

Case No: 2023-0355 Date of visit: 09/08/2023

Time spent on site: 4 Hours Main Inspector:

Site No: FS1274 Site Name: Kishorn West
Business No: FB0125 Business Name: Scottish Sea Farms Ltd

Case Types: 1 DIA 2 REP 3 4 5 6

Water Temp (°C): 13.9 Thermometer No: Site FHI 045 completed N/A

Observations: Region: HI Water type: S CoGP MA: M-19

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:

[Empty text box for visit detail reason]

Additional Case Information:

Site inspected in a calm sea state, sun with little cloud cover which allowed for good clear visibility of the stocks.

From the physical inspection of the site, a large population in each pen was observed shoaling and moving actively. There were approximately a dozen to two dozen lethargic / moribund fish observed in each pen. 5 fish displaying clinical signs of disease were removed for diagnostic sampling. The gills of all 5 fish were very pale and anaemic, indicative of a recent environmental insult, internally the fish appeared healthy, with no clear signs of disease observed.

The site is currently using both wrasse and lumpfish, both species were observed during the inspection with both stocks appearing healthy. No clinical signs of disease were observed across the site in either of the two cleaner fish stocks. Lumpfish are from Bantry (Ireland) and Wrasse are wild caught from Scotland.

In week 26 the site identified a large increase in numbers of micro jelly fish (Obelia) whilst conducting routine plankton checks which resulted in acute gill damage leading to an initial spike in mortality in week 26. The levels of mortality reduced in wk 27 following a reduction in plankton levels that week however mortality began to spike again in week 28 to present as a large population have developed very pale gills (anaemia from blood loss) following the initial insult which is causing on-going higher mortality. Plankton levels are currently low. In recent weeks the site have been conducting targeted harvest to reduce biomass, the site is now planning to fallow by the end of this month as mortality is still elevated and on-going.

Site thermometer used to record water temperature as T309 was faulty.

18/07/2023 - 3/6 fish sampled tested positive for pasturella, 6/6 positive for AGD.

Cleanerfish mortality : Wrasse - Week 28 to Week 31 was 0.41% (60 fish).

Cleanerfish mortality : Lumpfish - Week 28 to Week 31 was 0.54% (139 fish)

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="8"/>	No facilities inspected	<input type="text" value="10"/>
Species	<input type="text" value="SAL"/>	<input type="text" value="LUM"/>	<input type="text" value="WRS"/>		
Age group	<input type="text" value="2023"/>	<input type="text" value="2023"/>	<input type="text" value="2023"/>		
No Fish	<input type="text" value="170,668"/>	<input type="text" value="33,800"/>	<input type="text" value="13,200"/>		
Mean Fish Wt	<input type="text" value="4.4kg"/>	<input type="text" value="120g"/>	<input type="text" value="150g"/>		
Next Fallow Date (Site)	<input type="text" value="August 2023"/>		Next Input Date (Site)	<input type="text" value="December 2023"/>	
Recent (last 4 wks) disease problems?			Any escapes (since last visit)?	<input type="text" value="Y"/>	<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)?	<input type="checkbox"/>	Y
If yes, detail:	Benzocaine	
If other, detail:	N/a	
2. Medicines records available for inspection?	<input type="checkbox"/>	Y
3. Are records complete and correctly entered?	<input type="checkbox"/>	Y
4. Are fish in a withdrawal period?	<input type="checkbox"/>	Y
5. If yes, what treatment(s)?	Benzocaine	
If other, detail:	N/a	
6. Are medicines stored appropriately?	<input type="checkbox"/>	Y

Biosecurity Records

1. Biosecurity records available for inspection?	<input type="checkbox"/>
2. Has the manner and frequency of mortality removal, recording and safe disposal been considered?	<input type="checkbox"/>
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?	<input type="checkbox"/>
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?	<input type="checkbox"/>
5. Has the health status of aquaculture animals being stocked on the farm site been covered (equal or higher health status, certification if required)?	<input type="checkbox"/>
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.)?	<input type="checkbox"/>
7. Is documentation available regarding the measures in place to maintain the physical containment of aquaculture animals held on site?	<input type="checkbox"/>
8. Have the biosecurity procedures been adequately implemented on site?	<input type="checkbox"/>
If no, detail:	<input type="checkbox"/>

Results of Surveillance

1. Has any animal health surveillance been carried out by, or on behalf of, the business?	<input type="checkbox"/>	Y
2. If yes, are results available for inspection?	<input type="checkbox"/>	Y
3. Any significant results?	<input type="checkbox"/>	Y
If yes, detail (if not detailed under recent disease problems).	See additional info	

Records checked between:	17/07/23 - 09/08/23
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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	4.4kg	4.4kg	4.4kg	4.4kg	4.4kg							
Sex	N/A	N/A	N/A	N/A	N/A							
Water Type	SW	SW	SW	SW	SW							
Stock Details		Stofnfiskur	Stofnfiskur	Stofnfiskur	Stofnfiskur	Stofnfiskur						
	Stock Origin											
Facility No	6	2	2	1	1							

08/2023

Additional Sample Information:

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5

Total Tests assigned

3

Case no: **2023-0355** Site No: **FS1274** Method of killing:

Date of visit: **09/08/2023** Inspector(s): 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)		0	0	15	30	45				
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									
	Scale Oedema									
Opercula	Shortened									
	Flared									
Haemorrhaging	Throat									
	Ventrum									
	Base of fins									
	Elsewhere									
Eyes	Exophthalmic									
	Enophthalmic (sunken)									
	Cataract									
	Haemorrhagic									
Gills	Pale	M	S	S	W	S				
	Zoned		W	W						
	Necrotic		M	W						
Lesions	Flank									
	Elsewhere									
Vent	Inflamed									
	Trailing faeces									
Lice Load	Estimate numbers		5	3	4	2	6			
Internal Signs										
Ascites	Clear	S	W	M	W	W				
	Bloody									
Oedema	In tissues									
Heart	Pale/anaemic									
	Granulomas									
	Deformed									
Liver	Petechial haem									
	Gross haem									
	Tissue breakdown									
	Enlarged									
	Colour number(s)		3	3	4	3	5			
	Granulomas									
	Lesions		W							
Pyloric caeca	Petechial haem									
	Tubules mauve									
	Lack of fat									
Spleen	Enlarged									
	Granulomas									
Gut	No food present									
	Yellow pseudo-faeces	S	S	S	S	S				
	External haem									
	Internal haem									
Body wall	Haemorrhaging									
Swim bladder	Haemorrhaging									
	Fluid filled									
Kidney	Swollen									
	Grey									
	Granular									
	Liquefied									
General	Parasites present									
	Anaemia									

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Date of visit: 09/08/2023

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	Haemorrhaging														
	Haemorrhaging														
Kidney	Fluid filled														
	Swollen														
	Grey														
General	Granular														
	Liquefied														
	Parasites present														
Anaemia															

Additional comments:

Site No: FS1274
Case No: 2023-0355
Nature of non-compliance:
Action taken (FHI):
Non-compliance relevant to (delete): VirologyMolGen/Bacteriology/Histology/Parasitology



Case No: **2023-0355** Date of visit: **09/08/2023**

Site No: **FS1274** Inspector: **[REDACTED]**

Results Summary	Freq.	Date of Notification						
		Database	Insp	Phone	Insp	Writing	Insp	2 nd Insp
AGDQ	4/5	16/08/2023		16/08/2023				
IHNP	0/5	16/08/2023		16/08/2023				
IPNM	0/5	16/08/2023		16/08/2023				
PNST	4/5	16/08/2023		16/08/2023				
PMVP	0/5	16/08/2023		16/08/2023				
SPVP	3/5	16/08/2023		16/08/2023				
SALP	0/5	16/08/2023		16/08/2023				
VHSP	0/5	16/08/2023		16/08/2023				
Gill pathology - GPAT	4/5	30/08/2023		30/08/2023				
Amoebic gill disease (histology) - AMGD	3/5	30/08/2023		30/08/2023				
Complex gill issues (histology) - CGDH	4/5	30/08/2023		30/08/2023				
Liver pathology - LPAT	5/5	30/08/2023		30/08/2023				
Heart pathology - HPAT	5/5	30/08/2023		30/08/2023				
Postmortem changes - PMCH	5/5	30/08/2023		30/08/2023				
Vibrio species (culture) - VSPE	2/5	30/08/2023		30/08/2023				
*emailed								

Report Summary			
Case Type	Date	Insp	2 nd Insp
DIA	22/09/2023		



FISH HEALTH INSPECTORATE VISIT REPORT

SUMMARY FOR INFORMATION OF SITE OPERATOR

BUSINESS No	FB0125	DATE OF VISIT	09/08/2023
SITE No	FS1274	SITE NAME	Kishorn West
CASE No	20230355	INSPECTOR	[REDACTED]

Section 1: Summary

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

Histopathological examination revealed features consistent with mild, multifocal, hyperplastic branchitis, amoebic gill diseases confirmed by qPCR and vascular disturbances potentially associated with environmental factors/insults. Hepatocellular necrosis and minor myocarditis were also observed.

Vibrio sp. was identified on plates taken from kidney material of F1, F4 and F5. The level and purity of growth would not suggest this bacterium would be implicated as a primary cause of morbidity.

Four fish tested positive for *Neoparamoeba perurans* and *Paranucleospora theridion* by qPCR. Three fish tested positive for salmon gill poxvirus (SGPV).

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 prolonged increased mortality by the farm operator. At the time of visit the site was stocked with 170,668 Atlantic salmon at an average weight of 4.4kg.

A large increase in numbers of micro jelly fish (*Obelia* sp.) were identified during routine site plankton trawls in week 26 and again in week 28, over time the stock on site developed anaemia from blood loss as a result of these bloom events. At the time of inspection, plankton levels had dropped back within a normal range however mortality was still ongoing.

From the physical inspection of the site there were one to two dozen fish observed as lethargic and moribund in each pen. Five fish were removed for diagnostic sampling from pens 1, 2 and 6.

All fish sampled presented lethargic and moribund prior to removal for sampling. The gills of all 5 fish were very pale, with the gills of F2 and F3 appearing slightly zoned and necrotic. Internally, all fish sampled had clear ascites within the body cavities. The liver of F1, F2 and F4 was slightly pale and F2 had a small lesion to the liver. Yellow pseudo-faeces were present within the hind gut of each fish.

Samples

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

Fish number	Facility number	Species	Stage	Origin
F1	6	Atlantic salmon	2022 4.4 Kg	Stofnfiskur
F2	2	Atlantic salmon	2022 4.4 Kg	Stofnfiskur
F3	2	Atlantic salmon	2022 4.4 Kg	Stofnfiskur
F4	1	Atlantic salmon	2022 4.4 Kg	Stofnfiskur
F5	1	Atlantic salmon	2022 4.4 Kg	Stofnfiskur

Results

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

The following bacteria were isolated:

- *Vibrio* sp.: F1, F4 and F5 (Kidney).

The level and purity of this isolate would not suggest that it would be implicated as a primary cause of morbidity.

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

Fish Number	Endogenous control Cp value	Cp Values			Reported Result (PCR)
F1	-	-	-	-	Negative
F2	-	-	-	-	Negative
F3	19.10	33.47	32.87	32.71	POSITIVE
F4	19.43	35.27	36.85	35.34	POSITIVE
F5	19.60	31.95	32.28	32.51	POSITIVE

The samples tested negative for infectious haematopoietic necrosis virus (IHNV), infectious salmon anaemia virus (ISAV), viral haemorrhagic septicemia virus (VHSV), Infectious pancreatic necrosis virus (IPNV), Piscine myocarditis virus (PMCV) and Salmonid alphavirus (SAV).

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	19.99	28.77	28.93	29.00	POSITIVE
F3	19.10	31.40	31.07	31.13	POSITIVE
F4	19.43	32.38	32.18	32.81	POSITIVE
F5	19.60	29.17	29.12	29.12	POSITIVE

Paranucleospora theridion

Fish Number	Endogenous control Cp value	Cp Values			Reported Result (PCR)
F1	20.37	35.32	34.94	35.38	POSITIVE
F2	-	-	-	-	Negative
F3	19.10	34.18	34.47	34.39	POSITIVE
F4	19.43	36.78	34.11	34.07	POSITIVE
F5	19.60	31.04	30.53	30.58	POSITIVE

Histology: Tissue samples of gill, skin and skeletal muscle, heart, pyloric caeca, pancreas, hind gut, liver, spleen and kidney were taken from F1 – F5. The tissue samples were fixed in 10% neutral buffered formalin.

Histopathological examination revealed the following:

Gill: Lamellar hyperplastic branchitis, mild, multifocal (F2-F5), lamellar vascular disturbances (F2-F5). Presence of few amoeboid cells resembling *Neoparamoeba perurans* observed in F2, F5. F4 displayed between gill filaments plankton-like structure. Some aneurysmal dilation/telangiectasia and lamellar congestion and some vascular disturbances observed in all fish. F1 reading hindered by sampling artefacts.

Skin & Muscle: Within normal range.


Heart: Mild, multifocal, myocarditis (F1, F3) and minor necrosis (F5). Some thrombi nests in ventricular chamber. Minor pericarditis (F1, F4).

Gut and pyloric caeca: Marked cell sloughing potentially associated with post-mortem artefact observed in all fish. F2 reading hindered by sampling artefacts.

Liver: Hepatocellular necrosis, mild, multifocal (F1-F4) to coalescence F5, small foci of sinusoidal congestion (F1), cuffing (F1), hepatocellular vacuolation (macrovesicles), mild, diffuse (F2 & F3).

Kidney: Within the normal range.

Spleen: Within the normal range.

Signed: 

Date: 22/09/2023

Fish Health Inspector

R09

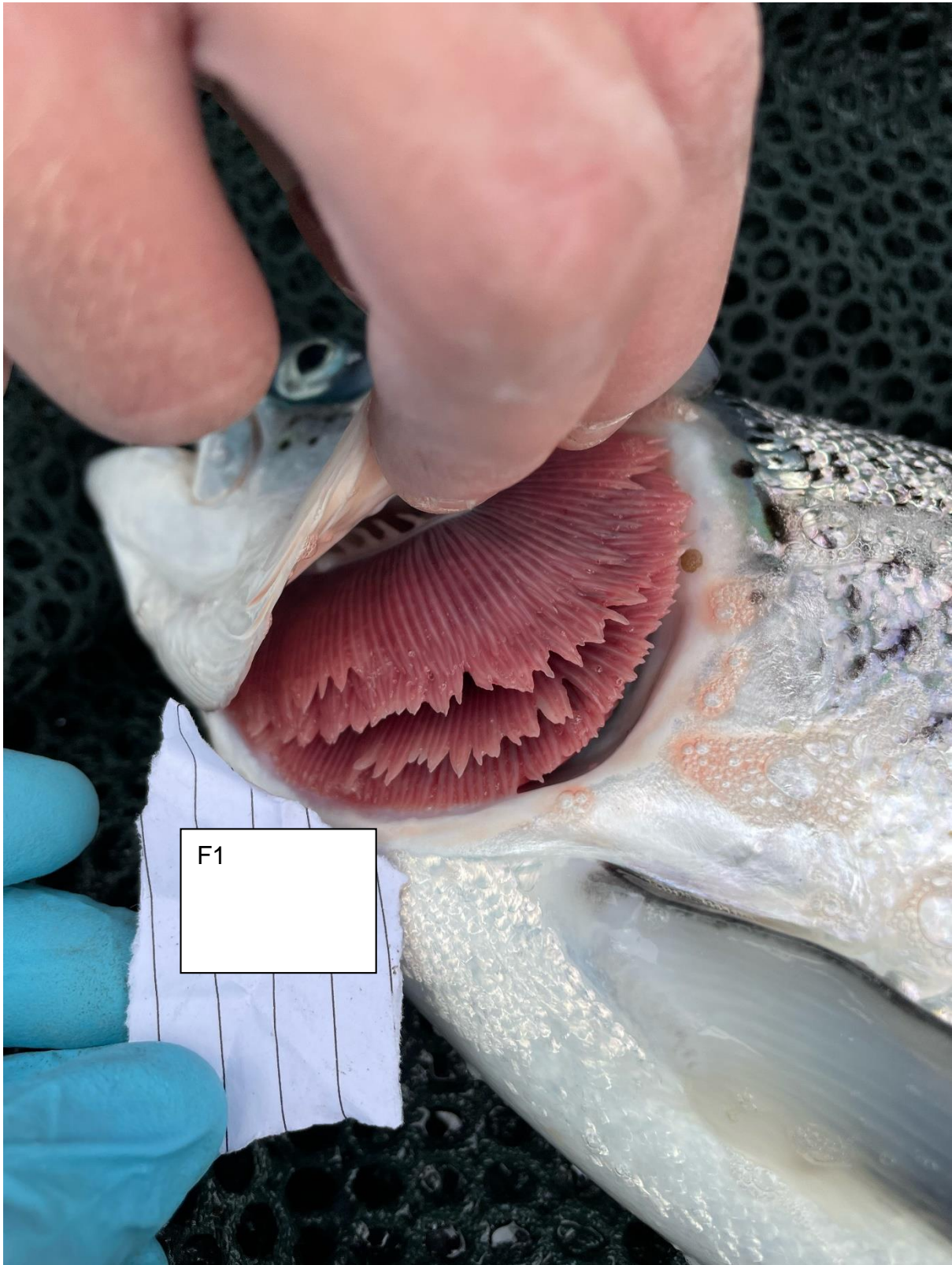
UKAS accredited testing laboratory No. 1964
Marine Laboratory, 375 Victoria Road, Aberdeen, AB11 9DB
Tel - 0131 244 3498 Fax - 0131 244 0944 Email - ms.fishhealth@gov.scot
Website - www.gov.scot/Topics/marine/science

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 \(www.gov.scot\)](http://www.gov.scot/Topics/marine/science/fishhealth)

R09

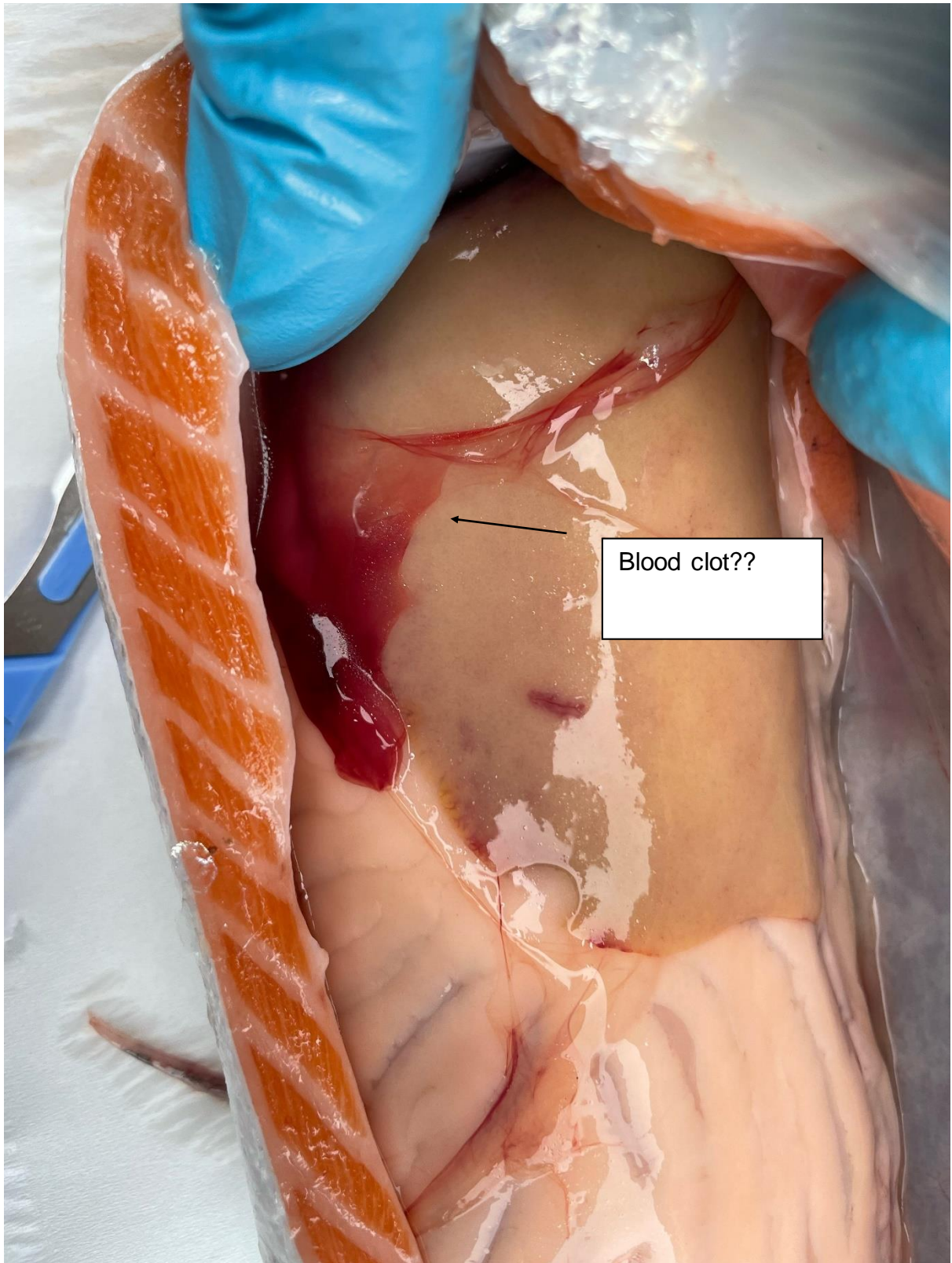
UKAS accredited testing laboratory No. 1964
Marine Laboratory, 375 Victoria Road, Aberdeen, AB11 9DB
Tel - 0131 244 3498 Fax - 0131 244 0944 Email - ms.fishhealth@gov.scot
Website - www.gov.scot/Topics/marine/science

F1









Blood clot??

F2







Lesion? Extra liver histology taken



F3





STERILIZED
SQUAWK MATHSON
STERILIZED
22

F3



F4



F4





F5





