

**From:** [Nick Joy](mailto:nickjoy@puresalmon.org)

**Sent:** Tuesday, January 27, 2009 7:52 PM

**To:** [dstaniford@puresalmon.org](mailto:dstaniford@puresalmon.org)

**Subject:** Fw: [SPAM] - Loch Duart: Chemical use, diseases and escapes - Found word(s) farm in the Text body

Dear Don,

Thanks for this. I appreciate the amount of work that must have gone into it.

It is Loch Duart's intent to always be ethical in its decision making, so of course we are investigating the interaction between our different operations.

This is what makes the advent of polyculture so difficult. There is a huge body of environmentalists and scientists pushing for polyculture but there are so many things to analyse and so much to do.

I am glad that you appreciate what we are doing and even applaud it.

I have read your e mail with interest. However I do have some problems with answering you.

I have been involved in dialogues with many groups and environmentalists and have always tried to answer and discuss what we do but it is only worthwhile with those who wish the process to be constructive and who do not have hidden agendas.

I am trying to equate what you have written with your stated aim, in the past, of getting rid of salmon farming.

I would truly like to hear that your view has changed and then we could perhaps have a constructive dialogue about how to improve Loch Duart's performance. I am not ashamed to say that we could do better. I wish we were perfect but we are not.

Perhaps we ought to meet sometime and discuss what has gone before because I really hope that you have changed your views.

All the best

Nick

ps. my email server regards your missive as Spam and I nearly missed it. Is there something odd about your server?

**From:** Don Staniford [<mailto:dstaniford@puresalmon.org>]

**Sent:** 27 January 2009 13:44

**To:** Nick Joy

**Cc:** Hazel Wade; [andrew.bing@lochduart.com](mailto:andrew.bing@lochduart.com); [info@cleanfish.com](mailto:info@cleanfish.com)

**Subject:** [SPAM] - Loch Duart: Chemical use, diseases and escapes - Found word(s) farm in the Text body

Nick,

I undertand you will be speaking next week in San Diego at the Seafood Summit on a panel titled: "Integrated Multi-Trophic Aquaculture: Mixed Farming Under Water".

Hopefully you can answer a few questions about how Loch Duart "are growing complementary aquaculture species at different trophic levels to use waste nutrients from one level as feed for another".

Has Loch Duart conducted food safety tests analyzing whether the chemical waste streams from your salmon farming operations affect other species? I understand from your web-site

that Loch Duart grows sea urchins and seaweed alongside salmon farm cages:

<http://www.lochduart.com/wherethewind.htm>

Whilst I applaud your vision - "The glory of integrated aquaculture is 'nutrient balancing'" - how do you balance Loch Duart's use of chemicals via bath treatments such as Cypermethrin, in-feed use of Emamectin benzoate (SLICE) and Fenbendazole (Panacur) and contaminants such as PCBs in fish feed with food safety issues?

Whilst I appreciate Loch Duart's policy of "No antifouling treatments on nets or moorings" and "No antibiotics" (<http://www.lochduart.com/swimming%20against%20the%20tide.htm>), Loch Duart (and your subsidiary Drumbeg Salmon) have reported the use of various chemicals such as Cypermethrin, Emamectin benzoate and Fenbendazole to the Scottish Environment Protection Agency (SEPA) via the Scottish Pollutant Release Inventory.

An analysis of SEPA's Scottish Pollutant Release Inventory (using data obtained by FOI - reported by Scottish salmon farming companies) reveals that:

- Loch Duart was the #1 user of SLICE (Emamectin benzoate) per tonne of feed in 2006 (#4 in absolute terms) in 2006
- In 2007 (data up to June) Loch Duart was the #1 user of SLICE per tonne of feed
- In 2005 and 2006, Loch Duart was the #1 user of EXCIS (Cypermethrin) per tonne of feed
- In 2008 (data up to June), Loch Duart reported the use of EXCIS (Cypermethrin) at five sites and SLICE (Emamectin benzoate) at four sites with Drumbeg Salmon reporting the use of EXCIS at a further three sites and SLICE at one

Loch Duart's Scottish Pollutant Release Inventory data returns to SEPA for 2007 (obtained from SEPA via FOI in May 2008), for example, list the following in the 'Antimicrobials' section:

- 115665 grams of Panacur 4% Powder (active ingredient: Fenbendazole) at Loch Duart's N Calbha Bay, Site 7
- 73605 grams of Panacur 4% Powder (active ingredient: Fenbendazole) at Loch Duart's East Rubh a Mhucard, Site 6
- 94896 grams of Panacur 4% Powder (active ingredient: Fenbendazole) at Loch Duart's Calbha Beag, Site 5

Furthermore, Drumbeg Salmon's Scottish Pollutant Release Inventory data returns to SEPA for 2007 (obtained from SEPA via FOI in May 2008 - signed off also by Hazel Wade of Loch Duart on 25th January 2008) list the following in the 'Antimicrobials' section:

- 129600 grams of Panacur 4% Powder (active ingredient: Fenbendazole) at Reintraid
- 76000 grams of Panacur 4% Powder (active ingredient: Fenbendazole) at Torgawn

We would be happy to brief you on this industry-wide data if you're interested - SEPA make available via FOI Excel spreadsheets data on chemical use, waste emissions, mortalities, feed use etc from every salmon farming company in Scotland detailing each individual site. Data for the whole of 2008 should be available next month (which should include the use of the newly licensed chemical Deltamethrin).

Has Loch Duart conducted any food safety tests associated with chemical contamination of sea urchins and seaweed grown alongside your farmed salmon?

The 1998/9 Annual Report of the Scottish Association of Marine Science, for example, detailed a project investigating the "Potential for bioaccumulation of chemotherapeutants in polycultured urchins" and reported that: "The potential for urchins to bioaccumulate a recently licensed product, the sea-louse biocide, Calicide, is now under investigation in conjunction with Nutreco ARC":

<http://www.sams.ac.uk/membership/pdf/AnnualReport2000.pdf>

Loch Duart were listed as participating in the above general research programme - but did Loch Duart participate in any field trials investigating potential bioaccumulation of biocides such as Calicide (Teflubenzuron) and/or SLICE (Emamectin benzoate), for example, as well as other chemicals such as Fenbendazole, Canthaxanthin, Astaxanthin and PCBs in the feed?

The Scottish Environment Protection Agency, for example, published a survey in November 2005 on: "The Occurrence of Polychlorinated Biphenyls In Sediments Adjacent to Marine Fish Farms: Results of Screening Surveys During 2001 & 2002".

Has Loch Duart conducted any testing of PCBs in sea urchins and seaweed grown alongside your farmed salmon?

The Scottish Environment Protection Agency also published various surveys on Cypermethrin, Teflubenzuron, Ivermectin and Emamectin benzoate contamination of sediments. Out of 20 salmon farm sites sampled in 2003:

- Emamectin benzoate was detected in samples from 13 sites ranging in concentration from 3.08 to 27.9 µg/kg
- Cypermethrin was found in 11 samples in the concentration range 0.03 to 1.85 µg/kg

[“The Occurrence of Chemicals used in Sea Louse Treatments In Sediments Adjacent to Marine Fish Farms: Results of Screening Surveys During 2003” (SEPA, April 2004)]

And in 2004 when 34 samples were taken from 23 salmon farms:

- Cypermethrin was detected in 31 of the 34 samples in the concentration range 0.04 to 1.85 µg/kg

[“The Occurrence of Chemicals used in Sea Louse Treatments In Sediments Adjacent to Marine Fish Farms: Results of Screening Surveys During 2004” (SEPA, February 2005)]

A report - "Analysis of Carotenoids in Sea Urchins" - by the Department of Food Science and Human Nutrition at the University of Maine published by the Maine Department of Marine

Resources in August 2008 also investigated Canthaxanthin and Astaxanthin contamination of sea urchins collected near salmon cages. The results indicated that:

"Five of the eleven areas sampled produced urchins with detectable levels of astaxanthin, ranging in concentration from 1.4 to 7.1 parts per million (ppm) or ug/g. Ten of the eleven areas had urchins with canthaxanthin concentrations ranging from 5.7 to 7.85 ppm"

Also note that:

"The sea urchins for this project were collected by DMR divers Jon Lewis and Robert Russell, tended by Chris Bartlett, from under commercial salmon aquaculture pens in Cobscook Bay, Maine, on November 7, 2007, after receiving a report of unacceptable levels of canthaxanthin in Maine sea urchins exported to Japan the previous winter.

Three salmon pens were sampled, at South Bay, Johnson Cove, and Birch Point. All pens were active or recently active. For more information about these lease areas, visit <http://www.maine.gov/dmr/aquaculture/leaseinventory/cobscookbay.htm>.....

The methodology modified for the analysis was translated from Japan's Ministry of Health, Labour, and Welfare, Department of Food Safety web page at <http://www.mhlw.go.jp/topics/bukyoku/iyaku/syoku-anzen/zanryu3/2-042.html>"

[Full report available via: <http://www.maine.gov/dmr/rm/seaurchin/canthreport.pdf>]

Does Loch Duart add Canthaxanthin and/or Astaxanthin to your salmon feed? And has Loch Duart tested sea urchins for Canthaxanthin and Astaxanthin contamination? If so, are the levels considered safe by the appropriate food safety agencies?

The *Telegraph Journal* in Canada reported last month, for example, that:

"In May the team finally persuaded the Canadian Food Inspection Agency, after seven years of data that proves mussels and seaweed grown near salmon are safe to eat, to change legislation allowing commercial sale of the products. The seaweed and mussels grown through the project will be advertised for the first time at the Boston's international seafood show next March....": <http://nbbusinessjournal.canadaeast.com/journal/article/497354>

The issue of potential contamination of sea urchins, seaweed, mussels etc from salmon farm wastes and feed is certainly an interesting one and I look forward to your "Integrated Multi-Trophic Aquaculture: Mixed Farming Under Water" panel discussion at the Seafood Summit next week in San Diego.

Finally, on the issues of infectious diseases and escapes what mitigation measures are Loch Duart adopting to tackle this recurring problem?

Escapes appear to be an ongoing problem at Loch Duart with 7 reported escape incidents since 2000:

29th December 2008: 6,500 from Loch Duart's Oldany site:  
<http://www.scotland.gov.uk/Resource/Doc/1062/0076494.pdf>

8th November 2007: 10,400 from Loch Duart's Loch Laxford site:  
<http://www.scotland.gov.uk/Resource/Doc/1062/0055496.pdf>

14th-17th October 2005: 3,000 from Loch Duart's Badcall Bay site:  
<http://www.scotland.gov.uk/Topics/Fisheries/Fish-Shellfish/18692/escapeStatistics/05escapes>  
(according to the Scottish Government, the escapees had also been treated with EXCIS - Cypermethrin)

13th May 2004: 200 from Loch Duart's Torgawn site:  
<http://www.scotland.gov.uk/Resource/Doc/1062/0072270.pdf>

12th August 2003: 18,416 from Loch Duart's Calva Bay (Calbha Beag) site:  
<http://www.scotland.gov.uk/Topics/Fisheries/Fish-Shellfish/18692/escapeStatistics/03escapes>  
(according to the Scottish Government, the escapees also came from a site affected by "Clinical Infectious Pancreatic Necrosis")

4th June 2002: 8,147 from Loch Duart's Badcall Bay site:  
<http://www.scotland.gov.uk/Topics/Fisheries/Fish-Shellfish/18692/escapeStatistics/02escapes>  
(according to the Scottish Government, the escapees had also been treated with SLICE - Emamectin benzoate)

In 2000, Loch Duart also reported an escape of 9,108 salmon from a site in Loch na Thuille:  
[http://www.northern-times.co.uk/news/fullstory.php/aid/5323/Fish\\_farm\\_slammed\\_over\\_latest\\_escape.html](http://www.northern-times.co.uk/news/fullstory.php/aid/5323/Fish_farm_slammed_over_latest_escape.html)

In relation to infectious diseases, data obtained via FOI from the Scottish Government's Marine Laboratory Aberdeen also shows that Loch Duart reported Epitheliocystis (related to Chlamydia: <http://www.chlamydiae.com/docs/chlamydiales/epitheliocystis.asp>) at two sites (Loch Na Thull and Duartmore Hatchery) during 2007. Gyrodactylus derjavini, Flavobacterium (histology), Unidentified bacteria, Adhesions, Flavobacterium species and Aeromonas hydrophila were also reported as affecting Loch Duart sites.

Has Loch Duart conducted any studies investigating potential links between infectious diseases on farmed salmon and other species such as sea urchins and seaweed?

If you could provide answers to the questions outlined above it would be much appreciated. If you have any questions please do not hesitate to contact me - I am only too happy to provide more details.

Thanks - and best fishes for 2009.

