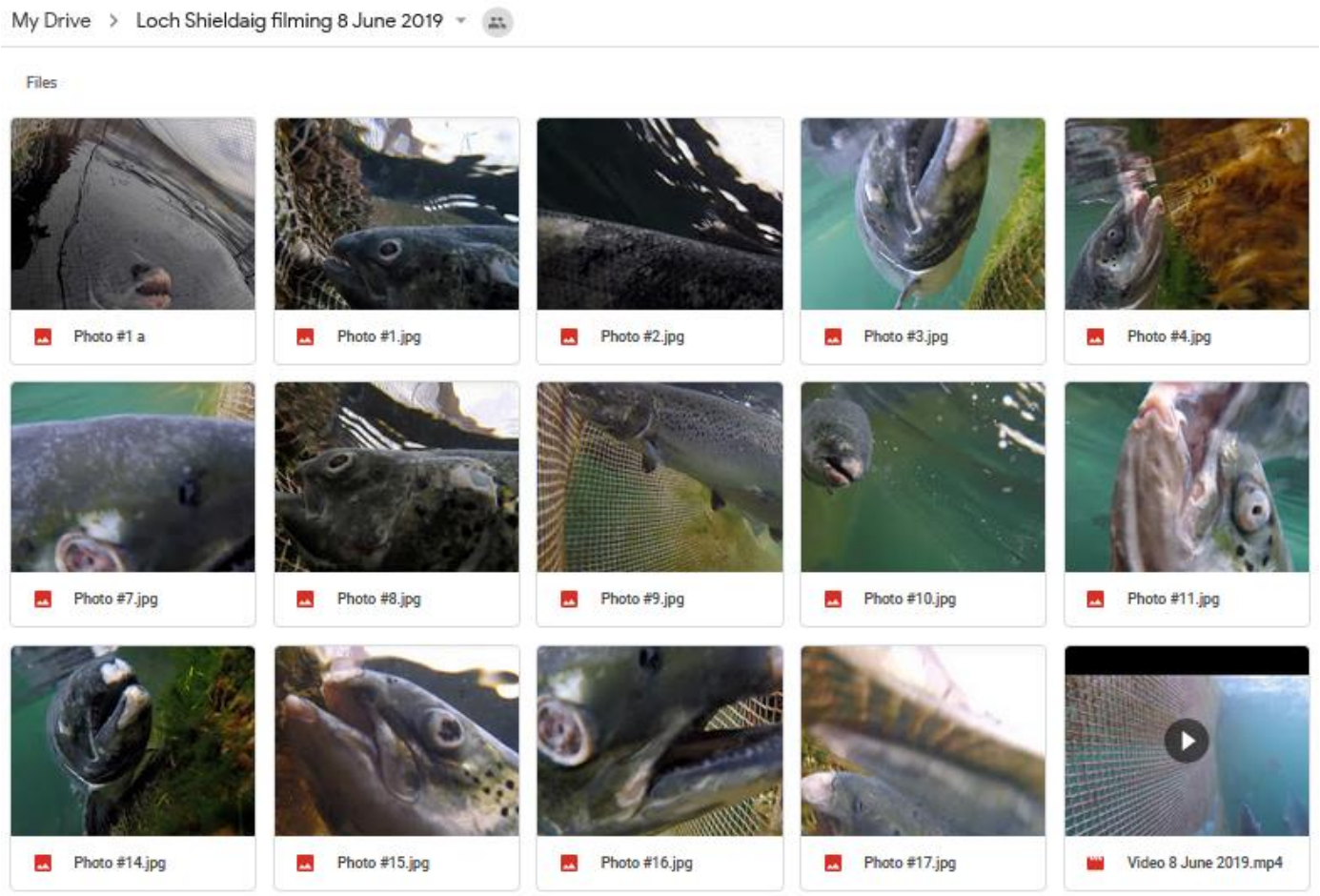
[redacted] (TSSC vet), [redacted] (TSSC), [redacted] (TSSC biologist), [redacted] (TSSC senior biologist) and [redacted] (APHA vet)
Visit conducted following report from Scottish Salmon Watch in relation to welfare issues on site.

Treatments - 27/5- 29/5/19 thermolicer. 17/4/19 hydrolicer, 5/3/19 hydrolicer,

Recent mort figures; wk20 0.24%, wk21 0.2%, wk22 0.48% (post treatment),

Site inspection, optilicer (Volt Processor) at cage pumping both salmon and lumpfish. Any damaged fish were being removed and dispatched in a harvest bin with an overdose of anaesthetic. On site inspection approximately 10-15 blind, rubbed and moribund were observed at the cage edges. In about three cages this number was about 15-30 fish. Many of these fish were removed during the inspection and killed with an overdoes of anaesthetic. 5 of these fish were sampled for diagnostic examination.

Additional comments:
All fish sampled were blind. Fish 3 "boil" on flank, Fish 4 enlarged gall bladder.



Read more via [Mmmm Blind Scottish Salmon with Boils, Anyone?]

Grieg Seafood - North Papa (28 March 2019):

Optilicer brought in first week of February and first week of March to reduce sea lice numbers across site.

Approximately 10 moribund fish observed across site with signs of physical damage (attributed to a recent optilicer treatment).

w/b 18/03/19 (1,031, 0.61%), w/b 11/03/19 (801, 0.48%), w/b 04/03/19 (1,437, 0.85%), w/b 25/02/19 (965, 0.57%), w/b 18/02/19 (697, 0.41%) - attributed to optilicer treatment.

Fish 1 Bilateral Exophthalmia

Read more via [Meet Pop-Eye the Scottish Salmon - Tortured by an Optilicer!]

Grieg Seafood - Gob na Hoe (Loch Dunvegan) (28 March 2019):

Optilicer used in week 10 , pen 2 and 3 had increased mortality post treatment. High mortality was observed in pen 4 which has had ongoing gill issues. Mortality numbers went over the reporting threshold post treatment, this mortality event was not reported at the time, and was picked up during the inspection.

During visual inspection of pens some fish were observed with physical damage to heads and tails. Site staff noted that this is localised to the larger fish which are more susceptible to damage when going through the optilicer. It was also noted that that the optilicer treatments were very effective at clearing the fish of lice.

Severe lesions observed on gills in pen 4.

Case No: 2019-0138 Site No: FS1175 Date of visit: 28/03/2019

Start date:	End date: (if applicable)	Size of fish:	Average weight of affected population:	Species:	Yearclass:	Timescale	Mortality rate recorded(%):	Explained/ unexplained:	If explained, select reason(s):
04/03/19	10/03/2019	≥750g	4.3kilos	SAL	18 S0's	Weekly	1.39	Explained	Complex gill issues, Treatment

Total mortality during event (if available):	Additional information (e.g. action taken by company):	Action taken by FHI (include case no where applicable):
3216	Post treatment mortality after treating for gills. Mortality stopped week after treatment	Mortality fell bellow the threshold the following week. No further action required.

Grieg Seafood - Leinish (Loch Dunvegan) (28 March 2019):

There have been ongoing increased levels of mortality at leinish due to treatments for ongoing gill issues, these numbers have not been above the reporting threshold but higher than normal.

An Optilicer boat from Shetland has been periodically treating and targeting pens at Leinish to control lice. The site manager reported that the optilicer had been achieving great clearance and reported that the combination treatment is significantly less harsh than the singular thermolicer or hydrolicer on its own.

However it was noted that because the fish are quite large (>4kg), the bigger fish are getting knocked around during the treatment process. The damage caused by the optilicer was observed on site in the form of a few fish near the surface with large physical wounds, appearing healthy otherwise.

Scottish Sea Farms - Teisti Geo (26 March 2019):

Thermolicer treatment at the beginning of February 2018, increase in mortalities attributed to physical damage and stress.

Thermolicer is reported to give very good clearances of sea lice. Site manager reported that they had used the hydrolicer, but the system could not handle fish over 3.5 kg and the grade of fish is important to provide consistent clearance.

June and July 2017, rise to 4% across whole site for whole month, attribited to thermolicer treatment.

Grieg Seafood - Leinish (Loch Dunvegan) (20 February 2019):

Spike in mortalities was recorded during week 45 and week 46 in 2018. These spikes were not reported to the FHI. After speaking to the production manager he reported that the mortality was attributed to two treatments in two pens. The optilicer was being trialled in pen 1 and a salmosan treatment took place in pen 3. Both of these treatments resulted in an increase in mortality.

2018 'Case Information' published by the Scottish Government's Fish Health Inspectorate included:

Mowi - Ornish Island (28 November 2018):

30/10/11/ - 01/11/18 - Thermolicer treatment carried out

w/b - 06/08/18 - 1.92% 19000 - post treatment thermolicer

The Scottish Salmon Company - Reibinish (21 November 2018):

Sea lice counts were above the reporting criteria with ongoing mechanical and AMX bath treatments being administered.

(43- 122 - 0.02%) (44- 2284- 0.35% Hydrolicer treat) (45-37- 0.01%) (46- 878 - 0.13%), cleanerfish mortality 48 (0.73%) last four weeks

Scottish Sea Farms - Loch Creran D (10 October 2018):

Currently under a slice treatment. Last hydrolicer was 22-25/9/18. Looking to do thermolicer next week.

Obervation on site;many fish with white heads and some with red heads on site. Worst cages 1 and 7. Fish in these cages currently on starve for thermolicer treatment Mon-wed next week. High numbers of lice observed in fish removed for sampling

Lice Load	Estimate numbers	20+	20+	20+	20+	20+

Additional comments:

Fish 1; red head - Fish 2 White head - Fish 3 Red head All fish with pale livers, extensive lice damage. Fish on starve for lice treatment next week

The Scottish Salmon Company - Vacasay (Loch Roag) (5 September 2018):

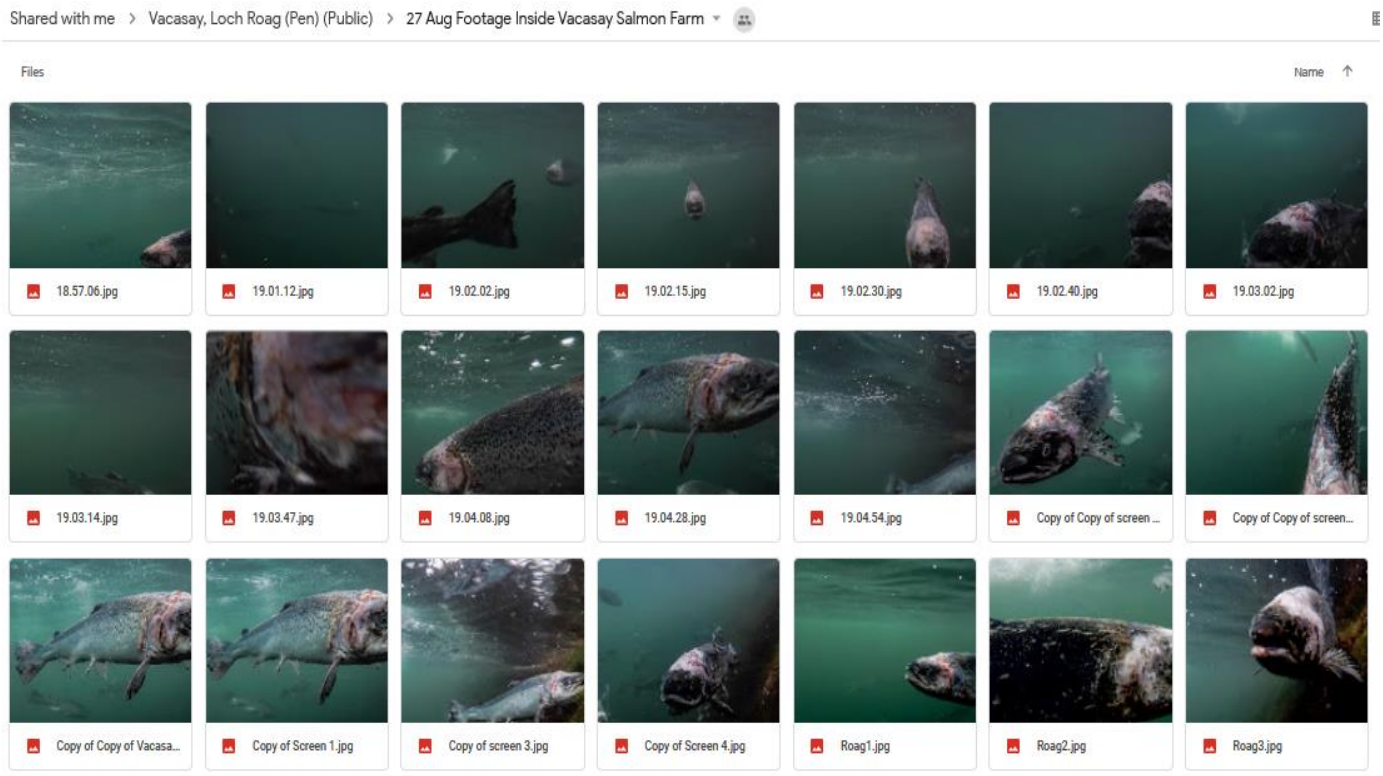
Accompanied APHA staff on visit to site following report of potential welfare issues by member of the public. Hydrolicer has been used on site in May (strategic treatment), June, July (when numbers rose significantly), twice in August (weeks 32 and 35).
Inspected a number of cages on the site. Worst affected cage appeared to have ~100 fish with observable lice damage (white heads and a few with more significant damage). Numbers with lice damage were lower in other cages. Hydrolicer treatment being conducted on cage 5. Observed fish exiting the hydrolicer over dewaterer and no fish seen with observable lice damage.

5. Evidence of recent increased/atypical mortalities? Y

If yes, facility nos/no mortality per facility/no stock per facility/reason:

wk 35 - Treatments with hydrolicer across site. Cage 4 - 1,469 (5.13%), Cage 6 - 1,264 (4.27%), cage 10 - 1,036 (3.56%)

Lice Load	Estimate numbers	high	high	high	high	high



Additional comments:
All fish had lice damage to the head area. Lice observed on all fish, mixture of Leps and Caligus. F1 had physical damage to left opercula and gill filaments were damaged. F1-5 gill damage - a few white patches, small amount of haemorrhaging and some damaged tips of filaments

Mortality levels had been low over the preceding few weeks, but had risen in week 35 to 2.56% (7,516). The increase had been attributed to a treatment with a hydrolicer during week 35. Gill health issues had been noted on site and samples had tested positive for AGD.

A number of lethargic fish with high lice loads and physical damage on the head area due to lice were observed across the site. Five fish were removed for further examination and subsequent diagnostic sampling.

Fish 1, 2 and 5 had some haemorrhaging along the ventrum. Fish 1 to 5 had gill damage consisting of small amount of petechial haemorrhaging, white patches and damage to the gill tips. Fish 1 had a shortened opercula and the gill filaments were more severely damaged. All five fish had yellow pseudo-faeces internally.

Read more via [Sick salmon at Scottish fish farm revealed on film]

The Scottish Salmon Company - Vuia Mor (Loch Roag) (13 August 2018)

The hydrolicer has been used on site in May (twice) and mid July, with a peroxide treatment in July for sea lice. Last hydrolicer treatment worked well, but had a settlement of juvenile leps very quickly afterwards. Were due to treat whole site using hydrolicer last Monday, but after ~2,000 fish had passed through the hydrolicer it was apparent that the fish were not coping with the crowding or the treatment and it was stopped.
Increased mortality started in cages 13 and 14. Mortalities were low at the weekend (single figures over 4/5 August), increased to ~250 on Monday, and then thousands on Tuesday.
Packed Cell Volume (PCV) counts have dropped dramatically as well. At end of week 31 the average for the site was 34% (range mostly 21-40%), by middle of week 32 they had dropped to 17% (mostly below 20%). Report from health staff from mid week 32 commented that the anaemia was significantly worse than the previous week, the feeding response was poor, lice numbers were high with cranial damage visible and PGD scores were high.
Histology report summary from start of August reported moderate to severe necrosis in the liver (suggestive of anoxia), multifocal severe/moderate lesions on the gills (consistent with treatment) and moderate grade anaemia.
Water temperatures have been above 14C since week 27.
On site lethargic fish seen in cages with high lice loads and cranial lice damage (estimate 50 - 100 per cage inspected with some worse than others e.g. cage 1). Reported that number of fish with visible lice damage has increased over the last week.

Lice Load	Estimate numbers	High	High	High	High	High	High	High	High	High	High

Additional comments:
Fish 1 - Slight lice damage to head, some petechial haemorrhages on gill Fish 2 - Smaller, Slight lice damage to head, damaged gill, small number of petechial haemorrhages on liver Fish 3 - Slight lice damage to head, some petechial haemorrhages on gill, small number of petechial haemorrhages on liver, spleen pale, liver very pale Fish 4 - severe lice damage to head, small white patches on gills Fish 5 - severe lice damage to head Fish 6 - severe lice damage to head Fish 7 - severe lice damage to head, some petechial haemorrhages on gill Fish 8 - Slight lice damage to head

Mowi - Loch Greshornish (12 June 2018):

. One pen was treated with hydrolicer but resulted in increased morts so treatments stopped.

Scottish Sea Farms - Fishnish B (Sound of Mull) (17 April 2018)

Increase in dead due to thermolicer treatments.

Scottish Sea Farms - Fishnish A (Sound of Mull) (17 April 2018):

thermolicer at Fishnish A and B 28-31 March 2018. 29/10/17 - slice, 1/7/17 Aquasure, 7/12/17 - Aquasure.

Last 4 weeks morts peaked at 1.7% per cage for 4 weeks - thermolicer dead. 0.66% for site /4wks.

mortality since input (Jan 2017) for site 7.13%. Two thermolicer treatments caused mort peaks January and March, handling morts.

The Scottish Salmon Company - Trilleachan Mor (Loch Seaforth) (27 March 2018)

Mortality event reported on the 22/01/2018 - Post treatment losses.
WK3, slightly higher mortality due to Thermolicer treatment (below 1%).
Thermolicing this week, 3rd of the year

Company vet checking to make sure fish were suitable for thermolicer

Cases reported in 2017 included:

The Scottish Salmon Company - Druimyeon Bay (Sound of Gigha) (5 December 2017)

Site inspected following mortalities reported above the weekly threshold. Mortalities have been attributed to PGD, and post hydrolicer losses. Recent vet report has identified CMS and this is now a factor in losses. 5 fish removed for diagnostic sampling, 6/9 cages are on the harvest forecast sheet and the site may be fallow by the end of the year.
Site is quite exposed and water was very choppy which affected visibility at times during the inspection. ~10 moribund fish observed per cage, some of which had sea lice grazing damage to heads.
It was reported that there was a higher than normal % of mature fish, this was estimated to be ~20%, half of moribund fish visible in the cages were maturing fish.

Lice Load	Estimate numbers	~10	~10	~10	~10	~10

06/11 - 25,607 (4.44%) attributed to post hydrolicer treatment, 13/11 - 45,089 (8.69%) attributed to post hydrolicer treatment, CMS and handling, 20/11 - 61,777 (14.12%) attributed to CMS and handling and 27/11 - 34,680 (10.12%) attributed to CMS and handling

Kames - Shuna SW (Rubh'an Trilleachain) (29 November 2017)

wk 45 - 6,184 (~1.7%) (80 to physical damage, 3,826 attributed to hydrolicer treatment and 2,278 attributed to anaemia), wk 46 - 3,303 (0.93%) (110 attributed to poor doers, 1,572 attributed to physical damage, 1,603 attributed to hydrolicer treatment and 18 attributed to anaemia) and wk 47 - 1,130 (0.32%) (1,130 attribited to physical damage)

Mowi - Caolas A Deas (Loch Shell) (7 November 2017)

Elevated mortality levels after treatment with thermolicer so no other cages treated.

August - 14,091 (5.5%) following thermolicer and salmosan treatments. September - 11,282 (4.66%) following salmosan treatment)

7. Have increased (unexplained) mortalities been reported to vet or FHI?	Y
If yes, detail action:	No further treatments with thermolicer. Continue with harvest

Case No: 2017-0506 Site No: FS1291 Date of visit: 07/11/2017

Total mortality during event (if available):	Additional information (e.g. action taken by company):	Action taken by FHI (include case no where applicable):
4,663	Thermolicer treatment on one cage. Decided not to treat other cages with thermolicer.	FHI not informed at time. Site inspected 7/11/17.

Mowi - Bagh Dail Nan Ceann (Loch Shuna) (12 October 2017)

~15000 (9000 between 3&9th sept) in September due to treatments - Thermolicer and H202, ~1000 9-10/10/17 - thermolicer in cages 1 & 2. 2804 in total so far for October 2017.

Mowi - Port Na Cro (Shuna Sound) (11 October 2017)

Total mortality since input 11264 - majority of mortalities are post treatment mainly mechanical also H202 for gills 1 and 2 October 2017 3100 mortalities post thermolicer, Pen 2 1100 (1/10/17), Pen 1 1700, Pen 3 200 (2/10/17) 15/8/17 - 793/site post treatment 650 out of Pen 1

0-1100/site/day - mainly post treatment mechanical/H202

The Scottish Salmon Company - Loch Odhairn (Gravir) (29 August 2017)

Total mortality during event (if available):	Additional information (e.g. action taken by company):
17191	accelerated harvests, some lice damaged fish hydrolicer treatment needed

The Scottish Salmon Company - North Uiskevagh (29 August 2017)

Total mortality during event (if available):	Additional information (e.g. action taken by company):
7278	Vet was onsite, gill aneamia (complex gill health). Hydrolicer on site

Mowi - Maol Ban (Inner Sound) (12 July 2017)

Notified of mortality event following treatment with Thermolicer. Mortality returned to below 1% the following week. Site stocked with 223,000 fish at 4.8Kg. Mortality of 2,200 on 17/6/17 from 2 pens (1.01% for site for the week).

Total mortality during event (if available):	Mortality rate recorded(%):	Explained/ unexplained:	If explained, select reason(s):
2,200	1.01	Explained	Treatment

Mowi - Creag an T'Sagairt (Loch Hourn) (12 July 2017)

Informed of elevated mortalities across three week period. Mortalities dropped below 1% in week 27 and have remained below 1%. Site stocked with 2016 Q3s at 2.75Kg
Week 24 - 1.39% (12,082) freshwater wellboat treatment
Week 25 - 1.09% (9,331) Thermolicer

Case No: 2017-0268 Site No: FS0605 Date of visit: 12/07/2017

Total mortality during event (if available):	Additional information (e.g. action taken by company):
9,331	Thermolicer

The Scottish Salmon Company - Kenmore (Loch Torridon) (23 June 2017)

FHI informed of a 1.91% (1851 fish) mortality of 3.4kg fish during week 23 (5 - 11/06/2017). This was put down to post treatment with hydrolicer. Mortality rate dropped to 0.7% for week 24. Levels increased again to 1.17% for week 25 but confirmed on 30th of June 2017 that week 26 mortality was below 1%.

Case No: 2017-0262 Site No: FS0050 Date of visit: 23/06/2017

Total mortality during event (if available):	Additional information (e.g. action taken by company):	Action taken by FHI (include case no where applicable):
1851	No action by company. Had been treating with hydrolicer.	Site to be visited when next in area. Confirmed on 30th June 2017 that mortality level now below 1%.
	No action by company. Had been treating with hydrolicer.	Site to be visited when next in area. Confirmed on 30th June 2017 that mortality level now below 1%.

The Scottish Salmon Company - Lamlash (Isle of Arran) (13 June 2017)

Hydrolicer on site week ending 22/5/17. Increase in mort's attributed to hydrolicer handling. Mort's at 0.57% for week.

5. Evidence of recent increased/atypical mortalities?	Y
If yes, facility nos/no mortality per facility/no stock per facility/reason:	
post hydrolicer across site 0.5%/site/week - see additional info	

Scottish Sea Farms - South Sound (1 June 2017)

Sea lice numbers just above 3 during April (wk 15 & 16) but not reported. Thermolicer used wk 18 brought numbers back below CoGP suggested criteria for treatment. Are hoping to set up skirts on 2 currently empty cages and transfer fish that have just been treated into these cages. Manager reported that estimate 30 - 40% of lice are knocked off fish during crowding prior to mechanical treatment and hence are not getting removed and caught by the filters.

Mortalities: 1/5/17- 3,460 (1.06%) post thermolicer treatment (24 - 30/4/17)

5. Evidence of recent increased/atypical mortalities?	Y
If yes, facility nos/no mortality per facility/no stock per facility/reason:	
wb 1/5/17 post treatment with thermolicer losses across site - 3,460 (1.06%)	

Case No: 2017-0198 Site No: FS0183 Date of visit: 01/06/2017

Total mortality during event (if available):	Additional information (e.g. action taken by company):
3460	No action taken. Mortality due to treatment with thermolicer. Mortalities reduced significantly the following week

Grieg Seafood - Langa Isle (East) (30 May 2017)

Mortalities:
Mortalities over the last 4 weeks have been low, not exceeding the reporting criteria. All put down to post treatment.
A spike in mortalities in Dec. 2016, where the percentage exceeded the reporting criteria. This was put down to post treatment losses with the Thermolicer. This event however, was not reported to the FHI.

Fish on site feeding well but external damage to fish was visible due to lice and treatments to reduce lice numbers.

Additional comments:

F1 - Haemorrhaging on the ventrum along to the base of the tail. F2 - extensive damage to the head, tail & dorsal. Lesion

F2 - extensive damage to the head, tail & dorsal. Lesion on dorsal and in front of adipose.

Mortality rate recorded(%):	Total mortality during event (if available):	Additional information (e.g. action taken by company):
5.30	18232	Thermolicer treatment losses
5.75	19131	Thermolicer treatment losses

Mowi - Hellisay (Isle of Barra) (24 May 2017)

Mortalities have been up slightly due to physical damage following crowding for thermolicing. The fish require crowding for extended periods which has resulted in some damage and increased mortality. There were a few fish with signs of physical damage on the flanks but they were not moribund and could not be caught.

Recent mortality (last 4 wks):	~6K for thermolicer in 3wks May

Mowi - Cairidh (Loch Ainort) (17 May 2017)

3472 morts/site November 2016 treatment loss - 7347 morts in total for month
Pen 2 3411 December 2016 hydrolicer - Operator error during pumping - water switched off in pump
January 2017 pen 1 2542 Thermolicer/sea lice damage, pen 2 6019 Thermolicer/sea lice damage - post new year - settlement was very quick only two cages affected.
Pen 1 728 April 2017 treatment loss - 3342/site April 2017

Case No: 2017-0187 Site No: FS0252 Date of visit: 17/05/2017

Total mortality during event (if available):	Additional information (e.g. action taken by company):	Action taken by FHI (include case no where applicable):
8561	Pen 1 and 2 affected post Thermolicer treatment the rest of the site was not treated	MRT case conducted

Scottish Sea Farms - Dury Voe (4 April 2017)

Mortalities mainly attributed to seal predation (23.8% of mortalities since input), post treatment (30.7% of mortalities since input) and concussion (14.2% of mortalities since input). Have lost a total of 52,921 fish since input. Mortalities removed as required using dead baskets. Divers on site conducting monthly net inspections.

4. Recent mortality (last 4 wks):	10,793 from 27/2/17-2/4/17 (5.05%) mainly attributed to seal predation (33%) and treatment with the thermolicer (38%)
5. Evidence of recent increased/atypical mortalities?	Y
If yes, facility nos/no mortality per facility/no stock per facility/reason:	
Across site due to seals and post treatment with thermolicer	

Scottish Sea Farms - Nevis A (Loch Nevis) (4 April 2017)

5. Evidence of recent increased/atypical mortalities?	Y
If yes, facility nos/no mortality per facility/no stock per facility/reason:	
SAL: w/b 13/3 486 morts for cage 5 divers were in post thermolicer treatment.	
6. Any other peaks in mortality during period checked?	Y
If yes, detail:	SAL: Slightly increased morts on input; approximately 6,000 morts in total attributed to thermolicer treatment; a few cages higher morts with failed smolts 200-300 every few weeks for a few months. WRS: very low since input in October 2016, increased wk2 2017 93 morts per site post Salmosan treatment and wk10 2017 post thermolicer 122 morts per site

Case No: 2017-0130 Site No: FS0430 Date of visit: 04/04/2017

Mortality rate recorded(%):	Total mortality during event (if available):	Additional information (e.g. action taken by company):
1.58	4,129	Losses following Thermolicer treatment. Thought to be fish weakend by HSMI.

Grieg Seafood - Score Holms (14 March 2017)

6. Any other peaks in mortality during period checked?	Y
If yes, detail:	21/11/16 - 10,619 post hot water treatment losses across site.

Case No: 2017-0101 Site No: FS0948 Date of visit: 14/03/2017

Mortality rate recorded(%):	Total mortality during event (if available):	Additional information (e.g. action taken by company):
3.70	10,619	Mortalities post Thermolicer treatment,

The Scottish Salmon Company - Meall Mhor (Loch Fyne) (2 March 2017)

Case No: 2017-0076 Site No: FS0091 Date of visit: 02/03/2017

Total mortality during event (if available):	Additional information (e.g. action taken by company):	Action taken by FHI (include case no where applicable):
49116	Post h202 treatment, complex gill issues and PD runts 2 treatments in period one bath and one hydrolicer	MRT case - no action as report was retrospective

The Scottish Salmon Company - Strondoir Bay (Loch Fyne) (2 March 2017)

Case No:	2017-0078	Site No:	FS1019	Date of visit:	02/03/2017

Total mortality during event (if available):	Additional information (e.g. action taken by company):	Action taken by FHI (include case no where applicable):
36103	Post treatment salmosan, h202 and hydrolicer, complex gills, agd	MRT Case - no action as report was retrospective

Mowi - Eilean Grianain (Kilbrannan Sound) (1 March 2017)

14th and 19th September 2016 - Hydrolicer trialled on Pens 15/11/16 - not carried out across site as fish deemed to big and some eye damage experienced

A few fish with eye damage observed across the site, reportedly due to the hydrolicer, one was examined internally but no gross pathology was observed and no samples taken.

The Scottish Salmon Company - Quarry Point (Loch Fyne) (28 February 2017)

19/9/16 - 25/9/16 - 7445 mortalities - reported post treatment and complex gill issues
14/11/16 - 20/11/16 - 4247 mortalities - reported post treatment and complex gill issues
Small number of moribund fish observed with eye damage, reportedly from hydrolicer, 3 removed for examination, no internal gross pathology, no samples taken

Case No:	2017-0045	Site No:	FS0698	Date of visit:	28/02/2017

Total mortality during event (if available):	Additional information (e.g. action taken by company):
4247	Post Hydrolicer treatment, fish with compromised health did not survive the treatment well - mechanical damage

The Scottish Salmon Company - Glenan Bay (Loch Fyne) (15 February 2017)

Hydrolicer has been successfully used instead of chemical treatment.

4. Recent mortality (last 4 wks):	W1- 1.1% (hydrolicer) W2 - 0.1% - W3- 0.04% W4 0.15% across the whole site.
5. Evidence of recent increased/atypical mortalities?	Y
If yes, facility nos/no mortality per facility/no stock per facility/reason:	
Increased mortality during wb 13/01 due to hydrolicer lice treatment	

Cases reported in 2016 included:

Grieg Seafood - North Havra (9 November 2016)

Increased mortality after the last thermolicer treatment that started the weeks before the inspection. Thermolicer has been in operation at other sites with reportedly no increase in mortality.
Thermolicer treatments are reportedly effective at removing lice. Adult females at an average of 2.075 before the treatment and 0.075 after (96% clearance).

4. Recent mortality (last 4 wks):	5,794 (2.5%) due to background morts and thermolicer
5. Evidence of recent increased/atypical mortalities?	Y
If yes, facility nos/no mortality per facility/no stock per facility/reason:	
All cages affected. Attributed to 'physical damage' on mort records but the damage is reportedly due to the thermolicer.	

Case No: 2016-0528 Site No: FS0674 Date of visit: 09/11/2016

Mortality rate recorded(%):	If explained, select reason(s):	Total mortality during event (if available):	Additional information (e.g. action taken by company):
2.50	Treatment	5,794	Thermolicer treatments

Read more via Treatment leads to morts in Shetland and Thermal treatment for lice blamed for salmon deaths

Cooke Aquaculture - Burrastow (9 November 2016)

Sea lice treatment with thermolicer. Some losses post treatment, but have now reduced. Thermolicer worked well at removing lice.

Case No: 2016-0442 Site No: FS0666 Date of visit: 09/11/2016

Mortality rate recorded(%):	Explained/ unexplained:	If explained, select reason(s):	Total mortality during event (if available):	Additional information (e.g. action taken by company):
2.67	Explained	Treatment		Physical damage following use of thermolicer. Due to be harvested out soon

Mowi - Loch Greshornish (8 September 2016)

Lice on site tested and found to be 60% resistance to all treatments. Lice problems started in Feb 2016. In 2016 the site has had monthly treatments; 2x salmosan bath, 2x salmosan wellboat, 2x hydrolicer, 1 x thermolicer. SLICE has proven ineffective (5x treatments) in 2015. Alphamax 9x bath treatments and peroxide treatments in this cycle of fish. Had to stop thermolicer treatment. It was giving 96% clearance but was killing too many fish. Temperature of 32c required. Treatment on 28th July killing 47,000 fish for month (9%). Solution has been to carry out salmosan treatment in the well boat for an extended time of 3 hours. Is causing increased morts. Lice leves are falling but increasing again soon after. Extended salmosan treatment on 20/8/16, current lice levels average; gravids;3.07, adult females;5.9, adult males; 4.28, preadults;8.65, chalimus; 2.63. Plan to harvest early and site should be fallow by end september 2016. Fish are not dying due to lice damage.

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

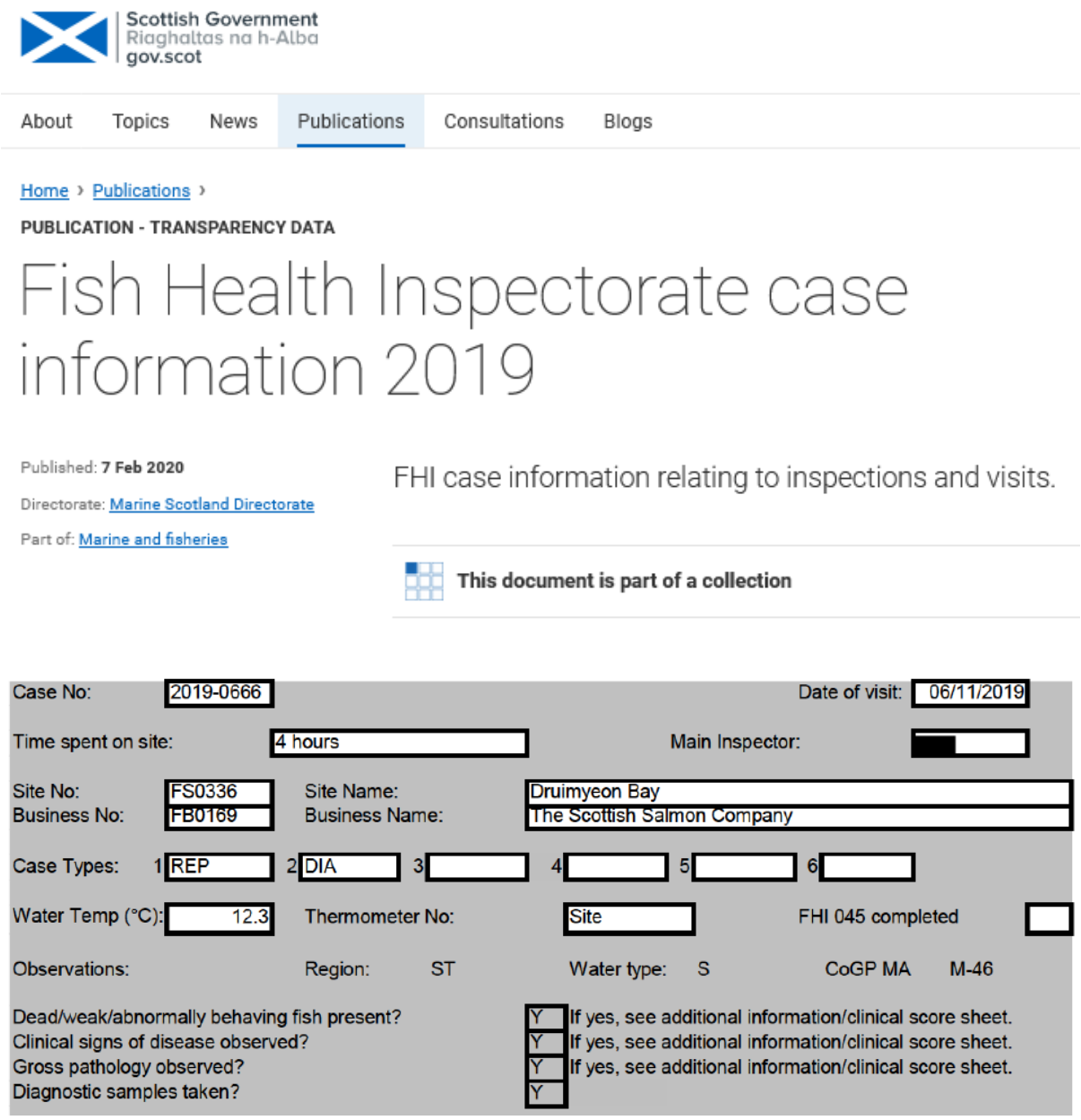
Case No: 2016-0379 Site No: FS0015 Date of visit: 08/09/2016

Total mortality during event (if available):	Additional information (e.g. action taken by company):	Mortality rate recorded(%):
47000	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	9.00

Read more via 'Thermolicer' Back-Fires Killing 95,400 Farmed Salmon

Appendix:

'Case Information' published by the Scottish Government in February 2020 detailing Fish Health Inspectorate site visits during 2019 included:



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PUBLICATION - TRANSPARENCY DATA

Fish Health Inspectorate case information 2019

Published: **7 Feb 2020**

Directorate: Marine Scotland Directorate

Part of: Marine and fisheries

FHI case information relating to inspections and visits.

This document is part of a collection

Case No:	2019-0666					Date of visit:	06/11/2019		
Time spent on site:	4 hours					Main Inspector:	[redacted]		
Site No:	FS0336	Site Name:	Druimyeon Bay						
Business No:	FB0169	Business Name:	The Scottish Salmon Company						
Case Types:	1 REP	2 DIA	3	4	5	6			
Water Temp (°C):	12.3	Thermometer No:	Site			FHI 045 completed			
Observations:		Region:	ST	Water type:	S	CoGP MA	M-46		
Dead/weak/abnormally behaving fish present?				Y	If yes, see additional information/clinical score sheet.				
Clinical signs of disease observed?				Y	If yes, see additional information/clinical score sheet.				
Gross pathology observed?				Y	If yes, see additional information/clinical score sheet.				
Diagnostic samples taken?				Y					

Additional Case Information:

03/06/2019 09/06/2019 1.5 PD 11,000
10/06/2019 16/06/2019 2 PD 14,000
17/06/2019 23/06/2019 2.01 PD 14000
24/06/2019 30/06/2019 1.90 PD 13000
01/07/2019 07/07/2019 1.27 PD 8628
08/07/2019 14/07/2019 1.02 PD 6854
22/07/2019 28/07/2019 1.00 PD/Handling 6591
23/09/2019 29/09/2019 1.36 Explained Gill 7451
07/10/2019 13/10/2019 1.04 Explained Gill health challenge (PGD) and some handling for harvest 5586
14/10/2019 20/10/2019 3.64 Explained Gill health challenge (AGD) & treatment 18,777

Input 2018 Sept 7. Russel burn

Morts; week 43 - 1.04% gill health 4960 fish. Week 44 0.48% 2021 fish gill health

Thermolicer on site 14/10/19 for 1 week. Lice levels increase - juv and pre adults. Average adult females prior to treatment 1.85, all stages 21.13 post treatment average adult females,1.15 All stage 5.6.

Hydrolicer currently on site treating.

East Tarbert Bay - 3 cages stocked currently harvesting well boat live to Ardyne for killing. 34000 left on site and these will be harvested out in the next month. Average weight 3.9kg. Week 44 morts 0.18% (842 fish) attributed to gill issues (1.58% post treatment wk 43)

Section 2: Case Detail

Observations

Druimyeon Bay was visited following reports from the business that mortality levels at the site had been high. This increase had been attributed to pancreas disease and gill health challenges including proliferative gill disease and amoebic gill disease. Handling and post treatment losses were also reported. For the two weeks prior to this visit mortality levels had been 1.04% (4960 fish) and 0.48% (2021 fish) respectively.

During the site inspection 5 moribund fish were removed from the pens for diagnostic examination. All fish five had pale gills. F2 had zoned gills and F3 had necrotic gills. F1 and F5 had external skin lesions. Internally F5 had bloody ascites and a swollen, grey and granular kidney.

Case No:	2019-0561			Date of visit:	13/11/2019
Time spent on site:	9 hours			Main Inspector:	[redacted]
Site No:	FS1291	Site Name:	Caolas A Deas		
Business No:	FB0119	Business Name:	Mowi Scotland Ltd		
Case Types:	1 REP	2 DIA	3	4	5 6
Water Temp (°C):	11.3	Thermometer No:	T275	FHI 045 completed	
Observations:		Region:	WI	Water type: S	CoGP MA W-5

Dead/weak/abnormally behaving fish present?	Y	If yes, see additional information/clinical score sheet.
Clinical signs of disease observed?	Y	If yes, see additional information/clinical score sheet.
Gross pathology observed?	Y	If yes, see additional information/clinical score sheet.
Diagnostic samples taken?	Y	

Additional Case Information:

Mortality disposal usually to Energen Cumbernauld - Fish during mass mortality go to landfill, white shore cockles on Uist.

Vet report from 23rd of October -

Gill issues, positive AGD swabs, so the site was treated with freshwater on October 11th , Hydrolicer 1 November.

Peroxide treatment - 11-14 Oct, thermolicer treatment 28th Oct

Lice figures low throughout the site - treating to keep numbers low.

Report from FVG 07/11/2019 - site reported higher mortalities and bleeding fish bleeding in aesthetic baths. High number of moribund fish seen in cages and were visually examined. Fish examined had severe anaemia, with severely pale gills and organs. No evidence of Haemorrhages in internal organs or obvious systemic infectious disease detected while on site. Clinically normal fish assessed showed multifocal chronic flat AGD lesions and occasional petechial haemorrhages along the filaments. Histology revealed mild to moderate vascular damage and AGD lesions in the gills of the fish sampled. Observed gill damage and bleeding suspected to be of an environmental origin, but exact cause yet to be determined.

Mortality onsite attributed to complications in treatment, arrising from gill health issues and anaemia.

Section 2: Case Detail

Observations

The site was inspected following a report of increased mortality by the business. Records on site showed that mortality for the 4 weeks before the inspection was 0.59% (6185 fish), 0.97% (9993 fish), 5.5% (57,089 fish), and 4.45% (43,499 fish) respectively. The company attributed increased mortality to treatment complications arising from gill issues which were being experienced on site, as well as anaemia.

Externally F2-F5 had pale gills,the gills of F1,F3-F5 were zoned and the gills of F4 were also necrotic. There was haemorrhaging at the base of the fins and the throat of F5 and the base of the fins of F4.

Internal examination showed enlarged spleens in all fish. The hearts of F2-F5 were pale and the kidney of F4 was grey. Pseudo-faeces were present in the gut of F1 and F5 and there was clear ascites in F2 and bloody ascites in F5.

Case No:	2019-0577								Date of visit:	17/10/2019	
Time spent on site:	11h								Main Inspector:	[redacted]	
Site No:	FS0245	Site Name:	Ardintoul								
Business No:	FB0119	Business Name:	Mowi Scotland Ltd								
Case Types:	1 ECI	2 CNI	3 SLI	4 VMD	5 DIA	6					
Water Temp (°C):	13.1	Thermometer No:	T205				FHI 045 completed				
Observations:		Region:	HI	Water type:	S		CoGP MA	M-21			

Dead/weak/abnormally behaving fish present?	Y	If yes, see additional information/clinical score sheet.
Clinical signs of disease observed?	Y	If yes, see additional information/clinical score sheet.
Gross pathology observed?	Y	If yes, see additional information/clinical score sheet.
Diagnostic samples taken?	Y	

Additional Case Information:

Paperwork completed 14/10/2019, site inspection on 17/10/2019

One movement on of cleaner fish from Ireland. Certificate checked.

Grid shifted by approximately 50 meter in strong tides on 1 September 2019. No damage to the pens and no containment issues observed on site. The moorings were immediately moved back and a new anchor was put in place (seahold 1.5 tonnes, holding strain of 60 tonnes). New concrete blocks to be added to the anchors in due course.

wk40 1.8 female leps, wk41 1.13 female leps Thermolicer treatment started 10/10/2019, finishing 14/10/2019 (between 2-3 pens per day). Good clearance observed so far.

Cleanerfish mortality - Lumpsuckers: August 2019 10,260 morts in Lumpfish, treated for bacterial infection, September 2019 7,209 morts. October to date: 2,461 morts. Wrasse: August 2019 2,086 and September 2019 3,006 morts. Large number of handling events from treatments likely to have contributed to increased morts.

5. Evidence of recent increased/atypical mortalities?	Y
If yes, facility nos/no mortality per facility/no stock per facility/reason:	
SAL: Mortality starting to increase across the site 28/29 September between 0-500 per pen over two days. 30/9/19 5,600 morts pen 1, 1,700 morts each in pen 3, 5, 7. 1/10/19 1,750 pen 7, 1,500 morts pen 9, 1,850 morts pen 10, 2,500 morts pen 11, 2,250morts pen 12. 2/10/19 2,125 morts pen 2, 2,825 morts pen 4, 1,065 morts pen 6, 3,500 pen 8, 3,150 morts pen 12. 3/10/19 2,100 morts pen 9. 3/10/19 and following days morts sharply drop off to mid-low hundreds or double digit figures. Occasional higher numbers : 9/10/19 pen2 900 morts, 11/10/19 1,250 morts pen 3, 12/10/19 1,400 morts pen 6, 13/10/19 1,610 morts pen 7, 1,090 morts pen 10. But overall decreased to low hundreds (occasional mid hundred) and double digits per pen per day. Over the last month (9/9-13/10) most mortalities attributed to anaemia (48,879 morts) and peroxide treatment (10,700 morts total from pen 1,3,5 and 7 only). 10/10/2019 5,220 morts attributed to thermolicer treatments. This is due to gill issues and the fish being slightly too small. Normally considerable lower post treatment morts.	
6. Any other peaks in mortality during period checked?	Y
If yes, detail: SAL: On input slight increase in pen 6 and pen 10 due to fungus. Some mortality attributed to seal predation. Seal targeting very small fish in specific pens repeatedly (pen 10). Persistently increasing morts from seal predation 1,365 morts in June 2019. July 2019 3,221 morts due to concussions due to increased Caligus burdens. Slice treatment administered. August 2019 6,380 morts attributed to Salmosan treatment, 2,185 morts attributed to thermolicer. Total morts for September 29,065 attributed to anaemia, two peroxide treatments, thermolicer and decomposed.	
7. Have increased (unexplained) mortalities been reported to vet or FHI?	Y

Results of Surveillance

1. Has any animal health surveillance been carried out by, or on behalf of, the business?	Y
2. If yes, are results available for inspection?	Y
3. Any significant results?	Y
If yes, detail (if not detailed under recent disease problems).	AGD and anaemia (pale gills)

Company vet report from 25/9/2019. Advance AGD and anaemia on site. Peroxide treatment ordered which is expected to cause some mortality in severely anaemic fish. Anaemia diet has been started. Higher than normal levels of cataracts observed on site. Change in feed to support eye problems. Health report from 26 August due to unexpected high post treatment (Salmosan) morts, further lice treatment required, poor gill health with obvious AGD lesions, gills also appear affected by relatively recent environmental source, no plankton recorded so to investigate jellyfish. Health report 8/8/19 noting high mortalities due to concussion. Health report 24/01/2019 increased input morts due to previously diagnosed health issues in freshwater (fungus).

Records checked between: 22/11/2017 - 14/10/2019

Case No:	2019-0602	Date of visit:	16/10/2019
Time spent on site:	6 hours	Main Inspector:	[redacted]
Site No:	FS1275	Site Name:	Flaeshins
Business No:	FB0095	Business Name:	Cooke Aquaculture Scotland Ltd

Additional Case Information:

Fish on site showing pathology of CMS, Grumbling mortality due to size of fish with CMS complication.

Site is currently being harvested out.

Mortality event in week 18 2019 (1.06%) - was not reported to FHI - event was due to post treatment mortality following a thermolicer treatment.

Mortality Records	
1. Mortality records available for inspection?	Y
2. How are mortalities disposed of?	Incinerated - Shetland Waste to Energy
If other detail:	
3. Mortality records complete and correctly entered?	Y
4. Recent mortality (last 4 wks):	41(1529 fish - 0.58%)40(1639 fish-0.59%)39(1428 fish-0.52%)38(1905 fish-0.65%)
5. Evidence of recent increased/atypical mortalities?	Y
If yes, facility nos/no mortality per facility/no stock per facility/reason:	
whole site seeing elevated mortalities due to CMS	
6. Any other peaks in mortality during period checked?	Y
If yes, detail:	Week 18 2019 (5414 - 1.06%) Post treatment mortality - Thermolicer
7. Have increased (unexplained) mortalities been reported to vet or FHI?	Y
If yes, detail action:	Company vet contacted
8. Have 'mortality events' been reported to FHI? If no, add MRT case and enter on mortality events sheet.	N

Case No:	2019-0479	Date of visit:	10/09/2019
Time spent on site:	4 hours	Main Inspector:	[redacted]
Site No:	FS1262	Site Name:	Sgeir Dughall
Business No:	FB0169	Business Name:	The Scottish Salmon Company

Additional Case Information:

Visit with [redacted] Paperwork [redacted], Inspection, [redacted] and Sampling [redacted]

Aird currently fallow. Sgier Dugall fallow by Thursday this week. Kenmore stocked.

Cleaner fish going with Harvest and killed at PP.
Mort disposal whole in Billy bowie skips

Freshwater and Mechanical treatments used on site. Thermolicer 5/9/19.

Only 5 thousand fish left on site - production morts due to crowding for harvest and post treatments

Wk31 308 morts - 0.12%, wk32 581 - 0.25%, wk33 761- 0.40, wk35 407- 0.23%, wk36 461- 0.33%,

Fish on site input from Aird and Kenmore in Dec 2018-Jan 2019.

Low level AGD (treated in January), background CMS, able to keep lice numbers down with freshwater and thermolicer treatments.

morts not above 1% since site input. Peak wk 14 2019 at 0.98%, 5315 fish attributed to post-treatment. Hydrolicer

Case No:	2019-0491			Date of visit:	10/09/2019
Time spent on site:	4 hours			Main Inspector:	[redacted]
Site No:	FS0804	Site Name:	Kishorn B (North)		
Business No:	FB0125	Business Name:	Scottish Sea Farms Ltd		

Case Types:	1	DIA	2	REP	3		4		5		6	

Water Temp (°C):	13.2	Thermometer No:	T146	FHI 045 completed	
Observations:		Region:	HI	Water type:	S

CoGP MA M-19

Dead/weak/abnormally behaving fish present?	Y	If yes, see additional information/clinical score sheet.
Clinical signs of disease observed?	Y	If yes, see additional information/clinical score sheet.
Gross pathology observed?	Y	If yes, see additional information/clinical score sheet.
Diagnostic samples taken?	Y	

Additional Case Information:

Visit conducted following reported mort events; wk24 - 1.14% CGI; wk32 - 2.5% CGI, wk33 4.12% CMS and post treatment, Thermolicer.

Weather conditions very poor. Only able to get onto one cage before having to come ashore. Computer network down so unable to view paper work. Information collected verbally. Fish observed in cage with white heads.

Lice levels are high and a salmosan treatment is planned for Thursday for cages 6, 8 and 15. Rest of cages on harvest plan

Last week mort figures have come down a bit.

Last lice count for the site; Verbally around 7 adult females for last lice count.

SLICE treatment last week. Finished on Sunday

Wrasse on site not proving effective. Stocked at 5%. Wild wrasse on site.

Paperwork by [redacted], Inspection by [redacted] and [redacted] Sampling by [redacted]

Case No:	2019-0491	Site No:	FS0804		
Date of Visit:	10/09/2019			Inspector(s):	[redacted]

Registration/Authorisation Details

1. Business/site details summary checked by site representative?	Y
2. Changes made to details?	N

Site Details

Total No facilities		15	Facilities stocked		8	No facilities inspected		1
Species	sal							
Age group	2018 Q2							
No Fish	140,000							
Mean Fish Wt	5							
Next Fallow Date (Site)		end Nov		Next Input Date (Site)		April 2020		

Recent (last 4 wks) disease problems?	Y	Any escapes (since last visit)?	N
If yes, detail:	CMS, Gills, post treatment		

Additional comments:
F1 -red head lice damage   F3 white head, lice damage. Fish 4 seal damaged. Head damage -red head- lice.

Section 2: Case Detail

Observations

The above site was inspected following a report from the operator of increased mortality in the Atlantic salmon stocked on the site. At the time of the inspection the site was stocked with 140,000 2018 Q2 Atlantic salmon at an average weight of 5Kg. Due to unfavourable weather and increasing swell, only one cage was inspected. A number of lethargic salmon were observed and four were removed for diagnostic purpose.

Mortality levels were elevated during week 24 in June 2019, week 32 in August, and peaking at 4.12% in week 33. Health surveillance carried out by the business reported proliferative gill disease (PGD) and CMS.

From the fish removed for diagnostic examination, sea lice damage was evident on the heads of fish 1, 3 & 4. Fish 4 also had physical damage, most likely attributed to seal predation. F2 showed slightly raised scales due to oedema while all four fish sampled showed mild haemorrhaging along the ventral surface. The gills of F1-3 were pale and all four fish had a sea lice load of over 50. Internally the heart of F1 was pale, there was evidence of petechial haemorrhaging on the liver of F3 and the liver of F1 was yellow in colour.

Case No:	2019-0476			Date of visit:	05/09/2019
Time spent on site:	4hrs			Main Inspector:	[redacted]
Site No:	FS0244	Site Name:	Loch Leven (1)		
Business No:	FB0119	Business Name:	Mowi Scotland Ltd		

Additional Case Information:

Ronja Commander used for occasional live harvests to Mallaig. Percussive stunners and bleeders on site.

Blood samples taken every 2 weeks by health manager.

Low mortalities across cycle, mainly attributed to poor performers, post-treatment (thermolicer) losses and seal predation.

Fish sampled for VMD appeared healthy and had a good feeding response.

Inspection, paperwork and VMD sampling completed by [redacted] under [redacted] supervision.

Case No:	2019-0380			Date of visit:	05/08/2019
Time spent on site:	6 hours			Main Inspector:	[redacted]
Site No:	FS0937	Site Name:	West of Burwick		
Business No:	FB0440	Business Name:	Grieg Seafood Shetland Ltd		

Additional Case Information:

Harvesting of fish has been brought forward after advisory letter issued in relation to sea lice. Site should be fallow within next 2-3 weeks. Treated two cages last week using optilicer, but mortality levels increased due to physical damage so decided not to use optilicer on further cages. Will treat cages using freshwater to reduce the sea lice numbers in conjunction with harvesting.

Have used various sea lice treatments this cycle - Slice, hydrogen peroxide, salmosan, optilicer and thermolicer. Lumpfish were stocked on site in July 2018, but none remaining on site now (gradual mortalities since stocking). Recent salmosan treatments have not been as effective at reducing sea lice numbers as those administered earlier in cycle, but company have used optilicer post salmosan treatment to further reduce to sea lice numbers. Lice skirts were initially installed on site, but removed when aeration system in use for plankton (don't use both at the same time).

Large grade of fish were transferred to Score Holms in March, May and June 2019. Normally harvest from site using dead haul.

Seal nets are in place and don't have a predation issue at site.

Observed sea lice count on cage 7. Average adult female lice level of 10.8. Fish appeared in good condition and no significant sea lice damage observed. Six fish with physical damage on head observed across site, but all deep down and not able to catch (water visibility good).

One fish sampled for VMD appeared healthy.

Farm Management Statement received 16/1/2020 in relation to issue raised. As FMAg has been replaced with FMS, issue raised is no longer applicable ([redacted] 27/1/2020)

Mortality Records

1. Mortality records available for inspection?	Y
2. How are mortalities disposed of?	Whole fish - TWMA (Shetland)
If other detail:	Also use incinerator at Lerwick
3. Mortality records complete and correctly entered?	Y
4. Recent mortality (last 4 wks):	w/b 8/7/19 - 548, w/b 15/7/19 - 596, w/b 22/7/19 - 763, w/b 29/7/19 - 3,598. Mainly due to physical damage
5. Evidence of recent increased/atypical mortalities?	Y

If yes, facility nos/no mortality per facility/no stock per facility/reason:

w/b 29/7/19 - cages 1 and 2 (2,300 total between both cages) after treatment with optilicer. Total mortality that week for whole site = 3,598 (2.73%)

6. Any other peaks in mortality during period checked?	Y
If yes, detail:	w/b 28/1/19 through to 3/3/19 - 52,634 physical damage following treatment with optilicer (see mortality event sheet for weekly details)
7. Have increased (unexplained) mortalities been reported to vet or FHI?	N/A
If yes, detail action:	
8. Have 'mortality events' been reported to FHI? If no, add MRT case and enter on mortality events sheet.	N

Case No: 2019-0380 Site No: FS0937 Date of visit: 05/08/2019

Start date:	End date: (if applicable)	Size of fish:	Average weight of affected population:	Species:	If explained, select reason(s):	Total mortality during event (if available):
28/01/19	03/02/2019	≥750g	2.9Kg	SAL	Post treatment (optilicer)	16,500
04/02/19	10/02/2019	≥750g	2.9Kg	SAL	Post treatment (optilicer)	9,025
11/02/19	17/02/2019	≥750g	3Kg	SAL	Post treatment (optilicer)	7,468
18/02/19	24/02/2019	≥750g	3Kg	SAL	Post treatment (optilicer)	14,529
25/02/19	03/03/2019	≥750g	3Kg	SAL	Post treatment (optilicer)	5,112
06/05/19	12/05/2019	≥750g	3.8Kg	SAL	Post treatment (thermolicer)	5,584

marinescotland science

Scottish Government
Riaghaltas na h-Alba
gov.scot

[redacted]
Grieg Seafood Shetland Ltd
Gremista
Lerwick
Shetland
ZE1 OPX
[redacted]

FISH HEALTH INSPECTORATE VISIT REPORT

SUMMARY FOR INFORMATION OF SITE OPERATOR

BUSINESS NO	FB0440	**DATE OF VISIT**	05/08/2019
SITE NO	FS0937	**SITE NAME**	West of Burwick
INSPECTOR	[redacted]	**CASE NO**	20190380

Inspection under the Aquatic Animal Health (Scotland) Regulations 2009

Mortality levels had exceeded the reporting criteria since the last inspection and had not been reported to the Fish Health Inspectorate. I would like to remind you of the industry agreement in relation to mortality reporting as detailed in A Code of Good Practice for Scottish Finfish Aquaculture.

Case No:	2019-0274	Date of visit:	12/06/2019
Time spent on site:	4 hours	Main Inspector:	[redacted]
Site No:	FS0804	Site Name:	Kishorn B (North)
Business No:	FB0125	Business Name:	Scottish Sea Farms Ltd

Additional Case Information:

Fish input in September split from Kishorn West. Wild caught wrasse fromTobermory, Tingwall and Orkney. Two havests live to Scalloway. Another harvest planned for weekend.

Morts for 2 kishorn sites brought to shore base for incineration. If larger numbers moved off whole

Mort events from; 7-13/1/19, 18-24/2/19, 8/-14/4/19 and 15-21/4/19 range 1.08- 1.34%/site wk attributed to AGD treatment, CGI - all reported to FHI.

Current morts; 6-12/6/19 - 0.26%/site/week (900 fish) - post treatment; 27/5-5/6/19 - 0.19% site /wk; 20-26/5/19 - 1.25%- CGI and post wellboat treatment. - reported

Mort figures counts; 18/2/19-24/2/19 4509; 8/4/19-14/4/19; 4007; 15/4/19-21/4/19, 3767; 20/5/19 - 26/5/19, 3322

Thermolicer treatment completed on Monday. Gill effected cages were harvested, rest of the site treated.

two treatments on Norholm; salmosan, 22 May 2019. - morts event for that week attibuted to post treatment. 50-60% clearance. Two cages 5 and 7 and these are going to be harvested. -not put through thermoclicer this week. Harvested out on Saturday.

Farm management statement detailed input from fresh water site. However the fish were input in Sept 2018 split from Kishorn West.

Lice current levels wk23 2019 - 1.19 average adult females pre thermolicer treatments, wk22 - 2.05, wk21; 1.5, wk20, 1.57

Case No:	2019-0311								Date of visit:	26/06/2019	
Time spent on site:								Main Inspector:		[redacted]	
Site No:	FS0805	Site Name:	Bagh Dail Nan Cean								
Business No:	FB0119	Business Name:	Mowi Scotland Ltd								
Case Types:	1 ECI	2 CNI	3 SLI	4 VMD	5	6					
Water Temp (°C):	12.5	Thermometer No:	T155				FHI 045 completed	N			
Observations:		Region:	ST	Water type:	S		CoGP MA	M-40			
Dead/weak/abnormally behaving fish present?		Y	If yes, see additional information/clinical score sheet.								

Additional Case Information:

FS in movement records not recorded

Currently treating on site with a thermolicer. Treatment abandoned today as fish were not taking to it very well. (Hot weather) Fish in the pen that had been treated looked very lethargic, the fish were visible a brighter shade of blue (probably due to the stress of crowd, water temperature). The weather was very hot on the day of inspection which probably contributed to the abandoning of the treatment.

2 pens are stocked with wild mixed wrasse and the rest of pens are stocked with lumpfish.

More wrasse arriving over the summer. A consignment of wrasse was due to be received from Northern Ireland on the 30th of June. The consignment contained around 1000 wrasse. Due to the movement of wrasse on site from Northern Ireland, this will increase the surveillance frequency category from medium to high.

There was an input of wrasse during 2018. These wrasse were slowly lost to mortality throughout the year and more so through the winter months. Looking through the records of wrasse mortality there seemed to be a variety of reasons for mortality. Predation, furuncolosis being the main ones. Site manager indicated that not many wrasse survived through the 2018/19 winter period.

Winter input of lumpfish into ten pens. Site manager noted that he was pleased with lumpfish survival over the winter, however they have been having issues with mortality increasing with the warmer weather and rise in sea temperature. This was visible when inspecting the pens as some fish looked very lean, and others with a clear fungal challenge. There were a few pens were this was evident, however most pens this did not seem to be an issue from the inspection. Health challenges were reported by site workers to the company vet. Who visited the site to health check the lumpfish, the vets report concluded that there was no visible health challenge with the lumpfish on site.

Case No:	2019-0312							Date of visit:	26/06/2019		
Time spent on site:	8hrs							Main Inspector:	[redacted]		
Site No:	FS0859	Site Name:	Port Na Cro								
Business No:	FB0119	Business Name:	Mowi Scotland Ltd								
Case Types:	1 ECI	2 CNI	3 SLI	4 VMD	5	6					
Water Temp (°C):	12.5	Thermometer No:	T155					FHI 045 completed	N		
Observations:		Region:	ST	Water type:	S			CoGP MA	M-40		
Dead/weak/abnormally behaving fish present?	Y	If yes, see additional information/clinical score sheet.									

Additional Case Information:

Salmosan treatment - pen 1 (Thursday the second of may.) post treatment mortality - 2.4% Cumulative mortality lost from pen.

Thermolicer treatment. 15th of June. Good clearance reported after treatment. Pens that had been treated with the thermolicer more recently had some lethargic fish visible in the pens, some of which had obvious mechanical damage from the thermolicer treatment.

MOWI when fish are bellow 2 kilos their trigger level for treatment is 0.2 lice / fish. This is a new adaptation to their sea lice policy so treatments are occurring more regularly and a lot earlier in the initial stages of sea lice settlement.

42000 lumpfish put in at end of 2018 - 32000 left. Lots of mortality attributed to post treatment and summer weather. Lethargic and lean lumpfish could be seen swimming round the edges of the pens. There were a lot of healthy ones too. Some had apparent issues with fungus attributed to the warmer weather. Site manager noted that they do really well in the winter months but as the sea warms up in summer they see increases in mortality and increases mortality post treatment.

Wrasse going to be stocked over the summer months. A Combination of wild and farmed -
Possibly coming from Ireland, Weymouth or local fishermen. BDNC is currently being stocked with wild wrasse from NI and local areas.

Morts are ensiled off site at a pier owned by Kames. Dead fish are moved to pier using work boats rather than a waste collector, so there are no transport records, just a list of how many bins are taken to the pier periodically.

All fish sample appeared healthy and free from lice, Internally they showed no signs of disease.

Sampling, Inspection and paperwork completed by [redacted] supervised by [redacted]

Results of Surveillance

1. Has any animal health surveillance been carried out by, or on behalf of, the business?	Y
2. If yes, are results available for inspection?	Y
3. Any significant results?	Y
If yes, detail (if not detailed under recent disease problems).	Health manager visited site. Observed sluggish and lethargic fish hanging at sides. Samples were taken to test for presence of SAV (PD)

Case No:	2019-0273	Date of visit:	12/06/2019
Time spent on site:	4 hours	Main Inspector:	[redacted]
Site No:	FS1274	Site Name:	Kishorn West
Business No:	FB0125	Business Name:	Scottish Sea Farms Ltd

Additional Case Information:

MR; no FS numbers and poor descriptions of areas wrasse caught from. Agreed more info including FS number will be included in future.

Wrasse mortality ranging from 2.95% to 24% since input currently peaking at 0.24%/cage/wk. Mort levels initially high but mort number have reduced.

Current salmon mort levels; wk21 0.25%/site/week, wk22;0.88% (post treatment - thermolicer), wk23 0.2%, wk24 0.04%

Thermolicer treatment resulted in increased morts - reported Monday 15th April -21 April 1.29% - 4233.

Peak morts 11613/site/wk -post input (May 2018) so not reported.

Treatments; Slice - 24/2/19, paramove -11/12/18,

Case No:	2019-0271			Date of visit:	13/06/2019
Time spent on site:	6 hours			Main Inspector:	[redacted]
Site No:	FS0594	Site Name:	Aird		
Business No:	FB0169	Business Name:	The Scottish Salmon Company		
Case Types:	1 REP	2 DIA	3	4	5 6
Water Temp (°C):	10	Thermometer No:	T146	FHI 045 completed	N/A
Observations:		Region: HI	Water type: S	CoGP MA	M-17

Dead/weak/abnormally behaving fish present?	Y	If yes, see additional information/clinical score sheet.
Clinical signs of disease observed?	Y	If yes, see additional information/clinical score sheet.
Gross pathology observed?	Y	If yes, see additional information/clinical score sheet.
Diagnostic samples taken?	Y	

Additional Case Information:

[redacted] (TSSC vet), [redacted] (TSSC), [redacted] (TSSC biologist), [redacted] (TSSC senior biologist) and [redacted] (APHA vet)
Visit conducted following report from Scottish Salmon Watch in relation to welfare issues on site.

Lump fish on site from Swansea, Otterferry and Ocean matters. - all hatchery reared.

Recent mort figures; wk20 0.24%, wk21 0.2%, wk22 0.48% (post treatment), wk23 0.39% wk24 0.10%

Treatments - 27/5- 29/5/19 thermolicer. 17/4/19 hydrolicer, 5/3/19 hydrolicer, 12/12/18 slice, 24/10/18 hydrogen peroxide, 21/9/18 hydrogen peroxide, 4/9/18 slice, 9/7/18 slice

Reported mort event; 1.29% - bad weather 18th March -14th March

Harvesting live to Arnish - last harvest 17/5/19 - harvesting on going.

Last lice count; 25.55 all stages; adult female 2.66, Optilicer on site today and will treat whole site today and tomorrow. Clearance has been good.

Movement book; Not recording source of cleaner fish; asked to record in future. No further action required.

Site inspection, optilicer (Volt Processor) at cage pumping both salmon and lumpfish. Any damaged fish were being removed and dispatched in a harvest bin with an overdose of anaesthetic. On site inspection approximately 10-15 blind, rubbed and moribund were observed at the cage edges. In about three cages this number was about 15-30 fish. Many of these fish were removed during the inspection and killed with an overdoes of anaesthetic. 5 of these fish were sampled for diagnostic examination. Fish were also viewed with the under water cameras on the barge. No moribund or blind fish were observed on the underwater cameras. APHA have advised the Scottish Salmon Company to remove all affected fish immediately and will be recommending that the company reviews its procedures to ensure that enough staff time is dedicated to inspecting cages and removing moribund fish, particularly during periods where there are increased poor doing fish on site.
A follow up inspection will be scheduled to check that the recommendation has been complied with.

Additional comments:
All fish sampled were blind. Fish 3 "boil" on flank, Fish 4 enlarged gall bladder.

Case no:	2019-0271	Site No:	FS0594	Method of killing:	Anaesthetic
Date of visit:	13/06/2019	Inspector(s):	[redacted]	Sheet Relevant:	Y

S for strong presence: **M** for medium presence: **W** for weak presence

Fish Number		1	2	3	4	5					
Time sampled after death (if > 45 minutes)		1-2 hou	1-2 hou	1-2 hou	1-2 hou	1-2 hours					
External Signs											
Behaviour	Moribund	S	S	S	S	S					
	Lethargic	S	S	S	S	S					
Eyes	Exophthalmic										
	Enophthalmic (sunken)										
	Cataract										
	Haemorrhagic	S		S	S	S					
Gills	Pale										
	Zoned										
	Necrotic										
Lesions	Flank	S		S	S						

Section 2: Case Detail

Observations

Following a report received by the inspectorate of welfare issues at Aird an inspection was arranged with a veterinarian from the Animal and Plant Health Agency. On inspection of the pens approximately 10-15 blind, rubbed and moribund fish were observed at the surface of each pen. This number increased to approximately 15-30 in three of the pens. During the inspection many of these fish were removed and dispatched with an overdose of aesthetic. While we were on site a boat was present treating the fish. During this procedure any damaged fish were removed and

dispatched in a harvest bin with an overdose of anaesthetic. Five fish removed directly from the pens were retained for diagnostic examination.

All five fish sampled were moribund, lethargic and blind. Externally four had haemorrhaged eyes and three had flank lesions including a "boil" like lesion on fish three. Internally fish three and four had enlarged livers and fish four had an enlarged gall bladder.

Case No:	2019-0138			Date of visit:	28/03/2019
Time spent on site:	8 hrs			Main Inspector:	[redacted]
Site No:	FS1175	Site Name:	Gob na Hoe		
Business No:	FB0440	Business Name:	Grieg Seafood Shetland Ltd		

Case Types:	1	ECI	2	SLI	3	CNA	4	VMD	5		6

Water Temp (°C):	8.3	Thermometer No:	T205		FHI 045 completed		N/A
Observations:		Region:	HI	Water type:	S	CoGP MA	M-25
Dead/weak/abnormally behaving fish present?			Y	If yes, see additional information/clinical score sheet.			

Additional Case Information:

FS number not recorded in movement book, this was raised with the site manager at the time of inspection and it was agreed that this would be recorded moving forward.

a new movement book has been sent out for Gob na Hoe as their current one was almost full

Optilicer used in week 10 , pen 2 and 3 had increased mortality post treatment. High mortality was observed in pen 4 which has had ongoing gill issues. Mortality numbers went over the reporting threshold post treatment, this mortality event was not reported at the time, and was picked up during the inspection.

During visual inspection of pens some fish were observed with physical damage to heads and tails. Site staff noted that this is localised to the larger fish which are more susceptible to damage when going through the optilicer. It was also noted that that the optilicer treatments were very effective at clearing the fish of lice.

Low to medium fowling was observed on the nets, the site has recently started using a new net washing boat which is making its way around both GNH and Leinish, using the auto boss net cleaning system. The boat is hired in along with the dive team from a third party contractor.

During inspection of the divers logs, it was noted that holes had been observed and repaired at Pen 8 on the 25/3/19, another set of holes was noted in pen 3 on the 15/2/19 in the dive logs. The divers log noted there were 4 holes in the sock repaired and 1 large hole repaired with a 2 meter patch. The site manager has been asked to provide further information on these dive reports and a notifications of potential escapes if necessary

Inspection and paperwork conducted by [redacted] supervised by [redacted]

Records received 26/7/2019, further records requested. Deadline extended by 30 days to provide additional requested documents. New deadline 31 August 2019.

Documents received on the 3rd of August 2019.

Results of Surveillance

1. Has any animal health surveillance been carried out by, or on behalf of, the business?	Y
2. If yes, are results available for inspection?	Y
3. Any significant results?	Y
If yes, detail (if not detailed under recent disease problems).	

Severe lesions observed on gills in pen 4, CMS detected in pen 8 with pathology observed in 8 and 4. No CMS detected in pen 4

Records checked between:	20/02/19-28/03/19

Case No: 2019-0138 Site No: FS1175 Date of visit: 28/03/2019

Start date:	End date: (if applicable)	Size of fish:	Average weight of affected population:	Species:	Yearclass:	Timescale	Mortality rate recorded(%):	Explained/ unexplained:	If explained, select reason(s):
04/03/19	10/03/2019	≥750g	4.3kilos	SAL	18 S0's	Weekly	1.39	Explained	Complex gill issues, Treatment

Total mortality during event (if available):	Additional information (e.g. action taken by company):	Action taken by FHI (include case no where applicable):
3216	Post treatment mortality after treating for gills. Mortality stopped week after treatment	Mortality fell bellow the threshold the following week. No further action required.

Case No: 2019-0135 Date of visit: 28/03/2019

Time spent on site: 5hrs Main Inspector: [redacted]

Site No: FS0515 Site Name: North Papa
Business No: FB0440 Business Name: Grieg Seafood Shetland Ltd

Case Types: 1 ECI 2 CNI 3 SLI 4 VMD 5 DIA 6

Water Temp (°C): 7.1 Thermometer No: T152 FHI 045 completed N

Observations: Region: SH Water type: S CoGP MA S-11

Dead/weak/abnormally behaving fish present?	Y	If yes, see additional information/clinical score sheet.
Clinical signs of disease observed?	Y	If yes, see additional information/clinical score sheet.
Gross pathology observed?	Y	If yes, see additional information/clinical score sheet.
Diagnostic samples taken?	Y	

Additional Case Information:

Optilicer brought in first week of February and first week of March to reduce sea lice numbers across site. Freshwater treatments have also been done, for next freshwater treatment the Ronja Superior will be used that has a larger well capacity allowing higher tonnages to be done each day. Operator has reduced the use of medicinal sea lice treatments in favour of mechanical and FW. Also authorised to hold lumpsuckers.

Lice skirts also used on all stocked cages.

Approximately 10 moribund fish observed across site with signs of physical damage (attributed to a recent optilicer treatment). 3 fish taken for diagnostic sample. Good visibility in cages at time of inspection (~4m).

Fish taken for VMD appeared healthy and feeding well.

Inspection, paperwork, F3 diagnostic and all VMD sampling completed by [redacted] under [redacted] supervision. F1 and F2 diagnostic completed by [redacted]

Mortality Records	
1. Mortality records available for inspection?	Y
2. How are mortalities disposed of?	Whole fish - TWMA (Shetland)
If other detail:	
3. Mortality records complete and correctly entered?	Y
4. Recent mortality (last 4 wks):	w/b 18/03/19 (1,031, 0.61%), w/b 11/03/19 (801, 0.48%), w/b 04/03/19 (1,437, 0.85%), w/b 25/02/19 (965, 0.57%), w/b 18/02/19 (697, 0.41%) - attributed to optilicer treatment.
5. Evidence of recent increased/atypical mortalities?	N
If yes, facility nos/no mortality per facility/no stock per facility/reason:	
6. Any other peaks in mortality during period checked?	N
If yes, detail:	
7. Have increased (unexplained) mortalities been reported to vet or FHI?	N/A
If yes, detail action:	
8. Have 'mortality events' been reported to FHI? If no, add MRT case and enter on mortality events sheet.	Y

Section 2: Case Detail

Observations

During a routine inspection of the North Papa site, a number of moribund and lethargic Atlantic salmon were observed in a number of pens. Three lethargic fish were removed for further examination and subsequent diagnostic sampling. No significant mortalities had been reported since the last inspection, with 1,031 mortalities (0.61%) recorded for the week prior to the site inspection.

Externally, ventral haemorrhaging was observed in all three fish, with F1 and F2 displaying bilateral exophthalmia. The gills of F2 were zoned, while F1 and F3 were pale in colour.

Internally, bloody ascites were observed in F1 and F3, with F3 also displaying gross haemorrhaging in the liver and petechial haemorrhaging in the pyloric caeca. The spleen was enlarged in F1 and F2, with F1 displaying yellow pseudo-faeces. The gut of F3 was empty.

Case No:	2019-0133								Date of visit:	26/03/2019	
Time spent on site:	5 hrs							Main Inspector:	[redacted]		
Site No:	FS1093	Site Name:	Teisti Geo								
Business No:	FB0125	Business Name:	Scottish Sea Farms Ltd								
Case Types:	1 ECI	2 CNI	3 SLI	4 VMD	5	6					
Water Temp (°C):	7	Thermometer No:	T152				FHI 045 completed	N			
Observations:		Region:	SH	Water type:	S		CoGP MA	S-11			
Dead/weak/abnormally behaving fish present?	Y	If yes, see additional information/clinical score sheet.									

Additional Case Information:

Thermolicer treatment at the beginning of February 2018, increase in mortalities attributed to physical damage and stress.

Currently trialling a feed that aims to increase the fish's ability to combat gill problems, by increasing haematocrit levels in the blood. Control cages are 8 and 9 and are therefore not receiving this trial feed. Awaiting results.

Thermolicer is reported to give very good clearances of sea lice. Site manager reported that they had used the hydrolicer, but the system could not handle fish over 3.5 kg and the grade of fish is important to provide consistent clearance.
Only chemical theraputants used this cycle for sea lice control are two SLICE treatments and one hydrogen peroxide treatment, one of the SLICE treatments was administered to reduce the levels of caligus on site and was reported to give a good clearance rate. Due to caligus settlement fish were jumping in to the top net support and causing physical damage to themselves. During this caligus were at a level of 6 per fish. May not use SLICE during next production cycle, currently unsure if Tiesti Geo will be stocked or fallowed for next cycle.

Several moribund fish identified across site.

Fish taken for VMD sample appeared healthy and feeding well.

No site specific lice strategy or harvest strategy. Discussed with manager who has agreed to draft these documents and submit to MSS.

Inspection, paperwork and VMD sampling completed by [redacted] under [redacted] supervision.

Mortality Records	
1. Mortality records available for inspection?	Y
2. How are mortalities disposed of?	Incinerated - Shetland Waste to Energy
If other detail:	High tonnages go to TMWA, Tingwall.
3. Mortality records complete and correctly entered?	Y
4. Recent mortality (last 4 wks):	week 9: (4,060, 0.46%), week 10: (3,054, 0.32%), week 11: (2,523, 0.26%), week 12: (1,511, 0.15%) across whole site.
5. Evidence of recent increased/atypical mortalities?	N
If yes, facility nos/no mortality per facility/no stock per facility/reason:	
6. Any other peaks in mortality during period checked?	Y
If yes, detail:	June and July 2017, rise to 4% across whole site for whole month, attributed to thermolicer treatment.
7. Have increased (unexplained) mortalities been reported to vet or FHI?	N/A
If yes, detail action:	
8. Have 'mortality events' been reported to FHI? If no, add MRT case and enter on mortality events sheet.	N/A

Case No:	2019-0139								Date of visit:	28/03/2019	
Time spent on site:	8.5 hours								Main Inspector:	[redacted]	
Site No:	FS0800		Site Name:	Leinish							
Business No:	FB0440		Business Name:	Grieg Seafood Shetland Ltd							
Case Types:	1	ECI	2	CNI	3	SLI	4	VMD	5		6
Water Temp (°C):	8.3		Thermometer No:	T205					FHI 045 completed	Y	
Observations:			Region:	HI			Water type:	S	CoGP MA	M-25	
Dead/weak/abnormally behaving fish present?	Y	If yes, see additional information/clinical score sheet.									

Additional Case Information:

2 last harvests not included in movement book as final numbers not received yet from the processing plant in Shetland.

There have been ongoing increased levels of mortality at leinish due to treatments for ongoing gill issues, these numbers have not been above the reporting threshold but higher than normal.

An Optilicer boat from Shetland has been periodically treating and targeting pens at Leinish to control lice. The site manager reported that the optilicer had been achieving great clearance and reported that the combination treatment is significantly less harsh than the singular thermolicer or hydrolicer on its own.

However it was noted that because the fish are quite large (>4kg), the bigger fish are getting knocked around during the treatment process. The damage caused by the optilicer was observed on site in the form of a few fish near the surface with large physical wounds, appearing healthy otherwise.

The site has been suffering from ongoing gill issues and grumbling morts from the worst affected pens. Gross Gill pathology was noted in a health surveillance report issued by fish vet group the week previous to inspection. They also detected a moritella infection in Pen 2 at Leinish. This pen has been quarantined from the rest of the site and no staff/equipment move off the unit without full disinfecting boat, PPE and equipment. This practice was observed during the inspection.

Visability was poor and fish feeding very low in the water. A few injured but actively swimming fish were observed. Fish sampled for VMD looked good and appeared healthy.

Inspection, paperwork and VMD sampling completed by [redacted] supervised by [redacted]

Case No:	2019-0074			Date of visit:	20/02/2019
Time spent on site:	6 hrs			Main Inspector:	[redacted]
Site No:	FS0800	Site Name:	Leinish		
Business No:	FB0440	Business Name:	Grieg Seafood Shetland Ltd		

1. Recent treatments (last 4 wks)?	Y
If yes, detail:	T.M.S., Salmosan
If other, detail:	optilicer

Additional Case Information:

Due to the extremely poor weather on the day of inspection and consequently the day after, the inspection of cages was not carried out.

Monday the 18th Feb count - total avg females for site 3.19 - not reported yet.

Site manager told us about a previous escape where a pipe on the well boat had burst during fish movements spilling fish out into the sea. This had be reported to the FHI and steps had been taken to prevent this happening in the future. The site made efforts to recapture the fish in collaboration with the local DSFB, using gill nets around the cages and near river mouths.

week 45- 3.06% 11828 -

week 46 - 1.01 % 3782 -

Spike in mortalities was recorded during week 45 and week 46 in 2018. These spikes were not reported to the FHI. After speaking to the production manager he reported that the mortality was attributed to two treatments in two pens. The optilicer was being trialled in pen 1 and a salmosan treatment took place in pen 3. Both of these treatments resulted in an increase in mortality.

Paper work completed by [redacted] supervised by [redacted]

'Case Information' for 2018 is available [online here]

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PUBLICATION - TRANSPARENCY DATA

Fish Health Inspectorate case information 2018

Published: **17 Jan 2020**

Directorate: Marine Scotland Directorate

Part of: Marine and fisheries

Information relating to the inspection and operational activities of Marine Scotland's Fish Health Inspectorate.

This document is part of a collection

Includes:

Case No:	2018-0613			Date of visit:	28/11/2018
Time spent on site:	2 hours			Main Inspector:	JET
Site No:	FS0531	Site Name:	Ornish Island		
Business No:	FB0119	Business Name:	Marine Harvest (Scotland) Ltd		

Additional Case Information:

AGD and PGD on site, freshwater treatment was due to take place w/b 26/11/18, but has been delayed due to poor weather. 30/10/11/ - 01/11/18 - Thermolicer treatment carried out
Sea lice figures checked between input (w/b 31/07/2017) and 28/11/2018. Average adult female sea lice figures above 3 reported to FHI - w/b 22/10/2018 - 3.7. w/b 19/11/2018 - 4.51, picked up during inspection.
Paperwork completed by JET, observed by NYL.

Mortality Records	
1. Mortality records available for inspection?	Y
2. How are mortalities disposed of?	Other (detail)
If other detail:	Whiteshore cockles
3. Mortality records complete and correctly entered?	Y
4. Recent mortality (last 4 wks):	6508 (1.9%) across site - AGD PGD related mortality
5. Evidence of recent increased/atypical mortalities?	N
If yes, facility nos/no mortality per facility/no stock per facility/reason:	
6. Any other peaks in mortality during period checked?	Y
If yes, detail:	w/b - 06/08/18 - 1.92% 19000 - post treatment thermolicer
7. Have increased (unexplained) mortalities been reported to vet or FHI?	Y
If yes, detail action:	Reported to FHI, mortality fell below 1% the following week.
8. Have 'mortality events' been reported to FHI? If no, add MRT case and enter on mortality events sheet.	Y

Case No:	2018-0598			Date of visit:	21/11/2018
Time spent on site:	4h			Main Inspector:	DJT
Site No:	FS1277	Site Name:	Reibinish		
Business No:	FB0169	Business Name:	The Scottish Salmon Company		

Additional Case Information:

Mortality event post treatment week 48 and 49 2016 - (48- 27485 - 4.78%) (49- 10227 morts - 1.87%)

Strong easterly winds prevented full inspection of site as considered dangerous to moor the boat to some pens. Majority of pens were inspected from the boat as not safe to walk on the cages.

No issues were observed with site integrity and the two fish sampled for VMD were in good general health.

Sea lice counts were above the reporting criteria with ongoing mechanical and AMX bath treatments being administered.

Paperwork completed by DJM on the 20/11/18 (supervised by DJT) and site inspection was completed on the 21/11/18.

On return to the lab some discrepancies were noted with the sea lice count data provided during the site inspection and what had been reported by the company to the FHI. Following a discussion with the site contact it was understood that on occasion additional counts were conducted by site staff after lice numbers had been reported. Some counts had been taken pre and post treatment and the post treatment number had been reported.

Some issues were reported with regards to cleaner fish mortality records, due to the size and shape some fish do not fall to the centre of the pen for removal as the salmon do. Some get picked off by wildfish and some will decompose. This results in an incomplete mortality record for the cleaner fish.
There is a standardised approach to cleaner fish husbandry across the company with all sites providing artificial kelp or lay flat plastic (allows for attachment of lumpfish) in each pen stocked with cleaner fish. The wrasse are fed using block feed and the lumpfish are hand fed a pelleted diet. Prior to crowding effort is used to move remove cleaner fish with creels, in addition the artificial habitat is moved away from the crowding area.

Mortality Records	
1. Mortality records available for inspection?	Y
2. How are mortalities disposed of?	Other (detail)
If other detail:	White Shore Cockles
3. Mortality records complete and correctly entered?	Y
4. Recent mortality (last 4 wks):	(43- 122 - 0.02%) (44- 2284- 0.35% Hydrolicer treat) (45-37- 0.01%) (46- 878 - 0.13%), cleanerfish mortality 48 (0.73%) last four weeks

Case No:	2018-0484							Date of visit:	10/10/2018		
Time spent on site:	8 hours							Main Inspector:	AJW		
Site No:	FS1047	Site Name:	Loch Creran (D)								
Business No:	FB0125	Business Name:	Scottish Sea Farms Ltd								
Case Types:	1 ECI	2 CNI	3 SLI	4 VMD	5 DIA	6					
Water Temp (°C):	12.8	Thermometer No:	T146					FHI 045 completed			
Observations:		Region:	ST		Water type:	S		CoGP MA	M-36		

Dead/weak/abnormally behaving fish present?	Y	If yes, see additional information/clinical score sheet.
Clinical signs of disease observed?	Y	If yes, see additional information/clinical score sheet.
Gross pathology observed?	Y	If yes, see additional information/clinical score sheet.
Diagnostic samples taken?	Y	

Additional Case Information:
Fish input; Dec 2017- Jan 2018 Loch Damph, Knock and Loch Ba.

Morts going to Shian and put through PP. Temporary measures until new incinerator up and running on new barge. Some Billy Bowie runs when morts were at peak.

Currently under a slice treatment. Last hydrolicer was 22-25/9/18. Looking to do thermolicer next week.

PGD scores high. 3-4 at worst in cages 2,4

Mort peaks W/B 24th sept; Pen 2; 2052 (21239 fish in pen), Pen 4; 2155 (21581 in pen) Pen 7; 2858(16481 fish in pen)

High morts on input in aquagen cages attributed to fungus.

Health results; chronic water bourne insult, plankton or jelly fish causing gill damage. Heavy lice loads

Current lice levels; last count; 2.93 juv, 20.11 mobiles, 1.09 adult female.

Issue with mobiles; adult female levels have been lower and below the average 3 levels

Slice only chemical treatment this cycle
Obervation on site;many fish with white heads and some with red heads on site. Worst cages 1 and 7. Fish in these cages currently on starve for thermolicer treatment Mon-wed next week. High numbers of lice observed in fish removed for sampling but very few adult females.

Case no:	2018-0484	Site No:	FS1047	Method of killing:	Anaesthetic
Date of visit:	10/10/2018	Inspector(s):	AJW	Sheet Relevant:	Y

S for strong presence: **M** for medium presence: **W** for weak presence

Fish Number		1	2	3	4	5					
Time sampled after death (if > 45 minutes)											
External Signs											
Behaviour	Moribund	S	S	S	S	S					
Gills	Pale		S		S	S					
	Zoned		S								
	Necrotic		S		S						
Lesions	Flank				S						
	Elsewhere	S	S	S							
Vent	Inflamed										
	Trailing faeces										
Lice Load	Estimate numbers	20+	20+	20+	20+	20+					

Additional comments:

Fish 1; red head - Fish 2 White head - Fish 3 Red head All fish with pale livers, extensive lice damage. Fish on starve for lice treatment next week

Case No:	2018-0429			Date of visit:	05/09/2018
Time spent on site:	5.5 hours			Main Inspector:	ALW
Site No:	FS1091	Site Name:	Vacasay		
Business No:	FB0169	Business Name:	The Scottish Salmon Company		

Case Types:	1	2	3	4	5	6
	REP	REG	SLI	DIA		

Water Temp (°C):	14	Thermometer No:	T148	FHI 045 completed	

Observations: Region: WI Water type: S CoGP MA W-1

Dead/weak/abnormally behaving fish present?	Y	If yes, see additional information/clinical score sheet.
Clinical signs of disease observed?	Y	If yes, see additional information/clinical score sheet.
Gross pathology observed?	Y	If yes, see additional information/clinical score sheet.
Diagnostic samples taken?	Y	

Additional Case Information:

Accompanied APHA staff on visit to site following report of potential welfare issues by member of the public.
Site is stocked with lumpsuckers and they had worked well at keeping lice numbers low until July. Sudden increase in lice numbers in mid July. Numbers of adult female leps rose above reporting level in week 29. Numbers peaked in week 34. Site was due treatment with hydrolicer that week, but was delayed due to weather. Numbers dropped significantly following week after treatment, but have started to rise again following quick resettlement of juvenile lice (4.65 average AFL from count at start of week).
Site has had strategic treatments with Slice in first year and Slice is currently being fed to stock in 6 cages (started on 4/9/18). Using the hydrolicer on the other 4 cages as these are going to be harvested (cages 1, 3, 5 and 11).
Hydrolicer has been used on site in May (strategic treatment), June, July (when numbers rose significantly), twice in August (weeks 32 and 35).
Inspected a number of cages on the site. Worst affected cage appeared to have ~100 fish with observable lice damage (white heads and a few with more significant damage). Numbers with lice damage were lower in other cages. Hydrolicer treatment being conducted on cage 5. Observed fish exiting the hydrolicer over dewaterer and no fish seen with observable lice damage. Also observed the crowded stock pre hydrolicer. A few fish seen with lice damage, but vast majority of the fish did not appear to have lice damage.
Most recent lice counts for weeks 34 and 35 had not yet been submitted to FHI, collected during visit. Mortality levels for week 35 were above mortality event reporting level and were reported during visit (within 7 days of end of reporting period so no further action).
Some of the stock will moved to Outer Eport next month for further ongrowing before harvest.
Site specific lice management procedure in place and company taking action to reduce the lice numbers on the site with other options available such as bath treatments if required. Staff are removing fish with lice damage and culling humanely.
Fish removed from cages 3 and 10 during inspection and diagnostic samples taken from five of these fish.

Mortality Records

1. Mortality records available for inspection?	Y
2. How are mortalities disposed of?	Other (detail)
If other detail:	Landfill at Whiteshore Cockles
3. Mortality records complete and correctly entered?	Y
4. Recent mortality (last 4 wks):	wk 32 - 1,305 (0.42%), wk 33 - 1,397 (0.45%), wk 34 -1,323 (0.43%), wk 35 - 7,516 (2.56%), wk 36 to date - 4,000 (1.46%) - total for period = 15,541 (4.96%)
5. Evidence of recent increased/atypical mortalities?	Y
If yes, facility nos/no mortality per facility/no stock per facility/reason:	
wk 35 - Treatments with hydrolicer across site. Cage 4 - 1,469 (5.13%), Cage 6 - 1,264 (4.27%), cage 10 - 1,036 (3.56%)	
6. Any other peaks in mortality during period checked?	N
If yes, detail:	
7. Have increased (unexplained) mortalities been reported to vet or FHI?	N/A
If yes, detail action:	
8. Have 'mortality events' been reported to FHI? If no, add MRT case and enter on mortality events sheet.	Y

Case no:	2018-0429		Site No:	FS1091		Method of killing:	Anaesthetic					
Date of visit:	05/09/2018		Inspector(s):	ALW		Sheet Relevant:	Y					

S for strong presence: **M** for medium presence: **W** for weak presence

Fish Number		1	2	3	4	5					
Time sampled after death (if > 45 minutes)											
External Signs											
Behaviour	Moribund										
	Lethargic	M	M	M	M	M					
	Hanging vertical										
	Spiralling										
	Flashing										
	Loss of equilibrium										
Body	Dark										
	Distended abdomen										
	Anorexic										
	Scale Oedema										
Opercula	Shortened	S									
	Flared										
Haemorrhaging	Throat										
	Ventrum	M	M			M					
	Base of fins										
	Elsewhere										
Eyes	Exophthalmic										
	Enophthalmic (sunken)										
	Cataract										
	Haemorrhagic										
Gills	Pale										
	Zoned										
	Necrotic										
Lesions	Flank										
	Elsewhere										
Vent	Inflamed										
	Trailing faeces										
Lice Load	Estimate numbers	high	high	high	high	high					

Additional comments:

All fish had lice damage to the head area. Lice observed on all fish, mixture of Leps and Caligus.
F1 had physical damage to left opercula and gill filaments were damaged.
F1-5 gill damage - a few white patches, small amount of haemorrhaging and some damaged tips of filaments

Section 2: Case Detail

Observations

The above site was inspected, following a report of a potential welfare issue by a member of the public. The site was stocked with 270,847 2007 S1 Atlantic salmon at 3.1kg average weight and 9,522 adult lumpsuckers.

Mortality levels had been low over the preceding few weeks, but had risen in week 35 to 2.56% (7,516). The increase had been attributed to a treatment with a hydrolicer during week 35. Gill health issues had been noted on site and samples had tested positive for AGD.

A number of lethargic fish with high lice loads and physical damage on the head area due to lice were observed across the site. Five fish were removed for further examination and subsequent diagnostic sampling.

Fish 1, 2 and 5 had some haemorrhaging along the ventrum. Fish 1 to 5 had gill damage consisting of small amount of petechial haemorrhaging, white patches and damage to the gill tips. Fish 1 had a shortened opercula and the gill filaments were more severely damaged. All five fish had yellow pseudo-faeces internally.

Case No:	2018-0278			Date of visit:	13/08/2018
Time spent on site:	6 hours			Main Inspector:	ALW
Site No:	FS1103	Site Name:	Vuia Mor		
Business No:	FB0169	Business Name:	The Scottish Salmon Company		

Case Types:	1	REP	2	DIA	3		4		5		6	

Water Temp (°C):	14.7	Thermometer No:	T148	FHI 045 completed	

Observations:	Region:	WI	Water type:	S	CoGP MA: W-2

Dead/weak/abnormally behaving fish present?	Y	If yes, see additional information/clinical score sheet.
Clinical signs of disease observed?	Y	If yes, see additional information/clinical score sheet.
Gross pathology observed?	Y	If yes, see additional information/clinical score sheet.
Diagnostic samples taken?	Y	

Additional Case Information:

Site inspected following report from company of increased mortality in week 31 due to clinical anaemia. Mortality levels had been low (range of 0.19-0.46% per week over preceding 7 weeks, 0.95% in May and 0.79% in June). Sharp increase in mortality in week 31 to 5.93% and 13.30 % in week 32.

Have harvested from site from March through to June, but due to the increase in mortality rates are now harvesting most days to get all of the fish off the site. Have harvested 101,546 fish between 5-12 August. Fish are being transported live to the killing stations at either Arnish or Ardyne.

Mortalities are being disposed at Whiteshore Cockles. Due to mortality levels, the Carly (operated by Fergusons Transport) is on site to collect mortalties with two tankers on the boat holding ~20T each. Fish are removed from the cage using the uplift and pumped into a grab/basket. Once full the grab is lifted over the sealed tanker and the fish are released into the tanker. The boat then travels direct to North Uist and the tankers are taken by road to Whiteshore Cockles.

The hydrolicer has been used on site in May (twice) and mid July, with a peroxide treatment in July for sea lice. Last hydrolicer treatment worked well, but had a settlement of juvenile leps very quickly afterwards. Were due to treat whole site using hydrolicer last Monday, but after ~2,000 fish had passed through the hydrolicer it was apparent that the fish were not coping with the crowding or the treatment and it was stopped.

Increased mortality started in cages 13 and 14. Mortalities were low at the weekend (single figures over 4/5 August), increased to ~250 on Monday, and then thousands on Tuesday.

Packed Cell Volume (PCV) counts have dropped dramatically as well. At end of week 31 the average for the site was 34% (range mostly 21-40%), by middle of week 32 they had dropped to 17% (mostly below 20%). Report from health staff from mid week 32 commented that the anaemia was significantly worse than the previous week, the feeding response was poor, lice numbers were high with cranial damage visible and PGD scores were high.

Histology report summary from start of August reported moderate to severe necrosis in the liver (suggestive of anoxia), multifocal severe/moderate lesions on the gills (consistent with treatment) and moderate grade anaemia.

Water temperatures have been above 14C since week 27.

On site lethargic fish seen in cages with high lice loads and cranial lice damage (estimate 50 - 100 per cage inspected with some worse than others e.g. cage 1). Reported that number of fish with visible lice damage has increased over the last week. Eight lethargic fish, plus two feeding fish removed for sampling.

Case no:	2018-0278	Site No:	FS1103	Method of killing:	Percussive
Date of visit:	13/08/2018	Inspector(s):	ALW	Sheet Relevant:	Y

S for strong presence: **M** for medium presence: **W** for weak presence

Fish Number		1	2	3	4	5	6	7	8	9	10
Time sampled after death (if > 45 minutes)		70	70	70	90	90	90	120	120	120	120
External Signs											
Behaviour	Moribund										
	Lethargic	M	M	M	M	M	M	M	M		
	Hanging vertical			M							
	Spiralling										
	Flashing										
	Loss of equilibrium										
Body	Dark	M	M	M	M	M	M	M	M		
	Distended abdomen										
	Anorexic										
	Scale Oedema										
Opercula	Shortened		W								
	Flared										
Haemorrhaging	Throat										
	Ventrum										
	Base of fins										
	Elsewhere										
Eyes	Exophthalmic										
	Enophthalmic (sunken)										
	Cataract										
	Haemorrhagic										
Gills	Pale	W		W							
	Zoned										
	Necrotic										
Lesions	Flank										
	Elsewhere										
Vent	Inflamed										
	Trailing faeces										
Lice Load	Estimate numbers	High	High	High	High	High	High	High	High	High	High

Additional comments:

Fish 1 - Slight lice damage to head, some petechial haemorrhages on gill
Fish 2 - Smaller, Slight lice damage to head, damaged gill, small number of petechial haemorrhages on liver
Fish 3 - Slight lice damage to head, some petechial haemorrhages on gill, small number of petechial haemorrhages on liver, spleen pale, liver very pale
Fish 4 - severe lice damage to head, small white patches on gills

Fish 5 - severe lice damage to head
Fish 6 - severe lice damage to head
Fish 7 - severe lice damage to head, some petechial haemorrhages on gill
Fish 8 - Slight lice damage to head

Section 2: Case Detail

Observations

The above site was inspected, following a report from the company of a recent increase in mortality. The site was stocked with 161,473 2007 S1 Atlantic salmon at 4.08 kg average weight and 28,872 adult lumpsuckers.

Mortality levels had been low over the preceding few weeks (range of 0.19-0.46%), but had risen in week 31 to 5.93% (14,995) and 13.30% in week 32 (31,571). Harvesting had been accelerated due to the increased mortality levels and the site was due to be fallow by the end of August 2018. Samples taken in early August showed necrosis of the liver, lesions on the gills and moderate anaemia.

A number of lethargic fish with high lice loads and physical damage were observed across the site. Ten fish (eight lethargic and two active fish) were removed for further examination and subsequent diagnostic sampling.

Fish 1 to 8 were dark and had lice damage to the head area. All fish had high lice loads. Fish 1, 3 and 7 had petechial haemorrhages on the gills. Fish 2 had a shortened operculum and damaged gill filaments. Fish 1 and 3 had slightly pale gills and fish 4 had small white patches on the gills.

Internally fish 2 and 3 exhibited petechial haemorrhaging on their livers and the liver of fish 3 was very pale. Fish 1 had clear ascites in the body cavity. Fish 5 and 9 had enlarged spleens and the spleen of fish 3 was pale. Fish 1, 3 and 6 had no feed in their guts and fish 2, 4, 5 and 8 had yellow pseudo-faeces.

Case No:	2018-0269			Date of visit:	12/06/2018
Time spent on site:	0			Main Inspector:	AJW
Site No:	FS0015	Site Name:	Loch Greshornish		
Business No:	FB0119	Business Name:	Marine Harvest (Scotland) Ltd		

Additional Case Information:

Current on site mortality approximately 0.1% for week attributed to CMS. Morts are generally incinerated on site but post treatment morts tend to be sent to Energen Biogas.

Treatments have included FW for gill issues, salmosan (whole site and individual cages). One pen was treated with hydrolicer but resulted in increased morts so treatments stopped.

It was reported that lice skirts on site had a lot of natural growth which caused water quality issues leading to poor gill health, anaemia and increased mortalities. The skirts have been removed and in Feb the whole site had a fw treatment for the gill issues. Mort levels have since decreased.

Case No:	2018-0122			Date of visit:	17/04/2018
Time spent on site:	4 hours			Main Inspector:	AJW
Site No:	FS0694	Site Name:	Fishnish (B)		
Business No:	FB0125	Business Name:	Scottish Sea Farms Ltd		

Additional Case Information:

wrasse mortality water temp 5.7 - long period of low temp affecting wrasse. In house vet taken samples. 9/4/18 peak wrasse morts;140 for site.

Post input morts from Damph. Fungal issues, health checked prior to transfere

7/12/17 - Fishnish B - Only two cages bath treated with salmosan. SLICE treatments carried out on an area basis. Bath treatments done per cages as cleaner fish on site will be effective in other cages

29/10/17 - slice, 1/7/17 aqua sure, 7/12/17 - aquasure. July peroxide; gills/lice. No significant gill issues

Movement of dead fish off site recorded on receipts from Billy Bowie. Fish collected from several sites, Bloody Bay, Finshnish A and B and Scallastle. All morts stored at shore base and collected by Billy Bowie. Weight for each site not recorded. Future movement of dead fish off site will be recorded in movement book. Looking to return to incineration. Increase in dead due to thermolicer treatments.

Current lice number; last count 0.38 adult female average at Fishnish B and Fishnish A; 0.33 average adult female.

Inspection under the Aquaculture and Fisheries (Scotland) Act 2007

The site was also inspected in accordance with the Aquaculture and Fisheries (Scotland) Act 2007, as amended, with respect to section 3 regarding parasites (sea lice), section 4A regarding fish farm management agreements and statements and section 5 regarding containment and escapes.

On this occasion the site was found to have had average adult female *Lepeophtheirus salmonis* ('sea lice') per fish counts of 3 or above. These counts had not been reported to the Fish Health Inspectorate as part of the required measures to demonstrate that satisfactory measures are in place for the control of sea lice. Where the average adult female sea lice per fish count reaches 3 or above this must be reported to the Fish Health Inspectorate within seven days of the date of the count. Please ensure that future counts that exceed the reporting level are reported to the Fish Health Inspectorate.

Please contact myself or the duty inspector should you require any assistance or clarification in implementing any requirement or recommendation detailed in this report.

Signed: [redacted]

Fish Health Inspector

Date: 08/05/2018

Case No:	2018-0123			Date of visit:	17/04/2018
Time spent on site:	4 hours			Main Inspector:	AJW
Site No:	FS0427	Site Name:	Fishnish (A)		
Business No:	FB0125	Business Name:	Scottish Sea Farms Ltd		

Additional Case Information:

Wrasse morts peak 9/4/18 across site 200 morts.

thermolicer at Fishnish A and B 28-31 March 2018. 29/10/17 - slice, 1/7/17 Aquasure, 7/12/17 - Aquasure.

Last 4 weeks morts peaked at 1.7% per cage for 4 weeks - thermolicer dead. 0.66% for site /4wks.

mortality since input (Jan 2017) for site 7.13%. Two thermolicer treatments caused mort peaks January and March, handling morts.

Current lice number; last count 0.38 adult female average at Fishnish B and Fishnish A; 0.33 average adult female.

BMP to be updated to include Billy Bowie mort disposal route currently being used at both sites. Records of movement of dead fish by Billy Bowie are incomplete. Weight of waste is not always recorded and movements are not recorded singly but for several sites so when weights are recorded it can not be determined how much from each site. In future dead fish movements off site will be recorded in the movement books.

Case No:	2018-0104			Date of visit:	27/03/2018
Time spent on site:	3 hours			Main Inspector:	DCB
Site No:	FS1118	Site Name:	Trilleachan Mor		
Business No:	FB0169	Business Name:	The Scottish Salmon Company		

Additional Case Information:

Planning to increase the footprint of the farm. 2300 tonnes with 8 120m cages. All planning and consents have gone through. Looking to increase stock by January-March 2019

Mortality event reported on the 22/01/2018 - Post treatment losses.
WK3, slightly higher mortality due to Thermolicer treatment (below 1%).
Thermolicing this week, 3rd of the year

Company vet checking to make sure fish were suitable for thermolicer

Emergency harvest plan in place

Traffic light system in place for sea lice control - refers to sops SSC/bio/ref - green/amber/red

Lumpfish Mortality = 1-2 per week.

Read more via 'The State of Scottish Salmon Farming in 2018'

'Case Information' from 2013 to 2017 is available online here

Case information

Information relating to the inspection and operational activities of Marine Scotland's Fish Health Inspectorate is published on a regular basis. From 2013-2018 the following information was published on a quarterly basis:

- A list of all cases conducted.
- A summary of case inspections and outcomes per region.
- A list of all enhanced inspections conducted under the Aquaculture and Fisheries (Scotland) Act 2007.
- Individual case information, with each case referenced in the list of all case types conducted.

Following a review of the publication process, from 2019 onwards the following information will be published on a monthly basis:

- A list of all cases conducted.
- Individual case information, with each case referenced in the list of all case types conducted.

Please note that information relating to cases which have not been completed will only be published following completion. There may be some situations where completed cases will not be published. Where this is the case this will be detailed within the list of cases conducted.

- 2013
- 2014
- 2015
- 2016
- 2017

2017 'Case Information' includes:

Case No:	2017-0606			Date of visit:	05/12/2017
Time spent on site:	3.5 hrs			Main Inspector:	PMM
Site No:	FS0336	Site Name:	Druimyeon Bay		
Business No:	FB0169	Business Name:	The Scottish Salmon Company		

Case Types:	1	REP	2	DIA	3	VMD	4		5		6	

Water Temp (°C):	11.2	Thermometer No:	T155	FHI 045 completed	
Observations:		Region:	ST	Water type: S	CoGP MA: M-46

Dead/weak/abnormally behaving fish present?	Y	If yes, see additional information/clinical score sheet.
Clinical signs of disease observed?	Y	If yes, see additional information/clinical score sheet.
Gross pathology observed?	Y	If yes, see additional information/clinical score sheet.
Diagnostic samples taken?	Y	

Additional Case Information:

Site inspected following mortalities reported above the weekly threshold. Mortalities have been attributed to PGD, and post hydrolicer losses. Recent vet report has identified CMS and this is now a factor in losses. 5 fish removed for diagnostic sampling, 6/9 cages are on the harvest forecast sheet and the site may be fallow by the end of the year.
Site is quite exposed and water was very choppy which affected visibility at times during the inspection. ~10 moribund fish observed per cage, some of which had sea lice grazing damage to heads.
It was reported that there was a higher than normal % of mature fish, this was estimated to be ~20%, half of moribund fish visible in the cages were maturing fish.

Mortality Records

1. Mortality records available for inspection?	Y
2. How are mortalities disposed of?	Whole fish - Dundas Chemicals
If other detail:	
3. Mortality records complete and correctly entered?	Y
4. Recent mortality (last 4 wks):	06/11 - 25,607 (4.44%) attributed to post hydrolicer treatment, 13/11 - 45,089 (8.69%) attributed to post hydrolicer treatment, CMS and handling, 20/11 - 61,777 (14.12%) attributed to CMS and handling and 27/11 - 34,680 (10.12%) - attributed to CMS and handling
5. Evidence of recent increased/atypical mortalities?	N
If yes, facility nos/no mortality per facility/no stock per facility/reason:	
6. Any other peaks in mortality during period checked?	N
If yes, detail:	
7. Have increased (unexplained) mortalities been reported to vet or FHI?	Y
If yes, detail action:	Harvesting worst affected cages and accelerated harvest of site
8. Have 'mortality events' been reported to FHI? If no, add MRT case and enter on mortality events sheet.	Y

Date of visit: 05/12/2017 Inspector(s): PMM Sheet Relevant: Y

S for strong presence: **M** for medium presence: **W** for weak presence

Fish Number		1	2	3	4	5					
Time sampled after death (if > 45 minutes)											
External Signs											
Behaviour	Moribund	S	S	S	S	S					
	Lethargic	S	S	S	S	S					
	Hanging vertical		S								
	Spiralling										
	Flashing										
	Loss of equilibrium										
Body	Dark										
	Distended abdomen										
	Anorexic					M					
	Scale Oedema										
Opercula	Shortened										
	Flared										
Haemorrhaging	Throat										
	Ventrum										
	Base of fins										
	Elsewhere										
Eyes	Exophthalmic										
	Enophthalmic (sunken)										
	Cataract										
	Haemorrhagic										
Gills	Pale										
	Zoned										
	Necrotic										
Lesions	Flank										
	Elsewhere										
Vent	Inflamed										
	Trailing faeces										
Lice Load	Estimate numbers	~10	~10	~10	~10	~10					
Internal Signs											
Ascites	Clear					W					
	Bloody	M		M	M						
Oedema	In tissues			M							
Heart	Pale/anaemic										
	Granulomas										
	Deformed			S							
Liver	Petechial haem										
	Gross haem	W		W	W	W					

Case No: 2017-0604 Date of visit: 29/11/2017

Time spent on site: 4 hrs Main Inspector: PMM

Site No: FS1290 Site Name: Shuna SW (Rubh'an Trilleachain)

Business No: FB0134 Business Name: Kames Fish Farming Ltd

Case Types: 1 REP 2 DIA 3 4 5 6

Water Temp (°C): 11.5 Thermometer No: T155 FHI 045 completed

Observations: Region: ST Water type: S CoGP MA: M-40

Dead/weak/abnormally behaving fish present?	Y	If yes, see additional information/clinical score sheet.
Clinical signs of disease observed?	Y	If yes, see additional information/clinical score sheet.
Gross pathology observed?	Y	If yes, see additional information/clinical score sheet.
Diagnostic samples taken?	Y	

Additional Case Information:

Site inspected after FHI identified increased mortalities above the reporting threshold during site inspections. 4 fish diagnostic sampling conducted. Fish were sitting deeper in the water column. Appeared to be shoaling normally, observed on camera system on barge. 1 fresh dead and 3 lethargic moribund fish removed from site for sampling. Fish one displayed some sea lice grazing damage

Thermolicer on site at time of inspection, reported that can treat up to 60 tonnes of fish an hour. Visible difference observed in sea lice load between pre and post thermolicer treated fish. Site manager reported that clearances are usually >90% and system is very effective. During treatment sea lice counts are conduct pre -treatment, multiple counts are conducted in the crowded fish during treatment and a post treatment count is conducted.

All top net supports have padding installed around the base of the support which is designed to eliminate fish concussing themselves, this has reportedly been very effective. Mortalities removed using uplift system. All cages have sea lice skirts installed, these are 5m deep

Biomass has been reduced with worst affected stock having been harvested. Harvests have been both live haul to Mallaig and dead haul. Dead haul has been conducted by the Viking Caledonia (Johnson Marine) and have been unloading in Oban for transport to Blar Mhor.

Mortality Records

1. Mortality records available for inspection?	Y
2. How are mortalities disposed of?	Whole fish - Dundas Chemicals
If other detail:	
3. Mortality records complete and correctly entered?	Y
4. Recent mortality (last 4 wks):	wk 45 - 6,184 (~1.7%) (80 to physical damage, 3,826 attributed to hydrolicer treatment and 2,278 attributed to anaemia), wk 46 - 3,303 (0.93%) (110 attributed to poor doers, 1,572 attributed to physical damage, 1,603 attributed to hydrolicer treatment and 18 attributed to anaemia) and wk 47 - 1,130 (0.32%) (1,130 attribited to physical damage)
5. Evidence of recent increased/atypical mortalities?	N
If yes, facility nos/no mortality per facility/no stock per facility/reason:	
6. Any other peaks in mortality during period checked?	N
If yes, detail:	
7. Have increased (unexplained) mortalities been reported to vet or FHI?	Y
If yes, detail action:	worst effected stock has been harvested.
8. Have 'mortality events' been reported to FHI? If no, add MRT case and enter on mortality events sheet.	Y

Case No:	2017-0506							Date of visit:	07/11/2017		
Time spent on site:	5.5 hours							Main Inspector:	ALW		
Site No:	FS1291	Site Name:	Caolas A Deas								
Business No:	FB0119	Business Name:	Marine Harvest (Scotland) Ltd								
Case Types:	1 REP	2 ECI	3 CNI	4 SLI	5 VMD	6					
Water Temp (°C):	12.2	Thermometer No:	T148					FHI 045 completed			
Observations:		Region:	WI	Water type:	S			CoGP MA:	W-5		
Dead/weak/abnormally behaving fish present?	Y	If yes, see additional information/clinical score sheet.									

Additional Case Information:

Due to finish harvest in a couple of weeks. Will then restock after 4 week fallow with ~450,000 part grown stock from Seaforth for approx 6 months. Next input after that will be late Q3/Q4s smolts in 2018.
CMS, PRV and PD have been confirmed on site. PGD is main cause of mortalities, particularly during treatments. Recent tests for AGD have been negative.
Fish were transferred to site from Tabhaigh and received a freshwater treatment in the wellboat during transfer. While on site fish have had treatments with Salmosan (June, August & September), Slice (July), freshwater (October) and the thermolicer (one cage only in August). Elevated mortality levels after treatment with thermolicer so no other cages treated. Recent freshwater treatment carried out on Intercaledonia. Fish treated on boat for 11 hours and some elevated mortality levels occurred due to PGD. Also experienced increased mortality levels in lumpfish during the treatment as they could not be removed from the pens prior to the treatment. Estimate approx 1,500-2,000 per pen.
Lumpfish worked well at controlling lice initially, but less so as they have grown. Also have sea lice skirts on all cages.
Fish on site feeding very deep and difficult to catch. Fish sampled for VMD appeared healthy. Only one lethargic fish removed for examination, but no gross pathology seen and no samples taken.

Mortality Records

1. Mortality records available for inspection?	Y
2. How are mortalities disposed of?	Other (detail)
If other detail:	Normally ensile, but currently to landfill at Bennadrove due to volume
3. Mortality records complete and correctly entered?	Y
4. Recent mortality (last 4 wks):	w/b 8/10 - 2,920 (1.27%) CMS, w/b 15/10 - 6,943 (3.06%) PGD/treatment, w/b 22/10 - 5,788 (2.63%) PGD/treatment, w/b 29/10 - 1,377 (0.63%)
5. Evidence of recent increased/atypical mortalities?	Y
If yes, facility nos/no mortality per facility/no stock per facility/reason:	
Across site due to freshwater treatment (details above)	
6. Any other peaks in mortality during period checked?	Y
If yes, detail:	August - 14,091 (5.5%) following thermolicer and salmosan treatments. September - 11,282 (4.66%) following salmosan treatment)
7. Have increased (unexplained) mortalities been reported to vet or FHI?	Y
If yes, detail action:	No further treatments with thermolicer. Continue with harvest
8. Have 'mortality events' been reported to FHI? If no, add MRT case and enter on mortality events sheet.	N

Case No: 2017-0506 Site No: FS1291 Date of visit: 07/11/2017

Start date:	End date: (if applicable)	Size of fish:	Average weight of affected population:	Species:	Yearclass:	Timescale	Mortality rate recorded(%):	Explained/ unexplained:	If explained, select reason(s):
08/10/17	14/10/2017	≥750g	5.6Kg	SAL	2016 Q3	Weekly	1.27	Explained	CMS
15/10/17	21/10/2017	≥750g	5.6Kg	SAL	2016 Q3	Weekly	3.06	Explained	PGD, Treatment
22/10/17	28/10/2017	≥750g	5.6Kg	SAL	2016 Q3	Weekly	2.63	Explained	PGD, Treatment
07/08/17	13/08/2017	≥750g	~4.5Kg	SAL	2016 Q3	Weekly	2.14	Explained	PGD, Treatment
21/08/17	27/08/2017	≥750g	~4.5Kg	SAL	2016 Q3	Weekly	1.89	Explained	PGD, Treatment
28/08/17	03/09/2017	≥750g	~4.5Kg	SAL	2016 Q3	Weekly	2.20	Explained	PGD, Treatment
04/09/17	10/09/2017	≥750g	~4.5Kg	SAL	2016 Q3	Weekly	2.28	Explained	PGD, Treatment

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Total mortality during event (if available):	Additional information (e.g. action taken by company):	Action taken by FHI (include case no where applicable):
2,920	Site harvesting out soon	Site inspected 7/11/17. Mortalities have reduced and site due to fallow in 2 weeks.
6,943	Site harvesting out soon	Site inspected 7/11/17. Mortalities have reduced and site due to fallow in 2 weeks.
5,788	Site harvesting out soon	Site inspected 7/11/17. Mortalities have reduced and site due to fallow in 2 weeks.
5,438	Salmosan treatment	FHI not informed at time. Site inspected 7/11/17.
4,663	Thermolicer treatment on one cage. Decided not to treat other cages with thermolicer.	FHI not informed at time. Site inspected 7/11/17.
5,411	Salmosan treatment	FHI not informed at time. Site inspected 7/11/17.
5,406	Salmosan treatment	FHI not informed at time. Site inspected 7/11/17.

Case No:	2017-0438			Date of visit:	11/10/2017
Time spent on site:	3.5h			Main Inspector:	JMS
Site No:	FS0859	Site Name:	Port Na Cro		
Business No:	FB0119	Business Name:	Marine Harvest (Scotland) Ltd		

Additional Case Information:

Fish moved on from Shuna SW
Site now has 4 120m circles in place. New top nets are on site which are supported by poles, negating the need for the hamster wheel in the centre of the cage.

Treating every four weeks for AGD
Wrasse stocked on site are wild caught from west coast of Scotland, Northern Ireland (Glenarm) and Plymouth

Total mortality since input 11264 - majority of mortalities are post treatment mainly mechanical also H202 for gills
1 and 2 October 2017 3100 mortalities post thermolicer, Pen 2 1100 (1/10/17), Pen 1 1700, Pen 3 200 (2/10/17)
15/8/17 - 793/site post treatment 650 out of Pen 1

Lice Skirts are in place on all cages. Site is using a mixture of lice control methods:
June 2017 Flusher
July 2017 Flusher, Salmosan, H202 (gill)
August 2017 Flusher, Thermolicer, H202 (gill), Slice
September 2017 Thermolicer
October 2017 Thermolicer, H202 (gill)
Wrasse

Lice levels have been above the reporting level of 3 in week 39 but levels are now below 3, 2.42 at last count on 10/10/17. All pens due to be thermoliced by 13/10/17.

Mortality Records

1. Mortality records available for inspection?	Y
2. How are mortalities disposed of?	Whole fish - Dundas Chemicals
If other detail:	
3. Mortality records complete and correctly entered?	Y
4. Recent mortality (last 4 wks):	0-1100/site/day - mainly post treatment mechanical/H202

Case No:	2017-0440	Date of visit:	12/10/2017
Time spent on site:	4 hours	Main Inspector:	JMS
Site No:	FS0805	Site Name:	Bagh Dail Nan Cean
Business No:	FB0119	Business Name:	Marine Harvest (Scotland) Ltd

Case Types: 1 VMD 2 3 4 5 6

Water Temp (°C): Thermometer No: FHI 045 completed

Observations: Region: ST Water type: S CoGP MA: M-40

Dead/weak/abnormally behaving fish present? Y If yes, see additional information/clinical score sheet.

Additional Case Information:

Treating with peroxide for AGD
Likey to be treating again start of November 2017
~32000 morts post stocking
Site treated with Floricol 31/1/17 - 7/2/17 for Moritella
Fish split to Muck in September and October 2017
Site is employing a number of methods for sea lice control: Freshwater, salmosan, thermolicer, slice, alphamax, Hydrolicer and wrasse. Lumpsuckers were stocked but have since died off from a bacterial infection, morts peaking at 6% loss in a week in July 2017. Site was over reporting threshhold of 3 in week 39. Average adult female leps were at 7.1 at last count on 5/10/17. H202 is being used to treat gills.

Mortality Records

1. Mortality records available for inspection?	Y
2. How are mortalities disposed of?	Whole fish - Dundas Chemicals
If other detail:	
3. Mortality records complete and correctly entered?	Y
4. Recent mortality (last 4 wks):	~15000 (9000 between 3&9th sept) in September due to treatments - Thermolicer and H202, ~1000 9-10/10/17 - thermolicer in cages 1 & 2. 2804 in total so far for October 2017.

Case No: 2017-0393 Site No: fs0242 Date of visit: 29/78/2017

Case No:	2017-0393	Date of visit:	29/78/2017
Time spent on site:	0	Main Inspector:	DJT
Site No:	fs0242	Site Name:	Loch Odhairn(Gravir)
Business No:	FB0169	Business Name:	The Scottish Salmon Company

Case No: 2017-0393 Site No: fs0242 Date of visit: 29/78/2017

Start date:	End date: (if applicable)	Size of fish:	Average weight of affected population:	Species:	Yearclass:	Timescale	Mortality rate recorded(%):	Explained/ unexplained:	If explained, select reason(s):
21/08/2017		≥750g	2.1	SAL	2016 s0	Weekly	3.35	Explained	AGD, Complex gill issues

Total mortality during event (if available):	Additional information (e.g. action taken by company):	Action taken by FHI (include case no where applicable):
17191	accelerated harvests, some lice damaged fish hydrolicer treatment needed	

Case No: 2017-0396 Date of visit: 29/08/2017

Time spent on site: 0 Main Inspector: DJT

Site No: fs1255 Site Name: North Uiskevagh

Business No: FB0169 Business Name: The Scottish Salmon Company

Case No: 2017-0396 Site No: fs1255 Date of visit: 29/08/2017

Start date:	End date: (if applicable)	Size of fish:	Average weight of affected population:	Species:	Yearclass:	Timescale	Mortality rate recorded(%):	Explained/ unexplained:	If explained, select reason(s):
21/08/2017		≥750g	2.3kg	SAL	2016 s0	Weekly	3.84	Explained	AGD, Complex gill issues

Total mortality during event (if available):	Additional information (e.g. action taken by company):	Action taken by FHI (include case no where applicable):
7278	Vet was onsite, gill aneamia (complex gill health). Hydrolicer on site	

Case No: 2017-0263 Date of visit: 12/07/2017

Time spent on site: 0 Main Inspector: ALW

Site No: FS0519 Site Name: Maol Ban

Business No: FB0119 Business Name: Marine Harvest (Scotland) Ltd

Additional Case Information:

Notified of mortality event following treatment with Thermolicer. Mortality returned to below 1% the following week. Site stocked with 223,000 fish at 4.8Kg. Mortality of 2,200 on 17/6/17 from 2 pens (1.01% for site for the week).

Case No: 2017-0263 Site No: FS0519 Date of visit: 12/07/2017

Start date:	End date: (if applicable)	Size of fish:	Average weight of affected population:	Species:	Yearclass:	Timescale	Mortality rate recorded(%):	Explained/ unexplained:	If explained, select reason(s):
12/06/2017	18/06/2017	≥750g	4.8Kg	SAL	2016	Weekly	1.01	Explained	Treatment

Total mortality during event (if available):	Additional information (e.g. action taken by company):	Action taken by FHI (include case no where applicable):
2,200	No further action as mortalities reduced following week	No further action

Case No:	2017-0268			Date of visit:	12/07/2017
Time spent on site:	0			Main Inspector:	ALW
Site No:	FS0605	Site Name:	Creag an T'Sagairt (Loch Hourn)		
Business No:	FB0119	Business Name:	Marine Harvest (Scotland) Ltd		

Additional Case Information:

Informed of elevated mortalities across three week period. Mortalities dropped below 1% in week 27 and have remained below 1%. Site stocked with 2016 Q3s at 2.75Kg
Week 24 - 1.39% (12,082) freshwater wellboat treatment
Week 25 - 1.09% (9,331) Thermolicer
Week 26 - 2.31% (19,633) Salmosan bath
Site visit scheduled.

Case No: 2017-0268 Site No: FS0605 Date of visit: 12/07/2017

Start date:	End date: (if applicable)	Size of fish:	Average weight of affected population:	Species:	Yearclass:	Timescale	Mortality rate recorded(%):	Explained/ unexplained:	If explained, select reason(s):
12/06/2017	18/06/2017	≥750g	2.75Kg	SAL	2016 Q3	Weekly	1.39	Explained	Treatment
19/06/2017	25/06/2017	≥750g	2.75Kg	SAL	2016 Q3	Weekly	1.09	Explained	Treatment
26/06/2017	02/07/2017	≥750g	2.75Kg	SAL	2016 Q3	Weekly	2.31	Explained	Treatment

Total mortality during event (if available):	Additional information (e.g. action taken by company):	Action taken by FHI (include case no where applicable):
12,082	Freshwater treatment on wellboat	Visit scheduled
9,331	Thermolicer	Visit scheduled
19,633	Salmosan treatment	Visit scheduled

Case No:	2017-0218			Date of visit:	13/06/2017
Time spent on site:	5 hours			Main Inspector:	AJW
Site No:	FS0423	Site Name:	Lamlash		
Business No:	FB0169	Business Name:	The Scottish Salmon Company		

Additional Case Information:

Live harvest to Ardyne small numbers 3 days a week.

Mort's are placed in a sealed skip for removal off island by Billy Bowie. Go to Dundass chemicals for processing.

Number of fish moved off site dead to be recorded for future movements off site.

Hydrolicer on site week ending 22/5/17. Increase in mort's attributed to hydrolicer handling. Mort's at 0.57% for week.

Current mort levels; 0.15% for site/week attributed to production mort's.

Mort's wk 19;758; wk 20; 494, wk 21 1239; wk 22 791;

SLICE in Feb 2017. No plans for further slice treatments.

Farm managed statement states incinerator for mort disposal. Updated while on site to current practice of placeing in sealed skips and take by Billy Bowie to Dundass Biogas plant.

Detection of PD antibodies in fish on site but no clinical disease.

last cycle; lice issue and gill issues

Lice levels currently; 7.32 all stages. 0.98 adult female average
4 cages not put through hydrolicer in February due to weight of fish (4kg too large for optimum effect). These 4 cages have been graded to remove largest fish and will now be run through hydrolicer to bring site below 0.5 adult female average. Extra wrasse also added to these cages. Large grade from these cages went to harvest at Ardyne and some went to Gob where they will be held for approximately 2 months prior to harvest. Risk assessment for this movement was available for inspection. All other site in Loch Fyne are fallow.

Mortality Records

1. Mortality records available for inspection?	Y
2. How are mortalities disposed of?	Biogas
If other detail:	Dundass collected by Billy bowie in sealed skips
3. Mortality records complete and correctly entered?	Y
4. Recent mortality (last 4 wks):	0.15%/site /wk
5. Evidence of recent increased/atypical mortalities?	Y
If yes, facility nos/no mortality per facility/no stock per facility/reason:	
post hydrolicer across site 0.5%/site/week - see additional info	
6. Any other peaks in mortality during period checked?	N
If yes, detail:	
7. Have increased (unexplained) mortalities been reported to vet or FHI?	N/A
If yes, detail action:	
8. Have 'mortality events' been reported to FHI? If no, add MRT case and enter on mortality events sheet.	N/A

Case No:	2017-0262	Date of visit:	23/06/2017
Time spent on site:	0	Main Inspector:	SJD
Site No:	FS0050	Site Name:	Kenmore Loch Torridon
Business No:	FB0169	Business Name:	The Scottish Salmon Company

Additional Case Information:

FHI informed of a 1.91% (1851 fish) mortality of 3.4kg fish during week 23 (5 - 11/06/2017). This was put down to post treatment with hydrolicer. Mortality rate dropped to 0.7% for week 24. Levels increased again to 1.17% for week 25 but confirmed on 30th of June 2017 that week 26 mortality was below 1%.
Site to be visited when next in area.

Case No: 2017-0262 Site No: FS0050 Date of visit: 23/06/2017

Start date:	End date: (if applicable)	Size of fish:	Average weight of affected population:	Species:	Yearclass:	Timescale	Mortality rate recorded(%):	Explained/ unexplained:	If explained, select reason(s):
05/06/2017	11/06/2017	≥750g	3.4kg	SAL	16 S0	Weekly	1.91	Explained	Treatment
19/06/2017	25/06/2017	≥750g	3.4kg	SAL	16 S0	Weekly	1.17	Explained	Treatment

Total mortality during event (if available):	Additional information (e.g. action taken by company):	Action taken by FHI (include case no where applicable):
1851	No action by company. Had been treating with hydrolicer.	Site to be visited when next in area. Confirmed on 30th June 2017 that mortality level now below 1%.
	No action by company. Had been treating with hydrolicer.	Site to be visited when next in area. Confirmed on 30th June 2017 that mortality level now below 1%.

Case No: 2017-0187 Date of visit: 17/05/2017

Time spent on site: 4.15 Main Inspector: JMS

Site No: FS0252 Site Name: Cairidh
Business No: FB0119 Business Name: Marine Harvest (Scotland) Ltd

Case Types: 1 ECI 2 CNI 3 SLI 4 VMD 5 MRT 6

Water Temp (°C): 9.3 Thermometer No: T152 FHI 045 completed

Observations: Region: HI Water type: S CoGP MA: M-28

Dead/weak/abnormally behaving fish present? Y If yes, see additional information/clinical score sheet.
Clinical signs of disease observed? Y If yes, see additional information/clinical score sheet.

Additional Case Information:

3472 morts/site November 2016 treatment loss - 7347 morts in total for month
Pen 2 3411 December 2016 hydrolicer - Operator error during pumping - water switched off in pump
January 2017 pen 1 2542 Thermolicer/sea lice damage, pen 2 6019 Thermolicer/sea lice damage - post new year - settlement was very quick only two cages affected.
Pen 11 720/March 2017 - seal attack
Pen 1 728 April 2017 treatment loss - 3342/site April 2017

Peroxide/site November 2016 - gills and lice
Hydrolicer/site November/December 2016
December 2016 Salmosan/site
Thermolicer pens 1 and 2 December 2016/January 2017
Hydrolicer/site January 2017
Flusher/site January 2017
AMX January 2017/site - clearance not reported to be good
Feb 2017 freshwater/site
Feb 2017 Slice 6-19/2/17 all cages got 7 day course but staggered across site to fit in with other operations
4 pens Salmosan in March 2017
April 2017 Salmosan/site
1 pen salmosan in May 2017
Some targeted treatments being undertaken for sea lice

Lumpfish stocked from Weymouth, treated with aquatet prior to transfer to site, wild wrasse
Sav/CMS bloods negative
Lice levels currently below the reporting threshold, and below the CoGP at the last count
Elevated levels end of December 2016 into first week of January 2017 - above 3 however levels reduced and have remained low so far.
ACE Aqatec ADD's on all cages
One lethargic fish removed, no gross pathology associated with listed diseases observed, no samples taken
Fish sampled for VMD appeared healthy
Paperwork JMS, VMD sampling by ALE supervised by JMS

Mortality Records

1. Mortality records available for inspection?	Y
2. How are mortalities disposed of?	Biogas
If other detail:	Energen Cumbernauld
3. Mortality records complete and correctly entered?	Y
4. Recent mortality (last 4 wks):	3342 morts/site April, 1-17/5/17 1202morts/site, 1493/cleaner fish morts/site last four weeks
5. Evidence of recent increased/atypical mortalities?	Y
If yes, facility nos/no mortality per facility/no stock per facility/reason:	
See additional comments	
6. Any other peaks in mortality during period checked?	Y
If yes, detail:	See additional comments
7. Have increased (unexplained) mortalities been reported to vet or FHI?	N/A
If yes, detail action:	
8. Have 'mortality events' been reported to FHI? If no, add MRT case and enter on mortality events sheet.	N

Case No: 2017-0187 Site No: FS0252 Date of visit: 17/05/2017

Start date:	End date: (if applicable)	Size of fish:	Average weight of affected population:	Species:	Yearclass:	Timescale	Mortality rate recorded(%):	Explained/ unexplained:	If explained, select reason(s):
05/01/2017	12/01/2017	≥750g	~3kg	SAL	2016 Q2	Weekly	1.30	Explained	Treatment

Total mortality during event (if available):	Additional information (e.g. action taken by company):	Action taken by FHI (include case no where applicable):
8561	Pen 1 and 2 affected post Thermolicer treatment the rest of the site was not treated	MRT case conducted

Case No:	2017-0192								Date of visit:	24/05/2017	
Time spent on site:	7 hrs								Main Inspector:	RJS	
Site No:	FS1261	Site Name:	Hellisay								
Business No:	FB0119	Business Name:	Marine Harvest (Scotland) Ltd								
Case Types:	1 ECI	2 CNI	3 SLI	4 VMD	5	6					
Water Temp (°C):	10.6	Thermometer No:	T148				FHI 045 completed				
Observations:		Region:	WI	Water type:	S		CoGP MA:	W-21			
Dead/weak/abnormally behaving fish present?				N	If yes, see additional information/clinical score sheet.						
Clinical signs of disease observed?				Y	If yes, see additional information/clinical score sheet.						

Additional Case Information:

No issues raised on site. Mortalities have been up slightly due to physical damage following crowding for thermolicing. The fish require crowding for extended periods which has resulted in some damage and increased mortality. There were a few fish with signs of physical damage on the flanks but they were not moribund and could not be caught. Water quality is generally good and there have been no issues with predation. A few sea gooseberry jellyfish were observed in the cages. The mortalities are removed by dead basket as current uplift systems would not be compatible due to the motion at the site. Fish were being treated using the thermolicer and pass through the system in ~30 seconds, however may be crowded for 3 - 4 hours. Lice are filtered out and disposed of with mortalities. Manager is hoping to harvest out in September without any further lice mitigation, however, if this is required it would be mechanical removal from targeted cages. The fish are on automatic feeding and were staying quite deep as they were satiated by the point of accessing cages. Feed pipes have to be extended into the cages further to avoid the cage motion breaking pipework. Two fish caught for VMD sampling which did not show any signs of clinical signs of disease. A bath treatment had been trialled on one cage but have used mechanical means of sea lice mitigation on rest of site.

Mortality Records

1. Mortality records available for inspection?	Y
2. How are mortalities disposed of?	Landfill
If other detail:	
3. Mortality records complete and correctly entered?	Y
4. Recent mortality (last 4 wks):	~6K for thermolicer in 3wks May
5. Evidence of recent increased/atypical mortalities?	N
If yes, facility nos/no mortality per facility/no stock per facility/reason:	
6. Any other peaks in mortality during period checked?	Y
If yes, detail:	6K transport losses after input
7. Have increased (unexplained) mortalities been reported to vet or FHI?	N/A
If yes, detail action:	
8. Have 'mortality events' been reported to FHI? If no, add MRT case and enter on mortality events sheet.	N/A

Case No:	2017-0198			Date of visit:	01/06/2017
Time spent on site:	3.5 Hrs			Main Inspector:	ALW
Site No:	FS0183	Site Name:	South Sound		
Business No:	FB0125	Business Name:	Scottish Sea Farms Ltd		

Additional Case Information:

Cleanerfish (lumpsuckers) coming onto site by end of June at 10% stocking density.
FMS needs to be updated when lumpsuckers arrive on site. Nothing specific in FMS about circumstances under which cleanerfish will be used on the site.
Site number missing from movement records in relation to inputs of fish onto site. Corrected at time of inspection so no further action required.
SLICE treatments in November 16 and January and March 17. Next treatment to start on 5/06/17.
H2O2 treatment finished end of April 2017. Thermolicer used on site 4 weeks ago.
Sea lice numbers just above 3 during April (wk 15 & 16) but not reported. Thermolicer used wk 18 brought numbers back below CoGP suggested criteria for treatment. Are hoping to set up skirts on 2 currently empty cages and transfer fish that have just been treated into these cages. Manager reported that estimate 30 - 40% of lice are knocked off fish during crowding prior to mechanical treatment and hence are not getting removed and caught by the filters.
4 of the cages are for Label Rouge while 6 are for Marks and Spencer (Loch Muir). 2 cages currently not stocked

Mortalities:
Some smolts delivered were not quite ready for sea and as a result had some high mortalities at input (26/9 - 24/10, 10.4% in total, 31% in one cage) from Landcatch. High mortalities after a particularly bad winter storm in which the fish burrowed deep in the cages and got scrubbed/damaged resulting in the mortalities. Mortality for period 26/12/16 - 31/1/17 was 27,752 (7.71%). Fish were at avg. weight of 333g at the time.
1/5/17- 3,460 (1.06%) post thermolicer treatment (24 - 30/4/17)
8/5/17 - 870 (0.27%)
15/5/17 - 251 (0.08%)
22/5/17 - 196 (0.06%)

Mortality Records

1. Mortality records available for inspection?	Y
2. How are mortalities disposed of?	Ensiled
If other detail:	Small quantities ensiled on barge. Large quantities taken away by TWMA
3. Mortality records complete and correctly entered?	Y
4. Recent mortality (last 4 wks):	wb 1/5 - 3460 (1.06%), wb 8/5 - 870 (0.27%), wb 15/5 - 251 (0.08%), wb 22/5 - 196 (0.06%)
5. Evidence of recent increased/atypical mortalities?	Y
If yes, facility nos/no mortality per facility/no stock per facility/reason:	
wb 1/5/17 post treatment with thermolicer losses across site - 3,460 (1.06%)	
6. Any other peaks in mortality during period checked?	Y
If yes, detail:	see additional information
7. Have increased (unexplained) mortalities been reported to vet or FHI?	Y
If yes, detail action:	see additional info
8. Have 'mortality events' been reported to FHI? If no, add MRT case and enter on mortality events sheet.	N

Case No: 2017-0198 Site No: FS0183 Date of visit: 01/06/2017

Start date:	End date: (if applicable)	Size of fish:	Average weight of affected population:	Species:	Yearclass:	Timescale	Mortality rate recorded(%):	Explained/ unexplained:	If explained, select reason(s):
01/05/2017	07/05/2017	≥750g	1.7kg	SAL	2016 S0	Weekly	1.06	Explained	Treatment

Total mortality during event (if available):	Additional information (e.g. action taken by company):	Action taken by FHI (include case no where applicable):
3460	No action taken. Mortality due to treatment with thermolicer. Mortalities reduced significantly the following week	No action taken

Case No:	2017-0199					Date of visit:	30/05/2017
Time spent on site:	5 hrs					Main Inspector:	ALW
Site No:	FS0433	Site Name:	Langa Isle (East)				
Business No:	FB0440	Business Name:	Grieg Seafood Shetland Ltd				
Case Types:	1 ECI	2 CNI	3 SLI	4 VMD	5 DIA	6 MRT	
Water Temp (°C):	10.7	Thermometer No:	Site		FHI 045 completed		
Observations:		Region:	SH	Water type:	S	CoGP MA:	S-11

Dead/weak/abnormally behaving fish present?	Y	If yes, see additional information/clinical score sheet.
Clinical signs of disease observed?	Y	If yes, see additional information/clinical score sheet.
Gross pathology observed?	Y	If yes, see additional information/clinical score sheet.
Diagnostic samples taken?	Y	

Additional Case Information:

Treatments:
SLICE treatments carried out in March, May, Aug. & Oct. 2016.
Salmosan treatments carried out in Feb., April & May 2017. The treatment in May was carried out in wellboat (Oysund). Recent treatment has not reduced the number of adult female lice. Numbers have slightly increase from week 20 to 21.
H2O2 treatments carried out in Feb. & April 2017. Thermolicer used Dec. 2016.

Mortalities:
Mortalities over the last 4 weeks have been low, not exceeding the reporting criteria. All put down to post treatment.
A spike in mortalities in Dec. 2016, where the percentage exceeded the reporting criteria. This was put down to post treatment losses with the Thermolicer. This event however, was not reported to the FHI.

Fish on site feeding well but external damage to fish was visible due to lice and treatments to reduce lice numbers.

Two fish removed for diagnostic sampling.

Next input due in October 2017. Smolts will be transferred from Girlsta to Taing of Railsborough in June and held there for 3-4 months prior to transfer to Langa Isle. Date of transfer will depend on harvest out date, aim to complete 6 week fallow prior to input.

Additional comments:

F1 - Haemorrhaging on the ventrum along to the base of the tail. F2 - extensive damage to the head, tail & dorsal. Lesion

F2 - extensive damage to the head, tail & dorsal. Lesion on dorsal and in front of adipose.

Case No: 2017-0199 Site No: FS0433 Date of visit: 30/05/2017

Start date:	End date: (if applicable)	Size of fish:	Average weight of affected population:	Species:	Yearclass:	Timescale	Mortality rate recorded(%):	Explained/ unexplained:	If explained, select reason(s):
05/12/2016	11/12/2016	≥750g	2.49 kg	SAL	2016 S1	Weekly	5.30	Explained	Treatment
12/12/2016	18/12/2016	≥750g	2.49 kg	SAL	2016 S1	Weekly	5.75	Explained	Treatment

Total mortality during event (if available):	Additional information (e.g. action taken by company):	Action taken by FHI (include case no where applicable):
18232	Thermolicer treatment losses	No action taken. Not informed at time of event
19131	Thermolicer treatment losses	No action taken. Not informed at time of event

Case No:	2017-0125			Date of visit:	04/04/2017
Time spent on site:	4 hours			Main Inspector:	ALW
Site No:	FS0033	Site Name:	Dury Voe		
Business No:	FB0125	Business Name:	Scottish Sea Farms Ltd		

Additional Case Information:

SSF are planning to join Dury Voe and Loura Voe into a single site with 12 100m cages. The site will be stocked in spring or autumn 2018 depending on when it is ready.
Mortalities mainly attributed to seal predation (23.8% of mortalities since input), post treatment (30.7% of mortalities since input) and concussion (14.2% of mortalities since input). Have lost a total of 52,921 fish since input. Mortalities removed as required using dead baskets. Divers on site conducting monthly net inspections.
Have multiple ADDs in place and Seal Pro nets installed to try to reduce losses.
Experienced gill issues in October 2016 associated with net washing. Nets in place at fish input were not treated with antifoulant and required regular cleaning. Nets were changed and fish treated with hydrogen peroxide.
No FMAg in place with other operator in area, but have a FMS and copy of other operator's FMS. Area is multiple year class with 2016 S1s on Dury Voe and Loura Voe, 2016 S0s on Bight of Bellister and 2017 S1s at Vidlin.
Have treated with Slice in May, August, October and November 2016, hydrogen peroxide in October and November 2016 and Salmosan in February 2017. Used thermolicer on site last week and reduced average adult female lice numbers from 4.66 to 0.5.
Paperwork completed on 4/4/17 and site inspection carried out on 6/4/17 due to weather.
No sick fish seen on site and fish sampled for VMD appeared healthy.

Mortality Records

1. Mortality records available for inspection?	Y
2. How are mortalities disposed of?	Other
If other detail:	TWMA - biogas plant
3. Mortality records complete and correctly entered?	Y
4. Recent mortality (last 4 wks):	10,793 from 27/2/17-2/4/17 (5.05%) mainly attributed to seal predation (33%) and treatment with the thermolicer (38%)
5. Evidence of recent increased/atypical mortalities?	Y
If yes, facility nos/no mortality per facility/no stock per facility/reason:	
Across site due to seals and post treatment with thermolicer	
6. Any other peaks in mortality during period checked?	N
If yes, detail:	
7. Have increased (unexplained) mortalities been reported to vet or FHI?	N/A
If yes, detail action:	
8. Have 'mortality events' been reported to FHI? If no, add MRT case and enter on mortality events sheet.	N

Case No:	2017-0130			Date of visit:	04/04/2017
Time spent on site:	7 hrs			Main Inspector:	SAE
Site No:	FS0430	Site Name:	Nevis A		
Business No:	FB0125	Business Name:	Scottish Sea Farms Ltd		

Additional Case Information:

Normally use an incinerator, however due to current issues the morts are collected by Billy Bowie and taken to Dundas Chemicals, Mosspark, Dumfries.

19-21 February 2017 Thermolicer treatment, treatment delayed by 3 weeks due to weather.

slice: 7 June, 27 July, 16 November, 30 January 2017, Azasure: 29 Dec, Peroxide 2/10/16

Nets very clean, trying to clean nets weekly. Fish very deep in the water, water very dark. Visibility very limited. Good feeding response observed on a number of cages. Lice counts observed during site inspection. Wild caught ballen wrasse are being used on site currently. Looking to source hatchery reared lumpfish from Aultbea.

8 cages counted this week and currently have an average of 3.3 female L. salmonis

28 Nov - 4 Dec 2016 1.01% average females, w/b 15/12 1.07 average females, w/b 12/12 1.74% average females w/b 19/12 1.25%, 26/12 2.42%, 2/1/17 no count as busy treating with Azasure, 9/1/17 1.13%, 16/1/17 1.36%, 23/1/17 1.21%, 30/1/17 1.65%, w/b 6/2/17 2.53%, w/b 13/2/17 no count busy treating, Thermolicer treatment 19-21 Feb, w/b 20/2/17 0.37, w/b 27/2/17 0.29%, w/b 6/3/17 0.43%, w/b/ 13/3/17 0.72%, w/b 20/3/17 1.52%, 27/3/17 2.29%, w/b 3/4/17 3.3%

Hoping to do Thermolicer treatment starting on 17/4/17.

Mortality Records

1. Mortality records available for inspection?	Y
2. How are mortalities disposed of?	Incinerated
If other detail:	see info
3. Mortality records complete and correctly entered?	Y
4. Recent mortality (last 4 wks):	SAL: last 4 wks 0.56% mortality for the site.
5. Evidence of recent increased/atypical mortalities?	Y
If yes, facility nos/no mortality per facility/no stock per facility/reason:	
SAL: w/b 13/3 486 morts for cage 5 divers were in post thermolicer treatment.	
6. Any other peaks in mortality during period checked?	Y
If yes, detail:	SAL: Slightly increased morts on input; approximately 6,000 morts in total attributed to thermolicer treatment; a few cages higher morts with failed smolts 200-300 every few weeks for a few months. WRS: very low since input in October 2016, increased wk2 2017 93 morts per site post Salmosan treatment and wk10 2017 post thermolicer 122 morts per site
7. Have increased (unexplained) mortalities been reported to vet or FHI?	N/A
If yes, detail action:	
8. Have 'mortality events' been reported to FHI? If no, add MRT case and enter on mortality events sheet.	N

Case No: 2017-0130 Site No: FS0430 Date of visit: 04/04/2017

Start date:	End date: (if applicable)	Size of fish:	Average weight of affected population:	Species:	Yearclass:	Timescale	Mortality rate recorded(%):	Explained/ unexplained:	If explained, select reason(s):
20/02/2017	26/02/2017	<750g	1.5kg	SAL	2016 S1	Weekly	1.58	Explained	Treatment

Total mortality during event (if available):	Additional information (e.g. action taken by company):	Action taken by FHI (include case no where applicable):
4,129	Losses following Thermolicer treatment. Thought to be fish weakend by HSMI.	Inspection carried out. No moribund fish observed.

Case No:	2017-0045			Date of visit:	28/02/2017
Time spent on site:	4 hours			Main Inspector:	JMS
Site No:	FS0698	Site Name:	Quarry Point		
Business No:	FB0169	Business Name:	The Scottish Salmon Company		

Case Types:	1	ECI	2	CNI	3	SLA	4	VMD	5	MRT	6

Water Temp (°C):	8.5	Thermometer No:	Site	FHI 045 completed	
Observations:		Region: ST	Water type: S	CoGP MA:	M-42

Dead/weak/abnormally behaving fish present?	Y	If yes, see additional information/clinical score sheet.
Clinical signs of disease observed?	Y	If yes, see additional information/clinical score sheet.

Additional Case Information:

19/9/16 - 25/9/16 - 7445 mortalities - reported post treatment and complex gill issues
14/11/16 - 20/11/16 - 4247 mortalities - reported post treatment and complex gill issues
Small number of moribund fish observed with eye damage, reportedly from hydrolicer, 3 removed for examination, no internal gross pathology, no samples taken

Treatments:
1 x slice October 2015
2 x slice November 2015
1 x slice February 2016
1 x slice April 2016
1 x slice June 2016 1 x alphamax
Salmosan 2 x August 2016, 1 x September 2016, 1 x February 2017
H202 1 x sept/oct 2016, 1 x October 2016, Jan 2017
Hydrolicer in November 2016 and February 2017

Average AF lice numbers currently below 3 but peaked at 47.8 average AF on counts conducted on 21/10/16
Treatments are reducing numbers but resettlement is reported to be quick
PRV in April 2016, Clinical HSMI in at least two cages and PD
Karenia Bloom in Summer 2016 reduced dissolved O2 in loch making treatments difficult. Complex gill pathology
August/September 2016 and reduced appetite making functional feed less affective
Harvesting started 24th October 2016 to reduce biomass
AMX used initially, moved to salmosan following gill issues
Bioassay showed high resistance to AMX and lowered sensitivity salmosan, low resistance to hydrogen peroxide
AMX June 2016 28% clearance all stages
Salmosan treatment in September 2016 reported to be poor
Some extended bath treatments with salmosan
Enhanced sea lice control report for this cycle viewed - report contains review of sea lice treatments and assessment of efficacy

Case No: 2017-0045 Site No: FS0698 Date of visit: 28/02/2017

Start date:	End date: (if applicable)	Size of fish:	Average weight of affected population:	Species:	Yearclass:	Timescale	Mortality rate recorded(%):	Explained/ unexplained:	If explained, select reason(s):
19/09/2016	25/09/2016	≥750g	3.0kg	SAL	2015 s0	Weekly	2.23	Explained	Treatment
14/11/2016	20/11/2016	≥750g	3.2kg	SAL	2015 s0	Weekly	2.80	Explained	Treatment

Total mortality during event (if available):	Additional information (e.g. action taken by company):	Action taken by FHI (include case no where applicable):
7445	Post salmosan treatment losses associated with complex gill issues and post kerinia bloom - FVG report from samples submitted by company identified PGD and gill pathology	MRT case
4247	Post Hydrolicer treatment, fish with compromised health did not survive the treatment well - mechanical damage	MRT case

Case No:	2017-0047								Date of visit:	01/03/2017	
Time spent on site:	7 hours								Main Inspector:	JMS	
Site No:	FS1176	Site Name:	Eilean Grianain								
Business No:	FB0119	Business Name:	Marine Harvest (Scotland) Ltd								
Case Types:	1 ECI	2 CNI	3 SLA	4 VMD	5 MRT	6					
Water Temp (°C):	8.5	Thermometer No:	Site						FHI 045 completed		
Observations:		Region:	ST		Water type:	S			CoGP MA:	M-47	
Dead/weak/abnormally behaving fish present?				Y	If yes, see additional information/clinical score sheet.						
Clinical signs of disease observed?				Y	If yes, see additional information/clinical score sheet.						

Additional Case Information:

Some Fungus and failed smolts on input in November 2015 peaking at 35500 on 19/11/15 numbers dropping down through December 2015 and January 2016
Smolts stocked into south cage group first and then split into north cage group in July/August 2016
1/3/16 - 33070 prior to splitting into north cage group, possible bird damage/failed smolts - numbers returned to normal, reported that there was an issue with the mesh on the top nets being too big - since rectified.

27/8/16 - Pen 1 (6000) and 7 (3000) wellboat treatment - amx salmosan, 10000 treatment loss pen 18
Pen 9 3857 treatment loss - compromised gills

Treatments
March 2016 - south group Slice
May 2016 - south group H202/AMX
May 2016 - south group Slice
July - south group treated with Salmosan
Site split July/August 2016
August 2016 - Site salmosan and H202, Pens 1/7/9 and 18 AMX/Salmosan combined - not carried out across the whole site due to higher losses
14th and 19th September 2016 - Hydrolicer trialled on Pens 15/11/16 - not carried out across site as fish deemed to big and some eye damage experienced
9th October 2016 - pen 16 - trial with fresh water - not carried out across whole site due to availability of freshwater
October 2016 - Site H202
November 2016 - Site Salmosan
December 2016/January 2017 - Site Salmosan - Site also harvesting
January/February 2017 - Site Alphamax
Treating with Alphamax at the moment - since the visit the manager reported that the efficacy of the AMX wasn't as good as hoped and the site is being treated with Salmosan - harvesting to resume week 11.

Average AF lice numbers were over 3 for the last count on 23/02/17 (6.2 AF South, 3.AF North)

A few fish with eye damage observed across the site, reportedly due to the hydrolicer, one was examined internally but no gross pathology was observed and no samples taken. Fish for VMD appeared healthy.
Records relating to issues raised with FMS supplied 10/4/17
Records relating to statutory point raised in CNA received 16/8/17

Case No:	2017-0101			Date of visit:	14/03/2017
Time spent on site:	3 hrs			Main Inspector:	PMM
Site No:	FS0948	Site Name:	Score Holms		
Business No:	FB0440	Business Name:	Grieg Seafood Shetland Ltd		

Additional Case Information:

Unable to access site due to adverse weather - wind gusting to force 10 and 2m swell going through site at time of inspection. Paperwork completed and site inspection to be rearranged.

No recent problems reported on site. There was a peak in mortality following a sea lice treatment week 21/11 - losses of 10,619 were experienced, unsure why this peak, as not experienced in all cages or on other sites where the system was used. Mortalities are know collected by TWMA rather than incinerated at Gremista Waste to energy centre.

Oysund wellboat has been on site for conducting sea lice treatments, boat has sea lice filters installed and these were reported to be very effective, have been conducting double treatment, 1st treat in well with AMX for 30 minutes, flush the wells, and then treat with H2O2.

Due to cost of wellboat, site staff have been working in shifts to maximise the usage of wellboat and minimise cost.
Due to fallowing of some MA, some staff from GSS sites have been working a two weeks on two weeks off rota at Greig sites in Skye.
All sites within 3a are due to have sea lice skirts fitted prior to restocking. These were trialled in MA 4a are were reported to have given good results for the period they were in the water.

Mortality Records

1. Mortality records available for inspection?	Y
2. How are mortalities disposed of?	Other
If other detail:	Collected by TWMA
3. Mortality records complete and correctly entered?	Y
4. Recent mortality (last 4 wks):	Mortalities are attributed to physical damage ~1,600 (0.4%) for previous 4 weeks except week 9- 4,983 for site, with west side (most exposed cages) worst effected
5. Evidence of recent increased/atypical mortalities?	N
If yes, facility nos/no mortality per facility/no stock per facility/reason:	
6. Any other peaks in mortality during period checked?	Y
If yes, detail:	21/11/16 - 10,619 post hot water treatment losses across site.
7. Have increased (unexplained) mortalities been reported to vet or FHI?	N/A
If yes, detail action:	
8. Have 'mortality events' been reported to FHI? If no, add MRT case and enter on mortality events sheet.	N

Case No: 2017-0101 Site No: FS0948 Date of visit: 14/03/2017

Start date:	End date: (if applicable)	Size of fish:	Average weight of affected population:	Species:	Yearclass:	Timescale	Mortality rate recorded(%):	Explained/ unexplained:	If explained, select reason(s):
21/11/2016		≥750g	1.7kg	SAL	2016 S1	Weekly	3.70	Explained	Treatment

Total mortality during event (if available):	Additional information (e.g. action taken by company):	Action taken by FHI (include case no where applicable):
10,619	Mortalities post Thermolicer treatment,	No further action - Retrospective information.

Case No:	2017-0076	Date of visit:	02/03/2017
Time spent on site:	0	Main Inspector:	JMS
Site No:	FS0091	Site Name:	Meall Mhor Loch Fyne
Business No:	FB0169	Business Name:	The Scottish Salmon Company

Case No: 2017-0076 Site No: FS0091 Date of visit: 02/03/2017

Start date:	End date: (if applicable)	Size of fish:	Average weight of affected population:	Species:	Yearclass:	Timescale	Mortality rate recorded(%):	Explained/ unexplained:	If explained, select reason(s):
15/08/2016	11/09/2016	≥750g	2kg	sal	2015 s0	weekly	2.88	Explained	PD, Treatment
26/09/2016	02/10/2026	≥750g	2kg	sal	2015 s0	weekly	1.39	Explained	PD, Treatment
17/10/2016	20/11/2016	≥750g	2kg	sal	2015 s0	weekly	4.10	Explained	PD, Treatment

Total mortality during event (if available):	Additional information (e.g. action taken by company):	Action taken by FHI (include case no where applicable):
32859	Post salmosan treatment, complex gill issues and PD runts	MRT case - no action as report was retrospective
3639	Post salmosan treatment, complex gill issues and PD runts	MRT case - no action as report was retrospective
49116	Post h202 treatment, complex gill issues and PD runts 2 treatments in period one bath and one hydrolicer	MRT case - no action as report was retrospective

Case No:	2017-0078	Date of visit:	02/03/2017
Time spent on site:	0	Main Inspector:	JMS
Site No:	FS1019	Site Name:	Strondoir Bay
Business No:	FB0169	Business Name:	The Scottish Salmon Company

Case No: 2017-0078 Site No: FS1019 Date of visit: 02/03/2017

Start date:	End date: (if applicable)	Size of fish:	Average weight of affected population:	Species:	Yearclass:	Timescale	Mortality rate recorded(%):	Explained/ unexplained:	If explained, select reason(s):
18/07/2016	07/08/2016	≥750g	2.5kg	sal	2015 s0	weekly	2.97	explained	Algal bloom, Treatment
17/10/2016	23/10/2016	≥750g	3kg	sal	2015 s0	weekly	1.30	explained	treatment
31/10/2016	20/11/2016	≥750g	3kg	sal	2015 s0	weekly	2.90	explained	treatment

Total mortality during event (if available):	Additional information (e.g. action taken by company):	Action taken by FHI (include case no where applicable):
39011	post treatment salmosan, low o2 due to plankton bloom	MRT Case - no action as report was retrospective
4988	complex gill, pd, hsmi post peroxide treatment	MRT Case - no action as report was retrospective
36103	Post treatment salmosan, h202 and hydrolicer, complex gills, agd	MRT Case - no action as report was retrospective

Case No:	2017-0023			Date of visit:	15/02/2017
Time spent on site:	3 hours			Main Inspector:	DCB
Site No:	FS0590	Site Name:	Glenan Bay		
Business No:	FB0169	Business Name:	The Scottish Salmon Company		

Additional Case Information:

Site experienced large numbers of mortalities between August and November due to PD/complex gill issues. Mortalities have came down below minimum reporting threshold since January. This was reported to the company biologists and the FHI. A diaganostic case was undertaken in November (case# 20160460)

Sea lice levels below CoGP suggested criteria for the majority of period checked, one or two elevated counts (1.06 - 1.12). Hydrolicer has been successfully used instead of chemical treatment.

Mortality Records

1. Mortality records available for inspection?	Y
2. How are mortalities disposed of?	Other
If other detail:	Biogas generation
3. Mortality records complete and correctly entered?	Y
4. Recent mortality (last 4 wks):	W1- 1.1% (hydrolicer) W2 - 0.1% - W3- 0.04% W4 0.15% across the whole site.
5. Evidence of recent increased/atypical mortalities?	Y
If yes, facility nos/no mortality per facility/no stock per facility/reason:	
Increased mortality during wb 13/01 due to hydrolicer lice treatment	
6. Any other peaks in mortality during period checked?	Y
If yes, detail:	Nov 6.16, Dec 1.55, Jan, 1.63% Across the whole site
7. Have increased (unexplained) mortalities been reported to vet or FHI?	Y
If yes, detail action:	Reported to FHI and company vets.
8. Have 'mortality events' been reported to FHI? If no, add MRT case and enter on mortality events sheet.	Y

2016 'Case Information' includes:

Case No:	2016-0528							Date of visit:	09/11/2016		
Time spent on site:	3 hours							Main Inspector:	ASM		
Site No:	FS0674	Site Name:	North Havra								
Business No:	FB0440	Business Name:	Grieg Seafood Shetland Ltd								
Case Types:	1 ECI	2 CNI	3 SLI	4 VMD	5 MRT	6					
Water Temp (°C):	10.2	Thermometer No:	T172			FHI 045 completed					
Observations:		Region:	SH	Water type:	S	CoGP MA	S-11				
Dead/weak/abnormally behaving fish present?	Y	If yes, see additional information/clinical score sheet.									

Additional Case Information:

New movement book required
Ability to ensile in the case of increased mortality. Morts usually taken off the site and incinerated at TWMA.
Increased mortality after the last thermolicer treatment that started the weeks before the inspection. Thermolicer has been in operation at other sites with reportedly no increase in mortality.
Thermolicer treatments are reportedly effective at removing lice. Adult females at an average of 2.075 before the treatment and 0.075 after (96% clearance).
Three SLICE treatments conducted in this current cycle (in June, August and October). June and August treatments were prophylactic. October treatment was unsuccessful at reducing lice number (average number of adult females: 0.7 before, 1.8 after).
Several dead fish observed floating on the surface. Approx. 10 in total over the site. No moribunds observed. Morts are removed twice weekly.

Mortality Records

1. Mortality records available for inspection?	Y
2. How are mortalities disposed of?	Incinerated
If other detail:	
3. Mortality records complete and correctly entered?	Y
4. Recent mortality (last 4 wks):	5,794 (2.5%) due to background morts and thermolicer
5. Evidence of recent increased/atypical mortalities?	Y

If yes, facility nos/no mortality per facility/no stock per facility/reason:

All cages affected. Attributed to 'physical damage' on mort records but the damage is reportedly due to the thermolicer.

6. Any other peaks in mortality during period checked?	N
If yes, detail:	
7. Have increased (unexplained) mortalities been reported to vet or FHI?	N
If yes, detail action:	
8. Have 'mortality events' been reported to FHI? If no, add MRT case and enter on mortality events sheet.	N

Case No: 2016-0528 Site No: FS0674 Date of visit: 09/11/2016

Start date:	End date: (if applicable)	Size of fish:	Average weight of affected population:	Species:	Yearclass:	Timescale	Mortality rate recorded(%):	Explained/ unexplained:	If explained, select reason(s):
07/11/2016	08/11/2016	≥750g	1.4kg	SAL	2016 S1	Weekly	2.50	Explained	Treatment

Total mortality during event (if available):	Additional information (e.g. action taken by company):	Action taken by FHI (include case no where applicable):
5,794	Thermolicer treatments	MRT case 2016-0528

Case No: 2016-0442 Date of visit: 09/11/2016

Time spent on site: 0 Main Inspector: ALW

Site No: FS0666 Site Name: Burrastow
Business No: FB0095 Business Name: Cooke Aquaculture Scotland Ltd

Additional Case Information:

~130,000 salmon on site at 3.8Kg average.
Sea lice treatment with thermolicer. Some losses post treatment, but have now reduced. Thermolicer worked well at removing lice.

Case No: 2016-0442 Site No: FS0666 Date of visit: 09/11/2016

Start date:	End date: (if applicable)	Size of fish:	Average weight of affected population:	Species:	Yearclass:	Timescale	Mortality rate recorded(%):	Explained/ unexplained:	If explained, select reason(s):
31/10/2016		≥750g	3.8	SAL	2015 S0	Weekly	2.67	Explained	Treatment

If unexplained, select observations:	Total mortality during event (if available):	Additional information (e.g. action taken by company):	Action taken by FHI (include case no where applicable):
		Physical damage following use of thermolicer. Due to be harvested out soon	Site inspected 19/7/16. No further action

Case No: 2016-0379 Date of visit: 08/09/2016

Time spent on site: 0 Main Inspector: AJW

Site No: FS0015 Site Name: Loch Greshornish

Business No: FB0119 Business Name: Marine Harvest (Scotland) Ltd

Additional Case Information:

Current morts 10,499 for site/month. 7,100 attributed to treatment morts. Currently 165 fish/wk. - 0.132%

Lice on site tested and found to be 60% resistance to all treatments. Lice problems started in Feb 2016. In 2016 the site has had monthly treatments; 2x salmosan bath, 2x salmosan wellboat, 2x hydrolicer, 1 x thermolicer. SLICE has proven ineffective (5x treatments) in 2015. Alphamax 9x bath treatments and peroxide treatments in this cycle of fish. Had to stop thermolicer treatment. It was giving 96% clearance but was killing too many fish. Temperature of 32c required. Treatment on 28th July killing 47,000 fish for month (9%). Solution has been to carry out salmosan treatment in the well boat for an extended time of 3 hours. Is causing increased morts. Lice leves are falling but increasing again soon after. Extended salmosan treatment on 20/8/16, current lice levels average; gravids;3.07, adult females;5.9, adult males; 4.28, preadults;8.65, chalimus; 2.63. Plan to harvest early and site should be fallow by end september 2016. Fish are not dying due to lice damage.

Mort normally incinerated on site. Increased morts have been transported whole in skips by Gogar and Billie Bowie to Dundas Chemicals in Dumfries and Energen Biogas in Cumbernauld.

Details submitted 12/9/16; "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 – 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."

Case No: 2016-0379 Site No: FS0015 Date of visit: 08/09/2016

Start date:	End date: (if applicable)	Size of fish:	Average weight of affected population:	Species:	Yearclass:	Timescale	Mortality rate recorded(%):	Explained/ unexplained:	If explained, select reason(s):
28/07/2016	28/08/2016	≥750g	4kg	SAL	2015 Q2	5 weeks	9.00	Explained	Treatment

Total mortality during event (if available):	Additional information (e.g. action taken by company):	Action taken by FHI (include case no where applicable):
47000	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	PSI case 20160379 Mort levels have dropped, currently 0.132%/site/wk. Awaiting further details on mortality figures for the cycle. Site to be contacted next week to ensure morts remain low.

Read more via 'The Case Against Scottish Salmon'

Scottish Salmon Watch, 6 January 2020

SCOTTISH SALMON WATCH — DISEASES

The Case Against Scottish Salmon

- **Newly published inspection reports make mockery of 'healthy' marketing claims**
- **Gruesome photos of welfare abuse, pathogens, bacteria & infectious diseases**
- **Anaemia, *Pasteurella skyensis*, Cardiomyopathy Syndrome & Gill Disease plague sites**
- **Lice loads of 50 reported at Scottish Sea Farms in Loch Kishorn**
- **Mowi's disease-ridden salmon farm in Loch Ainort revealed as origin of A86 roadspill**
- **Use of the antibiotic Oxytetracycline by Mowi in Loch Sunart**
- **Early harvesting to mask mortalities, diseases & welfare problems**
- **Call for unannounced & more rigorous inspections of farms**
- **'Case Information' now published on a monthly basis by Scottish Government**