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# INTERIM FISH HEALTH INSPECTORATE VISIT REPORT

## SUMMARY FOR INFORMATION OF SITE OPERATOR

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|---|---|---|---|
| **BUSINESS NO** | FB0544 | **DATE OF VISIT** | 18/08/2015 |
| **SITE NO** | FS1244 | **SITE NAME** | Strathclyde |
| **INSPECTOR** | Andy Mayes | **CASE NO** | 20150317 |

## Section 1: Summary

The River Gryffe was visited after a call from a The Clyde River Foundation informing the fish health inspectorate of a number of dead or moribund fish being found in a section of the river known locally as the 'The Pots'. Four moribund fish were sampled for a diagnostic investigation. Another moribund fish was removed before the inspector arrived and frozen. This fish was also sampled at a later date.

A histopathological examination revealed that losses were attributed to osmotic haemodilution resulting from oomycete infected skin tissue.

Interpretation of bacteriology plates revealed *Saprolegnia* sp. and three colonies of bacteria identified as *Aeromonas hydrophila*, *cavia*, and *sobria*. These motile aeromonads are known to be fish pathogens however in this case the mixed nature of the growth suggests they have occurred initially as an opportunist and increased to result in a significant bacterial infection.

Examination of fins and vents took place under a microscope. Examination of the fins found the fish to be negative for *Gyrodactylus* species. Examination of the vents identified a number of the parasitic nematode *Anisakis simplex*. The vents had varying levels of infestation with between 9 to 43 individuals identified per vent.

More results for this case will be available in due course.

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



Marine Laboratory, 375 Victoria Road, Aberdeen, AB11 9DB
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Website - www.gov.scot/Topics/marine/science

## Section 2: Case Detail

Observations

A call was received on Monday August 17th by the duty inspector from Dr William Yeomans, biologist at the River Clyde Foundation. The reason for the call was to notify the inspectorate of number of Atlantic salmon that have been found dead or moribund on the river Gryffe. These fish had been observed and removed by the river Gryffe bailiffs. Dr Yeomans was able to remove a fish on August 17th, this fish was frozen.

An inspector was at the River Gryffe the day after this phone call. Approximately 12 moribund fish were observed on the river, at a stretch known locally was 'The Pots'. The area consisted of a number of large potholes and small waterfalls, a formidable obstacle for a salmon migrating upstream. The moribund fish were observed in the potholes with grey lesions and suspected fungus on the heads and flanks of the fish. Clinically healthy fish were also observed in these pools.

Four moribund fish were removed for diagnostic sampling. Closer examination revealed that all the fish had pale gills and fish four had an inflamed vent. Internally, all four fish had slightly pale livers, a lack of fat associated with the pyloric caeca, yellow pseudo-faeces and no food present in the gut. Fish 1 also had bloody ascites and a grey and granular kidney. Fish 1 – 3 had slightly pale hearts.

The fish frozen by Dr Yeomans was fish 5. This fish was reportedly found moribund in a pool on August 17th. The fish was frozen later that day and collected by the inspector the following day (August 18th). The fish was taken back to the lab, defrosted and sampled on August 21st. Histology samples were not taken from this fish due to post mortem changes.

Samples

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

| Fish number | Pool number | Species | Stage | Origin |
|---|---|---|---|---|
| F1 - 5 | 1 | Atlantic salmon | Adult / ~1.5kg | River Gryffe |

Results

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

The following fungus was isolated from fish 1 – 5:
*Saprolegnia* sp. (found in the lesions of F1 - 5 and gills of F1 and F3).

The following bacteria were isolated from fish 1 – 5:
*Aeromonas hydrophila* (found in the lesions of F1 - 5 and kidney of F3 - 5).
*Aeromonas cavia* (found in the lesions of F1 - 5)
*Aeromonas sobria* (found in the lesions of F1 - 5)

The following bacteria were isolated from fish 3 and 5:
*Pseudomonas fluorescens* (found in the kidney of F3 and the lesion of F5)


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The following bacteria were isolated from fish 2 and 3:
*Flavobacterium psychrophilum* (found in the lesion of F2 and the kidney of F3)

Plates taken from lesion and gill material of all 5 fish showed evidence of fungus. This fungus has been given a preliminary identification of *Saprolegnia* sp. by microscopic examination. Three predominant bacterial colonies were also isolated from all 5 fish and were identified as *Aeromonas hydrophila, cavia* and *sobria*. These motile aeromonads are known to be fish pathogens however in this case the mixed nature of the growth suggest they have occurred initially as an opportunist and increased to result in a significant bacterial infection. *Pseudomonas fluorescens* and *Flavobacterium psychrophilum* were also isolated in 2 of 5 fish however the low level of growth would not suggest they are implicated in morbidity in this case.

**Molecular Genetics:** Tissue samples were tested for segments of RNA indicative of the presence of infectious salmon anaemia virus (ISAv) and salmonid alphavirus (SAV) using real-time PCR (QPCR).

The results of these tests were negative.

**Parasitology:** Fins were collected to determine the presence of *Gyrodactylus salaris* using light microscopy and molecular techniques (PCR). No *G. salaris* parasites were detected in the samples examined.

Vents were also collected to determine the presents of other parasites. All the vents were found to be positive for a parasitic nematode with varying levels of infestation as outlined below:
Fish 1: 9 *Anisakis simplex*
Fish 2: 17 *A.simplex*
Fish 3: 28 *A.simplex*
Fish 4: 43 *A.simplex*
Fish 5: 8 *A.simplex*

**Histology:** Tissue samples of gill, skin and skeletal muscle, heart, pyloric caeca, pancreas, hind gut, liver, spleen and kidney were taken from fish 1 - 4. The tissue samples were fixed in 10% neutral buffered formalin.

Histopathological examination revealed the following:
Gills: minor epidermal hyperplasia with generalised capillary dilatation, in some cases dense infiltration by granulocytes.
Skin and skeletal muscle, including adipose fin: patchy epidermal infiltration with some chromatophore migration, perivascular infiltrate consisting of scattered granulocytes. Loss of integument and oedema of the hypodermis including disruption of dermal layer as fungal hyphae have become widespread. This is accompanied by marked myofibrillar degenerative changes, and swelling of the inter-myotomal connective tissue and loss of nuclei and diffusing cellular necrosis.
Heart: within normal range
Intestine, pyloric caeca: within normal range
Pancreas: within normal range
Liver: within normal range
Kidney: within normal range
Spleen: within normal range


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Signed: A.S. Mayes Date: 07/09/2015

Fish Health Inspector

The Fish Health Inspectorate Service Charter detailing standards of service is available on the Marine Scotland website at www.gov.scot/Topics/marine/Fish-Shellfish/FHI/charter



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