

Case No: 2021-0553 Date of visit: 07/12/2021

Time spent on site: 4 hours Main Inspector:

Site No: FS0752 Site Name: Taranaish
Business No: FB0169 Business Name: The Scottish Salmon Company

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

Water Temp (°C): 8.7 Thermometer No: T148 FHI 045 completed

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

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

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

Additional Case Information:

Freshwater treatment completed on 28/11/2021; 6 hours. No cleanerfish on site due to consecutive freshwater treatments.

Ballan wrasse mortality events:

wk34, 609, 14.17%

wk35, 295, 6.20%

wk38, 552, 8.91%

wk43, 3550, 55.31%

wk45, 2868, 100%

Remote inspection conducted by [REDACTED], supervised by [REDACTED] on 02/12/2021.

Site inspection conducted by [REDACTED], shadowed by [REDACTED] on 07/12/2021. Inspectors were accompanied by APHA for the site inspection.

Case No: **2021-0553** Site No: **FS0752**
 Date of Visit: **07/12/2021** 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	16	Facilities stocked	5	No facilities inspected	5
Species	SAL				
Age group	21 S1				
No Fish	264,797				
Mean Fish Wt	1186g				
Next Fallow Date (Site)	October 2022	Next Input Date (Site)	Dec 2022		
Recent (last 4 wks) disease problems?		Y	Any escapes (since last visit)?		N
If yes, detail:	AGD, PRV, SAV, Tenacibaculum				

Movement Records

- 1. Movement records available for inspection? **Y**
- 2. Date of last inspection: **16/06/2021**
- 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)? **[REDACTED]**
- If yes, is there a system in place for maintenance of transportation records? **[REDACTED]**

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): **2021: Wk48, 75303, 23.42%; Wk47, 129650, 28.73%; Wk46, 75434, 14.32%;**
- 5. Evidence of recent increased/atypical mortalities? **Y**
- If yes, facility nos/no mortality per facility/no stock per facility/reason:
[REDACTED]
- 6. Any other peaks in mortality during period checked? **Y**
- If yes, detail: **wrasse mortality: see additional comments**
- 7. Have increased (unexplained) mortalities been reported to vet or FHI? **N/A**
- If yes, detail action: **[REDACTED]**
- 8. Have 'mortality events' been reported to FHI? If no, enter details on mortality events sheet. **N**

Treatments and Medicines Records

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

Records checked between:

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						
Pool Group	P1	P1	P1	P1	P1							
Species	SAL	SAL	SAL	SAL	SAL							
Average weight	1.2kg	1.2kg	1.2kg	1.2kg	1.2kg							
Sex	N/A	N/A	N/A	N/A	N/A							
Water Type	SW	SW	SW	SW	SW							
Stock Details												
	Stock Origin	Russel Burn (FS0500)	Russel Burn (FS0500)	Ormsary Smolt Unit (FS0575)	Ormsary Smolt Unit (FS0575)	Ormsary Smolt Unit (FS0575)						
Facility No	5	5	14	14	14							

12/2021 Additional Sample Information:
 Fish 1-2 sampled by █████, shadowed by █████. Fish 3-5 sampled by █████, supervised by █████. Molgen samples taken individually.

6 Total Tests assigned 14

Case no: 2021-0553

Site No: FS0752

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	S	S	M	M	M						
	Lethargic	S	S	S	S	S						
	Hanging vertical											
	Spiralling											
	Flashing											
	Loss of equilibrium											
Body	Dark											
	Distended abdomen											
	Anorexic	W	W									
	Scale Oedema											
Opercula	Shortened	S	S	S	S	S						
	Flared											
Haemorrhaging	Throat											
	Ventrum	W	W									
	Base of fins											
Eyes	Elsewhere											
	Exophthalmic			M	S	M						
	Enophthalmic (sunken)											
	Cataract											
Gills	Haemorrhagic											
	Pale											
	Zoned											
Lesions	Necrotic											
	Flank		W									
Vent	Elsewhere											
	Inflamed											
Lice Load	Trailing faeces											
	Estimate numbers											
Internal Signs												
Ascites	Clear											
	Bloody											
Oedema	In tissues											
	Pale/anaemic											
Heart	Granulomas											
	Deformed											
	Petechial haem											
Liver	Gross haem											
	Tissue breakdown											
	Enlarged											
	Colour number(s)	3	3	4	4	4						
Pyloric caeca	Granulomas											
	Lesions											
	Petechial haem											
Spleen	Tubules mauve											
	Lack of fat											
Gut	Enlarged											
	Granulomas											
	No food present											
Body wall	Yellow pseudo-faeces				M							
	External haem											
	Internal haem											
	Haemorrhaging											
Swim bladder	Haemorrhaging											
	Fluid filled											
Kidney	Swollen											
	Grey											
	Granular											
General	Liquefied											
	Parasites present											
Anaemia	Anaemia											

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Additional comments:

Notes: All fish were found to be lethargic, as well as, moribund. In addition, all sampled fish possessed damage on heads that is attributed to lice. The damage seemed to be healing and therefore was of a white colour. Shortened opercula was also observed in all samples specimens.

Fish 1: Externally, haemorrhaging was observed around the vent. Lice damage was significant on the head. In addition, scaling was present on the flanks. Internally, F1 was found to have a liver score of 3.

Fish 2: Haemorrhaging was observed around the vent. Scaling was also present on the flanks. A lesion was observed on the flank of F2 (see pictures). A sample of this lesion with assumed healthy flesh was taken for histology. In addition, the head possessed scarring from lice damage. Internally, liver score for F2 was observed as a 3.

Fish 3: Externally, F3 was found to possess pop-eyes (exophthalmic eyes). Lice damage was found on the head of F3. Internally, adhesions were observed. The liver colour of F3 was identified to be a 4.

Fish 4: F4 also showed signs of pop-eyes. In addition, lice damage was evident on the head. Internally, the hind gut possessed yellow pseudo-faeces. F4 possessed a liver score of 4.

Fish 5: Pop eyes were observed in F5, as well as significant lice damage on the head. When examined internally, adhesions were found. The liver score of F5 was identified as a 4.

2021-0553-
attach.pdf

Note - attachments file must be saved to ARC folder as PDF with correct name format e.g. 2012-0123-attach or 2012-0123-attach2 etc.



Figure 1 Five fish for diagnostic sampling. Numbers on the picture are associated to sampled fish number.



Figure 2 Fish 1 and 2 from the same pen. Fish 2 clearly shows the lesion on fish 2.



Figure 3 Closer view of the lesion on fish 2.

FISH HEALTH INSPECTORATE VISIT REPORT

SUMMARY FOR INFORMATION OF SITE OPERATOR

BUSINESS No	FB0169	DATE OF VISIT	07/12/2021
SITE No	FS0752	SITE NAME	Taranaish
CASE No	20210553	INSPECTOR	[REDACTED]

Section 1: Summary

The above site was inspected following reports of increased mortality by the farm operator. The inspection was conducted in conjunction with a veterinary officer from the Animal and Plant Health Agency (APHA). A separate report will be issued by the Animal and Plant Health Agency. During the physical inspection of all pens, five fish were removed for diagnostic sampling.

Histopathology examination revealed very mild multifactorial, non-specific, proliferative branchitis. Fish 1 also displayed some pathology consistent with salmon gill poxvirus and epitheliocystis (likely *Candidatus Branchiomonas cysticola*) which was confirmed by qPCR. The fish also displayed a mild, multifocal, hepatic degeneration. Fish 2 also had an ulcerative bacterial dermatitis which may impact on the osmotic balance of the individual. A mild to moderate peritonitis was observed. This condition is potentially associated with vaccine administration.

Due to gill health issues observed on site, the fish were screened for *Paranucleospora theridion* (syn, *Desmozoon lepeophtherii*), and *Neoparamoeba perurans* (the causative agent of AGD). Fish sampled tested positive for both parasites.

All fish sampled also tested positive by qPCR for infectious pancreatic necrosis virus (IPNV).

Vibrio sp. was identified on plates taken from all fish sampled. The prevalence, level and purity of growth would suggest this bacterium is likely a primary pathogen in this case and may pose a risk to overall fish health should the population be exposed to other stressors.

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 site had been reporting consecutive weeks of increased mortality among the salmon, as a result of gill health issues, as well as increasing sea lice figures in October. Following veterinary advice, the site undertook husbandry operations to treat gill health issues and remain ahead of a sea lice burden. From inspecting the paperwork, it was determined from mortality records that

consecutive freshwater treatments resulted in elevated levels of cleaner fish mortalities, where a 100% loss was recorded in week 45. No cleaner fish were stocked at the time of inspection.

During the site inspection it was evident that a significant proportion of the fish were moribund and some demonstrating evidence of lesions due to sea lice. All cages observed were affected. A number of moribund fish were removed during the inspection, and five were chosen for diagnostic sampling.

Clinical signs of disease included morbidity and lethargy present in all 5 fish sampled. All five fish had lesions on the head attributed to sea lice. Shortened opercula was also observed in all sampled fish. Fish 2 possessed a lesion on the flank. Fish 1 and 2 showed haemorrhaging around the vent. In addition, fish 3, 4 and 5 showed signs of exthalmia.

Internally, pseudo-faeces were present in fish 4. Adhesions were present in fish 3 and 5.

Samples

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

Fish number	Facility number	Species	Stage	Origin
F1- F2	5	Atlantic Salmon	2021 S1	Russel Burn
F3- F5	14	Atlantic Salmon	2021 S1	Ormsary Smolt Unit

Results

Bacteriology: Kidney, gill and lesion material from fish one to five were inoculated onto appropriate media for the isolation of bacteria.

The following bacteria were isolated:

- *Vibrio* sp.: F1-5(Kidney); F2 (Lesion)

From the tests conducted, we have evidence which may indicate some 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).

Salmon gill poxvirus (SGPV)

Fish Number	Endogenous control Cp value	Cp Values			Reported Result (PCR)
F1	19.27	22.4	22.28	22.27	POSITIVE
F2	19.92	26.24	26.18	26.26	POSITIVE
F3	18.38	26.57	26.32	26.46	POSITIVE
F4	16.47	25.93	26.09	26.16	POSITIVE
F5	18.89	26.79	26.74	26.87	POSITIVE

Infectious pancreatic necrosis virus (IPNV)

Fish Number	Endogenous control Cp value	Cp Values			Reported Result (PCR)
F1	19.27	27.62	27.48	27.56	POSITIVE
F2	19.92	23.48	23.59	23.71	POSITIVE
F3	18.38	35.35	36.48	35.58	POSITIVE
F4	16.47	19.5	19.28	19.49	POSITIVE
F5	18.89	20.77	20.85	20.74	POSITIVE

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

Parasitology:

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

Neoparamoeba perurans (AGD)

Fish Number	Endogenous control Cp value	Cp Values			Reported Result (PCR)
F1		-	-	-	NEGATIVE
F2		-	-	-	NEGATIVE
F3		-	-	-	NEGATIVE
F4	16.47	35.22	33.36	35.04	POSITIVE
F5		-	-	-	NEGATIVE

Paranucleospora theridion

Fish Number	Endogenous control Cp value	Cp Values			Reported Result (PCR)
F1	19.27	30.89	30.7	30.81	POSITIVE
F2	19.92	27.17	27.12	27.15	POSITIVE
F3	18.38	24.01	23.81	23.88	POSITIVE
F4	16.47	24.48	24.63	24.14	POSITIVE
F5	18.89	29.83	29.68	29.92	POSITIVE

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

Histopathological examination revealed the following:

Gill: Very mild to mild multifocal interlamellar hyperplasia (F1-F5), lamellar fusion (F3) gill filament displaying an inflammatory cell infiltrate at the centre (F1), small foci of cell necrosis on the hyperplastic plaques (F3). Prominent goblet cells and chloride cells displacement and hypertrophy observed in all fish and some apoptotic nuclei. Several basophilic epithelial inclusions (likely

epitheliocystis) (F1). Several aneurysmal dilations and thrombi observed in the lamellar vessels of all fish and some lamellar congestion observed in all fish (potentially linked to the killing method).

Skin & Muscle: F2 lesion: Absence of epidermal and dermal layer. The remains of dermal layer displays marked presence of Gram bacteria, mild oedema and mild influx of inflammatory cell.. These bacteria are also observed in the hypodermal layer reaching the dorsal area of the red skeletal muscle (F2). Moderate haemorrhage and myofibre degeneration also observed. F1 and F3 exhibited degeneration of several individual white skeletal fibres.

Heart: Small nest of inflammatory cell infiltration in the ventricle chamber (F1).

Gut and pyloric caeca: Mild to moderate peritonitis (F1, F4 & F5). F3 displayed foci of necrosis in the adipose tissue.

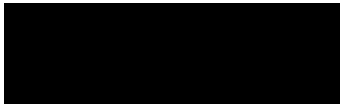
Pancreas: Within normal range.

Liver: Mild, multifocal hepatic vacuolation (F1) and presence of few apoptotic cells (F1, F4, F5) and pyknotic nuclei (F1), one small focus of cell necrosis (F5).

Kidney: Slight increase in melanomacrophage aggregates (F5).

Spleen: Slightly congested (F1).

Signed:



Fish Health Inspector

Date: 25/01/2022

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/>