



Cohen Inquiry Highlights



Synopsis of Key Evidence from the Commission of Inquiry into the Decline of Fraser River Sockeye



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Proboszcz, S., C. Orr, T. Hall, and A. Hill. July 2012. Cohen Inquiry Highlights: Synopsis of Key Evidence from the Commission of Inquiry into the Decline of Fraser River Sockeye. Watershed Watch Salmon Society, Coquitlam, B.C. <http://www.watershed-watch.org/wordpress/wp-content/uploads/2012/07/CohenInquiryHighlightsReport.pdf>

Media on the Cohen Inquiry

“Between 10.6 million and 13 million sockeye were expected to return to the Fraser this summer. But the official count is now just 1.7 million, according to the Department of Fisheries and Oceans.” **–Mark Hume, *Globe and Mail*, August 12, 2009**

“Consequently, those who have a primary stake in Fraser sockeye—the commercial, recreational and aboriginal fishing sectors—are demanding Ottawa hold a full judicial inquiry into the declines.” **–Brian Lewis, *The Province*, October 11, 2009**

“Supreme Court Justice Bruce Cohen, who is heading the judicial inquiry ordered last year by Prime Minister Stephen Harper, was also told by aboriginal groups that he can't ignore the topic, even though an examination of native rights falls outside his mandate.” **–Mark Hume, *Globe and Mail*, October 26, 2010**

“An unguarded note a Department of Fisheries and Oceans manager wrote to himself has given a judicial inquiry a glimpse into the frustrations and fears felt by frontline staff fighting to save salmon habitat in British Columbia. The brief, one-page document written by Jason Hwang, a manager for DFO's Habitat and Enhancement Branch in the Kamloops area, was entered as evidence at the Cohen commission...” **–Mark Hume, *Globe and Mail*, April 5, 2011**

“Ottawa bureaucrats have muzzled a leading fisheries scientist whose work could help explain why salmon stocks have been crashing off the West Coast, according to documents obtained by Postmedia News. The Privy Council Office and the Fisheries Department said Miller has not been permitted to discuss her work because of the Cohen Commission...” **–Margaret Munro, *The Province*, July 27, 2011**

“She’s not sure if the virus she says she has found in certain Fraser River sockeye salmon is killing them. Open-net farms might be contributing to the wild sockeye’s pattern of decline, but she hasn’t checked. She doesn’t know. Dr. Miller did stress that she has ‘enough evidence to keep going with this [virus] research.’ That’s not the last word, or any measure of proof. It’s just a start. Dr. Miller’s testimony continues Thursday.” **–Brian Hutchinson, *National Post*, August 24, 2011**

“A Department of Fisheries and Oceans communications plan, filed as an exhibit at the Cohen Commission, portrays the B.C. public as confused, West Coast newspaper reporters as biased and environmental groups as self-serving. The National Aquaculture Communications and Outreach Approach, prepared for DFO by a New Brunswick consultant, sets out a three- to five- year plan for convincing both DFO staff and the public of the merits of fish farming.” **–Judith Lavoie, *Times Colonist*, September 3, 2011**

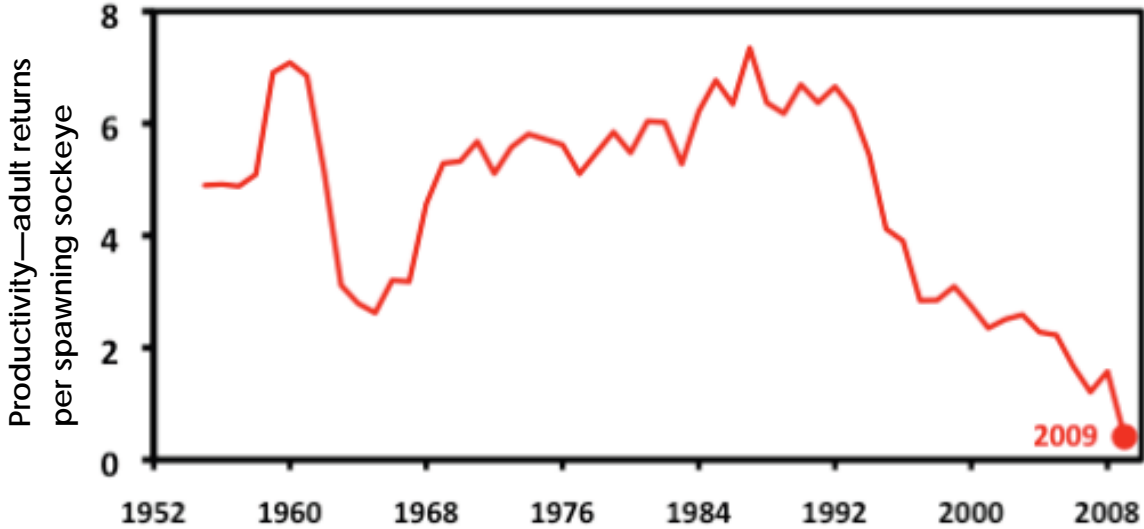
“The Commission has already heard much testimony about the impact of DFO staff reductions, including how cutting 24 fisheries officers in 2004-05 led to a 1,000 per cent drop in reported violations of laws protecting fish habitat. It also saw an internal memo from a DFO manager who said resource reductions had left staff ‘disillusioned’ and described as ‘dysfunctional’...” **–Bob Jackson and Nick Humphreys, *Vancouver Sun*, September 16, 2011**

“The Department of Fisheries and Oceans is charged with promoting aquaculture but also with protecting wild fish, a dual mission that some critics say creates conflicts. Agency officials are scheduled to testify in the next two days.” **–William Yardley, *New York Times*, December 15, 2011**

Inquiry background

The Fraser is widely renowned as the World’s greatest salmon river. This storied reputation is in no small way owing to its once abundant sockeye salmon. Sockeye, quite simply, are prized beyond other salmon. Their inordinate value stems from their vivid spawning colours and sheer numbers, their commercial, food and recreational value, and from their fascinating nature. Juvenile sockeye typically rear in lakes (more so than other salmon), and sockeye from different lakes often exhibit distinctive behavioral, physical and genetic characteristics. For example, Chilko Lake sockeye are distinctive in having large hearts to help them in their long and challenging spawning migrations. But other aspects of certain stocks remain a mystery. Harrison sockeye boast an unusual lifecycle; after they hatch in the river they don’t spend a year feeding in a nearby lake like other sockeye, but migrate almost immediately to the ocean. Unlike many other sockeye stocks, their numbers are increasing.

Millions of Fraser sockeye have occasionally “gone missing” in certain years due to known and unknown reasons, but the big mystery with Fraser sockeye revolves around the reasons behind the precipitous decline in their collective productivity since the early 1990s. Concerns over sockeye declines were



heightened considerably by exceptionally low returns in 2009, and the resulting alarm among managers, harvesters, and a distressed public eventually prompted Canada’s Prime Minister to commit to the first-ever federal judicial inquiry into their plight in November 2009. Justice Bruce Cohen—a B.C. supreme court appointed judge since 1987—accepted the challenge and was placed in charge of this momentous endeavor. The [Commission of Inquiry into the Decline of Sockeye Salmon in the Fraser River](#) was granted the power to compel witnesses to testify under oath and also to deliver relevant documents. Nothing of this nature had been witnessed in Canada before. The inquiry’s primary mandate was threefold: to examine the causes of the decline of Fraser River sockeye salmon, to look at how Fisheries and Oceans Canada (DFO) is managing sockeye and to develop recommendations for improving their future sustainability.

Response to the announcement of the inquiring was pronounced. The commission received 50 applications for official standing—a number believed to be greater than any previous federal commission of inquiry. Justice Cohen grouped some applicants with similar concerns into coalitions. When the dust settled, 21 participants gained standing, including First Nations, the provincial and federal governments, the B.C. Salmon Farmers Association, commercial fishing interests, conservationists, and other interests as diverse as Rio Tinto Alcan. Watershed Watch Salmon Society participated as a member of the Conservation Coalition and was represented by [Ecojustice](#). The Cohen Commission is expected to complete its work within a [budget of \\$26.4 million](#) and its efforts unquestionably are the most ambitious and authoritative of any previous investigation into British Columbia's wild salmon.

The number of documents the commission had to consider was simply enormous, [totaling over 500,000](#) from the Government of Canada, primarily from Canada's Department of Fisheries and Oceans (DFO). Almost half were emails. Other participants also submitted documents, in the end totaling over 17,000. All documents were housed in a confidential electronic database called Ringtail, which allowed participants to search and examine reports, memos, data, emails and other files. Documents in Ringtail deemed relevant to the inquiry's mandate could be made public only through a process of bringing them up in hearing; if no valid objections were raised, they became public exhibits. More than 2,100 relevant documents became evidence and also public documents. In addition, 33 expert and policy and practice reports were commissioned, over 180 witnesses took the stand, and more than 14,000 pages of testimony transcripts resulted.

Why a Cohen Inquiry synopsis?

Watershed Watch has a broad interest in salmon conservation and is involved in many issues including sustainable harvesting and aquaculture, habitat protection and enhancement, the Wild Salmon Policy, water conservation, and more. Given the inquiry's unique nature and mandate—and the substantial overlap in our activities and interests—Watershed Watch was an active participant. We were involved by:

- attending the majority of all sessions;
- providing submissions on previous inquiries;
- submitting a sworn affidavit regarding the release of salmon farming disease data;
- submitting numerous evidence documents;
- providing expertise and strategy support to our legal team;
- searching Ringtail for evidence documents; and
- testifying as an expert witness on sea lice and water issues.

We also examined mountains of evidence by attending hearings and reading exhibits and transcripts, and summarized it for the public in two blogs. [Salmon Leaks](#) is a high-level summary of key evidence revealed in each of the inquiry subject areas. Given ours and the public concern around negative effects of aquaculture—and the overwhelming number of public submissions on this subject as reported in the

inquiry [interim report](#)—we teamed-up with [SOS Marine Conservation Foundation](#) to produce the [Cohen Aquaculture Daily](#). This blog is a summary of key evidence from each hearing day that broached the subjects of salmon farming and disease.

As the inquiry unfolded, we were astounded by the sheer volume of illuminating and previously confidential information revealed through the process. Both excited by and concerned with the nature and volume of information being released, we felt strongly that key evidence and testimony should not become buried and forgotten. Hence, we took on the task of refining and summarizing key highlights from the inquiry to ensure a meaningful and permanent record was accessible to the public. For our report we drew from our blogs and notes, and read numerous transcripts and exhibits summarizing the information we found to be most compelling in the Fraser sockeye story. We hope this report will arm the reader with a compelling overview of some of the key evidence, maybe even a jumping off point to further research on specific exhibits and testimony. Finally, Watershed Watch offers this report as a measuring stick against what is considered in the final report of the Commissioner—and more importantly, what actions government eventually decides to take in response to its federal sockeye inquiry.

How to use this report

The hearings tackled numerous issues that may affect Fraser sockeye, such as commercial harvesting, climate change and other issues in a specific order. Our report follows the chronological order of issues as determined by the Cohen Commission (see Table of Contents) and limits interpretations and presents the evidence as nearly as it was tabled.

Since disease and aquaculture hearings were well attended by the public and gained wide media coverage, we report on those sessions in more detail—each hearing day is summarized separately in this report. Within each, similar topics of discussion and subjects are grouped but also separated from different issues by indentations in the page margin.

To find information on a specific topic, the reader is advised to look through the Table of Contents for the subject of interest, or to search for specific words using the PDF search function.

As a further service, original hearing transcripts and key exhibits are highlighted and electronically linked to this document and housed on our website. When searching for more details, please click on the [underlined links](#) to access specific exhibits and transcripts.

Quotations from testimony used in this report are accompanied by the transcript page and line number in parentheses, to help facilitate further review of actual dialogue between counsel and witnesses.

Part 1: Sockeye Lifecycle, Aboriginal Perspectives, Conservation, DFO Organization and the Pacific Salmon Commission, October 25 – November 9, 2010

Evidentiary hearings of the inquiry began on October 25th, 2010, and despite a heavy downpour, hundreds of people marched and chanted on the streets in downtown Vancouver in anticipation of the first day. The first week of hearings was introductory.

See the transcripts below:

- [Oct 25 Sockeye Life Cycle](#)
- [Oct 26 Aboriginal Perspectives](#)
- [Oct 28 Conservation](#)
- [Oct 29 Conservation](#)

Interesting information was revealed in the first week through David Welch's testimony on Oct 25 (starts on page 66, line 38) and a [report](#) he submitted to the commission. It was suggested that sockeye outmigration survival challenges could be rooted in the Discovery Islands and Johnstone Strait region and it was hypothesized that salmon farms could be a factor.

Another interesting exhibit is a [Policy and Practice Report on International Law](#) relevant to the conservation and management of Fraser River sockeye salmon which is a cornucopia of useful legal avenues in which to protect salmon. This is the second of twenty-one [Policy and Practice Reports](#) produced by the Cohen Commission.

Other interesting testimony came on Oct 28 (starts on page 88, line 11) from Dr. John Reynolds, Simon Fraser University (SFU) Salmon Conservation Chair, testified that DFO scientists were invited to a [SFU think tank](#) in December of 2009 to discuss possible factors contributing to sockeye declines, but he heard they were forbidden to attend by upper-level DFO staff. A primary goal of this meeting was to synthesize the most convincing theories behind the decline in Fraser sockeye and then present them to the public. The suggestion that scientists were banned from attending these meetings first raised the issue of possible DFO information control and censorship in the inquiry—and the start of a theme that continued throughout the hearings.

Also on Oct 28, author and journalist, Terry Glavin, testified that “the commercial salmon fishery...is the last fishery of any consequence on Canada's West Coast that remains locked mainly within an outdated and rigid limited entry licence system” (page 39, line 33). He suggests this is an obstacle and recommends “a transformation of the access privileges vested in commercial licence-holders to a system of quotas or transferable shares in the harvestable surpluses of individual salmon stocks” as detailed in a [2007 report](#) he authored.

Next, an organizational panel made up of high ranking DFO staff took the stand, transcripts below:

- [Nov 1 DFO Organizational Panel](#)
- [Nov 2 DFO Organizational Panel](#)
- [Nov 3 DFO Organizational Panel](#)
- [Nov 4 DFO Organizational Panel](#)

On Nov 1, a [good outline](#) of the structure and function of DFO was presented during this session.

An interesting exchange regarding the [Director General of Aquaculture's job description](#) occurred on Nov 2 (page 4, line 13). Although Clair Dansereau, Deputy Minister of Fisheries and Oceans stated (page 5, lines 17 to 25) that "conservation of our wild stocks and conservation of the fisheries is the top priority in everything that we do," and that "conservation is mentioned in all of our documentation," it was repeatedly suggested by counsel for the Aquaculture Coalition that the mandate to conserve wild stocks is not explicitly outlined in the Director General of Aquaculture's job description; however, expanding the aquaculture industry is emphasized repeatedly.

On Nov 3, a timely article by Mark Hume titled "Brain lesions linked to decline in sockeye stocks" was published in the Globe and Mail and cited a 2009 [confidential memo](#) to the Minister of Fisheries that was accessed by the newspaper through the Freedom of Information Process. It includes a number of alarming statements:

"Sockeye salmon have also been found to have brain lesions. Lesions were first detected in 2009 in samples from 2006, a year when 13 million sockeye returned to the Fraser River."

"The gene response pattern and the presence of lesions have not been directly linked, but they are thought to be related to a viral infection."

"In subsequent examinations, Fisheries and Oceans Canada (DFO) staff found lesions in the brains of southern BC coho, chinook and sockeye salmon, and across a range of life stages and sample years."

Given that Laura Richards, Director of Science for DFO, was listed as an author of this memo, counsel for the Aquaculture Coalition raised it on Nov 4 when she took the stand (page 35, line 19). This action was met with resistance from the Government of Canada and the B.C. Salmon Farmers Association. After a lengthy exchange involving many participant groups, a decision was made to not allow the memo to be entered as evidence at this point in time; however, it was decided that Laura Richards would be brought back to the stand (see Part 6, March 17, 2011) to specifically answer to this document at a later date.

The [Pacific Salmon Commission](#) (PSC) took the stand next. The PSC is responsible for implementing the Pacific Salmon Treaty and providing regulatory advice and recommendations to Canada and the USA in order to conserve and divide the fisheries appropriately.

Below are the Pacific Salmon Commission transcripts:

- [Nov 8 Pacific Salmon Commission](#)
- [Nov 9 Pacific Salmon Commission](#)

On Nov 8 counsel pointed out that much of the Pacific Salmon Treaty process is comprised of DFO staff and that Environmental Non-government Organization (ENGO) members in the process hold only observer status (starts on page 45, line 25).

Tim Leadem, counsel for Watershed Watch, introduced the important issue of late-run Fraser sockeye experiencing early upstream migration and high rates of mortality, through cross examination of Mike Lapointe, Chief Biologist from the PSC (page 51, line 18), specifically referencing his [report](#). The issue of early migration is one that repeatedly resurfaces throughout the hearings and is connected to the developing story regarding the [confidential memo](#) that was raised on Nov 4.

Another important document entered on Nov 8 was a [report](#) prepared for the PSC synthesizing evidence from a science workshop held in June 2010 on the decline of Fraser sockeye. The report categorizes various possible explanations for the decline into 9 categories ranging from disease pathogens to predators.

Part 2: Wild Salmon Policy and First Nations Panel, November 29 – December 15, 2010

It became clear early in the sockeye inquiry that the quantities of confidential documents and data flowing through the process were huge. Citing the reams of information that required examination, participant counsel requested a two-week break before continuing on to the next topic—the Wild Salmon Policy (WSP). A break before the WSP section was timely due to its importance to the inquiry.

In addition to the hearings, on December 8, Justice Cohen made a [ruling](#) regarding a request from the Conservation and Aquaculture Coalitions. Both coalitions requested the production of aquaculture health records from the province of B.C., the government of Canada and the B.C. Salmon Farmers Association. There were extensive written arguments from many participants on this issue, including affidavits from biologist Alex Morton, and Stan Proboszcz, biologist with Watershed Watch Salmon Society. After reviewing the information Justice Cohen ruled, “The respondent BCSFA takes strong issue with Mr. Proboszcz’s opinions and with the literature upon which Mr. Proboszcz relied to reach his opinions...this ruling is not the time or place for me to decide the serious conflict in the parties’ positions regarding the evidence on this point. However, I think that data from the additional fish farms identified in the affidavit of Mr. Proboszcz may assist me in assessing such issues as the impact of fish farms on Fraser River sockeye salmon (if any)...” (page 13 of Dec 8 ruling). In the end, Justice Cohen ruled that fish health records from an additional 99 salmon farms (for a total of 120) from the period January 1, 2000 to September 1, 2010 should be produced and be accessible to all participants in the inquiry.

Wild Salmon Policy Part 1 transcripts:

- [Nov 29 WSP](#)
- [Nov 30 WSP](#)
- [Dec 1 WSP](#)
- [Dec 2 WSP](#)
- [Dec 3 WSP](#)
- [Dec 7 WSP](#)
- [Dec 8 WSP](#)
- [Dec 9 WSP](#)
- [Dec 16 WSP](#)
- [Mar 4 WSP](#) (continuation from Dec 16 testimony)

One evidentiary highlight occurred on Nov 30 when Watershed Watch counsel suggested the WSP was in need of implementation funding (starts on page 93, line 4) and an [internal DFO email](#) was introduced to the commission. A caveat to attaining the funding was mentioned in the email: “the total amount of all [WSP] proposals should not exceed the previously estimated amount of \$800K annually.” It was also suggested that a considerable amount of internal debate within DFO occurred on the subject of the WSP, and that it likely slowed its implementation and that in hindsight, the use of facilitation, mediation or arbitration may have been a useful mechanism to reduce conflict (page 79, line 22).

On Dec 1, retired Assistant DFO Deputy Minister, Pat Chamut—a key architect of the Wild Salmon Policy—provided insight into the original intentions of the policy, in particular to the management of commercial fisheries:

“I was anticipating, with the Wild Salmon Policy, that it would definitely not be the status quo when it comes to managing the resource on an annual basis, that we would end up with challenges...to rebuild conservation units that are at low abundance, and that would require changes to the way in which fisheries are conducted, and I thought it would probably mean things like some seasonal closures in certain fisheries. I thought it might mean moving some fisheries from outer areas of the coast into more terminal areas, and particularly finding ways to fish more selectively” (page 97, line 7).

Ms. Gaertner, counsel for the First Nations Coalition, then turned to Mark Saunders, former Wild Salmon Policy coordinator with DFO, and asked if the results of the WSP once implemented, would result in an “increase in terminal fisheries” and more precautionary harvest of low abundance stocks (page 97, line 30).

Mark Saunders referred to the Pacific Integrated Commercial Fisheries Initiative (PICFI—a mechanism for transferring fishing licenses from mixed-stock coastal areas to in-river and terminal areas where fish could be harvested more selectively) and said, “...the PICFI initiative was announced very shortly around the same time, which was dedicated to this notion of shifting effort into more terminal areas. And so how explicitly that was discussed in the Wild

Salmon Policy dialogues, I don't...I can't recall off the top of my head, but I would expect that was the case.”

Through a lengthy exchange on Dec 2 between Commission Counsel and DFO staff (page 37, line 14) it was suggested that in the early stages of Wild Salmon Policy implementation (in approximately 2005) there were “firm” commitments and deadlines and “particular kinds of consultation” being promoted. The dialogue moved to the present day implementation of the policy, which seems “really more ad hoc, more internal, and doesn’t have the sort of rigorous commitment that was suggested in the early documentation.” This raised the question: has the enthusiasm for the implementation of this policy decreased precipitously within DFO in recent years? Although a DFO staff member states that implementation would take “somewhere between five and ten years,” counsel contested this timeframe by producing a [2005 DFO presentation](#) that clearly shows the implementation phase of the WSP was 5 years total and the final steps of the policy should have been completed in 2010. Full implementation of the WSP has yet to occur.

On Dec 16 counsel continued to press for a timeline for the completion of the much anticipated Wild Salmon Policy:

“Can you see getting there in terms of the fully operationalized Wild Salmon Policy within the next five years, if I can try to pin you down in terms of a time frame?” (page 45, line 2)

Susan Farlinger, Regional Director General of DFO, was unwilling to commit, “Well, I do think it’s pretty tough. I think we’re moving towards that at every possible level in the annual decision-making, in the preparation of the integrated management plan for salmon where we identify stocks of concern in all areas of B.C. and, in fact, the Yukon. I simply think it’s a continuum, and we can only continue to proceed towards completion. I’m not sure I can give you a date.”

After the first WSP section, First Nations took the stand before the holiday break to voice their world view, traditional knowledge and how habitat and fish stocks have changed in their territories in recent times.

Aboriginal World View transcripts:

- [Dec 13 First Nations Panel](#)
- [Dec 14 First Nations Panel](#)
- [Dec 15 First Nations Panel](#)

On Dec 13 the panel was asked to describe the habitat loss and degradation in their respective territories (page 67, line 17). Poor logging practices, excess siltation and inadequate management by DFO were some of the issues presented by chiefs on the panel.

Just before the holiday break on Dec 15, Chief Robert Mountain of the Namgis recounted his observations of elevated sea lice levels from salmon farms on juvenile salmon and on returning sockeye (starts on page 72, line 8). Salmon conservation concerns linked to salmon farming were voiced by a

broad spectrum of witnesses throughout the inquiry.

Part 3: Harvest Management, January 17 – February 11, 2011

As with any factor that potentially depletes sockeye, the amount of fish harvested as well as the associated decision making processes were examined closely by the inquiry.

To aid Justice Cohen’s objectives and the grand task at hand, the sockeye inquiry was given a 13-month extension and an additional \$11 million. With the extension, Justice Cohen’s final report was now due by June 30, 2012 (though the commission would receive one more extension to September 30, 2012).

See harvest management transcripts below:

- [Jan 17 Harvest Management](#)
- [Jan 18 Harvest Management](#)
- [Jan 19 Harvest Management](#)
- [Jan 20 Harvest Management](#)
- [Jan 21 Harvest Management](#)
- [Jan 24 Harvest Management](#)
- [Jan 25 Harvest Management](#)
- [Jan 26 Harvest Management](#)
- [Jan 27 Harvest Management](#)
- [Jan 31 Harvest Management](#)
- [Feb 1 Harvest Management](#)
- [Feb 2 Harvest Management](#)
- [Feb 3 Harvest Management](#)
- [Feb 7 Harvest Management](#)
- [Feb 8 Harvest Management](#)
- [Feb 9 Harvest Management](#)
- [Feb 10 Harvest Management](#)
- [Feb 11 Harvest Management](#)

Counsel for Watershed Watch questioned Mike Lapointe of the Pacific Salmon Commission Jan 19 on the issue of early sockeye entry into the Fraser River and how this relates to the research of Dr. Kristi Miller of DFO (page 30, line 47). Dr. Miller’s research is mentioned in the [confidential memo](#) accessed by the Globe and Mail in late 2010 regarding a purported virus affecting sockeye, coho and Chinook salmon and is one of the most interesting issues to unfold in the inquiry (pathogens and disease). Watershed Watch counsel asked Mr. Lapointe:

“And are you aware of her hypothesis that...this genomic signature or this genomic signal is associated with elevated mortality in response to a virus?”

Mr. Lapointe replied, “yes,” and counsel then highlighted this is an important topic that needs further examination by the inquiry in the coming months.

Also on Jan 19 counsel reviewed with Mr. Lapointe the issues and challenges with managing a mixed-stock fishery and suggested that a potential solution is to move toward more terminal fisheries in the Fraser River to maximize the ability to protect threatened stocks such as Cultus sockeye (page 32, line 6).

On Jan 25, DFO Area Director, BC Interior, Barry Rosenberger confirmed that overcapacity in the commercial marine fleet and lack of capacity in the terminal fishing areas are the biggest inhibitors to a more timely shift to terminal fisheries (page 36, line 21).

On Feb 3 Watershed Watch counsel asked Dr. Brian Riddell, CEO of the Pacific Salmon Foundation, about his thoughts on the importance of examining the early ocean survival of Fraser sockeye (page 3, line 31). Dr. Riddell stated:

“...the Strait of Georgia has been largely neglected as a major study in terms of ecosystems that salmon all use, and there really hasn’t been a comprehensive study of the strait and what determines marine survival in the early phase.”

Dr. Riddell continued to talk about Kristi Miller’s work regarding a purported virus and the importance of examining this factor in the inquiry: “We’ve been looking at this for a while. I’ve been following it, naturally, because Kristi was in my division before I left the department and as my background is genetics, we spent quite a bit of time talking about this” (page 5, line 3).

Dr. Riddell also touched on the importance of examining Harrison River sockeye for potential clues to the decline because of their unique outmigration behaviour: “not only do they use the strait longer, they go out to sea at a very different time” (page 6, line 15).

On Feb 8 Ken Wilson—a fisheries consultant and former DFO biologist—was questioned by Watershed Watch counsel about his previous involvement in the Fraser River Sockeye Spawning Initiative (FRSSI) (page 52, line 10). Mr. Wilson’s [report](#) stated, “The FRSSI process is represented by DFO as a Wild Salmon Policy implementation pilot for Fraser sockeye.” Mr. Wilson, representing the [Marine Conservation Caucus](#) (MCC) withdrew from FRSSI as detailed in a [letter](#) because the MCC conservation concerns were not adequately addressed by DFO. The letter states:

“...the FRSSI process is asking the question, ‘What is the best way to manage sockeye aggregates and what are the consequences of harvesting these aggregates in mixed-stock fisheries at different rates?’ The MCC is interested in asking a different question. We want to understand the consequences of alternative harvesting strategies on the individual conservation units that the WSP is intended to protect.”

Part 4: Commercial and Recreational Fishing and Harvest Management, February 21 – March 16, 2011

The inquiry continued its examination of various types of fishing and the underlying implications on Fraser salmon sustainability. In February and March the inquiry looked into the direct human effects on salmon through commercial and recreational fishing and also revisited harvest management.

See transcripts for commercial and recreational fishing as well as harvest management part 2:

- [Feb 21 Commercial Fishing](#)
- [Feb 22 Commercial Fishing](#)
- [Feb 23 Commercial Fishing](#)
- [Feb 24 Commercial Fishing](#)
- [Feb 28 Commercial Fishing](#)
- [Mar 1 Commercial Fishing](#)
- [Mar 2 Recreational Fishing](#)
- [Mar 3 Recreational Fishing](#)
- [Mar 7 Recreational Fishing](#)
- [Mar 15 Commercial Fishing](#)
- [Mar 16 Harvest Management \(Part 2\)](#)

On Feb 21, counsel, along with DFO staff Gordon Curry and Brent Hargreaves, testified about selective fishing methods and how these techniques can benefit the conservation of threatened salmon stocks by avoiding or releasing these fish quickly. Counsel then touched on an [internal memorandum](#) to the Regional Director General (page 32, line 3) which highlights an oppositional opinion by the commercial fishing industry towards selective methods:

“In spite of the large investment and very promising results to date, industry leaders have recently informed DFO that they are opposed to any addition testing or broader implementation of these new selective fishing methods in 2004.”

After counsel established the fishing industry was generally opposed to some selective fishing techniques, they continued further on this topic and entered an [internal audit on the Pacific salmon selective fishing program](#) into evidence. Counsel questioned the panel on this report (page 33, line 20) and whether they thought selective fishing techniques had dropped off DFO’s radar. Hargreaves stated, “So I think from about 2003 or so, shortly after the end of the CFAR funding, selective fishing has stalled to a large degree. There are a number of elements that continue to be a part of our normal practices, both for conservation and management...but I don’t think the emphasis is still there, and certainly the interest in terms of continuing to develop these methods has waned considerably since 2002.”

Mr. Curry concurred: “And it’s without having a directed funding source and without having someone working to continue to work with First Nations and recreational and commercial harvesters to progress with some of these gear and methods that we had started, some that

could definitely use completion, there wasn't someone driving that. So it has relaxed and there isn't the same type of push that I feel there should be in order to solve some of these issues that are getting more and more stringent as we move to Wild Salmon Policy, SARA legislation, more and more a need to solve some of these by-catch issues."

Another interesting document surfacing on Feb 21 was a [briefing note](#) from 2000 to the Minister of Fisheries that touches on the declining economic value of certain salmon stocks, theories for their declines, and a communications strategy for the public.

Two other reports of interest that were released during this section were the Policy and Practice reports produced by the Cohen Commission which summarize a broad range of issues related to the [commercial](#) and [recreational](#) fisheries.

Linkages were made between the Wild Salmon Policy and the commercial fishery on Feb 24. Tim Leadem, counsel for the Conservation Coalition, questioned Jeff Grout of DFO on useful tools such as shared-based management and selective fishing that could be emphasized by DFO in order to better implement the Wild Salmon Policy (page 23, line 12). Grout agreed that such tools could be useful.

Part 5: Climate Change and Fresh Water Ecology, March 8 – March 14, 2011

At this point, it's become clear that Justice Cohen's sockeye inquiry is a window into the behind the scenes workings of Fisheries and Oceans Canada. Due to the requirement of witnesses to testify under oath, the inquiry provides independent scientists an unprecedented opportunity to speak freely and tell it like it is. During the aforementioned sessions, contracted researchers in particular had just such an opportunity.

The inquiry [commissioned a number of researchers](#) to complete expert reports on various topics of concern and two reports were presented in the hearings recently. Drs. Scott Hinch from the University of British Columbia and Eduardo Martins from Carleton University presented their expert [report on the Potential Climate Change Effects on Sockeye](#) and trends in en route loss and pre-spawn mortality in the Fraser River.

See transcripts for testimony on climate change:

- [Mar 8 Climate Change](#)
- [Mar 9 Climate Change](#)

On Mar 8, counsel raised recent Fraser River extreme water temperature trends in relation to climate change (page 7, line 36) and questioned Dr. Hinch about them. Hinch replied, "...we have more extreme years, recently...13 out of the past 20 years were record temperatures in the historical context." Hinch

went on to discuss the negative effects of warming water on sockeye (page 9, line 45) and referred to temperature “as the master biological factor controlling for fish.”

Also on Mar 8, Dr. Hinch discussed the developing phenomena of pre-spawn mortality and en route loss in returning Fraser sockeye (page 62, line 3). Dr. Hinch stated, “yes, starting in 1992 en route loss really starts being reported by the management agencies. In 1996 we start seeing a real large or an abrupt change in the late run sockeye en route loss values where prior to ’96 it was minimal and after then it was very large, owing to the early migration phenomenon. Prior to ’92 en route loss wasn’t really recorded or reported much, although it likely occurred in some years, but it likely occurred in a much smaller context.”

Counsel continued on this interesting vein (starts on page 63, line 24) and the topic moved towards the significance and magnitude of pre-spawn and en route mortality. Counsel asked, “This might be the single greatest causative factor we have to look at?”

Dr. Hinch replied, “Yes. For—again, for a group of—for those particular group of stocks that are affected by en route loss.”

Counsel commented on the actual numbers of sockeye this could translate into, “we could be looking at losses of over three million fish in some years?”

Dr. Hinch replied, “Yes.”

The conversation between counsel and Dr. Hinch moved towards establishing the link between en route mortality of late run sockeye and the phenomenon of early entry into the river (page 65, line 44). Counsel asked, “...am I correct that this early migration pattern...for Late Runs is a significant factor in the pre-spawn mortality and en route loss?”

Dr. Hinch replied, “For Late Runs, yes.”

Counsel continued, “There’s a direct correlation between those?”

Dr. Hinch replied, “Yes.”

Counsel then asked about the cause of early migration. Dr. Hinch explained that, “It hadn’t happened prior to ’96 and suddenly this is occurring in large segments of the Late Runs.” The discussion continued and climate change was eliminated as a likely cause of the early migration phenomenon in late run sockeye.

Another [published study](#) which was [reported in the Globe and Mail](#) was brought into the discussion because Dr. Hinch was an author. The study’s lead author—Dr. Kristi Miller of DFO—hypothesized that a virus may be linked to the early entry behaviour and early mortality of some Fraser sockeye stocks. Dr. Hinch acknowledged that he agreed with the concluding statement of that study: “Our hypothesis is that the genomic signal associated with elevated mortality is in response to a virus infecting fish before river

entry and that persists to the spawning areas.” This interesting exchange went into further detail on this purported virus (page 70, line 39).

Dr. Hinch said that Kristi Miller offered up a name for the disease associated with the purported virus—“salmon leukemia”—and it was suggested that it may be caused by a retrovirus with immune suppression capabilities like the AIDS virus. Hence, it could compromise a salmon’s ability to fight off other diseases and parasites.

Gregory McDade, counsel for the Aquaculture Coalition, added that “Chinook farms in 1992 experienced an outbreak of salmon leukemia” and subsequently asked Hinch whether “In the course of your research have you looked at whether there’s any evidence of this viral signature in fish farms?”

Dr. Hinch replied, “I personally haven’t. I’m not sure what DFO has done.” He also agreed the purported virus in sockeye and its potential linkage to the salmon farming industry is an important line of research that should be addressed.

The second [expert report](#) was written by Marc Nelitz, Katherine Wieckowski and others from ESSA Technologies on the role of fresh water ecology on the decline of Fraser sockeye.

See transcripts for testimony on fresh water ecology:

- [Mar 10 Fresh Water Ecology](#)
- [Mar 14 Fresh Water Ecology](#)

On Mar 10, counsel engaged in a somewhat lengthy and heated cross-examination of Marc Nelitz (page 85, line 21) on the subject of the effects of recreational activities on sockeye, using Cultus Lake as an example, and why this factor was not included in his report.

Part 6: DFO’s Regional Director of Science—Dr. Laura Richards, March 17, 2011

The commission heard testimony from the head of science in the Pacific Region—Dr. Laura Richards. She returned to the stand on Mar 17 to answer questions related to an internal DFO workshop held in September of 2009 on the subject of the low sockeye return that year, among other issues. Some of the day’s highlights were reported in the [Globe and Mail on March 27](#). In a revealing session Dr. Richards was the focus of probing questions throughout the day. A review of the entire day’s transcript is recommended because a remarkable amount of evidence became public.

See transcripts for Dr. Richards, Regional Director of Science, DFO:

- [Mar 17 Dr. Laura Richards](#)

On Mar 17, an [email](#) was submitted that described an internal DFO workshop (held in September 2009) organized to discuss and synthesize the various theories for the 2009 low sockeye return. An agenda for that meeting was also attached. Another interesting [document](#) was comprised of three briefing notes to the Minister of Fisheries on various theories regarding the sockeye decline: one focused on sea lice, dated Mar 2, 2010; a second on a wide variety of potential factors, dated Dec 3, 2009; and a third on disease related factors, dated Dec 11, 2009. With respect to these documents, counsel suggested to Dr. Richards (starts on page 14, line 1) that DFO scientists concluded that the three most important factors that may have led to the poor Fraser sockeye return were “toxic algal blooms in Georgia Strait, low food abundance in Queen Charlotte Sound, and viral disease.” In addition, according to Dr. Richards in cross-examination, the three memos (one general, one on sea lice and one on disease) “were the only briefing memoranda that went to the minister’s office relating to the poor returns of the sockeye in 2009” at that time. This raised the question: if DFO concluded the three primary factors related to the poor sockeye return in 2009 were algal blooms, low food abundance and disease, then why weren’t specific memos on algae and food availability developed and sent to the minister to inform her of the situation? And why was a memo on sea lice sent to the minister, when this factor was not considered to be one of the primary causes of the sockeye loss? Dr. Richards does provide an intricate rationale for DFO’s actions (page 21, line 8).

The discussion on Mar 17 with Dr. Richards took an interesting turn with the introduction of several internal email threads and draft speaking notes (see below) written for a member of parliament that were developed by DFO staff from the Pacific Region (page 24, line 5). These speaking notes were to be used should a parliamentary debate on Fraser sockeye be initiated:

- [DFO email thread](#) that includes a statement from Paul Ryall, DFO, “We are been requested to draft speeches for the Minister. I don’t think this is our role. I can see that we can supply information and also address questions to a speech writer, but not be the lead on drafting a Minister’s speech”;
- [email and draft speaking notes](#) regarding aquaculture and sea lice for a member of parliament; and
- [email and draft speaking notes](#) of the entire speech for a member of parliament.

The release of these documents raises several questions. Given the draft speech notes regarding sea lice, why is so much effort put into debunking the aquaculture and sea lice theory in relation to the decline in sockeye? Why is the threat of disease (which is discussed in the internal DFO workshop held in Sept 2009) glaringly absent in the draft speech and not reported? Shouldn’t parliament be alerted to a potentially new threat to sockeye? Apparently this speech was never used, and the associated parliamentary debate on sockeye didn’t happen. Counsel for Watershed Watch posed some of these pressing questions and others to Dr. Richards during an interesting exchange later in the day (starts on page 78, line 29).

More information was entered into evidence that suggests DFO took other measures to control information. An [email](#) from Dr. Kristi Miller (see page 29, line 11) explicitly referred to Laura Richards and her alleged suppression of information regarding the purported virus theory:

“Laura does not want me to attend any of the sockeye salmon workshops that are not run by DFO for fear that we will not be able to control the way the disease issue could be construed in the press. I worry this approach of saying nothing will backfire.”

And it apparently did; on Mar 17 this “approach” was recounted publicly in a federal judicial inquiry. It is widely known DFO scientists did not attend Simon Fraser University [think tanks](#) on the subject of Fraser sockeye in December 2009 and more recently in [December 2010](#).

Counsel for the Aquaculture Coalition continued to press Dr. Richards for more than hour (starts on page 48, line 9) on the alleged suppression of information by DFO and various other subjects.

A [presentation](#) by Dr. Kristi Miller on the purported virus was entered into evidence and contained a substantial amount of information. In it Miller refers to “unhealthy” fish as those with the purported viral signature, and she said, “Unhealthy sockeye entered the Fraser River faster and suffered 9-16x higher mortality en route to spawning grounds than healthy fish. At spawning grounds, only 18% of unhealthy fish spawned.” Other pertinent disease statements from Dr. Miller’s presentation include:

- there is a “strong linkage” between her genomic and brain tumour data and Plasmacytoid Leukemia which is caused by the Salmon Leukemia Virus (SLV);
- SLV is a “relatively unknown retrovirus associated with mortalities of culture Chinook salmon in fresh and saltwater”;
- SLV “causes severe anaemia (also called Marine anaemia)”;
- “SLV-infected fish are slower growing, poorer feeders, generally less active-but with burst activity, often move lower or higher in the water column, adjust poorly to salinity transfer, may be more temperature sensitive”;
- In 1974 Plasmacytoid Leukemia was discovered in Chinook through histology at Washington State Hatchery;
- in 1988 Plasmacytoid Leukemia was found in “Net Pens in S. BC” and “SLV involvement” is proposed;
- between 1989 to 1992 “SLV spreads to [Chinook] Net Pens in central BC”; and
- there was a large SLV outbreak in 1991 from hatchery stock throughout Vancouver Island, Southern and Northern BC and Yukon.

With the introduction of two more documents, counsel began highlighting another example of DFO’s apparent lack of transparency regarding the purported virus:

- a [report](#) from a conference in June of 2008 that includes viral research by Dr. Miller; and
- a [March 2011 letter](#) from the Minister of Fisheries and approved by Dr. Richards to Alexandra Morton regarding the purported virus.

Counsel pointed out that Dr. Richards was in attendance of the June 2008 conference (page 53, line 17) where Dr. Miller presented “her hypothesis that the disease agent is intercellular, possibly a virus” and that Dr. Richards was the co-chair of the Committee on Scientific Cooperation on that conference and that she also prepared a summary of the conference. Given that Richards knew about the viral theory by at least June 2008, counsel highlighted the inconsistency in DFO’s communications about Miller’s research by drawing attention to a statement in the letter from the Minister to a concerned member of the public (page 58, line 5) in March 2011:

“The sockeye salmon that were studied were sampled in 2006, but the tissue was not analyzed until 2008 and 2009, and the hypothesis that the results indicated possible exposure to a virus was not made until mid-2009.”

Mr. Gregory McDade for the Aquaculture Coalition referred to the letter and asked, “Do you see that statement?”

Dr. Richards replied, “Yes, I do.”

Counsel continued, “Now, that’s incorrect, isn’t it? It was actually mid-2008?”

Dr. Richards replied with a somewhat confusing answer (see page 58, line 29).

Counsel continued to question Dr. Richards about the salmon leukemia work and whether Dr. Miller was being silenced by DFO in regards to this research (page 70, line 13). Counsel asked, “Dr. Richards, when Dr. Miller released her science paper in January of this year—”

Dr. Richards replied, “Yes.”

Counsel continued, “...she was told she should not speak to the media. Are you aware of that?”

Dr. Richards replied, “Yes. And again, I think — but yeah.”

Other documents of interest include a:

- [memo](#) to the Deputy Minister regarding potential factors contributing to the decline of sockeye discussed at a Pacific Salmon Commission meeting in June 2010;
- [proposal](#) on genomics research relating to sockeye declines (includes proposed research into examining if farm Atlantic salmon could act as carriers of the disease); and
- [memo](#) to the Minister in regards to strategy to address the issue of sea lice that includes: “The controversy is impeding the growth of the industry in BC and is negatively affecting public and policymaker impressions of the aquaculture sector overall regionally and nationally.”

Finally, Brenda Gaertner, counsel for several Fraser River First Nations, pressed Dr. Richards on DFO’s negligence in providing timely information regarding the purported virus which may threaten sockeye (starts on page 89, line 21).

Part 7: Habitat Management and Enforcement, April 4 – April 8, 2011

After a break in the hearings, the Cohen Commission continued with an overview of habitat management to introduce other specific habitat sessions on gravel extraction and additional issues. Directors and managers from DFO were the panel for these sessions.

See transcripts for habitat management and enforcement panel below:

- [April 4 Habitat Management and Enforcement](#)
- [April 5 Habitat Management and Enforcement](#)
- [April 6 Habitat Management and Enforcement](#)
- [April 7 Habitat Management and Enforcement](#)
- [April 8 Habitat Management and Enforcement](#)

On April 4, the “no net loss” policy, one of [DFO’s guiding principles](#), was raised early. DFO’s website states they “strive to balance unavoidable habitat losses with habitat replacement on a project-by-project basis so that further reductions to Canada’s fisheries resources due to habitat loss or damage may be prevented.” Commission counsel asked if Canada was “achieving no net loss of the productive capacity of fish habitat” (page 13, line 37). In response, Patrice LeBlanc, Director of Habitat Policies and Practices suggested that some individual projects may be increasing in productive capacity, but overall, DFO is losing more habitat than it is protecting. The Cohen Commission’s [Policy and Practice report on DFO’s habitat management](#) is an overview of some of the major issues involved in habitat protection and discusses DFO’s failure to achieve no net loss (page 20).

On April 5, counsel for the Conservation Coalition questioned the DFO panel on the Environmental Process Modernization Plan (EPMP) initiated by DFO in 2004 and summarized on page 24 in the [Policy and Practice report on habitat](#). The EPMP was in part, in response to demands from industry for greater certainty, clarity, and timeliness in regulatory reviews and environmental assessments, and demands from conservation groups pressing for stricter application of the *Fisheries Act*, the *Species at Risk Act* (SARA) and the *Canadian Environmental Assessment Act* (CEAA). Counsel asked the panel about an [internal report](#) on EPMP (page 10, line 13), suggesting this document clearly shows this DFO initiative isn’t effectively protecting habitat. The report portrays DFO staff survey results (table 2 on page 8) on the subject of EPMP. Counsel referenced the report and confirmed with Rebecca Reid, former regional Oceans Habitat and Enhancement Branch, DFO, that staff identified habitat loss as the number one downfall of EPMP. This may seem ironic, given one of the stated objectives of EPMP is to protect habitat. Counsel went on to suggest that the environmental non-government organization community “is generally against EPMP.”

Later on April 5, Watershed Watch counsel introduced an [internal briefing note](#) addressed to the Director of Habitat Management on the subject of public confidence in the aquaculture industry (page 16, line 22). The note highlights DFO’s concern with sagging public confidence in the salmon farming industry. It contains several interesting DFO perspectives:

“At present, however, there is a growing crisis of public confidence around aquaculture”; and

“As lead federal department for aquaculture, DFO has explicitly committed to improving public confidence in aquaculture. To deliver on this commitment the department has undertaken several initiatives to raise public confidence in the context of aquaculture.”

These comments raise concerns about funding and resources DFO uses to promote the salmon farming industry. The briefing note also shows the salmon farming industry is concerned about delays related to farm site reviews and renewals. It also states, “DFO transferred all 97 renewals assessments with completed screening reports for each to TC [Transport Canada] for review and decision on January 7, 2005. There remains no progress on finalizing these assessments or moving forward with First Nations consultations as TC plans. In the absence of any explanation from TC or proposed timelines, industry’s discomfort with these delays is growing.”

The same day, counsel for the Conservation Coalition also introduced an [internal memo](#) from Jason Hwang, DFO area manager from B.C.’s interior (page 19, line 7) which lists a number of problems facing the habitat branch of DFO. The memo includes:

“Huge amount of development in Thompson, Okanagan, Nicola, Shuswap. We can’t keep up. Referral backlog is up to 4 months. We are not able to pursue smaller occurrences that in the past we have pursued and prosecuted”;

“Meeting the regulatory minimum is not as favourable for fish habitat as what we used to be able to do which was to get the lowest viable impact. Also, using the results based approach means that we don’t have a handle on what is actually going on, and we often hear about things after the fact, making a problematic workload as investigations are costly, time consuming , and very confrontational”; and

“The relationship between province and DFO is in a state of disfunction. We don’t coordinate on referrals in any consistent way, and there is no guidance or leadership from Vancouver-Victoria on this.”

Part 8: Sockeye Management, Habitat Use and Production Dynamics and Habitat Restoration, April 14 – May 2, 2011

The Cohen Commission continued its examination of Fraser sockeye introducing several more expert reports, mostly from consultants and academics, and examining habitat enhancement and restoration.

See transcripts for expert reports and habitat restoration below:

- [April 14 Sockeye Fisheries and Management Expert Report](#)
- [April 15 Sockeye Fisheries and Management Expert Report](#)
- [April 18 Sockeye Habitat Use in Fraser River and Georgia Strait Expert Report](#)

- [April 19 Sockeye Habitat Use in Fraser River and Georgia Strait Expert Report](#)
- [April 20 Sockeye Production Dynamics Expert Report](#)
- [April 21 Sockeye Production Dynamics Expert Report](#)
- [May 2 Habitat Enhancement and Restoration](#)

On April 14, Karl English from LGL Ltd. the lead author of the [expert report](#) that compared management of sockeye in the Fraser River with sockeye management in Bristol Bay, Alaska, was questioned by commission counsel. On April 15, counsel questioned Mr. English on harvesting at the aggregate level and the resultant inadvertent harvest of endangered stocks such as Cultus Lake sockeye (page 3, line 22).

On April 18, Mark Johannes of Golder Associates, the lead author of the [expert report](#) on Fraser sockeye habitat use in the lower river and Georgia Strait, took questions from counsel. It was suggested by several counsel that less weight be placed on Mr. Johannes' report because of his past employment with DFO and due to his current position as a consultant, with DFO as a significant client (see page 15, line 34).

Counsel inquired about a [field audit report](#) regarding Canada's No Net Loss of Habitat Policy (page 41, line 7). The report states, "Approximately 86 percent of authorizations had larger HADD [Harmful Alteration Degradation or Destruction] and/or smaller compensation areas than authorised."

Counsel reiterated from the report that, "Habitat compensation to achieve>NNL [No Net Loss] as currently implemented in Canada is, at best, only slowing the rate of habitat loss in all likelihood increasing the amount of authorized compensation habitat in the absence of institutional changes will not reverse this trend."

Despite indications in this field report of widespread habitat loss in Canada, Mr. Johannes argued that a net gain of sockeye habitat has occurred in the Fraser River (page 41, line 45).

On April 20, Dr. Randall Peterman from Simon Fraser University presented his [expert report](#) on Fraser sockeye production dynamics. When questioned by Watershed Watch counsel about Fraser River sockeye in comparison with Alaskan sockeye stocks, Dr. Peterman summarized his opinion succinctly by pointing out B.C. and Alaskan stocks in the Gulf of Alaska are distributed in the same area (starts on page 53, line 30). Since some Alaskan stocks (Bristol Bay) are doing reasonably well, Dr. Peterman suggested the key to the problem with Fraser stocks could lie in a segment of the lifecycle outside this common area of the Gulf of Alaska. Dr. Peterman also suggested (page 54, line 42) that,

"sea surface temperature encountered by the juveniles, as they enter the ocean in their first summer of life, is a reasonable indicator of the conditions that would affect their survival rates."

Dr. Peterman went on to say, "when the sea surface temperature is above average, when the [Fraser] smolts hit the ocean, they tend to have lower productivity on average than when the ocean is at a moderate temperature level. The converse is true for the Alaskan stocks. When the

Alaskan stocks enter the ocean that's warm, their productivity seems to be higher or it is higher."

Counsel brought up the research of Dr. Kristi Miller from DFO, regarding the purported viral signature found in sockeye (previously reported in Part 6) and whether this issue seemed important (page 56, line 25). Dr. Peterman responded, "Well, I think it would definitely be something worth looking at, absolutely."

Counsel for Watershed Watch also confirmed with Dr. Peterman that there is "little to no evidence" supporting the theory that excessive escapement has reduced the productivity of stocks (page 57, line 23). The two reviewers of Dr. Peterman's report—Dr. David Welch and Dr. Sean Cox—agreed with this conclusion.

Part 9: Predation, Contaminants and Fisheries Monitoring and Enforcement, May 4 – May 18, 2011

At this point, the Cohen Commission had convened about 70 days of hearings and entered 770 exhibits into the record. In May 2011, the commission continued its examination of the decline of Fraser sockeye by introducing several new issues.

See transcripts on the issues of predation, contaminants and fisheries monitoring and enforcement below:

- [May 4 Predation](#)
- [May 5 Predation](#)
- [May 6 Predation](#)
- [May 9 Contaminants Expert Report](#)
- [May 10 Contaminants Expert Report](#)
- [May 11 Fisheries Monitoring and Enforcement](#)
- [May 12 Fisheries Monitoring and Enforcement](#)
- [May 17 Fisheries Monitoring and Enforcement](#)
- [May 18 Fisheries Monitoring and Enforcement](#)

On May 4, Commission Counsel established with DFO predator experts Dr. John Ford and Peter Olesiuk that "Only Steller sea lions and Pacific white sided dolphins appear to be potentially significant predators of sockeye" (see page 36, line 9). Counsel for the Conservation Coalition highlighted the point that humans are also predators of salmon and that there were healthy populations of sockeye up until commercial fishing began. Dr. Andrew Trites—a professor from UBC—agreed (page 99, line 33). Counsel continued to question Dr. Trites about the effect of (non-human) predators of sockeye and their relative importance as a factor in the decline in sockeye, he responded:

“We recognize that it [predation] is a contributing factor, but it would appear, at least when we sit back and look at the whole North Pacific, what’s going on, that there’s a much bigger force at play” (page 102, line 39).

On May 9, Don MacDonald from MacDonald Environmental Sciences Ltd., the lead author of the expert report on [Potential Effects of Contaminants on Fraser Sockeye](#), was questioned by Commission Counsel. An [errata sheet](#) for the report was also submitted by Mr. MacDonald. On May 10, counsel for Watershed Watch pointed out the report didn’t take into account “synergistic effects between some of the contaminants” and the possible multiplicative effects on fish (page 31, line 4), nor did the report detail “contaminants from the marine environment” (page 32, line 29).

On May 17, counsel pointed out to Randy Nelson—Director of Conservation and Protection, DFO—that a [1994 review](#) criticized DFO enforcement and stated:

“We recommend that, for the 1995 fishing season, DFO institute a plan to ensure that an effective and credible enforcement level is re-established” (page 7, line 18).

Counsel then brought up the [Williams’ Review](#) in 2004 which highlighted a similar concern years later:

“At the present time, DFO through its C&P [Conservation and Protection] Division is not maintaining a credible enforcement presence and not properly enforcing the Fisheries Act and Regulations including those that relate to habitat protection. Accordingly DFO must ensure that adequate resources are available and that the budget and staffing available for enforcement be increased.”

The conversation turned to the subject of illegal fishing and sockeye sales. Counsel referred to a [memo](#) and [operational intelligence assessment](#) on this subject and asked Mr. Nelson to describe what transpired in regards to “Project Ice Storm” (page 23, line 6)—an investigation into illegal fisheries and sales.

Part 10: Cultus Lake Sockeye, Wild Salmon Policy Part 2, Urbanization, Pulp and Paper/Mining, Municipal Wastewater, Gravel Extraction, Logging and Aboriginal Fishing, May 30 – July 5, 2011

The commission brought its focus to several new topics and revisited a couple it previously touched on. A number of interesting documents were made public.

See transcripts for May to July below:

- [May 30 Cultus Lake Sockeye](#)

- [May 31 Cultus Lake Sockeye](#)
- [June 1 Wild Salmon Policy](#)
- [June 2 Wild Salmon Policy](#)
- [June 3 Wild Salmon Policy](#)
- [June 6 Urbanization](#)
- [June 7 Urbanization](#)
- [June 8 Urbanization](#)
- [June 13 Pulp and Paper/Mining Effluent](#)
- [June 14 Municipal Wastewater](#)
- [June 15 Municipal Wastewater](#)
- [June 16 Gravel Extraction](#)
- [June 17 Logging](#)
- [June 27 Aboriginal Fishing](#)
- [June 28 Aboriginal Fishing](#)
- [June 30 Aboriginal Fishing](#)
- [July 4 Aboriginal Fishing](#)
- [July 5 Aboriginal Fishing](#)

On May 30, the commission discussed the decision of listing Cultus and Sakinaw Lake sockeye as endangered under the *Species at Risk Act* (SARA). Several internal documents were revealed and discussed (see page 8, line 17) on why these two sockeye populations were not listed as endangered, despite an emergency request from the Committee on the Status of Endangered Wildlife in Canada (COSEWIC):

- [Memo re: Emergency Listing Request for Two Sockeye Salmon Populations Under SARA 2004](#)
- [Memo re: Species at Risk Act \(SARA\) Listing Decision Process for Cultus and Sakinaw Sockeye](#)

Several drafts of a document reveal decisions on changing the listing of Cultus Lake sockeye under SARA (to not listing them). These changes are discussed by Commission Counsel and John Davis of DFO (see page 13 line 47):

- [SARA Listing Summary, June 30, 2004 draft](#)
- [SARA Listing Summary, July 20, 2004](#)
- [SARA Listing Summary, Aug 18, 2004](#)

Given the political factors involved in the scientific recommendation to list certain stocks as endangered, counsel for Watershed Watch brought up a published paper (see page 60, line 31) entitled: [Is scientific inquiry incompatible with government information control?](#)

On June 15, counsel for Watershed Watch questioned the wastewater panel about effluent from plants in the Greater Vancouver Regional District (GVRD, now Metro Vancouver) (page 55 line 34). Counsel brought into evidence a series of letters from Environment Canada to various departments of the GVRD in regards to alleged violations of subsection 36(3) of the *Fisheries Act* via several wastewater treatment discharges:

- [Letter to GVRD from Environment Canada re: Warning Respecting an Alleged Violation, March 20, 2011](#);
- [Letter to City of Vancouver from Environment Canada re: GVRD Liquid Waste Management Plan, May 15, 2001](#); and
- [Letter to City of Vancouver from Environment Canada re: GVRD Liquid Waste Management Plan, June 14, 2001](#).

Counsel asked Albert van Roodselaar, Division Manager with Metro Vancouver, about alleged failures of the rainbow trout acute lethality test—a test used for measuring and assessing the aquatic biological effects of toxic substances. Based on the letters and the [Iona Island Wastewater Treatment Plant 2006 Annual Summary](#) and [Monitoring Results for Operating Certificate, Iona Island](#), counsel asked if it were true that there were failures “in the acute lethality test as long ago as 2000 or 2001...right up through 2009 and right up to 2010?”

Mr. van Roodselaar replied, “Yes.”

Counsel then asked James Arnott, from Wastewater Section, Environment Canada, “what, if anything, is Environment Canada doing about these failures at Iona? Do you know anything about this?” (page 61, line 39)

Mr. Arnott replied, “No, as I said before, that would be Enforcement Branch issues to manage.”

On June 16, Tim Leadem, counsel for the Conservation Coalition brought up a [letter](#) from Dr. Church regarding the ecological implications of Fraser River gravel extraction (page 35, line 27) which included the statement:

“I have written this supplementary letter to indicate that there is substantial discomfort in the relevant technical community over the current trajectory of the sediment management program, variously expressed as concern that the program cannot attain the expected goals, and that insufficient cognisance is being taken of ecological issues.”

Mr. Leadem went on to ask Drs. Laura Rempel (DFO) and Marvin Rosenau (BCIT) on the gravel extraction expert panel whether they agreed with this statement. Dr. Rosenau agreed; however, Dr. Rempel from DFO replied:

“I agree that there’s an insufficient level of information for biologists such as myself to fully assess the potential impacts of this program, but depending on how, I think, you read this, I do believe that the Department is working with what information is available to the best of our ability to make decisions that minimize impacts to fish and fish habitat.”

On July 4, Marcel Shepert, Chairman of the Upper Fraser Fisheries Conservation Alliance, referenced a [report](#) by Ken Wilson, and suggested a fundamental flaw in the Fraser River Sockeye Spawning Initiative (FRSSI) is its use of aggregated stocks in its predictive models to determine harvest rates,

instead of conservation units which would be more aligned with the intentions of the Wild Salmon Policy (page 73, lines 2).

In response to questioning by Ms. Gaertner, counsel for the First Nations Coalition, Mr. Shepert spoke of the value of fish caught in terminal fisheries, and his successful discussions with retailers regarding their marketing potential (page 74, line 7). Mr. Shepert went on to say:

“...the feedback was incredible and positive in terms of, yes, we can market these products, no problem, particularly knowing that they're more sustainable.”

On July 5, Tim Dickson, counsel for the Stó:lō Tribal Council and Cheam Indian Band questioned Ernie Crey, Fisheries Advisor to the Stó:lō Tribal Council about terminal fisheries. Mr. Crey dismissed suggestions that the Stó:lō people are not supportive of more terminal fisheries (page 81, line 20):

“...if they really knew our fishery and realized that there are terminal fisheries on the Lower Fraser River that the Stó:lō take part in such as the Chehalis - there's desire for terminal fishery on the Chilliwack system where the Chilliwack Lake sockeye go, they would think differently. They would think differently if they were aware of the Katzie people and the Kwikwetlem people, who would fish on Pitt River sockeye and are desirous of a fishery. Those are terminal fisheries...why would we object to other folks further on up in the watershed to have terminal fisheries and see sufficient fish return there to have terminal fisheries? The two don't go together. They can't be reconciled. We have our own terminal fisheries and the desire for additional terminal fisheries in our own area. And we've seen the value of participating with First Nations in the upper reaches of the watershed and in the Nicola Valley. We've foregone fishing opportunities to permit a sufficient escapement into other reaches of the watershed where people might have an opportunity to have terminal fisheries, so those are misperceptions of the Stó:lō world view.”

Part 11: Habitat in the Marine Environment and Aboriginal Fishing, July 6 – September 2, 2011

The inquiry turned to a new topic—habitat in the marine environment—which included testimony from both DFO and non-DFO scientists. In addition, the commission took another look at aboriginal fishing.

See transcripts for the sessions on habitat in the marine environment and aboriginal fishing:

- [July 6 Habitat in the Marine Environment](#)
- [July 7 Habitat in the Marine Environment](#)
- [July 8 Habitat in the Marine Environment](#)
- [Aug 17 Habitat in the Marine Environment](#)
- [Aug 18 Habitat in the Marine Environment](#)
- [Aug 19 Aboriginal Fishing](#)

- [Sept 2 Aboriginal Fishing](#)

On July 6th, Dr. Stewart McKinnell from the North Pacific Marine Science Organization was questioned about his [expert report](#) on the decline of Fraser River sockeye in relation to marine ecology.

On July 7, counsel for the Aquaculture Coalition questioned Dr. Richard Beamish, DFO, about a report he authored: [Anomalous ocean conditions may explain the recent extreme variability in Fraser River sockeye salmon production](#). The report suggests that “poor early marine survival [of Fraser sockeye] was likely due to low food levels arising from unfavourable wind and river discharge conditions in the Strait of Georgia and the Queen Charlotte Sound-Hecate Strait region in the spring of 2007” (see page 2 of the report). Counsel asked Dr. Beamish if “The connection to prey abundance...and survival of sockeye salmon...is merely speculative?”

Dr. Beamish replied, “Yes, that’s true” (see transcripts page 95, line 20). The questioning continued and Dr. Beamish admitted that he did not have any “direct evidence of prey abundance” to support the theory in his paper.

On July 7, Watershed Watch counsel questioned Dr. David Welch, Kintama Research, on some interesting theories related to the type of decline witnessed in Fraser River sockeye as reported in Dr. McKinnell’s [expert report](#), which appeared to contrast with theories presented in Dr. Peterman’s [expert report on Fraser sockeye production dynamics](#). Dr. Welch was a peer reviewer of both reports and stated that Dr. McKinnell’s report suggests the 1992 sockeye decline was abrupt, as opposed to Dr. Peterman’s theory which implies it was a more gradual drop (starts on page 34, line 2). Welch went on to say that both reports do not solely pin-point the cause of the decline to the Strait of Georgia region.

Counsel questioned Dr. Beamish (page 37, line 22) in reference to his [report](#) that was criticized the previous day for a lack of substantiating prey abundance data to support his theory (see above). [An email](#) between DFO scientists Marc Trudell and Dave Mackas discussing this issue was entered into evidence. It included:

“Dick doesn’t have any plankton data in his paper, he just hypothesized that the low return of Fraser River sockeye in 2007 was due to poor/low plankton production. But could not substantiate his interpretation with plankton data; just with Mixed-Layer Depth from the Nanoose station and wind data.”

Tim Leadem, counsel the Conservation Coalition, entered another [evidentiary example](#) in which Dr. Beamish was criticized for presenting a theory without offering robust data. This critique was published by Dr. Larry Dill and other SFU authors, and was in reference to a [sea louse theory](#) Beamish conceived. Dr. Dill’s published critique included:

“In summary, BEA’s ([Beamish et al.](#)) errors of omission and their selective use of their own and others’ data lead the naïve reader to a conclusion that cannot be substantiated.”

Curiously, Dr. Beamish published this life-history paper in the Physiology and Endocrinology section of the Journal Aquaculture, the only [paper](#) to appear in that section not directly related to the subject matter.

Mr. Leadem also put into evidence an [internal DFO memo](#) written by Dr. Brent Hargreaves which criticizes Dr. Beamish for putting forward a theory without substantial scientific evidence in an internal DFO meeting with the province and salmon farming industry. It contained many revealing opinions including:

“I think to a large degree it was the inadequacies of Beamish’s research and conclusion that led to the lack of public confidence in DFO science.”

“How credible can DFO science be when a ‘novel hypotheses’ like this is proposed by Beamish, when he cannot know where a critical piece of the information he is basing it on actually come from or how this should be interpreted? He does not know where these fish samples were collected or how the resulting data should be interpreted (at least in the opinion of the person (me) that collected these samples in the first place). This really is ‘shoddy’ science.”

“Beamish then proceeded to say how these data supported his novel “theory” that sea lice attached to adult salmon returning to spawn may over winter in the Broughton, by transferring to the numerous sub-adult salmon that over-winter in the Broughton. Beamish stated that his new research showed this could be an important ‘alternate reservoir’ for sea lice that subsequently infect juvenile pink and chum in the Broughton the following Spring. He noted that other people might not agree, but ‘we’ll just publish this idea and then see what happens.’”

“In any case, I do not want to work or even be associated with any DFO ‘senior scientist’ with this kind of behavior and ethics. Please do not put me on the same ‘team’ as Dick Beamish.”

On July 8, Commission Counsel revisited the subject of Cultus and Sakinaw sockeye listing under the *Species at Risk Act* (also see Part 10). Counsel referred to a [2004 DFO memo](#) (page 10, line 2) that includes a departmental recommendation “not to list Cultus and Sakinaw sockeye as endangered”. It also states this “means that we are charting new waters under SARA legislation. These could well be the first endangered species not accepted under SARA due to the socio-economic impacts.” Mr. Wallace also recited another segment from the memo, “When an announcement is made regarding the final SARA decision for these two populations (expected by year-end), we will need to set out a plan for the management of Cultus and Sakinaw sockeye that would be in line with an exploitation rate of 10-12%”. Mr. Wallace then asked John Davis, DFO, “If subsequent years' exploitation rates were higher than that, say, as 20 or 30 percent, what would your reaction be?”

Mr. Davis replied, “I’d be concerned, because this was based on 10 to 12 percent, which was being put forward in terms of protecting those stocks” (page 11, line 23).

On Aug 17, the [Policy and Practice Report on marine environment issues potentially relevant to Fraser sockeye salmon](#) was entered into evidence. Mr. Leadem questioned Dr. Jack Rensel from Rensel

Associates Aquatic Science Consultants (page 34, line 13) on the subject of algal blooms in relation to aquaculture facilities and wild sockeye. Dr. Rensel suggested that aquaculture facilities may promote the production of harmful algal blooms and that algae can be detrimental to sockeye.

On Aug 19, Julie Stewart, Director of the Pacific Integrated Commercial Fisheries Initiative for DFO, confirmed that terminal fisheries further the Wild Salmon Policy because they allow the targeting of specific salmon stocks (page 12, lines 7).

On Sept 2, Ms. Gaertner, counsel for the First Nations Coalition, brought up the issue of rights and title with Ms. Kaarina McGivney, former Regional Director, Treaty and Aboriginal Policy, DFO (page 51, line 46). Ms. McGivney stated:

“DFO, as I think came up in some earlier documents, is not mandated to determine rights, yet we have an obligation to respect rights in the management of the fisheries. So part of the challenge—I think right now the processes that are open to clarify what rights and title there’s the scope and extent of the rights and title are undefined and the processes to resolve those are through the treaty process as well as through various litigations. So that process doesn’t —the responsibility for the reconciliation of those rights and title does not lay with DFO.”

Part 12: Disease Day 1, August 22, 2011

Witnesses for the first day examining the issue of disease:

Dr. Stewart Johnson (Head, Aquatic Animal Health, DFO)
Dr. Michael Kent (Professor, Microbiology & Biomedical Sciences, Oregon State University)
Dr. Christine MacWilliams (Fish Health Veterinarian – Salmonid Enhancement Program, DFO)
Dr. Craig Stephen (Director, Centre for Coastal Health & Faculty of Veterinary Medicine, University of Calgary)

See transcript: [Disease Day 1](#)

As in his [expert report on infectious diseases](#) produced for the inquiry, Dr. Kent testified (line 32, page 10) that very little disease research has been conducted on wild fish stocks in comparison to the amount done on aquaculture and hatchery stocks.

The [expert report on disease](#) stated that the “pathogens considered to be potential “High Risk” to Fraser River sockeye salmon include: the IHN virus, three bacteria (*Vibrio anguillarum*, *Aeromonas salmonicida*, *Renibacterium salmoninarum*), and two parasites (Ich – *Ichthyophthyrus multifillis* and the myxozoan *Parvicapsula minibicornis*).”

Counsel recited a quote from the [expert disease report](#) and Dr. Kent agreed with it:

“We cannot conclude that a specific pathogen is the major cause of demise to the Fraser River sockeye salmon. However, pathogens cannot be excluded at this time as adequate research on the impacts of disease on this population has not been conducted” (line 9, page 15).

Dr. Stephen, author of the [expert report on diseases in salmonid enhancement facilities](#) stated that:

“...we don't really have systematic surveillance, in my perspective, of hatchery reared and wild fish. We have periodic surveys. We have some surveillance for specific pathogens, but overall health surveillance is lacking” (line 17, page 16).

Dr. Kent testified on the issue of disease in relation to sockeye declines and Dr. Stewart Johnson, head of Aquatic Animal Health, DFO, agreed with his statement:

“Simply to not move forward on investigations on the impacts of diseases on...sockeye salmon, because we do not have any firm evidence at this time would not be prudent...” (line 6, page 20).

With respect to Infectious Salmon Anaemia Virus (ISAV), Dr. MacWilliams, a veterinarian from DFO, stated that according to the research she’s conducted in the past, it is possible to experimentally infect rainbow trout with a high dose of a very pathogenic strain of ISAV (line 46, page 21).

A [table](#) is discussed (line 6, page 29) that was produced by Dr. Kyle Garver of DFO, that reports the prevalence of Infectious Hematopoietic Necrosis Virus (IHNV) in sockeye from Weaver Creek and the Nadina and Okanagan Rivers.

In response to a question from Commission Counsel, Dr. Kent (a former DFO scientist of 11 years) suggested that both public and political interests can affect the research focused on by DFO scientists (line 33, page 35).

Counsel recited a quote from the [expert report on disease in salmonid enhancement facilities](#) and Dr. Stephen added that it was “the most important conclusion of the report”:

“We could not determine if diseases present in salmon enhancement facilities (hatcheries or spawning channels) present potential for serious or irreversible harms to Fraser River sockeye salmon. Limitations in scientific understanding, lack of ongoing surveillance of wild and cultured fishes, and deficits in data provided to us...deficits in the data provided were the primary reasons for our inability to make specific cause-effect conclusions and to qualitatively or quantitatively assess risk” (line 13, page 43).

Dr. Johnson described a relatively new DFO fish health survey program for Fraser River sockeye:

“We basically came up with a program to approach sockeye salmon health more from an overall health perspective rather than simply doing more surveys for disease. So the goal of this program is to integrate with our fisheries biologists, fisheries ecologists, the disease staff, Dr. Miller's group, to come up with an overall assessment of health status of Fraser River sockeye

starting in the lake, throughout their period of migration through the Strait of Georgia. So we received three years of funding. The first field season was in 2010 and that year we also received some support for marine harvest for some of the ship time, and some work from the [Pacific] salmon foundation...So in each of these years, we have done large-scale surveys of sockeye salmon throughout the Strait of Georgia at up to 70 to 80 different sites ranging from the mouth of the Fraser River right to through Johnstone Strait...And on these fish they're receiving a complete health assessment" (page 52, line 32).

In response to counsel representing the province and with reference to the [publicly available PCR test results for ISAV in B.C. farm salmon from 2003-2010](#), Dr. Stephen stated that this information alone was not enough for him to determine whether B.C. has demonstrated freedom from disease (line 44, page 92).

Part 13: Disease Day 2, August 23, 2011

Witnesses for the second day examining disease:

Dr. Stewart Johnson (Head, Aquatic Animal Health, DFO)
Dr. Michael Kent (Professor, Microbiology & Biomedical Sciences, Oregon State University)
Dr. Christine MacWilliams (Fish Health Veterinarian – Salmonid Enhancement Program, DFO)
Dr. Craig Stephen (Director, Centre for Coastal Health & Faculty of Veterinary Medicine, University of Calgary)

See transcript: [Disease Day 2](#)

Through questioning by Aquaculture Coalition counsel, Dr. Kent admitted that he didn't thoroughly address the risk of disease posed by fish farms in his [expert report](#) despite his expertise in this subject (line 38, page 25). Dr. Kent also stated he didn't have access to fish farm health data bases containing disease information for his report, and that they would have been useful (line 39, page 30).

Mr. Gregory McDade, counsel for the Aquaculture Coalition listed (line 5, page 44) a number of scientific papers ([Rimstad](#), [Mennerat et al.](#), [Reno](#), and [Walker and Winton](#)) that highlight fish farms as a disease risk to wild fish; papers that Dr. Kent did not refer to in his [expert report](#) because he deemed them as outside his mandate.

Dr. Christine MacWilliams, an expert in Infectious Salmon Anaemia (ISA) as quoted by Dr. Kent, disagreed with his statement regarding the possibility of ISA virus in B.C. She stated:

"If ISA were detected here, I would presume it came from a break in biosecurity, either at a farm level or through international transport. I would not presume it's coming from wild fish in B.C." (line 41, page 47).

Mr. Tim Leadem, counsel for the Conservation Coalition referred to an older [paper](#) by Dr. Kent which included a statement that he still stood by:

“Diseases of captive fish may pose a threat to wild fish when they are exotic diseases, have the potential to cause an increase in prevalence of an enzootic disease, or if their presence results in the use of drugs that are released into the environment” (page 67, line 8).

Counsel for the Conservation Coalition referred to page 9 of Dr. Kent’s [expert report](#) where he indicated that Bacterial Kidney Disease (BKD) is a rare occurrence at Atlantic salmon farms and contrasted this with numerous instances of *Renibacterium salmoninarum*—the pathogen responsible for the disease—in the B.C. Salmon Farmer databases (page 74, line 18):

- [2002 BC Salmon Farmer Database \[Excel\]](#)
- [2003 BC Salmon Farmer Database \[Excel\]](#)
- [2004 BC Salmon Farmer Database \[Excel\]](#)
- [2005 BC Salmon Farmer Database \[Excel\]](#)
- [2006 BC Salmon Farmer Database \[Excel\]](#)
- [2007 BC Salmon Farmer Database \[Excel\]](#)
- [2008 BC Salmon Farmer Database \[Excel\]](#)
- [2009 BC Salmon Farmer Database \[Excel\]](#)
- [2010 BC Salmon Farming Database \[Excel\]](#)

Counsel referred to an [email](#) from Dr. Kristi Miller that suggests Dr. MacWilliams did not support the idea of testing farmed salmon for the parvovirus (line 44, page 79). It included:

“Moreover, you stated that there is no benefit to testing, and if we were to ask industry to voluntarily submit fish for testing, that you would recommend to them that it would not be in their best interest to comply.”

Counsel then referred to an [email](#) from Dr. Miller to Dr. Stewart Johnson on the same issue. Both Dr. MacWilliams and Dr. Johnson testified they did not respond to the emails.

Counsel then asked Dr. Johnson, “Does Canada have a plan to actually start to sample net-pen fish, Atlantic salmon specifically, for the incidents of Parvovirus?”

Dr. Stewart testified, “Although I was not able to make the meeting because of Cohen-related activities, as I understand, the fish farms will be providing samples for screening for Parvovirus.”

Counsel referred to a [scientific paper](#) which suggests that the ISAV reported in Chile was transported there through salmon eggs by the farming industry. Dr. MacWilliams agreed with this interpretation (line 42, page 33).

Brenda Gaertner, counsel for the First Nations Coalition suggested that moving open-net pens away from migratory stocks is a way to minimize exposure to pathogens, and Dr. Stewart Johnson from DFO agreed (line 9, page 91).

Part 14: Disease Day 3, August 24, 2011

On this day the inquiry continued with the 2nd panel on the topic of disease. This included testimony from Dr. Kristi Miller, Head of Molecular Genetics, DFO, whose research has been the topic of much media coverage both due to findings related to a purported viral infection in salmon, as well as the perspective that she's been "muzzled" and "silenced" by the Canadian government. Today's Cohen Commission hearing had the highest public attendance to date.

Witnesses for the third day examining disease:

Dr. Kristi Miller – Head, Molecular Genetics, DFO
Dr. Kyle Garver – Research Scientist, DFO

See transcript: [Disease Day 3](#)

Commission Counsel discussed the nature of genomic sequencing with Dr. Miller, as a tool that allows one to look at tens of thousands of genes in a tissue sample all at once and see which are turned on and off. This technique provides information about the physiological condition of the tissue tested and provides a pattern known as a genomic profile (page 3, line 41). The discussion was in reference to her [published paper](#).

Dr. Miller testified that tissue samples from salmon that expressed a specific pattern in their genomic profile—also known as a mortality related signature (MRS)—had a 13.5 times lower probability of making it to the spawning grounds without dying relative to fish that didn't have the MRS. (page 6, line 25). Other interesting points that came up on the parvovirus include:

- In February 2011, a parvovirus was identified as the candidate virus for the MRS (page 30, line 33);
- At this point, it is not known whether the parvovirus is an endemic or introduced virus (page 41, line 46); and
- This is the first time a parvovirus has been identified in a fish species (page 74, line 42).

Farm Atlantic salmon have not yet been tested for the MRS or for the candidate parvovirus (page 13, line 30). There was email contact between Dr. Miller and Mary Ellen Walling, Executive Director of the B.C. Salmon Farmers Association, about testing. Dr. Miller testified further on this subject:

"This all came about a week before I was due to testify, and that was when we had the agreement that the four major salmon farming companies would work with us on a sampling program, and I believe after the aquaculture hearings, I will be getting together with the vets and Kyle and we will be designing a sample program for the industry because I want to make sure that we cover the life history stages where we've seen this virus in wild fish" (page 33, line 13) (also discussed on page 35, line 46).

When question by Commission counsel regarding her freedom to speak to the public about her research, Dr. Miller testified (page 33, line 31):

“Well, yes, I’m not to speak to the public because of the ongoing inquiry. I am free to speak with colleagues and other scientists, and I have been able to attend some scientific meetings.”

Commission Counsel asked: “Have you ever been told not to attend a scientific meeting?”

Dr. Miller replied: “Yes...it was really a think tank, an SFU think tank, but it wasn't me exclusively. DFO decided that nobody, no scientist from DFO was to attend that meeting.”

Counsel for Canada also questioned Dr. Miller about their freedom of speech (page 40, line 14). Dr. Miller stated her understanding of the rationale against speaking publicly was that: “It's only the rationale I've been told. As scientists, we're not very privy to the conversation that goes on in Ottawa about these sorts of things. We're sort of only told the result.”

Counsel asked: “Yeah. Perhaps a better question on my part, what's your understanding of the rationale then?”

Dr. Miller replied: “Again, the understanding is that the evidence supporting or refuting various hypotheses should be heard first in the Cohen Inquiry before it becomes something of public debate.”

Other important points discussed and exhibits entered into evidence:

- Dr. Miller’s genomic work has important management implications since the signature indicates river conditions (e.g., temperature) may not be the only exacerbating conditions for mortality in Fraser River sockeye (page 17, line 28);
- There is an association between the MRS and rapid entry by sockeye in 2006 into the river and faster migration to the spawning grounds. More work needs to be done to determine if other years of data corroborate these results and whether the parvovirus is also associated with these results (page 92, line 13);
- a [Hypothesis prepared for the Pacific Salmon Commission meeting, June 2010](#) by Dr. Miller regarding her genomic data and a potentially novel disease in Fraser sockeye; and
- a [timeline of Dr. Miller’s research](#) up to July 2011 detailing the progression of various hypotheses.

Part 15: Disease Day 4 and Aquaculture Day 1, August 25, 2011

The first half of the day was a continuation of the previous day on disease with the same panel members. The afternoon was comprised of the beginning of the first panel regarding aquaculture issues.

Witnesses for the morning disease panel:

Dr. Kristi Miller – Head, Molecular Genetics, DFO

Dr. Kyle Garver – Research Scientist, DFO

See transcript: [Disease Day 4 and Aquaculture Day 1](#)

In reference to a [PowerPoint presentation](#), Dr. Garver discussed his research estimating peak viral shedding rates of salmon farms. Dr. Garver said:

“If you have a farm that has approximately a million fish...and they're experiencing a 30 percent infection...and then you times that by the number of particles that we quantified in the water, and you do get 650 billion viral particles shed per hour. It's actually quite interesting. The virus has really evolved to put out a lot of particles so that it can subsequently have a lot of particles out there to re-infect” (page 6, line 4).

Under cross-examination by Gregory McDade representing the Aquaculture Coalition, Dr. Miller discussed why Atlantic salmon had not been tested yet and how this may have been influenced by difficulties in getting the fish health science community to understand what a genomic signature is. She also mentioned that after initial contact between DFO and the B.C. Salmon Farmers Association, it may have been that industry was advised by someone in DFO to not have the fish tested (page 11, line 20).

Mr. Tim Leadem, representing the Conservation Coalition, questioned Dr. Miller about recent communication between DFO and the B.C. Salmon Farmers Association regarding agreements to test farm salmon, and that the related emails should be obtained by the Commission (page 16, line 1).

Mr. Leadem also questioned Dr. Miller about her permission to speak about her research. She learned the order that restrained her from speaking about her research came from the Privy Council Office and from DFO. She learned of the source of this order as a result of the Cohen Commission process (page 20, line 37). With reference to an [internal email](#), Dr. Miller testified that permission to speak to numerous media requests was withheld by the Ottawa Communications Office.

In reference to an [internal email](#), Krista Robertson, counsel for the Musgamagw Tsawataineuk Tribal Council highlighted a meeting in which Dr. Miller briefed Marine Harvest Canada, the B.C. Salmon Farmers Association and the Pacific Salmon Foundation about her research before testifying at the Cohen Inquiry. Dr. Miller did not know of any First Nations that were present at the meeting (line 42, page 46).

Dr. Miller testified that the funding for her lab was uncertain at this time (page 47, line 34).

In the afternoon, a panel comprised of the authors of the technical reports related to Project 5—Impacts of salmon farms on Fraser River sockeye salmon—were questioned. This was an atypical situation as two separate overarching Project 5 reports by two separate authors were commissioned because participants could not agree on a single author. The [report by Dr. Don Noakes](#) is referenced as the “Noakes report” and [the one by Dr. Larry Dill](#) is referred to as the “Dill report”.

Afternoon aquaculture panel witnesses:

Dr. Brendan Connors – School of Resource and Environmental Management, Simon Fraser University

Dr. Larry Dill – Department of Biological Sciences, Simon Fraser University

Dr. Josh Korman – Ecometric Research Inc.

Dr. Don Noakes – Department of Mathematics and Statistics, Thompson Rivers University

Drs. Dill and Noakes agreed that based on available data and if considered in isolation, waste from farms, chemicals and escaped salmon, are not likely causing declines in Fraser River sockeye (page 76, line 2).

Panel members also mentioned there were limitations in the available fish health data that may have reduced the power of statistical methods that were used to detect relationships (page 89, line 23).

In reference to his [report](#), counsel confirmed with Dr. Connors, the following conclusion:

“The results of this analysis suggest that increasing farmed salmon production, SST [sea surface temperature] and pink salmon abundance increases sockeye salmon mortality. In addition, the influence of aquaculture production on sockeye mortality was predicted to be greater when SST anomalies are negative (i.e., cool for British Columbia populations) and when pink salmon abundance in the North Pacific Ocean is high. However, there was large uncertainty around these estimated effects, which precludes drawing strong inference from these results” (page 91, line 22).

Two other interesting exhibits were entered into evidence which detail some thoughts from Dr. Miller and her research findings:

- a [2009 email](#) from Dr. Miller to Mark Saunders (DFO) detailing her hypothesis that a disease causing agent (potentially Salmon Leukemia Virus) didn’t occur until the mid 1990’s; and
- a [2008 email](#) from Dr. Miller to Dr. Garver that includes a draft briefing note detailing her theory regarding a disease that may be linked to sockeye mortalities in the Fraser River.

Part 16: Aquaculture Day 2, August 26, 2011

There were important developments on this day regarding provincial fish health records and whether they would be made public or not.

Witnesses:

Dr. Brendan Connors – School of Resource and Environmental Management, Simon Fraser University

Dr. Larry Dill – Department of Biological Sciences, Simon Fraser University

Dr. Josh Korman – Ecometric Research Inc.

Dr. Don Noakes – Department of Mathematics and Statistics, Thompson Rivers University

See transcript: [Aquaculture Day 2](#)

At this point in time, these records, which are considered essential in determining if there were viruses found in open net-pen farms, were not to be made public until objections from the province could be fully comprehended (page 1, line 20). Despite the public nature of the Cohen Inquiry, the Province of British Columbia continued to object to the proposition made by other participants that farm fish health audits should be made public as exhibits. The Province argued the release of data could cause a “chilling effect” by impeding volunteer disclosure of disease information from agricultural farmers and that the disclosure of the data would not allow provincially-employed fish pathologist Dr. Gary Marty to publish a science paper based on these data (page 4, line 41).

Under cross examination by Commission Counsel, Dr. Dill raised the issue of farm fish resistance to disease (page 28, line 9). He inferred it is possible that farm fish may be asymptomatic for certain diseases, which in turn may be harmful to wild fish.

Dr. Dill disagreed with Dr. Noakes’ perspective that sea lice were common on juvenile salmon prior to the operation of open net-pen salmon farms. Dr. Dill said:

“Well, you may say it's common sense and logical, but I would contrast that with a number of studies done on the north coast and in Alaska in which it's simply not the case. They were not found on juvenile fish. And when I'm talking juvenile fish, I'm talking the size that they're parasitizing in the Broughton Archipelago” (page 65, line 10).

During cross-examination, Dr. Dill discussed attributes of a [sea lice paper](#) by Dr. Gary Marty, a provincial veterinarian. Dr. Dill stated,

“...that there was one finding in this paper that...the number of lice on juvenile pink salmon was closely related to the number of lice on the farm. That pretty much nails now that relationship to the lice on the wild fish are coming from the farm. This is something that the fish farm has denied for many 11 years but I now think that it's incontrovertial” (page 68, line 34).

The province has always maintained they have never detected ISAV in any farm in B.C. Under cross-examination by provincial counsel, Dr. Dill stated it seemed “curious” that Dr. Gary Marty—a provincial veterinarian—would specifically use the terms “classic ISA-like lesions” when describing symptoms in farm fish that ultimately were not diagnosed with ISAV (page 77, line 36).

The B.C. Salmon Farmers Association (BCSFA) tabled a report by Dr. Dick Beamish titled “[Assessing the impacts of salmon farming on Pacific salmon at the population level in British Columbia](#).” Several participants argued that it wasn’t appropriate as evidence for several reasons; however, it was eventually marked as an exhibit. It was unclear why this report was produced by Dr. Beamish—a DFO scientist—and whether it was produced for the BCSFA.

Other interesting exhibits include:

- [Policy and Practice on Aquaculture Regulation in British Columbia](#) produced by Commission staff
- [Expert Report on Information for Evaluating Impacts of Salmon Farms](#) by Josh Korman which summarizes some disease data from aquaculture in B.C.

Part 17: Aquaculture Day 3, August 29, 2011

Cross-examination of the aquaculture expert panel continued. Much of the discussion focused on how the authors of the expert reports applied analytical methods and interpreted farm disease records, scientific literature and other available data. Regarding the fish health records, the province withdrew their objection to making their farm audit data public evidence (page 68, line 21).

Witnesses:

Dr. Brendan Connors – School of Resource and Environmental Management, Simon Fraser University
Dr. Larry Dill – Department of Biological Sciences, Simon Fraser University
Dr. Josh Korman – Ecometric Research Inc.
Dr. Don Noakes – Department of Mathematics and Statistics, Thompson Rivers University

Transcript: [Aquaculture Day 3](#)

Dr. Connors’ analysis regarding sea surface temperature, farm production and pink salmon abundance in the North Pacific showed an interactive negative effect of salmon farm production on mortality rates of sockeye. Dr. Korman generally agreed with the validity of the analysis (page 10, line 35).

Under cross-examination by Gregory McDade for the Aquaculture Coalition, it was revealed that Drs. Noakes and Korman used the number of “fresh silvers” (i.e., recently deceased farm salmon) as an estimate of the number of fish that died of disease in their analyses. The analyses did not take into account other categories in the farm fish data such as “poor performers” and “old” fish, which likely contained individuals that also died of disease (page 16, line 42). Therefore, the estimate of 2% for “the

annual farm mortality rate based on fresh silvers only, which represent the maximum number of fish that may have died due to disease” (taken from the [report](#), page 7) may be an underestimate. Under further questioning, Dr. Korman agreed with Mr. McDade that a more accurate estimate of the amount of farm salmon that died from disease may be as high as 6% (page 21, line 18).

On average, provincial fish health audits examined about 5 fish per farm—about once per year at each active farm (line 43, page 30). Interestingly, Mr. McDade referred to [DFO sampling guidelines](#) (page 17), that stated in order to confidently conclude that a population of 100,000 was free from disease with a prevalence of 5%, 60 fish would need to be sampled (line 10, page 56).

A significant amount—approximately 60% of fish sampled in provincial fish health audits were classified as “open” (i.e., not definitively diagnosed with a cause of death) (page 44, line 34).

Tim Leadem representing the Conservation Coalition questioned the panel in reference to a recommendation from an SFU think tank that stated, “A compilation of historical data on the abundance and health of farm salmon along the sockeye migration route should be done in order to better understand the potential for transmission of disease and parasites to wild salmon.” Drs. Dill, Connors and Noakes agreed with this finding (page 64, line 42).

Continuing on this line of questioning, counsel asked, “Do I have it correct that the data from the fish farms and the fish health records have not always been freely available and accessible to scientists who wish to study and report on pathogens and the like that may be emanating from the finfish aquaculture industry in this province?”

Dr. Dill replied, “I can speak to that with respect to one pathogen, and that's sea lice. And your statement is correct, it's not been freely available” (line 30, page 64).

It was discussed that, bacteria that can cause furunculosis can be transferred by sea lice between Atlantic salmon (page 72, line 7). Also, the ISAV can be transferred by salmon sea lice as shown by [European Union research](#) (page 72, line 47).

Counsel for Watershed Watch referred to [Dr. Dill's report](#) and confirmed with him that he was still in agreement with his recommendation around “the most obvious solution to the risk of pathogens, infection of wild sockeye is closed containment” (page 78, line 15). Counsel continued along this line of questioning by reading a quote from Dr. Dill's report which referenced a paper by Dr. Neil Frazer:

“Declines of wild fish can be reduced by short growing cycles for farmed fish, medicating farmed fish and keeping farm stocking levels low. Declines can be avoided only by ensuring that wild fish do not share water with farmed fish, either by locating sea cages very far from wild fish or through the use of closed containment aquaculture systems.”

Part 18: Aquaculture Day 4, August 30, 2011

The first aquaculture regulatory panel was cross-examined on subjects that included siting, licensing, consultation, and adequacy of regulations.

Witnesses:

Dr. Ian Fleming – Professor, Ocean Sciences Centre, Memorial University of Newfoundland
Gavin Last – formerly Assistant Director, Aquaculture Branch, Ministry of Agriculture and Lands
Trevor Swerdfager – formerly Director General, Aquaculture Management Directorate, DFO (NHQ)
Andrew Thomson – Director, Aquaculture Management Directorate, DFO (Pacific Region)

Transcript: [Aquaculture Day 4](#)

Commission Counsel asked Mr. Swerdfager whether DFO could do two things at once; promote the aquaculture industry and conserve wild fish and ecosystems. In short, Mr. Swerdfager replied, “yes” (see page 10, line 45 for his entire answer).

In reference to the draft [Finfish Aquaculture Application Form](#), counsel questioned Dr. Ian Fleming about the suggested minimum 1 km siting distance of a farm site to a salmonid-bearing stream. Dr. Fleming said, “...overall, that particular criteria strikes me as being rather vague and unspecific, and the scientific basis for it is not clear to me” (page 17, line 46).

Commission Counsel asked Mr. Swerdfager about public reporting of farm information under the new and upcoming aquaculture regulation. Mr. Swerdfager said all relevant information will be published except things of a private nature such as telephone numbers, names, etc. (page 22, line 20).

Counsel for the Aquaculture Coalition discussed the issue of aquaculture in Norway with Dr. Fleming, given his experience in that area (page 66, line 24). Dr. Fleming agreed that Norway recognizes the risks of salmon aquaculture, including that associated with disease and has designated certain wild salmon migratory routes off-limits to salmon farming.

Counsel asked panel members whether a proposed salmon farm site had ever been rejected because of considerations to wild salmon migratory routes, Mr. Last and Mr. Swerdfager could not recall such an example (page 71, line 8).

Given the Morton decision which resulted in a jurisdictional change in governance of salmon aquaculture moving from the province to the federal government in December 2010, counsel asked whether current aquaculture site licences were simply ‘grandfathered’ in (page 74, line 47)? Mr. Thomson’s reply suggests this may have been the case.

Tim Leadem, counsel for the Conservation Coalition brought into evidence an [independent audit](#) of the management of the open net aquaculture industry in B.C., which rated the province poorly in comparison to several other jurisdictions, including Norway, Iceland and the USA (page 76, line 11).

A [document](#) submitted by Tim Leadem (page 79, line 7) suggested that DFO developed an outreach and marketing strategy to counter a Greenpeace campaign against unsustainable fisheries and aquaculture. On page 7 it mentions that Mr. Swerdfager planned to “travel to 5 or 6 centres in the US to discuss Canadian seafood sustainability with buyers and key decision makers.” The document also included an anticipated budget for various trips to the USA.

Tim Leadem introduced a [2008 DFO email](#) that detailed an upcoming meeting with USA senators (page 81, line 13). Proposed messaging to be used by DFO for the USA senators included: “DFO laboratory studies continue to show no evidence of a negative impact to juvenile pink salmon as a result of exposure to farm source sea lice.” This messaging seemingly disregards the DFO work published by Dr. Simon Jones and others in 2008 which concludes that pink salmon smaller than 0.7 grams may be at risk from sea lice.

Mr. Leadem entered an interesting [email](#) which details concerns from Mary Ellen Walling, B.C. Salmon Farmers Association, about proprietary farm data disclosure and includes internal DFO commentary (page 82, line 19). In it Andrew Thomson, DFO, wrote:

“The problem with this approach of industry is that it will cause a break in the time series of fish health data that BC has been collecting, which is a issue scientifically, and they have also informed BC that they will not provide carcasses for fish health sampling. Both of these decisions by BC SFA are short sighted as it plays back into the whole secrecy issues that the industry is criticised for.”

Mr. Leadem referred to a [DFO National Aquaculture Communications and Outreach Approach](#) prepared in part by the communications directorate that describes an elaborate plan that includes several objectives:

“...the Government of Canada has committed \$70 million over the next five years to build our aquaculture industry to make it more successful and competitive.”

“This communications plan presents a proactive and gradually intensifying outreach approach to complement the development of Fisheries and Oceans Canada’s Sustainable Aquaculture Program...”

“Strategic use of multi-media tools, such as the website, trade-shows and science fora will assist in delivering a consistent message to build awareness and confidence in the government’s role and management of the Canadian aquaculture industry”

Brenda Gaertner for the First Nations Coalition referenced [Mr. Swerdfager’s affidavit](#), specifically paragraphs 51 and 52, and highlighted the potential legal risks associated with not adequately

consulting all First Nations with regards to transitioning aquaculture governance from the provincial to the federal government (page 91, line 31).

Krista Robertson counsel for the Musgamagw Tsawataineuk Tribal Council brought to evidence a [Convener's Report](#) from a 2007 meeting that examined the risks of salmon farming attended by international scientists. Ms. Robertson read part of a consensus statement from that meeting into evidence:

“European governments (Ireland, Scotland, Iceland, Norway and the European Union) have recognized that salmon farming can be hazardous to the environment, including the proliferation of sea lice on salmon farms, posing significant risk to wild salmonids” (page 103, line 8).

Ms. Robertson also raised a concern with the Morton decision which resulted in the transition of governance of salmon farming from the province of B.C. to the federal government. She argued that as a result of the transition, Canadian Environmental Assessments of salmon farms may no longer be triggered via the *Fisheries Act* (page 107, line 42). Ms. Robertson asked, “So from a fisheries or protection point of view, there really is no trigger for an environmental assessment any longer?”

Mr. Thomson replied, “No, there isn't a trigger under the *Fisheries Act* authorization, no, which was the previous trigger that was used.”

Ms. Robertson put into evidence a [scientific paper](#) that details Iceland's efforts to minimize salmon farming risks to wild stocks and protect valuable recreational fisheries by excluding open net salmon farms from many coastal areas (page 103, line 39).

Part 19: Aquaculture Day 5, August 31, 2011

The second aquaculture regulatory panel was comprised of federal, provincial and industry employees and was cross-examined on subjects that included fish health management plans, disease data collection, and egg importation.

Witnesses:

Dr. Gary Marty – Fish Pathologist, Animal Health Centre, Ministry of Agriculture
Dr. Peter McKenzie – Veterinarian and Fish Health Manager, Mainstream Canada
Dr. Mark Sheppard – Lead Veterinarian, Aquaculture Environmental Operations, DFO
Trevor Swerdfager – formerly Director General, Aquaculture Management Directorate, DFO (NHQ)

See transcripts: [Aquaculture Day 5](#)

Ms. Gaertner, on behalf of the First Nations Coalition pressed forward on the issue of grandfathering aquaculture licences as a result of the Morton decision (line 26, page 9). Ms. Gaertner referred to a [letter](#) which included: “We also understand that DFO plans to rollover existing aquaculture licenses without any consultation with First Nations. These licenses were issued pursuant to a regulatory regime which the courts have determined is unconstitutional. A jurisdiction rollover without consultation accommodation of the infringement caused by these licenses would be unconstitutional.”

Subsequently, Ms. Gaertner asked, “Could you tell me who in DFO made the decision to approach these licenses by way of grandfathering or rollover?”

Mr. Thomson: “I think that the decision in the Department was to issue licenses to people who held them already.”

Ms. Gaertner: “Who made that decision?”

Mr. Thomson: “And the approach was taken not so much to just simply grandfather and roll them over.”

Ms. Gaertner: “I'm sorry, I'm asking the question who made the decision?”

Mr. Thomson: “Yeah. I think the Department's decision on these issues would have been made by our Deputy Minister, with advice from people within the Department.” (The “grandfathering” issue was also discussed on August 30th, page 74, line 47.)

Tara Callan, counsel for the Province of B.C., questioned Drs. Gary Marty and Mark Sheppard on whether the number of fish sampled via the provincial fish health audits were robust enough to certify farms as free from disease (page 55, line 9). Dr. Marty clarified that,

“The audit program is quite different [from a random sample]. The audit program, the goal of that program is to audit the fish health events that are reported by industry. So we are not attempting to certify any individual farm free from disease.”

Dr. Marty also said, “We have over 5,000 tests for ISAV, all are negative, and that gives us an extremely high level of confidence that our industry is free from ISAV.”

He also stated, “So at the end of the quarter we have 150 fish, if they are all free of, say, ISA, we can then state with a level of confidence that we have 95 percent confidence that the prevalence of ISAV in our population, our British Columbia fish, is less than two percent.”

And he concluded, “And that gives us an extremely high level of confidence that our industry is free from ISAV.”

In reference to suspect cases of ISA in B.C. farm fish and the use of PCR testing to examine fish with ISA associated lesions (page 59, line 1), Dr. Marty stated:

“Fortunately, all our audit cases, because they always have a PCR test and it's always negative, the PCR test is what they would use to rule it out. So when we have a PCR test and it's negative, and even if I see some suspicious signs, then I wouldn't report on that basis. Dr. Sheppard may receive my results and have some other information to suggest that there's a problem with our PCR test.” (Subsequently, testimony heard during the ISAV hearings revealed various scientists question the validity of the provincial PCR testing methodologies—see Cohen Highlights Part 25.)

Counsel for the Aquaculture Coalition entered into evidence an [internal DFO email](#) string that starts with a letter from a member of the public raising concerns about the risks associated with salmon farming (page 80, line 34). Director General of Aquaculture Management—Trevor Swerdfager—suggested in the email to not respond:

“...we get about ten of these a day and don't respond to any of them. I recommend a nil response to this one.”

Counsel entered another [internal email string](#) highlighting the B.C. Salmon Farming Association's concerns about their fish farm health data becoming public through freedom of information requests as a result of the province conducting the audits. Another [email](#) on this issue was entered the previous day.

Mr. McDade continued his cross examination (page 89, line 15) of the panel, “...If one looks back over the last year or five years or ten years, despite following all the procedures in the Fish Health Management Plans, fish farms do get disease.”

Dr. Sheppard replied, “That's correct...”

Tim Leadem entered into evidence (page 100, line 40) a [DFO Aquaculture Communications Overview report](#) document that may have aided in the development of a piece of evidence entered the previous day—[DFO National Aquaculture Communications and Outreach Approach](#). The introduction states “The Government of Canada, through its new initiative Aquaculture 2012, is looking to strengthen public confidence, increase transparency and build strategy inter-jurisdictional partnerships across the country as it relates to Canada's aquaculture industry.” The report appears to be a collaborative effort between DFO and industry and includes a summary of the perspectives of DFO staff and the salmon farming industry that were interviewed across Canada. Some perspectives from DFO staff include:

“We need to use shellfish aquaculture as a gateway for first nations into aquaculture”

“If we could get first nations to support aquaculture it would take the wind out of the NGOs sails” (This was discussed in more depth by Brenda Gaertner, counsel for the First Nation Coalition, on [Sept 1](#), page 111, line 27.)

“We can't win in dueling science”

“There is a real opportunity to grow in production through partnering with 1st Nations”

“We are losing the communications battle”

“DFO has to be perceived as an objective regulator of the industry and its impacts”

“It’s because we mismanaged the wild fishery that we have to defend our actions”

“The BC NGOs are kicking our ass. They’ve become rock stars”

“Marketing is not our role.”

Other interesting documents entered into evidence:

- a [memo](#) that highlights a request from industry to import Atlantic salmon eggs from a facility in Iceland that is not certified by the Canadian Fish Health Protection Regulations;
- a [provincial fish health database](#) that begins in 2004, presently managed by Dr. Mark Sheppard;
- an [email string](#) between Dr. Kyle Garver, DFO, and Sonja Saksida about a disease affecting farm Chinook salmon;
- a [PowerPoint presentation](#) from a researcher associated with Cermaq (the parent company of Mainstream Canada) suggests salmon farming was the transfer mechanism of the ISA virus between Norway to Chile; and
- B.C. Salmon Farmer Association sea lice data sets from years [2003](#), [2004](#), [2005](#), [2006](#), [2007](#), [2008](#), [2009](#), and [2010](#) were entered into evidence.

Part 20: Aquaculture Day 6, September 1, 2011

The third aquaculture regulatory panel was comprised of DFO staff and was cross-examined on subjects that included monitoring, compliance and enforcement. Record keeping, the new federal compliance and enforcement regime and examples of non-compliance of the salmon farming industry were main topics.

Witnesses:

Brian Atagi – Area Chief Aquaculture, Conservation & Protection, DFO

Kerra Hoyseth – Senior Aquaculture Biologist, Aquaculture Environmental Operations, DFO

Andrew Thomson – Director, Aquaculture Management Directorate, DFO (Pacific Region)]

See transcript: [Aquaculture Day 6](#)

Lisa Glowacki, counsel for the Aquaculture Coalition questioned Mr. Thomson on whether the conditions of licence for an aquaculture facility prohibit the presence of pathogens on the farm or prohibit the spread of pathogens to wild fish. Mr. Thomson replied there are no conditions of licence that prohibit the presence of pathogens on a farm or prohibit the spread of pathogens to wild fish (page 52, line 29).

Ms. Glowacki referred to several emails on two habitat pollution incidents caused by salmon farms and questioned Ms. Kerra Hoyseth (page 52, line 46):

- email strings from [May 26th](#) and [28th](#), 2010 describe sea bottom sampling done by the Georgia Strait Alliance near the Cyrus Rocks farm owned by Marine Harvest Canada that showed an “unhealthy” marine floor. Subsequent sampling done by the B.C. Ministry of the Environment and DFO found “fairly bad impact” that was considered “surprising” given “this site has not yet even reached peak impact”. In the email string, Ms. Hoyseth added that “we may need to consider drafting some communication lines;” and
- internal email strings from [Aug 11](#) and [Oct 9](#), 2008 describe concerns raised by the public about mysterious bubbles coming from beneath Cecil Island fish farm owned by Mainstream. The B.C. Ministry of Environment and DFO subsequently investigated the area and found “a mort uplift pipe full of dead fish. The Operations Manager for Mainstream Canada arrived and dealt with the pipe. He was unable to explain how it got to that location, especially full of fish.” A follow-up email from [Dec 13, 2010](#) from Alex Morton inquiring about the incident asked, “Did you determine why there were oily bubbles rising from the sea floor near Cecil Island farm?” In the reply email, Kerra Hoyseth did not disclose they found the pipe, it said, “there were no further bubbles seen, nor any information we could find to explain your observations.”

Tim Leadem, counsel for the Conservation Coalition entered into evidence (page 63, line 32) an interesting internal DFO [email string](#) that suggests the province of B.C.’s compliance and enforcement approach to monitoring salmon farming was “ineffective.” In the email string Randy Nelson, DFO, states:

“Fyi, for those who may think this industry is compliant, almost every report to C&P [Conservation and Protection] has been validated by much larger problems than reported...Once we begin targeted patrols (if we get the staff) I expect we’ll find numerous violations.”

Some of the “non-compliance” incidents listed in the [email string](#) as “worthy of further action by C&P” include:

- a farming company that failed “to release incidental catch and retain prohibited species [walleye pollock].” Offloading “of Atlantic salmon at processing plant contained walleye pollock...This is a daily occurrence at offload facility...Investigated by C&P decision as whether or not to proceed with investigations of this type;”
- “Bi-catch mortality during fish [farm] pumping which have included a range of species from hake to herring, sablefish and juvenile pink salmon. Some of the amounts of bi-catch mortality DFO has investigated has been significant (1-2 tonnes of herring);”
- a “Barkley Sound” company, at which “herring [were] present in pounds...fail to release incidental catch/retain prohibited species...smolt grow site with 10 net pens containing entrapped juvenile herring...herring appear diseased with probable VHS [Viral Hemorrhagic Septicemia] of unknown strain...;” and

- “Conception Point [likely Grieg Seafoods] Nootka Sound 26 Sea Lions/1 seal investigation initiated...Atrevida [likely Grieg Seafoods] Nootka Sound 11 + #'s of Sea Lions entangled investigation initiated.”

The [email string](#) also includes: “These types of occurrences are frequent (staff statements) and as far as C&P can tell through recent investigation that the company is not exercising due diligence to ensure it does not happen in the future.”

Another [email string](#) entered into evidence by counsel for the Conservation Coalition (page 64, line 27) focuses on the issue of salmon farming industry compliance with the provincial waste regulation. In it, a B.C. Ministry of the Environment auditor stated, “I can attest when I was auditing fish farms for the past couple years including to up to July this year the level of compliance with the Finfish Aquaculture Waste Control Regulation [FAWCR] was falling...We found problems at about 25% of the farms we audited.”

Two more emails from [June 21, 2011](#) and [Feb 25, 2009](#) on the issue of non-compliance and industry violations were entered by counsel for the Conservation Coalition (page 65, line 16):

- a [DFO perspective](#) on the farming industry’s lack of reporting stated, “...we are struggling to come to grips with the fact that not all farms have fulfilled their reporting requirements;” and
- a [chronological summary](#) of the killing of herring at a Mainstream Canada salmon farm and DFO’s ineffective response to the incident.

Mr. Leadem also entered into evidence an [interesting email](#) on concerns expressed by the B.C. Salmon Farmers Association with DFO’s operations and suggested lines of action that include:

- “DFO scientists must publish their results. The BCSFA knows...the department has conducted extensive research on sea lice and other aquaculture/environmental interactions but is frustrated...[by] the lack of publications that have resulted...while the ENGOS are publishing regularly;”
- “The BCSFA has concerns about the level of resources devoted to aquaculture in Pacific Region, in particular...communications...;” and
- “The BCSFA is not in favour of large scale investments into closed containment aquaculture and views the recent push for this technology by ENGOS and others...”

Ms. Brenda Gaertner for the First Nations Coalition referenced a [letter](#) and read the following into the record:

“It is offensive to First Nations that in the opening statement only positive statements are made with respect to First Nations’ engagement in aquaculture. There is a total lack of recognition of rights and title, of issues and concerns which have been raised repeatedly by First Nations with respect to many aspects of the current aquaculture management system. The repeated emphasis in the opening statement about First Nations receiving benefits from aquaculture

companies totally misses the point of the significant issues and concerns which have been repeatedly raised by B.C. First Nations with respect to the aquaculture industry.”

Other interesting exhibits include:

- an [email](#) detailing proposed DFO science and monitoring budget cuts;
- a [description](#) of \$70 million from the federal government going towards aquaculture innovation and market access; and
- an [email string](#) that includes a salmon farming association request for information about Dr. Kristi Miller’s disease research and a response summarizing the study. The salmon farming industry received an update on this research before Dr. Miller’s public testimony on the subject.

Part 21: Aquaculture Day 7, September 6, 2011

Testimony involved varying perspectives on the potential impact of sea lice on the reduced productivity of Fraser River sockeye and other issues.

Witnesses:

Dr. Simon Jones – Research Scientist, DFO

Dr. Craig Orr – Executive Director, Watershed Watch Salmon Society

Mike Price – Biologist, Raincoast Conservation Foundation

Dr. Sonja Saksida – Executive Director, Centre for Aquatic Health Sciences

Transcript: [Aquaculture Day 7](#)

Commission Counsel asked Dr. Orr (page 24, line 19) to “characterize the level of risk for Fraser River sockeye from sea lice?”

Dr. Orr responded, “I would hearken back to my comments before about the need to look at the full suite of issues around sea lice, all the behavioural influences, effect on the growth of juvenile fish...and suggest that lice, as a vector for disease transfer, is something that would cause me to consider that salmon farms present a fairly high risk...”

Counsel for Watershed Watch entered two documents into evidence that suggest Dr. Sonja Saksida from the Centre for Aquatic Health Sciences may be aligned closely with the salmon farming industry:

- an [email](#) from Dr. Saksida to DFO staff that highlights her close association with Marine Harvest Canada;
- A [letter](#) at the beginning of a report Dr. Saksida wrote for Cermaq (the parent company of Mainstream Canada) that includes: “Over the last few years, I have found that a large percentage of time and research efforts are spent responding to this debate...Responding to the

same repeated messages and faulty science has become a source of frustration for me and many others through the BC salmon farming industry...As such, it is a pleasure to write this report on behalf of Cermaq ASA;" and

- When asked by counsel for the Aquaculture Coalition about her opinion of the salmon farming industry Dr. Saksida replied that she is a supporter of the industry (page 78, line 8), as the primary source of funding for the Centre for Aquatic Health Sciences is the aquaculture industry and several of its board members are industry employees.

Gregory McDade for the Aquaculture Coalition posed an interesting line of questions (page 77, line 27) to Dr. Saksida and suggested that she worked for the farming industry for a significant part of her career, she is a "supporter" of aquaculture, some of her current "bosses" are industry employees, the primary funder of her organization is industry and she has published several scientific papers with Drs. Simon Jones and Richard Beamish of DFO and Dr. Gary Marty of the B.C. Ministry of Agriculture. Mr. McDade also referenced Dr. Saksida's quote (see above) from her [letter](#) and suggested that "a large percentage of...[her]...time is going to responding to these NGO science on sea lice."

Dr. Saksida replied, "It certainly seems like it."

Possibly an ironic ending to Mr. McDade's line of questions to Dr. Saksida (page 84, line 27), he asked her if she still agreed with a statement from her [report](#), "When the premeditated outcome of science is the delivery of a marketing message, the methods and results of that research have to be questioned."

Dr. Sonja Saksida still agreed with her statement.

Mr. McDade also suggested to Dr. Jones that he has "spent a great amount of time studying sea lice" and asked him if, "it's the most important issue facing the health of the wild sockeye, or is it because of the amount of public attention that sea lice has gotten?" (page 83, line 36)

Dr. Jones subsequently replied, "...frankly we do find it easier to get funding where there is a focus of attention..."

Counsel for the First Nations Coalition inquired about "available management options robust enough to address uncertainties...from sea lice?" (page 96, line 11)

Dr. Orr responded, "I'm still of the same [SFU] [consensus statement](#) opinion that we should be experimentally removing farms to see if that helps sockeye."

Mr. Price also replied to the question, "I believe there's more uncertainty than ever and I do agree with Dr. Orr that experimentally removing the farms would be certainly be a novel thing to do but also a practical thing to do at this time."

Benjamin Ralston, counsel for the Heiltsuk Tribal Council asked Dr. Jones "as a scientist knowledgeable about sea lice, would you agree that a First Nation that is considering whether to consent to a salmon

farm being placed in their traditional waters should have access to the salmon farm fish health data to assess the risk of such a farm?” (line 24, page 105)

Dr. Jones replied, “I would agree to the extent that all competent and interested parties should have access to that information...I do agree with that.”

Part 22: Aquaculture Day 8, September 7, 2011

The “perspectives on aquaculture” panel offered various views on how aquaculture is regulated; how salmon aquaculture science is interpreted, and how well DFO is dealing with salmon farming.

Witnesses:

Clare Backman – Director of Environmental Compliance and Community Relations, Marine Harvest Canada
Alexandra Morton – Executive Director, Raincoast Research Society
Mia Parker – formerly Manager, Regulatory Affairs, Grieg Seafood B.C. Ltd.
Catherine Stewart – Salmon Farming Campaign Manager, Living Oceans Society

Transcript: [Aquaculture Day 8](#)

Commission Counsel inquired about DFO’s conflicting mandates and asked “Can DFO successfully both promote and regulate the aquaculture industry? Can it do both things?”

Catherine Stewart provided a concise answer (page 7, line 28): “I don't believe that's possible...if you look at the patterns of [DFO] behaviour from marketing, meeting with retailers, promoting aquaculture at seafood expositions such as the Boston Seafood Show, at their promotional materials, at the granting programs such as AIMAP, they're very much acting on behalf of the promotion and development of the aquaculture industry... I think those two mandates have to be separated.”

Alexandra Morton replied (page 8, line 43) to the same question and included her perspective on the change in jurisdictional regulation of salmon farming from the province to federal government: “But what I see is a retraction of even where we were with the province where there are no regulations against infecting wild salmon with disease from farms. There's no regulations about the release of pathogens. The whole issue of deleterious substances seems to have been removed. Everything seems to now be up not the province anymore but just the fish farmers themselves. So I think it's potentially worse.”

Ms. Morton also stated, “They [DFO] need to free their scientists. We need the Fisheries Research Board type of style back again... So the scientists, yes, need to be released from the political body” (Page 15, line 1).

Ms. Stewart also added, “I agree with Alex, I think the Department needs to free up the scientists. It needs to prioritize the funding of science, rather than the funding of industry promotion and subsidizing the industry” (Page 20, line 10).

Ms. Stewart also discussed her perspective (starts on page 18, line 7) on industry pesticide and drug use: “I’m very concerned about the black hole around deleterious substances and the pest and pathogen regulation... in effect, the industry was being exempt from s. 36 of the *Fisheries Act* by the absence of requirements under the PARs [Pacific Aquaculture Regulations]... Mr. Thomson [DFO] admitted it was a black hole, that they’re simply not covered at the moment. There is no regulatory process in place that restricts, limits or controls the administration of those toxic substances...”

Alan Blair, counsel for the B.C. Salmon Farmers Association questioned Ms. Stewart about the arrival of consensus around science (line 28, page 48). Ms. Stewart mentioned the collaborative relationship between the Coastal Alliance for Aquaculture Reform (CAAR) and Marine Harvest Canada, and one of the reasons CAAR engaged in that relationship was the “the scientific debate...we believe that collaborative work with the company would perhaps assist in putting that debate to rest. I have to say that progress has been glacial at best, but that was why we embarked on that effort.”

Mr. Blair questioned Clare Backman about collaborative work with non-government organizations. Clare’s reply included mention of sea lice: “But we’ve learned that, yes, the salmon farms can be a place where the sea lice are amplified. I mean, that’s been proven. And yes, when the pink salmon, for example, are very small, the damage can be quite extensive to the pink salmon” (page 51, line 36).

Many counsel debated (page 63, line 3) whether a [report](#) written by Alex Morton could be entered into evidence based on ringtail documents and it was eventually entered as an exhibit.

Gregory McDade, counsel for the Aquaculture Coalition, entered into evidence (page 72, line 9) a [DFO email](#) that discussed Cultus Lake sockeye “experiencing very high levels of pre-spawning mortality”. Other interesting documents entered into evidence on prespawn mortality include:

- a [2009 summary report](#) of fish samples examined from Weaver Creek;
- a [2007 report](#) that “raises the spectre of [a] novel pathogen infecting late run fish;” and
- A [2009 DFO email string](#) that includes “The bottom line, we are no further ahead in finding out why the majority of the Nadina Channel population died, pre spawning. Our system to try and solve these problems or at least learn from them appears to be very broken.”

An interesting [2009 email](#) from Dr. Kristi Miller discusses salmon leukemia virus (SLV) and was entered into evidence. It includes:

“In talking to Mike Kent who first described the virus in Chinook at the time (1991/1992), they did not observe it in wild sockeye...although they showed that it was infective to them...it is highly likely that the incidence and rise of SLV (or what we hypothesize to be SLV) in sockeye did

not occur until the mid-1990's...This is most interesting, given the entry timing shifts in late-run sockeye started in 1996."

Part 23: Aquaculture Day 9, September 8, 2011

Questioning continued of the "perspectives on aquaculture" panel and included discussion on the appropriateness of siting criteria; the sufficiency of regulation to protect wild salmon; and disease control in open net-pen salmon farms. Concerns were also raised about the absence of First Nations representation on this panel.

Witnesses:

Clare Backman – Director of Environmental Compliance and Community Relations, Marine Harvest Canada

Alexandra Morton – Executive Director, Raincoast Research Society

Mia Parker – formerly Manager, Regulatory Affairs, Grieg Seafood BC Ltd.

Catherine Stewart – Salmon Farming Campaign Manager, Living Oceans Society

Transcript: [Aquaculture Day 9](#)

An interesting [email string](#) was introduced into evidence by Gregory McDade and detailed DFO communications response strategies to articles published in the Georgia Straight from Alex Morton and Brian Riddell, Pacific Salmon Foundation.

Tim Leadem, counsel for the Conservation Coalition entered into evidence (page 11, line 7) a [draft memo to cabinet](#) that recommended "a partnership with industry (Marine Harvest \$5M), the Province of BC (\$10M), and a charitable donor (Gordon and Betty Moore Foundation - \$10M), Cabinet support the investment of \$5M to contribute to a fund which will support initiatives piloting new, commercial-scale aquaculture systems." Ms. Stewart explained the Coastal Alliance for Aquaculture Reform's role in this partnership fund (page 11, line 30) and went on to describe her thoughts on why the fund wasn't established:

"This was in the spring of 2009...aquaculture was going to be a politically contentious issue for the government going into the election, and we had got to the point where we had ministerial support and Cabinet support for investment in a pilot fund. I had been told personally by the Deputy Minister that the recommendation had gone to Treasury Board. So we were right on the cusp of the fiscal year 2010 budget coming out, but then the jurisdictional shift took place, and the Province was no longer responsible for aquaculture. They were more or less off the hook, and that money did not make it into the budget. And then the federal government having now been instructed by Justice Hinkson to assume management of the farms was...in a position where they were looking at major restructuring, and so basically this just came off... the table. And the sad part about this is...the Moore Foundation had been holding onto this money for

quite some time, hoping to invest it in British Columbia, hoping to trigger...innovation in technology and help to resolve some of the disputes around aquaculture.”

The discussion moved to the topic of closed containment salmon farming and Ms. Stewart said, “...in terms of closed containment working, it is working. The AquaSeed facility, for example, in Washington State is producing closed containment raised salmon, which are being sold by Overwaitea Food Group in their stores in British Columbia and Alberta, and the market demand for that product is rising.”

Tim Leadem, counsel for the Conservation Coalition, introduced (page 21, line 7) into evidence a summary of [Aquaculture Innovation and Market Access Program \(AIMAP\) funding allocations](#). Ms. Stewart spoke to the program, “Well, to the best of my knowledge, it was a \$70 million investment that was made by the federal government to facilitate innovation and market access for the aquaculture industry. A portion of it is supposed to go to regulatory reform, a portion to science and a portion to market access.”

Mr. Leadem pointed to a specific line item (page 21, line 33) on the “Pacific Region” in the [AIMAP allocations](#) that refers to a \$142 500 grant to Marine Harvest Canada for “Soft-flesh Suppression Technology”. “Soft flesh” disease is caused by a parasite (kudoa) that infects farm fish and reduces its marketability, according to Ms. Stewart. Mr. Leadem pointed to several other large funding grants going to the aquaculture industry and Ms. Stewart shared her opinion:

“...but the government has to make choices and prioritize. And when we hear testimony that important research, like Dr. Miller's research, is potentially not being funded, and yet we see profitable corporations receiving taxpayer grants to deal with issues that are internal to the industry...that's when we have to question the government's prioritization and their decisions. The Department of Fisheries and Oceans should be doing their best to ensure the health of marine ecosystems and wild fish, not subsidizing profitable corporations to contend with internal problems that may affect their profitability.”

Ms. Stewart went on to share her views (page 26, line 2) on DFO funding priorities:

“My concern is the misrepresentation that is undertaken by the agencies and by the government and the support that's given with taxpayer dollars to counter the weight of scientific evidence, the concerns of indigenous people, and the concerns that I think a lot of us share around the impacts of open net cage salmon farming. Just as an example...a couple of years ago myself and Dr. Craig Orr were at a meeting in California, and I set up a meeting with the executive of Safeway headquarters in Pleasanton, California...We did a presentation to the executive level around our concerns with open net cage practices in B.C. And within about...a week and a half, I got a call from Safeway saying that Mr. Swerdfager [DFO] and Ruth Salmon from CAIA [Canadian Aquaculture Industry Association] had come down to...meet with them and counter all of the information that we had put forward, advancing claims that the Canadian

industry is completely sustainable, that sea lice are simply not a problem, despite the fact that they're a problem everywhere else in the world, as is acknowledged by governments in Europe, for example. I personally don't think...this [is] a responsible use of taxpayer dollars.”

Mr. Leadem introduced a [DFO California Trip report](#) and according to Ms. Stewart, described the trip Mr. Swerdfager made to California.

Mr. Leadem introduced (page 25, line 12) the [lobbying statement](#) from the Canadian Aquaculture Industry Alliance which states they received \$372,127 from DFO and \$470,530 from Agriculture and Agri-Food Canada.

A [letter](#) from the Coastal Alliance for Aquaculture Reform details concern about the potential certification of open-net cage farm salmon as organically certified in Canada. Ms. Stewart commented on the letter: “The Canadian government currently has a program underway to secure organic certification for open net cage farm salmon products in Canada, and we've been extremely concerned about this” (page 31, line 14).

Another interesting exhibit includes a [report](#) by Dr. Andrew Wright on the viability of closed containment aquaculture.

Part 24: Water, Cumulative Impacts and DFO Final Summary Panel, September 15 – September 28, 2011

The tail-end of the regular hearing of the Cohen Commission wrapped up with sessions on hydro and cumulative effects. In addition, a senior DFO management panel was brought back for a final wrap-up. Although these were the last hearings of the regular schedule, three unexpected hearing days were added in December on the emerging Infectious Salmon Anaemia virus (ISAV) issue (see Parts 25-27).

See transcripts below:

- [Sept 15 Hydro, Water and Temperature](#)
- [Sept 16 Hydro, Water and Temperature](#)
- [Sept 19 Cumulative Impact Assessment](#)
- [Sept 20 Cumulative Impact Assessment](#)
- [Sept 22 DFO Priorities and Summary](#)
- [Sept 23 DFO Priorities and Summary](#)
- [Sept 26 DFO Priorities and Summary](#)
- [Sept 27 DFO Priorities and Summary](#)
- [Sept 28 DFO Priorities and Summary](#)

On Sept 15, Dr. Craig Orr from Watershed Watch was questioned (starts on page 58, line 5) about the existence of groundwater legislation in B.C. and whether it is adequate. Dr. Orr responded with several comments:

“...there’s no regulation to licence groundwater extractions, and that is being considered in the Water Act modernization, although I just do not know where it is at this point;”

“There has to be blanket coverage, and it can’t just include problem areas and for extremely large groundwater extractions;”

“Watershed Watch and others, have been advocating for consistent groundwater protection, licensing of all groundwater wells that are drilled in British Columbia;” and

“The laws in British Columbia are antiquated with regards to protecting flow needs for fish.”

On Sept 16, counsel for Watershed Watch turned to independent power projects (IPPs) and questioned the panel on the Environmental Assessment (EA) process associated with their approval and the issue of splitting up larger projects into smaller components to potentially avoid an EA. Counsel referred to an [internal DFO memo](#) (page 67, line 4) that highlights a number of concerns associated with government habitat protection methods including:

“Project splitting is a current issue resulting from a poorly coordinated referral system.” Jason Hwang, BC Interior Area Manager, DFO, elaborated on this point from his memo, “So we’ll get a piece for a marina, and then we’ll get a separate referral for, say, a boat launch, and then we may or may not get a separate referral for upland development. But it tends to all be part of the same development activity. It would be more effectively managed and regulated if we were able to review it and consider it as a one singular project instead of three individual pieces of a project.”

The discussion moved to the idea that an EA could be avoided if an IPP is split-up into smaller components. Glen Davidson, Director of Water Management, Ministry of Forests said:

“Yeah, the trigger for the formal environmental assessment process is 50 megawatts. So under that, they’re not required to have certificate.”

Counsel continued, “And would it be possible to split a project into smaller projects to avoid the requirement to conduct an environmental assessment?”

Glen Davidson: “I would say not generally I’m seeing projects being split to do that. It’s kind of obvious if that’s the case.”

Counsel then brought up a potential IPP example in which this situation may have occurred, “there’s an example of a project in the Fraser River watershed, and it’s on the Holmes River, and I’m just wondering if you’re aware of an independent power project where it appears that there’s a total of ten licences that have been granted for a total of 76 megawatts of power production, so it’s ten licences on a row of streams that go into the Holmes River.”

On Sept 19, David Marmorek, from ESSA Technologies Ltd. spoke about his [report on cumulative impacts](#) produced for the Cohen Commission.

On Sept 22, under cross-examination by Commission Counsel, Susan Farlinger, DFO Pacific Region Director General recognized the conservation problems posed by mixed-stock salmon fisheries and showed intentions to move away from this practice (pages 64 to 71).

David Bevan, Associate Deputy Minister, DFO, agreed that “moving fishing upstream gets to a large extent or can to a large extent deal with the issue of the mixed stock fishery problem” (page 66, line 41).

Ms. Farlinger also discussed some marketing advantages for the existing share-based fisheries (page 71, line 4).

On Sept 23, Justice Cohen brought up the Wild Salmon Policy and the issue of its implementation with the senior DFO panel (page 81, line 12):

“Now that we’re in 2011, we have about six years under our belt. First of all, how realistic is that statement, that implementation must be accomplished within DFO’s existing resource capability? I’m reading that to mean human and financial resource, but I could be misinterpreting that statement. And secondly, how realistic is it that DFO will find a solution to sharing responsibility with First Nations, governments, volunteers, stakeholders, and other governments? In other words, after six years of working with the Wild Salmon Policy, if I could just get some reality check on these statements, it would be helpful.”

On Sept 27, counsel entered [an email](#) (page 3, line 7) into evidence that indicated the Minister of Fisheries had a private meeting with the largest salmon farming company in B.C.—Marine Harvest Canada—about their concerns with the Cohen Commission. Environmental groups in the Conservation Coalition—a participant group of the inquiry—were not offered an analogous meeting opportunity with the Minister.

An [email string](#) that included communications from Al Castledine—Ministry of Agriculture and Lands, BC—detailed a precautionary movement of Marine Harvest Canada’s fish from one farm to another which was funded by the province. The email suggests the news of the fish movement was to be made public, but the source of the funding provided to the company for the move was not.

In questioning Deputy Minister Dansereau about the adequacy of DFO, counsel referred to questions previously posed to Dr. Brian Riddell, former DFO scientist. See line 47, page 15 for an interesting exchange which included previous testimony from Dr. Riddell:

“Well, I don’t think there’s any question that I disagree. I am not surprised at all at her [Ms. Dansereau] reply because, of course, these people are under significant pressure for national priorities and I’m sure there’s a very substantial debate in Ottawa where the money goes to the various departments. But I don’t think there’s any question that you would get a very common response on the west coast with respect to salmon stock assessment, I have said publicly here, I believe, that it’s definitely at a marginal responsible level that sort of what we would define as a

core stock assessment responsibility is barely being met now.”

Part 25: Infectious Salmon Anaemia Day 1, December 15, 2011

On October 17, 2011, Simon Fraser University held a press conference to announce positive tests for segments of the Infectious Salmon Anaemia virus (ISAV). Sockeye samples collected from Rivers Inlet, B.C. were sent to the ISAV reference lab of the World Organization for Animal Health (OIE) run by Dr. Fred Kibenge at the University of Prince Edward Island. Dr. Kibenge’s lab is independent from the Canadian government. Wild salmon samples were also sent for ISAV testing to Dr. Are Nylund’s lab at the University of Bergen in Norway by Alex Morton. This new development prompted the Cohen Commission to announce three additional hearing days to examine this new ISAV information. These three days of testimony turned out to be among the most revealing in the entire inquiry.

Witnesses:

Nellie Gagné (Molecular Biology Scientist and Laboratory Supervisor, DFO, Moncton)
Dr. Fred Kibenge (Chairman, Department of Pathology and Microbiology, Atlantic Veterinary College, University of Prince Edward Island)
Dr. Kristi Miller (Head, Molecular Genetics, DFO)
Dr. Are Nylund (Professor, University of Bergen, Norway)

Transcript: [ISA Day 1](#)

Brock Martland, Commission Counsel, referenced four ISAV testing reports dated [Oct 15th](#), [Oct 20th](#), [Oct 31st](#), [Nov 7th](#) from Dr. Kibenge and inquired about the results. Dr. Kibenge replied (starts on page 12, line 24):

“...in total we received...[four] submissions, the very first one was the 48 hearts of sockeye smolts. And in that testing we found two positive samples out of 48... the second set of samples was saved, we have from a different submitter and in that case I think we found in total three positive samples. And then in the third and the fourth, those samples were negative... So by the time we put a result, we are confident that is a true positive result.”

Mr. Martland referenced another four ISAV testing reports from [Oct 27](#), [Nov 2](#), [Nov 23](#), and [Dec 12](#) from Dr. Nylund and inquired about the results. Dr. Nylund replied:

“among the first 48 I had one positive, and it was sample number 36...Among the others...There was one positive in the report from the 23rd, sample H10 and that was repeatable...And I also got sample 14 heart positive, but that was not possible to repeat... I had no sign of contamination...And it was only these tissues that came up positive. But of course I was not able to sequence any ISA virus from these samples. So I was not able to verify that this was actually

ISA virus I was picking out. But you know that the assays that we are using...are very specific, so they should only be picking out ISA virus.”

Mr. Martland referred to an [ISAV testing report](#) from the DFO Moncton lab supervised by Ms. Gagné and asked about the test results (page 16, line 6). Ms. Gagné replied, “They are negative.”

Commission Counsel pursued this further, “At the bottom of the document there's a row... highlighted,...”Interpretation of DFO testing” is the heading, and then we see “inconclusive” or not applicable, depending. Were your RT-PCR results inconclusive?”

Ms. Gagné replied, “We reported them as inconclusive based on our policy. Samples are tested additionally for the quality of the RNA tissue, and in this case all samples submitted show extensive to total degradation of RNA.”

Brock Martland, then referred to an [email](#) from Ms. Gagné (page 17, line 7) that discussed a weak positive test found at the DFO Moncton lab. It included, “I am not convinced it should be reported to our friends in Ottawa, guess why! We do not like to see a Ct like this, but this is the type of Ct that is equivalent to the finding by Nylund, i.e., can’t conclude anything from it.”

Mr. Martland then inquired about Dr. Miller’s ISAV testing (page 20, line 8). Dr. Miller elaborated that she conducted ISAV testing on wild salmon in the past using “an assay to segment 6, which does not necessarily pick up all strains of ISA,” and these results turned out negative. But after hearing of Dr. Kibenge’s positive ISAV results she was concerned that her lab “hadn’t done enough due diligence to make sure... [their] fish were negative.” Hence, Miller began retesting her sockeye samples after modifying her lab’s methods to include assays to segment 7 and 8 of the ISA virus. She reported, “the ISA 7, P7 primer set amplifies the most positive samples...and we find quite a lot of variability in our ability to pick up positives with segment 8 with various segment 8 primers. But when we do pick them up, they sequence as being ISA. So I believe that what we have in B.C. is a somewhat divergent strain of ISA that is not universally picked up with all...the assays that are presently in use.”

Mr. Martland continued to question (page 22, line 40) Dr. Miller, “Did you provide any of your samples to other scientists in order to...see whether they confirm or dispute your findings...?”

Dr. Miller responded, “...we provided a set of positive and negative blind samples on to Dr. Kyle Garver [DFO Pacific Biological Station]... he ran basically the same assay that Nellie Gagné [DFO Moncton] has run...and he also ran our ISA-7, the Plarre-7 primer sets that we use, and...he ran it under... their...protocol that is part of the validation protocol, and then also using the protocol that we use in our lab...And I should say that we have different instrumentation and a slight...variance in the protocol that we use for RT-PCR...[and] he was not able to pick up any positives using the DFO validated assay, but he did pick up a positive of ISA-7 using our assay with our pre-amplification.” An interesting [briefing note](#) by Dr. Miller discusses these details and other pertinent information.

Mr. Martland referred (page 25, line 17) to a [document](#) that included an email string and a DFO draft manuscript that was previously leaked that confirmed Dr. Molly Kibenge (Dr. Fred Kibenge's partner) "also conducted tests for ISAV on Pacific salmon" in 2004 at the DFO Pacific Biological Station in Dr. Simon Jones' lab, and asked Dr. Fred Kibenge about the results.

Dr. Kibenge responded, "...this work, at the time it was being carried out, there was no real time RT-PCR, so the testing that was done used the conventional RT-PCR, and the primers that were used were targeting segment 8 and they are the standard primers for testing for ISA... the results, I think, as far as I recall, were that Dr. Molly Kibenge was able [to get] several samples positive for ISA virus, and some of those samples were sequenced, the products that we amplified were sequenced, and deposited to the gene bank...So this was clearly a positive amplification of ISA virus in those samples."

Mr. Martland continued, "I take it to be your understanding that didn't move past being a draft manuscript. Are those results...ever published?"

Dr. Kibenge replied, "No, they were not published, and the reason that was given was that the results...we obtained were considered to have been due to contamination, and the decision to submit the paper was denied."

Mr. Martland: "You say the results were considered to be attributed to contamination, considered that way by whom?"

Dr. Kibenge: "Dr. Molly Kibenge was working in the lab of Dr. Simon Jones. Dr. Simon Jones was the supervisor of this project, and it was his call as to how to proceed with the results of that work."

Mr. Martland then questioned Ms. Gagné about her involvement in the 2004 ISAV testing (page 26, line 40). She said the DFO Moncton lab tried to reproduce Molly Kibenge's positive results but could not.

Mr. Martland questioned the panel regarding potential reasons why different labs were getting different ISAV results, specifically mentioning tissue types used for testing, testing machinery, and the specific virus segments tested for (see page 31, line 26).

An [email](#) from Dr. Gary Marty, B.C. Ministry of Agriculture and Lands, and a [document](#) detailing the ISAV testing methods were entered into evidence by Mr. Martland. In response to these documents, Drs. Nylund and Kibenge did not recognize the provincial staff that developed the provincial testing assay for ISAV (page 39, line 24). Later in the day, Gregory McDade referred to another [email](#) from Dr. Marty and questioned the panel further on the validity of the province's ISAV testing protocols (line 6, page 111) and asked, "Dr. Miller, you're aware of the nature of Dr. Marty's testing for ISA over the past eight years, or so?"

Dr. Miller replied, "I'm aware he's conducting testing and I'm aware that it's his own in-house test."

Mr. McDade added, "Yes...I understand it's a test that was designed by his Masters student?"

Dr. Miller replied, "That's what he said."

Mr. McDade: "And it's not the OIE standard test, is it, Ms.Gagné?"

Ms. Gagne: "It's not, no..."

Mr. McDade subsequently asked, "And it's not verified by any of the standard literature?"

Ms. Gagne: "I don't know if they have in-house validation data."

Mr. McDade: "Right. So what we have is the 4,700 [B.C. Ministry of Agriculture and Lands ISAV] tests that we heard so much about in the last hearing have all been under a process that is not an approved process by the OIE...Well Dr. Miller, what's your opinion about that test? Is that going to have picked up ISA? It's simply the wrong test, isn't it?"

Dr. Miller: "I don't know, I've never used this test so I really wouldn't know. I don't believe that it is published."

Mr. McDade: "So it's a completely unverified -- to the best of any of the knowledge of the three participants here, there's no verification of that test at all?"

Dr. Miller: "I'm not aware of any."

Mr. McDade: "Dr. Kibenge?"

Dr. Kibenge: "Yeah, I'm not familiar with this test...I would expect this [test] not to be as sensitive as segments 7 and 8."

Mr. McDade: "We don't know today...whether this test that's been conducted in a B.C.-only version would have been picking up the ISA even if it had been there for the last seven or eight years; isn't that right, Dr. Miller?"

Dr. Miller: "I wouldn't know, no."

Dr. Kibenge shared his opinion on the ease of culturing ISAV from wild fish (line 37, page 45) and said, "my experience has been that if virus is from a clinically sick fish, for example, Atlantic salmon with ISA, usually you are able to culture that virus. But in the reports I have seen so far, it has been very rarely shown that you can actually culture virus from wild fish."

Mr. Martland asked, "Are there strains of ISAV that are not culturable? (page 46, line 2)

Ms. Gagné and Dr. Kibenge both said, “Yes,” and Dr. Kibenge added: “the most famous one is what we call the ISAV virus HPRO that is known to be non pathogenic or non-virulent. This virus in fish does not cause any clinical disease, and you can only detect it by RT-PCR.”

Mr. Martland questioned Dr. Miller (line 48, page 28) about a [short report](#) written by Dr. Brad Davis who works in Dr. Miller’s lab. The briefing includes:

“...I was able to perform a retrospective statistical analysis of the microarray to determine whether salmon were responding strongly to the presence of the [ISAV] virus;” and,

“This is a very strong signal indicating that fish positive for ISAV7 are responding to the virus similarly as mammals would respond to other influenza infections. As ISAV is an influenza virus, this result not only validates the ability of microarrays to identify strong biologically relevant signals associated with health and condition on wild-caught migrating salmon, but it suggests that the virus is causing enough damage to elicit a strong response in the salmon.”

Dr. Miller discussed her theory (page 51, line 45) about how long the virus has been in B.C.:

“We have...sequenced from these 1986 samples...the three fixed base differences that we see, today, existed in 1986 as well, which suggests that not only has this been here for at least 25 years, but it's been here probably quite considerably longer than that...”

With reference to an [email](#) and an [ISAV results report](#), Dr. Miller discussed results of a DFO study on Creative Salmon’s farm fish that was initially prompted by concerns about a jaundice-disease syndrome their Chinook salmon had experienced (page 52, line 37). She stated, “...we did identify some positive ISA fish among their fish.”

Testimony moved to the subject of cooperation by the salmon farming industry on disease testing. Mr. Martland asked (page 53, line 17), “You've described Creative [Salmon Ltd.] as being quite willing to work with you in this testing, including for Parvovirus. Is that true of other companies?”

Dr. Miller replied, “So far, they're the only company who's been willing to provide us samples.”

Mr. Martland went further, “...if memory serves, when you testified in August you described that there was work underway to engage in testing for Parvovirus among those farming Atlantic salmon in the Pacific. Is there an update that we need to have there?”

Dr. Miller replied, “Yes, I had a meeting with the B.C. Salmon Farmers' Association after the aquaculture sessions in the Cohen [Inquiry], and we agreed, in principle...and we were writing a co-proposal for ACRDP, which is a DFO grant, and [at] the very last minute they basically took out all testing of Atlantic salmon in that proposal and they proposed that I, instead, look further back at sockeye salmon...until I had information on how long this [parvo-] virus...has been here, they did not want their samples to be tested.”

Mr. Martland continued, “...can you test fish farm audit samples?”

Dr. Miller replied (page 53, line 41), "So when this occurred, we approached the people in DFO...and the audit program is now run through DFO, but those samples are still sent to the provincial lab, the same lab that's been doing it for the province. The histology work and the PCR work is all done in the provincial lab. And we asked, we signed a material 1 transfer agreement with the provincial lab, and that transfer agreement only enabled us to test for Parvovirus and nothing else. The very unfortunate thing is that we were sent tissue homogenates in water that were not kept frozen... and anyone who knows anything about molecular biology knows you cannot send tissue samples that are not kept frozen or they degrade very, very rapidly. So by the time they got to our lab, they were quite degraded, and the DNA was of no use...we could use the RNA to test, but we had to sign an agreement to say we would not test for anything but Parvovirus. So it's useless for Parvovirus, because Parvovirus is a DNA virus, and we needed the DNA and we have completely degraded DNA."

Dr. Miller also discussed the issue of testing farm fish further with Alan Blair, counsel for the B.C. Salmon Farmers Association on page 101, line 32.

Karen Campbell, counsel for the Conservation Coalition, broached this subject by entering an interesting [email string](#) between Dr. Miller and Mary-Ellen Walling of the B.C. Salmon Farmers Association into evidence, that highlights the disagreement between the two regarding the testing (page 121, line 35).

In reference to a [summary report](#), Dr. Miller described the progression of her ISAV testing and various meetings she had about it with the fish health department and Stephen Stephen, DFO, Ottawa. Dr. Miller expounded on her perception of the Canadian Food and Inspection Agency's definition of a confirmed case of ISAV (page 54, line 41). Dr. Miller said, "...I believe it was decided that...the definition...CFIA uses...needs to be both cultured and culturable and it needs to validate with their validated primer set. If it doesn't meet those criteria...then it's not classified as ISA."

Dr. Miller also stated (page 56, line 6), "I don't think that Stephen Stephen [DFO], in Ottawa, was very pleased that we were doing this testing, because we are not the validated lab." She raised the concern, "...that if something is classified as being ISA that CFIA will come and basically take all the samples in the lab away...as their way to control for disease spread. I have a very large genomics program that relies on the very extensive sampling inventory that we have, and I was very concerned...that I could lose the samples that I rely on for my genomics program." (In response to questions later in the day from counsel for the Aquaculture Coalition, Dr. Miller elaborated on her conversations with Stephen Stephen, from DFO, Ottawa, on page 107, line 37.)

In further cross examination about the consequences of positive ISAV findings and the conversation she had with her superiors (page 126, line 15), Dr. Miller stated:

"the sentiment that I got was that research should not fog policy...I look at my own program and I think I have a lot to lose here if CFIA decided to sweep in and take all my samples. I've got

thousands of samples and a very big program in jeopardy, so whether Stephen Stephens (sic) meant that or not, I certainly have been very concerned about that;" and

"I think he just intimated that I, as a scientist, would not understand the complexities of these issues and that, as a scientist, I should not be undertaking research on something if I didn't understand the ramifications of what the results could do" (page 127, line 19).

Dr. Nylund shared his opinion on the potential presence of ISAV in B.C. (page 57, line 20), "...I published a publication saying that the ISA virus could be vertical transmitted to transport of embryos of Atlantic salmon from Europe to Chile. And, of course, the same could happen in British Columbia...But if you look at the situation in wild Pacific salmon that we've seen so far...We have a lot of indications that the virus could be present in Pacific salmon, but there is no hard evidence."

Dr. Kibenge shared his opinion on the same subject (page 59, line 17), "I think there's evidence that there are ISA virus sequences in the fish samples from B.C. and some of that information actually ties back to the work that Dr. Molly Kibenge was doing here way back in 2002, 2004, where she had that type of information, but the data was not allowed to go forward because it was considered to be because of contamination."

Dr. Miller also shared her opinion, "...I clearly believe that there is a virus here that is very similar to ISA virus in Europe, but we really do need to get a fuller sequence to get more information about how similar it is" (page 60, line 13).

Lastly, Ms. Gagné commented on this topic, "I don't know where we are at this point, because we don't have enough information, but it could really be that we're looking at another ISA that was there for a long time" (page 60, line 26).

Counsel for Canada inquired about Dr. Miller's genomic research and her lab's funding (page 79, line 36). Her reply included: "...it's about \$450,000 over three years, which is about 150,000 a year, which is a little bit more than half of what we had before..."

Tara Callan, counsel for the Province of B.C., entered a [report](#) by Dr. Gary Marty, B.C. Ministry of Agriculture, into evidence that acknowledges Dr. Kristi Miller had 9 positive test results for ISAV from farmed B.C. Chinook salmon.

Gregory McDade, counsel for the Aquaculture Coalition, inquired about Dr. Miller's freedom to speak about ISAV within DFO and about her experiences (page 109, line 19). Dr. Miller replied:

"I'm pretty alienated in the department at the moment so the end result of all of this is I'm not included in any conversations about any of this so once I reported this information on the 24th, nobody in the department talked to me about disease or ISA after that."

Dr. Miller also reported that her lab found 25% of Creative Salmon's Chinook tested positive for ISAV (page 112, line 39) and that 25% of migrating wild sockeye also tested positive for ISAV. Mr. McDade also inquired about other viral testing, Dr. Miller replied:

“We did find fish positive for the... [piscine reovirus], which is thought to be causing HSMI [Heart and Skeletal Muscle Inflammation]...We see positives for that in our [wild] sockeye salmon, as well.” This was the first public mention of the potential presence of piscine reovirus in wild and farm fish in B.C.

Mr. McDade asked Dr. Nylund if he knew piscine reovirus was in British Columbia, he replied: “I know it has been found in Chile, who has been importing embryos from Europe...it gives up to 10 percent losses in detected [Norwegian] farms and up to 100-percent morbidity. And it effects the muscle of the fish so it may reduce the quality of the fish.”

Dr. Miller also mentioned that in comparison to other years, the 2007 sockeye that left the Fraser River had a high incidence of a pathogenic strain of *Flavobacterium psychrophilum* which can cause coldwater disease (species clarified with K. Miller, personal communication, April 10, 2012). They also had “quite a high positive rate” for the piscine reovirus and a relatively high rate for ISAV (page 113, line 35).

Dr. Miller raised concerns about the provincial ISAV testing and the manner in which test fish may be pooled together (page 120, line 47). She also raised another potential problem with the province’s audit program, they didn’t keep tissue samples archived, so it is not possible to go back and re-test samples (page 123, line 14).

Part 26: Infectious Salmon Anaemia Day 2, December 16, 2011

The ISAV hearings continued in the morning session with two scientists returning from the previous day. Management staff from DFO and CFIA comprised the afternoon panel, along with Dr. Simon Jones from DFO.

Morning witnesses:

Dr. Fred Kibenge (Chairman, Department of Pathology and Microbiology, Atlantic Veterinary College, University of Prince Edward Island)
Nellie Gagné (Molecular Biology Scientist and Laboratory Supervisor, DFO, Moncton)

Afternoon witnesses:

Dr. Simon Jones (Research Scientist, DFO)
Dr. Kim Klotins (Acting National Manager, Disease Control Contingency Planning, Aquatic Animal Health Division, CFIA, Ottawa)
Stephen Stephen (Director Biotechnology and Aquatic Animal Health Sciences Branch, DFO, Ottawa)
Dr. Peter Wright (National Manager, National Aquatic Animal Health Laboratory System, Fisheries and Oceans Canada, Moncton)

Transcript: [ISA Day 2](#)

Alan Blair, counsel for the B.C. Salmon Farmers Association, referenced CFIA commissioned [laboratory audits](#) examining the DFO Moncton and Atlantic Veterinary College (AVC) labs and asked Dr. Fred Kibenge about comments regarding laboratory contamination. Dr. Kibenge replied, “in my view, that statement was made based on what they were looking for. We don't have any cross-contamination in our practices as we are processing these samples,” (page 11, line 33).

Interestingly, the lab audit issue was raised later in the day by Crystal Reeves, counsel for the First Nations Coalition, who referred to an [email](#) that suggests Ms. Gagné (DFO Moncton lab supervisor) provided tips that were used in the inspection of Dr. Kibenge’s AVC lab (page 51, line 38). This suggests an imbalance in the development of the audit criteria for each of the two labs may have occurred. The [email](#) contains points from Ms. Gagne that were forwarded to Dr. Kim Klotins, CFIA. However, Dr. Kibenge was not asked by the inspectors for his views on the Moncton lab before its inspection (see line 20, page 57). Counsel for the First Nations Coalition asked Mr. Kibenge (page 56, line 3): “Dr. Kibenge, were you aware that Ms. Gagné had been consulted about issues with your PCR tests prior to the assessment of your lab?”

Dr. Kibenge replied, “No, I'm just seeing this right now. I am quite surprised, actually.”

Ms. Reeves: “And have you ever had any issues raised with respect to your lab by CFIA prior to these latest testing results?”

Dr. Kibenge: “No.”

Ms. Reeves went on to ask, “Do you have a concern, Dr. Kibenge, that the focus was placed on your lab because you had an ISAV result?” (page 56, line 28)

Dr. Kibenge replied, “...When the lab assessment was presented to me, it was presented as an assessment between two labs, the DFO Moncton lab and the AVC lab. And at that point my view was that it's, you know, being done fairly. I was not aware that actually they first consulted the DFO Moncton lab for what issues to look for, and then set up this assessment...At the time of the site visit, I quickly got aware...the purpose of the site visit itself was not to do the things that I had been made to understand from the conversation with the senior officials in CFIA, and the collection of the lab documents, it was actually, in my view, to confirm a hypothesis that had already been communicated in the media.”

The lab assessments of DFO Moncton and the AVC lab were brought up again by Commission Counsel in the afternoon (page 114, line 29). After some dialogue with Drs. Klotins and Wright on this subject, Mr. Martland asked (page 119, line 10):

“I appreciate she may have the expertise in-house, but I think my question isn't so much...where can you find experts or who else do you need to bring into the equation so much as the concern, frankly, about the appearance of a conflict of interest. If DFO Moncton is the subject of an examination and an inspection, ultimately an assessment, how is it that DFO or CFIA people are

involved in that process? It would seem not to be an independent process. And to jump ahead, at least drawing some initial...conclusions from the assessment process, seem to be more critical of AVC than DFO Moncton.”

Dr. Klotins replied, “Whether it needs to be an independent or not depends on the information we were looking for so we can make decisions on whether it's a true positive or not...there was never an intention to do a comparison between the two laboratories...it was just to assess whether all the pieces are in place in order to make a determination of whether it's a true positive or a false positive or whatever.”

Mr. McDade questioned Ms. Gagné (page 25, line 2) further about a [CFIA news release](#) concerning government ISAV testing that stated: “DFO has tested all 48 samples received as part of the original reports and the results are all negative for the virus.”

Given Ms. Gagné already testified that due to degraded samples, her lab’s results were inconclusive (page 21, line 18) and they did get a “weak positive” (page 21, line 43), Mr. McDade asked if she thought the [news release](#) statement was misleading the public: “That's not your finding. Your finding was they were inconclusive, wasn't it?”

Ms. Gagné: “There may be a line in the bottom about the quality statement, I'm not sure.”

Mr. McDade, “This statement is misleading and contrary to your policy, isn't it?”

Ms. Gagné: “There was no virus found, definitely, so it's not misleading in the sense they were negative for the virus.”

Mr. McDade continued on this line of questioning, “You need to clarify it, you're right. In other documents, there are clarifying statements because otherwise that statement is very misleading, isn't it?”

Ms. Gagné: “It says "negative for the virus". I don't see anything untrue for that. However, as -- you're right, there's an inconclusive result because of the quality...”

Mr. McDade asked Dr. Kibenge about his recent experiences in testing for ISAV in B.C. salmon (page 33, line 12): “As a result of your making a simple scientific finding of ISA virus, you've been really quite attacked haven't you since then?”

Dr. Kibenge: “Well, yeah, I would say that, but I can't understand where the government is coming from. I mean, that's my view.”

Mr. McDade: “There's a lot of pressure been put on you and your university about this, hasn't there?”

Dr. Kibenge: “Yes.”

Mr. McDade: "And I'm going to give you a chance to say what you want to say about that, if there's anything you'd like to say."

Dr. Kibenge: "Well, I think we...there has been a lot of information that has been out there, and it hasn't been easy. But I believe that I'm very fortunate that I'm at a university that is very supportive. My dean in the vet school has been very supportive and I think because of that support we've been able to sort of deal with the other issues that have come our way. I really appreciate that support of the university and the vet college in this matter."

Mr. McDade: "I'm going to speculate that if you'd made a negative finding, you wouldn't have been exposed to the same kind of pressure. Do you agree with that?"

Dr. Kibenge: "I agree, yeah..."

Karen Campbell, counsel for the Conservation Coalition, referred to a published [scientific paper](#) authored by Dr. Fred Kibenge which evaluated 14 laboratories in terms of their procedures for detecting ISAV. Ms. Campbell asked Dr. Kibenge to elaborate on laboratory attributes that may contribute to differing results (page 36, line 37). Dr. Kibenge replied:

"We used a Roche LightCycler 480 machine with a different software...which is different from the DFO lab in Moncton...They use a Stratagene with again a different software...but what we found was that there were seven labs that we flagged as more or less reporting what we would call false negatives. And one of the labs was actually a very high profile lab in Europe, which had impeccable protocols...we found actually the reason for the difference was that they were using a Stratagene machine...So we established that if you're using that machine [Stratagene], you are most likely to miss positive samples that have low virus amounts, and the seven labs that were flagged for that were actually having that machine."

Ms. Campbell referred to the [2004 ISAV study](#) conducted by DFO that found indications that ISAV may be present in wild salmon in B.C. and asked Ms. Gagné: "the results of that study were known to DFO back in 2004; is that correct?"

Ms. Gagné replied, "Yes."

Given this response, Ms. Campbell then referred to a [document](#) that outlined DFO wild fish sampling and virus testing activities for 2007-2008 and asked Dr. Kibenge: "...we see that with respect to the Pacific Region they plan to test for IHNV and MSX, but they do not plan to test for ISAV...in light of the 2004 findings, which had indications of ISAV that were not necessarily confirmed, would you agree that it would have been prudent for DFO to have started testing for ISAV back at this time?"

Dr. Kibenge replied, "I would agree. But I would also add that regardless of that data, I think given the importance of ISA virus, these should be part of the screening wherever you are raising farmed Atlantic salmon" (page 39, line 6).

Ms. Campbell referred to a recent American ISAV research action plan that was spurred from the positive test results for the virus in B.C. and raised the issue of timelines (page 41, line 9): "...this is the reference to the U.S. Bill before the U.S. Congress. Near the bottom there's a statement in the bill that it's calling for the results of the research that's been done to be reported to Congress in six months...I'd like to get to the timeliness of the need for action on this...Dr. Kibenge, what you think is an optimal timeline to get further clarity on the issue of the extent to which this ISA virus may be in B.C. waters..."

Dr. Kibenge replied, "Well, I would suggest that given the information that we know today, and the technology as we have it today, I think one needs to move very fast and I wouldn't wait for six months."

Nicole Schabus, counsel for the Stó:lō Tribal Council and Cheam Indian Band, referred to the [2004 DFO ISAV draft manuscript](#) and asked Dr. Kibenge, "Meaning 100 percent positive findings of ISA virus in Cultus Lake sockeye confirmed in 2002-2003, correct?" (page 60, line 38)

Dr. Kibenge replied, "Yeah, ISA virus sequences of segment 8."

Ms. Schabus continued, "You would consider that a very significant finding and an important finding?"

Dr. Kibenge replied, "Yes."

Ms. Schabus: "That would necessitate and call for further research, especially regarding what is going on with the Cultus Lake salmon and wild salmon in relation to Infectious Salmon Anaemia virus."

Dr. Kibenge: "...yes, because that's a lot of positives."

Ms. Schabus also asked Dr. Kibenge about this research and why it wasn't published (page 61, line 35). Dr. Kibenge implied that the decision to not publish was ultimately in the hands of the senior author—Dr. Simon Jones, DFO.

In the afternoon, Brock Martland, Commission Counsel, entered an [email](#) from Kim Klotins to Cornelius Kiley (CFIA) that read:

"Dr. Kibenge did test the fish submitted by A. Morton. I believe we must check those samples for integrity. I'm thinking we should also advise all laboratories in Canada to not test any more samples of wild finfish for ISAV from the Pacific Ocean (Canada and US)."

Dr. Klotins was asked to explain this email (page 91, line 34). He said, "...it's a chain of custody issue in that there were samples out there being tested, looks like we had a suspect positive, and we need to confirm what is going out in the wild fish. So it was just an idea..."

Mr. Martland continued, "I'm not clear, though, why you would look to have labs not to testing?"

Dr. Klotins: "Because I would prefer that we started something that CFIA had oversight over and that then we could confirm the findings in the long run."

Mr. Martland: "Is that a question of distrust of labs that might be doing those tests?"

Dr. Klotins: "...no distrust there. I mean, we would have had to...they were not network laboratories, number one, so we would have to evaluate whether they could do the work for us. Right now, there are no approved laboratories; it would have to come to NAAHLS... And we also wanted the oversight on sample collection, shipment to the lab, to the lab that we can confirm through, and, and that's why I made the recommendation."

Mr. Martland referred to a surprising CFIA [email string](#) (page 111, line 8) between Joseph Beres, a CFIA inspector involved in the B.C. ISAV reports and Con Kiley, CFIA, concerning a recent press conference on the subject. The email string included:

"Con, It is clear that we are turning the PR tide to our favour, and this is because of the very successful performance of our spokes [people] at the Tech Briefing yesterday, you, Stephen, Peter and Paul were a terrific team, indeed. Congratulations! One battle is won, now we have to nail the surveillance piece, and we will win the war, also. Cheers, Joe."

Mr. Martland continued his questioning, "That language, that way of framing it is, "If there's a hill to be won and we need to fight our way up it and win that battle," suggests that CFIA is going into this with a hypothesis or with an end goal,...and I'd like to put that to you, Dr. Klotins. Is that an attitude that's prevalent or shared with others at CFIA? Am I misreading this?"

Dr. Klotins replied, "...We may get a little bit exuberant internally. I can't speak to his frame of mind here or how he views disease response in general. I really can't speak to what he was thinking during this..."

Mr. Martland continued, "...instead of this being a collective enterprise where people are trying to learn the truth of a situation this is a hockey game and we're wearing red jerseys and we want to score on the other goal. Is it an adversarial thing? Is the CFIA going into this out of a concern for trade partners and other interests with a view to, however we get there, to announcing there is no ISAV?"

Dr. Klotins replied, "Well, I don't read that in the e-mail...I mean, the point of surveillance is to find out if it is there or it is not there."

Mr. Martland referred to the draft [CFIA surveillance plan](#) for ISAV and other pathogens and asked the panel members about it (see page 120, line 229).

Mr. Martland referred to an earlier draft of the [2004 DFO ISAV manuscript](#) and two email strings ([email 1](#), [email 2](#)) between Dr. Simon Jones and Dr. Molly Kibenge. Mr. Martland went on to ask (page 125, line 25), "Dr. Jones, you testified before this commission on the topic of sea lice in early September of this year (see Part 21) and prior to that, were interviewed by Commission Counsel and I take it equally were

asked to produce relevant documents that you had that pertained to this commission and the work we were doing; is that correct?"

Dr. Jones replied, "To my recollection, yes, that's correct."

Mr. Martland continued, "At the time of that were you...would you have considered ISA to be an issue...an issue that at least was something that was on the commission's radar that the commission would be looking into?"

Dr. Jones replied, "No, I did not."

Mr. Martland: "Were you aware of a dialogue in the public realm or otherwise around the concern about ISA arriving on the Pacific Coast?"

Dr. Jones: "Generally, yes, I...obviously, I am aware that ISA has not been reported and the potential for ISA to occur has been raised as a concern."

Mr. Martland: "And in terms of these different documents...I've simply had flash across the screen in front of you, could you tell us why those were not produced at the commission until...November of 2011?"

Dr. Jones went on to describe his involvement with this 2004 DFO ISAV research (page 126, line 2) but didn't completely answer Mr. Martland's question. Mr. Martland inquired again (page 128, line 10): "...I suppose the basic question is were these documents that were not disclosed because they were overlooked or were they deliberately set aside and not disclosed?"

Dr. Jones replied, "Well, you know, I mean, I'm trying hard to keep my thinking as it was in 2003/2004 and what we concluded then. I was certainly aware that we had conducted that work, but there was no reason to assign any importance to that. It was a series of experiments that yield some puzzling results that were not verifiable and it didn't seem to add meaning to...it didn't seem to contribute to anything other than that this was a confusing piece of information that...yeah, was essentially a negative result."

Part 27: Infectious Salmon Anaemia Day 3, December 19, 2011

The final day of hearings wrapped up today continuing with the federal management panel, along with Dr. Simon Jones.

Witnesses:

Dr. Simon Jones – Research Scientist, DFO

Dr. Kim Klotins – Acting National Manager, Disease Control Contingency Planning, Aquatic Animal Health Division, CFIA, Ottawa

Mr. Stephen Stephen – Director Biotechnology and Aquatic Animal Health Sciences Branch, DFO, Ottawa

Dr. Peter Wright – National Manager, National Aquatic Animal Health Laboratory System, Fisheries and Oceans Canada, Moncton

Transcript: [ISA Day 3](#)

Under cross-examination by provincial counsel, Dr. Jones discussed his doubts about the validity of 2004 DFO findings of ISAV in Pacific salmon (page 21, line 42).

Under cross-examination by counsel for the B.C. Salmon Farmers Association (page 32, line 44), Dr. Wright discussed laboratory certifications like ISO 17025 by the Canada Standards Council and the “much more lenient” and less costly certification by the American Association of Veterinary Laboratory Diagnosticians (B.C.’s provincial lab in Abbotsford has AAVLD certification). DFO Moncton is currently working towards ISO 17025 certification.

Under questioning by Gregory McDade for the Aquaculture Coalition (page 38, line 9), the panel confirmed that the positive results for ISAV reported by Dr. Kibenge could not be confirmed due to “chain of custody issues” and could only be deemed “presumptive positive[s]”.

In regards to Heart and Skeletal Muscle Inflammation (a disease associated with piscine reovirus which Dr. Miller reported positive tests for in wild and farm fish on ISAV day 1), Dr. Klotins stated it “is not a reportable disease. It would be...possibly a new emerging disease...it's not notifiable to CFIA” (page 38, line 27).

Mr. McDade referred to a November 8, 2011, government of Canada [media release](#) that stated, “DFO has tested all 48 samples received as part of the original investigation and the results are all negative for the virus”, and asked Mr. Stephen and Dr. Klotins (who saw a version of the release before it went public) to comment. Of note, Ms. Gagné already testified that due to degraded samples, her lab’s results for these samples were inconclusive (page 21, line 18). Mr. McDade referred back to the statement about “all 48 samples” and asked, “Is that a correct statement, Mr. Stephen?” (page 41, line 30)

Mr. Stephen, “I think Dr. Wright might be able to provide a better answer to that than I.”

Mr. McDade: “Well, before Dr. Wright answers, I want to know what your views were.”

Mr. Stephen: “I was advised by our laboratories, yes, that was a correct statement.”

Mr. McDade: “That's Nellie Gagné’s laboratory?”

Mr. Stephen: “That's correct.”

Mr. McDade: “Now, you heard her testify, didn't you?”

Mr. Stephen: "I did."

Mr. McDade: "And you heard her testify that her statements were not negative, they were inconclusive because there wasn't enough RNA present to be able to make a conclusive statement; isn't that right?"

Mr. Stephen: "I'm not sure I recall that exactly, no. I heard a lot of testimony in a day and a half."

Mr. McDade: "Well, let me suggest to you that she agreed that without some qualification that would be misleading, the qualification being that the results were too degraded to be able to test. Before you answer, Dr. Klotins, I want Mr. Stephen's answer on this."

Mr. Stephen: "Could you repeat the question, please."

Mr. McDade: "I understood her evidence to be that the samples were so degraded that she couldn't say that they were negative, that they were inconclusive, and further that she would have expected a statement to that effect in the release, otherwise it would be misleading. What's your view on that?"

Mr. Stephen: "On my understanding from the information I was provided that those samples were negative."

Mr. McDade: "You didn't know that they were inconclusive."

Mr. Stephen: "I knew that some samples were inconclusive based on degradation of other materials, the 299 fish that were collected from Dr. Routledge. But I wasn't aware that these particular ones were degraded to that level, no."

Greg McDade: "The next statement says: 'These results are consistent with the findings of an independent laboratory in Norway...' Now, did you hear Dr. Nylund testify that he found positives?"

Mr. Stephen: "I did."

Mr. McDade: "Doesn't the word 'consistent' there mean they're all negative? How is a positive from him consistent with negatives from the other?"

Mr. Stephen: "I don't know."

Mr. McDade entered into evidence an interesting [critique](#) on ISAV detection capabilities of the Canadian Fish Health Protection Regulations, by Sally Goldes, a former provincial scientist. The report includes criticisms of farm salmon egg screening methodologies that were used by government to reduce the chance of importing pathogens via eggs.

Mr. Harrison, counsel for Watershed Watch and the Conservation Coalition, derived from his cross-examination of Dr. Jones (page 57, line 21), that Dr. Molly Kibenge's findings were, "that of the 64 tissue samples she tested from Cultus Lake sockeye, all 64 of those gave a positive result in her PCR reaction."

Mr. Harrison continued, "Have you ever suggested to anyone that they do additional sampling and testing of ISA, of Cultus?"

Dr. Jones replied, "No, I have not."

Mr. Harrison referred to a draft disease [surveillance plan](#) produced as a result of the positive ISAV test results and asked Dr. Klotins about it. Dr. Klotins said, "Part of the reason we're doing this plan is...basically to satisfy our countries that we trade with. They want to know the health status of finfish in B.C., salmonids" (page 58, line 35).

Mr. Harrison then referred to a statement (page 59, line 6) in the [plan](#), "There is no evidence to support that ISAV and IPNV occur in either wild or cultured salmon in B.C.," and asked, "Given the evidence we've heard to date, is that a true statement?"

Dr. Klotins replied, "I believe it is."

Later in the day, Don Rosenbloom, counsel for the Area D Salmon Gillnet Association and Area B Harvest Committee, also referenced the [surveillance plan](#) and asked for comment (page 78, line 5) on its development. Dr. Klotins' reply included, "...We knew we...would have to do this for the salmon commodity on the West Coast... It's just this event happened to push things forward because our [trading partner] countries are starting to ask for our claims of disease freedom, and our supporting information for those claims."

Leah Pence, counsel for the First Nations Coalition, entered into evidence (page 80, line 22) an [email](#) from Dr. Peter Wright clarifying his perspective on negative and inconclusive test results. It includes:

"CFIA also received 299 sockeye salmon fish samples that were thought to be collected at the same time as the original 48 that prompted this investigation. From these, all 299 samples have been tested and all results are negative; however these results must be considered as inconclusive at this time because of the poor quality of the samples received which prevent the detection of the virus with any reasonable confidence...our RT-qPCR test results were all negative from an analytical point of view (i.e. we have not found any detectable viral RNA in the samples). From a diagnostic point of view (i.e. with respect to the presence or absence of the pathogen in the field), we are saying that any interpretation must be qualified or guarded because of the degradation of the test material."

Leah Pence went on to refer to a [media statement](#) from Fisheries and Oceans Minister Keith Ashfield, "After Canada's reputation has needlessly been put at risk over the past several weeks because of speculation and unfounded science, additional in-depth conclusive tests, using proper and

internationally recognized procedures, are now complete and we can confirm that there has never been a confirmed case of ISA in BC salmon, wild or farmed” (page 81, line 18).

Ms. Pence then asked, “Dr. Wright, can you comment on that word ‘conclusive tests’? Is that accurate in your view?”

Dr. Wright replied, “Well, there have not been any conclusive tests, mainly because that in order to identify a pathogen as being there, you either have to be able to obtain it by, you know, through isolation and cell culture, or you have to be able to amplify enough genetic material that you can actually do some definitive sequencing on it.”

Ms. Pence referred to an [email chain](#) that was initiated by Erin Lynch at Minister Keith Ashfield's office that appears to be a request for input into a letter that was to be drafted to U.S. Senators and members of congress with a “factual update of the ISA situation in Canada.” The email from the Minister’s office also includes:

“Key messages to be included [in the letter]:

Testing: Our official lab in Moncton has completed the first tests and we can confirm that all samples which have previously been reported as infected with ISA have tested negative in our lab. The samples show no signs of the disease.

Lab review: We have contracted an independent review into the conduct of both laboratories to determine how a false positive could have been obtained - looking at diagnostic procedures, handling of samples and assessment of practises.

Public confidence: The public can be confident in our current review and management practises - between the federal and provincial governments, we've tested over 5000 samples and none have tested positive for the disease. Our management practises are clearly working. Should we be required to adjust our practises in the future due to new data, we are prepared to adjust our review and management practises accordingly.”

Given this email was addressed to Mr. Stephen and others, Ms. Pence asked (page 83, line 17), “And my question to you, Mr. Stephen, is...this the usual routine for the minister's office to tell staff what the message should be as opposed to staff on the ground informing the minister as to what the messages might be?”

Mr. Stephen replied, “Well, I haven't had a lot of correspondence with the minister's office communication outside of this particular investigation and over the last few months...”

Ms. Pence referred to [summary of a conference call](#) on the suspected ISAV findings and attendees included CFIA, DFO and industry representatives (page 86, line 46). It appears no First Nations or environmental groups were on the call. Ms. Pence asked, “...why were First Nations not included as part of that call on November 10th?”

Dr. Klotins replied, "I didn't set up the meeting and I really...I really don't know. Sorry."

Mr. Stephen said, "...Again, CFIA organized that meeting and I don't know what criteria they used to select the participants."

Nicole Schabus, counsel for the Stó:lō Tribal Council and Cheam Indian Band, questioned Dr. Jones at length regarding his lab's 2004 positive ISAV findings, why he did not recommend further study, and why Fraser River First Nations were not informed in regards to positive findings in endangered Cultus Lake sockeye (starts on page 93, line 38).

Mitch Taylor, counsel for Canada, entered an [email](#) from Dr. Molly Kibenge to Dr. Jones about her ISAV testing that suggests the controls in the ISAV PCR testing were positive along with some of the samples (page 111, line 39).

Other interesting exhibits include:

- a [2011 Umbrella MOU between DFO and CFIA](#) that highlights trade challenges to Canada's seafood exports because of disease concerns and the development and implementation of a national aquatic health program.