

Response to FoI 2012/01778

A request for information under the Freedom of Information (Scotland) Act 2002 was submitted to Marine Scotland and was answered by the Fish Health Inspectorate.

The request concerned information relating to gill diseases on Scottish salmon farms between the time period of 10 July 2012 and 31 October 2012. Further details of the request are provided in Annex 1.

Details and information are provided below in response to this request. Much of this information has been obtained through the FHI inspection process. The main purpose of FHI inspections is to support the high health status of Scotland's aquaculture industry in line with the current aquatic animal health legislation. This in turn has the benefit of protecting Scotland and the UK from trade in aquatic animals from countries of a lower health status.

During the period to which this information relates no listed diseases were detected from any of the cases conducted or indeed from any fish farm sites within Scotland. As a result Scotland has retained its high health status with respect to listed aquatic animal disease.

The following information is provided in response to the request. Details provided include: site name, business name, date and relevant information. Dates represent the date of visit or when information was received. All information provided relates to the time period requested – 10 July 2012 to 31 October 2012. The information requested relates to disease agents which are not notifiable diseases and therefore the information is not a comprehensive list and may not be representative of the actual situation during the time period or the current situation on Scottish salmon farm sites. Please be aware that the presence of pathogens on site does not always mean that the site is suffering from either disease or mortality.

- Kenmore Loch Torridon, The Scottish Salmon Company, 17/07/12. Amoebic gill disease – no associated mortality.
- Aird, The Scottish Salmon Company, 17/07/12. Epitheliocystis - no associated mortality. Diagnostic test conducted by Marine Scotland Science (MSS). Histology revealed mild or moderate epitheliocystis infection. Multi focal lamellar odema and lamella cell necrosis, and presence of melanin within lamellae and filaments. The gill pathology noted will be linked to a water irritant or water quality issue. Epitheliocystis infection was significant. The presence of melanin within some lamellae may indicate that some of the gill damage is chronic / old.
- Gousam, The Scottish Salmon Company, 18/07/12. Amoebic gill disease
- Kyles of Vuia, The Scottish Salmon Company, 18/07/12. Amoebic gill disease - no associated mortality
- Wick of Belmont, Meridian Salmon Farms Ltd, 25/07/12. Amoebic gill disease - no associated mortality. Diagnostic testing conducted by MSS. Histology revealed a moderate multifocal lamella hyperplasia and fusion, with numerous amoebas present. Fusion between adjacent filaments. Signs consistent with amoebic gill disease.

- Sconser, Marine Harvest (Scotland) Ltd., 25/07/12. Amoebic gill disease. Losses of 10,000 fish for the site over the past four weeks attributed to post treatment and amoeba. Diagnostic test conducted by MSS. Histology revealed severe multifocal and diffuse lamellar hyperplasia and fusion, with few amoebas observed in one fish and numerous amoebas observed in another fish. Gills showed mild pathology, including oedema, lamellar cells necrosis and/or scattered foci of lamellar hyperplasia and fusion. No amoebas were observed in two fish. Very small numbers of epitheliocystis were observed in all fish. Signs consistent with amoebic gill disease. Mild gill pathology was noted in two fish but no amoebas were seen.
- Gob na Hoe, Hjaltland Seafarms Ltd., 07/08/12. Amoebic gill disease. Recent mortality ~215,000 due to AGD and post treatment losses.
- Leinish, Hjaltland Seafarms Ltd., 07/08/12. Amoebic gill disease. Mortality of 14,000 fish for July.
- Ardintoul, Marine Harvest (Scotland) Ltd., 08/08/12. Amoebic gill disease. Suspected to be causing some mortality, no further detail held.
- Loch Alsh (Sron), Marine Harvest (Scotland) Ltd., 09/08/12. Amoebic gill disease. Mortality experienced - no precise detail of the extent caused by amoebic gill disease held.
- South Cava, Meridian Salmon Farms Ltd., 12/09/12. Amoebic gill disease. Mortality reported to be up to 25% attributed to amoebic gill disease and post treatment losses. MSS diagnostic samples taken. Histology revealed severe lamellar epithelium hyperplasia and fusion, moderate multifocal lamellar hyperplasia. Amoebas were present between filaments and fish showed multifocal lamellar thrombosis and necrosis of lamellar epithelium. A couple of epitheliocystis colonies were seen in one fish. Rod-shaped bacteria were observed within "clusters" of debris/sloughed lamellar cells/amoebas between filaments. Three fish were suffering from amoebic gill disease. Some of the pathological changes noted in all fish could indicate other concomitant gill insults.
- Chalmers Hope, Meridian Salmon Farms Ltd., 12/09/12. Amoebic gill disease. Mortality reported at 23,145 fish for previous 4 weeks, attributed to AGD and post treatment losses.
- Bay of Ham, Meridian Salmon Farms Ltd., 13/09/12. Amoebic gill disease. Mortality up to ~35,000 fish for previous four weeks attributed to amoebic gill disease and post treatment losses. MSS diagnostic samples taken. The gills showed severe or moderate multifocal lamellar epithelium hyperplasia and fusion, with some fish also showing fusion of adjacent filaments. Numerous amoebas were present between gill filaments. Lamellar epithelium necrosis was noted in the non-hyperplastic areas, multifocal lamellar thrombosis. Rod-shaped bacteria were observed within "clusters" of debris/sloughed lamellar cells/amoebas between filaments. A single encysted unidentified metazoan was noted in one rod filament of one of the fish. All fish sampled were suffering from severe amoebic gill disease. The lamellar thrombosis noted could indicate other concomitant gill insults. The presence of bacteria within

gill filaments and pyloric caeca lumen in some of the fish could be due to those fish being “severely” moribund when sampled.

- Carness Bay, Meridian Salmon Farms Ltd., 13/09/12. Amoebic gill disease with reported mortality at 33,163 fish attributed to amoebic gill disease and post treatment losses.
- Ardtaraig Hatchery, Meridian Salmon Farms Ltd., 19/09/12. Bacterial gill disease. Mortality of 5% reported.
- Lismore North, Scottish Sea Farms Ltd., 18/09/12. Proliferative gill disease. No associated mortality reported.
- Ardifuir, Meridian Salmon Farms (Argyll) Ltd., 19/09/12. Proliferative gill disease. No detail held concerning the extent of mortality attributed to proliferative gill disease.
- Vuiabeag, The Scottish Salmon Company, 24/10/12. Amoebic gill disease and proliferative gill disease. Mortality up to 4.1% for the site per month. MSS diagnostic samples taken. Histology revealed multifocal moderate lamellar hyperplasia with no fusion, and moderate/mild epitheliocystis. In one fish epitheliocysts were mainly observed at the base of the filaments. Multifocal thrombosis observed in one fish. The epitheliocystis infection observed in one of the fish may play a role in the gill pathology, but other concomitant gill insults are likely to be involved.
- West Loch Tarbet, Marine Harvest (Scotland) Ltd., 08/10/12. Proliferative gill disease. Mortality of 3989 fish attributed to gill infection.
- Scotasay, Marine Harvest Scotland Ltd, 09/10/12. Amoebic gill disease - no associated mortality reported.
- Raineach, Marine Harvest Scotland Ltd, 09/10/12. Amoebic gill disease - no associated mortality reported.
- Vacasay, The Scottish Salmon Company, 10/10/12. Proliferative gill disease. Recent mortality of 699 for previous 4 weeks attributed to amoebic gill disease / proliferative gill disease.
- Taranaish, The Scottish Salmon Company, 10/10/12. Proliferative gill disease / amoebic gill disease / gill problems. Mortality of ~ 7,000 fish experienced in July 2012 attributed to amoebic gill disease. Recent mortality 650 for the site per week.
- Arbhair, Lewis Salmon Ltd., 11/10/12. Mortality of ~160 fish per week for site attributed to gill damage as a result of previous case of amoebic gill disease.
- Seaforth, Marine Harvest (Scotland) Ltd., 09/10/12. Amoebic gill disease / proliferative gill disease. No associated mortality.
- Sound of Harris, Loch Duart Ltd. 31/10/12. Treated for amoebic gill disease. No mortality associated with AGD.

- Stulaigh, Marine Harvest (Scotland) Ltd., 30/10/12. Amoebic gill disease / gill pathology. No mortality associated with amoebic gill disease or gill pathology. MSS diagnostic samples. Histology revealed gill pathology, which is likely to be due to a combination of factors. Signs consistent with amoebic gill disease were observed ranging from very mild to severe. Mild to moderate epitheliocystis was present. The lamellar epithelium karyolysis and necrosis noted in some fish could indicate exposure to water irritants/toxics.
- Marulaig Bay, Marine Harvest (Scotland) Ltd., 30/10/12. Treated for amoebic gill disease - No associated mortality.
- Meridian Salmon in Unst, Shetland, 30/10/12. AGD. No detail on mortality held relevant to the time period of the request.

Annex 1 – Further detail of the FOI request received

Further to previous FOI requests (Fol/12/00998 and Fol/2012/0530), please provide more specific details on a) *Epitheliocystis and b) Infectious gill diseases** relating to Scottish salmon farms since 10 July 2012.

As with Fol/12/00998, information requested includes photos, conference papers, post-mortem reports, veterinary inspection reports, correspondence, diagnostic tests, histology reports, sample reports, results, laboratory reports, mortality reports, scientific papers, internal discussions, letters and any other information related to:

*Epitheliocystis is a term taken to broadly include Chlamydia, Candidatus Clavochlamydia salmonicola, Candidatus Piscichlamydia salmonis, Piscichlamydia salmonis and other agents of the order Chlamydiales (scientific papers are embedded as web-links to provide examples)

**Infectious gill diseases is a term taken to broadly include Salmonid gill poxvirus, Amoebic gill disease, microsporidian Paranucleospora theridion, tenacibaculosis, Neoparamoeba perurans, Tenacibaculum maritimum, paramyxovirus, proliferative gill inflammation and any “New Microorganisms linked to gill disease in salmon”