

Case No: 2023-0354 Date of visit: 08/08/2023

Time spent on site: 7.5 Hours Main Inspector:

Site No: FS0226 Site Name: Inchmore
Business No: FB0119 Business Name: Mowi Scotland Ltd

Case Types: 1 DIA 2 REP 3 4 5 6

Water Temp (°C): 14 Thermometer No: Site FHI 045 completed N/A

Observations: Region: HI Water type: F CoGP MA:

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:
N/a

Additional Case Information:

Inchmore is made up of a Hatchery unit, a fry unit, and an ongrowing unit. The hatchery unit consists of 4 facilities (A, B, C & D) and the fry unit has two sub units (A&B). Between the early hours of Friday 04 to Sunday 06 August 2023 (wk 31) Fry Unit B sustained a significant mortality of 1,132,880 fish (69.67%).

The cause of this mortality is currently unknown, the fish in this unit were transferred over from hatchery units C & D the previous week. There was an initial transfer related mortality of 420,040 fish (16.85%) immediately post transfer into fry unit B, however the mortality reduced and recovered soon after the initial transfer. Following this transfer (week 30), Fry unit B received its first routine treatment of formalin and cress at the beginning of week 31 (31 July - 02 August 2023) which saw a reduction in mortality from 13,027 on Monday 31 July to 3,944 on Thursday 03 August 2023 in the unit. The same batch of formalin and cress were also used to treat other units within Inchmore which did not sustain any mortality. Following the mortality event in week 31, the current stock left in Fry unit B have recovered well and mortality has now reduced to normal levels. PCR and Histology samples were taken from fish in Fry Unit B on Friday 04 August 2023, along with water samples by MOWI's fish health team, results of which are still pending.

Upon the physical inspection of the remaining stock in Fry unit B, fish were observed shoaling well and responding actively to the movement of the fish health inspector and the site manager whilst walking around the tanks. A few lethargic / moribund fish were observed around the mortality filter in each tank. Tank 3 and 13 in Fry unit B sustained the highest count for mortality during the mortality event in week 31 of the tanks still remaining that contains stock, so fish were removed from these tanks for diagnostic sampling.

Inchmore's ongrowing unit is made up of two smolt sub units (A & B). Another significant mortality event occurred between week 28 to week 30 within smolt unit B, which is stocked with a mix of Q3 Stofnfisker and Aquagen fish. The mortality event peaked between weeks 29 and 30 which occurred immediately post vaccination. Mortality in this unit rose from 3.89% in week 29 to 8.49% in week 30. It is thought that this mortality may have been due to some form of compromisation from high losses which occurred previously in the production cycle at incubation. In week 31 mortality in this unit reduced to 0.42%, all Aquagen tanks received a post vaccination treatment of formalin and bronopol following the mortality the previous week, fish now appear to be doing well again.

From the physical inspection of smolt unit B, fish were observed shoaling well and responding positively to routine feeding regimes. The water quality appeared slightly dull and murky which was limiting to visibility, this was due to a recent clean of the unit's biofilters. A few lethargic/moribund fish were observed around the tank's mortality filters, several fish with deformities were also observed during the inspection of this unit. Fish were removed for diagnostic sampling from tanks 5 and 8 as these tanks were most heavily impacted by mortality during the recent event.

Mortalities amounting to anything less than one tonne are incinerated onsite, any excess mortality is removed by BR solutions as whole fish waste.

Stocking details as of 08/08/2023:

Smolt Unit A: 2,077,800 2023 Q4 AquaGen SAL @ 27.88g, 9 tanks

Smolt Unit B: 1,633,626 2023 Q3 AquaGen & STOFN SAL @ 67.08g, 9 tanks

Fry Unit A: 1,515,155 2024 Q2 AquaGen & STOFN SAL @ 4.13g, 15 tanks

Fry Unit B: 492,172 2024 Q2 STOFN SAL @ 0.38g, 15 tanks

Hatchery A + B: 4,075,366 2024 STOFN SAL @0.1g (OVA)

Hatchery C + D: Fallow.

Site thermometer used for biosecurity.

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="49"/>		Facilities stocked	<input type="text" value="34"/>		No facilities inspected	<input type="text" value="49"/>	
Species	<input type="text" value="SAL"/>	<input type="text" value="SAL"/>	<input type="text" value="SAL"/>	<input type="text" value="SAL"/>	<input type="text" value="SAL (OVA)"/>			
Age group	<input type="text" value="2023 Q3"/>	<input type="text" value="2023 Q4"/>	<input type="text" value="2024 Q2 (1)"/>	<input type="text" value="2024 Q2 (2)"/>	<input type="text" value="2024 Q2"/>			
No Fish	<input type="text" value="1,633,626"/>	<input type="text" value="2,077,800"/>	<input type="text" value="1,515,155"/>	<input type="text" value="492,172"/>	<input type="text" value="4,075,366"/>			
Mean Fish Wt	<input type="text" value="67.08g"/>	<input type="text" value="27.88g"/>	<input type="text" value="4.13g"/>	<input type="text" value="0.38g"/>	<input type="text" value="0.1g"/>			
Next Fallow Date (Site)	<input type="text" value="N/A"/>			Next Input Date (Site)	<input type="text" value="Jan 2024"/>			
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="See additional info"/>							

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)?		Y
If yes, detail:	Formalin	
If other, detail:	Cress	
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)?	Formalin	
If other, detail:	Cress	
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 <i>increased (unexplained)</i> 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 <i>how</i> and <i>when</i> 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?		N
2. If yes, are results available for inspection?		
3. Any significant results?		
If yes, detail (if not detailed under recent disease problems).		

Records checked between:	18/04/23 - 08/08/23
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Case Number:	2023-0354	Site No:	FS0226	Insp:		
Date of Visit	08/08/2023	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	10
	Frequency of movements on from equivalent zone or compartment including third country	0	9	18	26	0
	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				0
	Farm is on-line or in a coastal zone with category I farms upstream or within 1 tidal excursion	1	2	4		
	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		0
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 Rank					28	

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/Pool - click

Pool/Fish No	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	F1	F3
Fish nos	1-2	3-4	5-6	7-8	9-10	17-19	26-30	37-40	47-50	57-60	1	3
Pool Group												
Species	SAL	SAL	SAL	SAL	SAL	SAL	SAL	SAL	SAL	SAL		
Average weight	65g	65g	65g	65g	65g	0.38g	0.38g	0.38g	0.38g	0.38g	65g	65g
Sex	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Water Type	FW	FW	FW	FW	FW	FW	FW	FW	FW	FW	FW	FW
Stock Details		Inchmore (FS0226)	Inchmore (FS0226)	Inchmore (FS0226)	Inchmore (FS0226)	Inchmore (FS0226)	Inchmore (FS0226)	Inchmore (FS0226)	Inchmore (FS0226)	Inchmore (FS0226)	Inchmore (FS0226)	Inchmore (FS0226)
	Stock Origin											
Facility No	2	2	5	8	8	3	3	13	13	13	2	2

08/2023 Additional Sample Information:
 Virology samples pooled due to size of fish. Histology samples from Fry Unit taken as whole fish, there should be three fish in each pot.

45 Total Tests assigned 6

F5	F7	F9	F11	F12	F13	F14	F15	F16	F20	F21	F22	F23	F24	F25	F31
5	7	9	11	12	13	14	15	16	20	21	22	23	24	25	31
65g	65g	65g	0.38g	0.38g	0.38g	0.38g	0.38g	0.38g	0.38g	0.38g	0.38g	0.38g	0.38g	0.38g	0.38g
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
FW	FW	FW	FW	FW	FW	FW	FW	FW	FW	FW	FW	FW	FW	FW	FW
Inchmore (FS0226)	Inchmore (FS0226)	Inchmore (FS0226)	Inchmore (FS0226)	Inchmore (FS0226)	Inchmore (FS0226)	Inchmore (FS0226)	Inchmore (FS0226)	Inchmore (FS0226)	Inchmore (FS0226)	Inchmore (FS0226)	Inchmore (FS0226)	Inchmore (FS0226)	Inchmore (FS0226)	Inchmore (FS0226)	Inchmore (FS0226)
5	8	8	3	3	3	3	3	3	3	3	3	3	3	3	13

Case no: **2023-0354** Site No: **FS0226** Method of killing:

Date of visit: **08/08/2023** Inspector(s): Sheet Relevant: **Y**

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

Fish Number		F1 - F1	F11 - F60	F1	F3				
Time sampled after death (if > 45 minutes)									
External Signs									
Behaviour	Moribund	W	W	W	W				
	Lethargic	W	W	W	W				
	Hanging vertical								
	Spiralling								
	Flashing								
	Loss of equilibrium								
Body	Dark								
	Distended abdomen								
	Anorexic								
	Scale Oedema								
Opercula	Shortened			M	W				
	Flared								
Haemorrhaging	Throat								
	Ventrum								
	Base of fins								
	Elsewhere								
Eyes	Exophthalmic				S				
	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								

Case no: 2023-0354

Date of visit: 08/08/2023

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												
Body	Loss of equilibrium												
	Dark												
	Distended abdomen												
	Anorexic												
Opercula	Scale Oedema												
	Shortened												
Haemorrhaging	Flared												
	Throat												
	Ventrum												
	Base of fins												
Eyes	Elsewhere												
	Exophthalmic												
	Enophthalmic (sunken)												
	Cataract												
Gills	Haemorrhagic												
	Pale												
	Zoned												
Lesions	Necrotic												
	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)												
Pyloric caeca	Granulomas												
	Lesions												
	Petechial haem												
	Tubules mauve												
Spleen	Lack of fat												
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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:

Fish removed for sampling were held alive in buckets whilst sampling was conducted, prior to saampling each pooled group of fish they were anaesthetised, allowing for all fish to be sampled within 45 minutes of death.

Site No: FS0226
Case No: 2023-0354
Nature of non-compliance:
Action taken (FHI):
Non-compliance relevant to (delete): VirologyMolGen/Bacteriology/Histology/Parasitology



Case No: **2023-0354** Date of visit: **08/08/2023**
 Site No: **FS0226** Inspector: **[REDACTED]**

Results Summary	Freq.	Date of Notification						
		Database	Insp	Phone	Insp	Writing	Insp	2 nd Insp
MG_IPN	1/10	16/08/2023		16/08/2023		07/11/2023		
MG_SAV	1/10	16/08/2023		16/08/2023		07/11/2023		
GS	0/10	16/08/2023		16/08/2023		07/11/2023		
AREO	4/15	16/08/2023		16/08/2023		07/11/2023		
GPAT	0/10	16/08/2023		16/08/2023		07/11/2023		
VHS	0/10	16/08/2023		16/08/2023		07/11/2023		
PSFL	2/15	16/08/2023		16/08/2023		07/11/2023		
IHNP	0/10	16/08/2023		16/08/2023		07/11/2023		
SKIN	0/10	16/08/2023		16/08/2023		07/11/2023		

Report Summary			
Case Type	Date	Insp	2 nd Insp
DIA	25/10/2023		
DIA	25/01/2023		

AMENDED FISH HEALTH INSPECTORATE VISIT REPORT

SUMMARY FOR INFORMATION OF SITE OPERATOR

BUSINESS No	FB0119	DATE OF VISIT	08/08/2023
SITE No	FS0226	SITE NAME	Inchmore
CASE No	20230354	INSPECTOR	██████████

This report replaces the fish health report R09 issued on 06/10/2023 by ██████████. The previous report should be discarded as an ISA test was not conducted. For virology, samples tested negative for infectious haematopoietic necrosis virus (IHNV), salmonid alphavirus (SAV) and viral haemorrhagic septicemia virus (VHSV).

Section 1: Summary

The above site was inspected following reports of increased mortality by the farm operator. During the physical inspection of all tanks, sixty fish (ten pooled samples) were removed for diagnostic sampling.

Histopathological examination revealed relatively low proliferative gill pathology with minor degenerative changes and inflammation in some fish. Internal findings were slight and non-specific, with no evidence of specific disease. A peritonitis was observed in the larger fish, potentially associated with vaccine administration. No significant pathology was observed.

Aeromonas sp. with characteristics which best fit *Aeromonas sobria* and *Pseudomonas fluorescens* were identified. The level and mixed purity of growth observed would not suggest these bacteria would be implicated in morbidity of the population. The significance of these bacteria was greater in some individual fish, see bacteriological section for more details.

Samples tested positive by QPCR for Infectious pancreatic necrosis virus (IPNV) and salmonid alphavirus (SAV). However histopathological observations were not consistent with IPN or SAV pathology.

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 was inspected following reports of two separate mass mortality events.

Between the 04 and 06 August 2023 (week 31) the sites fry unit (B), sustained a significant mortality of 69.67% (1,132,880 fish). The cause of mortality at the time was unknown. Upon inspection of the stock within fry unit (B), fish were observed shoaling well and responding actively to the movement of personnel walking around the tanks, at the time of inspection mortality levels on site within this unit had returned to more normal levels. During the physical inspection of the site, some weak swimmers displaying signs of lethargy were observed residing within the mortality filters, fifty of these fish were removed for sampling.

No obvious external or internal signs of disease were observed during the sampling process.
R09

Between weeks 28 and 30 another significant mortality was reported at Inchmore, this event occurred within the site's smolt unit (B). The mortality event peaked between weeks 29 and 30 where mortality in this unit rose from 3.89% in week 29 to 8.49% in week 30. From the physical inspection of smolt unit (B), fish were observed shoaling well and responding positively to routine feeding regimes. The water quality appeared slightly dull and murky which was limiting to visibility, this was due to a recent clean of the unit's biofilters. A few lethargic fish were observed around the tank's mortality filters in tanks 2, 5 and 8. Ten of these fish were removed for diagnostic sampling.

Upon the external examination of these fish from smolt unit (B), F1 and F3 had shortened opercula and the eyes of F3 were exophthalmic. No obvious gross pathology was observed in any of the fish sampled.

Samples

Samples were collected from 60 fish according to the table below:

Fish number	Pool number	Facility number	Species	Stage	Origin
F1 – F2	P1	2	Atlantic Salmon	Q3 65g	Inchmore (FS0226)
F3 – F4	P2	2	Atlantic Salmon	Q3 65g	Inchmore (FS0226)
F5 – F6	P3	5	Atlantic Salmon	Q3 65g	Inchmore (FS0226)
F7 – F8	P4	8	Atlantic Salmon	Q3 65g	Inchmore (FS0226)
F9 –10	P5	8	Atlantic Salmon	Q3 65g	Inchmore (FS0226)
F11-F20	P6	3	Atlantic Salmon	Q4 0.38g	Inchmore (FS0226)
F21-F30	P7	3	Atlantic Salmon	Q4 0.38g	Inchmore (FS0226)
F31-F40	P8	13	Atlantic Salmon	Q4 0.38g	Inchmore (FS0226)
F41-F50	P9	13	Atlantic Salmon	Q4 0.38g	Inchmore (FS0226)
F51-F60	P10	13	Atlantic Salmon	Q4 0.38g	Inchmore (FS0226)

Results

Bacteriology: Kidney and spleen material from P1 – P10 was inoculated onto appropriate media for the isolation of bacteria.

The following bacteria were isolated:

- *Aeromonas* sp. – F7, F11, F20, F31 and F51 (Kidney).
- *Pseudomonas fluorescens* F20 (Kidney), F3, F21 and F42 (Spleen).

A third bacterium was isolated from plates taken from kidney and spleen material from F51. This bacterium was not fully identified, however, it did not match the characteristics of any known fish pathogen and is likely to be of an environmental origin.

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 (IPNV)

Number	Endogenous control value	Cp	Cp Values			Reported Result (PCR)
P1-2, 4-10	-	-	-	-	-	NEGATIVE
P3	15.2	35.81	35.61	36.14		POSITIVE

Salmonid alphavirus (SAV)

Number	Endogenous control value	Cp	Cp Values			Reported Result (PCR)
P1-4, 6-10	-	-	-	-	-	NEGATIVE
P5	15.2	35.81	35.61	36.14		POSITIVE

The samples tested negative for infectious haematopoietic necrosis virus (IHNV), salmonid alphavirus (SAV) and viral haemorrhagic septicaemia 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 P1 – P10. The tissue samples were fixed in 10% neutral buffered formalin.

Histopathological examination revealed the following:

Gill: Lamellar hyperplasia, mild, multifocal (F1, F4), mainly at the tips (F1) and some lamellar necrosis (F5).

Skin & Muscle: Within the normal range.

Heart: Myocarditis, minor, multifocal (F1). Epicarditis (F3). F3, F5: No atrium in section.

Gut and pyloric caeca: Peritonitis (F2, F3, F4, F5).

Pancreas: Within the normal range.

Liver: Mild capsulitis (F1), cuffing, mild, diffuse, hepatitis, focal, mild (5), hepatocellular vacuolation (macrovesicles) (F1, F2, F3, F4).

Kidney: Presence of hyaline droplets (F1-F4), some renal tubule dilation (F4).

Spleen: Necrosis, multifocal (F3), peritonitis (F1), capsulitis (F2, F3).

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: 25/01/2024

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 \(www.gov.scot\)](https://www.gov.scot/policies/fish-health-inspectorate/)



FISH HEALTH INSPECTORATE VISIT REPORT

SUMMARY FOR INFORMATION OF SITE OPERATOR

BUSINESS No	FB0119	DATE OF VISIT	08/08/2023
SITE No	FS0226	SITE NAME	Inchmore
CASE No	20230354	INSPECTOR	[REDACTED]

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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 was inspected following reports of two separate mass mortality events.

Between the 04 and 06 August 2023 (week 31) the sites fry unit (B), sustained a significant mortality of 69.67% (1,132,880 fish). The cause of mortality at the time was unknown. Upon inspection of the stock within fry unit (B), fish were observed shoaling well and responding actively to the movement of personnel walking around the tanks, at the time of inspection mortality levels on site within this unit had returned to more normal levels. During the physical inspection of the site, some weak swimmers displaying signs of lethargy were observed residing within the mortality filters, fifty of these fish were removed for sampling.

No obvious external or internal signs of disease were observed during the sampling process.

Between weeks 28 and 30 another significant mortality was reported at Inchmore, this event

occurred within the site's smolt unit (B). The mortality event peaked between weeks 29 and 30 where mortality in this unit rose from 3.89% in week 29 to 8.49% in week 30. From the physical inspection of smolt unit (B), fish were observed shoaling well and responding positively to routine feeding regimes. The water quality appeared slightly dull and murky which was limiting to visibility, this was due to a recent clean of the unit's biofilters. A few lethargic fish were observed around the tank's mortality filters in tanks 2, 5 and 8. Ten of these fish were removed for diagnostic sampling.

Upon the external examination of these fish from smolt unit (B), F1 and F3 had shortened opercula and the eyes of F3 were exophthalmic. No obvious gross pathology was observed in any of the fish sampled.

Samples

Samples were collected from 60 fish according to the table below:

Fish number	Pool number	Facility number	Species	Stage	Origin
F1 – F2	P1	2	Atlantic Salmon	Q3 65g	Inchmore (FS0226)
F3 – F4	P2	2	Atlantic Salmon	Q3 65g	Inchmore (FS0226)
F5 – F6	P3	5	Atlantic Salmon	Q3 65g	Inchmore (FS0226)
F7 – F8	P4	8	Atlantic Salmon	Q3 65g	Inchmore (FS0226)
F9 –10	P5	8	Atlantic Salmon	Q3 65g	Inchmore (FS0226)
F11-F20	P6	3	Atlantic Salmon	Q4 0.38g	Inchmore (FS0226)
F21-F30	P7	3	Atlantic Salmon	Q4 0.38g	Inchmore (FS0226)
F31-F40	P8	13	Atlantic Salmon	Q4 0.38g	Inchmore (FS0226)
F41-F50	P9	13	Atlantic Salmon	Q4 0.38g	Inchmore (FS0226)
F51-F60	P10	13	Atlantic Salmon	Q4 0.38g	Inchmore (FS0226)

Results

Bacteriology: Kidney and spleen material from P1 – P10 was inoculated onto appropriate media for the isolation of bacteria.

The following bacteria were isolated:

- *Aeromonas* sp. – F7, F11, F20, F31 and F51 (Kidney).
- *Pseudomonas fluorescens* F20 (Kidney), F3, F21 and F42 (Spleen).

A third bacterium was isolated from plates taken from kidney and spleen material from F51. This bacterium was not fully identified, however, it did not match the characteristics of any known fish pathogen and is likely to be of an environmental origin.

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 (IPNV)

Number	Endogenous control Cp value	Cp Values			Reported Result (PCR)
P1-2, 4-10	-	-	-	-	NEGATIVE
P3	15.2	35.81	35.61	36.14	POSITIVE

Salmonid alphavirus (SAV)

Number	Endogenous control Cp value	Cp Values			Reported Result (PCR)
P1-4, 6-10	-	-	-	-	NEGATIVE
P5	15.2	35.81	35.61	36.14	POSITIVE

The samples tested negative for infectious haematopoietic necrosis virus (IHNV), infectious salmon anaemia virus (ISAV), 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 P1 – P10. The tissue samples were fixed in 10% neutral buffered formalin.

Histopathological examination revealed the following:

Gill: Lamellar hyperplasia, mild, multifocal (F1, F4), mainly at the tips (F1) and some lamellar necrosis (F5).

Skin & Muscle: Within the normal range.

Heart: Myocarditis, minor, multifocal (F1). Epicarditis (F3). F3, F5: No atrium in section.

Gut and pyloric caeca: Peritonitis (F2, F3, F4, F5).

Pancreas: Within the normal range.

Liver: Mild capsulitis (F1), cuffing, mild, diffuse, hepatitis, focal, mild (5), hepatocellular vacuolation (macrovesicles) (F1, F2, F3, F4).

Kidney: Presence of hyaline droplets (F1-F4), some renal tubule dilation (F4).

Spleen: Necrosis, multifocal (F3), peritonitis (F1), capsulitis (F2, F3).

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

Signed:



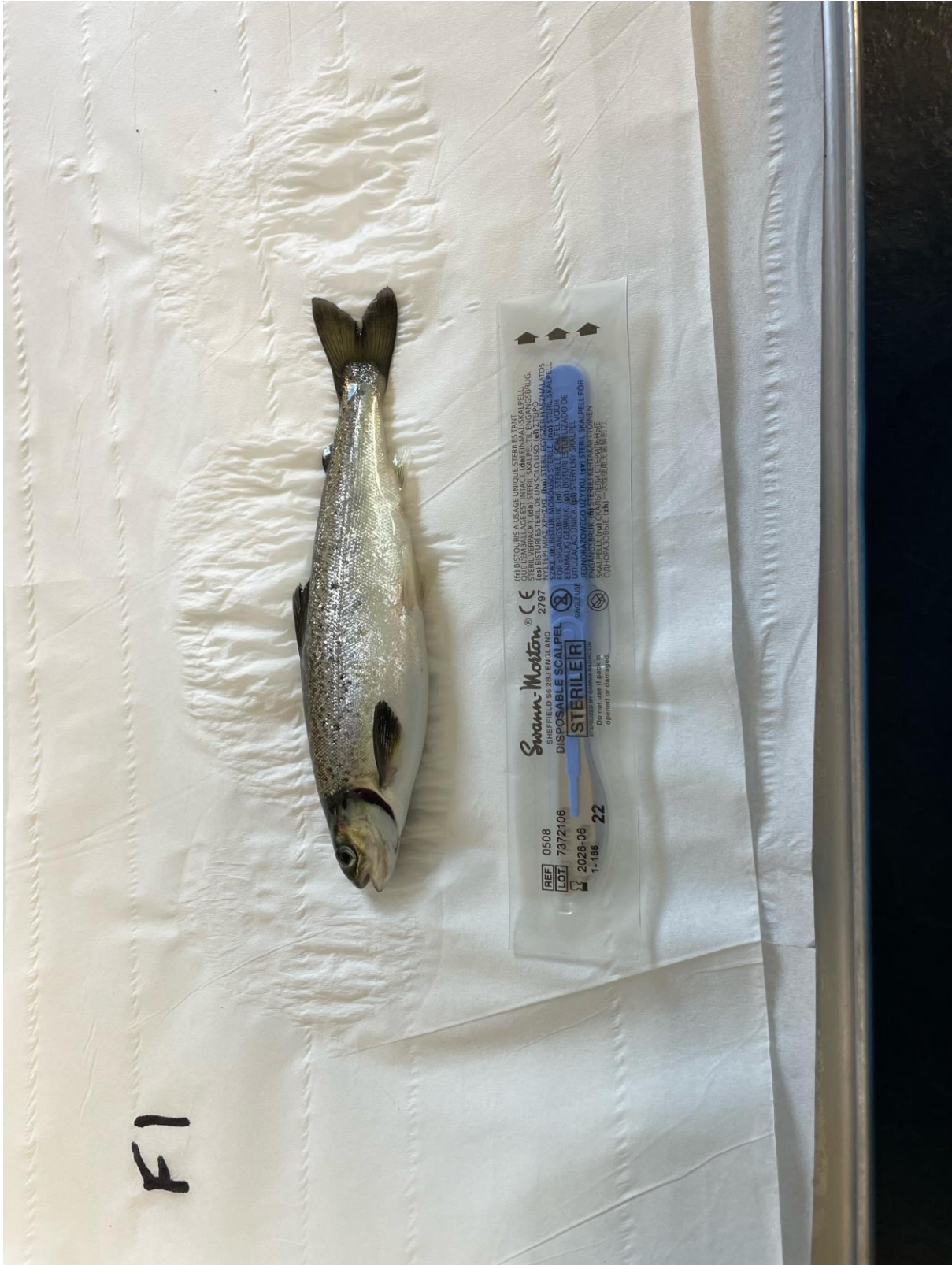
Fish Health Inspector

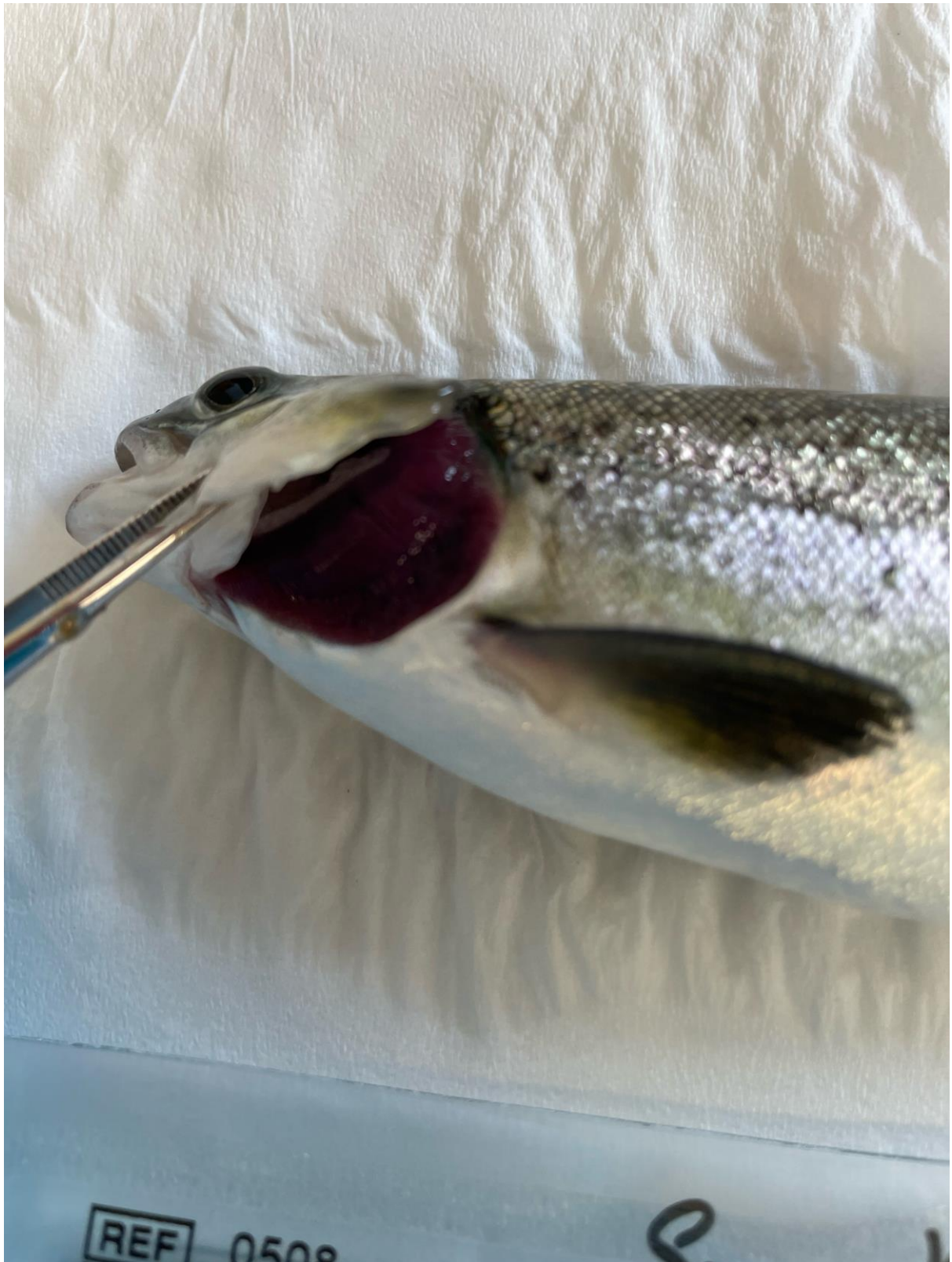
Date: 06/10/2023

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 \(www.gov.scot\)](https://www.gov.scot/resources/consultations-petitions-and-statements/fish-health-inspectorate-service-charter-2023/)

Inchmore (FS0226) AFH-2023-0354
08/08/2023

P1

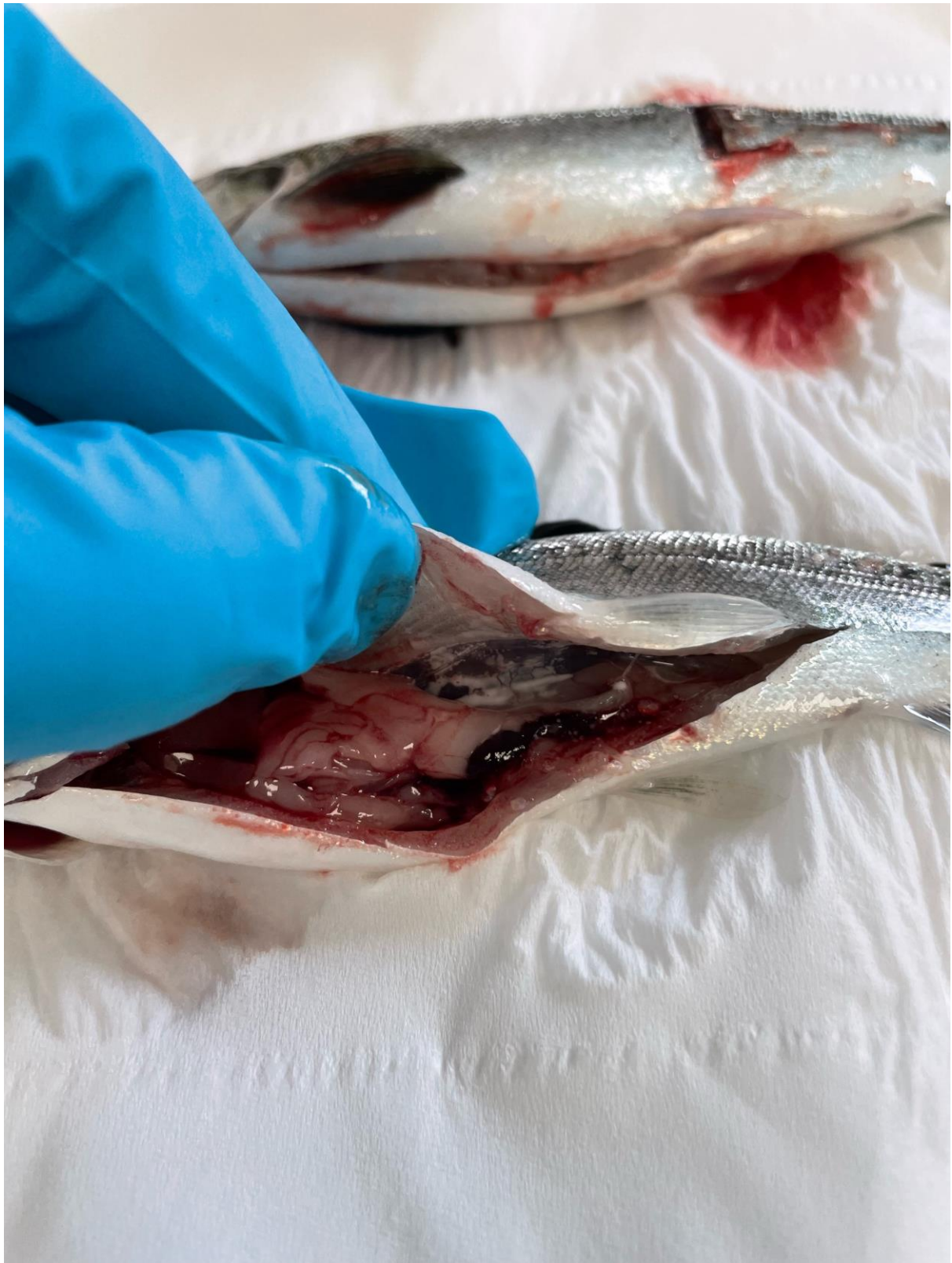






P2





P3





Brain histology taken



P4



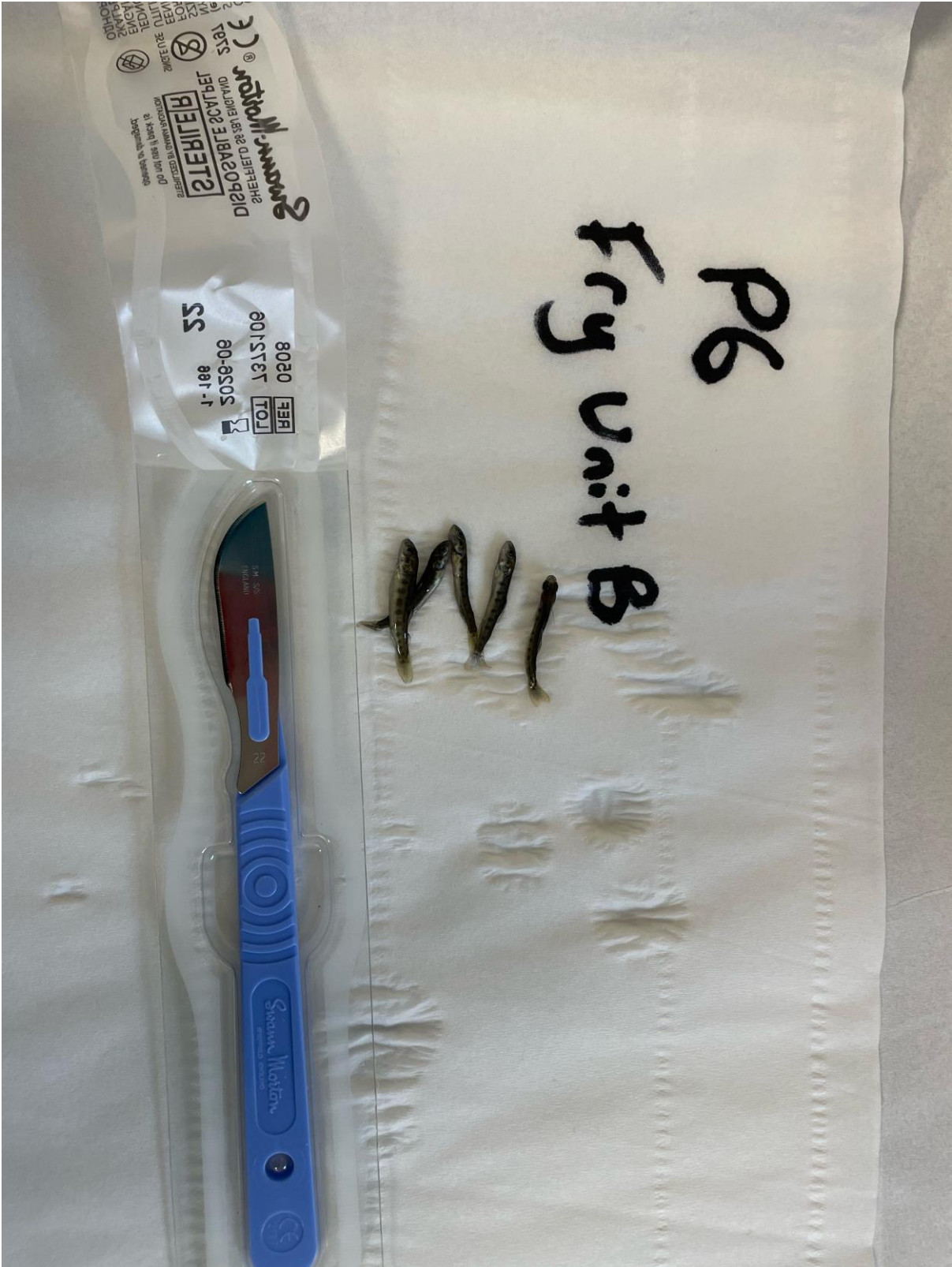


P5

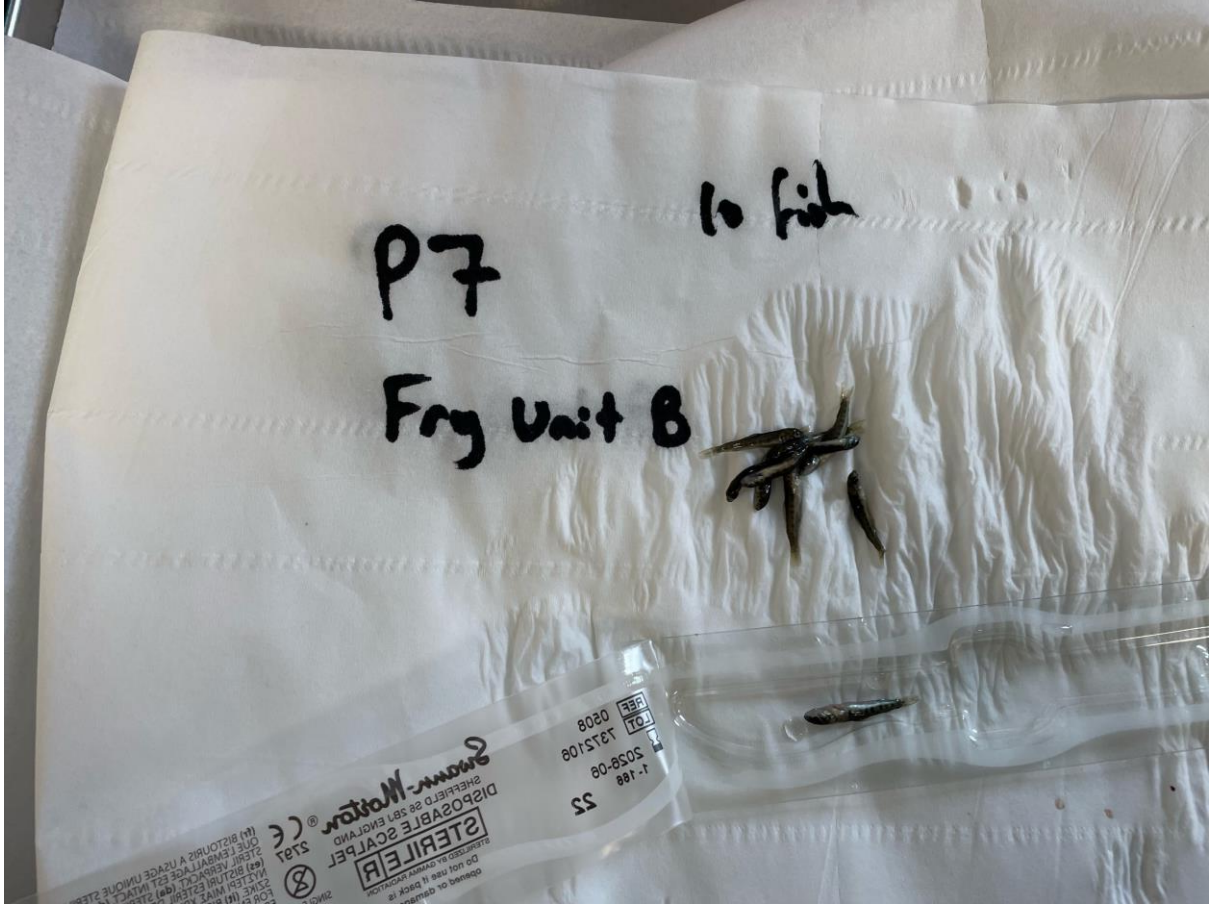




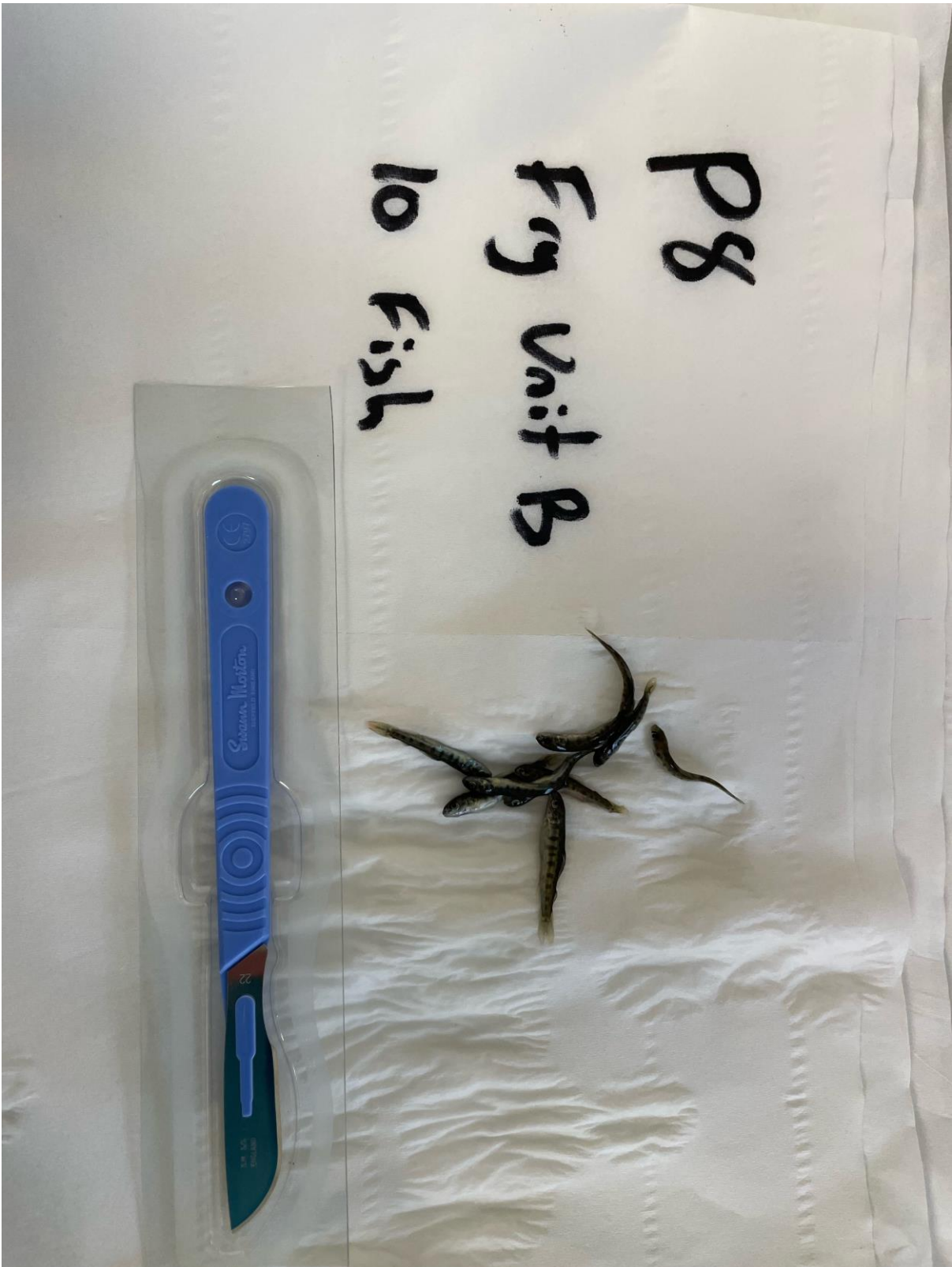
P6



P7



P8



P9

Fig out B

10 Fish



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P10
Fry Unit B
10 Fish

