

Case No: 2020-0482 Date of visit: 11/11/2020

Time spent on site: 3h Main Inspector: [Redacted]

Site No: FS0234 Site Name: Torridon  
Business No: FB0119 Business Name: Mowi Scotland Ltd

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

Water Temp (°C): 8.5 Thermometer No: T173 FHI 045 completed [ ]

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]

UNI/REG only - if unable to carry out intended visit detail reason below:  
[Redacted]

**Additional Case Information:**

Elevated mortalities due to gill issues currently an issue. Mortalities related to gill issues began during week 35 with a marked increase in week 39.

Salmon mortalities week 39 4689 (0.54%), week 40 7448 (0.86%), week 41 14571 (1.69%), wk 42 5691 (0.84%), wk 43 32494 (4.86%), wk 44 (2.02%) 11109, wk 45 10074 (2.08%)

Additional mortality peak recorded in week 26 6906 (0.82%) and week 27 4287 (0.49%) attributed to post treatment losses, this also affected cleaner fish mortalities with 9947 and 5389 recorded.

Cleaner fish mortalities have been elevated also with 2324 recorded for the last four week in the wrasse being attributed to atypical furunculosis, lumpfish mortalities have been 5938 due to pseudomonas and handling.

Sea lice numbers have been above the CoGP recommended threshold for treatment since week 39 with a breach of the reporting threshold in week 45 (4.72) and week 42 (4.93)

Gill anaemia a significant problem. At the time of inspection two boats were conducting freshwater treatments. A number of lethargic fish were observed in the pens however these difficult to catch with a hand net but five fish were removed for further examination and diagnostic sampling.

Extremely poor weather condition made stock inspection difficult.

Due to ongoing issues on site a meeting with the manager could not be arranged as he just too busy therefore some records could not be inspected and some details not clarified. Sea lice and mortality data was provided prior to the inspection as well as stock details for the salmon however some information was not available.

Results of animal health surveillance discussed on site with company biologist.

Case No:  Site No:

Date of Visit:  Inspector(s):

**Registration/Authorisation Details**

1. Business/site details summary checked by site representative?

2. Changes made to details?

**Site Details (include cleaner fish for all sections)**

Total No facilities	<input type="text" value="10"/>	Facilities stocked	<input type="text" value="10"/>	No facilities inspected	<input type="text" value="8"/>
Species	<input type="text" value="sal"/>	<input type="text" value="LUM"/>	<input type="text" value="WRS"/>		
Age group	<input type="text" value="2019 Q4"/>	<input type="text" value="adult"/>	<input type="text" value="adult"/>		
No Fish	<input type="text" value="460,000"/>	<input type="text" value="49,151"/>	<input type="text" value="45,448"/>		
Mean Fish Wt	<input type="text" value="3.45kg"/>	<input type="text" value="mix"/>	<input type="text" value="mix"/>		
Next Fallow Date (Site)	<input type="text" value="Not Provided"/>		Next Input Date (Site)	<input type="text" value="Not provided"/>	
Recent (last 4 wks) disease problems?			Y	Any escapes (since last visit)?	<input type="text" value="N"/>
If yes, detail:	<input type="text" value="gill issues"/>				

**Movement Records**

1. Movement records available for inspection?

2. Date of last inspection:

3. Are records complete and correctly entered?

4. Are movement records available for dead fish and waste?

5. Are records complete and correctly entered?

6. Are health certificates for introductions (outwith GB) available?

**Transport Records**

1. Are any movements carried out by (or on behalf) of the business (not using a STB)?

If yes, is there a system in place for maintenance of transportation records?

**Mortality Records**

1. Mortality records available for inspection?

2. How are mortalities disposed of?

If other detail:

3. Mortality records complete and correctly entered?

4. Recent mortality (last 4 wks):

5. Evidence of recent increased/atypical mortalities?

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

6. Any other peaks in mortality during period checked?

If yes, detail:

7. Have increased (unexplained) mortalities been reported to vet or FHI?

If yes, detail action:

8. Have 'mortality events' been reported to FHI? If no, enter details on mortality events sheet.

**Treatments and Medicines Records**

1. Recent treatments (see comment)?	<input type="checkbox"/>	Y
If yes, detail:	H2O2, Salmosan TMS	
If other, detail:	Freshwater Hydrolicer	
2. Medicines records available for inspection?	<input type="checkbox"/>	Y
3. Are records complete and correctly entered?	<input type="checkbox"/>	Y
4. Are fish in a withdrawal period?	<input type="checkbox"/>	Y
5. If yes, what treatment(s)?	TMS	
If other, detail:		
6. Are medicines stored appropriately?	<input type="checkbox"/>	Y

**Biosecurity Records**

1. Biosecurity records available for inspection?	<input type="checkbox"/>
2. Has the manner and frequency of mortality removal, recording and safe disposal been considered?	<input type="checkbox"/>
3. Has the manner and period in which the APB will notify Scottish Ministers or veterinary professional of any <i>increased (unexplained)</i> mortality at the site been included?	<input type="checkbox"/>
4. Has the action that will be taken in the event that the presence or suspicion of the presence of a listed disease is detected been included and <i>how</i> and <i>when</i> that will be notified to Scottish Ministers?	<input type="checkbox"/>
5. Has the health status of aquaculture animals being stocked on the farm site been covered (equal or higher health status, certification if required)?	<input type="checkbox"/>
6. Have the husbandry and biosecurity measures implemented between each epidemiological unit to minimise transmission of disease been covered (movement of staff, visitors, equipment, live or dead fish etc.)?	<input type="checkbox"/>
7. Is documentation available regarding the measures in place to maintain the physical containment of aquaculture animals held on site?	<input type="checkbox"/>
8. Have the biosecurity procedures been adequately implemented on site?	<input type="checkbox"/>
If no, detail:	

**Results of Surveillance**

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

Records checked between:	26/2/2020 (mortality/sea lice only)
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Case no:  Site No:  Date of visit/  
Sampling:

Priority samples: VI  BA  PA  MG  HI

Time sampling starts/ends:   Inspector:  VMD No.

Environmental conditions: 1  2  3  4  5

Summary samples HIST  BA  MG  VI  PA  Total Samples

**Add Fish/Pools - click**

Pool/Fish No	F1	F2	F3	F4	F5	P1							
Fish nos	1	2	3	4	5	1-5	6	7					
Pool Group	P1	P1	P1	P1	P1								
Species	SAL	SAL	SAL	SAL	SAL	SAL	SAL	SAL					
Average weight	4kg	4kg	4kg	4kg	4kg	4kg	4kg	4kg					
Sex	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A					
Water Type	SW	SW	SW	SW	SW	SW	SW	SW					
Stock Details		Glenfinnan	Glenfinnan	Loch Garry	Glenfinnan	Glenfinnan		Glenfinnan	Glenfinnan				
	Stock Origin												
Facility No	2	2	3	7	2		6	2					

11/2020 Additional Sample Information:

Additional pooled kidney sample taken into a dry tube.

Total Tests assigned


Case no: 2020-0482

Site No: FS0234

Method of killing: Percussive

Date of visit: 11/11/2020

Inspector(s):

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)	1.5h	1.5h	1.5h	1.5h	1.5h				
<b>External Signs</b>									
<b>Behaviour</b>	<b>Moribund</b>				<b>S</b>				
	<b>Lethargic</b>	<b>S</b>	<b>S</b>	<b>S</b>	<b>S</b>				
	<b>Hanging vertical</b>								
	<b>Spiralling</b>								
	<b>Flashing</b>								
	<b>Loss of equilibrium</b>								
<b>Body</b>	<b>Dark</b>								
	<b>Distended abdomen</b>								
	<b>Anorexic</b>								
	<b>Scale Oedema</b>								
<b>Opercula</b>	<b>Shortened</b>								
	<b>Flared</b>								
<b>Haemorrhaging</b>	<b>Throat</b>								
	<b>Ventrum</b>								
	<b>Base of fins</b>								
	<b>Elsewhere</b>								
<b>Eyes</b>	<b>Exophthalmic</b>								
	<b>Enophthalmic (sunken)</b>								
	<b>Cataract</b>								
	<b>Haemorrhagic</b>								
<b>Gills</b>	<b>Pale</b>	<b>S</b>	<b>S</b>	<b>S</b>	<b>S</b>	<b>S</b>			
	<b>Zoned</b>	<b>w</b>	<b>w</b>	<b>w</b>	<b>w</b>	<b>w</b>			
	<b>Necrotic</b>	<b>m</b>	<b>w</b>	<b>W</b>	<b>M</b>	<b>M</b>			
<b>Lesions</b>	<b>Flank</b>								
	<b>Elsewhere</b>								
<b>Vent</b>	<b>Inflamed</b>								
	<b>Trailing faeces</b>								
<b>Lice Load</b>	<b>Estimate numbers</b>								
<b>Internal Signs</b>									
<b>Ascites</b>	<b>Clear</b>								
	<b>Bloody</b>								
<b>Oedema</b>	<b>In tissues</b>								
<b>Heart</b>	<b>Pale/anaemic</b>	<b>w</b>	<b>w</b>	<b>w</b>	<b>m</b>	<b>w</b>			
	<b>Granulomas</b>		<b>M</b>		<b>M</b>				
	<b>Deformed</b>								
<b>Liver</b>	<b>Petechial haem</b>								
	<b>Gross haem</b>								
	<b>Tissue breakdown</b>								
	<b>Enlarged</b>								
	<b>Colour number(s)</b>								
	<b>Granulomas</b>								
	<b>Lesions</b>								
<b>Pyloric caeca</b>	<b>Petechial haem</b>								
	<b>Tubules mauve</b>								
	<b>Lack of fat</b>								
<b>Spleen</b>	<b>Enlarged</b>								
	<b>Granulomas</b>				<b>w</b>				
<b>Gut</b>	<b>No food present</b>								
	<b>Yellow pseudo-faeces</b>								
	<b>External haem</b>								
	<b>Internal haem</b>								
<b>Body wall</b>	<b>Haemorrhaging</b>								
<b>Swim bladder</b>	<b>Haemorrhaging</b>								
	<b>Fluid filled</b>								
<b>Kidney</b>	<b>Swollen</b>								
	<b>Grey</b>	<b>w</b>	<b>w</b>	<b>w</b>	<b>w</b>	<b>w</b>			
	<b>Granular</b>	<b>w</b>	<b>w</b>	<b>w</b>	<b>w</b>	<b>w</b>			
	<b>Liquefied</b>								
<b>General</b>	<b>Parasites present</b>								
	<b>Anaemia</b>								

Case no: 2020-0482

Date of visit: 11/11/2020

S for strong presence: M for medium presence: W for w

<b>Fish Number</b>																				
<b>Time sampled after death (if &gt; 45 minutes)</b>																				
<b>External Signs</b>																				
<b>Behaviour</b>	<b>Moribund</b>																			
	<b>Lethargic</b>																			
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	<b>Liquefied</b>																			
<b>General</b>	<b>Parasites present</b>																			
	<b>Anaemia</b>																			



Additional comments:

Fish were not sampled until after one hour due to boat logistics and poor weather conditions

Site No: FS0234
Case No: 2020-0482
Nature of non-compliance:
Action taken (FHI):
Non-compliance relevant to (delete): VirologyMolGen/Bacteriology/Histology/Parasitology



Case No:	2020-0482	Date of visit:	11/11/2020
Site No:	FS0234	Inspector:	

Results Summary	Freq.	Date of Notification						
		Database	Insp	Phone	Insp	Writing	Insp	2 <sup>nd</sup> Insp
AGD (Neoparamoeba perurans) (PCR)	3/5	19/11/2020		19/11/2020		17/12/2020		
IHN (PCR) - IHNP	0/1	19/11/2020		19/11/2020		17/12/2020		
IPN (PCR) - IPNM	0/1	19/11/2020		19/11/2020		17/12/2020		
ISA (real time qPCR - heart & kidney) - ISAQ	0/1	19/11/2020		19/11/2020		17/12/2020		
Paranucleospora theridion (PCR) - PNST	5/5	19/11/2020		19/11/2020		17/12/2020		
Salmon gill poxvirus (PCR) - SPVP	5/5	19/11/2020		19/11/2020		17/12/2020		
Salmonid alphavirus (SAV) (PCR) - SALP	0/1	19/11/2020		19/11/2020		17/12/2020		
VHS (PCR) - VHSP	0/1	19/11/2020		19/11/2020		17/12/2020		
Complex gill issues (histology) - CGDH	5/5	26/11/2020		26/11/2020		17/12/2020		
Epitheliocystis - EPIT	5/5	26/11/2020		26/11/2020		17/12/2020		
Heart pathology - HPA	5/5	26/11/2020		26/11/2020		17/12/2020		
Liver pathology - LPATT	5/5	26/11/2020		26/11/2020		17/12/2020		
Spleen pathology - SPAT	5/5	26/11/2020		26/11/2020		17/12/2020		
Bacteria NSIG	1/5	03/12/2020				17/12/2020		

Report Summary			
Case Type	Date	Insp	2 <sup>nd</sup> Insp
REP, VMD	25/11/2020		
DIA	17/12/2020		

[REDACTED]  
Mowi Scotland Ltd  
Stob Ban House  
Glen Nevis Business Park  
Fort William  
PH33 6RX  
[REDACTED]

## FISH HEALTH INSPECTORATE VISIT REPORT

### SUMMARY FOR INFORMATION OF SITE OPERATOR

<b>BUSINESS No</b>	FB0119	<b>DATE OF VISIT</b>	11/11/2020
<b>SITE No</b>	FS0234	<b>SITE NAME</b>	Torridon
<b>INSPECTOR</b>	[REDACTED]	<b>CASE No</b>	20200482

#### Section 1: Summary

An inspection was conducted to follow up mortality event reports caused by gill health issues. Four lethargic and one moribund fish were removed for further examination and subsequent diagnostic sampling.

Histopathology examination revealed mixed pathology. All fish showed evidence of complex gill issues with mild multifocal hyperplastic branchitis, presence of epitheliocystis and some vascular damage (lamellar vasculitis). Individual gill samples were taken from all fish and were screened by qPCR. All five fish tested positive for *Paranucleospora theridion* (syn, *Desmozoon lepeophtherii*) and also salmon gill poxvirus. Three fish tested positive for the presence of *Neoparamoeba perurans* the causative agent of amoebic gill disease (AGD).

Fish also displayed a very mild myocarditis, mild splenitis and mild multifocal hepatic necrosis. In addition, a very mild peritonitis likely associated with vaccine administration was observed.

Please contact myself or the duty inspector should you require any further information, have any queries regarding this report or if any problems develop. Due to the continuance and level of mortalities reported the site was subject to a site inspection to collect diagnostic samples.

#### Section 2: Case Detail

##### Observations

Recurring weekly mortality events had been reported to the Fish Health Inspectorate beginning in October 2020. The mortalities were reportedly attributed to gill issues including AGD and proliferative gill disease (PGD) and also post treatment mortalities.

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On inspection of the site lethargic fish were observed in all pens inspected but only one moribund fish was observed. Freshwater treatments were being administered to the whole site at the time of inspection.

All fish sampled had pale gills, some zonation and appeared necrotic. The hearts were pale with granulomas present on F2 and F4. The spleen of F4 had granulomas present with all fish having a grey and granular kidney.

### Samples

Samples were collected from five fish according to the table below:

Fish number	Pool number	Facility number	Species	Stage	Origin
F1, 2 and 5	1	2	Atlantic salmon	3.45 kg, 2019 Q4	Glenfinnan
F3	1	3	Atlantic salmon	3.45 kg, 2019 Q4	Loch Garry
F4	1	7	Atlantic salmon	3.45 kg, 2019 Q4	Glenfinnan

### Results

**Bacteriology:** Kidney and gill material from F1 to F5 were inoculated onto appropriate media for the isolation of bacteria.

No significant bacteria were isolated.

**Virology:** Tissue samples were tested for segments of nucleic acid indicative of the presence of the pathogens specified below using real-time PCR (qPCR).

Salmon gill poxvirus (SGPV)

Fish Number	Endogenous control value	Cp	Cp Values			Reported Result (qPCR)
F1	19.13		31.41	31.41	31.44	POSITIVE
F2	19.53		36.21	36.72	35.56	POSITIVE
F3	17.99		31.39	31.12	31.08	POSITIVE
F4	18.29		31.36	31.91	31.78	POSITIVE
F5	18.40		29.61	29.83	29.89	POSITIVE

The samples tested negative for infectious haematopoietic necrosis virus (IHNV), infectious pancreatic necrosis virus (IPNV), infectious salmon anaemia virus (ISAV), salmonid alphavirus (SAV) and viral haemorrhagic septicemia virus (VHSV).

**Parasitology:** Tissue samples were tested for segments of nucleic acid indicative of the presence of parasites specified below using real-time PCR (qPCR).

*Paranucleospora theridion*

Fish Number	Endogenous control Cp value	Cp Values			Reported Result (qPCR)
F1	19.13	24.23	24.38	24.33	POSITIVE
F2	19.53	25.98	25.92	25.99	POSITIVE
F3	17.99	23.83	23.56	22.87	POSITIVE
F4	18.29	25.11	25.33	25.14	POSITIVE
F5	18.40	23.14	23.29	23.30	POSITIVE

*Neoparamoeba perurans*

Fish Number	Endogenous control Cp value	Cp Values			Reported Result (qPCR)
F1	19.13	33.01	32.97	32.76	POSITIVE
F2	19.53	34.68	-	35.19	Negative
F3	17.99	-	-	-	Negative
F4	18.29	29.15	28.91	29.20	POSITIVE
F5	18.40	32.69	33.21	32.93	POSITIVE

**Histology:** Tissue samples of gill, skin and skeletal muscle, heart, pyloric caeca, pancreas, hind gut, liver, spleen and kidney were taken from F1 to F5. The tissue samples were fixed in 10% neutral buffered formalin.

Histopathological examination revealed the following:

Gill: Minimal to mild multifocal interlamellar hyperplasia with spaces (lacunae) occasionally filled with cell debris (F1-F4) and in F5 mainly noted at the gill filament tips, moderate displacement of chloride cells and hypertrophy some lamellar epithelial thickness. Several basophilic epithelial inclusions (likely epitheliocystis) (F1). Several scattered aneurysmal dilation/telangiectasia and thrombi (F1-F5).

Skin & Muscle: Mild skeletal white muscle degeneration (F2 & F3) and in F3 also noted in skeletal red muscle.

Heart: Presence of few nests of basophilic nuclei, indicative of inflammation and several cardiac myofibre degeneration, displaying some shrunken myofibre (F1-F5). F3 also displayed infiltration at the junction of the compact and spongy cardiac ventricular.

Gut and pyloric caeca: Some fibrous adhesions likely associated with vaccine administration (F3). Cell sloughing (likely associated with post-mortem artefact).

Pancreas: Within normal range.

Liver: Mild multifocal hepatic necrosis (F1-F5) and mild diffuse hepatocyte vacuolation (F1-F5).

Kidney: Within normal range.

Spleen: focal to diffused mild reduction of white pulp (F2 & F4)

Signed:



Date: 17/12/2020

Fish Health Inspector

The Fish Health Inspectorate Service Charter detailing standards of service is available on the Marine Scotland website at <https://www.gov.scot/publications/fish-health-inspectorate-service-charter/>

R09

[REDACTED]  
Mowi Scotland Ltd  
Stob Ban House  
Glen Nevis Business Park  
Fort William  
PH33 6RX  
[REDACTED]

## FISH HEALTH INSPECTORATE VISIT REPORT

### SUMMARY FOR INFORMATION OF SITE OPERATOR

<b>BUSINESS No</b>	FB0119	<b>DATE OF VISIT</b>	11/11/2020
<b>SITE No</b>	FS0234	<b>SITE NAME</b>	Torridon
<b>INSPECTOR</b>	[REDACTED]	<b>CASE No</b>	20200482

The above site was inspected, following a report of increased mortality by the business.

Eight epidemiological units were inspected and samples were taken for diagnostic purposes. A separate report will be issued detailing the results of these tests.

#### Records

Due to the site activity and staff availability at the time of the inspection only a limited number of records could be inspected however, the following records were inspected to ensure that the conditions of authorisation for your Aquaculture Production Business (APB) are being met:

Mortality records were inspected and found to be adequately maintained.

The outstanding records will be inspected during the next site visit.

#### **Inspection under the Animals and Animal Products (Examination for Residues and Maximum Residue Limits) (England and Scotland) Regulations 2015**

Medicine records were inspected and found to be adequately maintained.

Samples were taken to be analysed for veterinary residues.

Please contact myself or the duty inspector should you require any further information or have any queries regarding this report.

Signed: [REDACTED]

Date: 8/12/2020

Fish Health Inspector

The Fish Health Inspectorate Service Charter detailing standards of service is available on the Marine Scotland website at <https://www.gov.scot/publications/fish-health-inspectorate-service-charter/>

R10