

Case No: 2022-0456 Date of visit: 19/10/2022

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

Site No: FS0502 Site Name: Scotasay
Business No: FB0169 Business Name: The Scottish Salmon Company

Case Types: 1 REP 2 DIA 3 4 5 6

Water Temp (°C): 12.2 Thermometer No: T308 FHI 045 completed

Observations: Region: WI Water type: S CoGP MA: W-8

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:

Mortality events commenced from wk 26 2022. Gill health issues were attributed to cause of mortality on site, with PGD being main issue following increased plankton episode. Aeration increased to manage plankton burden as well as reduction in handling.

Slight anaemia also observed on site. Mechanical treatments planned were cancelled due to the fish not tolerating mechanical treatment. FW treatments commenced in WK 31 to aid gill issues experienced on site. From health screening, initial results were positive for AGD, *Brachiomonas cysticola* and *paranucleospora theridion*. Functional feed scheduled for Wk32. mortalities remained high and constant following second round of FW treatments in Wk36.

Mortality events 2022 (all attributed to gill health and bacterial disease as described in recent disease problems):

Wk37, 7385, 1.96%

WK36, 6797, 1.77%

Wk35, 6832, 1.75%

Wk34, 8137, 2.05%

Wk33, 14021, 3.30%

Wk32, 26251, 5.97%

Wk31, 29022, 6.18%

Wk30, 26868, 5.41%

Wk29, 9155, 1.81%

Wk28, 11019, 2.13%

Wk27, 7427, 1.41%

Wk26, 6841, 1.29%

Five fish were removed during the site inspection for diagnostic sampling purposes. All fish were observed to have liver colours of 2/3 as well as no food and yellow pseudofaeces present on examination. In addition, some hearts were observed to be pale and slightly enlarged. Pen two and three were observed to have an increased amount of moribund and lethargic fish on inspection. During site inspection, pen 8 was being treated with freshwater with a new wellboat- Ronja Star - as lice were increasing on site.

Cleanerfish mortality (wrasse and lumpfish) 2022:

Wk18, 8405, 14.80% (FW treatment)

Wk19, 17029, 35.18% (black losses)

WK23, 4990, 16.56% (black losses)

Wk24, 4687, 18.65 (black losses)

Case No: **2022-0456** Site No: **FS0502**
 Date of Visit: **19/10/2022** 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	8		Facilities stocked	8	
Species	SAL	WRS	LUM		
Age group	Q1 2021	wild caught	2021		
No Fish	327,112	5,862	10,113		
Mean Fish Wt	3.6kg	mix	Mix		
Next Fallow Date (Site)	late Q1 or Q2 2023		Next Input Date (Site)		
Recent (last 4 wks) disease problems?				Y	Any escapes (since I
If yes, detail:	Pasturella skyensis, CMS, AGD, PGD				

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? **Other (detail)**
- If other detail: **Disposed of at Whiteshore Cockles**
3. Mortality records complete and correctly entered?
 4. Recent mortality (last 4 wks): **2022: Wk41, 0.81%, 2662; Wk40, 0.94%, 3129; Wk39, 7.64%,**
 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: **see additional information**
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)?

If yes, detail:

If other, detail:

FW treatment

2. Medicines records available for inspection?

3. Are records complete and correctly entered?

4. Are fish in a withdrawal period?

5. If yes, what treatment(s)?

If other, detail:

6. Are medicines stored appropriately?

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* (*unex* 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 b 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, ce

6. Have the husbandry and biosecurity measures implemented between each epidemiological unit to minimise transmission 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 he

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?

2. If yes, are results available for inspection?

3. Any significant results?

If yes, detail (if not detailed under recent disease problems).

Pasteurella Skyensis
PGD and CMS confii

Records check

10/10/2021 10/10/2021

[Redacted]	
Y	
N	

No facilities inspected	8

Juen 2023 ast visit)?	N
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[Redacted]	Y
08/12/2021	Y
[Redacted]	Y
[Redacted]	Y
[Redacted]	N/A

[Redacted]	
[Redacted]	

[Redacted]	Y
[Redacted]	
[Redacted]	Y
27506; Wk38, 2.19% 8081	
[Redacted]	N

[Redacted]	Y
[Redacted]	N/A
[Redacted]	
[Redacted]	Y

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explained) mortality at the site been
 been included and *how* and *when* that
 certification if required)?
 of disease been covered (movement of
 old on site?

and PRV confirmed on 2/10/2022. Prior to this report AGD,
 rmed on site.

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							
Fish nos	1	2	3	4	5							
Pool Group												
Species	SAL	SAL	SAL	SAL	SAL							
Average weight	3.6kg	3.6kg	3.6kg	3.6kg	3.6kg							
Sex	N/A	N/A	N/A	N/A	N/A							
Water Type	SW	SW	SW	SW	SW							
Stock Details	Stock Origin	Geocrab Hatchery (FS0562)	Mingarry Hatchery (FS0145)	Mingarry Hatchery (FS0145)	Mingarry Hatchery (FS0145)	Geocrab Hatchery (FS0562)						
	Facility No	1	3	5	5	4						

10/2022	Additional Sample Information: F1 sampled from 12:18-12:35. F2 sampled from 12:46-13:10. F3 and F4 sampled from 13:15-14:00. F5 sampled from 14:05-14:45.
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Total Tests assigned

Case no: 2022-0456

Site No: FS0502

Method of killing: Anaesthetic

Date of visit: 19/10/2022

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	W	W	W	M	W				
	Lethargic	S	S	S	S	S				
	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	S								
	Enophthalmic (sunken)				S					
	Cataract				S					
	Haemorrhagic	S								
Gills	Pale	S	S	S	S					
	Zoned	S	S	S	S	W				
	Necrotic									
Lesions	Flank									
	Elsewhere									
Vent	Inflamed									
	Trailing faeces									
Lice Load	Estimate numbers		1		4					
Internal Signs										
Ascites	Clear									
	Bloody									
Oedema	In tissues									
Heart	Pale/anaemic		S							
	Granulomas									
	Deformed		M							
Liver	Petechial haem									
	Gross haem									
	Tissue breakdown									
	Enlarged									
	Colour number(s)	3	3	3	3	3				
	Granulomas									
	Lesions									
Pyloric caeca	Petechial haem									
	Tubules mauve									
	Lack of fat									
Spleen	Enlarged	W	W	W	W	W				
	Granulomas									
Gut	No food present	S	S	S	S	S				
	Yellow pseudo-faeces	S	S	S	S	S				
	External haem									
	Internal haem									
Body wall	Haemorrhaging									
Swim bladder	Haemorrhaging									
	Fluid filled									
Kidney	Swollen									
	Grey									
	Granular									
	Liquefied									
General	Parasites present									
	Anaemia									

Additional comments:

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 Site No: **FS0502** Inspector: **[REDACTED]**

Results Summary	Freq.	Date of Notification						
		Database	Insp	Phone	Insp	Writing	Insp	2 nd Insp
MG_AGDQ	0/5	26/10/2022		26/10/2022		08/11/2022		
MG_VHS	0/5	26/10/2022		26/10/2022		08/11/2022		
MG_IHNQ	0/5	26/10/2022		26/10/2022		08/11/2022		
MG_IPN	0/5	26/10/2022		26/10/2022		08/11/2022		
MG_ISA	0/5	26/10/2022		26/10/2022		08/11/2022		
MG_PARA_THER_Q	5/5	26/10/2022		26/10/2022		08/11/2022		
MG_PMCV	3/5	26/10/2022		26/10/2022		08/11/2022		
MG_PRV	5/5	26/10/2022		26/10/2022		08/11/2022		
MG_SAL_POX	5/5	26/10/2022		26/10/2022		08/11/2022		
MG_SAV	0/5	26/10/2022		26/10/2022		08/11/2022		
SHPU	1/5	04/11/2022		04/11/2022		08/11/2022		
SHPU	5/5	04/11/2022		04/11/2022		08/11/2022		
EPIT	1/5	03/11/2022		04/11/2022		08/11/2022		
GPAT	4/5	03/11/2022		04/11/2022		08/11/2022		
HPAT	5/5	03/11/2022		04/11/2022		08/11/2022		
CMPS	5/5	03/11/2022		04/11/2022		08/11/2022		
PASS	0/1	04/11/2022		04/11/2022		08/11/2022		

Report Summary			
Case Type	Date	Insp	2 nd Insp
REP, DIAG	08/11/2022		

FISH HEALTH INSPECTORATE VISIT REPORT

SUMMARY FOR INFORMATION OF SITE OPERATOR

BUSINESS No	FB0169	DATE OF VISIT	19/10/2022
SITE No	FS0502	SITE NAME	Scotasay
CASE No	20220456	INSPECTOR	██████████

Section 1: Summary

The above site was inspected following reports of increased mortality by the farm operator. During the physical inspection of all pens, five fish were removed for diagnostic sampling.

Histopathology examination revealed pathology consistent with cardiomyopathy syndrome (CMS). F3 also exhibited filament lamellar adhesions as part of mild gill health issues and some epitheliocystis, likely due to *Brachiomonas* sp. in addition, F3 displayed some features resembling infections by *Pasteurella* sp. but bacteria were not observed on Gram stain.

Shewanella putrefaciens was identified on plates taken from gill and kidney material. The level of purity of growth would not suggest that this bacterium would be implicated as a primary pathogen and is likely to be of environmental origin.

Five fish tested positive for *Paranucleospora theridion*, piscine reovirus and salmon gill pox virus by qPCR. Three fish tested positive for piscine myocarditis virus (PMCV) the causative agent of cardiomyopathy syndrome by a qPCR.

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

Notifications of increased mortality above the reporting commenced week 26 2022. As a result, a site inspection was scheduled and conducted. On the day of site inspection, it was confirmed via internal health reports that *Pasteurella skyensis* and CMS were present on site. During the site inspection, a freshwater treatment in pen 8 was on-going. Across the site, many fish were seen to be lethargic. Pen two and three we observed to have an increased amount of moribund and lethargic fish. On inspection, gills were observed to be in poor condition and in many cases very pale. In addition, lice numbers had been increasing on site and a number of lice were observed on inspected fish.

All sampled fish were lethargic. Gills were found to be zoned in all and pale. Internally, yellow pseudofaeces was present in the hind gut of all sampled fish as well as pale livers.

Samples

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

Fish number	Facility number	Species	Stage	Origin
1	1	Atlantic Salmon	3.6kg 2021 Q1	Geocrab Hatchery (FS0562)
2	3	Atlantic Salmon	3.6kg 2021 Q1	Mingarry Hatchery (FS0145)
3-4	5	Atlantic Salmon	3.6kg 2021 Q1	Mingarry Hatchery (FS0145)
5	4	Atlantic Salmon	3.6kg 2021 Q1	Geocrab Hatchery (FS0562)

Results

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

The following bacterium were isolated:

- *Shewanella putrefaciens*
 - Kidney material: F1, F2, F3, F4, F5
 - Gill material: F2, F3, F4, F5

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

Piscine myocarditis virus (PMCV)

Fish Number	Endogenous control Cp value	Cp Values			Reported Result (PCR)
F1	-	-	-	-	NEGATIVE
F2	-	-	-	-	NEGATIVE
F3	18.08	16.14	16.22	16.31	POSITIVE
F4	17.53	16.01	16.01	15.97	POSITIVE
F5	18.54	30.8	30.62	30.68	POSITIVE

Salmon gill pox virus

Fish Number	Endogenous control Cp value	Cp Values			Reported Result (PCR)
F1	19.69	33.65	33.85	33.5	POSITIVE
F2	20.37	35.06	35.62	36.47	POSITIVE
F3	19.84	24.49	24.4	24.43	POSITIVE
F4	19.83	27.28	27.37	27.29	POSITIVE
F5	19.56	37.63	35.27	35.93	POSITIVE

R09

Piscine reovirus (PRV)

Fish Number	Endogenous control Cp value	Cp Values			Reported Result (PCR)
F1	17.75	33.33	32.9	33.03	POSITIVE
F2	17.78	34.23	33.23	33.33	POSITIVE
F3	18.08	32.45	32.62	32.24	POSITIVE
F4	17.53	31.61	31.87	31.03	POSITIVE
F5	18.54	30.25	30.57	30.32	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 the parasites specified below using real-time PCR (qPCR).

Paranucleospora theridion

Fish Number	Endogenous control Cp value	Cp Values			Reported Result (PCR)
F1	19.69	29.7	29.53	29.75	POSITIVE
F2	20.37	31.2	31.46	31.13	POSITIVE
F3	19.84	27.85	27.62	27.83	POSITIVE
F4	19.83	26.5	26.57	26.45	POSITIVE
F5	19.56	29.61	29.46	29.49	POSITIVE

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

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

Histopathological examination revealed the following:

Gill: Filament hyperplasia and lamellar fusion and adhesions, mild, multifocal (F1, F2) and F3 displayed a more extended lamellar adhesion and presence of several lacunae in F3. F4 exhibited some diffuse irregular epithelium. Lamellar telangiectasia with multifocal thrombosis in F1 and F2.

Skin and Muscle: Small foci of inflammation and fibrosis surrounding muscle fibres.

Heart: Mild, multifocal myocarditis (F1, F2) and endocarditis (F3). F4 displayed endocarditis marked diffuse and F3 a milder one. F3 inflammation in the compact layer. Moderate epicarditis F3, F4, F5. F2: no atrium in section.

Gut and pyloric caeca: Mild peritonitis (F3, F5)

R09

Pancreas: Within normal range.

Liver: Within normal range.

Kidney: Within normal range.

Spleen: F3 exhibited small area with multinucleated giant-like cells. Capulitis and peritonitis, mild (F3).



Signed:

Date: 08/11/2022

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/>

Scotasay Diagnostic Sample Pictures (20220456):



Figure 1 Overview of the condition of Fish 1



Figure 2 Gills of Fish 1



Figure 3 Internal view of Fish 1



Figure 4 Overview of the condition of Fish 2



Figure 5 Gills of Fish 2



Figure 6 Internal view of Fish 2. The black box shows the heart of Fish 2



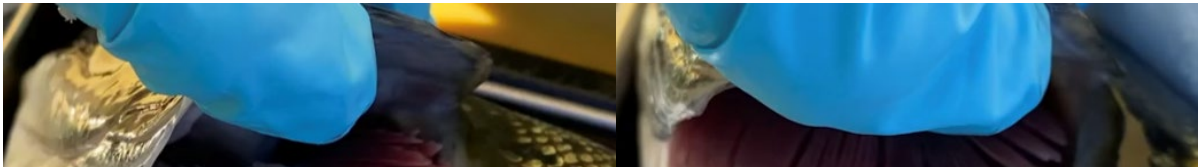
Figure 7 Overview of the condition of a) Fish 3 and b) Fish 4



Figure 8 Internal view of Fish 3



Figure 9 Internal view of Fish 4



a)

b)

Figure 10 Gills of a) Fish 3 and b) Fish 4



Figure 11 Overview of the condition of Fish 5



Figure 12 Internal view of Fish 5



Figure 13 Gills of Fish 5