Case No: 2022-0146 Date of visit: 11/05/2022

Time spent on site: 6h Main Inspector: [redacted]

Site No: FS0240 Site Name: Linnhe
Business No: FB0119 Business Name: Mowi Scotland Ltd

Case Types: 1 ECI 2 CNI 3 SLI 4 VMD 5 DIA 6

Water Temp (°C): 9.8 Thermometer No: T305 FHI 045 completed N/A

Observations: Region: HI Water type: S CoGP MA M-33

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:

Additional Case Information:

Remote paperwork completed 04/05/22.

WRS some wild caught from N. Ireland, some farmed.

Fallow possibly Sep 22 (if current stock moved to Muck or Rum) or July 2023.

Treatment imported from Chile: Veterian (Florfenicol)

Lethargic and moribund fish observed in pen 8-10. Site staff actively remove lethargic and moribund fish on a daily basis from these pens. Fish removed for diagnostic from pen 8 and 9. Lethargic fish also observed in some of the other pens, particularly pen5 and 7. Approximately 10-15 lethargic fish observed in pen 5 and 7 each. Two fish removed for diagnostic removed from pen 5. Overall majority of fish in pens 1-7 appeared to be shoaling normally. Fish a little deeper in the water and at times with the light conditions difficult to observe. At the time of inspection strong tidal currants were observed on site.

Case No: 2022-0146 Site No: FS0240

Date of Visit: 11/05/2022 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	10	Facilities stocked	10	No facilities inspected	10			
Species	SAL	WRS	LUM					
Age group	2021 Q4	mixed	2021					
No Fish	915,000	31,844	2,240					
Mean Fish Wt	1.8kg	80-150g	50g					
Next Fallow Date (Site)	Sep 22 or July 23		Next Input Date (Site)	Oct 22 or Oct 23				
Recent (last 4 wks) disease problems?		Y	Any escapes (since last visit)?	N				

If yes, detail: Tenacibaculum causing increased mortality. 3 pens with smaller fish mostly affected, but stating to see other pens affected as well. 3 pens with smaller fish treated with Florfenicol, with no effect. New Aquatet (Oxytetracycline) treatment to be started towards the end of the week (3 pens with smaller fish only for now). Health visit scheduled for tomorrow.

Movement Records

1. Movement records available for inspection?	Y
2. Date of last inspection:	11/03/2022
3. Are records complete and correctly entered?	N
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?	Y

Transport Records

1. Are any movements carried out by (or on behalf) of the business (not using a STB)?	Y
If yes, is there a system in place for maintenance of transportation records?	Y

Mortality Records

1. Mortality records available for inspection?	Y
2. How are mortalities disposed of?	Ensiled - on site
If other detail:	
3. Mortality records complete and correctly entered?	Y
4. Recent mortality (last 4 wks):	SAL: wk 14, 2022: 1.49% / 14,423; wk 15, 2022: 1.14% / 10,882; wk 16, 2022: 1.16% / 10,996; wk 17, 2022: 1.13% / 10,493. WRS: wk 14, 2022: 154/ 0.48% ; wk 15, 2022: 77/ 0.24% ; wk 16, 2022: 144/ 0.45%; wk 17, 2022: 136/ 0.43%. LUM: wk 14, 2022: 270/ 1.12% ; wk 15, 2022: 195/ 0.82% ; wk 16, 2022: 1.38%; wk 17, 2022: 448/1.93%.
5. Evidence of recent increased/atypical mortalities?	Y

If yes, facility nos/no mortality per facility/no stock per facility/reason:

SAL: Majority of morts from pens 8, 9 and 10, remaining pens on site significantly lower figures.

6. Any other peaks in mortality during period checked?	Y
If yes, detail:	SAL: wk 13, 2022: 1.14%
7. Have increased (unexplained) mortalities been reported to vet or FHI?	Y
If yes, detail action:	SAL: Health visit 24/3/22, Florfenicol treatment started for pen 8,9,10 on 5/4/22. Further visits in April. Next visit planned 5/5/22.
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)?	Y
If yes, detail:	Veterin 80% (Florfenicol), TMS
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?	Y
5. If yes, what treatment(s)?	Veterin 80% (Florfenicol), TMS
If other, detail:	
6. Are medicines stored appropriately?	

Biosecurity Records

1. Biosecurity records available for inspection?	Y
2. Has the manner and frequency of mortality removal, recording and safe disposal been considered?	Y
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?	Y
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?	Y
5. Has the health status of aquaculture animals being stocked on the farm site been covered (equal or higher health status, certification if required)?	Y
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.)?	Y
7. Is documentation available regarding the measures in place to maintain the physical containment of aquaculture animals held on site?	Y
8. Have the biosecurity procedures been adequately implemented on site?	Y
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).	Tenacibaculum maritimum

Visit 13/4/22: Samples collected from affected pens (8 & 9). Pathology observed consistent with Tenacibaculum maritimum and also Moritella viscosa. PatoGen report on samples collected (13/4/22) dated 21/4/22: PCR positives for M. viscosa; T. maritimum. Visit 28/4/22: Samples collected from 8 &9. Samples positive for Tenacibaculum spp., and Yersinia ruckeri, however negative results for T. maritimum and M. viscosa.

Records checked between:	11/03/2022 - 04/05/2022

Case no:	2022-0146	Site No:	FS0240	Date of visit/ Sampling:	11/05/2022	11/(							
Priority samples:	VI		BA		PA		MG		HI				
Time sampling starts/ends:	11:00:00	14:00:00	Inspector:		VMD No.	13							
Environmental conditions:	1	Indoors	2	Wet	3		4		5				
Summary samples	HIST	Y	BA	Y	MG	Y	VI	Y	PA		Total Samples		

Add Fish/Pools - click

	Pool/Fish No	F1	F2	F3	F4	F5	P1	P2					
	Fish nos	1	2	3	4	5	1-2	4-5	6	7	8		
	Pool Group	P1	P1		P2	P2							
Stock Details	Species	SAL	SAL	SAL	SAL	SAL			SAL	SAL	SAL		
	Average weight	2kg	2kg	700g	700g	700g			1.8kg	1.8kg	1.8kg		
	Sex	N/A	n/A	N/A	n/A	N/A			N/A	N/A	N/A		
	Water Type	SW	SW	SW	SW	SW			SW	SW	SW		
	Stock Origin	Glenfinnan	Glenfinnan	Glenfinnan	Glenfinnan	Glenfinnan			Glenfinnan	Glenfinnan	Glenfinnan		
	Facility No	5	5	8	9	9			1	3	6		

05/2022 Additional Sample Information:

7 Total Tests assigned 13

Case no: 2022-0146 Site No: FS0240 Method of killing: Percussive

Date of visit: 11/05/2022 Inspector(s): [redacted] Sheet Relevant: Y

S for strong presence: **M** for medium presence: **W** for weak presence

Fish Number		F1	F2	F3	F4	F5					
Time sampled after death (if > 45 minutes)		60	80	80	80	90					
External Signs											
Behaviour	Moribund	M	M	M	M	M					
	Lethargic	S	S	S	S	S					
	Hanging vertical										
	Spiralling										
	Flashing										
	Loss of equilibrium										
Body	Dark										
	Distended abdomen										
	Anorexic			M	M	S					
	Scale Oedema										
Opercula	Shortened	M	M								
	Flared										
Haemorrhaging	Throat										
	Ventrum										
	Base of fins										
	Elsewhere										
Eyes	Exophthalmic										
	Enophthalmic (sunken)										
	Cataract										
	Haemorrhagic										
Gills	Pale										
	Zoned				W	W					
	Necrotic										
Lesions	Flank				M	M					
	Elsewhere										
Vent	Inflamed										
	Trailing faeces										
Lice Load	Estimate numbers										
Internal Signs											
Ascites	Clear										
	Bloody										
Oedema	In tissues										
Heart	Pale/anaemic										
	Granulomas										
	Deformed			W							
Liver	Petechial haem	W	W	W							
	Gross haem										
	Tissue breakdown										
	Enlarged										
	Colour number(s)	4	3	4	2	2					
	Granulomas										
	Lesions										
Pyloric caeca	Petechial haem										
	Tubules mauve										
	Lack of fat			M	S	S					
Spleen	Enlarged	M	M	M	W	W					
	Granulomas										
Gut	No food present			W	S	S					
	Yellow pseudo-faeces	S	S	M	W	W					
	External haem										
	Internal haem										
Body wall	Haemorrhaging										
Swim bladder	Haemorrhaging		M								
	Fluid filled										
Kidney	Swollen										
	Grey	M	M	M	W	W					
	Granular	M	M	M							
	Liquefied				W	M					
General	Parasites present										
	Anaemia										

Case no: 2022-0146

Date of visit: 11/05/2022

S for strong presence: **M** for medium presence: **W** for w

Fish Number											
Time sampled after death (if > 45 minutes)											
External Signs											
Behaviour	**Moribund**										
	Lethargic										
	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**										
	Zoned										
	Necrotic										
Lesions	**Flank**										
	Elsewhere										
Vent	**Inflamed**										
	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										
	Colour number(s)										
	Granulomas										
	Lesions										
Pyloric caeca	**Petechial haem**										
	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										

Additional comments:

Case Number:	2022-0146		Site No:	FS0240	Insp:	
Date of Visit	11/05/2022					

		No of movements/supp./dest.				Score
Live fish movements		**0**	**1-5**	**6-10**	**>10**	
Movements on (from out with GB) of susceptible species	Frequency of movements on from equivalent MS	0	5	10	14	5
	Frequency of movements on from equivalent zone or compartment including third country	0	9	18	26	
	Number of suppliers	0	5	10	14	5
Movements off	Frequency of movements off	0	3	6	10	10
	Number of destinations	0	3	6	10	3

Exposure via water	**Site contacts**	**0**	**1-5**	**6-10**		
Water contacts with other farms (holding species susceptible to same diseases)	Farm is protected (secure water supply through disinfection or borehole)	0				
	Farm is on-line or in a coastal zone with category I farms upstream or within 1 tidal excursion	1	2	4		2
	Farm is on-line or in a coastal zone with category III farms upstream or within 1 tidal excursion	1	3	6		
	Farm is on-line or in a coastal zone with category V farms upstream or within 1 tidal excursion	1	4	8		

Management practices		None	Secure	Unsecure		
Water contacts with processors	Any processing plant discharging into adjacent waters	0	1	2		1
On farm processing within the rules of the directive	No on farm processing	0				0
	Processing own fish (re-cycling risk)	1				
	Processing fish from MS of equivalent status	2				
	Processing fish from zone or compartment of equivalent status	4				
	Processing fish from Category III farm	8				
	Processing fish from Category V farm	10				
Disposal of fish and fish by-products	Site's own waste only processed.	0				0
	Common processes with other farms	3				
	Collection point for waste from other farms	5				
Use of unpasteurised feeds	No feeding of unpasteurised feed	0				0
	Feeding unpasteurised feed	5				

Biosecurity	**Number of sites**	**1**	**2 or 3**	**≥ 4**		
Contacts with other sites	Sites operating from single shorebase	0	1	2		0
	Sites sharing staff and equipment	0	1	2		0
Disinfection of equipment between sites, use of footbaths etc	Yes	0				0
	No	1				
CoGP/Regulator						
Practices in accordance with regulator or industry code of practice	Yes	0				0
	No	3				
Platform access to cages	Yes	0				0
	No	2				

Total	**26**
Rank	**HIGH**

Case No: 2022-0146 Site No: FS0240

Sea Lice Inspection (Seawater Sites Only)

1. Has the site experienced sea lice problems in the previous 4 years?	N
2. Is the CoGP Farm Management Area (or equivalent) fallowed synchronously on a single year class basis?	Y
3. Does the site have access to a range of licenced in-feed and bath sea lice medications (including deltamethrin, azamethiphos and emamectin benzoate) as well as access to suitable biological and/or mechanical control measures, and can these be deployed in a reasonable period of time?	Y
4. Is there a signed documented farm management agreement or statement relevant to the site and CoGP Farm Management Area (or equivalent)?	Y
5. Are sea lice count records available for inspection? (Legal SSI, CoGP Annex 6)	Y
6. Do records adequately reflect the required standard specified in the SSI and the CoGP? (Legal SSI, CoGP Annex 6)	Y
7. Are sea lice (*L. salmonis*) record levels below the suggested criteria for treatment in the CoGP during the period that records are inspected? (CoGP Annex 6)	Y
8. Have average adult female sea lice (*L. salmonis*) numbers per fish been at a level of 3 or above (prior to w/b 10/6/19) or 2 or above (from w/b 10/6/19) during the period that records are inspected?	N
If yes, have these been reported to the Fish Health Inspectorate? If no, FHI see comment.	N/A
9. Is *C. elongatus* infestation at a level which is considered to cause significant welfare problems? (CoGP 4.3.81, 5.3.50)	N
10. Have therapeutic treatments been administered or other actions taken when *L. salmonis levels* have exceeded the suggested criteria for treatment or where *C. elongatus* is considered to have welfare implications? (CoGP 4.3.82, 5.3.51)	N/A
11. Has any other action been taken (where applicable)?	N/A
12. Have therapeutic treatments or the actions taken had a significant impact upon the lice levels recorded?	N/A
13. Are treatments, where conducted, carried out in cooperation between participating farms?	Y
14. Is there a harvesting strategy for the site, where fewer populations or part populations are held without treatment for sea lice?	Y
15. Is there a site specific written lice management procedure with waypoints describing set actions to deal with recognised scenarios during the escalation of a sea lice infestation?	Y
16. Do the sea lice levels observed on stocks reflect sea lice count data? If no please detail reasons.	Y

Containment Inspection

1. Has the site experienced equipment damage due to predators in the current or previous production cycles?	N
2. Are measures in place to mitigate against the predation experienced on site? (Detail below)	Y

If other, detail below:

tensioned nets, top nets, seal blinds

3. Have escape incidents or events been experienced on or in the vicinity of the site since the last FHI inspection?	N

If Yes proceed with questions 4 – 9. If No skip to question 10

4. Have these been reported to Scottish Ministers?	
5. Have these been reported to local DSFB forthwith (where they exist)? (CoGP – 4.4.37, 5.4.17)	
6. Have these been reported to the SSPO and local fisheries trusts forthwith (where they exist)? (CoGP – 4.4.37, 5.4.17)	
7. Were methods (if any) used to recover escapees? If yes give detail	
8. If gill nets were deployed was this action agreed with local wild fish interests and was permission given by Scottish Ministers? (Legal, CoGP – 4.4.38, 5.4.18)	
9. What action was taken to prevent and minimise the risk of further escapes? (Not covered in code but could be considered under satisfactory measures of the Act)	
10. Is the site inspected as satisfactory with regards to containment? If no, please detail reason(s)	Y

Case No: 2022-0146 Site No: FS0240

Date of Visit: 11/05/2022 Inspector: [redacted]

Point of Compliance

1. Is the farm under inspection located within a farm management area?	Y

If N, no further questions require completion.

Points of Compliance for Both Farm Management Agreements and Statements

2. Has a current farm management agreement or statement (FMAg/S) been prepared?	Y
3. Is the current FMAg/S available for inspection?	Y
4. Does the FMAg/S identify the relevant farm management area?	Y
5. Does the FMAg/S identify the fish farm site(s) to which it applies?	Y
6. Does the FMAg/S identify the date of commencement of the agreement or statement?	Y
7. Does the FMAg/S identify the date of review?	Y

Arrangements for Fish Health Management

8. Does the FMAg/S identify the minimum health standards for the stocks to be introduced to the area or farm?	Y
9. Does the FMAg/S identify the vaccination requirements for stocks held in the area or farm?	Y
10. Does the FMAg/S identify the species of fish which may be stocked into the area or farm?	Y
11. Does the FMAg/S identify the maximum stocking density of any pen on any farm in the area or the individual farm?	Y
12. Does the FMAg/S identify the arrangements for the storage and disposal of any dead fish from any fish farm in the area or the individual farm?	Y

Arrangements for The Management of Sea Lice

13. Does the FMAg/S identify arrangements for the sharing of data on sea lice numbers and treatments?	Y
14. Does the FMAg/S identify the availability and the use of medicines on farms covered by the agreement of statement?	Y
15. Does the FMAg/S identify any requirements for the sensitivity testing of available treatments for sea lice on farms in the area or individual farms?	Y
16. Does the FMAg/S identify the circumstances under which biological controls and cleaner fish are to be used on farms in the area or individual farms?	Y
17. Does the FMAg/S identify the arrangements for synchronous treatments on farms within the area?	Y

Live Fish Movements

18. Does the FMAg/S identify the circumstances when live fish may be introduced or removed from the area or farm?	Y
19. Does the FMAg/S identify the arrangements for the movement of live fish on and off sites in the area or individual farms?	Y

Harvesting

20. Does the FMAg/S identify acceptable harvest practices on farms in the area or individual farms?	Y

Fallowing

21. Does the FMAg/S identify the dates by which the area or individual farm will be fallow and the earliest date when a farm or area may be restocked?	Y
22. Does the FMAg/S identify whether one or more year classes may be stocked onto sites covered by the agreement or statement?	Y
23. Does the FMAg/S identify whether broodstock or potential broodstock are to be kept on any site covered by the agreement or statement?	Y

Point of Compliance for Farm Management Agreements Only

24. Does the farm management agreement include arrangements for persons to become, or cease to be, parties to the agreement?	N/A

Management and operation

25. Is the fish farm being managed and operated in accordance with the agreement or statement?	Y
26. What is the version no/date of issue of the FMAg/S?	Jan-22

MOWI only business in the CoGP area

Site No: FS0240

Case No: 2022-0146

Nature of non-compliance:
Action taken (FHI):
Non-compliance relevant to (delete): VirologyMolGen/Bacteriology/Histology/Parasitology

Case No: 2022-0146 Date of visit: 11/05/2022

Site No: FS0240 Inspector: [redacted]

Results Summary	Freq.	Date of Notification						
		Database	Insp	Phone	Insp	Writing	Insp	2nd Insp
MG-AGD	0/5	16/05/2022		18/05/2022		16/06/2022		
MG-SAL POX	3/5	16/05/2022		18/05/2022		16/06/2022		
MG- PARA THER	5/5	16/05/2022		18/05/2022		16/06/2022		
MG-VHS	0/5	16/05/2022		18/05/2022		16/06/2022		
MG-IHN	0/5	16/05/2022		18/05/2022		16/06/2022		
MG-ISA	0/5	16/05/2022		18/05/2022		16/06/2022		
MG-PMCV	0/5	17/05/2022		18/05/2022		16/06/2022		
MG-SAV	0/5	17/05/2022		18/05/2022		16/06/2022		
MG-IPN	0/5	17/05/2022		18/05/2022		16/06/2022		
TENC	3/5	02/06/2022		02/06/2022		16/06/2022		
SULC	2/5	02/06/2022		02/06/2022		16/06/2022		
HPAT	4/5	02/06/2022		02/06/2022		16/06/2022		
PMCH	1/5	02/06/2022		02/06/2022		16/06/2022		
ADHE	5/5	02/06/2022		02/06/2022		16/06/2022		
SPAT	5/5	02/06/2022		02/06/2022		16/06/2022		
YRUK	3/5	14/06/2022				16/06/2022		
Rhodococcus sp.	1/5	14/06/2022				16/06/2022		
VSPE	2/5	14/06/2022				16/06/2022		
VVIS	1/5	14/06/2022				16/06/2022		
NSIG	2/5	14/06/2022				16/06/2022		

Report Summary			
Case Type	Date	Insp	2nd Insp
ECI, CNI, SLI, VMD	18/05/2022		
DIA	16/06/2022		

FISH HEALTH INSPECTORATE VISIT REPORT

SUMMARY FOR INFORMATION OF SITE OPERATOR

BUSINESS NO	FB0119	**DATE OF VISIT**	11/05/2022
SITE NO	FS0240	**SITE NAME**	Linnhe
CASE NO	20220146	**INSPECTOR**	[redacted]

Section 1: Summary

During a routine inspection moribund and lethargic fish were removed for diagnostic sampling. The site had reported increased mortality due to bacterial infection for several weeks prior to the visit.

Histopathology examination revealed bacterial infection (likely associated with *Tenacibaculum* sp.) in F3; F4 and F5 displayed bacterial ulcerative dermatitis. F2 displayed myocarditis and all fish had evidences of splenitis and nephritis, potentially associated with bacterial infection. Some peritonitis was observed in all fish, potentially associated with vaccine administration.

Yersinia ruckeri was identified on plates taken from kidney material of fish F1, F2 and F5. *Moritella viscosa* was identified on plates taken from F5 lesion. *Vibrio* sp. was identified on plates taken from fish 4 and 5. Both *Yersinia ruckeri* and *Moritella viscosa* are primary fish pathogens, *Vibrio* sp. is more commonly a secondary pathogen. The purity of growth would not suggest that any one of these bacteria could be implicated as the primary cause of morbidity however the level of growth overall was significant.

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 a routine inspection moribund and lethargic fish were observed on site and removed for diagnostic sampling. At the time of the visit the site was stocked with 915,00 2021Q4 Atlantic salmon at an average weight of 1.8kg, as well as wrasse and lumpfish. The site had been reporting mortality events above the reporting threshold to the Fish Health Inspectorate in the weeks leading up to the inspection. Mortalities were attributed to bacterial infection with *Tenacibaculum*. Mortality records showed that mortality was increased predominantly in pens 8, 9 and 10. During the site inspection approximately 10-15 moribund and lethargic fish were also in pens 5 and 7.

All fish removed for the diagnostic were moribund and lethargic. Externally, F1-F2 had shortened opercula and F3-F5 were anorexic. F4-F5 had slightly zoned gills, as well as lesions on the flanks. Internally, F1-F3 showed some petechial haemorrhaging on the liver with the heart of F3 showing slight deformity. F3-F5 had a lack of fat around the pyloric caeca and had no food present in the gut. All fish showed signed of an enlarged spleen, as well as a slightly grey appearance of the kidney, with the kidney also appearing slightly granular in F1-F3. The kidney appeared liquefied in F4-F5. The swim bladder displayed some haemorrhaging in F2.

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

Samples

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

Fish number	Pool number	Facility number	Species	Stage	Origin
F1 – F2	P1	5	Atlantic salmon	2kg, 2021 Q4	Glenfinnan
F3	N/A	8	Atlantic salmon	700g, 2021 Q4	Glenfinnan
F4 – F5	P2	9	Atlantic salmon	700g, 2021 Q4	Glenfinnan

Results

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

The following bacteria were isolated:

- *Yersinia ruckeri*: F1-F2& F5 (Kidney);
- *Moritella viscos*a: F5 (Lesion);
- *Vibrio* sp.: F4 (Lesion, Gill); F5 (Kidney, Lesion, Gill);
- *Rhodococcus* sp.: F3 (Kidney);

Rhodococcus sp. was identified using PCR and sequencing of 16s rRNA. *Rhodococcus* sp. is not known as a fish pathogen.

From the tests conducted on *Yersinia ruckeri* isolates, we do not have evidence of resistance to oxytetracycline, sulphamethoxazole/trimethoprim or florfenicol. We have evidence which may indicate some resistance to amoxycillin.

From the tests conducted on *Moritella viscosa* isolates, we do not have evidence of resistance to oxytetracycline, amoxycillin or florfenicol. We have evidence which may indicate some resistance to sulphamethoxazole/trimethoprim.

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	18.79	-	-	-	Negative
F2	19.1	-	-	-	Negative
F3	19.43	32.23	32.26	32.87	**POSITIVE**
F4	19.59	27.76	28.29	28.82	**POSITIVE**
F5	20.18	27.77	27.68	27.43	**POSITIVE**

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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).

Paranucleospora theridion

Fish Number	Endogenous control Cp value	Cp Values			Reported Result (PCR)
F1	18.79	32.94	32.54	32.16	**POSITIVE**
F2	19.1	33.41	32.85	33.93	**POSITIVE**
F3	19.43	25.93	25.83	25.94	**POSITIVE**
F4	19.59	27.02	26.45	27.41	**POSITIVE**
F5	20.18	26.24	25.95	26.36	**POSITIVE**

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

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: Several clusters of filamentous bacteria and no inflammation reaction associated (F3). Mild, multifocal, interlamellar epithelial hyperplasia (F1, F2). Some scattered aneurysmal dilation/telangiectasia, lamellar congestion and freed blood among gill filaments (F1-F5). F4 displayed post-mortem artefacts.

Skin & Muscle: lesions: partial absence of epidermal (F4 & F5). Some dermal oedema and presence of high number of mixed bacteria that stained Gram-negative and Giemsa positive (F4 & F5). Foci of unknown round-shaped structures (potentially yeast) noted in all the lesions. Musculature displayed mild inflammation and some haemorrhage.

Heart: Several clusters of filamentous bacteria and no inflammation reaction associated (F3). Mild influx of mononuclear cells (F2). Some pericarditis (F4, F5).

Gut and pyloric caeca: Mild to moderate peritonitis (potentially associated with vaccine administration) (F1-F5). Some cell sloughing (potentially linked to post-mortem artefacts).

Pancreas: Within the normal range.

Liver: Some cuffing (F1-F5). Mild, multifocal hepatocellular cell degeneration and necrosis and some haemorrhage (F5). F2 displayed some congested vessels.

Kidney: Some foci of sparse haematopoietic tissue and some inflammatory cells circulating within the sinusoidal spaces (F2). Renal tubes displayed hyaline droplets on the lining epithelium (F2-F5). F2 and F3 exhibited very few numbers of rod-shaped and filamentous Gram-negative bacteria, respectively.

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Spleen: Several clusters of filamentous bacteria surrounded by melanin pigment (F3) and F1 also exhibited very few numbers of rod-shaped Gram-negative bacteria. Mild diffuse vaculation in the white pulp (F1-F5). Slightly congested (F2-F5).

Signed: [redacted] Date: 16/06/2022

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/

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FISH HEALTH INSPECTORATE VISIT REPORT

SUMMARY FOR INFORMATION OF SITE OPERATOR

BUSINESS NO	FB0119	**DATE OF VISIT**	11/05/2022
SITE NO	FS0240	**SITE NAME**	Linnhe
CASE NO	20220146	**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.

All epidemiological units were inspected.

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

Records

The surveillance frequency category of the site was assessed as high. An inspection under the Aquatic Animal Health (Scotland) Regulations 2009 will be conducted annually. The category of the site will be reassessed on a routine basis and updated as required.

The information required for the public record of aquaculture production businesses regarding this site was verified and where necessary updated. The following records were also inspected to ensure that the conditions of authorisation for your Aquaculture Production Business (APB) are being met:

Aquaculture animal and aquaculture animal product movement records were inspected and found to be inadequately maintained.

Records in relation to aquaculture animals transported by the business were inspected and found to be adequately maintained.

Mortality records were inspected and found to be adequately maintained.

Mortality levels had exceeded the reporting criteria since the last inspection and had been reported to the Fish Health Inspectorate as required.

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.

The biosecurity measures plan for the site was inspected and found to be adequately maintained and implemented.

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The following points were raised with the site representative during the inspection:

- FS numbers must be recorded in the source/destination section of the movement record book, to allow for better traceability of stocks. It was discussed with the site manager that this would be recorded in future. No further action is required.

These must be addressed to ensure the conditions of authorisation for your Aquaculture Production Business (APB) are being met.

Inspection under the Animals and Animal Products (Examination for Residues and Maximum Residue Limits) (England and Scotland) Regulations 2015

Medicine records were inspected and found to be adequately maintained.

Samples were taken to be analysed for veterinary residues.

Inspection under the Aquaculture and Fisheries (Scotland) Act 2007

The site was also inspected in accordance with the Aquaculture and Fisheries (Scotland) Act 2007, as amended, with respect to section 3 regarding parasites (sea lice), section 4A regarding fish farm management agreements and statements and section 5 regarding containment and escapes.

On this occasion the site was found to be satisfactory with regards to parasites, fish farm management agreements and statements and containment and escapes.

Please contact myself or the duty inspector should you require any assistance or clarification in implementing any requirement or recommendation detailed in this report.

Signed: [redacted] Date: 18/05/2022

Fish Health Inspector

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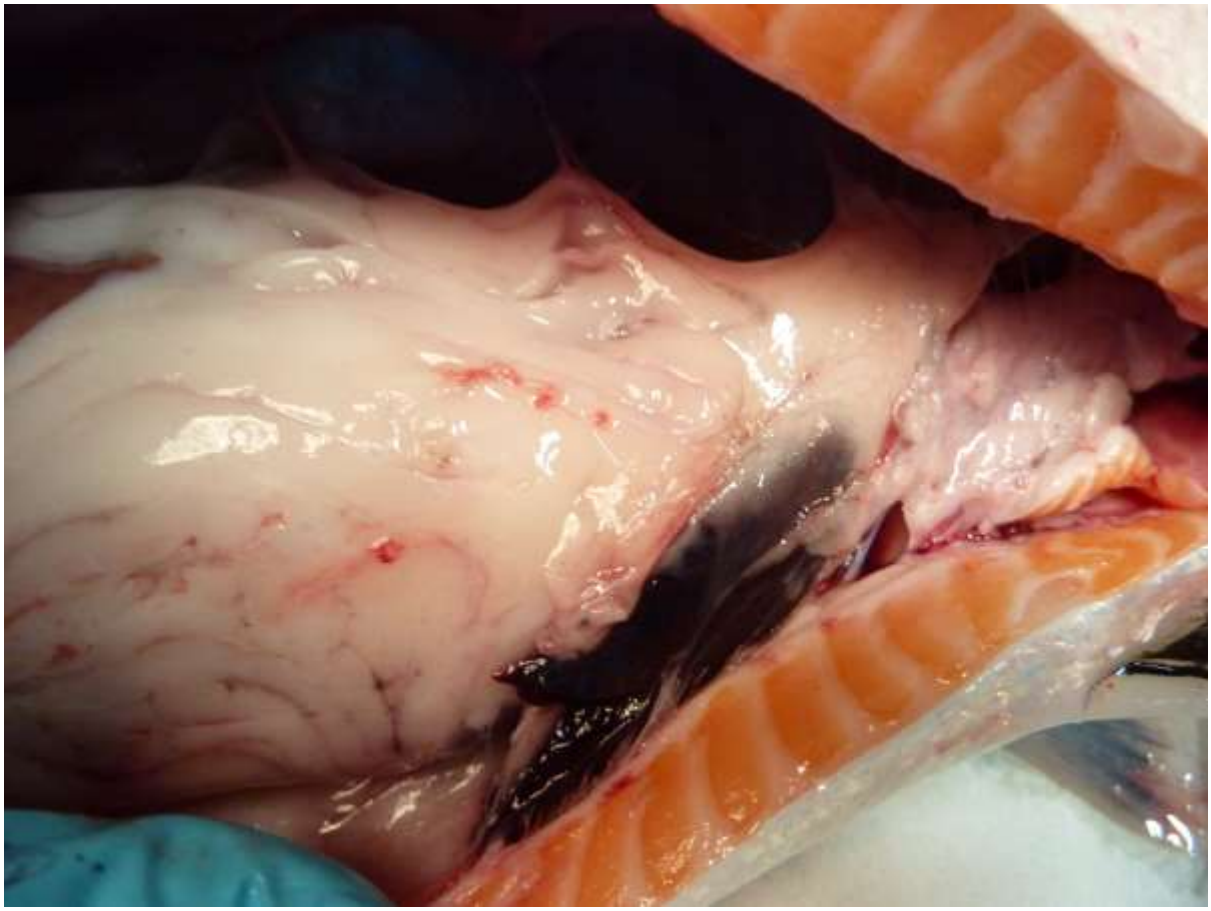
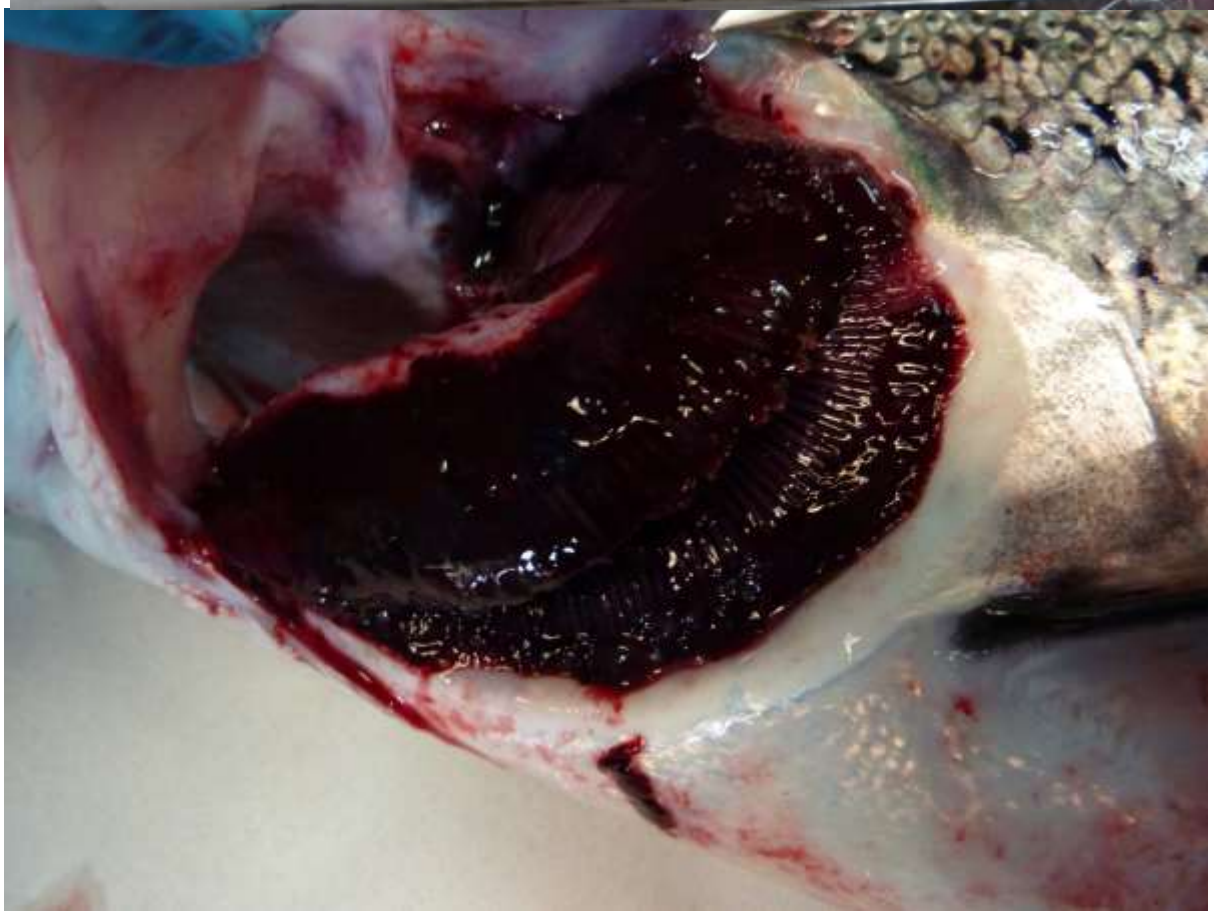
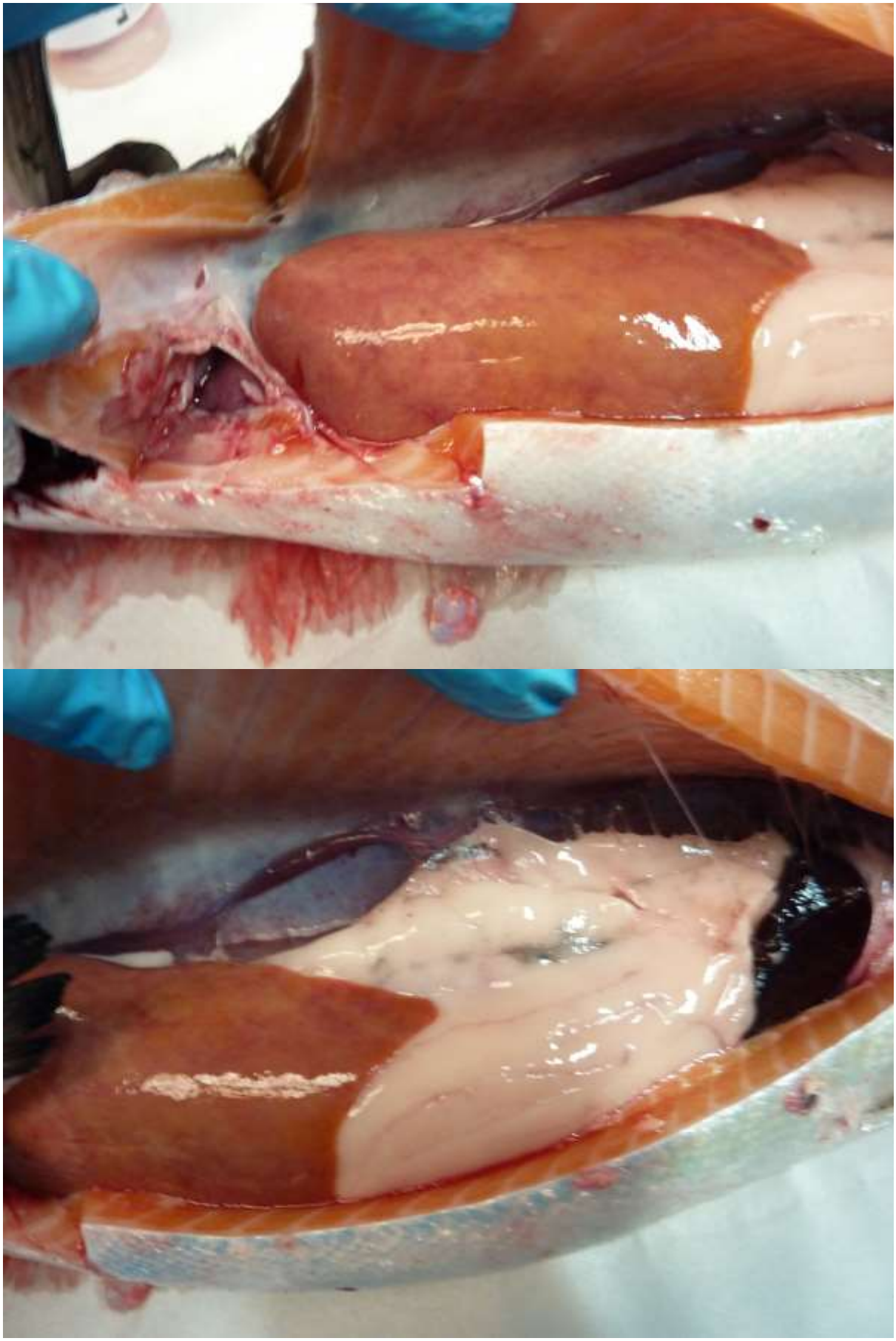
2022-0146

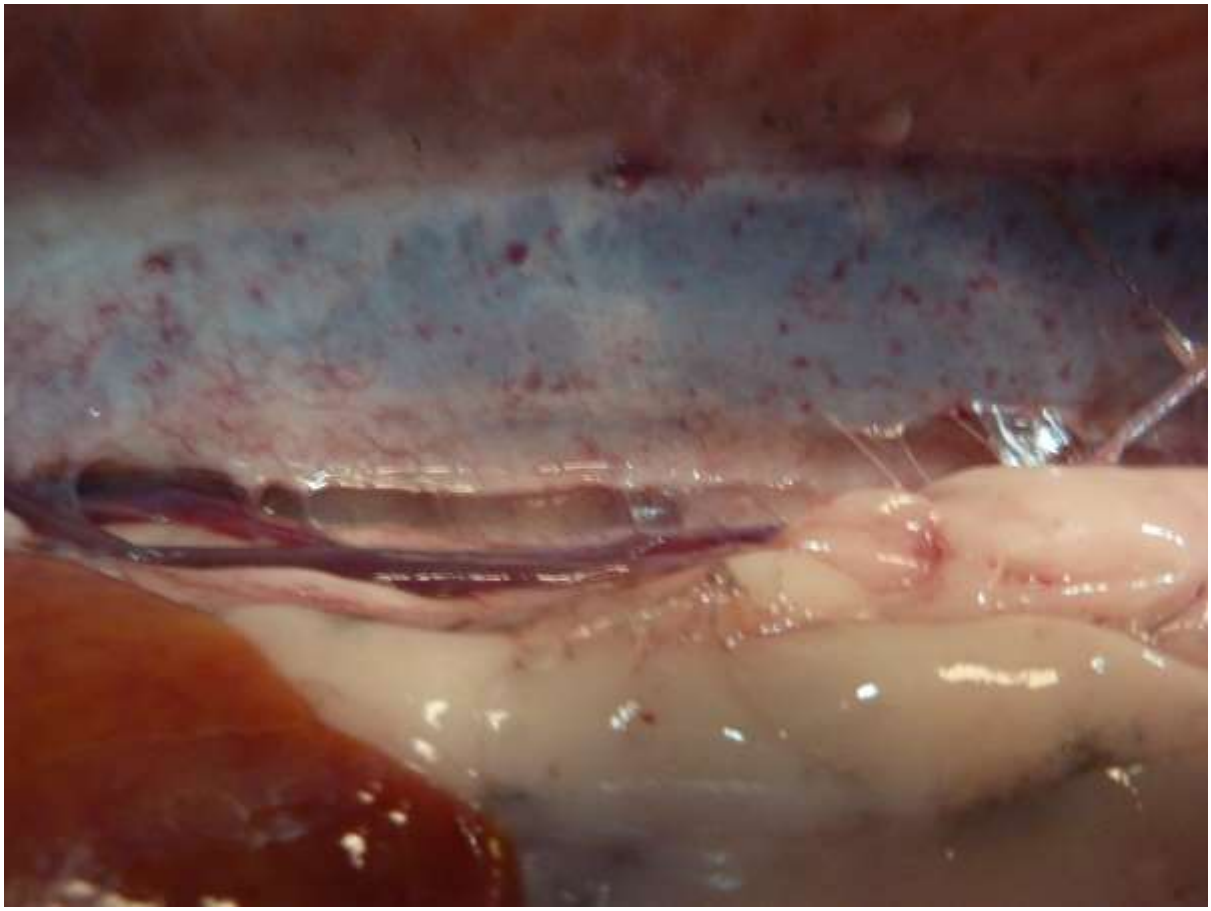
F1 (Pen 5)



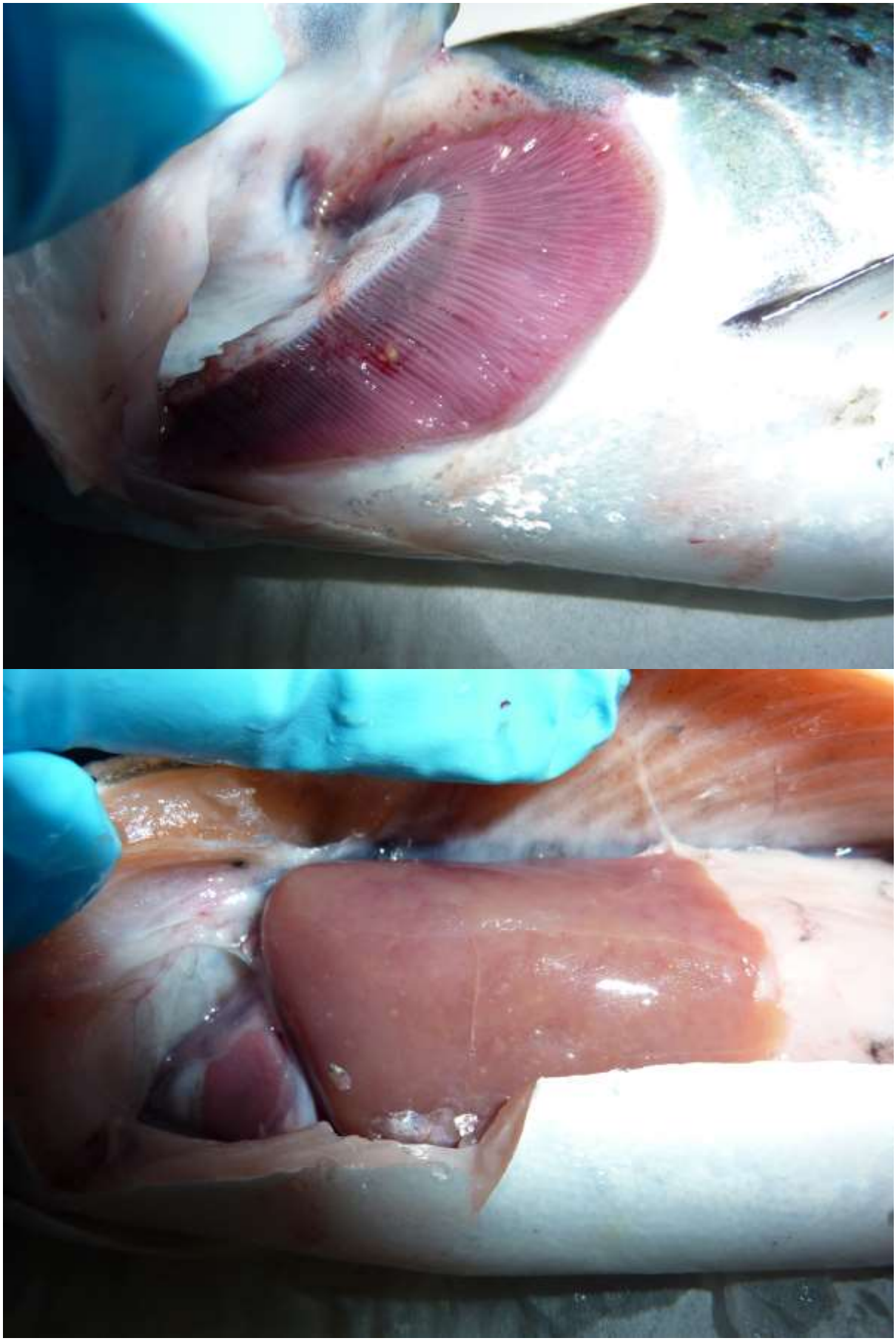
F2 (Pen5)







F3 (Pen8)



F4 (Pen 9)

F5 (Pen 9)