

Atlantic salmon stocking in Atlantic Canada:

*An overview of legislation, activities
and socioeconomic dimensions*



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1.0 Introduction

This report provides an overview of the captive rearing facilities (e.g., hatcheries) and stocking programs for Atlantic salmon in Canada, where stocking is defined as the deliberate release of Atlantic salmon into the wild at any life stage for any purpose (North Atlantic Salmon Conservation Organization [NASCO], 2024). It summarizes relevant federal and provincial legislation, regulations, and frameworks used in Canada to manage and permit Atlantic salmon stocking activities. Based on engagement with Atlantic salmon stocking practitioners, this report also provides an overview of the socioeconomic dimensions of Atlantic salmon stocking activities in the Maritime provinces and includes a summary of key considerations to inform future policy guidance. In parallel to this report, an ongoing research partnership with Dalhousie University (Marine Affairs Program), ‘Tilling Wild Waters’, considers the social and human dimensions (i.e., values, perspectives, and experiences) of participation in cultivation-based Atlantic salmon hatchery and stocking activities throughout the Maritime provinces to: advance understanding and research; develop critical knowledge and information sharing; and, contribute to public discourse and policy recommendations.

2.0 Regulatory frameworks, policies, and guidance relevant to Atlantic salmon stocking activities

The management of the introduction and transfer of Atlantic salmon for hatchery and stocking activities is a shared responsibility between federal, provincial, and territorial jurisdictions (Table 1). Additionally, Canada is party to NASCO, an international organization established by the *Convention for the Conservation of Salmon in the North Atlantic* (1984), which aims to enable co-operation for the conservation of the species and provides international guidance for stocking of Atlantic salmon.

Table 1. List of relevant legislation, regulations, and policy frameworks used at the international, federal, and provincial level to manage Atlantic salmon captive rearing and stocking activities in Canada.

Government	Relevant Legislation & Policy
International	<ul style="list-style-type: none"> • NASCO Guidelines on the Use of Stock Rebuilding Programmes in the Context of the Precautionary Management of Salmon Stocks (CNL(04)55) • Guidelines for Stocking Atlantic Salmon (CNL(24)61)
Federal	<ul style="list-style-type: none"> • Fisheries and Oceans Canada <ul style="list-style-type: none"> ○ Fisheries Act (1985) <ul style="list-style-type: none"> ▪ Fishery (General) Regulations (1993) ▪ Maritime Provinces Fishery Regulations (1993) ▪ Newfoundland and Labrador Fishery Regulations (1978) ▪ Quebec Fishery Regulations (1990) ○ National Code on Introductions and Transfers (2017) ○ Canada’s Wild Atlantic Salmon Conservation Policy (2018) ○ Wild Atlantic Salmon Conservation Implementation Plan (2019 to 2021) ○ Canada’s national strategy to ensure the future of Atlantic salmon (2024-2036) • Environment and Climate Change Canada <ul style="list-style-type: none"> ○ Species at Risk Act (S.C. 2002, c. 29) • Parks Canada <ul style="list-style-type: none"> ○ Canada National Parks Act (S.C. 2000, c. 32) <ul style="list-style-type: none"> ▪ National Parks General Regulations (SOR/78-213) ▪ National Parks of Canada Fishing Regulations (C.R.C., c. 1120) ▪ National Parks Wildlife Regulations (SOR/81-401)

Provincial	<i>New Brunswick</i>	<ul style="list-style-type: none"> • Aquaculture Act (S.N.B 2019 c. 40) • Clean Water Act (S.N.B 1989, C-6.1) • Fish and Wildlife Act (S.N.B 1980, F-14.1)
	<i>Nova Scotia</i>	<ul style="list-style-type: none"> • Fisheries and Coastal Resources Act (S.N.S. 1996, c. 25) <ul style="list-style-type: none"> ○ Aquaculture Licence and Lease Regulations ○ Aquaculture Management Regulations ○ Live Fish Possession Regulations
	<i>Prince Edward Island</i>	<ul style="list-style-type: none"> • Fisheries Act (R.S.P.E.I. 2019, c F.13.01) • Wildlife Conservation Act (R.S.P.E.I 1988, c W-4.1)
	<i>Newfoundland and Labrador</i>	<ul style="list-style-type: none"> • Aquaculture Act (R.S.N.L. 1990, c A-13) and Regulations • Wildlife Act (R.S.N.L. 1990, c W-8)
	<i>Quebec</i>	<ul style="list-style-type: none"> • An Act Respecting the Conservation and Development of Wildlife (R.Q. 2002, C-61.1) <ul style="list-style-type: none"> ○ Regulation Respecting Aquaculture and the Sale of Fish (2025) • Atlantic Salmon Management Plan (2016 to 2026)

2.1 Federal legislation and regulation relevant to Atlantic salmon stocking in Canada

Various approaches to stocking exist that may require the handling, introduction and transfer of Atlantic salmon between environments at different life stages. In Canada, under the *Fisheries Act* (Section 4) and the *Fishery (General) Regulations* (Sections 52, 54, 55, 56) authorization under a licence is required to:

- obtain wild fish for artificial breeding or stocking purposes;
- release fish into fish habitat; and,
- transfer live aquatic organisms into fish-rearing facilities.

In Atlantic Canada, licence applications to obtain wild fish for artificial breeding or stocking purposes are reviewed by DFO Fisheries Resource Management and licence applications to release and transfer live aquatic organisms into fish-rearing facilities are reviewed by an Introduction and Transfer Committee (ITC) in each province and territory with representation from DFO (where applicable), provincial/territorial governments, and the Canadian Food Inspection Agency (CFIA) as required.

Noting that in Quebec, management of anadromous and diadromous species, including Atlantic salmon, was delegated to the province in 1922. As such, licence applications to conduct Atlantic salmon stocking activities in inland waters are reviewed by an ITC – freshwater committee chaired by the Province of Quebec and under Section 21(2) of the Quebec Fishery Regulations (1990), licences are issued by the Minister or Director responsible for the application of *An Act respecting the conservation and development of wildlife*.

Review of licence applications follows the *National Code on Introductions and Transfers of Aquatic Organisms (the Code)*, which provides a framework for assessing and managing disease, ecological, and genetic risks associated with the intentional movement of live aquatic organisms. The Code primarily provides guidance for the CFIA and the aquaculture sector, but its principles apply to Atlantic salmon stocking activities, noting Guiding Principle 2.2 in particular:

Intentional introductions and transfers support a multitude of benefits, including commercial and recreational fisheries, stock enhancement, research, education and ecological restoration.

Additionally, the Code recognizes that ongoing historic and routine introductions and transfers (i.e., movements which have been practiced in the past and movements commonly and regularly performed as part of a procedure rather than for a special reason, respectively), help to maintain socioeconomic benefits, and if determined to be appropriate, should continue. The decision-making authority or delegate may consider socioeconomic criteria and analysis which may be applied on a case-by-case basis.

Following review of a licence application, where the Fishery (General) Regulations apply, the DFO Regional Director Generals may issue an introduction and transfer licence on behalf of the Minister. Noting that for low-risk, routine movements, a licence may also be issued by an appropriate departmental representative.

According to Section 56 of the *Fishery (General) Regulations*, the Minister may issue a licence if:

- a) the release or transfer of the fish would be in keeping with the proper management and control of fisheries;
- b) the fish do not have any disease or disease agent that may be harmful to the protection and conservation of fish; and
- c) the release or transfer of the fish will not have an adverse effect on the stock size of fish or the genetic characteristics of fish or fish stocks.

For Atlantic salmon populations listed under Schedule 1 of Canada's *Species at Risk Act (SARA)* (2003), namely the Inner Bay of Fundy Atlantic salmon population (listed as endangered), further authorization of stocking activities must be obtained under Section 73 of SARA. Noting that for activities conducted in national parks of Canada, including national park reserves, national historic sites, or national marine conservation areas, authorization of designated activities may be issued by a Parks Canada superintendent, which may include research and collection permits for activities affecting SARA Schedule 1 species.

2.2 Federal policy guidance relevant to Atlantic salmon stocking

How the Government of Canada will meet its responsibility for the conservation of Atlantic salmon is detailed in the *Wild Atlantic Salmon Conservation Policy (the Policy)* (2018), which sets the goal to 'restore and maintain healthy wild Atlantic salmon populations.' Although it

makes no explicit reference to how stocking may be used to support this goal, the Policy does implicitly consider stocking by providing a definition of wild, such that ‘Atlantic salmon are considered wild if they have spent their entire life cycle in the wild and originate from parents who were also produced by natural spawning and have continuously lived in the wild.’ In addition, the Policy considers an Atlantic salmon to be wild ‘if produced through a Live Gene Bank (LGB) program’, which occurs at both federal hatcheries (i.e., the Coldbrook and the Mactaquac Biodiversity Facilities). However, no further consideration is given to what this means for the management of fish that do not meet the definition of wild.

Several commitments and/or recommendations have also been made by the federal government to develop an Atlantic salmon stocking policy, including: *the Minister’s Advisory Report “Special Report on Wild Atlantic Salmon in Eastern Canada”* (2015); *the Report of the Standing Committee on Fisheries and Oceans* (2017); and, *the Wild Atlantic salmon Conservation Policy (WASCP) Implementation Plan* (2019 to 2021). Calls for policy guidance were also heard throughout engagement on the development of Canada’s first-ever national conservation strategy for Atlantic salmon.

Feedback provided by Indigenous peoples, provincial governments, and stakeholders related to the appropriate use of stocking and varied from ‘do not stock’ to ‘invest in hatcheries like the Pacific region.’ Strong support for compromise emerged: ‘use stocking as a management tool where populations are low, alongside other conservation measures (e.g., habitat restoration, predator management activities, and elimination of aquatic invasive species).’ In particular, we heard the desire for: policy guidance to support decision making on stocking, collaborative decision making in regard to stocking proposals, and improved stocking practices that could reduce risks and enhance benefits. Indigenous peoples also expressed interest in the use of stocking as a tool to ensure social, cultural, and ecological connections to salmon are maintained for the next generations, and to restore access to Rights-based fisheries. In response, a commitment to policy guidance to support decision making for Atlantic salmon stocking activities was made in Strategic Outcome 4 of [Canada’s national strategy to ensure the future of Atlantic salmon](#), published in March 2025.

2.3 Provincial legislation, policies, and guidance relevant to Atlantic salmon stocking

Provincial governments participate in the ITC assessment process for Atlantic salmon stocking, maintaining an integrated federal-provincial approach to assessment and management of these activities, and mitigation of potential risks. In addition to federal guidance provided by the Code, a variety of provincial legislation and/or policy frameworks for management and decision making may be considered for stocking purposes (Table 1). Federal-provincial cooperation and coordination in the conservation and management of diadromous Atlantic salmon for recreational fisheries is described under Memoranda of Understanding (MOU) for New Brunswick (2001) and Nova Scotia (2003), though no specific reference to stocking is made. In Quebec, the [Atlantic salmon Management Plan \(2016 to 2026\)](#) provides specific guidance for

Atlantic salmon stocking activities in alignment with Quebec’s provincial legislation and regulations.

2.4 International guidance relevant to Atlantic salmon stocking

Under the *United Nations Fish Stocks Agreement* (1995), Canada is committed to international cooperation to ensure the long-term conservation and sustainable use of straddling and highly migratory fish stocks. As such, Canada works multi-laterally through Regional Fisheries Management Organizations (RFMOs) established by treaty for a variety of species (e.g., Pacific Salmon, Tuna). NASCO is the RFMO for Atlantic salmon which was established under the *Convention for the Conservation of Salmon in the North Atlantic Ocean* (1984). NASCO enables the 7 governments and the European Union (EU) under this Convention to cooperate to conserve wild Atlantic salmon, with the goal ‘to prioritize and drive actions necessary to slow the decline of wild Atlantic salmon populations and demonstrate that restoration is possible.’ Through resolutions and agreements, commitments are made and policy guidance is provided to support this goal.

For Atlantic salmon stocking, NASCO guidance is provided in 3 key documents:

1. [Williamsburg Resolution \(2003\)](#): seeks to minimize potential adverse effects of aquaculture, introductions and transfers and transgenics on wild stocks.
2. [Guidelines for Stocking Atlantic Salmon \(2024\)](#): provides specific advice for specific types of stocking activities, including: restoration, recovery, creation of new runs, mitigation, fishery enhancement and ranching. These guidelines also provide an overview of new approaches and alternatives to Atlantic salmon stocking, including: Smolt-to-Adult Supplementation (SAS), novel rearing environments and regimens, enrichments to the hatchery environment, and translocation of fry.
3. [Guidelines on the Use of Stock Rebuilding Programmes in the Context of the Precautionary Management of Salmon Stocks \(2025\)](#): describes the suite of management measures, including stocking, designed to restore wild Atlantic salmon stocks.

2.5 Indigenous roles and perspectives

In Atlantic Canada and Quebec, Indigenous peoples have been the stewards of Atlantic salmon – a culturally and spiritually important species – and their habitats since time immemorial. As recognized and affirmed in Section 35(1) of the *Constitution Act* (1982), Indigenous peoples have the Aboriginal and treaty right to be involved in Atlantic salmon conservation and management (Denny & Fanning, 2016).

The nature and use of Indigenous Knowledge and methodologies for the planning and delivery of Atlantic salmon hatchery and stocking programs in Canada has not yet been documented. However, Indigenous organizations and communities leading and/or participating in these programs use the relevant provincial and federal legislation, frameworks, and guidelines for management and decision-making processes. In alignment with United Nations Declaration of

the Rights of Indigenous Peoples, current federal legislative and policy frameworks, as well as internationally through the NASCO Guidelines for Stocking, there is reference to the inclusion of Indigenous Knowledge and Indigenous perspectives in the development of key considerations and guidance for Atlantic salmon hatchery and stocking programs.

3.0 Socioeconomic dimensions of Atlantic salmon stocking

3.1 Engaging with stocking practitioners

Data and information collection to inform the social and economic dimensions of this study required engagement with a variety of practitioners in hatchery and stocking activities. Preliminary engagement with individuals and organizations included discussions with hatchery staff and managers, various government departments at federal, provincial, and municipal levels, non-governmental organizations, and Indigenous organizations.

Based on preliminary engagement, key partners and collaborators were identified in the Maritime provinces. Key partners provided funding support to this project, and in addition to key collaborators from captive rearing facilities, voluntarily participated in a questionnaire which collected data on Atlantic salmon hatchery and stocking programs to inform our analysis and report. Additionally, knowledge and information on Atlantic salmon hatchery and stocking activities and licensing processes were shared by key collaborators, including the provincial governments of Prince Edward Island and New Brunswick, DFO Introductions and Transfers Committee Chairs, and DFO Aquaculture (Figure 1).

Key Partners

Key Collaborators

	Fisheries and Oceans Canada	Pêches et Océans Canada	Government of Prince Edward Island (<i>Department of Environment, Energy & Climate Action</i>)
	Dalhousie University (<i>Marine Affairs Program</i>)		Government of New Brunswick (<i>Department of Natural Resources & Energy Development</i>)
	Parks Canada (<i>Fundy National Park - Fundy Salmon Recovery Project</i>)		DFO Introductions & Transfers Committee
	Fort Folly First Nation (<i>Fundy Salmon Recovery Project</i>)		Chairs
	Government of Nova Scotia (<i>Department of Fisheries & Aquaculture</i>)		DFO Aquaculture
	Social Science and Humanities Research Council of Canada		Miramichi Salmon Conservation Centre
			Fraser's Mills & Margaree Fish Hatchery
			Abegweit Biodiversity Enhancement Centre
			Charlo Salmonid Enhancement Centre
			Dalhousie University Aquatron Laboratory
			Coldbrook & Mactaquac Biodiversity Facilities

Figure 1. List of key partners and collaborators which contributed resources, knowledge and information sharing throughout the project.

3.2 Questionnaire distribution & Data collection

A questionnaire, consisting of 37 questions related to Atlantic salmon hatchery and stocking activities for the 2022/2023 fiscal year, was distributed to partners and collaborators involved with activities at captive rearing facilities for voluntary completion in August 2023. From September to December 2023, the Socio-Economic Policy team of Domestic Fisheries Policy (in the Strategic Policy Sector) met with each project partner to review the information provided in their respective questionnaire and to discuss feedback on their experience participating in the study. Throughout Spring 2024, a presentation was delivered to project partners and collaborators, facilitating a final review of results. Note that to maintain and respect privacy and confidentiality in accordance with the Confidentiality Notice Statement of the questionnaire, this report provides only aggregate results.

4.0 Results

4.1 Overview of Captive Rearing Facilities and Stocking Activities

There exist 12 facilities rearing Atlantic salmon for stocking purposes in Atlantic Canada and Quebec (Table 2). In the Maritime provinces, 9 facilities stocked salmon in approximately 52 rivers and tributaries across the region (Figure 2).

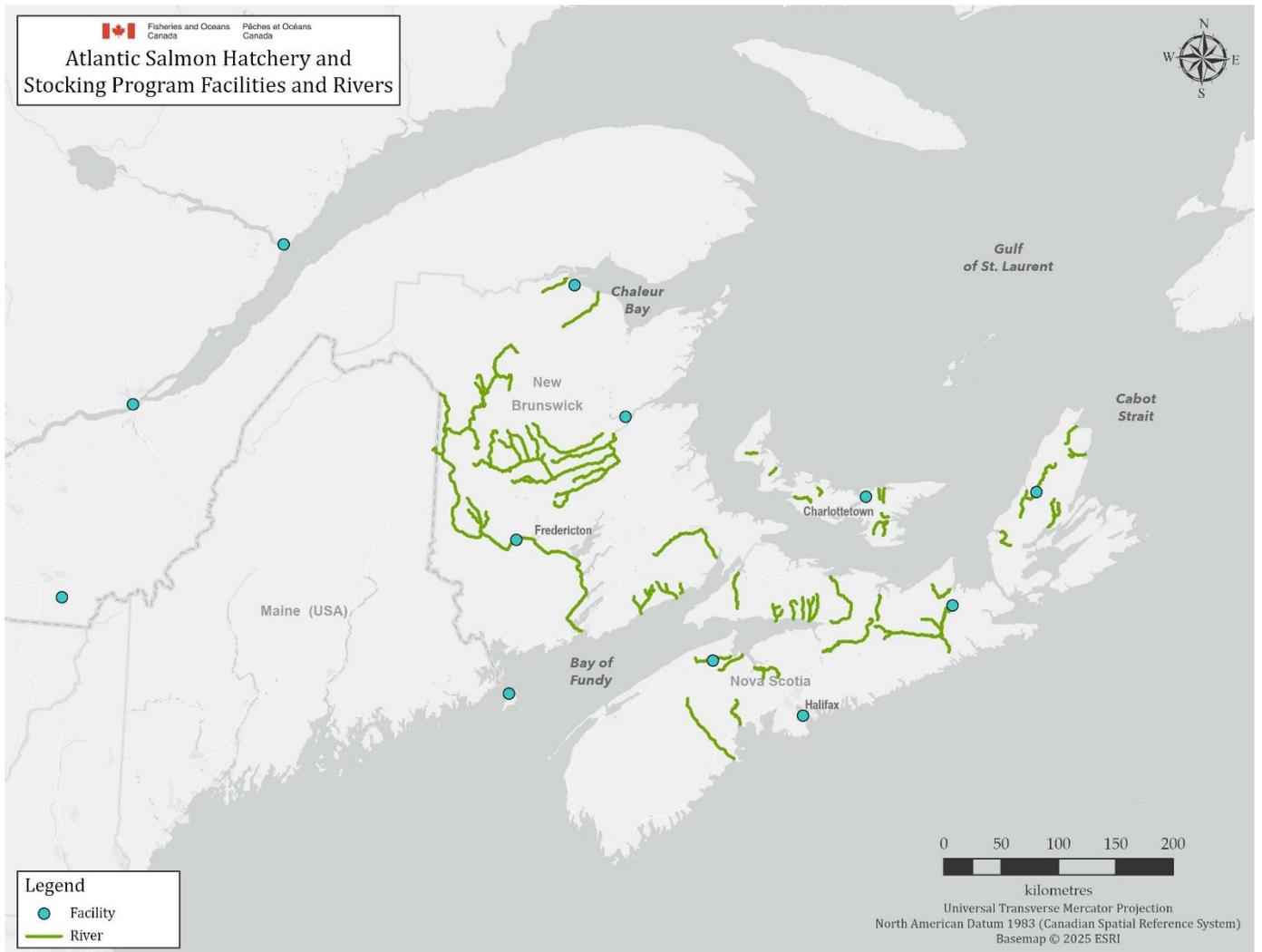


Figure 2. Map of the facilities rearing Atlantic salmon for stocking purposes (in blue) and rivers stocked (in green) across Atlantic Canada and Quebec for 2022/2023. Target rivers were intentionally rotated from year to year in some programs to minimize impacts to wild populations. Within the Atlantic salmon range, these activities occurred in 5 Designatable Units across 8 Salmon Fishing Areas and 3 Quebec Fishing Areas.

Table 2. Overview of the 12 facilities producing Atlantic salmon for stocking purposes across Atlantic Canada and Quebec for 2022/23, including each facilities' type of production as provided by project partners.

Province	Facility	Location	Ownership	Type of production
<i>New Brunswick</i>	1. Charlo Salmonid Enhancement Centre	Charlo	Private	<ul style="list-style-type: none"> • Egg-to-Juvenile
	2. Mactaquac Biodiversity Facility	French Village	Federal (DFO)	<ul style="list-style-type: none"> • Live Gene Banking (using Egg-to-juvenile and Smolt-to-Adult Supplementation)
	3. Miramichi Salmon Conservation Centre	Miramichi	Private	<ul style="list-style-type: none"> • Egg-to-Juvenile • Smolt-to-Adult Supplementation
	4. Wild Atlantic Salmon Marine Conservation Farm	Dark Harbour, Grand Manan	Combination *	<ul style="list-style-type: none"> • Smolt-to-Adult Supplementation
<i>Nova Scotia</i>	5. Aquatron Laboratory (Dalhousie University)	Halifax	Academic	<ul style="list-style-type: none"> • Smolt-to-Adult Supplementation
	6. Coldbrook Biodiversity Facility	Annapolis Valley	Federal (DFO)	<ul style="list-style-type: none"> • Live Gene Banking (using Egg-to- Juvenile and Smolt-to-Adult Supplementation)
	7. Fraser Mill's Fish Hatchery	Saint Andrews	Provincial	<ul style="list-style-type: none"> • Egg-to-Juvenile
	8. Margaree Fish Hatchery	Margaree Valley	Provincial	<ul style="list-style-type: none"> • Egg-to-Juvenile
<i>Prince Edward Island</i>	9. Abegweit Biodiversity Enhancement Hatchery	Mount Stewart	Indigenous	<ul style="list-style-type: none"> • Egg-to-Juvenile
<i>Québec</i>	10. Laboratoire aquatique de recherche en sciences environnementales et médicales (Laval University)	Québec City	Academic	<ul style="list-style-type: none"> • Egg-to-Juvenile • Smolt-to-Adult • Adult reconditioning
	11. Station Piscicole Gouvernementale de Baldwin-Coaticook	Coaticook	Provincial	<ul style="list-style-type: none"> • Egg-to-Juvenile
	12. Station Piscicole Gouvernementale de Tadoussac	Tadoussac	Provincial	<ul style="list-style-type: none"> • Egg-to-Juvenile • Smolt-to-Adult • Adult Reconditioning
<i>Newfoundland and Labrador</i>	nil	nil	nil	nil

*Property leased from the Village of Grand Manan, operated by Cooke Aquaculture, funding provided by Parks Canada and Fort Folly First Nation.

All 9 facilities operating in New Brunswick, Nova Scotia, and Prince Edward Island participated in the questionnaire. The Province of Quebec reported that 3 facilities produce Atlantic salmon for stocking purposes, but did not participate in the questionnaire. In Newfoundland and Labrador, Atlantic salmon stocking occurred historically (e.g., in the Exploits River), however, there are currently no hatcheries producing Atlantic salmon for stocking purposes in the province.

The following results report on information provided by the 9 facilities in the Maritime provinces only.

In the Maritime provinces, facilities used for Atlantic salmon stocking included those dedicated exclusively to Atlantic salmon (3 out of 9 facilities) and those that rear multiple species (6 out of 9 facilities rear at least 1 other species), including: Atlantic whitefish (*Coregonus huntsmani*), Brook trout (*Salvelinus fontinalis*), and landlocked Atlantic salmon (*Salmo salar*).

The rearing capacity of these facilities included a combination of indoor and outdoor tank space:

- For rearing eggs to fry, 6 facilities have incubation space in the form of troughs, double troughs, or a combination indoor and outdoor tanks.
- For juvenile and/or adult rearing, 7 facilities have indoor tanks capacity ranging from 22 to 114 tanks. Outdoor tanks are present at 6 facilities, with capacity ranging from 2 to 54 tanks.

Water sources used at facilities included river water (5 facilities), well water (5 facilities), sea water (2 facilities), and municipal water (1 facility). Five facilities use 2 or more of the listed water sources.

4.2 Cost of Facility Operations & In-kind support

For the 2022/2023 fiscal year, annual operating budgets, expenses, and revenue were calculated for all 9 facilities in the Maritime provinces. The average annual operating budget per facility (including support from private and/or public funding sources) was approximately \$400, 000 and the average annual expenses per facility was approximately \$670, 000.

Key partners and collaborators noted that Atlantic salmon hatchery and stocking activities provide limited opportunity to generate revenue. As a result, in-kind support (e.g., sharing of equipment, volunteers, etc.) between facilities, agencies, and other organizations, as well as funding sources and availability, were important in some cases for facility operations and program activities. In-kind support was reported to be provided or used by all facilities, with 3 out of 9 facilities reporting high to entire reliance on in-kind support.

4.3 Current and future Atlantic salmon production

Captive rearing and production of Atlantic salmon

Mate pairing and production of eggs

To maintain genetic diversity and effective population sizes during artificial spawning, a variety of approaches for mate pairing were reported including the use of factorial, random, or genetic analysis. Across all facilities, mate pairing created approximately 1,300 broodstock pairs and produced approximately 1,870, 000 fertilized eggs.

The fertilized eggs produced during artificial spawning are then reared to the desired life stage for release. Noting that for Smolt-to-Adult Supplementation (SAS), wild-capture smolts are collected from rivers, reared to their adult life stage, and are then released as adults to spawn naturally.

For each program type, the number of individuals reared to the desired life stage for release was reported:

- For SAS programs, approximately 2, 787 adults were produced from the rearing of wild-captured smolts.
- For LGB programs, approximately 1.7 million unfed fry and 2, 217 adults were produced.

Releasing Atlantic salmon into rivers

Atlantic salmon were released at a variety of life stages (Table 3), resulting in approximately 1,700,000 individuals being released across all life stages. Individuals were most commonly transferred to stocking sites by truck. For timing of release, early life stages were released from May to June, and for adults, releases occurred in October.

Table 3. Life stages released and total number of individuals released by life stage for each type of stocking activity across all 9 facilities in the Maritime provinces.

Type of Stocking Activity	Life stage released	Total number of individuals released
<i>Egg-to-Juvenile</i>	Fry	72, 904
	Parr	15, 000
	Smolts*	nil
<i>Smolt-to-Adult Supplementation</i>	Adults	2, 787
<i>Live Gene Banking</i>	Unfed fry	1, 597, 314
	Smolts	302
	Adults**	2, 217

* Insufficient data available.

** All adult Atlantic salmon released from Live Gene Banking contributed to SAS programs.

Knowledge and information used to rear and stock Atlantic salmon

Hatchery managers and stocking practitioners used a variety of information and knowledge sources to inform the planning and delivery of their programs. These knowledge types are reported in Figure 3, noting that 'Other' sources of knowledge or information reported included: data from research and monitoring, institutional knowledge, or other federal policy guidance such as from Environment and Climate Change Canada or Crown-Indigenous Relations and Northern Affairs Canada.

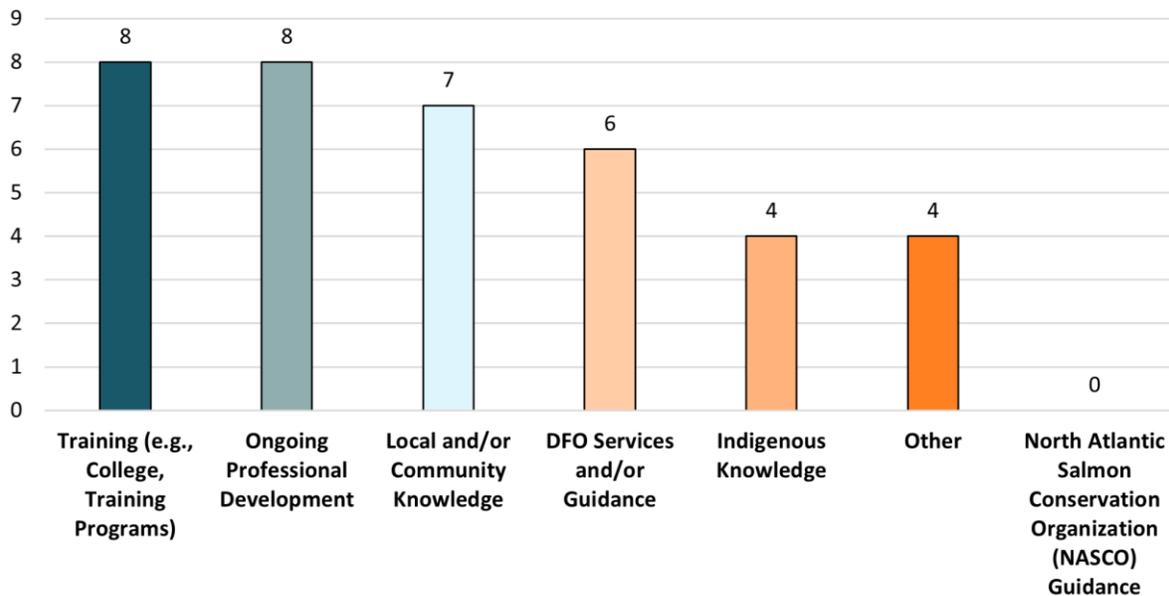


Figure 3. Types of knowledge and information sources used for decision making and the number of facilities reporting use of each type.

Future aspirations for Atlantic salmon production and stocking

In addition to questions about current production, project partners were asked about their aspirations for production in the future. For future aspirations for Atlantic salmon production, 6 facilities reported a desire to increase production, 3 facilities reported a desire to maintain current production, and no facilities reported a desire to reduce production. For the facilities that reported an aspiration to increase future production, the most commonly reported reasons include:

- Continuing use of captive rearing and stocking activities and programs as a tool for conservation and mitigation.
- Achieving viable population sizes for population recovery or restoration.
- The maintenance of recreational angling opportunities, including the maintenance of cultural significance for First Nations and iconic value for conservation groups and the public.
- Creating and maintaining Indigenous leadership and involvement in Atlantic salmon conservation.

Challenges to achieving future aspirations

Challenges to achieving future aspirations included limitations of facility infrastructure and capacity, lack of funding resources and programming to support facility operations and program activities, climate change impacts, and lack of policy guidance for stocking activities and program development.

4.4 Program objectives, opportunities, and challenges

For all stocking programs, 7 distinct objectives were identified. Some programs reported more than one objective. In order of frequency, stated objectives include:

1. Population recovery
2. Maintenance of genetic diversity
3. Enhancement of recreational fisheries
4. Mitigation of incidental mortalities from catch-and-release fishing activities
5. Mitigation of specific industrial pressures
6. Public outreach and education
7. Maintenance of the cultural significance of Atlantic salmon to Indigenous peoples

Monitoring effectiveness against stated objectives

Monitoring was used to evaluate the outcomes of stocking and to inform facility operations and program planning and delivery. Examples of monitoring measurements or indicators included: juvenile abundance and/or density following release or in subsequent years, number of adult returns, genetic variability of the population, and ecosystem productivity.

During post-release, 5 out of 9 facilities used monitoring or tracking methods to determine program efficacy and/or to later indicate the origin of fish during broodstock collection. Methods included the use of electrofishing, rotary screw traps (i.e., smolt wheels), tissue samples, genetic analysis and tracking data using tagging methods (i.e., Passive Integrated Transponder or Radio-Frequency Identification tags) or marking methods (i.e., adipose fin clipping).

Challenges and Limitations to meeting objectives

A variety of challenges and/or limitations to the facility's or program's ability to meet objectives were reported. In order of frequency, challenges included: limitations in funding and/or capacity, limitations of the facility's current infrastructure, impacts of climate change (e.g., increasing water temperatures, increased frequency of storm events, etc.) on Atlantic salmon populations and their habitat, and lack of policy guidance for stocking activities.

Opportunities to provide more support exist within DFO services

To understand what further support is needed, the questionnaire asked how DFO could improve the services or guidance it provides for facilities and programs. Key themes in the responses provided included: improvement of funding and resources for existing programs;

challenges of current permitting processes for the introduction or transfer of Atlantic salmon; and, the need for the provision of federal policy guidance and decision-making frameworks for captive rearing and stocking activities. Additional feedback included the need for: improved support for data collection and data sharing for monitoring purposes; provision of informational resources and services to support best practices for captive rearing and stocking, particularly in the face of environmental change and climate change; and, support in partnerships and collaboration in captive rearing and stocking activities.

4.5 Who is involved in Atlantic salmon stocking activities

Employment profile

Based on data provided by 8 out of 9 facilities, approximately 90 individuals were employed, 49 per cent of which are employed full-time. The remainder of the workforce was employed on a full-time seasonal basis (15 per cent), part-time (18 per cent) or as students (17 per cent). Approximately 60 per cent of this workforce were men and 40 per cent were women (no other gender identities were reported). The median age of employees was 35 years old. The majority of employees within the sector had a post-secondary education (79 per cent).

Public & Community outreach and engagement

Public and community outreach and engagement is done by 80 per cent of the facilities, noting that only 2 had specific funding available for these activities. Examples of public and community outreach and education activities included: tours of visitor interpretation centers or the facility for the public or school groups, the Fish Friends Program (i.e., an educational program for elementary school students to learn about the life cycle of salmon by raising them in their classrooms from their egg stage to release them as juveniles), collaboration with community groups (e.g., river or angler associations), co-op student and internship opportunities, and public adult salmon releases.

Volunteerism

Volunteerism was reported to be an outcome of public and community outreach and engagement important for most of these facilities and programs. Volunteers were recruited from a variety of sources, most notably colleges and universities, Indigenous communities, and local communities (Figure 4).

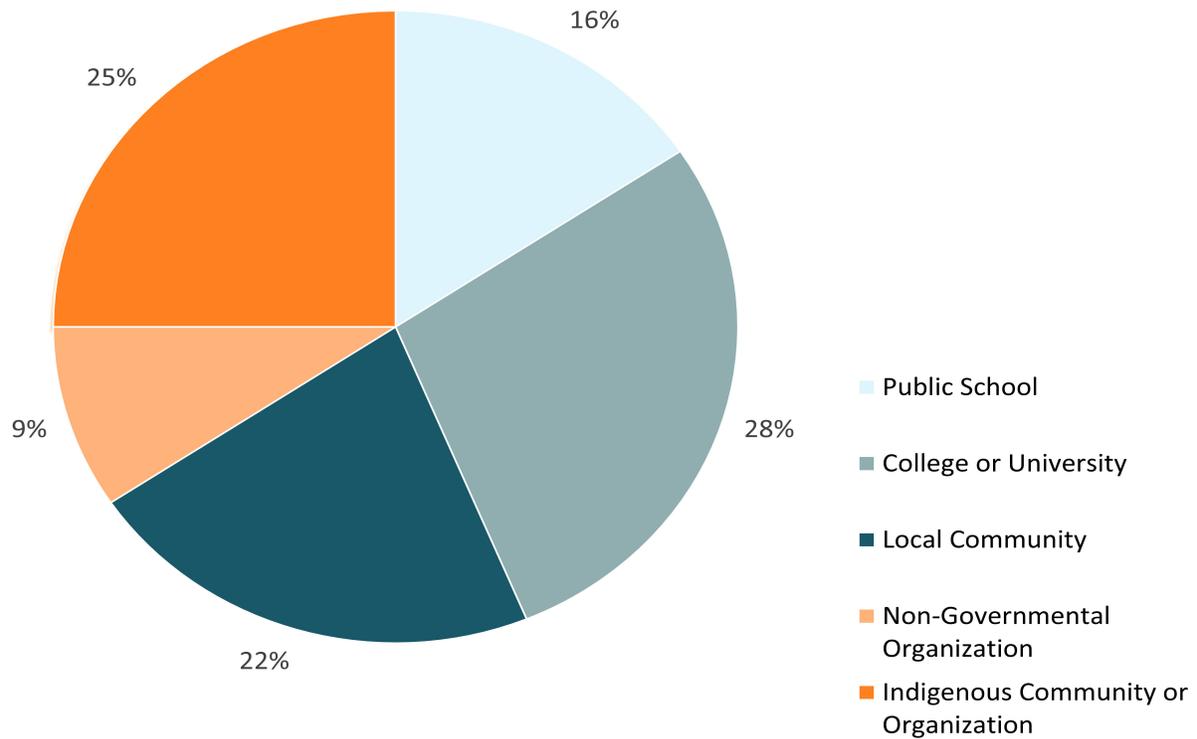


Figure 4. Sources of volunteer recruitment for Atlantic salmon hatchery and stocking activities, and facility operations at the 9 facilities in the Maritime provinces.

Volunteers participated in all stages of the production cycle, including activities related to production (e.g., broodstock collection), rearing (e.g., feeding, adipose fin clipping), and release (e.g., transportation of fish), where in some cases volunteers contributed more broadly to facility operations. However, volunteer recruitment and retention was reported as an emerging challenge over recent years. As the number of individuals volunteering has declined, facility managers described noticeable, negative impacts to the capacity and function of facility operations and program activities.

5.0 Key Findings

This study provides a snapshot of the current landscape of captive rearing facilities and stocking programs used for Atlantic salmon conservation in Atlantic Canada. The key themes which emerged from these findings could be used to support current and future decision making, as well as the development of future policy guidance.

Infrastructure, operations, and ownership models are diverse. Comparison of facilities reveals a diversity of operational models, objectives, and outcomes within this sector. As such, the characterization of facilities does not follow standardized infrastructure models similar to those used in the [Pacific Region Salmonid Enhancement Program](#). Characteristics of these facilities are highly context-specific, however, several common challenges were identified, including: aging infrastructure, limited capacity of infrastructure, and limited staffing capacity. Despite these challenges, there also exists a shared interest amongst many facilities to increase production to better contribute to salmon conservation, with an emphasis on more coordination and innovation in conducting these activities.

Atlantic salmon stocking is supported by complex networks. Captive rearing facilities and operations are interconnected and often dependent on partnerships and collaboration between several organizations – including multiple levels of government, Indigenous communities and organizations, stakeholders, and volunteers. Understanding the interconnectedness between groups is an important, though often overlooked, element to understanding and adapting decision making for current and future stocking programs. This aligns with the findings of recent literature, including an ongoing research partnership with Dalhousie University (Marine Affairs Program), which indicates that Atlantic salmon captive rearing facilities and stocking are perceived as long-standing places and initiatives that play a role in connecting communities and providing opportunities for participation in Atlantic salmon conservation (Dalby & Harrison, 2025; Harrison et al., 2018). In Atlantic Canada, these facilities and their programs are, as a result, part of complex social networks of partnerships and collaboration between individuals and organizations in local communities and the larger Atlantic salmon community (Dalby & Harrison, 2025).

Policy guidance for Atlantic salmon stocking is needed to coordinate activities and support decision-makers, practitioners, Indigenous peoples, and stakeholders. Stocking is actively practiced across 4 provinces to support a variety of objectives. However, little exists in the way of policy guidance or specific, standardized advice to support decision making specific to Atlantic salmon conservation. As a result, there is inconsistency in decision making, and a high degree of uncertainty for stocking practitioners about the future. This can lead to mistrust and tension between practitioners and decision makers. For practitioners, decisions on stocking impact operational budgets, local economies, livelihoods, and conservation efforts made for Atlantic salmon. As such, there is a call to provide clear direction for future Atlantic salmon stocking which can support better relationships between practitioners and decision makers in addition to a multitude of other benefits, including: strengthened conflict resolution within the

network and the wider Atlantic salmon community, which can support better socio-economic outcomes within the sector; better conservation outcomes for Atlantic salmon; and, increased opportunities for equal and equitable participation, innovation, and leadership in Atlantic salmon conservation.

Appendix

Appendix 1. List of rivers and tributaries in Atlantic Canada where Atlantic salmon were stocked for the 2022/23 fiscal year by province.

Province	River or Tributary Name
<i>New Brunswick</i>	Anderson Brook, Big Salmon River (including Stony Lake and Wilkins Lake), Cains River, Crow Brook Falls, Dickson Brook, Dungarvon River, Eel River, Fall Brook Falls, Jacquet River, Kennedy Lake Brook, Nackawic Stream, Odell River, Petitcodiac River, Pointe Wolfe River, Welastoq/Saint John River, River de Chute, Southwest Miramichi River, Tobique River, Two Brooks, Upper Salmon River.
<i>Nova Scotia</i>	Baddeck River, Clyburn River, Cornwallis River, Debert River, Economy River, Folly River, Gaspereau River, Great Village River, Herbert River, LaHave River, Mabou River, Margaree River, Meander River, Middle River, Rivers of the Northumberland Strait, Portapique River, St. Mary's River, Salmon River (Colchester Co.), St. Croix River, Stewiacke River, Waughs River, West River.
<i>Prince Edward Island</i>	Bristol Creek, Brudenell River, Dunk River, Mill River, Montague River, Morell River, Trout River, Valleyfield River.
<i>Quebec</i>	Unknown
<i>Newfoundland and Labrador</i>	Unknown

Glossary

Adult Reconditioning	Capture of adult salmon returning to saltwater environments post-spawning (i.e., kelts) to be reconditioned in a captive rearing facility as broodstock.
Broodstock	Mature adults used for breeding purposes.
Captive Rearing	The raising of fish from egg or juvenile life stages for release into the wild.
Early life stages	Life stages including egg, fry or parr.
Egg-to-Juvenile	Uses broodstock collected to obtain fertilized eggs which are reared until early life stages and then released as juveniles.
Enhancement	Augmentation of wild fish stocks by the release of fish into river systems at different life stages.
Indigenous Knowledge	A set of complex knowledge systems based on the worldviews of Indigenous peoples.
Indigenous Methodologies	Research approaches based on ways of knowing, being, and doing grounded in Indigenous Knowledge.
Introduction	Intentional or accidental release of a species into an environment outside its native or natural range.
Live Gene Bank	A Live Gene Bank is a program that has a primary objective of archiving a collection of tissue from a stock, the progeny of which may be used to restore wild populations.
Mitigation	Stocking conducted to mitigate loss of individuals or of production due to an activity.
Population Recovery	Re-establishment of wild self-sustaining populations.
Rehabilitation	Rebuilding of a fish population toward a level that is best supported by the current state of the environment.
Restoration	The re-establishment of a fish species in an area in which they were previously found.
Smolt-to-Adult	Captive rearing method which raises juvenile salmon until their adult life stage as broodstock to obtain fertilized eggs which are then reared until early life stages and then released as juveniles. Adults are not released.
Smolt-to-Adult Supplementation	Captive rearing method which raises juvenile salmon until their adult life stage prior to release for supplementation purposes.
Stocking	The release of fish into the wild at any life stage for any purpose including enhancement, mitigation, rehabilitation, or restoration.
Transfer	Movement of fish from one location to another, including between facilities or to the natural environment.

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