Case No: 2024-0397 Date of visit: 09/10/2024

Time spent on site: 4 hours Main Inspector: [redacted]

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

Case Types: 1 REP 2 DIA 3 4 5 6

Water Temp (°C): 12.55 Thermometer No: T310 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	

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

Additional Case Information:

Site visited due to prolonged mortality over threshold: Wk 37 - 1.98%, Wk 38 - 1.96%, Wk 39 - 2% and Wk 40 - 1.3% attributed to anaemia, FW treatment losses and gill issues.

Mortality is currently highest in pens 2, 4 and 7. In the last week (1-8th October) pen 2 had the highest mortality at 3.24%. Currently this week mortality has been 0.48%. Per pen: 1 - 0.59%, 2 - 0.95%, 4 - 1.05%, 6 - 0.21%, 7 - 0.44%, 9 - 0.11%, 10 - 0.47%, 11 - 1.12% (harvested out yesterday), 12 - 0.25%. Pen 4 is being harvested out tomorrow.

Fish came onto site August 2023. Site has begun to harvest on the 06/05/24, most recent harvest was on the 08/10/24 and site is now harvesting to fallow in mid December (mostly deadhaul). Targeting harvest - keeping an eye on mortality levels each week.

Site also has both lumpfish and wrasse on site. A total of 70,665 wrasse have been input onto site since August 2023. Today there are 21,274 wrasse on site. Wrasse mortality has been attributed to freshwater treatments and environmental issues (microjellies and plankton). In September 2023 the first batch of 63,089 lumpfish arrived on site and not long after lumpfish mortality started to rise. After testing by the company it was found that furunculosis was the cause (lumpfish were vaccinated but further testing revealed it was a different strain). Company believed the cause of the outbreak were the wrasse on site. Medicated feed blocks were ordered in October but due to a delay the blocks didn't arrive on site until 15/11/2023 by which point 59,549 lumpfish had died. The next input of lumpfish was not until Feb 2024. Since Feb 2024, 60,000 lumpfish have been input onto site and as of today the site has 33,924 lumpfish. Lumpfish mortalities in 2024 have been attributed mainly to environmental conditions (microjellies and plankton) as well as freshwater treatments.

Gill issues on site from December 2023 until March 2024 which then began again at the end of August. Lots of microjellies in the water - counts ranging from 1000 to 2200 cells per millilitre in some samples taken daily on site during June/July. Most recent (7th October) had 100 cells/ml.

Treatments - Freshwater treatments were carried out in March, July and September 2024. September treatments carried out on 8th, 9th, 11th, 13th, 15th, 17th and 18th. Some days were weathered off. Averaging about 2 cages per day. Last year's treatments could grade out the lumpfish due to their small size however the most recent treatments have happened on a boat that can't grade out lumpfish.

Sealice - have been low in number.

Last health visit - 23/09/2024 but report hasn't been sent through yet.

Last health report - 27/08/2024 - "gill health decreased with a lot of gill bleeding, CGD present, only 1 or 2 moribund per pen, mortality (80%) attributed to anaemia, feed response good".

When inspecting site, only one moribund fish was observed in pen 2. This was caught and taken for diagnostic sampling. Gills of this fish were bleeding. Staff on site were carrying out lice counts and the majority of fish they caught also had bleeding gills but these fish all appeared healthy otherwise.

Case No:	2024-0397	Site No:	FS0234
Date of Visit:	09/10/2024	Inspector(s):	[redacted]

Registration/Authorisation Details

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

Site Details (include cleaner fish for all sections)

Total No facilities		10	Facilities stocked		8	No facilities inspected		10
Species	SAL	LUM	WRS					
Age group	23 Q3	2023/2024	Wild					
No Fish	317,343	33,924	21,274					
Mean Fish Wt	4.9kg	200-300g	400-600g					
Next Fallow Date (Site)		Dec 2024		Next Input Date (Site)		End of Jan 2025		
Recent (last 4 wks) disease problems?				Y	Any escapes (since last visit)?			N
If yes, detail:	See additional info							

Movement Records

1. Movement records available for inspection?	Y
2. Date of last inspection:	04/10/2023
3. Are records complete and correctly entered?	Y
4. Are movement records available for dead fish and waste?	Y
5. Are records complete and correctly entered?	Y
6. Are health certificates for introductions (outwith GB) available?	N/A

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?	Y
2. How are mortalities disposed of?	Ensiled - on site
If other detail:	
3. Mortality records complete and correctly entered?	Y
4. Recent mortality (last 4 wks):	SAL: Wk 37 - 1.98% (10,607), Wk 38 - 1.96% (9276), Wk 39 - 2% (8710), Wk 40 - 1.3% (5022)
5. Evidence of recent increased/atypical mortalities?	Y

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

Mortalities highest in pens 2, 4 and 7

6. Any other peaks in mortality during period checked?	Y
If yes, detail:	4 weeks in Feb/March 2024 due to gill issues ranging from 1.3% to 2.47%
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, enter details on mortality events sheet.	Y

Treatments and Medicines Records

1. Recent treatments (see comment)?	Y
If yes, detail:	
If other, detail:	T.M.S
2. Medicines records available for inspection?	Y
3. Are records complete and correctly entered?	Y
4. Are fish in a withdrawal period?	Y
5. If yes, what treatment(s)?	
If other, detail:	T.M.S
6. Are medicines stored appropriately?	Y

Biosecurity Records

1. Biosecurity records available for inspection?	
2. Has the manner and frequency of mortality removal, recording and safe disposal been considered?	
3. Has the manner and period in which the APB will notify Scottish Ministers or veterinary professional of any *increased* (*unexplained)* mortality at the site been included?	
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 *how* and *when* that will be notified to Scottish Ministers?	
5. Has the health status of aquaculture animals being stocked on the farm site been covered (equal or higher health status, certification if required)?	
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.)?	
7. Is documentation available regarding the measures in place to maintain the physical containment of aquaculture animals held on site?	
8. Have the biosecurity procedures been adequately implemented on site?	
If no, detail:	

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).	See additional info

Records checked between: 04/10/2023 - 09/10/2024

Case no:	2024-0397	Site No:	FS0234	Date of visit/ Sampling:	09/10/2024	09/1							
Priority samples:	VI		BA		PA		MG		HI				
Time sampling starts/ends:	11:40:00	12:15:00	Inspector:		VMD No.	0							
Environmental conditions:	1	Indoors	2		3		4		5				
Summary samples	HIST	Y	BA	Y	MG	Y	VI		PA		Total Samples		

Add Fish/Pools - click

	Pool/Fish No	F1											
	Fish nos	1											
	Pool Group												
Stock Details	Species	SAL											
	Average weight	4.9000											
	Sex	N/A											
	Water Type	SW											
	Stock Origin	Loch Ness (FS0434)											
	Facility No	2											

10/2024 Additional Sample Information:

1 Total Tests assigned 3

Case no: 2024-0397 Site No: FS0234 Method of killing: Percussive

Date of visit: 09/10/2024 Inspector(s): [redacted] Sheet Relevant: Y

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

Fish Number		**1**									
Time sampled after death (if > 45 minutes)											
External Signs											
Behaviour	**Moribund**	**W**									
	Lethargic	**W**									
	Hanging vertical										
	Spiralling										
	Flashing										
	Loss of equilibrium										
Body	**Dark**										
	Distended abdomen										
	Anorexic										
	Scale Oedema										
Opercula	**Shortened**										
	Flared										
Haemorrhaging	**Throat**										
	Ventrum										
	Base of fins										
	Elsewhere										
Eyes	**Exophthalmic**										
	Enophthalmic (sunken)										
	Cataract										
	Haemorrhagic										
Gills	**Pale**	**M**									
	Zoned										
	Necrotic										
Lesions	**Flank**										
	Elsewhere										
Vent	**Inflamed**										
	Trailing faeces										
Lice Load	**Estimate numbers**	**28**									
Internal Signs											
Ascites	**Clear**										
	Bloody	**M**									
Oedema	**In tissues**										
Heart	**Pale/anaemic**	**S**									
	Granulomas										
	Deformed										
Liver	**Petechial haem**										
	Gross haem										
	Tissue breakdown										
	Enlarged										
	Colour number(s)	**2**									
	Granulomas										
	Lesions										
Pyloric caeca	**Petechial haem**										
	Tubules mauve										
	Lack of fat										
Spleen	**Enlarged**										
	Granulomas										
Gut	**No food present**										
	Yellow pseudo-faeces	**M**									
	External haem										
	Internal haem										
Body wall	**Haemorrhaging**										
Swim bladder	**Haemorrhaging**										
	Fluid filled										
Kidney	**Swollen**										
	Grey										
	Granular										
	Liquefied										
General	**Parasites present**										
	Anaemia	**M**									

Case no: 2024-0397

Date of visit: 09/10/2024

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

Fish Number											
Time sampled after death (if > 45 minutes)											
External Signs											
Behaviour	**Moribund**										
	Lethargic										
	Hanging vertical										
	Spiralling										
	Flashing										
	Loss of equilibrium										
Body	**Dark**										
	Distended abdomen										
	Anorexic										
	Scale Oedema										
Opercula	**Shortened**										
	Flared										
Haemorrhaging	**Throat**										
	Ventrum										
	Base of fins										
	Elsewhere										
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	Enophthalmic (sunken)										
	Cataract										
	Haemorrhagic										
Gills	**Pale**										
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	Necrotic										
Lesions	**Flank**										
	Elsewhere										
Vent	**Inflamed**										
	Trailing faeces										
Lice Load	**Estimate numbers**										
Internal Signs											
Ascites	**Clear**										
	Bloody										
Oedema	**In tissues**										
Heart	**Pale/anaemic**										
	Granulomas										
	Deformed										
Liver	**Petechial haem**										
	Gross haem										
	Tissue breakdown										
	Enlarged										
	Colour number(s)										
	Granulomas										
	Lesions										
Pyloric caeca	**Petechial haem**										
	Tubules mauve										
	Lack of fat										
Spleen	**Enlarged**										
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Gut	**No food present**										
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	External haem										
	Internal haem										
Body wall	**Haemorrhaging**										
Swim bladder	**Haemorrhaging**										
	Fluid filled										
Kidney	**Swollen**										
	Grey										
	Granular										
	Liquefied										
General	**Parasites present**										
	Anaemia										

Additional comments:

Site No: FS0234

Case No: 2024-0397

Nature of non-compliance:

Action taken (FHI):

Non-compliance relevant to (delete): VirologyMolGen/Bacteriology/Histology/Parasitology

Case No:	2024-0397	Date of visit:	09/10/2024
Site No:	FS0234	Inspector:	

Results Summary	Freq.	Date of Notification					
		Database	Insp	Phone	Insp	Writing	Insp
IPN	0/1	17/10/2024		17/10/2024		04/11/2024	
ISA	0/1	17/10/2024		17/10/2024		04/11/2024	
Piscine myocarditis virus	0/1	17/10/2024		17/10/2024		04/11/2024	
VHS	0/1	17/10/2024		17/10/2024		04/11/2024	
AGD	0/1	17/10/2024		17/10/2024		04/11/2024	
IHN	0/1	17/10/2024		17/10/2024		04/11/2024	
Paranucleospora theridion	1/1	17/10/2024		17/10/2024		04/11/2024	
Salmon gill poxvirus	0/1	17/10/2024		17/10/2024		04/11/2024	
SAV	0/1	17/10/2024		17/10/2024		04/11/2024	
TENC	1/1	28/10/2024		25/10/2024		04/11/2024	
GPAT	1/1	28/10/2024		25/10/2024		04/11/2024	
HPAT	1/1	28/10/2024		25/10/2024		04/11/2024	
LPAT	1/1	28/10/2024		25/10/2024		04/11/2024	

Report Summary			
Case Type	Date	Insp	2nd Insp
DIA, REP	04/11/2024		

2nd Insp

FISH HEALTH INSPECTORATE VISIT REPORT

SUMMARY FOR INFORMATION OF SITE OPERATOR

BUSINESS NO	FB0119	**DATE OF VISIT**	09/10/2024
SITE NO	FS0234	**SITE NAME**	Torridon
CASE NO	20240397	**INSPECTOR**	[redacted]

Section 1: Summary

An inspection was carried out at the above site after receiving consecutive mortality reports from the business regarding this site. Mortality reports attributed the mortality experienced on site to anaemia, freshwater treatment losses and gill issues.

During the inspection only one moribund fish was observed. This fish was caught and taken for diagnostic sampling. Gills of this fish were bleeding. Staff on site were carrying out lice counts and the majority of fish they caught also had bleeding gills, however these fish all appeared healthy otherwise.

Histopathology examination revealed mild proliferative branchitis, mild myocarditis and hepatic necrosis.

The sampled fish tested positive for *Paranucleospora theridion*.

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

Section 2: Case Detail

Observations

The company reported mortality levels over threshold for 4 consecutive weeks before this inspection with 1.98%, 1.96%, 2.00% and 1.30% mortality respectively. These mortality reports have attributed mortality to freshwater treatment losses, anaemia and gill issues. The site was in the process of harvesting to fallow before December 2024. Harvests were targeted towards the pens with highest mortality figures. At the time of inspection pens 2, 4 and 7 had the highest mortality across the site and pen 4 was to be harvested the day after this inspection took place.

During the physical inspection site staff were conducting lice counts across the site. During the lice counts observed on two pens, numerous fish had bleeding from the gills. Despite this gill bleeding, all fish caught for lice counts appeared healthy and were not showing any moribund behaviour.

Across the whole site, only one moribund fish was observed in pen 2 and it was removed for diagnostic sampling. This fish was lethargic with a high lice load of 28 *Caligus elongatus* and various life stages of *Lepeophtheirus salmonis*. There was some bleeding from the gills, which were pale in colour. Internally the fish had bloody ascites, had a pale heart and liver and yellow pseudo-faeces in the hind gut.

UKAS Accredited Inspection Body - Type C No. 0269
Marine Laboratory, 375 Victoria Road, Aberdeen, AB11 9DB
Tel – 0131 244 3498 Email – ms.fishhealth@gov.scot
Website - https://www.gov.scot/policies/fish-health-inspectorate/

Samples

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

Fish number	Facility number	Species	Stage	Origin
1	2	Atlantic Salmon	4.9kg 2023 Q3	Loch Ness (FS0434)

Results

Bacteriology: Kidney and gill material were inoculated onto appropriate media for the isolation of bacteria.

The following bacteria was isolated from the gill:

- *Tenacibaculum sp.*

The level and purity would not suggest it would be implicated in morbidity of this fish.

From the tests conducted, we do not have evidence of resistance to amoxycillin, oxytetracycline, sulphamethoxazole/trimethoprim or florfenicol.

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

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

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

Paranucleospora theridion

Fish Number	Endogenous control Cp value	Cp Values			Reported result
1	22.49	32.95	32.91	33.04	**POSITIVE**

The samples tested negative for *Neoparamoeba perurans* (AGD).

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

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Histopathological examination revealed the following:

Gill: Focally extended lamellar hyperplasia and fusion. Few aneurysmal dilation/telangiectasia.

Skin & Muscle: Within the normal range.

Heart: Mild, multifocal, myocarditis and mild, multifocal, epicarditis.

Gut and pyloric caeca: Peritonitis, mild.

Pancreas: Within the normal range.

Liver: Hepatocellular necrosis, mild, multifocal, hepatocellular vacuolation (macrovesicles), mild, diffuse and minor small foci of cellular inflammation.

Spleen: Within the normal range.

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

Signed: [redacted] Date: 06/11/2024

Fish Health Inspector

The Fish Health Inspectorate Service Charter detailing standards of service is available on the Scottish Government website at Fish Health Inspectorate Service Charter - gov.scot (www.gov.scot)

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Left lateral external view of fish 1

Right lateral external view of fish 1

Pale and bleeding gills of fish 1

Internal view of fish 1 showing pale heart and liver with bloody ascites in the body cavity