

Aquaculture

How can I help ensure that an aquaculture operation is NOT having a negative impact on water quality?

**Deborah Carver, Executive Director
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Definition

Commercial husbandry of fish, plants or shellfish in contained spaces, fresh or ocean waters.

ECELAW's community inquiries most interested in open netcage salmon farming in tidal waters.

The Aquaculture industry

- Aquaculture equals 50% of world fisheries output for human consumption, doubled from 1996 – 2006 (FAO)
- Capture fishery will soon peak at 100 million Tonnes; aquaculture continues to grow
- Aquaculture equals 33% of Canada's fisheries output for human consumption and could double in 10 years.

Canada aquaculture output

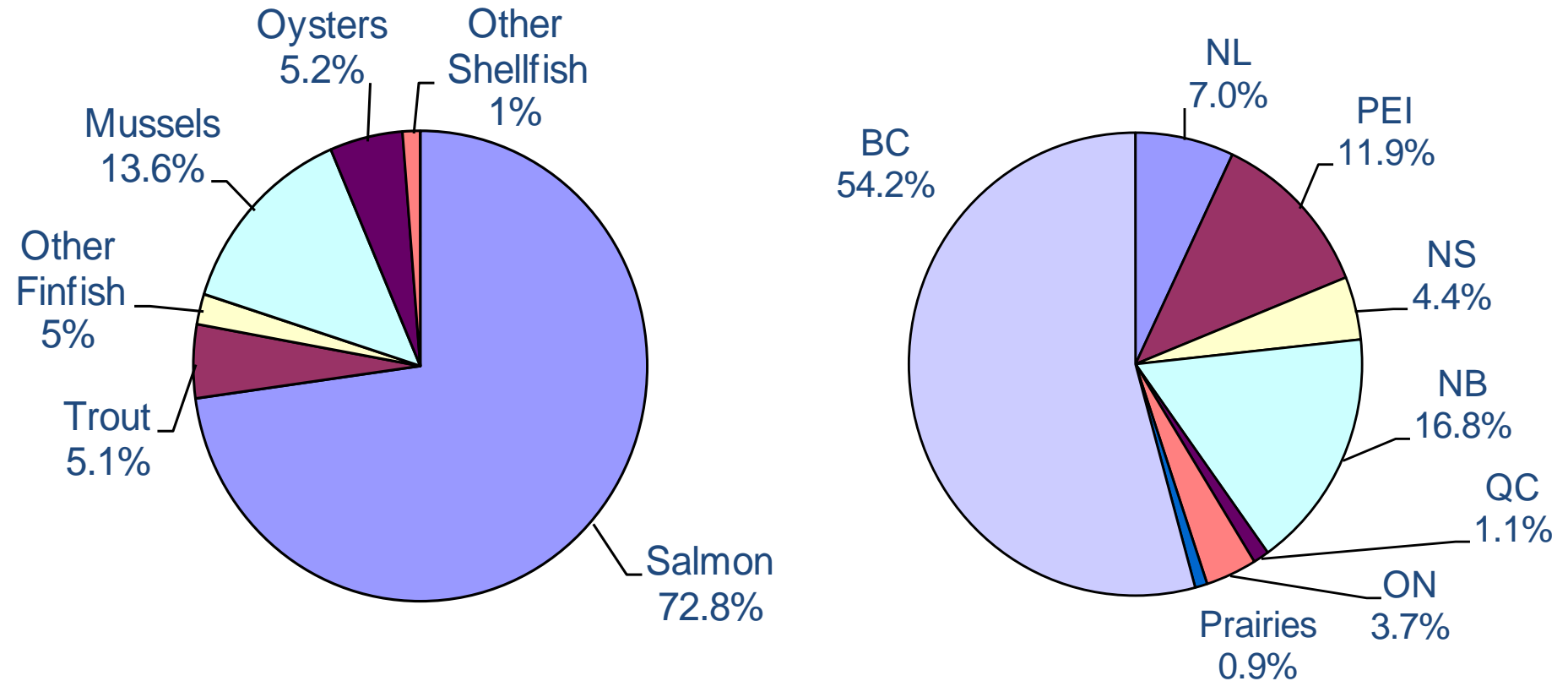


Figure 1: Canadian aquaculture output by species and province (metric tonnes 2008).
(Data Source: Statistics Canada 2010)

**Nova Scotia
aquaculture output
2008: \$36M
2009: \$57M

2015 target: \$125 M**

**NOVA SCOTIA FISHERIES AND AQUACULTURE
Aquaculture Production and Sales
2009**

SPECIES	PRODUCTION (KGS.)	VALUE \$	% OF TOTAL VALUE
Atlantic Salmon/Rainbow Trout (Marine)	7,437,590	43,017,671	74.33%
Atlantic Salmon (Landbased, Hatchery, Nursery)	112,393	2,756,032	4.76%
Rainbow Trout (Landbased, Hatchery, Nursery, U-Fish)	133,325	1,329,967	2.29%
Arctic Char	93,475	542,545	0.94%
TOTAL FINFISH	7,776,783	47,646,215	82.32%
Blue Mussels	1,892,876	2,628,636	4.54%
Bay Quahogs	538,738	2,056,827	3.55%
American Oysters	158,742	676,105	1.17%
Giant Sea Scallops	2,561	22,754	0.04%
TOTAL SHELLFISH	2,592,917	5,384,322	9.30%
Confidential Species			
*Marine Plants	(c)	(c)	(c)
*Atlantic Halibut	(c)	(c)	(c)
*Bay Scallops	(c)	(c)	(c)
*American Eels	(c)	(c)	(c)
*Brook Trout (U-Fish)	(c)	(c)	(c)
*Striped Bass	(c)	(c)	(c)
*European Oysters	(c)	(c)	(c)
*Clams	(c)	(c)	(c)
TOTAL CONFIDENTIAL	147,052	4,846,987	8.38%
GRAND TOTAL	10,516,752	57,877,524	100%

*(c) To protect the confidentiality of individual licensees, production figures for species with three or fewer producers are not listed separately in this data.

The Aquaculture controversy

The first major resource sector in Canada to grow up in the new realities of economic globalization, heightened public and stakeholder sensitivity to environmental degradation, and powerful Aboriginal and stakeholder rights movements.

The Aquaculture Controversy in Canada, Young and Matthews, UBC Press 2010

The Aquaculture controversy

- Aquaculture is a recent entrant to natural resource industries after adoption of sustainability and precautionary principles
- Raises complex issues re environment, human health, rights, rural development
- Lack of scientific consensus and confidence
- Dual government role of promoter and regulator
- Governance challenges: market demand / environmental dialogue / need to build confidence

Benefits of Aquaculture

Aquaculture, not the Internet, represents the most promising investment opportunity of the 21st century.

Nobel prize-winner and economist Peter F. Drucker

Benefits of Aquaculture

- Farmed fish can take the pressure off wild stocks
- Employment for coastal communities
- Healthy, affordable food
- Uses fish meal / oil from trimmings and fish for which there is little or no demand
- Export sales

Risks of aquaculture

Direct environmental issues:

- Disease and sea lice and transfer to wild populations
- Effect of antibiotics and chemicals on local non-target organisms
- Impacts beneath the farm on biodiversity
- Impacts beyond the farm: nutrient release; interaction with critical or sensitive habitats and species (far-field effects)

Other issues

- Sustainability of culturing carnivorous fish
- User conflicts
- Cumulative effects
- Predator/prey interaction and destruction e.g. entanglement or drowning
- By-catch – species swim into netcages and are eaten or harvested illegally.
- Carbon footprint

Regulatory considerations

- Fishery or agri-food business?
- Transparency: governance by legislation/regulation vs. guidelines, policies and licence conditions
- Science-based monitoring and reporting on impacts
- Public access to monitoring data
- Effectiveness: Adequate funding and enforcement
- Equity: the relative equities of granting public tenure to aquaculture vs. other uses

The Constitutional regime for aquaculture

- Federal jurisdiction: seacoast and inland fisheries
- Provincial jurisdiction: property and civil rights
- Provincial offshore territory: may include within the “jaws of the land” and territory of province at confederation

The constitutional and jurisdictional overlap

- A province can grant rights to the seabed within its territory, subject to Aboriginal entitlements and federal regulatory power.
- Federal government can grant rights to the seabed beyond provincial territory.
- Public rights of navigation and fishing may only be removed by federal legislation.

Saunders and Finn “Property Rights in Canadian Aquaculture” in *Aquaculture Law and Policy*, VanderZwaag and Chao, editors, Routledge 2006, page 140

Federal Management

Federal responsibilities

- *Canadian Environmental Assessment Act (CEAA)*: assessment of potential adverse environmental effects
- *Fisheries Act*: impacts on fish or fisheries
- *Navigable Waters Protection Act (NWPA)*: navigable waters approvals
- *Species at Risk Act (SARA)*

Federal Management

- Lead Department: DFO
- Other federal departments and Agencies:
 - CEAA
 - Transport Canada: navigable waters
 - Environment Canada: toxic substances and ocean dumping
 - Health Canada: Veterinary Drugs Directorate; Pest Management Regulatory Agency
 - Canadian Coast Guard
 - CFIA (shellfish)

Environmental Assessment (EA)

Federal environmental assessment under *Canadian Environmental Assessment Act* (CEAA) required if:

- any federal department is conducting the work
- federal funds
- federal land or land access
- federal approval under a “Law List” regulation e.g.
 - approval by the Minister of Transport (Navigable Waters Protection Act, section 5(1)).
 - Section 35 of the Fisheries Act HADD authorization

CEAA Requirements for proponent

- Submit Environmental Impact Statement

CEAA Process

- Responsible Authority RA manages...usually Transport Canada
- Screening level
- Interdepartmental consultation
- Public notice via CEAA registry
- Proposed changes with Budget Bill 2010

DFO Fisheries Act Habitat Assessment

- Proponent submits baseline information
- Marine Finfish Aquaculture Decision Support System (MFADSS): a “traffic light” guideline to assess environmental variables for finfish aquaculture sites
- 5 overriding variables must all be met:
 - adequate depth
 - adequate current-speeds
 - minimum distance to nearest existing aquaculture site
 - minimum distance to critical fish habitat
 - minimum distance to endangered species

Provincial Management

Provincial responsibilities

Guided by:

- Canada- N.S. Memorandum of Understanding (MOU):
- Canadian Council of Fisheries and Aquaculture Ministers (CCFAM)

Fisheries and Coastal Resources Act

N.S. Department of Fisheries and Aquaculture (NSDFA)

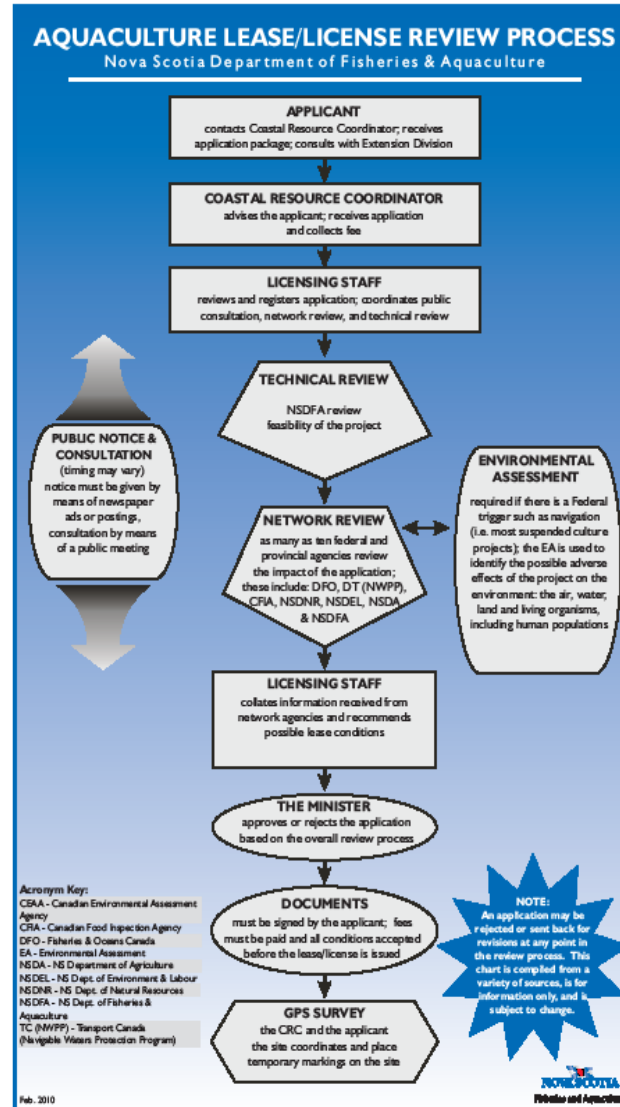
- administers leasing and licensing for all near shore activities:
 - underwater land leases (siting)
 - operational licences
 - activities including containment and waste management
 - aquatic animal health
 - public consultation and information

Siting

- Criteria currently based on guidelines
- *Road Map for Aquaculture Investment in Nova Scotia (2010)* identifies suitable areas for development:

This study is not a detailed investigation of site-level conditions, nor does it speak to the feasibility of individual aquaculture operations. This study is not intended to be used for environmental assessment or permitting purposes, but rather as a strategic-level guide for future development of the industry.

Lease/ Licensing Process: NSDFA as the “sti handler”



Rights

What does a licence grant?

s. 44(3) Unless otherwise restricted by this Part or the terms of the licence, the granting of an aquaculture licence carries with it the exclusive right to possession of the water column and sub-aquatic land described in the licence upon such terms as may be prescribed.

Proponent requirements

- Marine Finfish Development Plan, with contents determined by staff
- Recommendations / No minimum standards

Network Review

Prior to making a decision on an application, NSDFA:

- required to consult with NS Agriculture, NS Environment, Service NS and Municipals Relations, DNR, etc.
- provides to DFO and DT (Canada) for environmental assessment, habitat assessment, navigable waters permit and other comment

Public Consultation

NSFDA manages consultation:

- project proposals to be advertised
- usually public meeting or open house
- public hearing or ADR discretionary
- Regional Aquaculture Development Committees (RADACs) no longer in use

Public hearing:

- s.48(c): the Minister may refer the application to a public hearing
- Minister shall:
 - appoint an official of the Department to conduct the public hearing in the manner prescribed by the Minister.
 - give notice of the hearing by publishing at least once a week for two successive weeks in daily and weekly newspapers

Decision to grant lease and licence

- Ministerial decision is made on basis of reviews, comments, consultation
- Licence conditions on term (10 + 5 + 5), species, technology and as per comments received
- right of Appeal to Minister and to NS Supreme Court by a “person aggrieved” s. 118,119
- all information held by NSDFA available to public (subject to FOIPOP)

Compliance:

- regulation through conditions of licence
- voluntary code of practice
- emphasizes self-regulation and monitoring
- no minimum standards
- ongoing records required re transfers, diseases, food, medication, sales

Environmental Monitoring Program

- monitoring of leased sites and reference sites : water column, sediments
- Target for 2010-11: 64% of all marine aquaculture sites have baseline data collected.
- Ultimate target: Complete baseline sampling for all marine aquaculture sites

Environmental Assessment

NS Environmental Protection Act

Environmental Assessment Regulations, s. 3

- Minister could determine that an aquaculture operation be subject to a provincial EA, and has discretion to determine whether it is a Class 1 or Class 2 undertaking

Municipal governments

Guysborough County Sustainable Aquaculture Initiative (2002):

- uses a GIS based program to help select the more favorable areas of a body of water for aquaculture.
- includes water quality data for 18 harbours;
- compares and contrasts the properties of the water requirements of 6 species

Law and Policy Changes

Law and policy changes

- *Morton v. British Columbia*: finfish aquaculture is a “fishery” and its regulation is outside (*ultra vires*) provincial authority and falls within the exclusive jurisdiction of Parliament under subsection 91(12) of the Constitution Act, 1867
- Application of decision suspended to December 18, 2010.
- BC will continue to be responsible for leases

Pacific Aquaculture Regulation (DFO)

Canada Gazette Vol. 144, No. 28 — July 10, 2010

- mandatory reporting with respect to sea lice, health of fish, marine mammal interactions, and by-catch
- conditions of licence may require:
 - reporting of other matters e.g. sediment sampling
 - immediate notification of events that may impose environmental risks e.g. sulphide concentrations, chemical treatment

Aquaculture

- deleterious substances approvals (i.e. fish feed and feces). Conditions of licence will mirror section 36 authorization
- prescribed concentration / quantity of feed and fish health products are left to plans, policies, directives
- Integrated Management of Aquaculture Plans (IMAPs)
- External Fisheries Guardians as observers

National Aquaculture Strategy (NASAPI)

Canadian Council of Fisheries & Aquaculture Ministers

Target: October 2010

Some Areas of Interest:

- Intent to establish benchmarks and monitoring protocols
- Recognizes need for timely and meaningful engagement with host communities at the earliest stages of project development
- Training of enforcement officers to work specifically in the aquaculture sector
- R&D: green technologies; recirculating systems, aquafeed, etc., alternative species (halibut)

National Aquaculture Strategy (NASAPI)

Some areas of concern:

- Late involvement of NGO sector
- Lack of emphasis on food security
- Emphasises “adaptive management approach” not precautionary approach
- Intends to outline a regulatory mechanism to allow reviewed and approved aquaculture applications to advance without contravening s.35 and 36 of the Fisheries Act, i.e. by which pesticides, drugs, anaesthetics and disinfectants can be used for fish health management and control of invasive species

Federal Sustainable Development Act (2008)

to develop a Federal Sustainable Development Strategy based on the precautionary principle, including targets for sustainable fisheries and aquaculture.

What Are My Options...

If I have concerns regarding a NEW aquaculture operation? On the Federal Level

- Go to CEAA registry

CONTACT: Responsible Authority (RA) as shown on CEAA Registry for the project.

- RA must consider comments from the public (section 16 (1)(c))

See: *Sierra Club of Canada v. Canada* 2003 FCT 271:

Re a proposed mussel farm in St. Ann's Harbour, Cape Breton, NS: a reasonable period must be given so that public review and comment on the screening report be solicited pursuant to the CEAA.

On the Provincial level

- Minister of Fisheries and Aquaculture may refer the application to a public hearing (s. 48(c) *Fisheries and Coastal Resources Act*).

CONTACT: Minister of Fisheries and Aquaculture: ask that a hearing take place.

- NSDFA link regarding public consultations at www.gov.ns.ca/fish/aquaculture.
- Also contact NSE, DNR if you have relevant concerns because NSDFA must consult with them.

If I have concerns regarding an EXISTING aquaculture operation? On the Federal level

- Deposit of a deleterious substance (pesticides, feed, fish waste or dead fish) in water frequented by fish?
Fisheries Act s.36(3)

CONTACT: Environment Canada, Enforcement Branch

- Harm to fish habitat e.g. excessive fish waste causing depletion of oxygen? *Fisheries Act s.35*

CONTACT: DFO, Habitat Management

***Fisheries Act* enforcement powers include:**

- entry and inspection of aquaculture facilities;
- searches when supported by reasonable grounds;
- tests or analyses;
- review and copy records;
- warnings;
- directions by Fishery Inspectors for remedial or preventative action;
- orders by the Minister to prevent the occurrence or repetition of a violation of the habitat protection and pollution prevention provisions(s 37(2));
- tickets;
- injunctions; and
- prosecutions: laying of charges upon reasonable grounds that an offence has occurred.

On the Provincial level

- NS DFA will provide you with water quality data collected at an aquaculture site as part of the EMS Program.
- Minister has the authority to appoint an inspector, who may seize fish, or take any other necessary action, on reasonable grounds that there has been a violation of the Act or any regulations (Section 83).

CONTACT: Dept. of Fisheries and Aquaculture
regional offices

Aquaculture

- If the terms of an aquaculture license have been violated, the Minister has the right to terminate the license (*Fisheries and Coastal Resources Act*, section 51(2)).

CONTACT: Coastal Resource Coordinator at to find out specific terms of a license: (902) 424-0356

- You may also write a letter or an email request to your regional office. Regional contact information is available at: www.gov.ns.ca/fish/contactus/reps/fishreps.shtml.

SOME SUGGESTED IMPROVEMENTS

- Clear articulation of precautionary principle
- Require that there be NO measurable adverse effects outside leased areas
- Require plans for waste minimization
- Clarify application of s. 35 and 36 of Fisheries Act
- Required reporting of feed, medication, disease, etc
- Limits on density and distance between sites
- Limits on timing/quantity of drug and chemical use

RECOMMENDED REFERENCES:

- *The Aquaculture Controversy in Canada*, Young and Matthews, UBC Press 2010
- *Aquaculture Law and Policy*, VanderZwaag and Chao, editors, Routledge 2006
- Pacific Aquaculture Regulation, Fisheries Act
Canada Gazette Vol. 144, No. 28 — July 10, 2010
- *Road Map for Aquaculture Investment in Nova Scotia*, NSDFA, December 2009

THANK YOU!

***Please see additional resources at
www.ecelaw.ca***

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