# INTELL-ECHO

Vol. 5, no. 10, December 2018

**Economic Information Observatory**
a regional cooperation project between
**Atlantic Canada** and **Saint-Pierre and Miquelon, France**

# Aquaculture: Key Figures and Resources

Atlantic Canada (p. 1-4)

Saint-Pierre and Miquelon, France (p. 5-8)

Collaboration CACIMA PROVLS

Economic Information Observatory
Intell-Echo

Thematic Information Bulletin
Vol. 5, no. 10, December 2018
ISSN 2292-518X

**Atlantic Canada,**
4 provinces:
Prince Edward Island (PEI),
New Brunswick (NB),
Nova Scotia (NS),
Newfoundland and Labrador (NL)

# Aquaculture: Key Figures and Resources

**In this issue:**



In focusing on aquaculture—farming of fish, aquatic plants or shellfish in freshwater or salt water—Canada has committed to **farming its waters sustainably** and contributing to **global food safety**. Its safe, healthy products are highly regarded on international markets. The federal, provincial and territorial governments are also aware of the challenges associated with the rapid growth of this industry, and in light of the fact that aquaculture is used to meet more than 50% of global demand for fish and other seafood, they have been working together to support economically and environmentally **sustainable production**. **Aquaculture activities** are carried out in every Canadian province as well as in Yukon. In 2014 in Canada, approximately 45 species of fish, shellfish and marine plants were farmed for commercial purposes, including 26 different finfish species, 16 species of shellfish and a number of kelp, moss and algae species. For additional information on this topic, please consult the following ***IE* bulletins**: vol. 1, no. 5, 2014 – The Fishery Sector; vol. 2, no. 2, 2015 – The Aquaculture Industry; vol. 3, no. 4, 2016 – Seafood Products; and ***Focus*, vol. 5, no. 10, 2018,** on standards applicable to the industry.

⇒ In 2015, farmed salmon was Canada's third-largest seafood product export by value.

⇒ Canada is the world's fourth-largest producer of farmed salmon after Norway, Chile and the United Kingdom.

⇒ Aquaculture accounts for 16% of total seafood production in Canada by volume and more than 33% of total seafood production in Canada by value.

**International aquaculture collaboration**
http://www.dfo-mpo.gc.ca/aquaculture/collaboration-eng.html

As aquaculture is expanding, Canada is working with partner countries and multinational organizations to create new, and strengthen existing, mechanisms to secure a sustainable future for global aquaculture.

- Codex Alimentarius – United Nations
- Food and Agriculture Organization of the United Nations (FAO)
- International Organization for Standardization (ISO)
- Joint Statements between Canada, Chile, Norway and Scotland on Aquaculture
- North Atlantic Salmon Conservation Organization (NASCO)
- Organisation for Economic Co-operation and Development (OECD) – Fisheries Committee
- Canada–United States Regulatory Cooperation Council (RCC)

**Economic impact of Canada's aquaculture industry: Highlights (national figures)**

- $5.16 billion in economic activity generated
- $2 billion injected into GDP
- 25,000 full-time jobs
- $1.16 billion in work income generated
- Aquaculture production volume: 200,565 tonnes
- Aquaculture production value: $1.37 billion
- Aquaculture export volume: more than 103,000 tonnes
- Aquaculture export value: $1 billion
- Primary export destination: United States (94% of total exports)
- Other export destinations: Japan, China, Taiwan, Israel, Hong Kong

Canadian Food Inspection Agency, <http://www.inspection.gc.ca/food/sfcr/regulatory-compliance/eng/1528322304931/1528322305274>; Canadian Aquaculture Industry Alliance, <http://www.aquaculture.ca/>; Fisheries and Oceans Canada Library, <http://waves-vagues.dfo-mpo.gc.ca/>; Standards Council of Canada, <https://www.scc.ca/>; Department of Fisheries & Aquaculture of Nova Scotia, <http://www.gov.ns.ca/fish/> / <https://novascotia.ca/fish/aquaculture>; Department of Fisheries and Land Resources of Newfoundland and Labrador, <https://www.fishaq.gov.nl.ca/index.html>; Prince Edward Island Department of Agriculture and Fisheries, <https://www.princeedwardisland.ca/en/topic/agriculture-and-fisheries>; New Brunswick Department of Agriculture, Aquaculture and Fisheries, <https://www2.gnb.ca/content/gnb/en/departments/10/aquaculture.html>; Food and Agriculture Organization of the United Nations, <http://www.fao.org>; Fisheries and Oceans Canada, <http://www.dfo-mpo.gc.ca/>.

Collaboration CACIMA PROVINCES

# Aquaculture Production: Key Figures

## Aquaculture Production in Atlantic Canada in 2017 (tonnes)

| | PEI | NB | NS | NL |
|---|---|---|---|---|
| **Finfish** | | | | |
| Salmon | .. | 23,867 | 11,078 | .. |
| Trout | .. | .. | 467 | .. |
| Steelhead | .. | 0 | 0 | .. |
| Other | .. | 0 | 103 | .. |
| **Total Finfish** | **464** | **23,867** | **11,648** | **18,822** |
| **Shellfish** | | | | |
| Clams | 124 | 48 | 358 | 0 |
| Oysters | 3,928 | 1,250 | 261 | 0 |
| Mussels | 20,004 | 0 | 1,019 | 2,890 |
| Scallops | 0 | 0 | .. | 0 |
| Other | 0 | 0 | 66 | 0 |
| **Total Shellfish** | **24,056** | **1,298** | **1,704** | **2,890** |
| **TOTAL** | **24,520** | **25,165** | **13,352** | **21,712** |

## National governance framework

In Canada, aquaculture management is a **shared responsibility** between the federal government and the provinces and territories.

Under the *Fisheries Act*, Fisheries and Oceans Canada manages fisheries and fish habitats across the country. With the exception of British Columbia and Prince Edward Island, where the federal government plays a greater role in areas including licence management, the various Canadian provinces and territories are responsible for their own aquaculture activities. They adopt and enforce their own laws and regulations (licensing, environmental monitoring, animal welfare, fish health, oversight of the use of pest control products).

In the interest of protecting the environment, promoting the fisheries and supporting the industry, the strategy of the Canadian Council of Fisheries and Aquaculture Ministers (CCFAM) for 2016-2019 targets three main outcomes:

- ◊ improved regulatory framework
- ◊ improved coordination of aquaculture fish health management
- ◊ improved support for regional economic growth through aquaculture

The CCFAM's **Aquaculture Development Strategy** picks up where the National Aquaculture Strategic Action Plan Initiative (2011-2015) left off.

Like all other fishing activities in Canada, **fish farming** is governed by the *Fisheries Act*. Responsibility for oversight of this activity is shared among the federal, provincial and territorial governments.

The **regulatory framework** varies by jurisdiction: in British Columbia, Prince Edward Island and the rest of Canada, managing the planned movement of live eggs and fish and determining which drugs and pesticides are approved for use is a shared responsibility. In contrast, monitoring and controlling the safety and quality of fish falls exclusively under federal responsibility, while day-to-day operations and oversight activities are a federal responsibility in British Columbia and Prince Edward Island and a provincial responsibility across the rest of Canada. Finally, land management is a provincial responsibility in British Columbia and across the rest of Canada with the exception of Prince Edward Island, where it is a federal responsibility, while site approval is a shared responsibility in British Columbia and Prince Edward Island and managed provincially across the rest of Canada.

## Aquaculture Production in Atlantic Canada in 2017 ($000)

| | PEI | NB | NS | NL |
|---|---|---|---|---|
| **Finfish** | | | | |
| Salmon | .. | 227,843 | 99,644 | .. |
| Trout | .. | .. | 3,331 | .. |
| Steelhead | .. | 0 | 0 | .. |
| Other | .. | 0 | 4,549 | .. |
| **Total Finfish** | **x** | **227,843** | **x** | **x** |
| **Shellfish** | | | | |
| Clams | 319 | 175 | 593 | 0 |
| Oysters | 13,857 | 12,112 | 3,167 | 0 |
| Mussels | 28,666 | 0 | x | x |
| Scallops | 0 | 2 | .. | 0 |
| Other | 0 | 0 | 3,160 | 0 |
| **Total Shellfish** | **42,842** | **12,289** | **x** | **x** |
| **TOTAL** | **x** | **240,132** | **116,004** | **x** |

# Aquaculture in Atlantic Canada

Success story

## Aboriginal aquaculture industry in Atlantic Canada

http://www.waycobah.ca/

In Nova Scotia, the **We'koqma'q First Nation** has since 2011 been operating an aquaculture company that is currently undergoing rapid growth. For example, the company harvested 70,000 rainbow trout in 2016 and 170,000 trout in 2017 and expects to harvest a total of more than 400,000 trout in 2018. In 2017, the trout farm generated $2 million in revenue.

On June 1, 2018, the federal government announced $1 million in funding to assist the company with initiatives including expanding its operations and upgrading certain equipment. The enterprise currently employs 45 members of the community and plans to add at least 10 more positions. Subsequent to this expansion and the innovations implemented, the We'koqma'q First Nation is aiming to farm more than 1,000,000 fry annually.

## Aquaculture farmed species in the Atlantic Provinces

| Common name | Species group | PEI | NB | NS | NL |
|---|---|---|---|---|---|
| Algae, brown (kelp) | Marine algae spp | | √ | √ | |
| Algae, green (sea lettuce) | Marine algae spp | | √ | √ | |
| Algae, red (Irish moss, dulse) | Marine algae spp | | √ | √ | |
| Bass, striped | Finfish | | | √ | |
| Char, Arctic | Finfish | | √ | √ | √ |
| Clam, hard (quahog) | Shellfish | √ | √ | √ | |
| Clam, soft-shell | Shellfish | √ | | √ | |
| Cod, Atlantic | Finfish | | | | √ |
| Cunner | Finfish | | √ | | |
| Eel, American | Finfish | | √ | √ | √ |
| Halibut, Atlantic | Finfish | √ | | √ | |
| Mussel, Western blue | Shellfish | √ | √ | √ | √ |
| Oyster, American | Shellfish | √ | √ | √ | |
| Salmon, Atlantic | Finfish | √ | √ | √ | √ |
| Scallop, bay | Shellfish | √ | √ | √ | |
| Scallop, sea | Shellfish | | √ | √ | |
| Sturgeon, Atlantic | Finfish | | √ | | |
| Sturgeon, short-nose | Finfish | | √ | | |
| Trout, brook/speckled | Finfish | | √ | √ | √ |
| Trout, rainbow / steelhead | Finfish | √ | √ | √ | √ |

## Recent and upcoming events

**Aqua Sur 2018**
https://exportnb.com/assets/Uploads/Aquasur-Approved-2019.pdf
October 14–21, 2018
Trade mission with the goal of developing markets with a focus on Chile and surrounding markets.

**Canada's Farmed Seafood Policy Conference**
http://www.aquaculture.ca/farmed-seafood-policy-conference-2018
November 26–28, 2018
Ottawa, Ontario
Theme: Accelerating Sustainable Growth

**2019 SeaFarmers Conference**
http://seafarmers.ca/in-the-community/2019-seafarmers-conference/
January 23–25, 2019
Halifax, NS
Theme: Making Waves – Leveraging Our Opportunities
For rural coastal communities in Nova Scotia, aquaculture generates major economic spinoffs. This two-day event aims to gauge the sector's value and examine ways to maximize the benefits of this fast-growing industry.

**Seafood Expo North America**
https://www.seafoodexpo.com/north-america/
March 17–19, 2019
Boston, US
An annual gathering of seafood industry representatives, Seafood Expo North America is the largest trade show of its kind in North America. Thousands of exhibitors and buyers from around the world converge on this event each year to do business.

**Aquaculture Canada 2019**
http://aquacultureassociation.ca/aquaculture-canada-2019-save-the-date/
May 5–9, 2019
Victoria, BC
[Event schedule TBA]

**Seafood Expo Global**
https://www.seafoodexpo.com/global/
May 7–9, 2019
Brussels, Belgium
More than 29,000 buyers, suppliers, media and other seafood professionals from more than 140 countries attended the fair in 2018. It is an ideal opportunity to promote and sell seafood products, processing equipment and services to leading buyers from around

# R&D and Resources (Selected List)

## Schools and training programs in Atlantic Canada
(selected list)

### Prince Edward Island

- Canadian Aquaculture Institute
  http://www.upei.ca/
  Fish Health
- Atlantic Veterinary College
  http://www.upei.ca/
  Aquatic Veterinary Medicine including Aquaculture and Fish Health; Health of Aquatic Food Animals and the Ecosystem

### New Brunswick

- New Brunswick School of Fisheries (CCNB Caraquet)
  https://ccnb.ca/
  Programs offered to workers in the aquaculture and seafood processing industries
- Collège communautaire du Nouveau-Brunswick, Caraquet, NB
  Experimental Aquaculture
- New Brunswick Community College, St. Andrews, NB
  http://nbcc.ca/
  12-week program in Aquaculture Operations
- University of New Brunswick
  https://www.unb.ca/
  Centre for Coastal Studies and Aquaculture

### Nova Scotia

- Nova Scotia Community College
  https://www.nscc.ca/
  1-year certificate program in Ocean Resources – Fisheries & Aquaculture
- Faculty of Agriculture in Truro
  Dalhousie University
  https://www.dal.ca/academics/
  B.Sc. Agriculture in Aquaculture

### Newfoundland and Labrador

- Marine Institute of Memorial University of Newfoundland
  https://www.mi.mun.ca/
  Advanced Diploma in Sustainable Aquaculture
  Master's Degree in Technology Management (Aquaculture Technology)
  Technical Certificate in Aquaculture
- Memorial University
  https://www.mun.ca/
  Minor in Sustainable Aquaculture and Fisheries Ecology

## Laboratories and research centres in Atlantic Canada providing services to the industry

### Prince Edward Island

- **Atlantic Veterinary College – Aquatic Diagnostic Services**
  http://www.upei.ca/
  Located on the campus of the University of Prince Edward Island, the Atlantic Veterinary College's facilities conduct projects on request from aquaculture enterprises.
- **Centre for Aquaculture Technologies**
  http://aquatechcenter.com/
- **Centre for Aquaculture Technologies Canada (CATC)**
  A subsidiary of the Center for Aquaculture Technologies based in San Diego, US, the CATC opened its doors in 2016 in a former fish plant in Souris, Prince Edward Island. In addition to providing R&D support services to the aquaculture industry, the CATC has partnered with the Atlantic Veterinary College to conduct research into aquatic animal health.

### New Brunswick

- **Provincial Fish Health Laboratory**
  https://www2.gnb.ca/
  Available to the aquaculture industry in NB, this laboratory in St. George performs numerous testing protocols for various organisms that can cause diseases in marine species. It offers a range of services including analysis (necropsy), testing (bacteriology, parasitology, immunofluorescence) and polymerase chain reaction (PCR) testing. Using specialized equipment, its staff are also equipped to detect chemical and drug residues in fish tissue.
- **New Brunswick Research and Productivity Council (RPC)**
  Founded in 1962, the RPC carries out R&D contracts in addition to stimulating grant-based university research into industrial and scientific technology. In 1991, a laboratory for chemical analysis, pest control technology, food product development, food preparation and fish health research was established. The RPC is accredited by the Standards Council of Canada (SCC) among other bodies.
- **Valorēs (Coastal Zone Research Institute)**
  http://www.valores.ca/
  Private applied research centre with expertise in aquaculture.
- **Huntsman Marine Science Centre (NB)**
  http://www.huntsmanmarine.ca/
  In April 2018, Dr. Ehab Misk, New Brunswick (NBIF) Innovation Research Chair in Aquatic Biosciences, joined the Huntsman Marine Science Centre. Dr. Misk has extensive expertise in controlled infection models associated with a range of freshwater and saltwater fish for use in developing medical tests and treatments. His research to date has focused on aquaculture farming conditions, fish infection levels and toxicity levels.
- **St. Andrews Biological Station (SABS)**
  http://inter-w02.dfo-mpo.gc.ca/SABS/Home
  Research conducted at the Station includes aquaculture and biological interactions (integrated multitrophic aquaculture, interactions between lobster and aquaculture facilities, disease research). The SABS is Atlantic Canada's oldest permanent marine research facility. Its research scope encompasses the Bay of Fundy and the Gulf of Maine. The Station is also interested in coastal ecosystems and traditional fisheries in Nova Scotia and Prince Edward Island.
- **New Brunswick Aquarium and Marine Centre**
  http://www.aquariumnb.ca/
  Motivated by the growth and diversification of aquaculture, the Centre carries out research in areas including the development of selected finfish (cod, Arctic char), shellfish (oysters) and crustacean species.

### Newfoundland and Labrador

- **Centre for Aquaculture and Seafood Development – Marine Institute**
  https://www.mi.mun.ca/departments/centreforaquacultureandseafooddevelopment/
  The Centre provides its clients assistance in all areas of aquaculture and food development as well as industrial applied research and technology transfer services.

## Associations

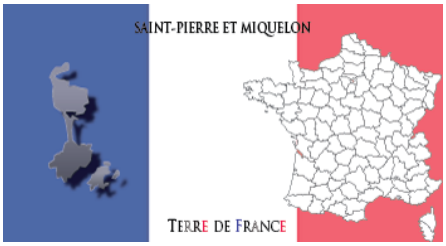
- Canadian Aquaculture Industry Alliance
  http://www.aquaculture.ca/
- Aquaculture Association of Canada (AAC)
  http://aquacultureassociation.ca/
- Atlantic Canada Fish Farmers Association (ACFFA)
  https://www.atlanticfishfarmers.com/
- Eastern Aquaculture Veterinary Association (EAVA)
  https://www.eava.ca/
  The EAVA is a group of professionals made up exclusively of veterinarians on the East Coast of Canada and the United States having particular interest in aquaculture.
- Prince Edward Island Aquaculture Alliance
  http://www.aquaculturepei.com/
- New Brunswick Professional Shellfish Growers Association
  278 des Pêcheurs Ave.
  Shippagan, NB E8S 1J6
  Tel.: 506-336-4794
- Aquaculture Association of Nova Scotia (AANS)
  http://seafarmers.ca/
  This association has been supporting responsible aquaculture development for over 40 years.
- Newfoundland Aquaculture Industry Association (NAIA)
  https://www.naia.ca/

## Publications

**R&D 2017**
http://waves-vagues.dfo-mpo.gc.ca/
Published every other year, this R&D review covers research and development projects active in Canada since the last publication (more than 210) with a focus on marine and freshwater species. Readers can explore the numerous topics covered under these projects (examples: fish health, marine algae, farming techniques, molluscs and crustaceans, environmental interactions). The 2017 edition is the fourth issue of the review prepared in partnership with Fisheries and Oceans Canada.

Economic Information Observatory
Intell-Echo
Thematic Information Bulletin
Vol. 5, no 10, December 2018
ISSN 2292-518X

Saint-Pierre
Miquelon
Metropolitan
France




## In this issue:



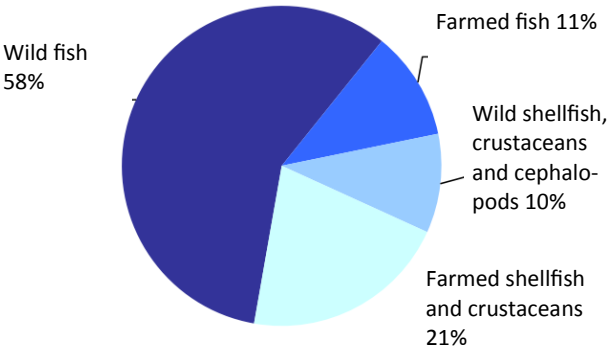
# Overview

Alongside the UK, France is the European Union's second-largest aquaculture producer behind Spain, with just over 200,000 tonnes representing a value of €702.5 million. **Shellfish farming is the dominant sector** with 155,000 tonnes or a value of €535 million, primarily **oysters (leading EU producer)** and mussels.

# Consumption

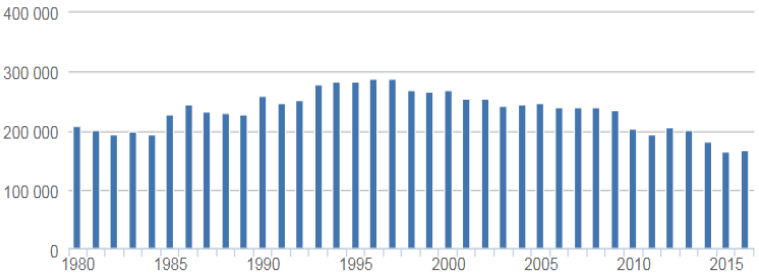
On average, the French eat **34 kg of fish per head per year.** France **imports 86% of its consumption**, generating a €3.7-bn trade deficit in 2015. Unlike the rest of the world, which prioritizes **farmed fish**, France largely **consumes** wild fish. Despite the acceleration in global aquaculture production in the 1970s and constant growth in demand for fish and shellfish, France's aquaculture sector has been stagnating since 1990 for land-management and acceptability reasons.

**Seafood consumption per head in France**




# Production

**Total French aquaculture production**




Source: FAO

DepAlthough growth had previously been strong, French aquaculture production has fallen in volume terms since the early 2000s.

# Employment

| | Number of aquaculture companies: | Jobs | Fulltime equivalent |
|---|---|---|---|
| **Shellfish farming — including algae and prawns** | 2,864 | 17,715 | 8,574 |
| **Marine fish and sturgeon farming** | 35 | 648 | 602 |
| **Inland salmon farming** | 387 | 1,762 | 1,263 |

Source : MEDDE / DPMA / BSPA (enquête aquaculture 2012)

Collaboration CACIMA PROVLS

# Aquaculture production in France

## Shellfish farming

Many shellfish farmers have sought accreditation to highlight the quality, expertise or regional specificities of their production: they include Marennes-Oléron oysters, Bouchot mussels from Mont-Saint-Michel Bay and Côtes-d'Armor scallops.

Shellfish farming fell significantly between 2005, when it approached 190,000 tonnes, and 2013 due to the marked decline in the production of Pacific oysters, which was affected by abnormally high spat death rates from 2008 to 2014.

**French shellfish farming in 2013**

| | Volume (in tonnes) | Value (in millions of euros) |
|---|---|---|
| **Shellfish farming** | **154,520** | **534.7** |
| of which oysters | 77,510 | 389.1 |
| of which mussels | 74,140 | 132.2 |
| of which other shellfish (cockles, clams, etc.) | 2,870 | 13.4 |
| **TOTAL aquaculture** | **200,200** | **702.5** |

Source : MAA/DPMA (2014 aquaculture survey )

## Freshwater fish farming

There are approximately 500 production sites across France, which are managed by some 300 commercial companies (Agreste 2007 survey). But some regions have made it their speciality, such as Nouvelle-Aquitaine, Hauts-de-France and Brittany, which account for 70% of national production. France is now Europe's third-largest producer of farmed freshwater trout, approaching 38,714 tonnes in 2016. Trout is one of the five most regularly eaten fish in France.

**Production de la pisciculture française**

| | 2010 | 2013 | 2014 | 2014 |
|---|---|---|---|---|
| | **tonnes** | | | **millions of euros** |
| **Inland fish farming** | **44,005** | **40,513** | **39,850** | **127** |
| Salmonids | 35,803 | 32,178 | 31,448 | 111 |
| *of which rainbow trout* | 34,546 | 30,818 | 29,347 | 98 |
| *Lake fish* | 8,000 | 8,000 | 8,000 | 13 |
| Other | 202 | 335 | 402 | 3.0 |
| **Marine fish farming** | **5,668** | **5,215** | **4,803** | **37** |
| *of which bass* | 2,337 | 2,428 | 2,244 | 17 |
| *gilt-head bream* | 1,239 | 1,636 | 1,379 | 10 |
| **Total fish farming** | **49,673** | **45,728** | **44,653** | **164** |

## Marine fish farming

Although a pioneer in Europe's fish farming sector due to its expertise in reproduction and feeding, France only produces 5,000 tonnes of saltwater fish (by way of a comparison, Norway produces over 1.3 million tonnes of salmon). Several fish farming companies are hatcheries and sell spawn. 113 million spawn were produced in 2016. Nearly 90% of spawning and nursery sales revenue is generated from export.

Marine and new (referring to sturgeon production) fish farming produces seven species of fish, including in 2016: 1,928 tonnes of bass, 1,671 tonnes of bream, 288 tonnes of turbot, 236 tonnes of meagre, 450 tonnes of salmon, 248 tonnes of sole, and 306 tonnes of sturgeon meat.
Caviar production stands at approximately 27 tonnes, positioning France amongst the world's main producer countries with Italy (behind China). The sturgeon sector comprises ten companies across eighteen production sites.

# Integrated Multi-Trophic Aquaculture

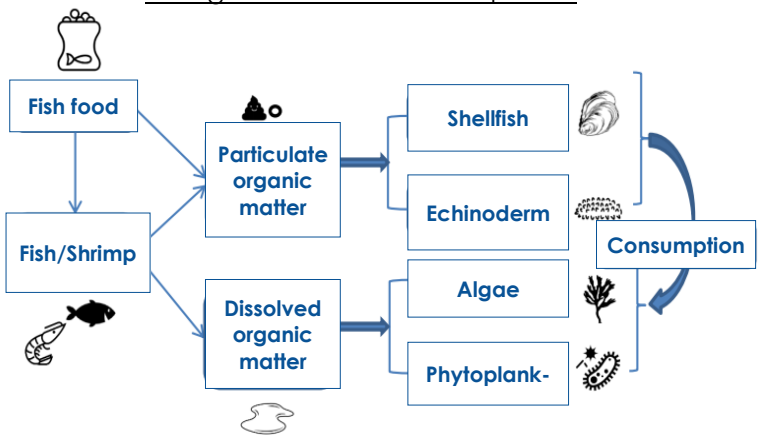
This new technique is being studied around the world, in Europe and in France: it aims to cut the pollution generated by farming whilst diversifying production to bring the world 21st-century, ecofriendly and high-yield aquaculture.

**What is Integrated Multi-Trophic Aquaculture (IMTA)?**

IMTA involves recreating a natural ecosystem by combining the **farming of various complementary species**, each belonging to a link in the food chain. The organic and inorganic waste produced by a so-called fed species, such as fish (trout, salmon, bream), are used as food for locally farmed algae and shellfish. The presence of these filter feeders reduces the farming's environmental impact. The seabed is protected and its balance maintained.

The standard model involves farming fed species (e.g. fish or prawns) with extractive species (algae and molluscs). The algae grow from filtering the fish's liquid nitrogenous waste whilst the molluscs filter solid nitrogenous waste (uneaten food, waste rejected by the fish) and can then feed on the system's algae. Through that process, uneaten food and nitrogenous rejections, which are seen as waste in fish and prawn monoculture, are partly converted and reused to develop other commercially valuable species.

Diagram of interactions in an IMTA farming system combining fed and extractive species




source : Aubin, 2018, IMTA effect project

Examples of Integrated Multi-Trophic Aquaculture companies based on France's Atlantic coast

| | Species grown | Location | Size | At sea or on land |
|---|---|---|---|---|
| **Symbiomer** | Fish Algae | Paimpol (Côtes-d'Armor) | 3 ha | At sea |
| **Algolesko** | Algae Shellfish | Lesconil and Moëlan-sur-Mer (South Finistère) | 150 ha and 225 ha | At sea |
| **ACRIMA** (Association Crevette Impériale des Marais Charentais) | Oysters Prawns | Charente-Maritime | Several producers of all sizes | On land (marsh) |

In late 2017, the startup Symbiomer secured permission for a planned IMTA system at the mouth of the Trieux in Côtes-d'Armor. It aims to produce rainbow trout and macroalgae over three hectares. The idea is to bring together species belonging to a different link in the food chain by creating trophic (or nutritional) connections between them.

Symbiomer has filed a patent for its floating cage, which has been designed like a ship for improved hydrodynamics. Moored to a buoy, it's connected to a honeycombed pink granite block which has the advantage of replacing concrete and providing a shelter for other filtering organisms such as crustaceans (lobster, crab, etc.). The structure can be brought back to land in summer to clear the space for leisure activities, meeting the needs of residents and tourism networks in this very popular holiday resort.

# R&D et resources

## Events

**SEAFOOD EXPO GLOBAL**, 7 to 9 May 2019 in Brussels (Belgium), is the world's largest seafood trade event. It provides an opportunity to see and compare products, suppliers and prices, investigate new trends and test the latest technologies. Website: https://www.seafoodexpo.com/global/

**Aquaculture Europe 2019**, 7 to 10 October in Berlin (Germany), organized by the European Aquaculture Society. Website: https://www.aquaeas.eu/

## Professional structures

- CNPMEM: **The Committees for Maritime Fisheries and Fish Farming** represent the industry's interests, manage marine fishing and actively participate in devising French, European or international regulations for the sector. There are twelve regional committees (**CRPMEM**) comprising elected leaders, union representatives, producers' organizations and maritime cooperatives covering all types of fishing http://www.comite-peches.fr/
- Syndicat de l'Aquaculture Marine et Nouvelle (**SFAMN**)
- Comité National de Conchyliculture (**CNC**) http://www.cnc-france.com/
- Fédération Française d'Aquaculture (**FFA**)
- L'Union des aquaculteurs d'outre-mer (**UAOM**) http://www.uaom.eu/
- Comité Interprofessionnel des Produits d'Aquaculture (**CIPA**) www.poisson-aquaculture.fr/

- The **CIPA** has **three boards** working on behalf of:
  - **producers**, namely the **freshwater salmon farmers and marine fish farmers** represented by the FFA (Fédération Française d'Aquaculture)
  - **feed manufacturers**, represented by the SPPA (Syndicat Professionnel des Producteurs d'Aliments Aquacoles)
  - **processors**, represented by the ATT (Association des Transformateurs de Truite).

## Public and research bodies supporting the sector

- **IFREMER,** Institut français de recherche pour l'exploitation de la mer: https://wwz.ifremer.fr
- **IRD**, the French National Research Institute for Sustainable Development, which is present in some fifty countries, promotes research, education, information sharing and partnerships to benefit the territories and countries that use science and innovation to further their development: https://www.ird.fr/
- **Aquimer** is a French competitiveness cluster specializing in promoting aquatic products. It helps companies implement their projects up to securing financing and marketing new products, services and processes: https://www.poleaquimer.com/fr
- **Institut technique de l'aviculture (ITAVI)** is a Ministry of Agriculture agency that works to bring farmers the scientific, technical and economic information and expertise needed to improve the competitiveness and quality of productions. The institute has a department focusing on fish farming: https://www.itavi.asso.fr/
- **DPMA:** Part of France's Ministry of the Environment, Energy and Fisheries (MEEM), the Direction des Pêches Maritimes et de l'Aquaculture oversees professional saltwater and freshwater fishing as well as marine and inland aquaculture.
- **FranceAgriMer** is a government agency. It manages national and community grants, implements market regulation policies and provides economic intelligence: http://www.franceagrimer.fr/

# INTELL-ECHO

Are you seeking business opportunities in this sector?
CACIMA and PROVIS can facilitate your business prospection process and help with establishing new partnerships (targeted information and network contacts)

***Intell-Écho*** is a periodic bulletin published by the Economic Information Observatory, a regional cooperation project between Atlantic Canada and Saint-Pierre and Miquelon. The publication of this bulletin is made possible through the sponsorship of the Atlantic Canada Opportunities Agency in support of research initiatives, linguistic minorities and business development, and the Province of New Brunswick as well as the Université de Moncton, Shippagan Campus, and the Prefecture and Territorial Council of Saint-Pierre and Miquelon.

**Editorial Production:** Project Lead, Dr. Monica Mallowan, PROVIS Observatory, Université de Moncton, Shippagan Campus, Shippagan, NB, Canada.
observatoirePROVIS@umoncton.ca


Information Policy: The aim of this project is to provide useful information to stakeholders seeking to promote regional cooperation between Atlantic Canada and Saint-Pierre and Miquelon. Information supplied herein may be used on the condition that the Intell-Écho be cited as a source.

Responsibility: The project team is not responsible for the information resources supplied in this bulletin (content, links, changes, updates, timeliness of statistical data) nor for decisions or actions undertaken based on information supplied herein.

CACIMA SAINT-PIERRE ET MIQUELON

Chambre d'Agriculture, de Commerce, d'Industrie, de Métiers et de l'Artisanat (CACIMA)

4, boul. Constant Colmay, BP 4207 97500

Saint-Pierre et Miquelon, France

www.cacima.fr/blog

Observatoire PROVIS veille & prospective

UNIVERSITÉ DE MONCTON CAMPUS DE SHIPPAGAN

PROVIS—UNIV. DE MONCTON, CAMPUS DE SHIPPAGAN

218, J.-D.-Gauthier

Shippagan NB E8S 1P6
Canada

https://provis.umcs.ca

**The Economic Information Observatory** is a regional cooperation project established between Atlantic Canada and Saint-Pierre and Miquelon. The publication of this information bulletin is made possible through the sponsorship of the Préfecture and the Conseil Territorial of Saint-Pierre et Miquelon, in support of the Atlantic Canada Opportunities Agency's programs for research initiatives, linguistic minorities and business development, and the Province of New Brunswick, as well as the University de Moncton, Shippagan Campus and the Prefecture and Territorial Council of Saint-Pierre and Miquelon.

**Editorial Production**: Project manager, Mrs. Janick CORMIER, chamber d'Agriculture, de Commerce, d'Industrie, de Métiers et de l'Artisanat.
Intell-echo@cacima.fr



Information Policy: The aim of this project is to provide useful information to stakeholders seeking to promote regional cooperation between Atlantic Canada and Saint-Pierre and Miquelon. Information supplied herein may be used on the condition that the Intell-Écho bulletin be cited as a source.

Responsibility: The project team is not responsible for the information resources supplied in this bulletin (content, links, changes, updates, timeliness of statistical data) nor for decisions or actions undertaken based on information supplied herein.