

Case No: 2023-0216 Date of visit: 29/05/2023

Time spent on site: 3 hours Main Inspector:

Site No: FS1336 Site Name: Applecross Hatchery
Business No: FB0169 Business Name: Bakka frost Scotland

Case Types: 1 WEL 2 REP 3 4 5 6

Water Temp (°C): Thermometer No: FHI 045 completed

Observations: Region: HI Water type: F CoGP MA

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

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

**Additional Case Information:**

13/2/23-19/2/23 3.93% 0.3g fish fungus 124,528 Formalin treatment  
1/5/23-7/5/23 6.04% 0.5g fish fungus 184728 aquasen/cress treatment  
8/5/23-14/5/23 27.73% 4.5g fry 797,014 fish  
15/5/23-21/5/23 10.42% 216330 fish - parr section

From mort report; "This mortality was in parr unit (separate from the fry unit detailed in wk18 mortalities). Issues with pH in water. Lag between pH buffer added and probe feedback. Changes have been made to probes and protocols for improved real time feedback to reduce lag and improve response. Mortalities in remaining stock being closely monitored and they may be culled. Discussed with [REDACTED] and he will inform APHA".

Historic mortality event from 22nd - 28th August 2022 a loss of 53.33% which affected all 8 tanks within the fry section of the site. It is believed that water supplied to the site had become contaminated prior to water intake which lead to a rise in hydrogen sulphide levels leading to significant mortality within the fry section. Following a deep clean of the sites water reserve and facilities, the site was restocked and no further issues had occurred.

Currently in the fry section 8 tanks with 1309989 fish @ 0.7g which will be ready to move to the parr section in 6 weeks. Parr section was stocked on 10th-18th April 2023 from the fry section

Peak daily mortality in parr section; 8/5/23 34500 2.52%, 9/5 83768 6.26%, 10/5 134352 10.76%, 11/5, 140576 12.61%, 12/5 148919 15.29%, 13/5 96505 11.7% 14/5, 86693 11.9%, 15/5 107932 16.82%, 16/5 17234 3.23%.

Records checked and adequately maintained; site details, mortality records and health surveillance records.

In the parr section the prob monitoring the PH is placed just after caustic soda or bicarbonate soda is added. This results is the readings from this probe jump up and down so the cut off from this probe has been over-ridden. There are 8 tanks in the cycle but only 4 were stocked at the time of the incident. 10 cycles prior to this one with no issues. 24/5/23 TMS used to cull remaining stock due to compromised (burnt) gills.

Health reports from 15/5/23 from Pharmaq; gills evidence of lamellar surface damage with adhesions, hyperplasia and lamellar fusion. Epithelial cell necrosis/apoptosis and detachment sometimes associated with debris containing filamentous bacteria and lower numbers of large segmented filamentous bacteria like organisms. Hyperplastic filament thickening and clubbing. All fish showed eosinophilic or hyaline globular inclusions within kidney and splenic macrophages. Post acute gill pathology may indicate recent irritant or toxic gill lamellar surface damage.

Poxvirus results from 12/5/23 - PCR 5/5 positive Ct values range 23.5-26.9

Cycle consists of; Tanks-probes- drum filter- biofilter - doser- probes- tanks - Also concrete mixing tank which had a thick biofilm above the water line but below the water lie was stripped clean. Thought combination of caustic soda and bicarbonate soda may have removed the biofilm into the system.

Teams meeting 8/6/23

10/4/23 1.85 million input. Development issues in batch. Unusual behaviour, spiralling, inappetence and grumbling mortality. – Stock also at Couldoran with similar issues. Reason undetermined but not thought to be a disease issue from test conducted. Landcatch Hebridean strain.

8/5/23 1.3 million fish on site -Sudden mortality due to gill insult with gill pathology.

11/5/23 1 million fish on site. Significant mortality, gill lamellae exposed to something. Necrotic, swelling, fish unresponsive, some fungus. Still considered an opportunity for recovery so salinity increased for fungus to 2ppt.

H2S levels up slightly after the event thought to be due to dead biological material loading.

15/5/23 PCR gill pox virus with low CT values. – Gill pox often present but can be significant if stress in population – considered 2ndry.

16/5/23 Mortality continuing – further gill samples in healthy and moribund fish result still considerable gill swelling with a slight improvement.

18/5/23 600,000 fish on site. Small improvement but generally at the population level poor improvement. – welfare of population decision to cull all stocks.

PH stabilising using Bicarbonate soda or Caustic soda (finer margin for error but will not interfere with CO2 at high biomass). Bicarb is added manually, caustic with a dosing pump set up for 8 tanks but fish only stocked into four due to development issue early on in cycle. Caustic soda the preferred stabiliser but had run out so switched to Bicarb briefly then returned to Caustic soda.

2 probes.

One immediately after dosing and before tanks – to close to dosing therefore readings fluctuate and therefore ignored.

One after tanks -. Not giving the true readings of levels in the tanks

Mitigation- the dosing point will be moved to before drum filter. Biofilm – not thought to be the issue. Tanks will be restocked mid July.

Inspection conducted in association with two APHA vets.



# FISH HEALTH INSPECTORATE VISIT REPORT

## SUMMARY FOR INFORMATION OF SITE OPERATOR

<b>BUSINESS No</b>	FB0169	<b>DATE OF VISIT</b>	29/05/2023
<b>SITE No</b>	FS1336	<b>SITE NAME</b>	Applecross Hatchery
<b>CASE No</b>	20230216	<b>INSPECTOR</b>	[REDACTED]

### Inspection under the Aquatic Animal Health (Scotland) Regulations 2009

The above site was inspected in conjunction with veterinary officers from the Animal and Plant Health Agency (APHA) following the report of a significant mortality at the site by the operators.

The section of the site where the mortality event had occurred was fallow as the fish remaining had been culled.

A separate report will be issued by the Animal and Plant Health Agency.

### Records

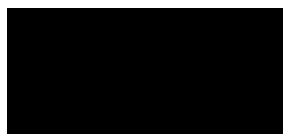
The information required for the public record of aquaculture production businesses regarding this site was verified and where necessary updated. The following records were also inspected to ensure that the conditions of authorisation for your Aquaculture Production Business (APB) are being met:

Mortality records were inspected and found to be adequately maintained. Mortality levels had exceeded the reporting criteria since the last inspection and had been reported to the Fish Health Inspectorate as required.

Reports detailing the results of animal health surveillance carried out by or on behalf of the business and/or Marine Scotland were available for inspection.

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: 28/06/2023

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/>