

INFORMATION NOTE

DATE: October 26, 2023

PREPARED FOR: Honourable George Heyman, Minister of Environment and Climate Change Strategy

Laurel Nash, Assistant Deputy Minister of Environment and Climate Change Strategy

ISSUE: Risks to the Fraser River Wild Salmon by fish farm piscine orthoreovirus (PRV) and fish processing effluent

KEY FACTS:

- Recently, the ministry has received multiple letters from First Nations and individuals expressing concern over potential risks to wild salmon from the effluent from the Brown's Bay Packing Company (BBPC) fish processing plant, located north of Campbell River.
- A 2022 pilot study by Fisheries and Oceans Canada (DFO) scientist Dr. Kyle Garver showed that the treated effluent from BBPC contained the virus PRV, and that the PRV in the effluent was infectious to Atlantic Salmon exposed to it in a controlled, laboratory setting.
- A ministry Environmental Impact Assessment Biologist reviewed the study, and concluded that based on current information, the risk of negative health effects to wild salmon from exposure to the treated effluent plume at BBPC is considered to be low.
- Ministry staff met with Dr. Garver in August of 2023. Dr. Garver agreed with our biologist's risk assessment, noting the dilution of effluent shortly beyond the outfall, and the limited time that wild salmon are expected to be in proximity to the effluent outfall.
- Ministry authorizations staff conducted a site visit of the BBPC facility in September 2023. Staff received a tour of the effluent treatment system from start to finish, while fish were being processed, and observed that the effluent from the system is now visibly clearer and less turbid (see photo in Appendix 1) than it had previously been. The clearness or clarity of the water is critical for disinfection effectiveness.
- Ministry compliance and enforcement staff have planned an inspection of the BBPC facility to verify compliance with all permit requirements by the end of the fiscal year.
- Ministry authorizations staff are not currently considering any additional amendments to the permit; however, are considering options for further testing of the improved-quality effluent.

BACKGROUND:

- BBPC was the site where the original “blood pipe” video was taken in 2017, which generated considerable concern from the public and First Nations at the time.
- In response to concerns, the ministry initiated the Fish Processing Permit Amendment Project in 2018, to review and update effluent discharge permits for fish processing facilities: [Fish Processing Permit Amendment Project - Province of British Columbia \(gov.bc.ca\)](https://www2.gov.bc.ca/gov/content/spe/fish_processing_permit_amendment_project)
- BBPC’s permit was amended in 2019, and the effluent treatment system received a considerable upgrade, to include a Dissolved Air Flotation (DAF) treatment followed by disinfection with hydrogen peroxide.
- PRV is an orthoreovirus that can cause a disease called Heart and Skeletal Muscle Inflammation (HSMI) in Atlantic salmon. It is important to note that in Dr. Garver’s study, no mortality or external signs of disease were noted in any of the fish after six weeks of exposure.
- There are currently 22 active permits in the fish processing industry in B.C., as shown on the map in Attachment 2 (permit 8124 is the BBPC).
- The science on PRV is still emerging and inconclusive with respect to risks to wild salmon in B.C. The minimum exposure time and dose to cause disease is not known. Exposure concentration and duration to PRV in natural environments from effluent is believed to be very low but has not been quantified.
- Permitting under the *Environmental Management Act* is made following a cautious approach but is not zero risk. Requiring best achievable technology, such as DAF is one means of managing risks of effluent discharges.

DISCUSSION:

The presence of infectious PRV in the effluent stream of the BBPC continues to be of concern to a number of citizens and First Nations, including the Musqueam Nation and the St’at’imc Chiefs Council. The concerns revolve around the potential for wild salmon passing through or around the effluent outfalls to be exposed to PRV, and potentially become infected.

In the meeting with ministry staff, Dr. Garver provided an in-depth explanation of the infection and disease dynamics of PRV and the associated HSMI diseases it can cause in Atlantic salmon. Dr. Garver agreed with our biologist’s conclusion that risk to wild salmon was low and emphasized that it was very difficult to draw conclusions from infection rates in a laboratory study to any risk of infection to wild salmon. The ability of PRV to infect and cause disease in fish is specific to each fish species, and pacific salmon species do not show the same infection and disease dynamics as Atlantic salmon. However, Dr. Garver agreed that there are still a lot of unknowns with respect to any potential risks to wild salmon, including whether wild salmon would have sufficient contact time with the effluent plume to become infected.

The permit for the BBPC facility was amended in 2019, at which point the effluent treatment system received a significant upgrade from previous permit requirements. From ministry staff’s site visit in September of this year, the operator described recent adjustments to the system that have improved

the quality of the final effluent further. At this time, the facility operators were open to the idea of further effluent testing, to see if the adjustments to the system have reduced the PRV viral load.

Based on the current evidence and risk analysis, ministry staff are not recommending additional permit amendments at this point. The addition of further disinfection or treatment systems would come at significant cost to the facility and there are space constraints on the site. However, consideration should be given to working with the facility operators, and hopefully with Dr. Garver as well, to conduct further testing on the effluent to determine PRV viral load.

Ministry staff are recommending pursuing this additional testing of the effluent to further inform future actions. This would also demonstrate that in addition to the significant actions recently taken to understand the potential risks, the ministry is committed to taking meaningful steps to address concerns raised by First Nations and members of the public. DFO would need to lead the testing due to the challenges in such testing.

Attachment(s):

- Attachment 1: photo of treated and untreated effluent - September 2023.
- Attachment 2: Map of Fish Processing Facilities in B.C. - 2023.

Executive Director:

*Doug Hill
Regional Operations Branch
250 302-3586*

Alternate contact for content:

*Cassandra Caunce
Regional Operations Branch
236 468-2227*

Prepared by:

*Andreas Wins-Purdy
Regional Operations Branch
778 476-9021*

Attachment 1: Photo of the untreated bloodwater (left) and the final treated effluent (right) from the BBPC ministry site tour September 15, 2023.



Attachment 2: Map of the 22 current fish processing permits in B.C. Permit 8124 is the Brown's Bay Packing Company.

