
Report 1—Salmon Farming

Salmon farming, also referred to as salmon aquaculture, is the farming of salmon for commercial purposes. In Canada, it is carried out primarily along the coasts of British Columbia and the Atlantic provinces. In 2016, the salmon aquaculture industry in Canada was valued at \$1 billion.

Canada is the fourth largest producer of farmed salmon after Norway, Chile, and the United Kingdom. The Canadian salmon farming industry is considered to have significant potential for growth due to Canada's long coastline, cold water temperatures, and proximity to the United States market.

This audit focused on whether Fisheries and Oceans Canada and the Canadian Food Inspection Agency managed the risks associated with salmon aquaculture in a manner that protected wild fish.

This audit is important because salmon aquaculture is a growing industry in Canada that provides an important source of fish, given declining wild fish stocks. Globally, aquaculture now provides half of all fish for human consumption. Raising farmed salmon in net pens in the ocean has potential effects on wild fish that need to be understood and addressed, as appropriate.

We concluded that Fisheries and Oceans Canada did not adequately manage the risks associated with salmon aquaculture consistent with its mandate to protect wild fish. Although the Department had some measures to control the spread of infectious diseases and parasites to wild fish in British Columbia, it had not made sufficient progress in completing the risk assessments for key diseases that were required to understand the effects of salmon aquaculture on wild fish. It also had not defined how it would manage aquaculture in a precautionary manner in the face of scientific uncertainty. Moreover, the Department did not adequately enforce compliance with aquaculture regulations to protect wild fish.

The Canadian Food Inspection Agency had measures to prevent the introduction and spread of infectious diseases with respect to aquaculture. However, the Department and the Agency had not clarified roles and responsibilities for managing emerging diseases. This lack of clarification created a risk that potential emerging diseases affecting wild salmon would not be adequately addressed.

Overall, we found that Fisheries and Oceans Canada had not made sufficient progress in completing risk assessments for key diseases, which were required to assess the effects of salmon farming on wild fish.

This finding matters because the Department committed to conducting scientific studies and assessments to understand the effects of aquaculture on wild fish.

- **Fisheries and Oceans Canada had not made sufficient progress in completing risk assessments for key diseases**

Recommendation. Fisheries and Oceans Canada should conduct its planned disease risk assessments by 2020 to increase its knowledge of the effects of aquaculture on wild salmon, as it committed to doing in its response to the Cohen Commission report.

Overall, we found that although Fisheries and Oceans Canada and the Canadian Food Inspection Agency had put in place some measures to mitigate the spread of infectious diseases and parasites from farmed salmon, key elements were missing. For example, Fisheries and Oceans Canada's program for auditing the health of farmed salmon in British Columbia was out of date, and the Department had limited laboratory capacity to provide timely surveillance test results. In addition, the Department and the Agency had not clarified roles and responsibilities for managing emerging disease risks to mitigate the potential impacts of salmon farming on wild fish.

This finding matters because diseases and parasites present in salmon farms in the ocean may pose a risk to wild fish.

- **Some measures to address disease risks in aquaculture management were not yet in place**

Recommendation. Fisheries and Oceans Canada and the Canadian Food Inspection Agency should clarify their roles and responsibilities for managing emerging disease risks to mitigate the potential impacts of salmon farming on wild fish.

Recommendation. Fisheries and Oceans Canada should determine and communicate how it applies the precautionary approach to managing aquaculture when there is uncertainty about the effects of aquaculture on wild fish. The Department should also clearly articulate the level of risk to wild fish that it accepts when enabling the aquaculture industry.

Overall, we found that Fisheries and Oceans Canada did not conduct adequate analysis to know whether its rules for drug and pesticide deposits at salmon farms would minimize harm to wild fish. In addition, the Department did not define limits on the amount of drugs or pesticides that could be deposited, or confirm the accuracy of information self-reported by aquaculture companies.

This finding matters because drugs and pesticides used in aquaculture operations can harm wild fish, especially those living on the ocean floor.

- **Fisheries and Oceans Canada had not assessed the effectiveness of its rules for depositing drugs and pesticides at salmon farms to minimize harm to wild fish**

Recommendation. Fisheries and Oceans Canada should establish thresholds for the deposit of drugs and pesticides into net pens to more effectively minimize harm to wild fish.

Recommendation. Fisheries and Oceans Canada should develop and implement an approach to validate the accuracy of information that aquaculture companies report regarding their drug and pesticide deposits.

Overall, we found that Fisheries and Oceans Canada had not set a national standard for the quality and maintenance of equipment, such as nets and anchoring systems, to reduce the risk of fish escapes.

This finding matters because preventing fish escapes is important to minimize the risk of causing negative genetic effects in wild salmon. This is especially important in Atlantic Canada, where escaped farmed salmon have begun to interbreed with declining wild salmon populations.

- **Fisheries and Oceans Canada did not set a national standard for nets and other equipment to prevent fish escapes**

Recommendation. Fisheries and Oceans Canada should initiate discussions with its counterparts in the Atlantic provinces to address the quality and maintenance of equipment on salmon farms to prevent fish escapes.

Overall, we found that the Department did not sufficiently enforce its Aquaculture Activities Regulations to minimize harm to wild fish. It also did not always publish detailed or up-to-date information about such matters as disease outbreaks.

This finding matters because enforcement is important to ensuring that aquaculture companies are complying with regulations designed to protect wild fish. Publishing information about disease outbreaks and compliance with regulations is important to building public confidence in government regulation of the industry.

- **Fisheries and Oceans Canada did not adequately enforce compliance with regulations to minimize harm to wild fish**

Recommendation. Fisheries and Oceans Canada should more effectively enforce aquaculture regulations and pursue additional enforcement measures.

Recommendation. Fisheries and Oceans Canada should provide timely public reports with detailed information on companies' drug and pesticide deposits, and on the health of farmed fish in British Columbia.

The audited entities agree with our recommendations, and have responded (see List of Recommendations).

	Commissioner of the Environment and Sustainable Development
	Performance audit
	<ul style="list-style-type: none"> • Agriculture • Environment • Natural Resources • Water
	<ul style="list-style-type: none"> • Canadian Food Inspection Agency • Fisheries and Oceans Canada
	21 December 2017
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	<ul style="list-style-type: none"> • Report 2 – Sustaining Canada's Major Fish Stocks – Fisheries and Oceans Canada – 2016 Fall Reports of the Commissioner of the Environment and Sustainable Development

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