

Case No: 2023-0524 Date of visit: 14/11/2023

Time spent on site: 13hrs Main Inspector:

Site No: FS1056 Site Name: Strone
Business No: FB0169 Business Name: Bakka Frost Scotland

Case Types: 1 STS 2 3 4 5 6

Water Temp (°C): 10.4 Thermometer No: T305 FHI 045 completed N/A

Observations: Region: ST Water type: S CoGP MA M-45

Dead/weak/abnormally behaving fish present? If yes, see additional information/clinical score sheet.
Clinical signs of disease observed? If yes, see additional information/clinical score sheet.
Gross pathology observed? If yes, see additional information/clinical score sheet.
Diagnostic samples taken?

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

Additional Case Information:

Site was re-visited following a positive PCR for ISA (2023-0511). Sequencing to determine if positive for ISA HPR-0 or ISA HPR-deleted was unsuccessful due to small volume of sample. Case has not yet been closed and FHR has not yet been issued.

Statutory sample of 150 fish was taken from the site. Fish from every cage were sampled. Few moribunds were observed (generally 1-2 fish per cage) and these were prioritised for sampling. Where there were not enough moribunds to make up the sample, clinically healthy fish were sampled.

Site is sharing a shorebase with Sgian Dubh (FS1281). Sites have separate entrances to the shorebase office, with foot baths and disinfectant at the entrance for Strone staff. Site staffs are using site-specific PPE, changing rooms, equipment and boats (with Strone workboats being moored in a separate location from Sgian Dubh workboats).

No movements on or off the site had occurred since the last inspection.

Site is stocked with a mix of farmed and wildcaught wrasse. Wrasse mortality for Wk44 was zero.

■■■ sampled: F1-6, 11-16, 23-28, 33-38, 45-50, 55-60, 65-70, 75-80, 85-90, 95-100, 105-110, 115-120, 125-130, 137-142, 149-150.

■■■ sampled: F7-10, 17-22, 29-32, 39-44, 51-54, 59-64, 71-74, 81-84, 91-94, 101-104, 111-114, 121-124, 131-136, 143-148.

Moribund fish: 1-10, 19, 22, 47, 61, 78-79, 81-84, 92, 101, 112, 114, 118, 120, 122, 124, 132-133, 136 and 139.

Case No: **2023-0524** Site No: **FS1056**
 Date of Visit: **14/11/2023** 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	14	Facilities stocked	14	No facilities inspected	14
Species	SAL	WRS			
Age group	2023 Q1	2023			
No Fish	964,544	54,000			
Mean Fish Wt	1.65kg	150g			
Next Fallow Date (Site)	July 24		Next Input Date (Site)	Jan 25	
Recent (last 4 wks) disease problems?			Y Any escapes (since last visit)?	N	
If yes, detail:	Furunculosis, SRS, AGD				

Movement Records

1. Movement records available for inspection? **Y**
 2. Date of last inspection: **03/11/2023**
 3. Are records complete and correctly entered? **N/A**
 4. Are movement records available for dead fish and waste? **N/A**
 5. Are records complete and correctly entered? **N/A**
 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? **Biogas - Barkip**
 If other detail: **[REDACTED]**
 3. Mortality records complete and correctly entered? **Y**
 4. Recent mortality (last 4 wks): **Wk45: 4,447 (0.41%) , Wk44: 4,024 (0.41%), Wk43: 8,767 (0.89%), Wk42: 7,114 (0.72%)**
 5. Evidence of recent increased/atypical mortalities? **Y**
 If yes, facility nos/no mortality per facility/no stock per facility/reason: **Cage 11 (9,765 (9.95%)), Cage 12 (10,777 (9.08%)) Week 35 to Week 41.**
 6. Any other peaks in mortality during period checked? **N**
 If yes, detail: **[REDACTED]**
 7. Have increased (unexplained) mortalities been reported to vet or FHI? **N/A**
 If yes, detail action: **[REDACTED]**
 8. Have 'mortality events' been reported to FHI? If no, enter details on mortality events sheet. **N/A**

Treatments and Medicines Records

1. Recent treatments (see comment)?	<input type="checkbox"/>
If yes, detail:	<input type="text"/>
If other, detail:	<input type="text"/>
2. Medicines records available for inspection?	<input type="checkbox"/>
3. Are records complete and correctly entered?	<input type="checkbox"/>
4. Are fish in a withdrawal period?	<input type="checkbox"/>
5. If yes, what treatment(s)?	<input type="text"/>
If other, detail:	<input type="text"/>
6. Are medicines stored appropriately?	<input type="checkbox"/>

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="text"/>

Results of Surveillance

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

Records checked between:	03/11/23 - 14/11/23
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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	F6	F7	F8	F9	F10	F11	F12
Fish nos	1	2	3	4	5	6	7	8	9	10	11	12
Pool Group	P1	P1	P2	P2	P3	P3	P4	P4	P5	P5	P6	P6
Species	SAL	SAL	SAL	SAL	SAL	SAL	SAL	SAL	SAL	SAL	SAL	SAL
Average weight	1.5kg	1.5kg	1.5kg	1.5kg	1.5kg	1.5kg	1.5kg	1.5kg	1.5kg	1.5kg	1.5kg	1.5kg
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	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW
Stock Details												
	Stock Origin	Loch Langavat FS0149	Loch Langavat FS0149	Loch Langavat FS0149	Loch Langavat FS0149	Loch Langavat FS0149	Loch Langavat FS0149	Loch Langavat FS0149	Loch Langavat FS0149	Loch Langavat FS0149	Applecross Smolt Unit FS0500	Applecross Smolt Unit FS0500
Facility No	4	4	4	4	4	4	4	4	4	4	1	1

11/2023 Additional Sample Information:
 Fish humanely dispatched by anesthetic followed by percussive blow. Liver, kidney, heart and spleen sampled for virology samples. Fish number 149-150 (P75) unknown cage source as not recorded at time of sampling (possible cages: 8, 9, 10, 11, 12, 13, 14)

225 Total Tests assigned 3

F13	F14	F15	F16	F17	F18	F19	F20	F21	F22	F23	F24	F25	F26	F27	F28
13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
P7	P7	P8	P8	P9	P9	P10	P10	P11	P11	P12	P12	P13	P13	P14	P14
SAL	SAL	SAL	SAL	SAL	SAL	SAL	SAL	SAL	SAL	SAL	SAL	SAL	SAL	SAL	SAL
1.5kg	1.5kg	1.5kg	1.5kg	1.5kg	1.5kg	1.5kg	1.5kg	1.5kg	1.5kg	1.5kg	1.5kg	1.5kg	1.5kg	1.5kg	1.5kg
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
SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW
Applecross Smolt Unit FS0500	Applecross Smolt Unit FS0500	Applecross Smolt Unit FS0500	Applecross Smolt Unit FS0500	Applecross Smolt Unit FS0500	Applecross Smolt Unit FS0500	Applecross Smolt Unit FS0500	Applecross Smolt Unit FS0500	Applecross Smolt Unit FS0500	Applecross Smolt Unit FS0500	Loch Langavat FS0149	Loch Langavat FS0149	Loch Langavat FS0149	Loch Langavat FS0149	Loch Langavat FS0149	Loch Langavat FS0149
1	1	1	1	1	1	1	1	1	1	3	3	3	3	3	3

Case no: 2023-0524

Site No: FS1056

Method of killing: Percussive

Date of visit: 14/11/2023

Inspector(s):

Sheet Relevant: N

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

Fish Number		F79	F82	F101	F112									
Time sampled after death (if > 45 minutes)		45mins	45mins	60 min	80 min									
External Signs														
Behaviour	Moribund	S	S	S	S									
	Lethargic													
	Hanging vertical													
	Spiralling													
	Flashing													
	Loss of equilibrium													
Body	Dark													
	Distended abdomen	W												
	Anorexic													
	Scale Oedema													
Opercula	Shortened				W									
	Flared													
Haemorrhaging	Throat													
	Ventrum	S												
	Base of fins													
	Elsewhere													
Eyes	Exophthalmic													
	Enophthalmic (sunken)													
	Cataract													
	Haemorrhagic													
Gills	Pale	M	W	W										
	Zoned		W	M	W									
	Necrotic													
Lesions	Flank													
	Elsewhere													
Vent	Inflamed													
	Trailing faeces													
Lice Load	Estimate numbers		2											
Internal Signs														
Ascites	Clear													
	Bloody	W	M											
Oedema	In tissues													
Heart	Pale/anaemic	M												
	Granulomas													
	Deformed													
Liver	Petechial haem	W			M									
	Gross haem													
	Tissue breakdown													
	Enlarged													
	Colour number(s)		2	2	6	2								
	Granulomas													
	Lesions													
Pyloric caeca	Petechial haem	S			M									
	Tubules mauve													
	Lack of fat													
Spleen	Enlarged			M										
	Granulomas													
Gut	No food present													
	Yellow pseudo-faeces													
	External haem													
	Internal haem													
Body wall	Haemorrhaging		M	W										
Swim bladder	Haemorrhaging	S	S	S	S									
	Fluid filled	W												
Kidney	Swollen													
	Grey	W												
	Granular	W		W										
	Liquefied													
General	Parasites present													
	Anaemia													

Additional comments:

F101 haemorrhaging on the body wall close to the kidney, see photo



FISH HEALTH INSPECTORATE VISIT REPORT

SUMMARY FOR INFORMATION OF SITE OPERATOR

BUSINESS NO	FB0169	DATE OF VISIT	14/11/2023
SITE NO	FS1056	SITE NAME	Strone
CASE NO	20230524	INSPECTOR	[REDACTED]

Statutory test summary

A statutory test was conducted to test for the presence of infectious salmon anaemia following a positive real-time PCR (QPCR) result from a previous inspection (see report for case 2023-0511). The site had experienced increased mortality levels and a number of moribund fish were observed across the site, therefore additional histology samples were collected from four fish.

Samples were screened for infectious salmon anaemia virus (ISAv) by QPCR. The samples tested positive for infectious salmon anaemia virus (ISAV) by QPCR and the sequence data confirmed the presence of ISAv HPR0, the non-pathogenic form of the virus. No further statutory action is required to be taken in this case, infection with ISAv HPR0 not being a disease listed in The Aquatic Animal Health (Scotland) Regulations 2009. The initial designation notice which was served has now been withdrawn.

Histopathological examination revealed features resembling *Aeromonas salmonicida* (Furunculosis). Hepatocellular necrosis and necrotising splenitis were also observed. One fish also displayed areas of light H&E stain in the compactum stratum of the heart.

Samples

One hundred and fifty Atlantic salmon were tested for the presence of infectious salmon anaemia virus (ISAv). Samples were collected according to the table below:

Fish number	Pool number	Facility number	Stage	Origin
F1-10	P1-5	4	2023 Q1 Atlantic salmon	Loch Langavat FS0149
F11-22	P6-11	1	2023 Q1 Atlantic salmon	Applecross Smolt Unit FS0500
F23-32	P12-16	3	2023 Q1 Atlantic salmon	Loch Langavat FS0149
F33-44	P17-22	2	2023 Q1 Atlantic salmon	Loch Langavat FS0149
F45-54	P23-27	5	2023 Q1 Atlantic salmon	Loch Langavat FS0149
F55-64	P28-32	7	2023 Q1 Atlantic salmon	Clachan Hatchery FS0398

F65-74	P33-37	6	2023 Q1 Atlantic salmon	Loch Langavat FS0149
F75-84	P38-42	10	2023 Q1 Atlantic salmon	Applecross Smolt Unit FS0500
F85-94	P43-47	8	2023 Q1 Atlantic salmon	Clachan Hatchery FS0398
F95-104	P48-52	9	2023 Q1 Atlantic salmon	Clachan Hatchery FS0398
F105-114	P53-57	11	2023 Q1 Atlantic salmon	Applecross Smolt Unit FS0500
F115-124	P58-62	14	2023 Q1 Atlantic salmon	Applecross Smolt Unit FS0500
F125-136	P63-68	12	2023 Q1 Atlantic salmon	Ormsary Smolt Unit FS0575
F137-148	P69-74	13	2023 Q1 Atlantic salmon	Ormsary Smolt Unit FS0575
F149-150	P75	Not recorded	2023 Q1 Atlantic salmon	Unknown

In addition, fish 79, 82, 101 and 112 were sampled for histological examination.

Observations

Externally, F79 had a distended abdomen with shortened opercula on F112. Haemorrhaging was observed on the ventrum of F79 and the gills of F79, 82 and 101 were pale, with zoning noted on F82, 101 and 112 also.

Internally, F79 and 82 had bloody ascites and the heart of F79 was pale/anaemic. Petechial haemorrhaging was observed on the livers and pyloric caeca of F79 and 112, and in the body wall of F82 and 101. The swim bladders of all fish (F79, 82, 101 and 112) also had haemorrhaging. The spleen was enlarged in F101 and the kidney was grey in F79 and granular in F79 and 101.

Results

Virology

Tissue samples were tested for the presence of segments of RNA indicative of the presence of ISAv using real-time PCR (QPCR).

The following 7 fish tested positive for ISAv:

Fish Number	Cp value	Cp value	Cp value	Reported result
F2	37.59	37.06	>40	POSITIVE
F19	37.45	37.25	36.76	POSITIVE
F58	35.48	34.85	35.24	POSITIVE
F60	37.12	37.38	37.00	POSITIVE
F114	38.83	37.61	37.82	POSITIVE
F131	>40	>40	>40	POSITIVE
F144	35.30	35.05	35.60	POSITIVE

Sequencing confirmed 100% identity of ISA HPR0.

The remaining fish all tested negative for ISAv by QPCR.

Tissue samples from the above fish were also tested for the presence of Infectious salmon anaemia virus (ISAv) by cell culture. The results of these tests were negative.

Histology:

Tissue samples of gill, skin and skeletal muscle, heart, pyloric caeca, pancreas, hind gut, liver, spleen and kidney were taken from four 4 fish. The tissue samples were fixed in 10% neutral buffered formalin.

Histopathological examination revealed the following:

Gill: Minor, multifocal lamellar hyperplasia (F79). Several aggregates of Gram-negative bacteria (F82). Free blood among gill filaments (F101). Lamellar telangiectasia (F112). Some post- mortem artefacts observed (F82, F112).

Skin & Muscle: Minor myositis (F82). F1: not present.

Heart: Mild epicarditis (F79, F101, F112). Gram-negative bacterial aggregates observed on the atrium chamber wall (F79, F82). Minor myocarditis (F101). Areas of light H&E stain observed in the compact layer (F79, F112).

Gut and pyloric caeca: Within normal range.

Pancreas: Within normal range.

Liver: Hepatocellular necrosis, mild, ranging from multifocal to coalescence (F1) with some haemorrhage (F79, F82) and F82 displayed Gram-negative rod-shaped bacterial aggregates. Mild, diffuse hepatocellular vacuolation (macrovesicles) (F82). Some sinusoidal congestion (F82, F101). Some capsulitis (F112).

Kidney: Occasional tubules with mineralisation (F79). Some interstitial cell (haemopoietic) necrosis (F82) with Gram-negative rod-shaped bacterial aggregates. Some foci of haemorrhage (F82).

Spleen: Necrotising splenitis (F82, F101, F112) with Gram-negative rod-shaped bacteria, multifocal, mild (F82). F112 also exhibited one giant cell.

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



Signed:

Date: 20/12/2023

Fish Health Inspector

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









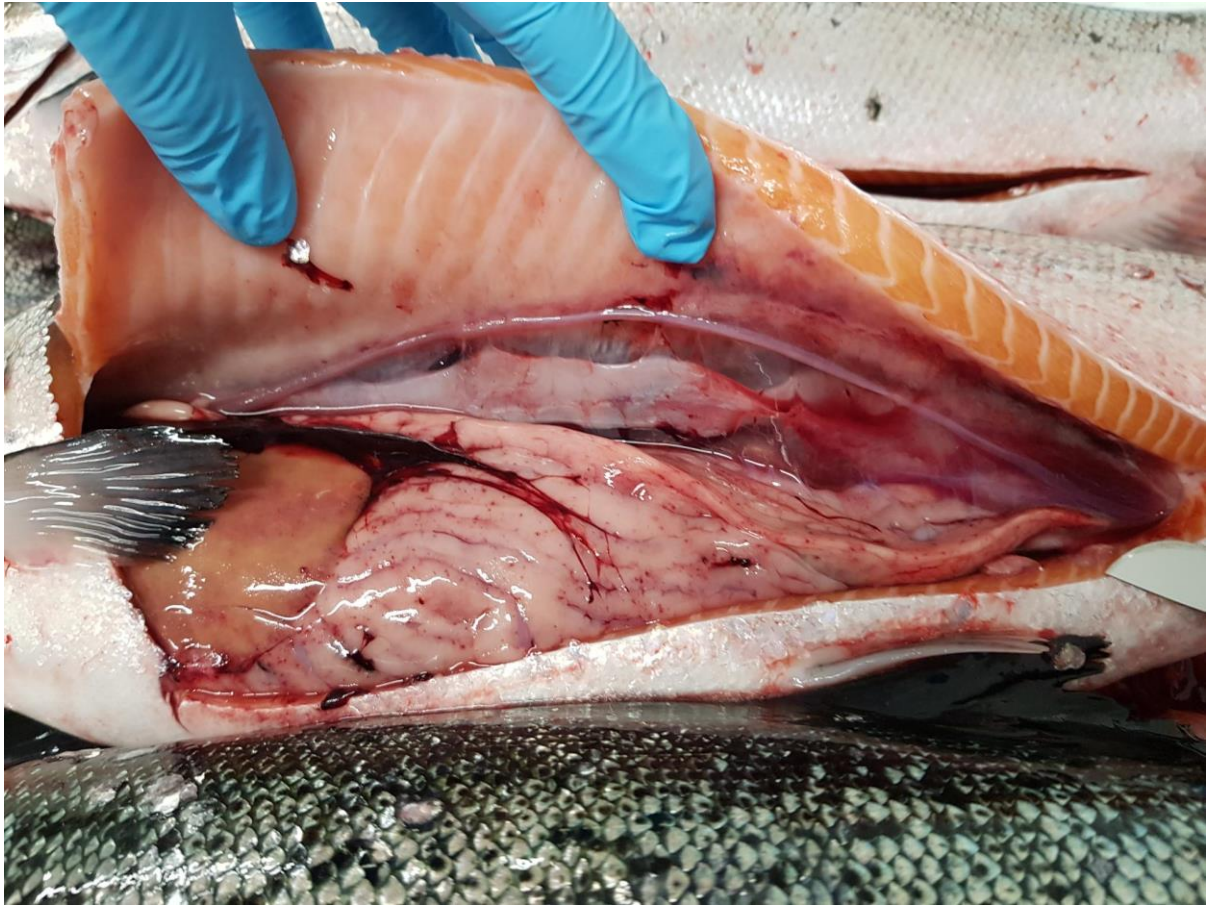






F79 DIA -





F7-F8



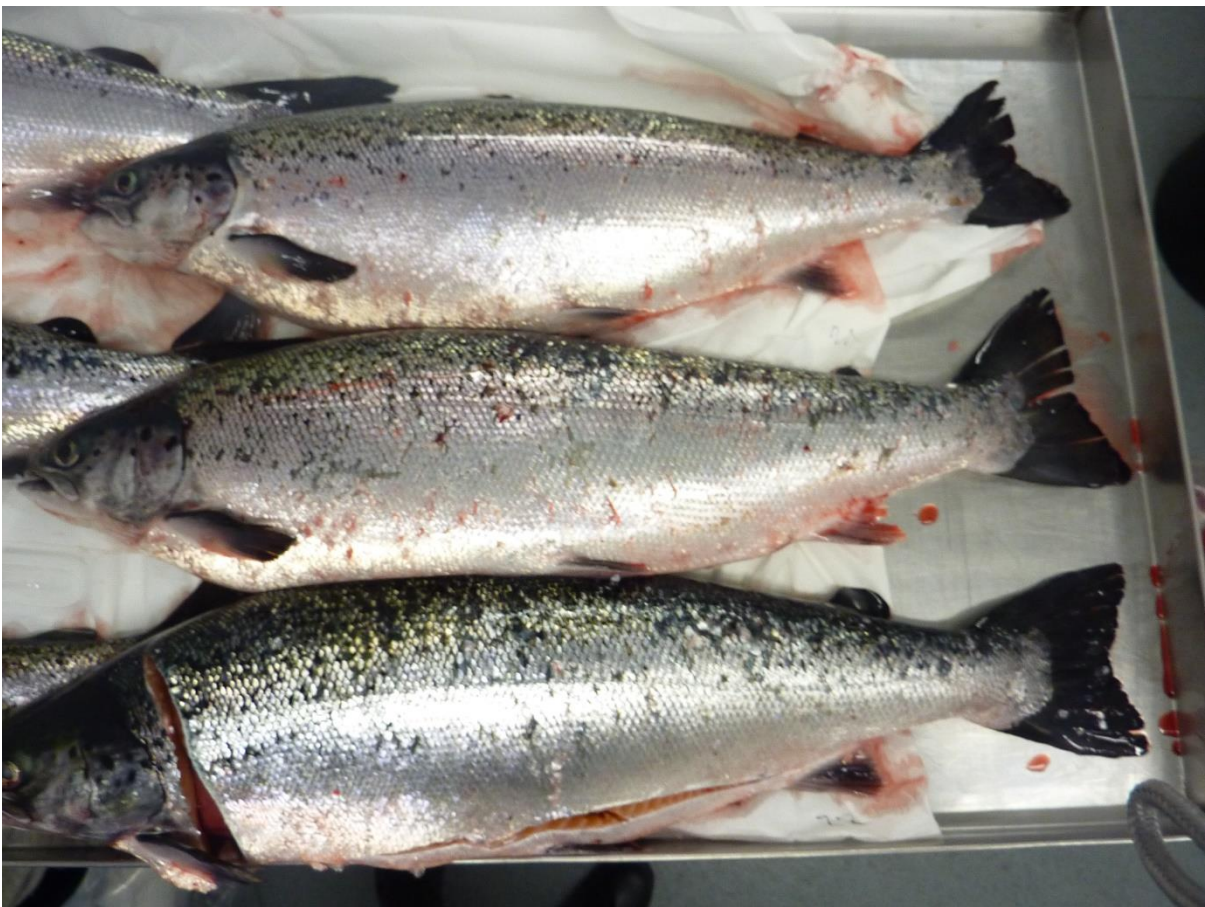
F9-F10



F17-F19



F20-F22



F29-F30



F31-32



F51-F52



F53-F54



F71-F72



F73-F74



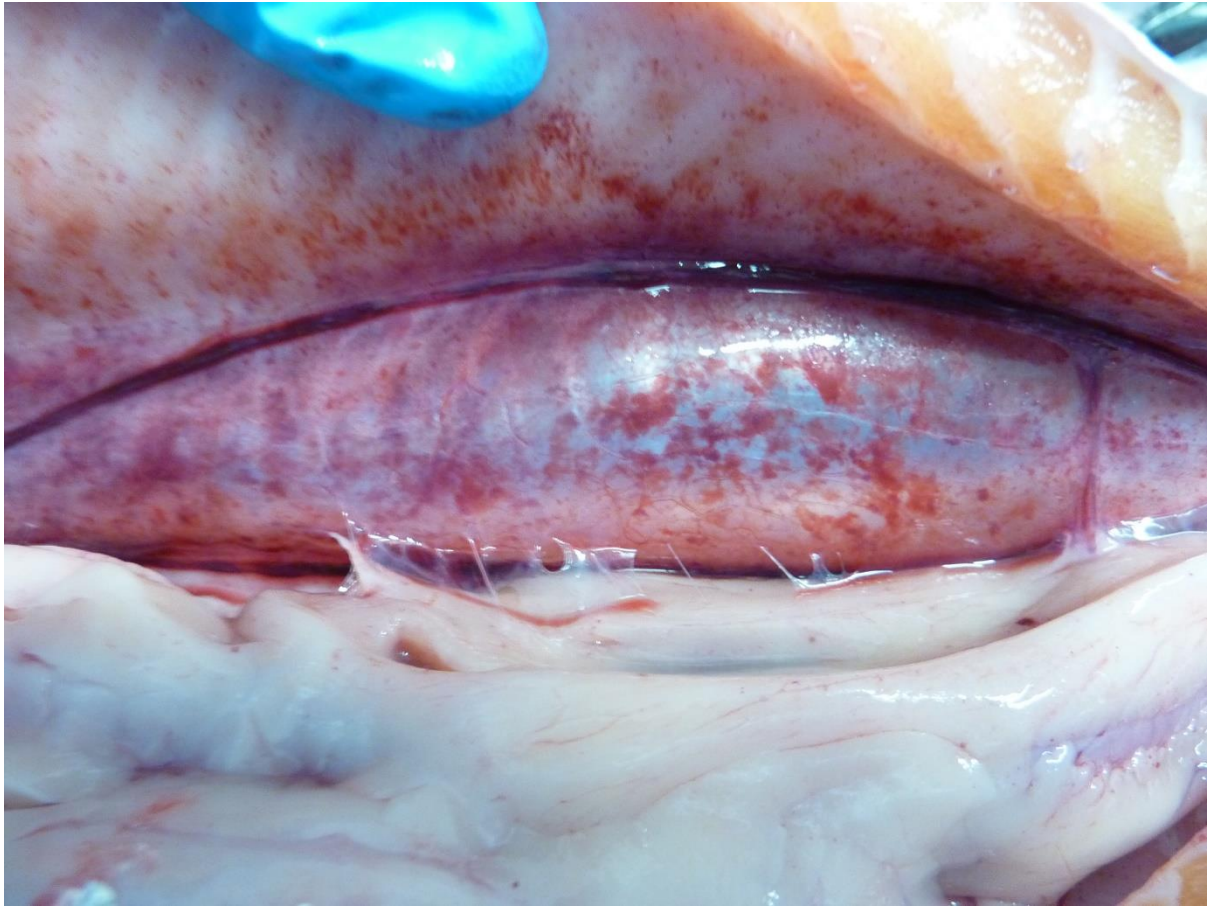
F81-F82

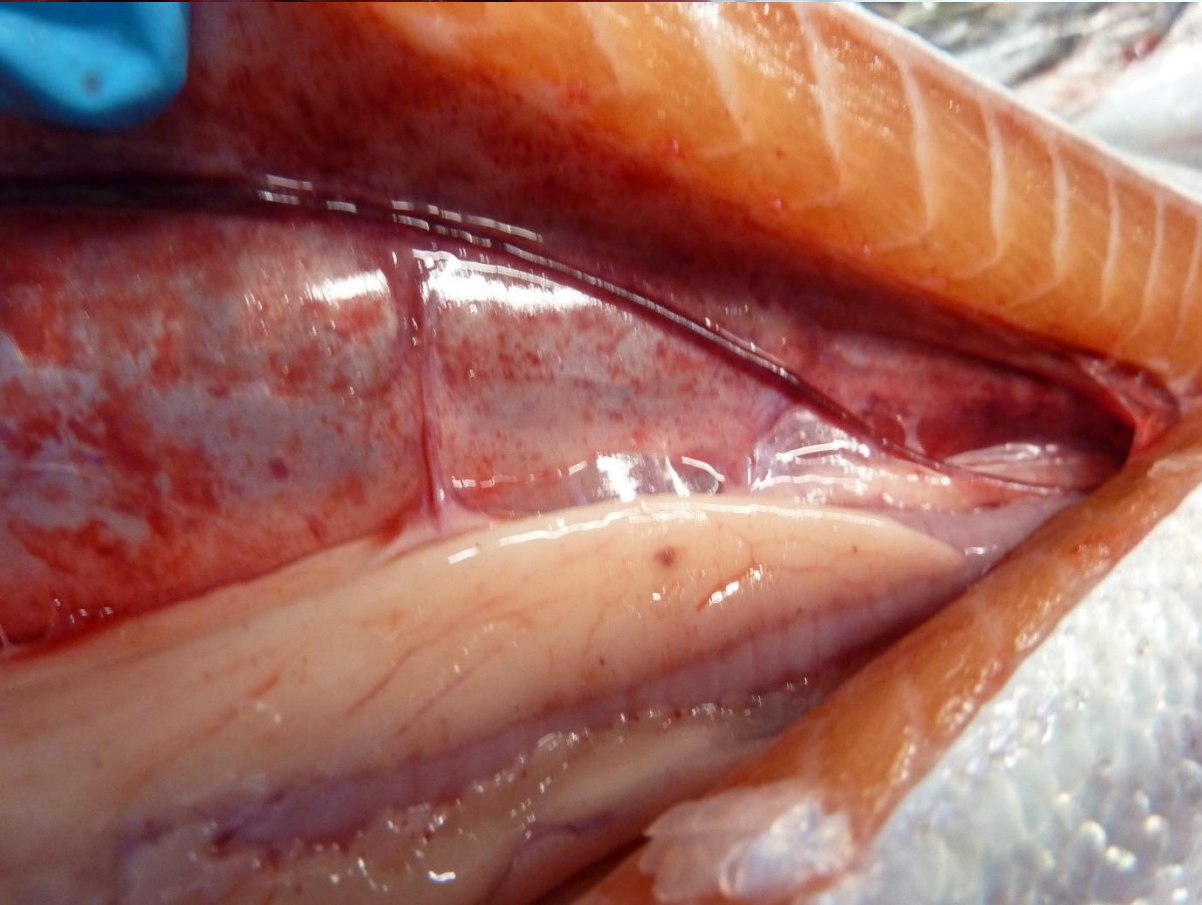
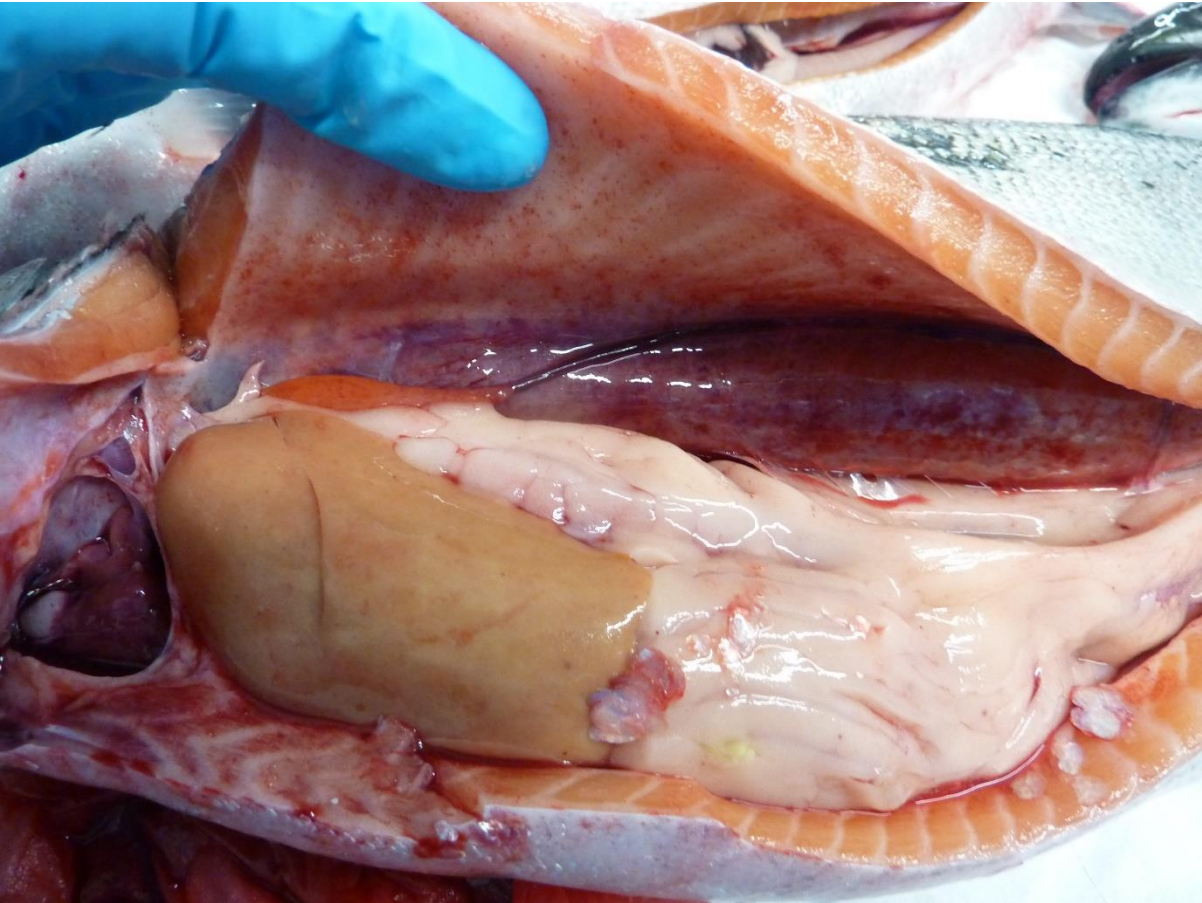


F82 gills



F82 internal

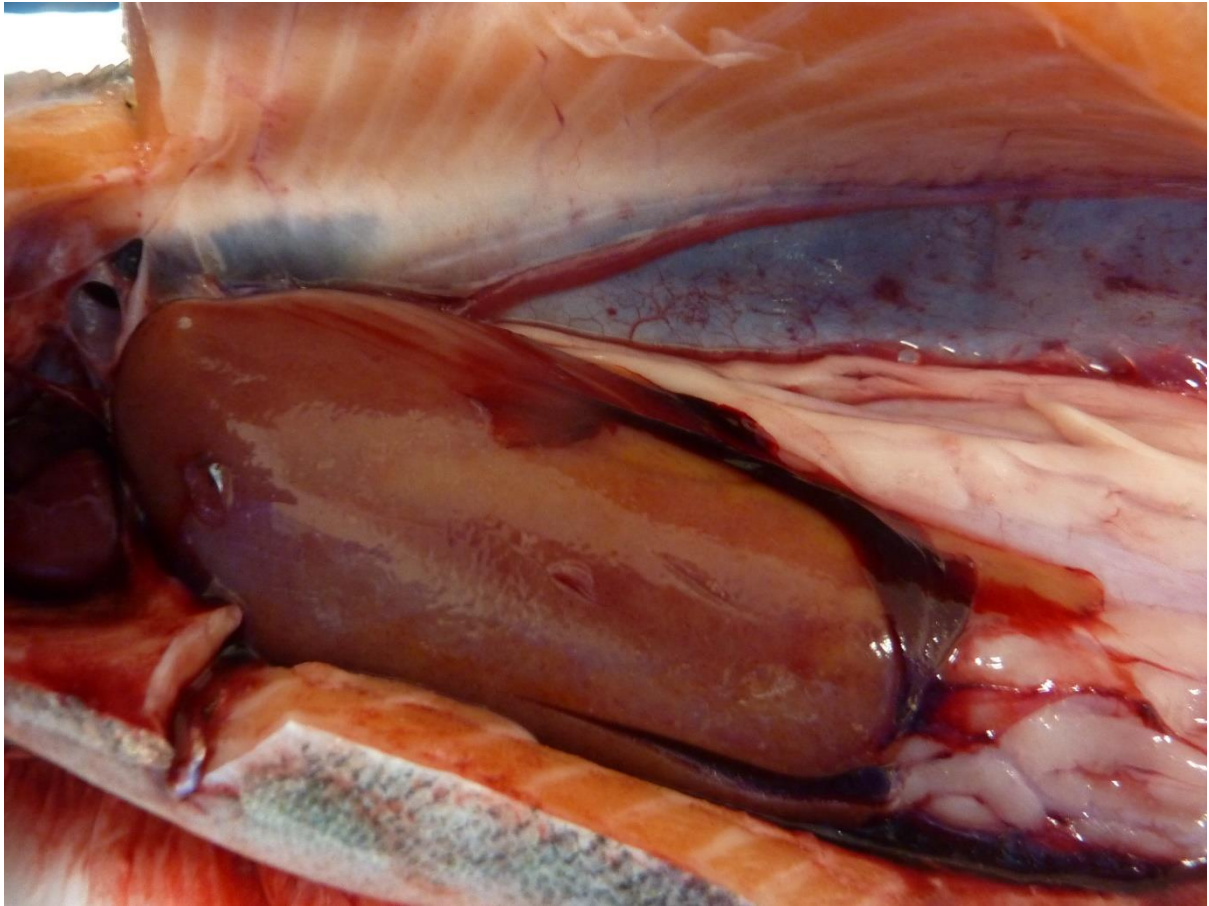


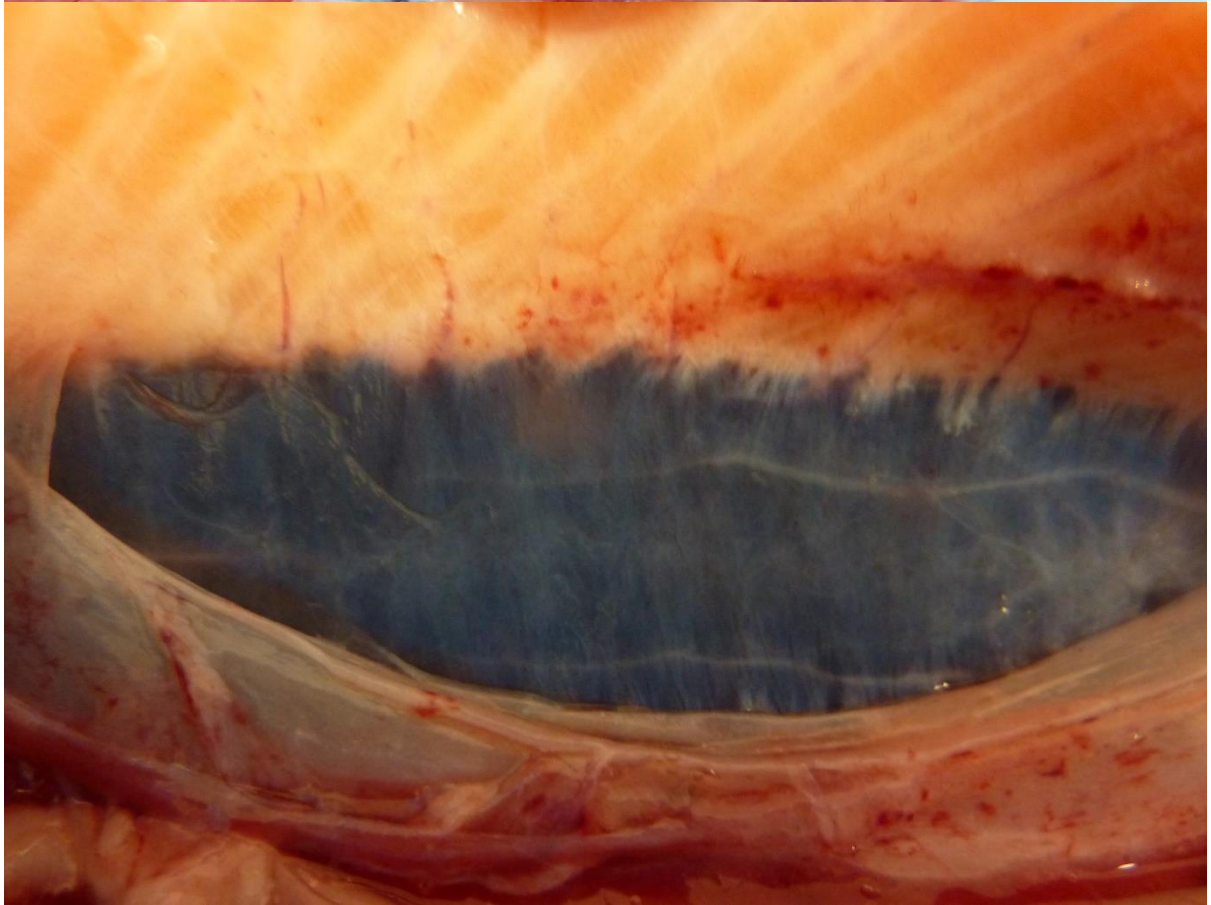
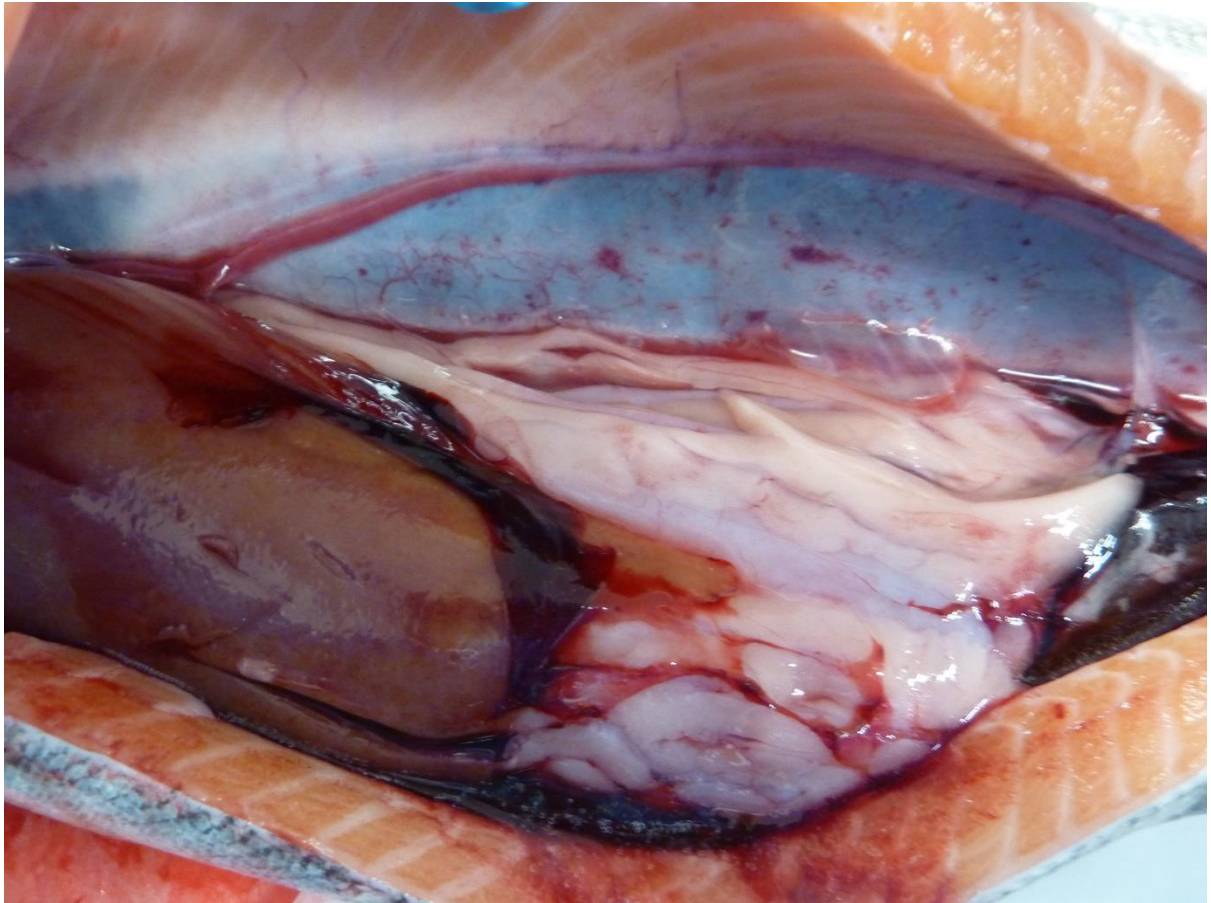


F101 gills



F101internal





F104-F105



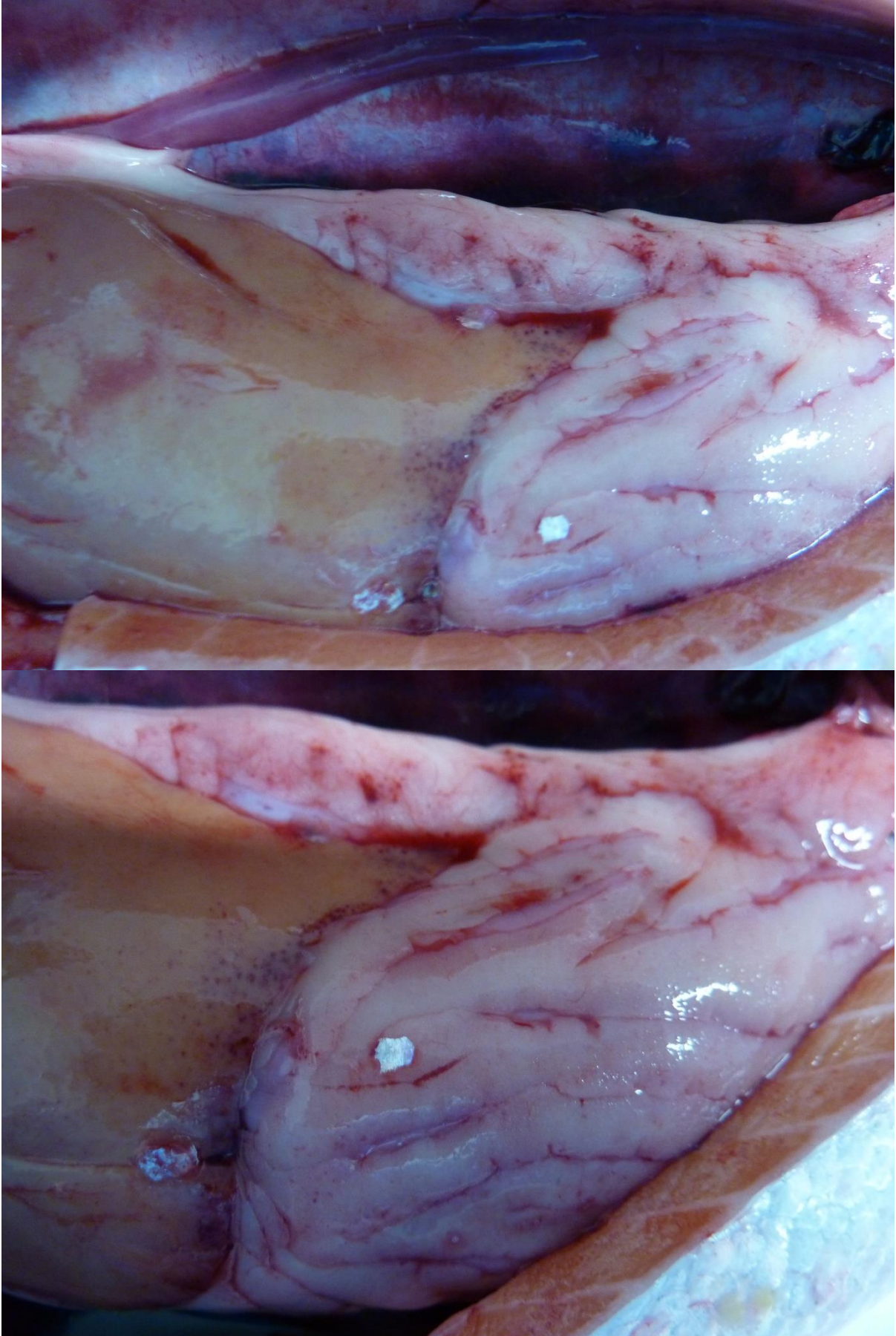
F111-F112

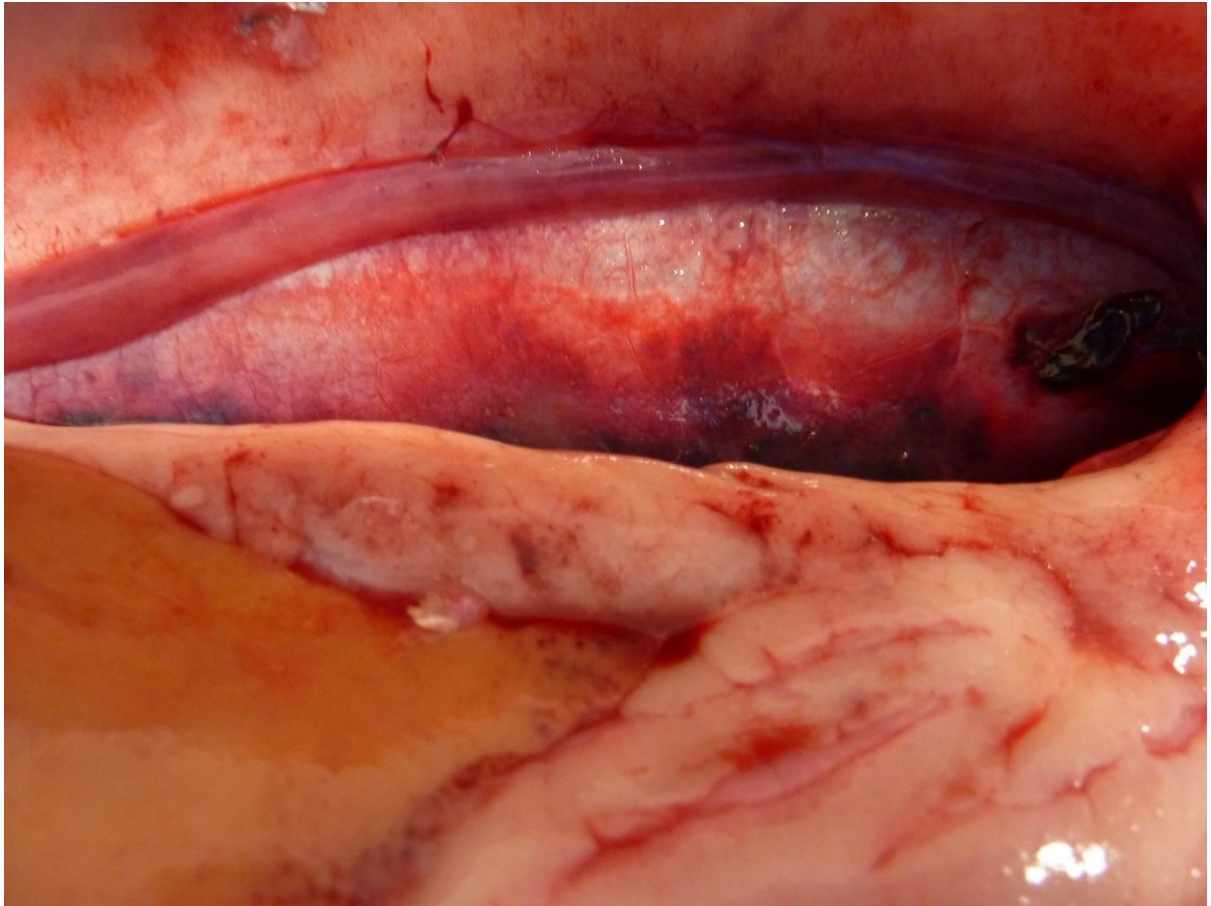


F112 gills



F112 internal





F113-F114



F121-F122



F123-F124



F131-F133



F134-F136

