

Case No: 2021-0588 Date of visit: 07/12/2021

Time spent on site: 4h Main Inspector: [Redacted]

Site No: FS1067 Site Name: Inverawe (East) Etive 2
Business No: FB0456 Business Name: Dawnfresh Farming Ltd

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

Water Temp (°C): 9.5 Thermometer No: T173 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]

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

Additional Case Information:

FHI received a report of increased mortalities on the site of an unknown cause. Two pens were affected both have stock from Kinnaird Mill.

The site was inspected on the 7/12/21 some runts were observed as well as a number of lethargic and moribund fish, bilateral exophthalmia was evident in the majority of the lethargic/moribund fish. Five were removed from the pens for further examination and diagnostic sampling. Gill health has been poor.

Mortalities had been slightly elevated from week 43 until week 47 where 1.55% (3303) was recorded, week 48 reduced to 0.52% (1090). Divers were to be on site shortly to complete morting.

Case No: **2021-0588** Site No: **FS1067**
 Date of Visit: **07/12/2021** Inspector(s): **[REDACTED]**

Registration/Authorisation Details

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

Site Details (include cleaner fish for all sections)

Total No facilities	6	Facilities stocked	5	No facilities inspected	5
Species	RTR				
Age group	2020/2021				
No Fish	208,687				
Mean Fish Wt	740g				
Next Fallow Date (Site)	n/a	Next Input Date (Site)	n/a		
Recent (last 4 wks) disease problems?		Y	Any escapes (since last visit)?	N	
If yes, detail:	unknown causative agent however exophthalmia evident, complex gill issues. Paranucleospora theridion				

Movement Records

1. Movement records available for inspection? **N/A**
 2. Date of last inspection: **N/A**
 3. Are records complete and correctly entered? **N/A**
 4. Are movement records available for dead fish and waste? **N/A**
 5. Are records complete and correctly entered? **N/A**
 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? **Whole fish - Dundas Chemicals**
 If other detail:
 3. Mortality records complete and correctly entered? **Y**
 4. Recent mortality (last 4 wks): **wk 45 0.26% (549) Wk 46 0.35% (759) Wk 47 1.55% (3303), Wk 48 0.52%**
 5. Evidence of recent increased/atypical mortalities? **Y**
 If yes, facility nos/no mortality per facility/no stock per facility/reason:
see additional comments, increased mortalities in pens 5 and 6.
 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: **Extensive samples taken and sent for analysis, site also contacted FHI to report.**
 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)?	<input type="text"/>	N/A
If yes, detail:	<input type="text"/>	
If other, detail:	<input type="text"/>	
2. Medicines records available for inspection?	<input type="text"/>	N/A
3. Are records complete and correctly entered?	<input type="text"/>	
4. Are fish in a withdrawal period?	<input type="text"/>	N/A
5. If yes, what treatment(s)?	<input type="text"/>	
If other, detail:	<input type="text"/>	
6. Are medicines stored appropriately?	<input type="text"/>	N/A

Biosecurity Records

1. Biosecurity records available for inspection?	<input type="text"/>
2. Has the manner and frequency of mortality removal, recording and safe disposal been considered?	<input type="text"/>
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="text"/>
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="text"/>
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="text"/>
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="text"/>
7. Is documentation available regarding the measures in place to maintain the physical containment of aquaculture animals held on site?	<input type="text"/>
8. Have the biosecurity procedures been adequately implemented on site?	<input type="text"/>
If no, detail:	<input type="text"/>

Results of Surveillance

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

Records checked between:	6/10/2021 to 7/12/2021
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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/Pool - click

Pool/Fish No	F1	F2	F3	F4	F5							
Fish nos	1	2	3	4	5							
Pool Group	P1	P1	P1	P1	P1							
Species	RTR	RTR	RTR	RTR	RTR							
Average weight	800g	800g	800g	800g	800g							
Sex	N/A	N/A	N/A	N/A	N/A							
Water Type	SW	SW	SW	SW	SW							
Stock Details		Kinnaird Mill	Kinnaird Mill	Kinnaird Mill	Kinnaird Mill	Kinnaird Mill						
	Stock Origin											
Facility No	E5	E5	E5	E6	E6							

12/2021

Additional Sample Information:

Histology eye sample taken for F2 and 5. Individual BKD samples taken due to some clinical signs and the unknown cause of the mortality. TSA kidney samples taken due to Loch being very brackish.

5

Total Tests assigned

7

Case no: 2021-0588

Site No: FS1067

Method of killing: Percussive

Date of visit: 07/12/2021

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)										
External Signs										
Behaviour	Moribund									
	Lethargic	S	S	S	S	S				
	Hanging vertical									
	Spiralling									
	Flashing									
	Loss of equilibrium									
Body	Dark									
	Distended abdomen					S				
	Anorexic									
	Scale Oedema									
Opercula	Shortened									
	Flared									
Haemorrhaging	Throat									
	Ventrum									
	Base of fins									
	Elsewhere									
Eyes	Exophthalmic	S	S	S	S	M				
	Enophthalmic (sunken)									
	Cataract									
	Haemorrhagic									
Gills	Pale		M		m					
	Zoned									
	Necrotic					S				
Lesions	Flank		m							
	Elsewhere									
Vent	Inflamed									
	Trailing faeces									
Lice Load	Estimate numbers									
Internal Signs										
Ascites	Clear									
	Bloody									
Oedema	In tissues									
Heart	Pale/anaemic	W	S	m	W	W				
	Granulomas	W			m					
	Deformed	W	W	W	W	W				
Liver	Petechial haem									
	Gross haem									
	Tissue breakdown									
	Enlarged									
	Colour number(s)	6	2	7	7	7				
	Granulomas									
	Lesions	W	W	W	W	W				
Pyloric caeca	Petechial haem									
	Tubules mauve									
	Lack of fat									
Spleen	Enlarged	S	S	S	S	S				
	Granulomas									
Gut	No food present									
	Yellow pseudo-faeces									
	External haem					S				
	Internal haem									
Body wall	Haemorrhaging									
Swim bladder	Haemorrhaging									
	Fluid filled									
Kidney	Swollen									
	Grey									
	Granular	W	W	W	W	W				
	Liquefied									
General	Parasites present									
	Anaemia									

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	Anaemia													

Additional comments:

Case No: **2021-0588** Date of visit: **07/12/2021**
 Site No: **FS1067** Inspector: **[REDACTED]**

Results Summary	Freq.	Date of Notification						
		Database	Insp	Phone	Insp	Writing	Insp	2 nd Insp
MG AGD	0/5	09/12/2021		09/12/2021		08/02/2022		
MG PMCv	0/5	09/12/2021		09/12/2021		08/02/2022		
MG BKD	0/5	09/12/2021		09/12/2021		08/02/2022		
MG IHN	0/5	09/12/2021		09/12/2021		08/02/2022		
MG IPN	0/5	09/12/2021		09/12/2021		08/02/2022		
MG ISA	0/5	09/12/2021		09/12/2021		08/02/2022		
MG SAL POX	0/5	09/12/2021		09/12/2021		08/02/2022		
MG SAV	0/5	09/12/2021		09/12/2021		08/02/2022		
MG VHS	0/5	09/12/2021		09/12/2021		08/02/2022		
PARA THER	5/5	09/12/2021		09/12/2021		08/02/2022		
SPVH	3/5	23/12/2021		23/12/2021		08/02/2022		
GPAT	3/5	23/12/2021		23/12/2021		08/02/2022		
HPAT	4/5	23/12/2021		23/12/2021		08/02/2022		
LPAT	1/5	23/12/2021		23/12/2021		08/02/2022		
Tenacibaculum spp	2/5	18/01/2022		18/01/2022		08/02/2022		
Pseudomonas fluorescens	3/5	18/01/2022		18/01/2022		08/02/2022		

Report Summary			
Case Type	Date	Insp	2 nd Insp
REP	16/12/2021		
interim DIA	08/02/2022		
case completion	05/09/2022		

INTERIM FISH HEALTH INSPECTORATE VISIT REPORT

SUMMARY FOR INFORMATION OF SITE OPERATOR

BUSINESS No	FB0456	DATE OF VISIT	07/12/2021
SITE No	FS1067	SITE NAME	Inverawe (East) Etive 2
CASE No	20210588	INSPECTOR	██████████

Section 1: Summary

The site was inspected following reports of unexplained elevated mortalities occurring on site. On inspection a number of moribund and lethargic fish were observed, five were removed for further examination and subsequent diagnostic sampling.

Histopathology examination revealed mild, multifocal proliferative branchitis and the lamellar epithelial layer also displayed some irregularity, which may compromise the respiratory function. Hepatic necrosis was also observed. This pathology is potentially secondary to the gill pathology and the heart inflammation observed.

Due to a suspicion of the presence of salmon gill poxvirus (SGPV), a further *in situ* hybridization (ISH) test will be run on the formalin-fixed paraffin-embedded gills to investigate the presence of DNA fragments of SGPV. A separate report will be issued in due course.

Due to gill health issues observed on site, individual gill samples were screened for *Paranucleospora theridion* (syn, *Desmozoon lepeophtherii*) by qPCR. All five fish were positive for *Paranucleospora theridion*.

Pseudomonas fluorescens and *Tenacibaculum* sp. were identified, however, the level and purity of growth observed would suggest they are likely to be of environmental origin and not primary pathogens in this case.

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 Fish Health Inspectorate received a report on the 1/12/2021 that unexplained elevated mortalities of 1.55% (3303) had occurred w/b 22/11/2021. Clinical signs and gross pathology included exophthalmia, pale gills, ascites and swollen spleens. Whilst tissue samples had been submitted to Pharmaq, no causative agent had been identified therefore a site inspection was conducted on 7/12/2021.

All pens were inspected, three of which had a number of lethargic fish evident on the surface, five were selected and removed for further examination. F5 had a distended abdomen with exophthalmia evident in F1-5. The gills of F2 and F4 were pale and appeared necrotic in F5. A lesion was present on the flank of F2.

R09

Internally all fish had pale/anaemic hearts that also appeared deformed, F1 and F4 also had granulomas present. The livers of F1-5 had minor lesions present with splenomegaly also evident. External haemorrhaging was noted on the gut of F5 and the kidneys of all fish were granular in appearance.

Samples

Samples were collected from F1-5 fish according to the table below:

Fish number	Pool number	Facility number	Species	Stage	Origin
1-3	1	E5	Rainbow trout	800g	Kinnaird Mill
4-5	1	E6	Rainbow trout	800g	Kinnaird Mill

Results

Bacteriology: Kidney and gill material from F1-5 and lesion material from F2 was inoculated onto appropriate media for the isolation of bacteria.

The following bacteria were isolated:

- *Pseudomonas fluorescens*: F1, 2 and 4 (Gill).
- *Tenacibaculum* sp.: F1 and 2 (Gill).

Due to the granular appearance of the kidneys, samples were taken from F1-5 to test for the presence of *Renibacterium salmoninarum*, the causative agent of bacterial kidney disease (BKD) by qPCR, the result of this test was negative.

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 septicaemia virus (VHSV), SGPV and piscine myocarditis virus (CMS).

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 (PCR)
F1	19.5	26.26	26.34	26.37	POSITIVE
F2	19.15	28.9	28.73	28.94	POSITIVE
F3	19.29	31.5	31.89	32.01	POSITIVE
F4	19.3	29.54	29.64	29.55	POSITIVE
F5	18.94	30.19	30.35	30.42	POSITIVE

The samples tested negative for *Neoparamoeba perurans*, the causative agent of amoebic gill disease (AGD).

Histology: Tissue samples of gill, skin and skeletal muscle, heart, pyloric caeca, pancreas, hind gut, liver, spleen, kidney and eye were taken from F1-5. The tissue samples were fixed in 10% neutral buffered formalin.

Histopathological examination revealed the following:

GILL:

F1

- Two isolate lamellae with resolved thrombi.

F2

- Lamellar aneurysms/thrombi, multifocal, mild.
- Filament branchitis and necrosis, focal, mild.
- Lamellar tip clubbing, multifocal, mild.
- Lamellar hyperplasia, multifocal, mild.
- Chloride cell hypertrophy and displacement, diffuse, moderate.

F3

- Lamellar aneurysms, several, multifocal, mild.
- Free blood among gill filaments
- Lamellar tip clubbing, multifocal, mild.
- Lamellar epithelial lifting, multifocal, mild (it can be post-mortem artefact).

F4

- Lamellar hyperplasia and fusion, multifocal, very mild.
- Lamellar branchitis and necrosis, mild, focal.
- Chloride cell hypertrophy and displacement, diffuse, moderate.

F5

- Filament and lamellar hyperplasia and fusion, multifocal, mild.
- Filament branchitis, mild.

LIVER: Moderate to significant multifocal hepatocellular necrosis (F2) exhibiting nuclear pyknosis and karyorrhexis, accompanied by intra and extra cellular hyaline-like material.

HEART: Mild (F1-2) and moderate to significant (F3-4) epicarditis of ventricle. F3 exhibited moderate epicarditis of bulbus arteriosus and mild multifocal peri/myocarditis.

KIDNEY: Moderate necrosis of interstitial hematopoietic tissue in F1 and F5, although appears to be primarily associated with sampling trauma in F1.

SPLEEN: Mild necrosis of individual cells throughout parenchyma of F1, although within ranges of normal.

GASTRO INTESTINAL TRACT: Two focal regions of necrosis within the lamina propria of F3 (possible artefact of section plane).

SKIN & MUSCLE: Mild multifocal necrosis affecting few cells of F2 epidermis.

MISC: Two unidentified tissues (possible heart atrium/muscle) exhibiting significant diffuse necrosis, were provided for F2.

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Signed:



Fish Health Inspector

Date: 08/02/2022

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

Marine Laboratory, 375 Victoria Road, Aberdeen, AB11 9DB
Tel - 0131 244 3498 Fax - 0131 244 0944 Email - ms.fishhealth@gov.scot
Website - www.gov.scot/Topics/marine/science

FISH HEALTH INSPECTORATE VISIT REPORT

SUMMARY FOR INFORMATION OF SITE OPERATOR

BUSINESS No	FB0456	DATE OF VISIT	07/12/2021
SITE No	FS1067	SITE NAME	Inverawe (East) Etive 2
CASE No	20210588	INSPECTOR	[REDACTED]

Case completion report

In the report issued on the 9th February 2022 it was stated that further, *in situ* hybridization (ISH) tests were to be run on the formalin-fixed paraffin-embedded gills to investigate the presence of DNA fragments of salmon gill pox virus (SGVP).

Due to changing priorities and the now extended timeframe, the ISH tests are unlikely to be completed, therefore the case is now closed.

Should this situation change and the ISH tests are completed results will be forwarded to you.

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

Signed:



Date: 05/09/2022

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/>

FISH HEALTH INSPECTORATE VISIT REPORT

SUMMARY FOR INFORMATION OF SITE OPERATOR

BUSINESS No	FB0456	DATE OF VISIT	07/12/2021
SITE No	FS1067	SITE NAME	Inverawe (East) Etive 2
CASE No	20210588	INSPECTOR	[REDACTED]

Inspection under the Aquatic Animal Health (Scotland) Regulations 2009

The above site was inspected, in accordance with the Aquatic Animal Health (Scotland) Regulations 2009 following a report of increased and unexplained mortalities.

All epidemiological units were inspected.

Samples were taken for diagnostic purposes. A separate report will be issued detailing the results of these tests.

Records

Mortality records were inspected and found to be adequately maintained.

Reports detailing the results of animal health surveillance carried out by or on behalf of the business and/or Marine Scotland were available for inspection.

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

Signed: [REDACTED]

Fish Health Inspector

Date: 16/12/2021

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/>