

An Agenda for Law Reform: The Need to Publicly Disclose Diseases on BC Fish Farms

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Introduction

Numerous concerns about open-net fish farms have arisen since such farms began to proliferate on the BC coast in the late 1980s. Concerns have included the potential for sea lice to escape farms and infest wild fish, the possibility that exotic Atlantic salmon might escape and impact the environment, the deposition of large amounts of fecal matter below farms, potential impacts from the use of antibiotics on the farms, and the excessive use of wild fish in feed.

This report addresses an additional important concern -- the risk that outbreaks of exotic or virulent fish disease at farms may spread to wild fish and threaten wild stocks.

Both fish diseases and sea lice may spread from net cage fish farms to threaten wild fish stocks. On the sea lice issue, First Nations and environmental and fisheries groups worked for years to get adequate public reporting of infestations on fish farms, so that independent scientists could research solutions to that problem. Government has finally improved its public reporting on sea lice outbreaks – but reporting of fish diseases remains woefully inadequate. This report aims to rectify that situation, just as a previous ELC report helped improve sea lice reporting.

Today Government fails to adequately report on fish farm disease outbreaks – and has resisted requests that it do so. The basic issue is that Government fails to disclose exactly where diseases have broken out, and only releases such extremely generalized information when it's too late to be useful. This needs to change.

Government needs to publish detailed, meaningful, timely information on diseases that occur at BC fish farms because:

- It is clearly possible to do so. As discussed below, countries like Scotland and Norway do a better job of publicly reporting fish disease outbreaks at their fish farms.
- Independent research into the identification of outbreaks -- and into causes and solutions -- cannot take place unless full and timely disease information is public and available to independent scientists.

The more people (including independent scientists) who are keeping track of salmon disease problems, the more likely a disease will be identified and

dealt with quickly. The Cohen Commission recognized this -- it recommended full disclosure of fish disease information to independent scientists.¹

- Timely public reporting of where a disease has occurred is necessary to mobilize useful local knowledge and maximize public participation in identifying causes and solutions.

The Brundtland Commission emphasized the “indispensable role” that non-government bodies and scientists play in “identifying risks, in assessing environmental impacts and implementing measures to deal with them.”²

- Fish farm owners should be held accountable for actions that affect public resources. Without public reporting of the time and location of disease occurrences, it is difficult to judge whether Government is responding appropriately and preventing unnecessary reoccurrences – or making wise decisions about siting and licensing of new fish farms.
- The federal Open Government Action Plan specifically requires the information published by Government to be “meaningful” -- and Government’s handling of fish disease outbreak information fails to provide the public with such promised “meaningful” information.
- Finally – and of utmost importance -- the current approach to disease reporting does not fulfill the Crown’s duty to consult First Nations.

If we are to successfully deal with this risk to an invaluable resource, government needs act as it has on sea lice reporting. It needs to publicly report detailed, meaningful and timely information when diseases are discovered on fish farms.

¹ At the same time, the Commission recommended increased disease research. See Commission of Inquiry into the Decline of the Sockeye Salmon in the Fraser River, *The Uncertain Future of the Fraser River Sockeye: Volume 2 – Causes of the Decline*. (Ottawa: Public Works and Government Services Canada, 2012) at 114. Also, see *The Uncertain Future of the Fraser River Sockeye: Volume 1 – The Sockeye Fishery* at 419.

² World Commission on Environment and Development, *Our Common Future*, UNWCEDOR, 1987, UN Doc A/42/427. 1 at 269. online: UN <http://www.un-documents.net/our-common-future.pdf>. Accessed April 29, Similarly, the Parliamentary Committee that investigated the collapse of Northern Cod recognized that government needs to take into account the knowledge of local fishers. See Canada, House of Commons, Standing Committee on Fisheries and Oceans, *Northern Cod: a failure of Canadian Fisheries Management* (November 2005) at recommendation 6, online: Parliament of Canada <http://www.parl.gc.ca/HousePublications/Publication.aspx?DocId=2144982&Mode=1&Parl=38&Ses=1&Language=2014>.

Background

Salmon farming in British Columbia is big business, but it is important to ensure that this industry does not impair the ecological, cultural, social and economic value of the wild salmon fishery. There are approximately 114 salmon farming sites with active licenses, 95 percent of which are held by four companies. Three of the four corporations are Norwegian multi-nationals that lease 102 sites, all of which are licensed to farm Atlantic salmon while the remaining Canadian company raises Chinook at six sites.³ Yearly farm-gate production is approximately 80,000 tonnes with a value of around \$500 million,⁴ and the BC Salmon Farmers Association claims that the industry provides 6000 direct and indirect jobs.⁵

But it is vital that the fish farm industry not undermine the enormously valuable wild salmon fishery. The wholesale value of the commercial salmon fishery alone was \$237 million in 2010, and that is only a portion of the total monetary value of wild salmon.⁶ Recreational fishing for wild salmon is a major portion of the BC sport fishing industry – which, by some estimates produces annual revenues of \$925 million, contributes \$325 million to BC's GDP and supports 8,400 direct jobs.⁷ And while there is no statistical value for the First Nations wild salmon fishery, the food, social and cultural value of wild salmon to coastal First Nations is both incalculable and absolutely irreplaceable.

Unfortunately, money, jobs and fillets of fish may not be the only things that flow from BC fish farms. With one exception, salmon farming in B.C. is conducted with open net cages, the dominant method of salmon aquaculture across Canada.⁸ Eggs may be

³ Department of Fisheries and Oceans Canada, "Current Valid Marine Finfish British Columbia Aquaculture Licence Holders" online: DFO <http://www.pac.dfo-mpo.gc.ca/aquaculture/licence-permis/docs/finfish-pisciculture-eng.html>. Accessed April 17, 2014.

⁴ British Columbia Ministry of Environment, "Salmon Aquaculture in British Columbia" online: BCMoE <http://www.env.gov.bc.ca/omfd/fishstats/aqua/salmon.html>. Accessed April 17, 2014.

⁵ BC Salmon Farmers Association, "FAQs" online: <http://www.salmonfarmers.org/faqs>. Accessed April 17, 2014.

⁶ British Columbia Ministry of Environment, "B.C. Capture (Wild) Salmon Production" online: BCMoE <http://www.env.gov.bc.ca/omfd/fishstats/graphs-tables/wild-salmon.html#wholesale>. Accessed May 23, 2014.

⁷ Damien Gillis, "Tide turning against salmon farms in lead up to election" *The Tyee*, online: <http://thetyee.ca/Blogs/TheHook/2013/04/25/TideTurningSalmonFarm/#sthash.vXYoQ48f.dpuf>. Accessed May 23, 2014.

⁸ Namgis First Nation, "Namgis Closed Containment Salmon Farm" online: <http://www.namgis.bc.ca/CCP/Pages/default.aspx>. Accessed April 17, 2014; Thai Nguyen & Tim Williams, "Aquaculture in Canada" Library of Canada Research Publications, online: <http://www.parl.gc.ca/Content/LOP/ResearchPublications/2013-12-e.htm>. Accessed April 17 2014.

produced on-site or procured from a hatchery⁹ and smolts are grown in tubs on land until large enough to be transferred into suspended net cages. Net mesh size can be greater than 38mm, allowing water and small fish to move freely between the inside and outside of the cage.¹⁰ As described below, raising fish in open net cages allows fish farms to become potential vectors for disease and sea lice that can then pass to wild fish stocks. Both sea lice and fish disease can be carried away from net cages into the migratory paths of wild salmon.

The history of the struggle to get Government to release data about fish farm sea lice outbreaks is highly instructive. In the early years of this century, the BC Ministry of Agriculture fought a number of legal battles to avoid publishing such sea-lice data. Aquaculture operators kept detailed records of sea lice infestation levels on their farms in accordance with the government's monitoring program and reported the information to the B.C. Ministry of Agriculture and Land, the regulator at the time.¹¹ However, the Ministry blocked the release of this sea lice information to the public and independent scientists.¹²

However, independent scientists carried out research that highlighted the potential risk from sea lice. This eventually led to public outcry and the Ministry was pressured into releasing sea lice data in a meaningful manner that continues today.¹³ In the case of sea lice, common sense prevailed, and DFO reversed the previous policy of secrecy about infestations. A similar move to transparency is now required for fish disease information.

One difference in dealing with the two issues is that independent science was able to influence the sea lice issue because sea-lice are macro parasites that can be observed by

⁹ Department of Fisheries and Oceans Canada, "Finfish Aquaculture Licence under the Pacific Aquaculture Regulations" s 3.9 at 11. Online: DFO <http://www.pac.dfo-mpo.gc.ca/aquaculture/licence-permis/docs/licence-cond-permis-mar-eng.pdf>. Accessed April 17, 2014; Department of Fisheries and Oceans Canada, "Public Reporting on Aquaculture – Salmon Egg Imports" online: DFO <http://www.pac.dfo-mpo.gc.ca/aquaculture/reporting-rapports/egg-oeuf-eng.html>. Accessed April 17, 2014.

¹⁰ Department of Fisheries and Oceans Canada, "Finfish Aquaculture Licence under the Pacific Aquaculture Regulations" online: DFO <http://www.pac.dfo-mpo.gc.ca/aquaculture/licence-permis/docs/licence-cond-permis-mar-eng.pdf>. Accessed April 17, 2014.

¹¹ Ecojustice, "BC Government blocking release of information on sea lice levels" online: <http://www.ecojjustice.ca/media-centre/media-backgrounder/bc-government-blocking-release-of-information-on-sea-lice-levels>. Accessed April 17, 2014.

¹² Although one operator voluntarily released its data, See Ecojustice, "BC Government blocking release of information on sea lice levels" online: <http://www.ecojjustice.ca/media-centre/press-releases/bc-government-blocking-release-of-information-on-sea-lice-levels>. Accessed April 17, 2014.

¹³ Department of Fisheries and Oceans Canada, "Sea Lice Counts; July – September 2013" online: DFO <http://www.pac.dfo-mpo.gc.ca/aquaculture/reporting-rapports/docs/lice-pou/2013/Q3-T3/A-eng.html>. Accessed April 17, 2014.

anyone catching salmon. Independent testing was relatively simply – it just required capturing, identifying, and counting sea-lice. In contrast, before independent science can be brought to bear on fish disease issues, scientists need the data produced by expensive laboratory analysis – and scientists can only get that data if Government releases information about what the analyses have found.

As occurred with sea lice, independent science now needs to be harnessed to identify solutions to fish disease problems. The Canadian Food Inspection Agency (CFIA) and DFO should publish disease information in a meaningful way in order to harness the watchful eyes of independent scientists, the improved decision-making that comes with full public participation, and to meet the duty to consult with First Nations.

In the discussion below, this report:

- Explains why fish diseases are a problem,
- Describes Government's current inadequate approach to the publication of diseases on fish farms,
- Describes why geographically specific information should be publicly released in a timely fashion,
- Cites jurisdictions like Scotland, Norway and Chile that, in a number of ways, do a better job of publicly reporting on fish diseases,
- Argues that it is clearly in the public interest for the federal government to reform its laws and policies on publicly reporting disease outbreaks at fish farms, and
- Makes specific recommendations for reform of Government's reporting of fish diseases.

Why Do Diseases on Fish Farms Matter?

Pathogenesis

Diseases on fish farms matter because they have the potential to spread to wild salmon and threaten wild stocks. Numerous studies have shown how wild fish can be directly infected as they swim near fish farms, and subsequently via wild-to-wild transmission.¹⁴ In areas of the Pacific, salmon from diverse rivers swim and feed together -- raising the possibility that fish may become infected with farm borne diseases far from aquaculture sites.¹⁵

Fish farms rear animals at an artificially high density that can create unnaturally high concentrations of pathogens, and may even give rise to especially virulent strains of endemic diseases.¹⁶ This contributes to another method of disease transfer, whereby wild salmon are infected as they swim through water containing pathogens shed by fish farms. The dispersion rates of pathogens through this process are not well known, but tidal flows in B.C. are substantial.¹⁷

Exotic Diseases

Perhaps the most well known disease risk to wild salmon is the introduction of non-native diseases through imported germplasm. In the past many farms imported eggs to be hatched and grown on site. This practice is now much more limited from overseas sources, but the data does not state whether eggs are imported from other parts of Canada.¹⁸ An outbreak that is not caught before the smolts are transferred to net-cages

¹⁴ Mari Press, "Wild and farmed fish infect each other" *The Norwegian Veterinary Institute* (24 January 2014), online: ScienceNordic <http://sciencenordic.com/wild-and-farmed-fish-infect-each-other>. Accessed April 17, 2014; Commission of Inquiry into the Decline of the Sockeye Salmon in the Fraser River, *The Uncertain Future of the Fraser River Sockeye: Volume 2 – Causes of the Decline*. (Ottawa: Public Works and Government Services Canada, 2012) at 113.

¹⁵ Thomas P. Quinn, *The Behavior and Ecology of Pacific Salmon and Trout* (Seattle: University of Washington Press, 2005) at 42.

¹⁶ K. Pulkkinen et al, "Intensive fish farming and the evolution of pathogen virulence: the case of columnaris disease in Finland" (2009) 277:1681 *Proc. R. Soc. B* 593.

¹⁷ Department of Fisheries and Oceans Canada, "A Scientific Review of the Potential Environmental Effects of Aquaculture in Aquatic Ecosystems." AH McVicar et al, "Cultured and Wild Fish Disease Interactions in the Canadian Marine Environment" online: DFO <http://www.dfo-mpo.gc.ca/science/enviro/aquaculture/sok-edc/volume4/mcvicar-eng.htm>. Accessed April 19, 2014.

¹⁸ Department of Fisheries and Oceans Canada, "Public Reporting on Aquaculture – Salmon Egg Imports" online: DFO <http://www.pac.dfo-mpo.gc.ca/aquaculture/reporting-rapports/egg-oeuf-eng.html>. Accessed April 17, 2014.

could be spread between farms on the coast [as happened in Scotland with Infectious salmon anemia (ISAv)]¹⁹ and then passed en masse to a vulnerable wild gene pool.

The Current Approach to the Release of Disease Information

The release of fish disease information in Canada may meet the minimum requirements of international trade agreements, but goes no further. Public reporting of even the most serious reportable diseases is routinely delayed – and does not identify where the disease took place, other than to generally identify that it took place at some unspecified location in a named province.

Thus, unlike some jurisdictions, Canadian independent scientists who want to research a disease outbreak get no useful information from these public reports. The lack of site specificity and the delayed nature of the reporting make the information in the reports virtually useless to independent parties seeking to conduct their own testing or give informed input. Unfortunately, this seriously limits society's ability to identify and contain disease outbreaks originating on fish farms.

Lack of Geographic Specificity

The Canadian Food Inspection Agency (CFIA) plays the key role in regulating and reporting on diseases at fish farms.²⁰ Regulating diseases on fish farms involves input from a wide variety of agencies and stakeholders, promulgation of regulations, laboratories, response plans, and publication regimes. The National Aquatic Animal Health Program (NAAHP) is the administrative body within CFIA that works in conjunction with the Department of Fisheries and Oceans (DFO) to plan the regulations, policies and protocols in line with international standards set by the World Organization for Animal Health (OIE). In return for meeting OIE standards Canada is

¹⁹ Murray A.G., Smith R.J., & Stagg R.M., "Shipping and the spread of infectious salmon anemia in Scottish aquaculture" (2002) 8(1) Emerg Infect Dis. 1-5. Online: <http://www.ncbi.nlm.nih.gov/pubmed/11749740>. Accessed April 17 2014.

²⁰ Department of Fisheries and Oceans Canada, "Finfish Aquaculture Licence under the Pacific Aquaculture Regulations" online: DFO <http://www.pac.dfo-mpo.gc.ca/aquaculture/licence-permis/docs/licence-cond-permis-mar-eng.pdf>. Accessed April 17, 2014; *Pacific Aquaculture Regulations*, SOR/2010-270, ss. 3-4.

able to verify to its trading partners that its products are free from disease and that testing is up to standards that member states follow.²¹

OIE member states are required to inform the organization through the World Animal Health Information System (WAHIS) within 24 hours of discovery of a listed disease.²² That information is then accessible to other member states that can use it to prevent the introduction or limit the spread of disease. Canada meets its trade obligation by regulating the reporting of diseases on fish farms through the *Health of Animals Regulations* and the *Reportable Diseases Regulations*. These rules, issued under the *Health of Animals Act* divide finfish diseases into three categories: reportable, immediately notifiable, and annually notifiable.²³

When a fish farm employee discovers a “reportable” disease (or any indication of its presence), the finding must be reported immediately to a veterinarian; if that veterinarian also suspects a reportable disease, then a CFIA veterinary inspector must be notified immediately.²⁴ Veterinary inspectors have broad powers to enter premises, search, seize and collect samples,²⁵ although specific protocol is set out in CFIA policy, not regulation or legislation.²⁶

In contrast, “immediately notifiable” diseases are serious but not endemic to Canada and are reported by laboratories, not aquaculturists or veterinarians.²⁷ “Annually notifiable” diseases are less serious and are also reported by laboratories.²⁸

CFIA publishes reports of confirmed “reportable” diseases, (which include all but one OIE listed disease) in a table delineated by provincial boundaries and designated “for EXPORT purposes only.”²⁹ **However, specific disease locations within the province named are not identified.** The table is updated with commendable speed, nominally

²¹World Organisation for Animal Health, “International trade: Rights and obligations of OIE Member Countries” online: OIE

http://www.oie.int/fileadmin/Home/eng/International_Standard_Setting/docs/pdf/Legal_rights_and_obligations/A_Rights_and_obligations_April_2013.pdf. Accessed April 17, 2014.

²² World Organisation for Animal Health, “Aquatic Animal Health Code” online: OIE

http://www.oie.int/index.php?id=171&L=0&htmfile=chapitre_1.1.1.htm, at 1.1.3. Accessed April 17, 2014.

²³ *Health of Animals Regulations*, CRC, 296, Schedules VII & VIII; *Reportable disease regulations*, SOR/91-2, s.2

²⁴ *Health of Animals Act* SC 1990, c 21 ss. 5(1), 5(2).

²⁵ *Health of Animals Act* SC 1990, c 21 ss. 38-47.

²⁶ EC, Health and Consumers Directorate-General, *Animal health – live aquaculture animals and products*, at 12. Online: EC, http://ec.europa.eu/food/fvo/rep_details_en.cfm?rep_id=3041. Accessed April 17 2014.

²⁷ *Health of Animals Regulations*, CRC, 296, s. 91.2(1).

²⁸ *Health of Animals Regulations*, CRC, 296, s. 91.2(3).

²⁹ Canadian Food Inspection Agency, “Status of Regulated Aquatic Animal Reportable Diseases” online: CFIA <http://www.inspection.gc.ca/animals/aquatic-animals/exports/reportable-diseases/eng/1327613207253/1327614044216#y14>. Accessed April 17 2014.

every 24 hours, but the data is operationally useless to *anyone* (other than trade partners) because of its scale. In a province the size of British Columbia it is simply not helpful to say that there has been a disease outbreak somewhere on the BC coast. No scientist can possibly investigate such a broad, vague report.

This form of reporting deletes the truly useful information. The CFIA currently collects detailed data from each reportable disease notification via its Aquatic Premises Inspection Questionnaire, which is designed to ascertain whether a possible disease should be further investigated by an inspection of the facility.³⁰ However, this information is never released, even if the facility is in fact confirmed to be harbouring a reportable disease.

Surprisingly, facility location, clinical signs of infection, species present, and other key aspects of the data³¹ are re-worked into a broad table -- with the useful portion of facility location and ownership removed.

The current approach exemplifies bureaucratic inertia at best, and regulatory capture at worst. Either way, CFIA is failing to meet its first “guiding principle” of transparency:

Usefulness - The CFIA will provide relevant and practical information that supports informed decision making on the part of the public and regulated parties and information that may be used as a tool to generate compliance.³²

Absence of Timely Reporting

Delay in reporting is another concern. Currently, the process of confirming a disease can go through up to three stages depending on the disease. The first stage occurs when a worker or inspector notices a sick fish on site while conducting the daily

³⁰ Canadian Food Inspection Agency, “Procedure for Receipt and Evaluation of Mandatory Notifications for the National Aquatic Animal Health Program” Exhibit 2024 of the Cohen Commission at 19. Online: <https://web.archive.org/web/20131114212437/http://www.cohencommission.ca/en/Exhibits.php> Accessed April 17 2014.

³¹ Canadian Food Inspection Agency, “Procedure for Receipt and Evaluation of Mandatory Notifications for the National Aquatic Animal Health Program” Exhibit 2024 of the Cohen Commission at 19. Online: <https://web.archive.org/web/20131114212437/http://www.cohencommission.ca/en/Exhibits.php> Accessed April 17 2014.

³² Canadian Food Inspection Agency, “Transparency in Regulatory Decision Making” online: CFIA <http://www.inspection.gc.ca/about-the-cfia/accountability/transparency-in-regulatory-decision-making/eng/1363183662938/1363185978804>. Accessed April 17 2014.

inspection³³, or by a laboratory conducting routine tests. At this point the disease is “suspected” and is sent to the National Aquatic Animal Health Laboratory Service (NAAHLS) for confirmation. Then, depending on the disease, it may require confirmation at an OIE reference laboratory.

This leads to three distinct points in time when information on disease emergence could be published: on suspicion, on NAAHLS lab confirmation, or on OIE reference laboratory confirmation. Because OIE reference laboratories for salmonid diseases are few and far between, with none remaining in Canada,³⁴ that level of confirmation is only necessary when an exotic disease is suspected. For endemic diseases, the four NAAHLS labs provide sufficient confirmation for immediate publication to OIE member states and the public.³⁵

The problem is that currently, when a disease is simply suspected that suspicion is not publicly reported. Rather, reporting generally occurs only after NAAHLS laboratory confirmation – involving substantial delay. Even worse, if the disease is exotic, an OIE reference laboratory confirmation is usually required and publication does not occur until much later.

An incident involving a virus highly lethal to farmed salmon -- Infectious Salmon Anemia virus (ISAv) -- is a prime example of the delay in reporting that can occur.³⁶ This virus was preliminarily suspected in fish examined by independent BC research scientists, who sent the fish to Dr. Kibenge at the ISA reference laboratory on Prince Edward Island, which had previously confirmed the first occurrence of ISA at Chilean salmon farms, where the virus killed millions of salmon at a cost of about \$2-billion.

Dr. Kibenge publicly confirmed a finding of the virus in the BC fish.³⁷ Yet without Dr. Kibenge’s independent actions the presence of the virus would not have been publicly

³³ Department of Fisheries and Oceans Canada, “Finfish Aquaculture Licence under the Pacific Aquaculture Regulations” s 2.6 at 6. Online: DFO <http://www.pac.dfo-mpo.gc.ca/aquaculture/licence-permis/docs/licence-cond-permis-mar-eng.pdf>. Accessed April 17, 2014.

³⁴ World Organisation for Animal Health, “Reference Experts and Laboratories” online: OIE <http://www.oie.int/our-scientific-expertise/reference-laboratories/list-of-laboratories/>. Accessed April 17, 2014.

³⁵ Department of Fisheries and Oceans Canada, “National Aquatic Animal Health Laboratory System” online: DFO <http://www.dfo-mpo.gc.ca/science/aah-saa/national-aquatic-animal-health-laboratory-system-eng.html>. Accessed April 18, 2014;

³⁶ Commission of Inquiry into the Decline of the Sockeye Salmon in the Fraser River, *The Uncertain Future of the Fraser River Sockeye: Volume 2 – Causes of the Decline*. (Ottawa: Public Works and Government Services Canada, 2012) at 60.

³⁷ “Lab that found virus in BC salmon stripped of credentials after audit”, *Globe and Mail* <http://www.theglobeandmail.com/news/british-columbia/lab-that-found-virus-in-bc-salmon-stripped-of->

reported -- because the official channels had not proven the presence of the disease, just a suspicion that it existed. (Indeed, there are troubling allegations that Dr. Kibenge's timely but unofficial reporting of the virus led CFIA to request that the long-time reference laboratory's status be suspended by the OIE³⁸.)

The general delay in publication about *potential* diseases -- which may occur months after initial suspicion -- is at odds with the CFIA's own third guiding principle of transparency:

Timeliness - Information will be provided early enough to preserve the value of the information.³⁹

The Rationale for Timely, Geographic-specific Reporting

Timely and geographic-specific reporting is necessary in order to make the data meaningful. Such meaningful data would facilitate input from the public, non-government groups and scientists that have valuable information to contribute.

Ability to Independently Test

This is the key reason why the CFIA should report meaningful information. Independent testing can substantiate or challenge government test results, fill gaps where resources are limited, and inject local knowledge where needed. Justice Cohen, in his Commission of Inquiry into the Decline of the Sockeye Salmon in the Fraser River, noted in reference to the spread of fish diseases:

[credentials-after-audit/article12977743/](http://www.vancouverobserver.com/opinion/shooting-messenger-lab-stripped-credentials-after-finding-infectious-virus-bc-salmon) Twyla Roscovitch "Shooting the messenger: Lab stripped of credentials after finding infectious virus in BC salmon" *Vancouver Observer* online: <http://www.vancouverobserver.com/opinion/shooting-messenger-lab-stripped-credentials-after-finding-infectious-virus-bc-salmon>. Accessed May 23, 2014.

³⁸ As was predicted by lawyer Gregory McDade during questioning at the Cohen Commission. Twyla Roscovitch "Shooting the messenger: Lab stripped of credentials after finding infectious virus in BC salmon" *Vancouver Observer* online: <http://www.vancouverobserver.com/opinion/shooting-messenger-lab-stripped-credentials-after-finding-infectious-virus-bc-salmon>. Accessed May 23, 2014.

³⁹ Canadian Food Inspection Agency, "Transparency in Regulatory Decision Making" online: CFIA <http://www.inspection.gc.ca/about-the-cfia/accountability/transparency-in-regulatory-decision-making/eng/1363183662938/1363185978804>. Accessed April 17 2014.

“...those sorts of questions will be better asked and answered if scientists, including those not connected with governments or industry, are able to access and assess data of the same level of detail as was disclosed to this Inquiry.”⁴⁰

Unfortunately, government has remained unwilling to acknowledge the benefits of independent sampling – and continues to publish meaningless information that actively stymies independent research. The vast size of BC’s coast means that a report that a disease occurred *somewhere in BC* is useless to anyone wanting to test wild fish for that disease.

While fish migrations are not perfectly understood, we do know that some fish populations take specific, repetitive return migration routes.⁴¹ And if migrating salmon consistently pass certain fish farms it makes sense that a disease outbreak there could be passed to migrating fish, as is the case with sea lice.⁴² Therefore, in order to identify potential impacts from the outbreak, scientists need to know the specific outbreak location, in order to test and study the right wild fish.

The same goes for timeliness: diseases must be reported at the time of initial suspicion, not at the confirmation stage if there is to be a decent chance of sampling wild fish before they swim away. The practice of delaying disease reports until after NAAHLS or OIE reference laboratory confirmation limits the ability of independent groups to go out and test wild salmon for disease. When disease information is finally released, months after initial suspicion, it is often too late for any testing-- the salmon have moved on.⁴³

Since current reports fail to provide the location of outbreaks in a timely way, the CFIA’s status update reports are not meaningful to the public or independent scientists. The lack of timely, geographic-specific reporting critically undermines the public’s ability to test independently, and ensure accountability.

⁴⁰Commission of Inquiry into the Decline of the Sockeye Salmon in the Fraser River, *The Uncertain Future of the Fraser River Sockeye: Volume 2 – Causes of the Decline*. (Ottawa: Public Works and Government Services Canada, 2012) at 114.

⁴¹ While others may change their route year-to-year. See Commission of Inquiry into the Decline of the Sockeye Salmon in the Fraser River, *The Uncertain Future of the Fraser River Sockeye: Volume 1 – The Sockeye Fishery*. (Ottawa: Public Works and Government Services Canada, 2012) at 419; Thomas P. Quinn, *The Behavior and Ecology of Pacific Salmon and Trout* (Seattle: University of Washington Press, 2005) at 49.

⁴² Commission of Inquiry into the Decline of the Sockeye Salmon in the Fraser River, *The Uncertain Future of the Fraser River Sockeye: Volume 2 – Causes of the Decline*. (Ottawa: Public Works and Government Services Canada, 2012) at 114.

⁴³ This is particularly true in the case of adults returning from the ocean. Thomas P. Quinn, *The Behavior and Ecology of Pacific Salmon and Trout* (Seattle: University of Washington Press, 2005) at 57.

Informing siting and licensing decisions

When considering an application for a new salmon farm site, First Nations and other residents of the area should have access to the best and most complete information possible. Unfortunately the current publication regime leads to substantial gaps when it comes to understanding a new application. Notably, there is no publication of information describing which farm sites or companies have had repetitive disease events. This makes it difficult for the public to find out which companies have the best or worst records. (Although, ironically the records of companies that operate in countries where reporting laws are better -- and company and site-specific information **is** available -- can be checked, for their operations outside of Canada.)

The unavailability of site-specific data prevents anyone other than the CFIA from constructing a fact-based record about diseases at particular sites or at farms run by a particular company. This is bad public policy. If an operator is using practices that repeatedly result in disease outbreaks, the public should know about that record when that operator proposes a new operation -- so that the public can meaningfully participate in the decision-making process.

Indeed, the federal government has supported the general concept that increased access to information facilitates public participation in decision-making⁴⁴ -- recognizing that such public participation can improve the quality of the decision-making, increase confidence in decisions, increase accountability and enhance public education on the topic.⁴⁵ CFIA even has a stated policy of “being as transparent as possible” and “provid[ing] the public with useful and timely information”⁴⁶

However, in the case of government siting and licensing decisions about fish farms, there is a lack of meaningful disease outbreak information that would support public participation and investigation by independent scientists. CFIA policy today privileges industry by withholding information that should be public. This precludes local residents and First Nations from having input into decisions affecting the fish they rely

⁴⁴ Government of Canada, “Canada’s Action Plan on Open Government” online: GOC <http://data.gc.ca/eng/canadas-action-plan-open-government>. Accessed April 18 2014.

⁴⁵ PS Elder, ed, *Environmental Management and Public Participation*, (Toronto, CA: Canadian Environmental Law Research Foundation, 1975).

⁴⁶ Canadian Food Inspection Agency, “Transparency in Regulatory Decision Making” online: CFIA <http://www.inspection.gc.ca/about-the-cfia/accountability/transparency-in-regulatory-decision-making/eng/1363183662938/1363185978804>. Accessed April 17 2014.

on – and from providing information that could prevent bad siting decisions and consequent future disease outbreaks.

Ironically, one of the only ways to ascertain whether a company's Canadian farms have had significant and recurrent disease problems is to look at amount of government compensation payments for culls. Although this doesn't show what diseases or how many mortalities occurred, these compensation payments are at least published quarterly by publicly traded companies.⁴⁷

Living Up to "Open Government" Promises

Another reason why disease reporting should be improved is that such improvements are necessary if Government is to deliver on its formally stated promise of "Open Government". Government has issued "Canada's Action Plan on Open Government", stating that the three pillars of that Action Plan are:

- Open information,
- Open data, and
- Open dialogue.⁴⁸

Indeed, the CFIA's website has a section titled "Transparency in Regulatory Decision Making"⁴⁹ which is studded with adjectives like "timeliness", "usefulness", and "accountability", but, as noted above, the reality is quite different.

CFIA's restrictive release of salmon farm disease information belies Ottawa's Open Government promises. For example, the Open Government Action Plan calls for raw data to be made more available "to leverage it in innovative and value-added ways."⁵⁰ Clearly, releasing disease information to the public and independent scientists will add value to society by better protecting the public resource. In fact, this is a common theme in the Cohen Commission findings, the Brundtland Commission, the House

⁴⁷ See, for example, the Cermaq (Mainstream) report from the fourth quarter of 2012: "Q4 2012 Quaterly Report" Cermaq, online: <http://hugin.info/134455/R/1677289/546944.pdf>. Accessed May 23, 2014.

⁴⁸ Government of Canada, "Canada's Action Plan on Open Government" online: GOC <http://data.gc.ca/eng/canadas-action-plan-open-government>. Accessed April 18 2014.

⁴⁹ Canadian Food Inspection Agency, "Transparency in Regulatory Decision Making" online: CFIA <http://www.inspection.gc.ca/about-the-cfia/accountability/transparency-in-regulatory-decision-making/eng/1363183662938/1363185978804>. Accessed April 17 2014.

⁵⁰ Government of Canada, "Canada's Action Plan on Open Government" online: GOC <http://data.gc.ca/eng/canadas-action-plan-open-government>. Accessed April 18 2014.

standing committee on fisheries, and reports of the BC Forest Practices Board: *generally speaking, the more information that is available to the public, the better the protection of public resources*.⁵¹ Current Canadian reporting of fish diseases run counter to this principle.

[Note that as this report is being written, access to information requests are ongoing that may demonstrate the ease with which CFIA could publish the raw data, if it chose to.]

Meeting consultation requirements

Finally, and perhaps most important, fish disease reporting must be improved because the current failure to fully report fish diseases likely violates Aboriginal rights.

Any potential infringement by government on an Aboriginal right, or even a *potential Aboriginal right*, is subject to a duty to consult and accommodate.⁵² This is a constitutional duty which makes it the highest law of the land. After the initial licensing/permitting and construction of a development there remains an attached duty to consult as the impact of the development changes. In other words, there is an ongoing duty to maintain information exchange and dialogue in order to fulfill the obligation, which may also have additional fiduciary aspects.

The case for an Aboriginal right to salmon for food, social and ceremonial purposes is strong for most First Nations in BC. The court of appeal in *Sparrow* noted that, the existence of the right [to fish] was "not the subject of serious dispute".⁵³

Section 35 of the *Constitution Act 1982* expressly recognized and affirmed First Nations' Aboriginal and treaty rights that were in existence at the time of enactment.⁵⁴ 'Aboriginal rights' is a legal term of art that describes a spectrum of entitlement ranging from access to a resource, to title over land, depending on the strength of the claim.⁵⁵ For many British Columbian First Nations (only a few of whom signed treaties) the use of salmon is an integral and well-documented part of the traditional way of life that likely rises to the level of protected Aboriginal rights.

⁵¹ See discussion above .

⁵² *Haida Nation v British Columbia (Minister of Forests)*, 2004 SCC 73 at para 39; *Taku River Tlingit First Nation v British Columbia (Project Assessment Director)*, 2004 SCC 74 at para 25.

⁵³ *R v Sparrow*, [1990] 1 SCR 1075 at 1095.

⁵⁴ *R v Sparrow*, [1990] 1 SCR 1075 at 1077.

⁵⁵ *Delgamuukw v British Columbia*, [1997] 3 SCR 1010 at para 15.

In *Sparrow* the Supreme Court found an Aboriginal right to salmon taken for food, social, or ceremonial purposes.⁵⁶ The *Fisheries Act* was soon altered to reflect the decision and the category of “Aboriginal fishery” was created, and defined as one where the harvest of fish by an aboriginal is for food, social and ceremonial purposes.⁵⁷ Soon after, the allocation of fishery resources was changed, and the Aboriginal fishery was placed before the recreational and commercial sectors.⁵⁸ This is a not-so-subtle acceptance by the federal government of the existence of an Aboriginal right to salmon for many First Nations in BC.⁵⁹

When it comes to consultation, where Aboriginal rights are found to exist or are likely to exist, the government has a responsibility to consult with the First Nation whose rights may be affected by the government action of allowing fish farm operations. The potential for such fish farms to impact wild salmon that First Nations rely upon is broadly accepted, and thus Government clearly must consult.⁶⁰

The Supreme Court’s decision in *Haida Nation v British Columbia* clarified the consultation requirement by employing a continuum, like that used to ascertain the existence and extent of aboriginal rights. So,

“...the scope of the duty [to consult] is proportionate to a preliminary assessment of the strength of the case supporting the existence of the right or title, and to the seriousness of the potentially adverse effect upon the right or title claimed.”⁶¹

Since many BC First Nations have an Aboriginal right to harvest salmon and there is a strong argument that salmon farming can significantly impact wild salmon⁶², it is likely that there is an ongoing duty to consult and reasonably accommodate a First Nation regarding the licensing of fish farms in a Nation’s territory. Furthermore it will

⁵⁶ *R v Sparrow*, [1990] 1 SCR 1075 at 1077.

⁵⁷ *Fisheries Act*, RSC 1985, c F-14 s.2(1).

⁵⁸ Department of Fisheries and Oceans Canada, “An Allocation Policy for Pacific Salmon” at ii. Online: (1999) DFO <http://www.dfo-mpo.gc.ca/Library/240366.pdf>. Accessed April 17, 2014.

⁵⁹ In addition to the right to fish for food, social and ceremonial purposes, in some cases there will be a First Nations right to fish commercially. See the recent Supreme Court of Canada decision in *Ahousaht et al. vs. Canada* and see *R. v. Gladstone*, [1996] 2 S.C.R. 723.

⁶⁰ Commission of Inquiry into the Decline of the Sockeye Salmon in the Fraser River, *The Uncertain Future of the Fraser River Sockeye: Volume 2 – Causes of the Decline*. (Ottawa: Public Works and Government Services Canada, 2012) at 113.

⁶¹ *Haida Nation v British Columbia (Minister of Forests)*, 2004 SCC 73 at para 39.

⁶² Commission of Inquiry into the Decline of the Sockeye Salmon in the Fraser River, *The Uncertain Future of the Fraser River Sockeye: Volume 2 – Causes of the Decline*. (Ottawa: Public Works and Government Services Canada, 2012) at 113.

probably fall at the more rigorous end of the spectrum because of the critical importance of salmon and the potential for significant impact on the aboriginal right to harvest them. Without a court case on point, it is difficult to say exactly what that duty looks like, but it is probable that the current approach to release of disease information is insufficient. If government is to meet its consultation duty it must at the very least release the information in a meaningful manner.

The duty to consult requires government to release disease information in a way that is commensurate with both the extent of the infringement and the strength of the Aboriginal right. Clearly, the high level of both here should translate into a duty to release data that is at least *meaningful*. To do less is to invite devastating lawsuits if a disease originating at a salmon farm were to conclusively decimate First Nation salmon returns.⁶³

Learning from Other Jurisdictions

Canada should learn from the more transparent and stringent disease reporting requirements in other jurisdictions. Other jurisdictions do a better job of providing public information to scientists and the public – information that can be used to fashion better solutions and preventative measures (e.g., adjusting where fish farms are located).

Many other countries farm salmon, but only Norway, Chile, and Scotland produce more fish than Canada.⁶⁴ These jurisdictions have policies about how and when they release disease data that Canada can learn from. The most comprehensive and transparent approach to publication of disease information uncovered in the research for this project is that of the European Union, although it falls short in its timeliness. Norway provides the most timely reporting, publishing disease information within 48 hours of suspicion at an aquaculture site, it also has commendable accessibility and detail in reporting.

⁶³ Note that other duties might arise for the Crown under s. 35(1), such as compensation, infringing as little as possible, etc.

⁶⁴ Seafish “Responsible Sourcing Guide: Farmed Atlantic Salmon: August 2012” online: Seafish http://www.seafish.org/media/publications/SeafishResponsibleSourcingGuide_Atlanticsalmon_201208.pdf at 4. Accessed April 18 2014.

Scotland

Throughout Europe, including Scotland, *Article 6 of Council Directive 2006/88/EC* sets out a regime that Canada needs to seriously consider. *Article 6* prescribes a public register of fish farms that must be maintained with up-to-date information regarding presence or freedom from OIE listed diseases.⁶⁵ The register includes details about each fish farm such as location, business name, type of fish raised, type of cage, and maximum capacity.⁶⁶ The register includes six of the ten OIE listed diseases. (Two of the four not included are exotic to the European Union, one was recently added to the list and the other does not affect the species farmed in Scotland.)⁶⁷

The disease register is a powerful tool allowing the public to find out where and when specific diseases are present, but it is not perfect. A potential shortcoming is the fact that disease status on the register is based on diagnosis by the national reference laboratory, not first suspicion or private laboratory diagnosis. This has the potential to inject substantial delay and limit the usefulness of the information vis-a-vis independent testing.

However, suspicion does result in an “initial designation notice” being placed on a farm.⁶⁸ The notice puts a legal burden on the regulator to take action towards stopping the spread of disease, and on individuals by making it an offence to move any animal tissue.⁶⁹ The notice remains in place until the farm is either declared disease free or infected, at which point it is published on the register.

A second minor shortcoming is the unwieldiness of the register. It is a large downloadable Excel file that is somewhat difficult to navigate and use.⁷⁰ Still, interested Canadians would be overjoyed to have equivalent information at their fingertips.

⁶⁵ EC, *Council Directive 2006/88/EC of 24 October 2006 on animal health requirements for aquaculture animals and products thereof, and on the prevention and control of certain diseases in aquatic animals*, L 328/14 at 20.

⁶⁶ EC, *Council Directive 2006/88/EC of 24 October 2006 on animal health requirements for aquaculture animals and products thereof, and on the prevention and control of certain diseases in aquatic animals*, L 328/14 at 38.

⁶⁷ EC, *Council Directive 2006/88/EC of 24 October 2006 on animal health requirements for aquaculture animals and products thereof, and on the prevention and control of certain diseases in aquatic animals*, L 328/14 at 43; World Organisation for Animal Health, “Report of the Meeting of the OIE Aquatic Animal Health Standards Commission” Paris, 11-15 March 2013 at 5-7, online: OIE <http://www.oie.int/doc/ged/D12378.PDF>. Accessed April 18, 2014.

⁶⁸ *The Aquatic Animal Health (Scotland) Regulations 2009*, Scot SI 2009/85 at ss. 23- 24.

⁶⁹ *The Aquatic Animal Health (Scotland) Regulations 2009*, Scot SI 2009/85 at s 24(3).

⁷⁰ The Scottish Government, “Internet based public register of all authorized production businesses and authorized processing establishments” online: Marine Scotland <http://www.scotland.gov.uk/Topics/marine/Fish-Shellfish/FHI/authorisation/apb/register>. Accessed April 18 2014.

Norway

Norway, far and away the largest producer of farmed salmon in the world, has implemented a user-friendly and transparent system for the publication of two very infectious OIE listed diseases, ISAv and pancreas disease.⁷¹ A highly intuitive interactive map shows suspected and proven outbreaks at specific farms including contact information for the responsible Norwegian Food Safety Authority official (FSA). The inclusion of suspected outbreaks, posted 2 days after initial findings,⁷² makes this information particularly useful for residents wishing to conduct independent testing, or be involved in siting and license approval decisions.

Information about other OIE listed diseases is not displayed in the same intuitive format, and the lack of a regularly updated disease register like Scotland's earned a chiding from the European Free Trade Association.⁷³ However, in response to a question about how the public can inform themselves about diseases on fish farms Kristina Birkelund of the FSA said "people can always contact us with their questions, nothing is confidential."⁷⁴ It is truly ironic -- the country where 90% of B.C. fish farms are headquartered releases virtually *any* information desired, while it may take months, or be impossible to get the same information in Canada.

Chile

Publication of disease information in Chile is much less transparent than Norway or Scotland but still marginally better than Canada when it comes to geographic location, though less so in terms of timeliness. Chile publishes a yearly salmon health report with regional divisions for which broad statistics on some diseases are available, with

⁷¹ Veterinarian Institute of Norway, "Geographical distribution of PD and ISA" online Norwegian Veterinary Institute <http://odin.vetinst.no/ta/pd/> Accessed April 18 2014.

⁷² Veterinarian Institute of Norway, "Geographical distribution of PD and ISA" online Norwegian Veterinary Institute <http://odin.vetinst.no/ta/pd/> Accessed April 18 2014.

⁷³ European Commission, Health and Consumers: Animals "Register of aquaculture production businesses and authorized processing establishments" online: EC http://ec.europa.eu/food/animal/liveanimals/aquaculture/register_aquaculture_establishments_en.htm. Accessed April 18 2014;

EC, European Free Trade Association Surveillance Authority, *Mission to Norway*, online: EFTA Surveillance Authority http://www.eftasurv.int/media/reports/Final_report_fish_health_mission_Norway_May_2010.pdf at 24. Accessed April 18 2014.

⁷⁴ Interview of Kristina Birkelund (21 March 2014).

some infections pinpointed to particular farms.⁷⁵ This is more detailed than Canada's location information but is only disseminated yearly (as opposed to monthly) and is quite irregular with regard to exactly what information is published and what diseases are reported on.

As an OIE member country Chile abides by the Aquatic Animal Health Code requiring publication of listed diseases within 24 hours, but communication of that information with the public is limited.⁷⁶

The geographic specificity of disease information in the top four producing countries is revealing:

	Site	Region/Province
Norway	√	
Chile	√ ⁷⁷	√
EU (Scotland)	√	
Canada		√

Notably, Canada is the only country that consistently fails to report by site. This means that all of the advantages of site specific reporting- independent testing, public input, consultation, and open government mores are lost.

A Call for Reform

The current failure of Government to release disease information provides a sense of *déjà vu*. In the first decade of this century, the provincial Ministry of Agriculture argued vociferously against publishing sea lice data collected by fish farms on grounds that it would disadvantage Ministry scientists writing about it, and that it was proprietary.⁷⁸

⁷⁵ Chile, Sernapesca, *Health Report of Salmon Farming in Marine Centers*, (February 2014) at 24-25. Online: Sernapesca.

⁷⁶ World Organisation for Animal Health, "Aquatic Animal Health Code" online: OIE http://www.oie.int/index.php?id=171&L=0&htmfile=chapitre_1.1.1.htm, at 1.1.3. Accessed April 17, 2014.

⁷⁷ Chile, Sernapesca, *Health Report of Salmon Farming in Marine Centers*, (February 2014) at 24-25. Online: Sernapesca.

http://www.sernapesca.cl/index.php?option=com_remository&Itemid=246&func=fileinfo&id=6820. Accessed April 18 2014.

⁷⁸ *British Columbia (Agriculture and Lands) (Re)*, 2011 BCIPC 14 at 1. Online: Canadian Legal Information Institute [Http://www.canlii.org/en/bc/bcipc/doc/2011/2011bcipc14/2011bcipc14.html](http://www.canlii.org/en/bc/bcipc/doc/2011/2011bcipc14/2011bcipc14.html). Accessed April 18 2014; *British Columbia (Agriculture and Lands) (Re)*, 2009 BCIPC 9 at 1. Online: Canadian Legal Information

After four years of argument, BC's information commissioner ordered the ministry to publish the data, which is now publicly reported by DFO.

According to Justice Cohen:

Neither salmon farms nor government auditors have, in the past, provided much data about salmon farms to non-government scientists; they have tended to treat this information as proprietary. DFO has made progress in making information from salmon farms more transparent and in reporting this information to the public [i.e., for lice information]. This work needs to be continued, particularly to provide access to non-government scientists for research purposes.⁷⁹

Unfortunately, with the CFIA now as the main regulator, the transparency that Justice Cohen espoused does not yet extend beyond sea lice to cover fish diseases.

This lack of transparency continues, even though there are few valid arguments in favour of withholding the details of disease information under the provisions of the *Access to Information Act*:

- Industry may argue that the information is “proprietary” and thus non-releasable. However, the argument that disease information should not be released because it is “proprietary information” has failed numerous times. Such an argument has been legislated to not be determinative where the public interest outweighs the third party's interests.⁸⁰
 - Inspector's observations have been ruled to not be confidential⁸¹
 - Diseased fish are not “information”⁸²
- In addition, industry has sought exemptions from release requirements based on the idea that the information would create a “competitive disadvantage to the company.”⁸³ This argument is weak— competitors in the European Union

Institute <http://www.canlii.org/en/bc/bcipc/doc/2010/2010bcipc9/2010bcipc9.html>. Accessed April 18 2014.

⁷⁹ Commission of Inquiry into the Decline of the Sockeye Salmon in the Fraser River, *The Uncertain Future of the Fraser River Sockeye: Volume 1 – The Sockeye Fishery*. (Ottawa: Public Works and Government Services Canada, 2012) at 419.

⁸⁰ *Access to Information Act*, RSC 1985, c A-1 s.20(6).

⁸¹ *Les viands du Breton Inc. v Canada (Canadian Food Inspection Agency)*, 2006 FC 335 at 49, aff'd 2007 FCA 341.

⁸² *British Columbia (Agriculture and Lands) (Re)*, 2009 BCIPC 9 at 1. Online: Canadian Legal Information Institute <http://www.canlii.org/en/bc/bcipc/doc/2010/2010bcipc9/2010bcipc9.html>. Accessed April 18 2014.

⁸³ *Access to Information Act*, RSC 1985, c A-1 s.20(1)(c).

operate where governments require release of information about disease outbreaks on specific farms⁸⁴

In light of the above, we make the following recommendations for reforming Canada's reporting of disease outbreaks on fish farms.

Specific Recommendations for Reform

Recommendation 1: Law and policy should be changed to ensure that fish disease reporting is meaningful and useful to the public and independent scientists. Such reporting must be both timely and geographically specific.

- *Suspected* diseases need to be reported, as well as confirmed diseases; and
- The specific geographic location and site of disease outbreaks need to be reported.

Without timely and geographically specific reporting, independent scientists and others cannot sample effectively -- and are severely limited in their ability to give input into siting and other decisions. Fortunately, timely and geographically specific information already exists, since the CFIA digitally records all instances of suspicion of reportable diseases at specific aquaculture sites.⁸⁵ All the CFIA has to do is stop expunging such information from its public records.

Recommendation 2: Fish disease reports should be published in an accessible and easily navigable format. Reported information should be used to populate a register like that mandated by the European Union.

⁸⁴ EC, *Council Directive 2006/88/EC of 24 October 2006 on animal health requirements for aquaculture animals and products thereof, and on the prevention and control of certain diseases in aquatic animals*, L 328/14 at 20.

⁸⁵ Canadian Food Inspection Agency, "Mandatory Notification and Suspect Phase Disease Response Policy for the National Aquatic Animal Health Program" Exhibit 2023 of the Cohen Commission at 18 -19. Online: <https://web.archive.org/web/20131114212437/http://www.cohencommission.ca/en/Exhibits.php> Accessed April 17 2014.

Norway's ISAv and PD interactive map⁸⁶ is the leading example of this approach, any citizen can instantly find out what farms have or are suspected of having these diseases within two days of the suspicion arising.

Conclusion

The stated transparency goals of the federal government and the regulator are commendable, but now they need to actually be put into action. Scientists, First Nations, fisheries groups, residents and environmental groups need to know about diseases on fish farms when the government does so that they can independently corroborate or challenge findings, hold institutions and industry to account, and provide invaluable and informed input.

Such a vetting of information is critically important, if we are to find solutions to current problems and threats – and if we are to improve decisions about siting of future fish farms and other regulatory decisions.

In sum, a combination of the European Union and Norwegian approaches would produce a functional system that Canadians could use to inform themselves and better protect wild salmon. At the same time, such reforms are necessary to meet Government's duty to consult with First Nations.

⁸⁶ Veterinarian Institute of Norway, "Geographical distribution of PD and ISA" online Norwegian veterinary Institute <http://odin.vetinst.no/ta/pd/> Accessed April 18 2014.