

# Open-net salmon aquaculture is not environmentally sustainable.

## Executive Summary

Open-net salmon aquaculture farms are harmful to wild BC salmon populations as they create environments where the intensification of disease and parasites can occur. This results in increasing transmission of infections in wild salmon populations which in turn increase mortality rates. These farms pose a huge risk as many BC salmon populations are threatened, with some facing the risk of extinction.

## Introduction

Open-net farms in BC house high densities of Atlantic salmon that utilize water flow from the surrounding ocean <sup>1</sup>. The high density of farmed fish in these pens create an environment where pathogens are abundant and can be transmitted to wild populations <sup>1</sup>. Studies have shown increased pathogen risk and declines in salmon populations where their migration routes are close to open-net salmon farms <sup>2</sup>. BC salmon populations have been declining and are threatened by the exposure to pathogens near these farms <sup>3</sup>. As of 2021, several salmon runs have been determined to be threatened (5), endangered (20), or extinct (3) <sup>4</sup>.

## Key Points

- Open-net farms create an environment with high abundances of pathogens
- Salmon with migration routes in proximity to these farms have increased mortality rates due to diseases and parasite exposure
- Proximity to open-net farms are associated with salmon population declines
- Recommend transition to on-land closed systems and improved eco-certification



@Ian Smith

## Diseases *Infectious Salmon Anemia*

- Highly infectious & transmitted between fish <sup>5</sup>
- Can be transmitted between fish through sea lice infection <sup>5</sup>
- Causes severe anemia with high mortality <sup>5</sup>
- Killed thousands of Sockeye Salmon before they had the chance to spawn <sup>6</sup>
- Arrived in BC in 2011 and can be traced to open-net pens <sup>6</sup>



@Alexandra Morton

## Parasites *Sea lice*

- Open-net farms are associated with high levels of sea lice infestations <sup>7</sup>
- Salmon with migration routes near farms have higher occurrences of sea lice than salmon that do not travel by these farms <sup>7</sup>
- Most harmful to young salmon migrating to the ocean as their skin is easier to penetrate <sup>7</sup>
- Reduces growth rates and increases mortality <sup>7</sup>

## Recommendations

- **Continue to monitor and assess BC wild salmon populations effected by fish farms**
  - Maintain and record up-to-date occurrences of pathogens and returning spawning stock
- **Continue to build and plan a framework for transition of open-net sea pens to sustainable closed on-land operations that eliminate interactions between farmed salmon and wild BC salmon<sup>8</sup>**
  - should be done in collaboration with both Indigenous communities, stakeholders, provincial government and aquaculture industry
- **Create reliable eco-certifications for aquaculture facilities that aim to strengthen sustainability in protecting wild salmon and enhance transparency for consumers**
  - current certifications contain loop-holes that allow facilities to maintain labels despite high occurrences of pathogens<sup>9</sup>
- **Maintain DFO promise to remove open-net pens by 2025**



## References

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