New Brunswick Rainbow Trout Aquaculture Policy

2016

Department of Energy and Resource Development

Department of Agriculture, Aquaculture and Fisheries

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New Brunswick
rainbow trout zones

1. *New Brunswick Rainbow Trout Aquaculture Policy*

1.1 Overview

Rainbow trout ***Oncorhynchus mykiss*** is a native fish of the eastern Pacific and the freshwater west of the Rocky Mountains. Rainbow trout were first introduced into New Brunswick in 1899 for the recreational fishery. Rainbow trout have also been cultured in private and commercial ponds within the province. As a result of intentional or unintentional introductions, some self-sustaining (naturalized) populations have established in New Brunswick. To prevent the threat to native fish stocks, mitigation measures such as containment and the use of non-breeding stocks have been implemented and supported by the Department of Energy and Resource Development and the Department of Agriculture, Aquaculture and Fisheries.

The culture of rainbow trout, as with other aquaculture activities, requires an Aquaculture Licence from the Department of Agriculture, Aquaculture and Fisheries as per sections 7 and 8 of the *Aquaculture Act*.

1.2 Requirement for Policy

This policy describes a process to simultaneously support the development of rainbow trout aquaculture and mitigate risks to wild stocks for New Brunswick.

Rainbow trout are recognized by the New Brunswick aquaculture industry as a viable species for

culture. At the same time, it has been documented that the establishment of rainbow trout in the wild has the potential to negatively impact native Atlantic salmon and brook trout stocks.

1.3 Policy statement and objectives

Rainbow trout may be reared in private and commercial aquaculture operations in New Brunswick subject to terms and conditions that prevent the threat to native fish stocks.

Policy Objectives:

1. Support/facilitate the continuation of private and commercial rainbow trout aquaculture operations in New Brunswick.
2. Protect the wild fish stocks of New Brunswick from further introduction of rainbow trout into their habitats by:
   - establishing acceptable operational requirements for the aquaculture industry regarding the culture of rainbow trout, designed to prevent potential negative effects on native fish stocks without unduly impeding the aquaculture sector;
   - providing a standardized inter-departmental mechanism for the review of rainbow trout culture licence applications under the direction of the Department of Agriculture, Aquaculture and Fisheries;
   - respecting federal and provincial acts, regulations, and policies related to conservation and aquaculture activities;
   - establishing rainbow trout culture zones for New Brunswick.

1.4 Scope and application

- This policy applies only to aspects of private and commercial aquaculture rearing of rainbow trout.
- This policy does not apply to rainbow trout research.
- This policy does not apply to stocking or enhancement of public waters.

2. Definitions

2.1 All-female stocks

The production of stocks that are all females. Populations that do not contain male rainbow trout.

2.2 Aquaculture

The cultivating of aquatic plants and animals but does not include cultivation of aquatic plants and animals in a laboratory for experimental purposes or in an aquarium.

2.3 Aquaculture site

A site, specified in an aquaculture licence, at which aquaculture is to be carried out, is carried out or was carried out.

2.4 Aquatic organisms

All organisms including finfish, mollusks, crustaceans, echinoderms, and other invertebrates and their lifestages defined as "Fish" in the *Fisheries Act* (Canada) as well as marine and freshwater plants.

2.5 Commercial Aquaculture Licence

A class of aquaculture licence that permits a licensee to conduct aquaculture for commercial gain.

2.6 Fish-out ponds

A fish rearing facility constructed for the culture or stocking of fish for the purposes of fishing.

2.7 Grow-out

The production and rearing of rainbow trout from a fingerling size (about 5g) to a market size.

2.8 Hatchery

A land-based facility that raises trout from the egg stage to a post first feeding size (about 5g).

2.9 Naturalized species

Introduced species that have become established and have formed self-sustaining populations.

2.10 Non-indigenous species

Species not originating or occurring naturally in a particular environment; or introduced outside its native or natural range.

2.11 Private Aquaculture Licence

A class of aquaculture licence that authorizes the licensee to carry out aquaculture for private use and not for commercial gain.

2.12 Rainbow trout culture zone

Geographical divisions of the province, based on major watershed drainages, governing the culture of rainbow trout.

2.13 Registrar of Aquaculture

An employee appointed by the Minister of Agriculture, Aquaculture and Fisheries as Registrar of Aquaculture, under the *Aquaculture Act*.

2.14 Sterile

Not able to reproduce young or incapable of producing offspring. For the purposes of this policy, sterile stocks mean triploid stocks.

2.15 Triploid

Mixed sex or all female populations having three sets of chromosomes are considered sterile. Triploid rainbow trout are considered sterile after testing shows triploidy at the 95% confidence level by a recognized method and laboratory.

3. Procedures for licensing rainbow trout aquaculture facilities

3.1 Administrative roles and responsibilities

3.1.1 Applications for new and renewed licences.

Proponents seeking a private or commercial rainbow trout aquaculture license must submit an application to the Registrar of Aquaculture, Department of Agriculture, Aquaculture and Fisheries, as per section 7 of the *Aquaculture Act*.

Licence application forms and guides are available at all Department of Agriculture, Aquaculture and Fisheries offices and on the department website.

Issuance of a rainbow trout private or commercial aquaculture licence in no way conveys responsibility or liability to the Government of New Brunswick. The licensee assumes all responsibility and liability for the operation of the facility as prescribed in the conditions of the licence. This policy does not exclude any other responsibilities or liabilities under other acts, regulations or policies.

The proponent must complete all parts of the rainbow trout licence application before an application will be processed.

Upon receipt of the licence application, the Department of Agriculture, Aquaculture and Fisheries will complete an initial site visit with the proponent.

All applications will be reviewed by the Rainbow Trout Licensing Committee. The Registrar of Aquaculture will inform the applicant of the approved terms and conditions upon which a rainbow trout aquaculture licence shall be issued.

3.1.2 Other approvals

Aquaculture operations must satisfy all provincial and federal legislation, and obtain all other required permits or licences in addition to their aquaculture licence, including, but not limited to:

- Watercourse Alteration Permit, Groundwater Source Permit, Approval to Construct and Approval to Operate from the Department of Environment and Local Government).

- New Brunswick Introduction and Transfer Licence pursuant to section 56 of the Fishery (General) Regulation - *Federal Fisheries Act* - a requirement for operations that introduce or transfer fish within or into New Brunswick.
- Provincial and federal fish health regulations must be obeyed.
- Import Permit from Canadian Food Inspection Agency (CFIA) and the National Aquatic Animal Health Program (NAAHP).
- Inland Movement Testing (Department of Agriculture, Aquaculture and Fisheries).

3.1.3 Containment standards and terms and conditions of an aquaculture licence

Containment guidelines have been established to prevent escapement of rainbow trout from freshwater facilities. These standards, *Containment Standards for Land-based Rainbow Trout Aquaculture Facilities,* have been developed through consultation with industry and various government agencies and are subject to revisions based on development of new technology. Containment standards shall be specified in the terms and conditions of a licence as issued by the Registrar of Aquaculture.

3.2 Rainbow trout culture zones

For the purpose of rainbow trout aquaculture, the province is divided into two zones based on potential ecosystem risks, and respecting neighbouring jurisdictions that share common watersheds. Activities approved by zone are based on historical use and ecological risks. See Appendix A.

The activities approved in each zone are as follows:

3.2.1 Zone 1 – Bay of Fundy drainage

Rainbow trout have been introduced and/or have become naturalized (historical area for culture of rainbow trout):

- Cage culture may be permitted in sea and tidal estuary areas using triploids only.
- Broodstock facilities will be considered on a case-by-case basis.
- Only triploids or all females are permitted in all other operations.
- Land-based operations must comply with containment standards noted under Appendix B.

3.2.2 Zone 2 – Northumberland Strait and Bay of Chaleur

Rainbow trout are considered an exotic, non-indigenous species, with little to no previous culture occurring:

- No cage culture permitted for rainbow trout.
- Only triploid stocks permitted.
- Movements of live fish will only be permitted from a hatchery operation.
- No private licences for rainbow trout.

- No broodstock facilities will be permitted.
- No new commercial fish-out ponds for rainbow trout.
- Land-based operations must comply with containment standards noted under Appendix B.

3.3 Compliance

- Protocols on inspection criteria will be determined by the Department of Agriculture, Aquaculture and Fisheries as well as the Department of Energy and Resource Development.
- Scheduled inspection of all proposed and licensed rainbow trout aquaculture facilities will be the responsibility of the Department of Agriculture, Aquaculture and Fisheries.
- As part of the final licence approval process all rainbow trout facilities will be inspected by Department of Agriculture, Aquaculture and Fisheries staff. Other government agencies may be invited to attend these inspections.
- Enforcement and compliance lies with the Department of Agriculture, Aquaculture and Fisheries by authority of the *Aquaculture Act*.
- Should any department or agency become aware of activities of alleged non-compliance or complaints, each respective department will ensure the other department is informed as per inter-departmental agreement on protocols.
- The Department of Agriculture, Aquaculture and Fisheries will provide the Fish and Wildlife Branch, Department of Energy and Resource Development, with information on any follow up action taken regarding compliance and enforcement where legally permissible.

3.4 Changes to the Policy

Modifications or exceptions to this policy may occur if the the Department of Agriculture, Aquaculture and Fisheries as well as the Department of Energy and Resource Development are confident those modifications or exceptions are required to support rainbow trout aquaculture and they continue to maintain or enhance protection to wild fish stocks in the province. This policy will be subject to review in 2019.

4. Conformity with other legislation and policies

The *New Brunswick Rainbow Trout Aquaculture Policy* is not a substitute for existing legislation, or licence requirements under the federal Fishery (General) Regulations.

The New Brunswick Introductions and Transfers Committee has committed to adopt the policy as its official protocol for providing guidance relating to applications involving movements of rainbow trout. The issuance and enforcement of the Introductions and Transfers licence lies with Fisheries and Oceans Canada pursuant to the *Fisheries Act*.

Consultation with First Nations:

The Department of Agriculture, Aquaculture and Fisheries may require applicants to consult

with First Nations should there be a need to mitigate any impacts to Aboriginal or treaty rights in accordance with the Government of New Brunswick *Duty to Consult Policy* and any other relevant policy developed by the Government of New Brunswick.

5. Authorities

5.1 Departmental authority

- *New Brunswick Aquaculture Act 2011* and Regulation 91-158
- *New Brunswick Fish and Wildlife Act* and Regulation 82-103

5.2 Other applicable acts, regulations and policies

- *New Brunswick Clean Environment Act* and Regulation 87-83
- *A Wildlife Policy for New Brunswick 1995 – Wildlife Populations and Values and Uses of Wildlife*
- *Bay of Fundy Marine Aquaculture Site Allocation Policy*
- *Fisheries Act (Canada)*
- Fish Health Protection Regulations (Canada)
- NAAHP, *National Aquatic Animal Health Program Health of Animals Act* and Health of Animals Regulations
- *National Code on Introduction and Transfers of Aquatic Organisms*

6. Policy inquiries

Inquiries concerning this policy may be directed to the regional aquaculture leasing and licensing officer at the following regional offices of the Department of Agriculture, Aquaculture and Fisheries:

St. George	Shippagan	Bouctouche
Tel: 506-755-4000	Tel: 506-336-3751	Tel: 506-743-7222
Fax: 506-755-4001	Fax: 506-336-3057	Fax: 506-743-7229

Approved by:

_____

Jean Finn, Deputy Minister of Energy and Resource Development and
Deputy Minister of Agriculture Aquaculture and Fisheries

2016

7. Appendices

A: Map of rainbow trout culture zones

B. Containment standards for land-based rainbow trout aquaculture facilities

1. Goal

The goal of the standards presented here is to protect wild fish stocks of New Brunswick from further introduction of rainbow trout into their habitats.

2. Standards

Each proposal will be reviewed on a case-by-case basis. The following standards must be adhered to in establishing containment procedures for rainbow trout aquaculture facilities:

- The facility must have a mechanism to prevent unauthorized access to the site.
- The facility cannot be located within the floodplain of a river. Please refer to the Department of Environment and Local Government, Environment Division.
- The Aquaculture Licence application must include a detailed sketch of the proposed contain-

ment plan providing all aspects of design, construction and the location on site. Information on equipment used for containment must also be provided.

- Any facility using surface water will be required to adequately screen the rearing unit inlet or have sufficient head-drop to prevent fish passage at all water levels. (See: Design and Maintenance Standards of Screening And Containment Systems).
- Rearing units must be constructed and plumbed in such a way, and with materials, that prevents the possibility of structural failure and fish escapement.
- Each rearing unit outlet must be screened according to the size of fish as outlined in Table 1 or Table 2.
- All effluent should be concentrated into one outlet.
- Final effluent must pass through an approved containment system upon release from the facility prior to being discharged to another body of water. As determined during a site visit by the Department of Agriculture, Aquaculture and Fisheries, if the possibility of fish escapement into a natural watershed exists, more stringent containment measures (i.e. a filter) may be required.
- A contingency plan must be submitted with the Aquaculture Licence application that indicates the course of action in the event of a tank failure or system failure to ensure all rainbow trout are contained to the site.
- Any fish escapements must be reported to the Department of Agriculture, Aquaculture and Fisheries as well as the Department of Energy and Resource Development within 24 hours of the operator's awareness of the escapement.

Design And Maintenance Standards of Screening and Containment Systems

Screens are the most commonly used barriers to prevent the unwanted movement of fish in culture facilities. They are used to block both upstream and downstream movement through the inflow and outflow pathways, and to prevent fish from escaping the facility. Other types of containment measures may be considered but need to be pre-approved by the Registrar of Aquaculture in consultation with the Department of Energy and Resource Development, before being put into use. Described below is an example of the basic requirements needed for a standard screening containment system.

a) Standards

- Perforated aluminium or stainless steel material is required. Material such as chicken wire and plastic mesh are not suitable as they are difficult to clean, easily damaged and unable to withstand winter conditions.
- Grow out facilities will use 16-gauge thickness screening for large mesh screens and hatcheries will use 18-20 gauge screening for small mesh screens.
- For extra rigidity, screens must be made up of panels mounted on metal or rigid frame.

- The screen panel must fit snugly in the guides so that spaces larger than the clear opening in the mesh do not occur.
- Water levels must not exceed more than half the screen height.
- The screen shall be cleared of debris on a daily basis.

b) Inlet for rearing units where upstream fish passage is possible

- Two slot guides, one for a regular screen and one for a spare screen used during maintenance and cleaning, must be provided.
- A screen must be installed perpendicular to the water flow at all times.
- To accommodate maintenance and cleaning operations, the spare screen is placed into the spare slot guides while the first panel is removed for maintenance or cleaning.
- Where pipes are used, flattened and expanded metal screens must be moulded over the pipe and secured with a metal clamp.
- As determined by a site visit, if fish passage is highly probable, more stringent containment measures on the inlet structure may be required.

c) Outlet for final effluent discharge

- Screens must be made up of panels mounted on metal or rigid frames.
- Three sets of slot guides positioned in succession must be provided.
- Three screens are continuously installed perpendicular to the water flow (i.e., triple screening system. See Triple Screening System Structure diagrams).
- To accommodate maintenance and cleaning operations, the spare screen is placed into the slot guides when the first panel is removed for maintenance or cleaning.
- For purpose of maintenance, only one screen should be removed at a time for cleaning and immediately replaced.
- Order of screen removal must be such that screens are removed and cleaned in an upstream direction.

d) Individual rearing unit screening

- Each rearing unit outlet (i.e. tank, raceway) must have screening or standpipe opening of sufficient size according to the size of the fish outlined in Table 1 and Table 2.

Screening requirements for rainbow trout culture

Table 1: Standard horizontal oblong screen slots.

Fish weight (g)	Fish length		Slot size	
	cm	inches	Width (mm)	Length (mm)
0 - 0.45	0 - 3.8	0 - 1½	1.6	3.2
0.45 - 2.3	3.8 - 6.4	1½ - 2½	3.2	6.4
2.3 – 15	6.4 - 11.4	2½ - 4½	6.4	12.7
> 15	11.4	4½	12.7	19.1

Reference: Fish Hatchery Management, U.S. Fish and Wildlife Service.

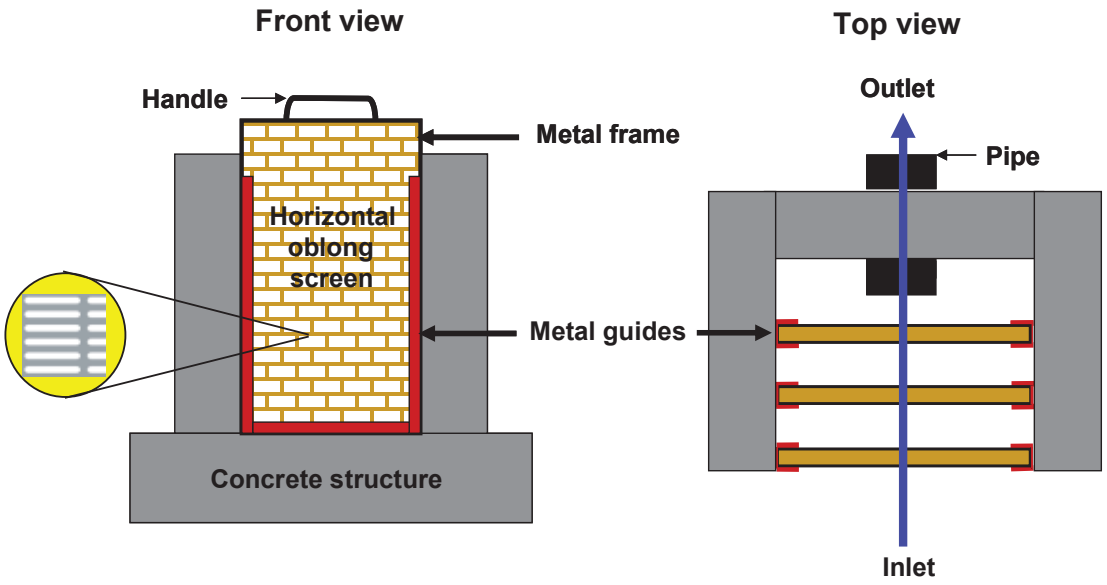
Table 2. Standard round screen openings

Fish length		Fish weight		Required screen spacing	
mm	inches	grams	ounces	mm	inches
51	2	1.5	.05	5	3/16
76	3	5	.17	10	3/8
127	5	28	1	13	½
203	8	114	4	19	¾
305	12	284	10	25	1
381	15	681	24	35	1 3/8

Reference: Alberta Agriculture, Food and Rural Development, Aquaculture Section.

Alternate designs will be reviewed on a case-by-case basis, to be reviewed with each application and requiring a recommendation by the Rainbow Trout Licensing Committee.

Triple screen system culture



Note: **Wherever the screens may be installed, you have to make sure the screen panels fit snugly in the metal guides. Therefore, it is important to fix the metal guides on both sides and bottom of the concrete structure.**