FHI 059, Version 13		Issued by: FHI	Date of issue: 12/05/2020
Case No: 2024-0418			Date of visit: 06/11/2024
Time spent on site:	3 hours	Main Insp	ector:
Site No: FS1328 Business No: FB0125	Site Name: Business Name:	Barcaldine Smolt Unit Scottish Sea Farms Ltd	
Case Types: 1 DIA	2 REP 3	4 5	6
Water Temp (°C): 12.2	Thermometer No:	T155	FHI 045 completed N/A
Observations:	Region: ST	Water type: F	CoGP MA
Dead/weak/abnormally behaving Clinical signs of disease observed Gross pathology observed? Diagnostic samples taken?	-	Y If yes, see additional i	information/clinical score sheet. information/clinical score sheet. information/clinical score sheet.
UNI/REG only - if unable to carr	y out intended visit deta	il reason below:	

Additional Case Information:

Inspection lead by , observed by

The business refers to the site (FS1328) internally as smolt unit 1 and smolt unit 2.

Inspection scheduled due to the business reporting high mortality events attributed to saprolegnia, post-vaccination and Aquacen (formalin) bath treatments. 31/10/2024 third party health report identified the presence of saprolegnia, 2/10 positive detection. Aquacen and Cress (bronopol) treatments are on going. These fish were vaccinated from 30/9/24 to 23/10/24 in the pre-smolt unit (FS1327). The current fish in pre-smolt unit have a low fungus level which is being controlled with salinity. Going forward the business is aiming to control fungus in all units with salinity rather than formalin and/or bronopol.

Stock currently held at the smolt unit is predicted to go to sea at the end of November, this will be done under veterinary advice.

Case No:

Date of Visit:

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

Species

Age group

No Fish

Mean Fish Wt

Next Fallow Date (Site)

Recent (last 4 wks) disease problems?

If yes, detail:

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

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:

Increased mortality across the site attributed to Saprolegnia.

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)?

If yes, detail:

If other, detail:

- 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

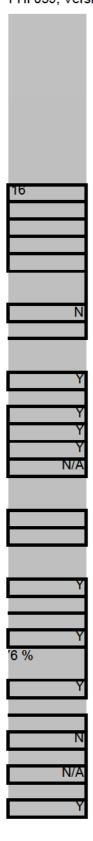
- 1. Biosecurity records available for inspection?
- 2. Has the manner and frequency of mortality removal, recording and safe disposal been considered?
- 3. Has the manner and period in which the APB will notify Scottish Ministers or veterinary professional of any increased (unexpl
- 4. Has the action that will be taken in the event that the presence or suspicion of the presence of a listed disease is detected be
- 5. Has the health status of aquaculture animals being stocked on the farm site been covered (equal or higher health status, cert
- 6. Have the husbandry and biosecurity measures implemented between each epidemiological unit to minimise transmission of c
- 7. Is documentation available regarding the measures in place to maintain the physical containment of aquaculture animals held
- 8. Have the biosecurity procedures been adequately implemented on site? If no. detail:

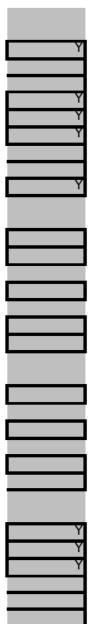
Results of Surveillance

- 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?

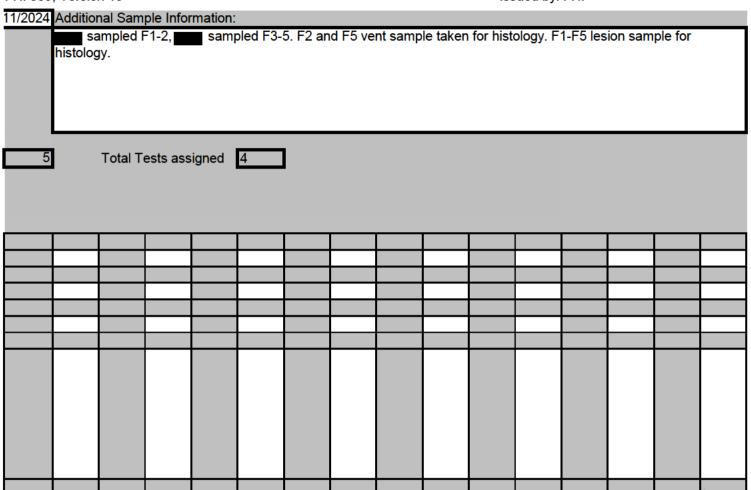
If yes, detail (if not detailed under recent disease problems).

FHI 059, Ver	sion 13			Issued by: F	Н	Date of issue: 12/05/2020
2024-0418		Site No:	FS1328			
	06/11/2024			Inspector(s):		
		-				V
						N
	16	Facilities sto	cked	16	No facilities inspected	
SAL						
2024 Q4						
916,612						
78.4						
	Smolt unit 1		Naud Innud D	-4- (0:4-)	Consult const 4 20/44/24	÷ 2.40/42/24
	smolt unit 2	4/12/24.	Next Input D		Smolt unit 1 28/11/24, smolt un	nit 2 10/12/24.
			Y	Any escapes	(since last visit)?	
Saprolegnia						
						23/07/2024
						23/07/2024
				Ensiled - on s	site	
Ensiled mate	erial disposed o	f at Shieldhall	\/\\\T\\\ via		,,,,,	
Lisiled mate	riai disposed o	i at Shieldhail	vv vv i vv via i	ACIE.		
		\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	/ (/36/// fich)	\ \\/\L \\2\· \\ 7\ 0/	6 (75635 fish) Wk 43: 6.61 % (1	22 003 fich) Wk 44: 6.7
		/103223 fish	0 (43044 listi) \ \Mk 45 (narti	ial): 2.03 % (2	0 (73033 11311) WK 43. 0.01 70 (1	22,095 11511) VVK 44. 0.7
		(103223 11511) VVK 45 (part	iai). 2.03 % (2	07 13 lisi1)	





٠.	ii 055, version 15							100	ucu by.				
	Case no:	2024-04	118	Site No:		FS1328			Date of Samplin		06/	11/2024	06/
	Priority samples:	VI		ВА		PA		MG	-	y. HI			
	Time sampling starts/ends:	10:1	0:00	11:0	0:00		Inspecto	or:			VMD No). [0
	Environmental conditions:	1	Indoors	2		3		4		5			
	Summary samples	HIST	Y	ВА	Y	MG	Y	VI		PA	Y	Total Sa	mples
A	dd Fish/Pools - click												
	Pool/Fish No	F1	F2	F3	F4	F5							
	Fish nos	1		3	4	5							
	Pool Group	P1	P2	P3	P4	P5							
	Species	SAL	SAL	SAL	SAL	SAL							
	Average weight	0.7840	0.7840	0.7840	0.7840	0.7840							
	Sex	N/A	N/A	N/A	N/A	N/A							
	Water Type	FW	FW	FW	FW	FW							
		smolt	Barcaldine pre smolt unit (FS1327)	smolt	smolt	Barcaldine pre smolt unit (FS1327)							
		(I)	pre 27)	pre 27)	a	pre 27)							
Details		dine S132	dine S132	dine S132	dine S132	dine S132							
		Barcaldine pre unit (FS1327)	Barcaldine pre unit (FS1327)	Barcaldine pre s unit (FS1327)	Barcaldine pr unit (FS1327)	Barcaldine pro unit (FS1327)							
ock	Stock Origin	Ba	Ba	Ba									
St	Facility No	T7	T7	T8	T8	T8							



FHI 059, Version 13 Issued by: FHI Date of issue: 12/05/2020

Case no:	2024-0418	Site No:) :	FS1328		Me	Method of killing: Anaesthetic			
Date of visit:	06/11/2024	I	Inspec	tor(s):			Sheet Relevant: Y				Y
	ce: M for medium presence: W for v	veak pres									
Fish Number		1	2	3	4	5					
Time sampled after death (if > 45 minutes) External Signs											
Behaviour	Moribund	S	S	S	S	S					
	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										
	Haemorrhagic										
Gills	Pale										
Gills	Zoned	-									
	Necrotic										
Lesions	Flank										
20010110	Elsewhere	S	S	S	S	S					
Vent	Inflamed		S			S					
	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	6	6	6	6	6					
	Colour number(s) Granulomas	0	0	0	0	U					
	Lesions										
Pyloric caeca	Petechial haem										
. Jionio cacca	Tubules mauve										
	Lack of fat										
Spleen	Enlarged										
	Granulomas										
Gut	No food present										
	Yellow pseudo-faeces										
	External haem										
	Internal haem										
Body wall	Haemorrhaging										
Swim bladder	Haemorrhaging										
	Fluid filled										
Kidney	Swollen										
	Grey										
	Granular										
	Liquefied										
General	Parasites present										
	Anaemia										

Case no: 2024-0418

Date of visit: 06/11/2024

S for strong presen	ce: M for medium presence: W fo						
Fish Number	ice. W for medium presence. W to	l W	_		1	_	_
	er death (if > 45 minutes)	$\overline{}$					
External Signs	_						
Behaviour	Moribund	-					
Donavioui	Lethargic	_					
	Hanging vertical						
	Spiralling	_					
	Flashing						
	Loss of equilibrium	_					
Body	Dark						
	Distended abdomen						
	Anorexic						
	Scale Oedema						
Opercula	Shortened						
орогоши	Flared	_					
Haemorrhaging	Throat						
ridomorridging	Ventrum	_					_
	Base of fins						
	Elsewhere						
Eyes	Exophthalmic						
	Enophthalmic (sunken)						
	Cataract						
	Haemorrhagic						
Gills	Pale	_					
Onio	Zoned						
	Necrotic	-					
Lesions	Flank	_					
Lesions	Elsewhere						
Vent	Inflamed	_					
vent		-					
Lina Land	Trailing faeces Estimate numbers	-					
Lice Load	Estimate numbers	$\overline{}$					
Internal Signs		_					
	Clear	-					
Ascites	Clear Bloody	_					
Oedema	In tissues						
		_					
Heart	Pale/anaemic Granulomas	-					
	Deformed	-					
Liver		-					
Liver	Petechial haem	-					
	Gross haem Tissue breakdown	-					
	Enlarged						
	Colour number(s)						
	Granulomas						
Dudania acces	Lesions						
Pyloric caeca	Petechial haem						
	Tubules mauve						
Culass	Lack of fat						
Spleen	Enlarged						
01	Granulomas						
Gut	No food present						
	Yellow pseudo-faeces						
	External haem						
.	Internal haem					_	
Body wall	Haemorrhaging						
Swim bladder	Haemorrhaging						
	Fluid filled						
Kidney	Swollen						
	Grey						
	Granular						
	Liquefied						
General	Parasites present						
	Anaemia						

Case No: 2024-0418 Date of visit: 06/11/2024 Site No: FS1328 Inspector: Results Summary Freq. Date of Notification Database Phone Insp Writing 2nd Insp Insp Insp 11/11/2024 11/11/2024 11/12/2024 MG_IHNQ 0/5 11/12/2024 MG_SAV 0/5 11/11/2024 11/11/2024 MG IPN 3/5 11/11/2024 11/11/2024 11/12/2024 MG_VHS 0/5 11/11/2024 11/11/2024 11/12/2024 Gyrodactylus salaris 0/5 19/11/2024 27/11/2024 11/12/2024 **GSAL** Saprolegnia sp-SAPR 21/11/2024 27/11/2024 11/12/2024 5/5 AERO 5/5 21/11/2024 27/11/2024 11/12/2024 4/5 27/11/2024 11/12/2024 **FSPE** 21/11/2024 **GPAT** 2/5 06/12/2024 11/12/2024 06/12/2024 11/12/2024 SKIN 5/5 Saprolegina parasitica 3/3 10/10/2024 11/12/2024 (sequenced) Report Summary 2nd Insp Case Type Date Insp DIA, REP 16/12/2024



FISH HEALTH INSPECTORATE VISIT REPORT

SUMMARY FOR INFORMATION OF SITE OPERATOR

BUSINESS NO FB0125 **DATE OF VISIT** 06/11/2024

SITE NO FS1328 SITE NAME Barcaldine Smolt Unit

CASE NO 20240418 INSPECTOR

Section 1: Summary

The business submitted notifications of mortality above the Code of Good Practice for Scottish Finfish Aquaculture reporting threshold. These mortality events were attributed to saprolegnia, post-vaccination and bath treatments. On inspection of the site, moribund and lethargic fish were observed in all tanks with extensive lesions and fungus infection. Five fish were removed for diagnostic examination.

Histopathology examination revealed features consistent with saprolegniasis, this was confirmed by the isolation of *Saprolegnia* species from lesion material of all five fish. DNA sequence analysis was performed on material from F1, F4 and F5 indicating the isolate to be *Saprolegnia parasitica* phylotype S2 (common to UK).

Infectious pancreatic necrosis virus was detected in three fish by qPCR. The significance of this result was unclear as no associated pathology was observed and the fish have been vaccinated.

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

During October, the business had submitted weekly mortality notifications of 4.1 %, 4.7 %, 6.61 % and 6.8 % for the site. These mortality events were attributed to saprolegnia, post-vaccination and bath treatments. Aquacen (formalin) and Cress (bronopol) treatments were initiated.

During the inspection of stock, moribund and lethargic fish were observed in all tanks. Many presented with extensive lesions and fungus infection. Five moribund and lethargic fish were removed for diagnostic sampling.

Externally, lesions by the dorsal fin were observed in all fish sampled. Ragged caudal fins were observed on F4 and F5. The vents of F2 and F5 were inflamed.

Internally, no gross pathology related to disease was observed.

Samples

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

R09



Fish number	Facility number	Species	Stage	Origin
F1-F2	T7	Atlantia Calman	78.4 g	Barcaldine Pre Smolt Unit
F3-F5	Т8	Atlantic Salmon	Q4 2024	(FS1327)

Results

Microbiology: Kidney, spleen and lesion material from five fish were inoculated onto appropriate media for isolation of colonies.

The following bacteria were isolated from fish F1-F5:

- Aeromonas sobria: F1 and F5 (Kidney)
- Aeromonas hydrophila: F1-F4 (Lesion)
- Flavobacterium spp.: F5 (Spleen) and F1, F2 and F4 (Lesion)

Aeromonas sobria was identified in kidney material of F1 and F5. The level and purity of growth would suggest this bacterium is likely to be present as a secondary pathogen. Aeromonas hydrophila was identified in lesion material of F1-F4. The level and purity of growth would suggest this bacterium is likely to be present as a secondary pathogen; however, in F2 it is likely that this bacterium was the primary source of the lesion. Flavobacterium spp. was identified in spleen material of F5 and lesion material of F1, F2 and F4. These bacteria are not known as primary fish pathogens and are likely to be present as opportunistic pathogens.

In addition, a colony matching the characteristics of *Saprolegnia* species was observed on the plate taken from lesion material.

Saprolegnia spp.: F1-F5 (Lesion)

DNA sequence analysis was performed on *Saprolegnia* spp. colony from material of F1, F4 and F5. Results showed the isolate to be *Saprolegnia parasitica* phylotype S2 (common to UK).

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

Infectious pancreatic necrosis virus (IPNV)

Fish Number	Endogenous control Cp value		Cp Values	Reported Result (PCR)	
F1	-	-	-	-	Negative
F2	-	-	-	-	Negative
F3	16.20	37.62	37.39	37.59	POSITIVE
F4	16.07	37.21	35.89	36.81	POSITIVE
F5	16.57	>40	38.40	37.96	POSITIVE



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

Parasitology: Fins were collected to determine the presence of *Gyrodactylus salaris* using light microscopy.

No G. salaris parasites were detected in the samples examined.

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

Histopathological examination revealed the following:

Gill: F1 - Minor lamellar hyperplasia (F1), some deformed cartilage and an area of presence of an hyphae mat (F5).

Skin & Muscle: Lesion: fungal-like dermatitis displaying an hyphae mat at the dermal outer layer and in dermis (F1, F2, F3, F4, F5) and observed within the musculature in F1-F5. Muscular degeneration (F1, F2, F3) and haemorrhage also observed (F1).

Heart: Within the normal range.

Gut and pyloric caeca: Peritonitis, minor-up-to mild (F2, F4).

Pancreas: Within the normal range.

Liver: Minor cuffing (F1, F2). Hepatocellular vacuolation (macrovesicles), mild, diffuse (F5).

Kidney: Interstitial necrosis, some (F1-F4). F5 displayed some hyaline droplets on the lining epithelium of few renal tubules.

Spleen: Cuffing, mild (F2, F3) and F5 slightly congested.

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

Signed:

Fish Health Inspector

Date: 16/12/2024

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)



Figure 1. F1 and F2 overview.



Figure 2. F1 close overview.



Figure 3. F1 lesion close to dorsal fin.



Figure 4. F1 inside view.



Figure 5. F2 close overview



Figure 6. F2 view showing lesion close to dorsal fin.



Figure 7. F2 view showing inflamed vent.



Figure 8. F2 inside view.



Figure 9. F3-F5 overview.



Figure 10. F3 close overview.

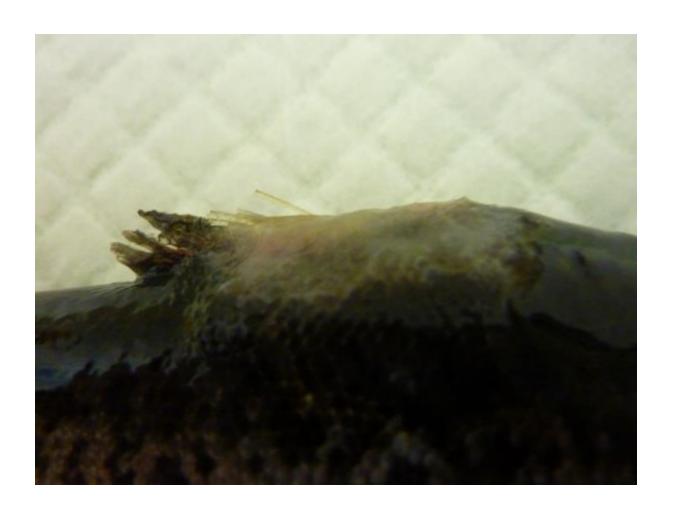






Figure x. F4 close overview showing ragged codial fin.









Figure x. F5 close overview showing ragged codial fin.



Figure x. F4 view showing inflamed vent.

