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MANAGEMENT OF CANADIAN AQUACULTURE

CANADIAN ENVIRONMENTAL SUSTAINABILITY INDICATORS

Canada

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CANADIAN ENVIRONMENTAL SUSTAINABILITY INDICATORS

MANAGEMENT OF CANADIAN AQUACULTURE

February 2023

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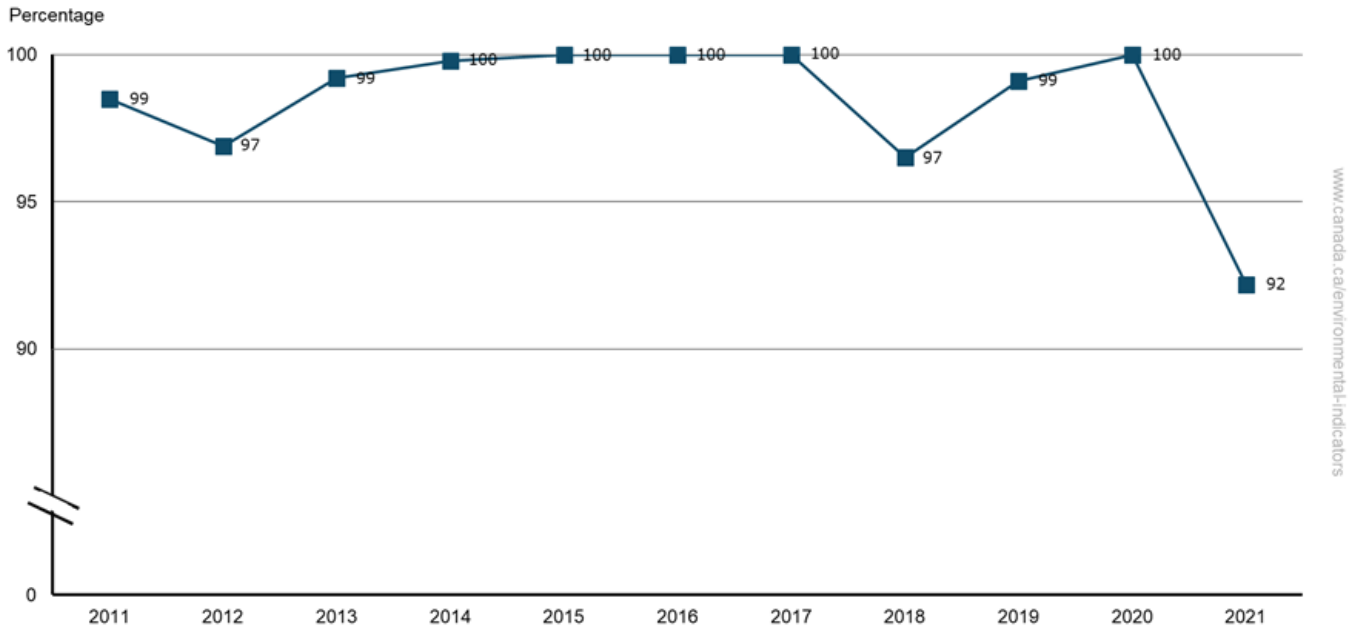
Management of Canadian aquaculture

Aquaculture operators' compliance with environmental standards helps to protect our aquatic environment. Fishery officers respond to complaints and conduct inspections to validate licence reporting and to verify compliance with aquaculture licences, conditions of licence and other applicable regulations. This indicator reports the rate of compliance of inspected aquaculture operations with *Fisheries Act* regulations. It provides a measure of how well aquaculture operators meet environmental protection standards as set out in the *Fisheries Act* regulations.

Key results

- From 2011 to 2021, over 92% of aquaculture operations inspected did not result in charges
- Of the 550 aquaculture operations inspected in 2021, 92% did not result in charges

Figure 1. Percentage of aquaculture operations inspected with no charges laid under *Fisheries Act* regulations, Canada, 2011 to 2021



Data for Figure 1

Note: A risk-management approach is used to determine the frequency of inspections and operations to be inspected. Individual operations may be inspected more than once per year.
Source: Fisheries and Oceans Canada (2022).

Prior to 2018, federal aquaculture enforcement efforts focused mostly on the marine finfish sector, which has a high level of compliance. In 2018, aquaculture enforcement efforts were shifted to the Pacific shellfish sector which has resulted in a lower reported rate of overall compliance due to an increase in warnings issued and charges laid. In addition to ongoing enforcement actions in the Pacific shellfish sector, an even lower rate of compliance was reported in 2021 due to an increase in aquaculture operations inspected and charges laid in the Pacific shellfish aquaculture sector.

While pollution control has always been a component of the *Pacific Aquaculture Regulations* under the *Fisheries Act*, the conditions of licence for shellfish aquaculture were updated in 2021 to address the issue of marine plastic debris and ghost gear in British Columbia's coastal waters. The new licence conditions support lost gear identification, foam flotation pollution reduction, and regular clean-ups of licensed facilities.

In the rest of Canada, provinces are responsible for managing aquaculture marine debris through conditions of licence. Atlantic provinces have implemented other regulatory mechanisms to help reduce marine plastics such as security bonds, adaptive farm management plans, and ability to issue tickets for non-compliance.

Between 2011 and 2021, an annual average of 295 inspections, 92 warnings and 6 charges occurred. In 2021, of the 550 inspections conducted, 32 warnings and 16 tickets (British Columbia only) were issued and 43 charges were laid due to a lack of compliance with licenses.

Common types of concerns identified during inspections included inadequate record keeping; inadequate markings and signage; improper storage and tagging of equipment, feed and/or chemicals; and deficiencies with nets, cage arrays or other structures. These concerns or deficiencies do not always lead to charges. Based on the severity of the issue, enforcement can include education, warnings, required changes or charges.

In British Columbia, enforcement actions now also include the ability of Fishery Officers to issue tickets under the federal *Contraventions Act* should an operator breach their conditions of licence. This gives aquaculture inspectors another tool for enforcing compliance. Ticketing is an alternative to using conviction procedures under the *Criminal Code*. This allows tickets to be issued for minor offences where warnings might be considered inappropriate or charges too drastic.[1]

About the indicator

What the indicator measures

The indicator measures the percentage of aquaculture operation inspections where no charges were laid with respect to federal aquaculture regulations.

Aquaculture management in Canada is a shared responsibility among federal, provincial and territorial governments. The federal government has jurisdiction over fisheries and fish habitat across the country under the *Fisheries Act*. The indicator includes all national and regional regulations under the Act that apply to aquaculture.

Why this indicator is important

Aquaculture represents about one third of Canada's total fisheries value and about 20% of total seafood production by weight. In 2021, salmon accounted for 74% of production value followed by other finfish with 17% of the total value. Shellfish accounted for 9% of production value.

If not sustainably managed, different types of aquaculture operations could have different environmental effects, ranging from local nutrient or chemical deposits into water systems to direct risks to wild species (habitat alteration and potential disease spread).

Aquaculture makes a significant contribution to Canada's economic prosperity by providing jobs, revitalizing communities, and increasing production and exports. Fisheries and Oceans Canada manages the sustainability of aquaculture under the *Fisheries Act* and related regulations. The degree to which facilities comply with the *Fisheries Act* and regulations is an indication of how well operators meet environmental protection standards and that Canadian aquaculture is sustainably managed. Ensuring that aquaculture operators meet environmental protection standards helps to protect our aquatic environment and keep marine resources productive and available for the benefit of future generations.

Related initiatives

This indicator contributes towards reporting on Target 8 of the 2020 Biodiversity Goals and Targets for Canada: "By 2020, all aquaculture in Canada is managed under a science-based regime that promotes the sustainable use of aquatic resources (including marine, freshwater and land based) in ways that conserve biodiversity."

In addition, the indicator contributes to the Kunming-Montreal Global Biodiversity Framework. It is linked to Target 10: " Ensure that areas under agriculture, aquaculture, fisheries and forestry are managed sustainably, in particular through the sustainable use of biodiversity, including through a substantial increase of the application of biodiversity friendly practices, such as sustainable intensification, agroecological and other innovative approaches contributing to the resilience and long-term efficiency and productivity of these production systems and to food

[1] Fisheries and Oceans Canada (2023) Fisheries violations and the Contraventions Act ticketing regime. Retrieved on January 16, 2023.

security, conserving and restoring biodiversity and maintaining nature's contributions to people, including ecosystem functions and services."

Related indicators

The Status of key fish stocks and Harvest levels of key fish stocks indicators report the condition and management of wild fish stocks.

The Shellfish harvest area quality indicator provides a partial measure of coastal marine water quality.

Data sources and methods

Data sources

Data are from the Compliance and Enforcement Program of Fisheries and Oceans Canada, Fishery Enforcement Activities Tracking System and the Departmental Violations System.

More information

Aquaculture management in Canada is a shared responsibility. Under the *Fisheries Act*, the federal government has jurisdiction over fisheries and fish habitat across the country. Under this Act, the Minister of Fisheries, Oceans and the Canadian Coast Guard issues aquaculture licences in British Columbia and Prince Edward Island. In the rest of the country, the provinces and territories have this authority.

The Government of Canada established the Sustainable Aquaculture Program in 2008 to help develop an environmentally, economically, and socially sustainable aquaculture sector. Sustainability is improved by increasing scientific knowledge and fact-based decision-making, by developing and improving regulations, and by ensuring transparency through enhanced reporting.

For all mandated responsibilities under the *Fisheries Act* (whether for fishing or aquaculture), fishery officers conduct regular patrols on land, on sea and in the air for compliance and enforcement purposes. In their inspections, they validate licence reporting and determine whether there is compliance with the conditions of the aquaculture licences. When necessary, fishery officers respond to complaints and conduct investigations. In addition, Fisheries and Oceans Canada promotes compliance through public education and awareness activities to encourage all Canadians to protect fishery resources and habitats.

There are two key regulations under the *Fisheries Act* that are specifically related to compliance and enforcement activities for aquaculture: the *Pacific Aquaculture Regulations* and the *Aquaculture Activities Regulations*.

The *Pacific Aquaculture Regulations* only apply in British Columbia and require aquaculture operators to comply with a number of licence conditions, primarily to manage diseases and parasites and to prevent farmed fish escapes into the environment.

The second set of aquaculture regulations are under the pollution prevention provisions of the *Fisheries Act* (section 36). Before 2014, Environment and Climate Change Canada administered all of section 36 (pollution prevention) of the *Fisheries Act*. In 2014, responsibility for the administration and enforcement of all section 36 activities related to aquaculture, aquatic invasive species and pests was placed under the authority of Fisheries and Oceans Canada. The *Aquaculture Activities Regulations* came into effect in July 2015. They are the first national section 36 regulations adopted in order to manage aquaculture. Under these regulations, the aquaculture industry is authorized to deposit potentially deleterious substances into fish-bearing waters subject to environmental protection conditions. These measures or conditions include: submission of data to the federal government on the type and quantities of drugs and pesticides used to treat diseases and pests, organic loading monitoring in marine waters, actions to be taken if wild fish mortalities occur during pesticide treatments, and mitigation measures to minimize impact on fish and fish habitat. An operator must meet all of the conditions or loses the authority to deposit any prescribed deleterious substance, and faces possible prosecution under the *Fisheries Act.*

Methods

The Management of Canadian aquaculture indicator presents the percentage of inspections that did not lead to charges against the operator. The indicator includes all national and regional regulations under the act that apply to aquaculture. Infractions do not always lead to charges. Based on the severity of the infraction, enforcement can include education, warnings, tickets, required changes or charges. The indicator provides a compliance rate, calculated as the number of inspected aquaculture sites (n) minus the number of inspected aquaculture sites with charges laid (x), divided by the number of inspected aquaculture sites, which is then multiplied by 100. The result is expressed as an annual percentage.

$$compliance\ rate\ (\%) = \left(\frac{n-x}{n}\right) \times 100$$

More information

Through the *Fisheries Act*, Fisheries and Oceans Canada regulates the aquaculture industry in order to protect fish and fish habitat. The indicator includes all national and regional regulations under the Act that apply to aquaculture. The following are the current regulations under the *Fisheries Act* that apply to aquaculture:

- The *Aquaculture Activities Regulations* are the first national aquaculture regulations that clarify conditions under which aquaculture operators may install, operate, maintain or remove an aquaculture facility, or undertake measures to treat their fish for disease and parasites as well as deposit organic matter under sections 35 and 36 of the *Fisheries Act*.
- The *Atlantic Fishery Regulations*: the aquaculture industry is subject to these wild capture fisheries regulations.
- The *Fishery (General) Regulations* set out Canada's authorities for approving the release of fish into fish habitat and the transfer of live fish to fish rearing facilities, based on an assessment of genetic disease and ecological risk. These regulations support aquaculture management in British Columbia in conjunction with the *Pacific Aquaculture Regulations*.
- The *Management of Contaminated Fisheries Regulations* authorize Fisheries and Oceans Canada to close areas to fishing and to take other measures when biotoxins, bacteria, chemical compounds or other substances are present in fish habitat to a degree that may constitute a danger to public health.
- The *Marine Mammal Regulations* set out an authorization mechanism for the management and control of marine mammals that cause a nuisance to fisheries activities.
- The *Maritime Provinces Fishery Regulations* are similar to the *Atlantic Fishery Regulations*: the aquaculture industry is subject to wild capture fisheries regulations that impact farming practices.
- The *Pacific Aquaculture Regulations* set out Fisheries and Oceans Canada licensing and management authorities for aquaculture in British Columbia.
- The *Pacific Fishery Regulations* set out Fisheries and Oceans Canada authorities respecting fishing in the Pacific Ocean and the province of British Columbia.

Fisheries and Oceans Canada regularly inspects aquaculture operations, and keeps the results of these inspections in a database maintained by its Compliance and Enforcement Program. In addition, the *Aquaculture Activities Regulations* and the *Pacific Aquaculture Regulations* require annual reporting by the industry. These reports are tracked by Fisheries and Oceans Canada, and the results are posted on the department's website.

Recent changes

The percentage of inspections with no violations detected has been removed from this indicator to better align with Fisheries and Oceans Canada's departmental reporting and more accurately reflect inspection data.

Caveats and limitations

The database used for reporting inspections, warnings and charges is constantly being updated and data linked to inspections from previous years can be revised. In certain cases, it can take a number of years before charges

are laid and entered into the database. Therefore, the number of inspections, warnings and charges reported in previous indicator releases may vary and comparisons between releases should be made with caution.

A risk-management approach is used to determine the frequency of inspection and operations to be inspected. Individual operations may be inspected more than once per year.

The indicator is limited to regulations under the *Fisheries Act*, whereby Canada regulates the aquaculture industry to protect fish and fish habitat. However, it does not include investigations of alleged violations.

Outside of British Columbia and Prince Edward Island, the provinces and Yukon manage aquaculture activities under their own acts and regulations, as well as manage potential environmental impacts, animal welfare, and fish health and/or pest control products.

In July 2015, Fisheries and Oceans Canada brought into force the *Aquaculture Activities Regulations* under the *Fisheries Act*. The regulations clarify conditions under which all licensed aquaculture operators in Canada may treat their fish for disease and parasites, as well as deposit organic matter, under sections 35 and 36 of the *Fisheries Act*.

Resources

References

Fisheries and Oceans Canada (2013) Aquaculture statistics. Retrieved on November 28, 2022.

Fisheries and Oceans Canada (2013) Renewed Sustainable Aquaculture Program. Retrieved on November 28, 2022.

Fisheries and Oceans Canada (2017) Regulating and monitoring British Columbia's marine finfish aquaculture facilities 2017: Assessing compliance. Retrieved on November 28, 2022.

Fisheries and Oceans Canada (2018) Publications and multimedia. Retrieved on November 28, 2022.

Fisheries and Oceans Canada (2019) Aquaculture collaboration and responsibilities. Retrieved on November 28, 2022.

Fisheries and Oceans Canada (2020) Aquaculture public reporting. Retrieved on November 28, 2022.

Fisheries and Oceans Canada (2020) Fisheries enforcement. Retrieved on November 28, 2022.

Fisheries and Oceans Canada (2020) Regulating and monitoring British Columbia’s shellfish aquaculture facilities 2020. Retrieved on December 20, 2022.

Fisheries and Oceans Canada (2021) Aquaculture regulations and policies. Retrieved on November 28, 2022.

Fisheries and Oceans Canada (2021) Aquaculture science. Retrieved on November 28, 2022.

Fisheries and Oceans Canada (2022) Canadian Science Advisory Secretariat. Retrieved on November 28, 2022.

Fisheries and Oceans Canada (2023) Aquaculture Production and Values. Retrieved on January 23, 2023.

Annex

Annex A. Data tables for the figures presented in this document

Table A.1. Data for Figure 1. Percentage of aquaculture operations inspected with no charges laid under *Fisheries Act* regulations, Canada, 2011 to 2021

Year	Number of inspections	Number of warnings issued	Number of charges laid	Violation type when charges are laid	Region in which charges occurred[A]	Percentage of inspections with no charges laid
2011	204	220	3	Assault/obstruct Species/size limit Other	Gulf	98.5
2012	195	23	6	Reporting	Pacific	96.9
2013	245	24	2	Illegal transportation Reporting	Pacific	99.2
2014	494	105	1	Maximum allowable amount of biomass exceeded	Pacific	99.8
2015	296	130	0	n/a	n/a	100.0
2016	373	45	0	n/a	n/a	100.0
2017	327	96	0	n/a	n/a	100.0
2018	141	238	5	Lack of compliance with license Activities occurring outside of designated time/areas	Pacific	96.5
2019	219	58	2	Persons attempting to obstruct or hinder a fishery officer	Pacific	99.1
2020	201	39	0	n/a	n/a	100.0
2021	550	32	43	Lack of compliance with license	Pacific	92.2

Note: [A] Fisheries and Oceans Canada regions are Newfoundland and Labrador, Maritimes (Scotia-Fundy), Gulf, Quebec, Central and Arctic, and Pacific. n/a = not applicable. A risk-management approach is used to determine the frequency of inspections and operations to be inspected. Individual operations may be inspected more than once per year.
Source: Fisheries and Oceans Canada (2022).

Additional information can be obtained at:

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