

Case No: 2022-0446 Date of visit: 19/10/2022

Time spent on site: 3.5hours Main Inspector: [Redacted]

Site No: FS1256 Site Name: Plocrapol

Business No: FB0169 Business Name: The Scottish Salmon Company

Case Types: 1 REP 2 DIA 3 4 5 6

Water Temp (°C): 12.05 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:**

Site has been reporting mortalities for ~6 weeks. First reports of mortality above 1% were attributed to bacterial disease, with 2 pens testing positive for Furunculosis. Gill health and anaemia became primary cause of mortality on site second week, with freshwater treatments scheduled to aid gills. Last treatment on site was extended 3hr FW treatment.

Pasturella and Furunculosis confirmed by internal diagnostic sampling on 19/09 and 18/08 respectively. In addition, low level CMS also found. Pen 6 has highest mortality. During site inspection, few fish seen with open lesions. No fish that did possess open furuncle like lesions were sampled as they were not able to be caught.

Gills observed during site sampling inspection were found to be in poor condition and clearly anaemia was present in sampled fish too. Feeding rates on site were low across the board. Lice burden was observed to be low on site.

All fish sampled were lethargic with all being moribund also.

Lumpfish losses as below from Wk 7 2022:

Wk41, 9159, 99.71% (black losses)\*

Wk31, 1231, 10.75% (Mechanical treatment and black losses)

Wk30, 1335, 10.44% (Mechanical treatment related)

Wk18, 2669, 13.04% (FW treatment related)

No wrasse or lumpfish on site during site inspection on the 19/10/2022.

\*Cause of mortality was amended following discussions with the business. Initially cause was recorded as FW treatment losses but corrected to black losses on 06/07/2023. The black losses were observed at the time of a freshwater treatment, where fewer than expected number of lumpfish were observed, rather than the losses being directly associated with the FW treatment conducted.

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="7"/>	No facilities inspected	<input type="text" value="10"/>
Species	<input type="text" value="SAL"/>				
Age group	<input type="text" value="Q1 2021"/>				
No Fish	<input type="text" value="215,807"/>				
Mean Fish Wt	<input type="text" value="2.5kg"/>				
Next Fallow Date (Site)	<input type="text" value="late Q1 or Q2 2023"/>	Next Input Date (Site)	<input type="text" value="June 2023"/>		
Recent (last 4 wks) disease problems?		<input type="text" value="Y"/>	Any escapes (since last visit)?	<input type="text" value="N"/>	
If yes, detail:	<input type="text" value="Pastruella skyensis, AGD, PGD, CMS, Furunculosis"/>				

**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)?  N  
 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).

AGD, PGD, CMS, Pasturella skyensis, Furunculosis

18/8/2022 positive for Aeromonas salmonicida spp, PRV, AGD, PGD. 19/9/2022 positive for PRV and Pasteurella skyensis

Records checked between: 16/02/2022-19/10/2022

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	2.7kg	2.7kg	2.7kg	2.7kg	2.7kg							
Sex	N/A	N/A	N/A	N/A	N/A							
Water Type	SW	SW	SW	SW	SW							
Stock Details		Geocrab Hatchery (FS0562)	Geocrab Hatchery (FS0562)	Geocrab Hatchery (FS0562)	Geocrab Hatchery (FS0562)	Geocrab Hatchery (FS0562)						
	Stock Origin											
Facility No	3	5	5	6	6							

10/2022 Additional Sample Information:

F1 sampled from 09:35-09:50. F2 and F3 sampled from 10:08-10:30. F4 sampled from 11:04-11:35.

5 Total Tests assigned 4


Case no: 2022-0446

Site No: FS1256

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)										
<b>External Signs</b>										
Behaviour	Moribund	W	W	M	W	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									
	Enophthalmic (sunken)									
	Cataract			S						
	Haemorrhagic									
Gills	Pale	S	S	S	S	W				
	Zoned	S	S	S	S	M				
	Necrotic									
Lesions	Flank									
	Elsewhere									
Vent	Inflamed				W					
	Trailing faeces									
Lice Load	Estimate numbers	0	0	0	0	0				
<b>Internal Signs</b>										
Ascites	Clear									
	Bloody		M							
Oedema	In tissues									
Heart	Pale/anaemic	W	W	W	W	W				
	Granulomas									
	Deformed									
Liver	Petechial haem									
	Gross haem									
	Tissue breakdown									
	Enlarged									
	Colour number(s)	3	3	2	3	3				
	Granulomas									
	Lesions									
Pyloric caeca	Petechial haem									
	Tubules mauve									
	Lack of fat									
Spleen	Enlarged	M	M	M	M	M				
	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		W							
	Fluid filled									
Kidney	Swollen									
	Grey									
	Granular									
	Liquefied									
General	Parasites present									
	Anaemia									

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Date of visit: 19/10/2022

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	Grey											
	Granular											
	Liquefied											
General	Parasites present											
	Anaemia											



Additional comments:

Site No: FS1256
Case No: 2022-0446
Nature of non-compliance:
Action taken (FHI):
Non-compliance relevant to (delete): VirologyMolGen/Bacteriology/Histology/Parasitology



Case No:	2022-0446	Date of visit:	19/10/2022
Site No:	FS1256	Inspector:	[REDACTED]

Results Summary	Freq.	Date of Notification						
		Database	Insp	Phone	Insp	Writing	Insp	2 <sup>nd</sup> Insp
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_TER_Q	4/5	26/10/2022		26/10/2022		08/11/2022		
MG_PMCV	0/5	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		
MG_AGDQ	1/5	26/10/2022		26/10/2022		08/11/2022		
ASAL	1/5	04/11/2022		04/11/2022		08/11/2022		
FURH	1/5	03/11/2022		04/11/2022		08/11/2022		
GPAT	1/5	03/11/2022		04/11/2022		08/11/2022		
LPAT	4/5	03/11/2022		04/11/2022		08/11/2022		
KPAT	5/5	04/11/2022		04/11/2022		08/11/2022		
SPAT	4/5	03/11/2022		04/11/2022		08/11/2022		
PAST	4/5	03/11/2022		04/11/2022		08/11/2022		
PASS	4/5	04/11/2022		04/11/2022		08/11/2022		

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

# FISH HEALTH INSPECTORATE VISIT REPORT

## SUMMARY FOR INFORMATION OF SITE OPERATOR

<b>BUSINESS No</b>	FB0169	<b>DATE OF VISIT</b>	19/10/2022
<b>SITE No</b>	FS1256	<b>SITE NAME</b>	Plocrapol
<b>CASE No</b>	20220446	<b>INSPECTOR</b>	██████████

### 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 *Pasteruella* sp. *Pasteurella skyensis* was confirmed on site signs consistent with the bacterium were observed by histology examination, samples were tested for the presence of *P. skyensis* by qPCR and were positive. In addition, one fish was observed to display features consistent with *Aeromonas salmonicida*. In addition, *Aeromonas* sp. was identified on plates taken from kidney material of F3. The level and purity of growth would suggest that it would be implicated as a primary pathogen of this individual fish. However, there is no evidence from the samples provided that it would be implicated in morbidity overall. Lastly, mild, multifocal hepatic and necrotizing splenitis.

One fish tested positive for amoebic gill disease (*Neoparamoeba perurans*) by qPCR. In addition, four fish tested positive for *Paranucleospora theridion*. All fish sampled tested positive for salmon gill pox virus and piscine reovirus 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

Following, 6 weeks of notifications of increased mortality above the reporting threshold, a site inspection was conducted. On the day of the inspection, it was confirmed via internal health reports that *Pasteurella skyensis*, cardiomyopathy syndrome and furunculosis were present on site. Few fish were observed with open lesions, however, many fish were observed to be lethargic. On inspection, gills were observed to be in poor condition and in some cases extremely pale with clear anaemia present. Pen 6 was found to be the pen with the most lethargic fish and had experienced the highest mortality on site since issues began. Minimal lice numbers were observed on sampled fish.

All sampled fish were lethargic and moribund. Gills of four fish were zoned and pale. Internally, yellow pseudofaeces was present in the hind gut of all fish sampled.

R09

## Samples

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

Fish number	Facility number	Species	Stage	Origin
1	3	Atlantic Salmon	2.7kg 2021 Q1	Geocrab Hatchery (FS0562)
2-3	5	Atlantic Salmon	2.7kg 2021 Q1	Geocrab Hatchery (FS0562)
4-5	6	Atlantic Salmon	2.7kg 2021 Q1	Geocrab Hatchery (FS0562)

## Results

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

The following bacteria was isolated from kidney material in F3:

- *Aeromonas salmonicida*

From the tests conducted, we do not have evidence of resistance to oxytetracycline and florfenicol.

We have evidence which may indicate resistance to amoxicillin and sulphamethoxazole.

In addition, another bacteria was identified from kidney material and by qPCR:

### *Pasteurella skyensis*

Fish Number	Endogenous control Cp value	Cp Values			Reported Result (PCR)
F1	23.46	28.3	28.92	28.92	POSITIVE
F2	23.93	24.99	25.49	25.5	POSITIVE
F3	-	-	-	-	NO_RESULT
F4	23.43	25.42	25.37	25.65	POSITIVE
F5	24.81	27.81	27.82	27.75	POSITIVE

**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 pox virus

Fish Number	Endogenous control Cp value	Cp Values			Reported Result (PCR)
F1	19.75	39.61	39.6	36.73	POSITIVE
F2	21.47	37.97	36.47	36.07	POSITIVE
F3	20.08	26.42	26.53	27.17	POSITIVE

R09

F4	20.45	27.13	27.37	27.24	POSITIVE
F5	20.55	30.43	30.33	30.6	POSITIVE

Piscine reovirus (PRV)

Fish Number	Endogenous control Cp value	Cp Values			Reported Result (PCR)
F1	18.17	33.79	33.15	34.06	POSITIVE
F2	18.02	31.67	31.99	31.47	POSITIVE
F3	18.07	28.62	28.63	28.51	POSITIVE
F4	17.27	32.07	31.69	31.73	POSITIVE
F5	18.28	32.19	31.96	32.05	POSITIVE

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) 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).

*Neoparamoeba perurans* (AGD)

Fish Number	Endogenous control Cp value	Cp Values			Reported Result (PCR)
F1	-	-	-	-	NEGATIVE
F2	-	-	-	-	NEGATIVE
F3	20.08	34.21	33.94	32.96	POSITIVE
F4	-	-	-	-	NEGATIVE
F5	-	-	-	-	NEGATIVE

*Paranucleospora theridion*

Fish Number	Endogenous control Cp value	Cp Values			Reported Result (PCR)
F1	19.75	35.32	35.37	34.98	POSITIVE
F2	-	-	-	-	NEGATIVE
F3	20.08	30.51	30.38	30.73	POSITIVE
F4	20.45	30.88	28.68	30.98	POSITIVE
F5	20.55	33.25	33.25	33.05	POSITIVE

**Histology:** Tissue samples of gill, skin and skeletal muscle, heart, pyloric caeca, hind gut, liver, spleen, pancreas 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 (F3). Some bluntness of gill filament tips and presence of several dense aggregates of Gram-negative bacteria (F3).

R09

Occasional basophilic epithelial inclusions (likely epithelicystis) (F3). Lamellar telangiectasia with multifocal thrombosis in all fish.

Skin and Muscle: within normal range.

Heart: F3 displayed several small dense aggregates of Gram-negative bacteria in the two chambers and one foci fibre necrosis. Mild cellular infiltration (F2, F4 and F5).

Gut and pyloric caeca: Very mild peritonitis (F3).

Pancreas: within normal range.

Liver: Hepatocellular necrosis, mild, multifocal (F3, F5). Infiltration of mononuclear cells in the vasculature and sinusoids (F1, F4). Some cuffing (F5). Some mild, diffuse hepatocellular vacuolation (macrovisicules) (F1).

Kidney: Some, multifocal interstitial cell (haemopoietic) necrosis (F2, F3, F4). Presence of dense aggregates of Gram-negative bacteria surrounded by interstitial cell (haemopoietic) necrosis and pustule-like structure (F3). F1-F2 and F4-F5 displayed Gram-negative bacteria in the glomeruli.

Spleen: Cellular necrosis, mild, multifocal (F2, F5), some cuffing and presence of inflammatory cells, some resembling giant cells (F1, F4).



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/>



Plocrapol Diagnostic Sample Pictures (20220446):



*Figure 1 An overview of the condition of Fish 1.*



*Figure 2 Gills of Fish 1*



*Figure 3 Internal overview of Fish 1.*





Figure 4 External view of a) Fish 2 and b) Fish 3

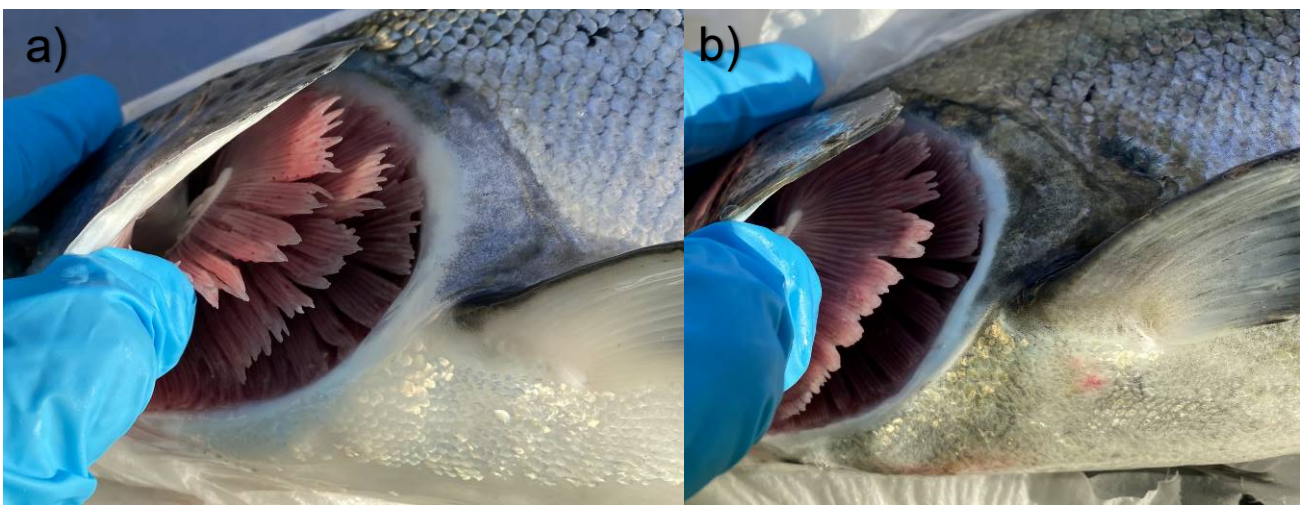


Figure 5 View of gills of a) Fish 2 and b) Fish 3



Figure 6 Internal view of Fish 2





Figure 7 Internal view of Fish 3.



Figure 8 Overview of the conditions of a) Fish 4 and b) Fish 5

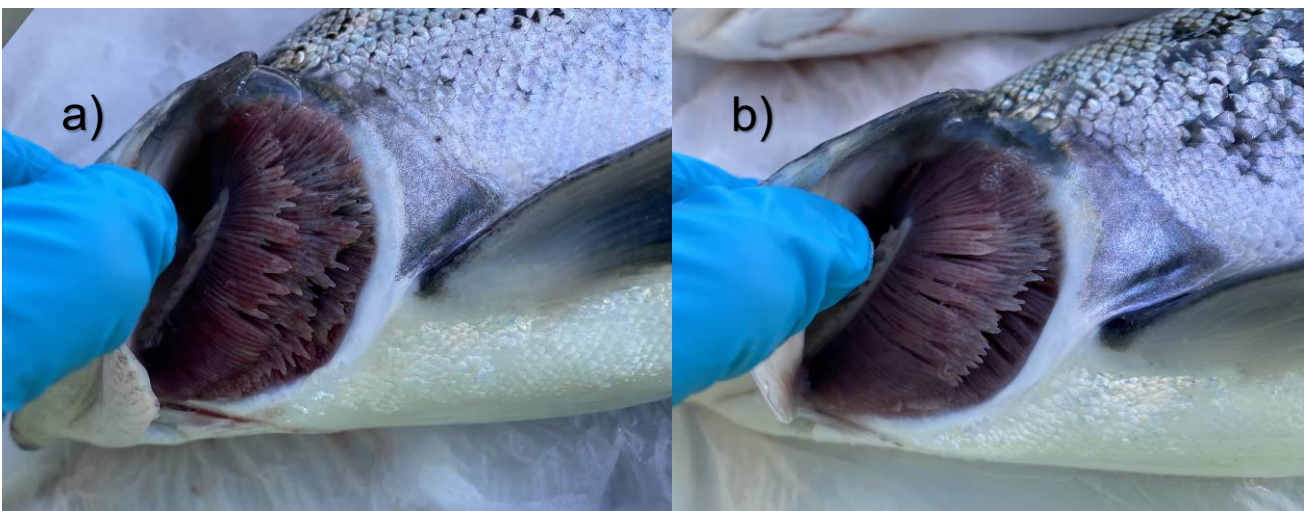


Figure 9 View of gills of a) Fish 4 and b) Fish 5





Figure 11 Internal view of Fish 4.



Figure 10 Internal view of Fish 5