

Case No:	<input type="text" value="2021-0132"/>	Date of visit:	<input type="text" value="14/05/2021"/>			
Time spent on site:	<input type="text" value="5.5 hours"/>	Main Inspector:	<input type="text" value=""/>			
Site No:	<input type="text" value="FS0253"/>	Site Name:	<input type="text" value="Loch Spelve (B)"/>			
Business No:	<input type="text" value="FB0125"/>	Business Name:	<input type="text" value="Scottish Sea Farms Ltd"/>			
Case Types:	1 <input type="text" value="REP"/>	2 <input type="text" value="WEL"/>	3 <input type="text" value="DIA"/>	4 <input type="text" value=""/>	5 <input type="text" value=""/>	6 <input type="text" value=""/>
Water Temp (°C):	<input type="text" value="9"/>	Thermometer No:	<input type="text" value="T172"/>	FHI 045 completed	<input type="text" value=""/>	
Observations:	Region:	ST	Water type:	S	CoGP MA	M-39
Dead/weak/abnormally behaving fish present?	<input type="text" value="Y"/>	If yes, see additional information/clinical score sheet.				
Clinical signs of disease observed?	<input type="text" value="Y"/>	If yes, see additional information/clinical score sheet.				
Gross pathology observed?	<input type="text" value="Y"/>	If yes, see additional information/clinical score sheet.				
Diagnostic samples taken?	<input type="text" value="Y"/>					

UNI/REG only - if unable to carry out intended visit detail reason below:

**Additional Case Information:**

Site paperwork inspected remotely by [REDACTED] on 12/05/2021. Physical inspection done by [REDACTED] on 14/05/2021. During physical inspection site inspection conducted due to a complaint from Scottish salmon watch. Whilst group were on site they filmed some moribund fish and fish with lesions that appear to be winter ulcers. The complaint was that a breach of the Animal Welfare Act 2006 had occurred.

WRS caught from wild. Caught in west coast of Scotland.

25/03 - 28/03 Paramove for AGD

28/04 - 30/04 Paramove for AGD

Lice levels low since start of cycle and two prophylactic treatments using azamethiphos (Salmosan)

Wk 9 mortality threshold exceeded to 1.29% 5,155 fish. Associated with a azamethiphos treatment combined with higher than average levels AGD and PGD.

Billy Bowie called onto site during peak in mortality to remove excess mortality that could not be incinerated. Fish disposed of at Barkip Biogas plant.

Ulcers first observed in end of March once fish were crowded for treatment

Some deformities observed by sites staff in February in stock, specifically a compressed head. Other deformities observed during site inspection including shortened snouts, shortened opercular, deformed fins and deformed spines.

Sub-population of runt fish developed, formed predominantly of deformed fish. Planned to bring runt fish off site using a grader on board a well boat that will visit on 17/05/2021. Fish taken off live and will be harvested. Larger fish will be left on site. Two particular cages affected are 12 and 7. Worst cages will be graded first on Monday.

Divers on site on Friday before inspection (07/05/2021) asked to look for deformities during a routine net inspection.

Deformities were observed and communicated to site manager.

Deformities not observed by site staff in all cages.

Proactively been removing runts and moribund fish since April using a hand net.

Complex gill issues diagnosed by FVG on 10/03/2021. FVG called onto site following mortality event. AGD diagnosed by FVG via swabs.

AGD scores improving since mid-April

Fish on site positive for salmonid gill pox, branchiomonas cysticola, piscine reovirus and AGD. Histo results from 13/05/2021, from Pharmaq Analytiq Ltd. Also tested for CMS, HSML, IPNV but not detected.

ADD was removed from the site after the a change in policy that required a license before using an ADD. Site in the process of Feed called "Assist-Skin" (from Biomar) has been used on site since the observation of lesions at the end of March this report. Thermolicer visits: 02/04/2021: cages 3 and 6 treated. 14/04/2021 - 16/04/2021 cages 1, 4, 7, 10, 11 and 12 treated.

During site inspection, 31 moribund fish were removed from the site using a hand net



Case No: **2021-0132** Site No: **FS0253**  
 Date of Visit: **14/05/2021** 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	<b>12</b>	Facilities stocked	<b>12</b>	No facilities inspected	<b>12</b>
Species	<b>SAL</b>	<b>WRS</b>			
Age group	<b>2020 S1</b>	<b>Mixed</b>			
No Fish	<b>369,195</b>	<b>8,792</b>			
Mean Fish Wt	<b>1.8kg</b>	<b>0.2kg</b>			
Next Fallow Date (Site)	<b>Sept 2021 approx.</b>		Next Input Date (Site)	<b>Undetermined at present</b>	
Recent (last 4 wks) disease problems?				<b>Y</b>	Any escapes (since last visit)? <b>N</b>
If yes, detail:	<b>Two treatments for AGD, paramove used.</b>				

**Movement Records**

1. Movement records available for inspection? **Y**  
 2. Date of last inspection: **09/12/2021**  
 3. Are records complete and correctly entered? **Y**  
 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? **N/A**

**Transport Records**

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

**Mortality Records**

1. Mortality records available for inspection? **Y**  
 2. How are mortalities disposed of? **Incinerated - on site**  
 If other detail: **Mortalities were removed by Billy Bowie after an increase in mortality in wk 9**  
 3. Mortality records complete and correctly entered? **Y**  
 4. Recent mortality (last 4 wks): **wk 18: 0.76% 2,835 fish, wk 17: 0.86% 3,268 fish, wk 16: 0.43% 1,633 fish, wk 15: 0.43% 1,633 fish**  
 5. Evidence of recent increased/atypical mortalities? **N**  
 If yes, facility nos/no mortality per facility/no stock per facility/reason:  
**[REDACTED]**  
 6. Any other peaks in mortality during period checked? **Y**  
 If yes, detail: **Mortality at 1.29% reported to FHI in March attributed to complex gill issues and a bath treatment. Mortality returned to below threshold the following week.**  
 7. Have increased (unexplained) mortalities been reported to vet or FHI? **Y**  
 If yes, detail action: **FHI contacted to report mortality over 1%**  
 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:

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)?

If other, detail:

6. Are medicines stored appropriately?  Y

**Biosecurity Records**

1. Biosecurity records available for inspection?

2. Has the manner and frequency of mortality removal, recording and safe disposal been considered?

3. Has the manner and period in which the APB will notify Scottish Ministers or veterinary professional of any *increased (unexplained)* mortality at the site been included?

4. Has the action that will be taken in the event that the presence or suspicion of the presence of a listed disease is detected been included and *how* and *when* that will be notified to Scottish Ministers?

5. Has the health status of aquaculture animals being stocked on the farm site been covered (equal or higher health status, certification if required)?

6. Have the husbandry and biosecurity measures implemented between each epidemiological unit to minimise transmission of disease been covered (movement of staff, visitors, equipment, live or dead fish etc.)?

7. Is documentation available regarding the measures in place to maintain the physical containment of aquaculture animals held on site?

8. Have the biosecurity procedures been adequately implemented on site?

If no, detail:

**Results of Surveillance**

1. Has any animal health surveillance been carried out by, or on behalf of, the business?  Y

2. If yes, are results available for inspection?  Y

3. Any significant results?  Y

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

Records checked between:

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	P1						
	Fish nos	1	2	3	4	5	1-5						
	Pool Group	P1	P1	P1	P1	P1							
	Species	SAL	SAL	SAL	SAL	SAL	SAL						
	Average weight	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000						
	Sex	N/A	N/A	N/A	N/A	N/A	N/A						
	Water Type	SW	SW	SW	SW	SW	SW						
Stock Details		Barcaldine smolt unit	Barcaldine smolt unit	Barcaldine smolt unit	Barcaldine smolt unit	Barcaldine smolt unit	Barcaldine smolt unit						
	Stock Origin												
	Facility No	3	5	7	7	12							



Case no: 2021-0132

Site No: FS0253

Method of killing: Percussive

Date of visit: 14/05/2021

Inspector(s):

Sheet Relevant: Y

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

Fish Number		1	2	3	4	5				
Time sampled after death (if > 45 minutes)		2 hours	2 hours	2 hours	2 hours	1 hour				
External Signs										
Behaviour	Moribund	M	M	S	M	M				
	Lethargic	M	M	S	M	M				
	Hanging vertical									
	Spiralling									
	Flashing									
	Loss of equilibrium			S						
Body	Dark									
	Distended abdomen			W						
	Anorexic									
	Scale Oedema									
Opercula	Shortened			W						
	Flared									
Haemorrhaging	Throat									
	Ventrum									
	Base of fins									
	Elsewhere									
Eyes	Exophthalmic									
	Enophthalmic (sunken)									
	Cataract									
	Haemorrhagic									
Gills	Pale	S	M	M	S	M				
	Zoned									
	Necrotic	S								
Lesions	Flank	M				M				
	Elsewhere		M	M	M					
Vent	Inflamed									
	Trailing faeces									
Lice Load	Estimate numbers			2						
Internal Signs										
Ascites	Clear									
	Bloody									
Oedema	In tissues									
Heart	Pale/anaemic									
	Granulomas									
	Deformed									
Liver	Petechial haem	M								
	Gross haem									
	Tissue breakdown									
	Enlarged									
	Colour number(s)									
	Granulomas									
	Lesions									
Pyloric caeca	Petechial haem									
	Tubules mauve									
	Lack of fat		W	W	W	W				
Spleen	Enlarged									
	Granulomas									
Gut	No food present	M	M	M	M	M				
	Yellow pseudo-faeces		W	W						
	External haem									
	Internal haem									
Body wall	Haemorrhaging	W								
Swim bladder	Haemorrhaging									
	Fluid filled									
Kidney	Swollen									
	Grey	M	M	M	M	M				
	Granular	M	M	M						
	Liquefied									
General	Parasites present									
	Anaemia									





## Additional comments:

Lesions: F2 lesion on tail, F3 lesion on opercular valve, F4 lesion on opercular valve. Head of F2 and F5 were slightly deformed, opercular valve of F3 was shortened, snout of F5 and F2 were shortened. F3 lost an eye but this was post mortem. Deposit (appears to be fat) on the spleen of F5 (see photos)

Site No: FS0253

Case No: 2021-0132

Nature of non-compliance:

Action taken (FHI):

Non-compliance relevant to (delete): VirologyMolGen/Bacteriology/Histology/Parasitology



# FISH HEALTH INSPECTORATE VISIT REPORT

## SUMMARY FOR INFORMATION OF SITE OPERATOR

<b>BUSINESS No</b>	FB0125	<b>DATE OF VISIT</b>	14/05/2021
<b>SITE No</b>	FS0253	<b>SITE NAME</b>	Loch Spelve (B)
<b>CASE No</b>	20210132	<b>INSPECTOR</b>	██████████

### Section 1: Summary

The site was visited following a welfare complaint. During the physical inspection five fish were removed for diagnostic sampling.

Histopathology examination revealed mixed pathology. Integument displayed ulcerative bacterial dermatitis and the gill displayed complex gill pathology, although the reading of the gill, gut and pyloric caeca of some fish was compromised by autolysis artefacts. Liver of F1 displayed mild zonal haemorrhagic hepatocellular necrosis and glomerular necrosis, potentially linked to *Moritella* infection.

Due to gill health issues observed on site samples were screened for *Neoparamoeba perurans*, salmon gill poxvirus (SPGV) & *Paranucleospora theridion* (syn. *Desmozoon lepeophtherii*) by QPCR and tested positive for all three pathogens.

Samples were screened for infectious salmon anaemia virus (ISAV) by QPCR as part of surveillance program for control of listed diseases. The samples tested positive for infectious salmon anaemia virus (ISAV) by QPCR and the sequence data confirmed to be ISAV HPR0, the non-pathogenic form of the virus. Additionally, an ISAV immunochemistry (IHC) assay that target against the pathogenic form of the virus (ISA-deleted nucleoprotein) was performed and confirmed to be negative for the pathogenic form.

*Vibrio* sp. *Photobacterium* sp. and *Moritella viscosa* were identified, these can be pathogenic however the level and purity would not suggest they are implicated in current morbidity.

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 visited following a complaint. Whilst the complainant was on site they filmed some moribund fish and fish with lesions that appeared to be winter ulcers. The complaint was that a breach of the Animal Welfare Act 2006 had occurred.

During the inspection of paperwork (that was undertaken remotely with a member of Animal and Plant Health Agency (APHA) present) it was observed that mortality levels were not significantly

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elevated and sea lice levels remained low. Veterinary advice had been sought after lesions were observed on the fish in March 2021. The fish were fed on an enriched food to increase the rate of healing in the fish population. A number of deformities were also notified by site staff in February 2021, specifically a compressed head. The business correspondent explained that a sub-population of runt fish had developed during the current cycle, and a well boat visited has been planned to remove this sub-population on 17/05/2021, after the physical inspection of the site. The site staff were also aware of amoebic gill disease and proliferative gill disease in the population. Two treatments using Paramove were conducted in March and April to try to alleviate this issue.

During the physical inspection, members of staff from APHA, Argyll and Bute Council and the Royal Society of the Prevention of Cruelty to Animals (RSPCA) were present. Whilst the physical inspection took place it was clear that there were moribund fish on site. Some fish had lesions and others had deformities. During the physical inspection, 31 moribund fish were removed from the site using a hand net. From these fish, 5 were selected for internal examination and sampling.

Clinical signs of disease included morbidity and lethargy present in all 5 fish sampled. Fish 3 also had a loss of equilibrium, a distended abdomen and a shortened opercula. All fish had pale gills and the gills of fish 1 were also necrotic. All fish had lesions, some on the flank, opercular valve and tail. Fish three also had 2 sea lice present.

Internally, petechial haemorrhaging of the liver and haemorrhaging in the body wall was exhibited in fish 1. There was a lack of fat associated with the pyloric caeca in fish 2-5 and no food was present in the gut of any fish. Pseudo-faeces were present in the gut of fish 2 and 3. The kidney in all fish appeared grey and the kidney of fish 1-3 were also granular.

### Samples

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

Fish number	Pool number	Facility number	Species	Stage	Origin
1	1	3	Atlantic salmon ( <i>Salmo salar</i> )	Grower 2020 S1 ~1.8kg	Barcaldine Smolt Unit
2	1	5	Atlantic salmon ( <i>Salmo salar</i> )	Grower 2020 S1 ~1.2kg	Barcaldine Smolt Unit
3 and 4	1	7	Atlantic salmon ( <i>Salmo salar</i> )	Grower 2020 S1 ~1.5kg	Barcaldine Smolt Unit
5	1	12	Atlantic salmon ( <i>Salmo salar</i> )	Grower 2020 S1 ~1.5kg	Barcaldine Smolt Unit

### Results

**Bacteriology:** Kidney, gill and lesion material from fish 1 – 5 were inoculated onto appropriate media for the isolation of bacteria.

The following bacteria were isolated.

*Vibrio* sp. was identified on plates taken from kidney and lesion material of 5/5 fish and gill material of 3/5 fish. The level and purity of growth would not suggest it would be implicated in current

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morbidity, however, on the plates taken from lesion material of fish 4 and 1, the level and purity would suggest it may be the primary source of the lesion sampled. In fish 1 this *Vibrio* sp. was the predominant colony observed in heavy mixed growth and in fish 4 it was observed as almost pure heavy growth.

*Photobacterium* sp. was identified on plates taken from kidney material of 3/5 fish and lesion material of 5/5 fish.

*Moritella viscosa* was identified on plates taken from lesion material of fish 1.

The level and purity would not suggest these bacteria would be implicated in current 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).

#### ISAV

Pool Number	Endogenous control Cp value	Cp Values			Reported Result (PCR)
P1	15.18	35.23	37.01	36.63	POSITIVE

#### Salmon gill poxvirus

Fish Number	Endogenous control Cp value	Cp Values			Reported Result (PCR)
F1	17.92	28.36	28.34	28.48	POSITIVE
F2	18.84	32.94	33.58	32.90	POSITIVE
F3	18.79	26.77	26.73	26.82	POSITIVE
F4	19.05	31.32	31.34	31.24	POSITIVE
F5	18.64	27.83	28.07	27.66	POSITIVE

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

**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	17.92	34.51	34.77	34.10	POSITIVE
F2	18.84	35.37	35.07	34.68	POSITIVE
F3	18.79	33.01	33.50	32.52	POSITIVE
F4	19.05	33.02	32.50	32.26	POSITIVE
F5	18.64	30.60	30.68	30.53	POSITIVE

*Paranucleospora theridion*

Fish Number	Endogenous control Cp value	Cp Values			Reported Result (PCR)
F1	17.92	24.58	24.75	24.64	POSITIVE
F2	18.84	22.86	22.87	22.85	POSITIVE
F3	18.79	22.15	22.15	22.22	POSITIVE
F4	19.05	23.33	23.37	23.37	POSITIVE
F5	18.64	21.46	21.70	21.49	POSITIVE

**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: Mild interlamellar epithelial hyperplasia and lamellar fusion, observed mainly at the tips of the gill filaments (F1-F3, F5). Few scatter lamellar vessels displaying necrosis (F1). Several basophilic epithelial inclusions (likely epitheliocystis) also noted in all fish. Several scattered aneurysmal dilation/telangiectasia, lamellar congestion and freed blood among gill filaments (F1-F5). Autolytic artefacts noted on F1-F4. F4, gill reading hindered by autolytic artefacts.

Skin & Muscle: Absence of epidermal, mild dermal oedema and presence of rod-shaped Gram-negative bacteria noted in F1-F2, F4 exhibited moderate, multifocal, skeletal muscle necrosis and degeneration. The red muscle displayed mild haemorrhage and some leucocyte cell infiltration.

Gut and pyloric caeca: Some to marked cell sloughing, likely associated with post-mortem artefacts (F1, F2, F3, F4, F5).

Pancreas: Within the normal range. F2 exhibited some autolytic artefacts.

Liver: Random, mild, multifocal hepatocellular cell degeneration and necrosis, multifocal congestion and dilation of the hepatic sinusoids and foci of sinusoidal haemorrhage with several cells exhibiting granules of melanin. A varied number of hepatocytes exhibited cytoplasmic inclusions roughly spherical of varied size (ranging from 9.8 to 17.8 µm), some being brightly eosinophilic but the majority presented more basophilic properties, potentially linked to erythrocyte degradation..

Kidney: Several glomeruli displayed shrunken appearance, congested vessels and proteinaceous material with in Bowman capsule (F1). F2 and F3 also exhibited within the glomeruli eosinophilic material, potentially linked with erythrocyte degradation.

Spleen: Within the normal range

Signed:



Fish Health Inspector

Date: 03/06/2021

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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Marine Laboratory, 375 Victoria Road, Aberdeen, AB11 9DB  
Tel - 0131 244 3498 Fax - 0131 244 0944 Email - [ms.fishhealth@gov.scot](mailto:ms.fishhealth@gov.scot)  
Website - [www.gov.scot/Topics/marine/science](http://www.gov.scot/Topics/marine/science)





Image 1: Fish with lesions



Image 2: Fish 1 on deck of boat



Image 3: Fish 2 on deck of boat



Image 4: Fish 1 – 5 before sampling



Image 5: Fish 1 (from cage 3)



Image 6: Fish 2 (from cage 5)



Image 7: Fish 3 (from cage 7)



Image 8: fish 3 and 4 (both from cage 7)



Image 9: Fish 5 (from cage 12)

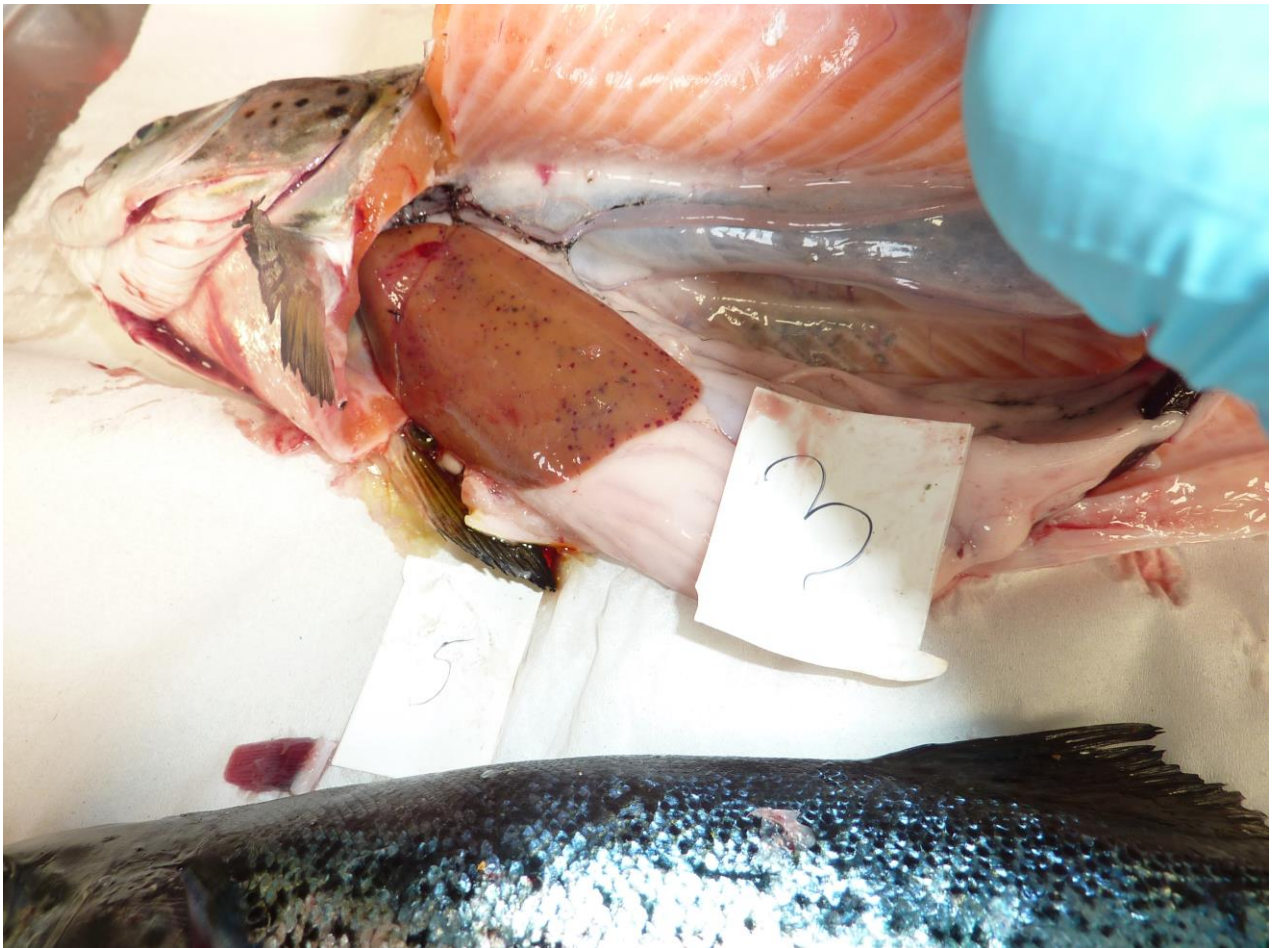


Image 10: petechial haemorrhaging of the liver (fish 1 from cage 3)

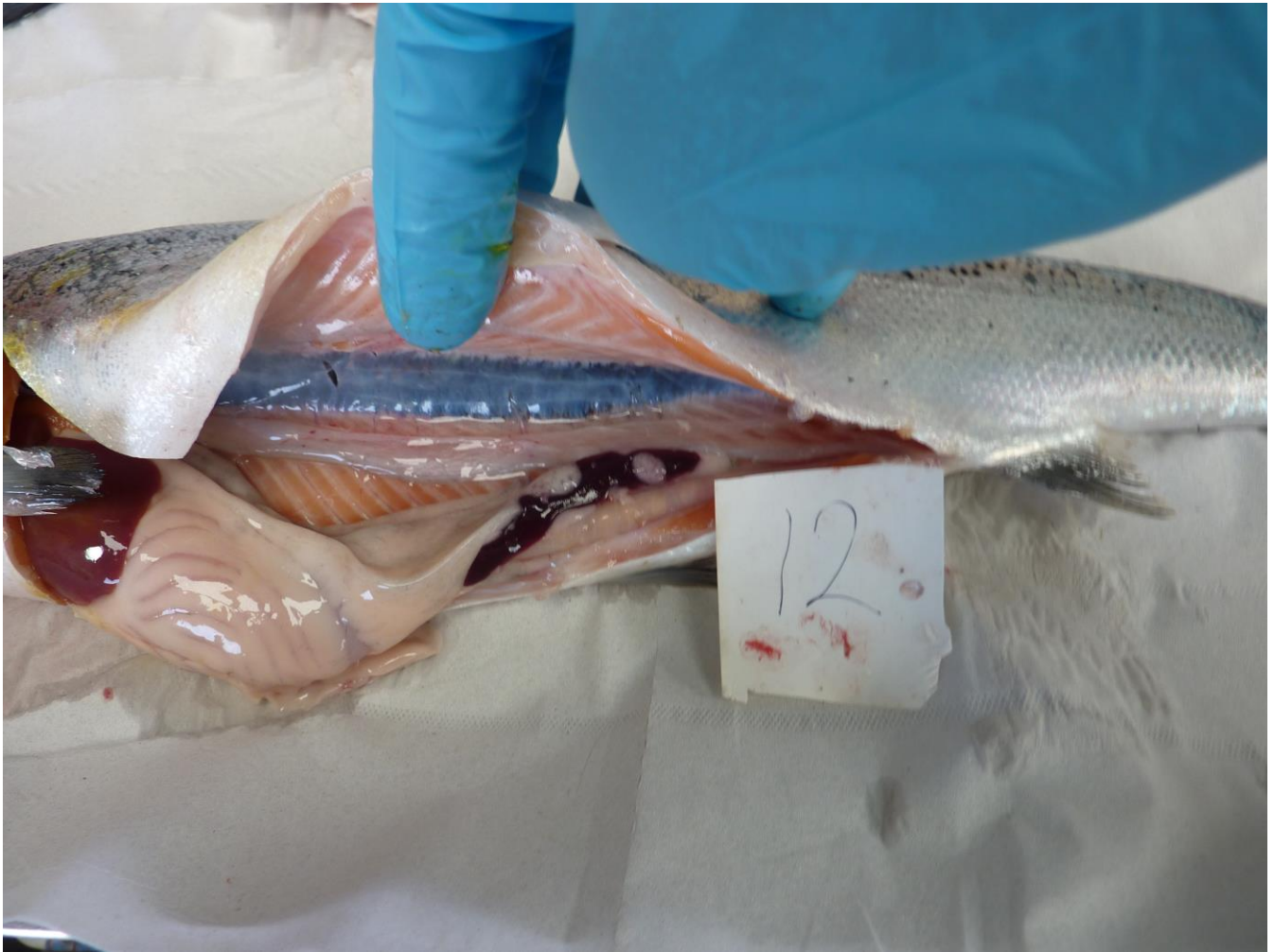


Image 11: spots (possibly fat) on the spleen (fish 5, from cage 12)