

TESTIMONY TO THE COHEN COMMISSION ON THE DECLINE OF FRASER RIVER SOCKEYE

MARINE ENVIRONMENT CONDITIONS THAT AFFECT THE ABILITY OF SOCKEYE SALMON TO REACH TRADITIONAL SPAWNING GROUNDS OR REACH THE OCEAN: WATER BORN TRANSMISSION OF DISEASE

I just finished reading a research paper [1] funded by the British Columbia Ministry of Agriculture, Fisheries and Farms (BCMAFF) and the British Columbia Salmon Farmers Association (BCSFA) regarding the transmission of a virus from Fraser River sockeye to farmed fish on the east coast of Vancouver Island and the likely re-transmission of the virus to sockeye as they migrate through waters near the infected farms.

According to the research paper:

1. The virus, infectious hematopoietic necrosis, more commonly known as IHNV is a common pathogen of sockeye salmon. IHNV is similar to the virus found on farmed salmon in this area (p. 13), and there is the possibility that "Atlantic salmon can become infected when placed in close proximity to an infected [wild] salmon."

2. IHNV causes high mortality in the early life stages of wild salmon, (later stages have not been studied) (p. 13), and farmed salmon exposed to IHNV can have a mortality rate as high as 70%.

3. The virus can survive in salt water (p. 15), 2 weeks or longer in temperatures of 15° C, and longer at lower temperatures (p. 15) and can be transported by currents (p. 25).

While the paper's focus is on preventing the transmission of IHNV from one fish farm to another, it raises questions concerning the transmission of IHNV to wild fish populations and raises the possibility that IHNV was a factor in the collapse of the Fraser river sockeye in 2009.

PRECAUTIONS TAKEN

The IHNV virus is so prevalent and virulent that industry has taken extreme precautions to protect Atlantic farmed salmon from contact with the virus. They first limited the use of "towing pens" that exposed farm fish to water within the vicinity of infected farms. Next they introduced "converted fish boats/packers to transport their fish. However, this did not work because the deck hatches and water inlets of their holds could not be completely sealed and thus allowed "contact with contaminated water and a risk of infection" (p. 19). Farms now promote the use of "well boats".

Wild sockeye salmon pass through the same infected water as the boats transporting Atlantic salmon but do not have the same protections. If the "risk of spreading IHNV by moving Atlantic salmon within an infected area is very high" (p. 19), it follows that IHNV can impact wild sockeye salmon passing the infected areas.

TRANSMISSION OF DISEASE BY CARRIERS

According to the paper, IHNV infection could also be spread by "carrier fish", animals that are infected and capable of transmitting the disease but are not themselves diseased" (p. 17). Pacific herring and pilchard were reported in the vicinity of the farms prior to their outbreak. Also shiner perch and tubenout were seen in and around the pen system. (p. 18).

It is possible that carrier fish acquire the virus from the diseased farm fish, act as a reservoir for IHNV, and then pass the virus to wild fish populations including sockeye as they move through the channels.

THE DECISION MAKERS

Science can only speculate, not prove, a connection between IHNV (or sea lice) and the decline of sockeye and other wild BC salmon.

Government, backed by corporations, cannot be expected to be objective in their analysis of the impact of fish farms on the ocean environment. Science generated under the governmental body DFO has tended to focus on variables other than the proximity of fish farms to wild fish populations or the transmission of disease between farm and wild fish. Non-government scientists have referred to this focus as "distraction science" since it removes the spotlight from the most likely suspect for disease transfer.

Only the Judicial system has the tools to weigh the evidence and come to a decision. As in a court of law, the evidence on both sides is presented and when a "smoking gun" is not found, the court relies on the preponderance of the evidence to reach a conclusion. In the case of the sockeye salmon, there is evidence of the transmission of disease and sea lice between fish farms and wild fish populations sharing an ocean environment. There is evidence to support the hypothesis that wild fish passing through water contaminated by fish farms are negatively impacted by the interchange of parasites and disease.

As the ocean is a public resource, the public's right to a clean environment for its marine life (fish, plankton, cetaceans, reefs etc), must be protected. Protection is also needed for local jobs dependent on a healthy ocean habitat i.e. tourism and commercial and sports fishing.

INDUSTRY'S MANAGEMENT IS INEFFECTIVE

The paper acknowledges that the fish farm industry is working to "manage" the problem of disease. However, it presents information that supports the conclusion that solutions DO NOT exist at the moment. It is likely that future therapeutic treatments

may do more harm to BC's ocean environment.

Management recommendations suggested by the author include:

1. *Tightening biosecurity by "establishing management zones"*

[The author admits this "will be difficult considering the number of variables and lack of knowledge" p. 16]

2. *Placing a "security ring around infected sites" to restrict cross-area movement*

[A "security ring" would not stop wild fish from migrating past the sites. Johnstone Strait is a common migration route. The author acknowledges: "The sockeye populations that would potentially pass through Area 1 to spawn would include many of the Fraser River runs..." p. 13]

Ring size would be "arbitrary" until "more information on survival and dispersion of IHNV in seawater becomes known (p. 16). Farm managers still do not know the size of the area over which the virus is likely to spread.]

3. *Disinfecting equipment (nets, mortality rings and buckets) and vessels transporting fish*

[According to the author: "the removal of all organic material capable of carrying the virus below the water line is very difficult". p. 20]

4. *"complete" water disinfection at processing plants*

[According to the author: "It is possible that even with the adherence to the prescribed disinfection protocols that some live virus may have been discharged by the processing plant and then subsequently pumped up into the well boats containing the smolts." p. 22]

She also reported that boat companies transporting smolts through Area 1 "had protocols in place to cease pumping water into the holds 40 km (24 miles) "upstream" from the channel containing sites with IHNV infections to 27km (16 miles) "downstream" from the point where the harvested fish from infected sites were being offloaded onto trucks." p. 22]

5. *Using effective chemicals i.e. iodophors, sodium hydrochlorite and physical disinfectants i.e. heat and ultraviolet light*

["The initial protocol deemed acceptable by DFO and BCMAFF for handling harvest blood water and processing water involved chlorination...and dechlorination (using sodium thiosulphate)..." p. 22]

[According to the author: "There are some concerns regarding the effectiveness of the protocol....Most of the water being treated contained large amounts of organic material, and in the presence of organic material chlorine is known to be inactivated to varying degrees...(C)ompany representatives who had used the prescribed protocol found that it was very difficult to reach and maintain the recommended level of chlorination." p. 23]

"The question arises as to how effective the protocol is in destroying the virus in large volumes of water, especially when complete mixing is difficult and organic levels are high... (T)here may have been some unintentional releases of IHNV infected water." p. 23]

6. *Notification of other farm sites when there is a known infection*

[There is no requirement to notify the public.]

CONCLUSION

Fish farms should be removed from the ocean environment and relocated on land in order to eliminate water transmission of disease and parasites between BC's farmed and wild fish.

RECOMMENDATIONS FOR FISHERIES AND OCEANS CANADA (DFO)

1. Remove fisheries science from DFO, so the policies and practices of the federal government do not compromise scientific objectivity.
2. Establish a policy that prioritizes the protection of wild fish and their ocean habitat.
3. Fund the study and implementation of sustainable land based aquaculture.
4. Terminate all research funding for open-netpen aquaculture.
5. Acknowledge that "risk management strategies" to control variables in the ocean environment are unrealistic given the global complexity of temperature, currents, pathogens and viruses

REFERENCE

1. Saksida, Sonja, "Investigation of the 2001-2003 IHN epizootic in farmed Atlantic salmon in British Columbia" Director of Veterinary Sciences and Epidemiology, BC Center for Aquatic Health Sciences

*Thank you for the work you are doing on this critical issue.
Veritas Curat ("Truth Cures")*