

New Brunswick Shellfish Aquaculture Development Strategy | 2010 – 2014



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Province of New Brunswick

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Preface

Aquaculture is an important industry in New Brunswick and has become the cornerstone of the economy in a number of communities. Fisheries and Oceans Canada (DFO) and the New Brunswick Department of Agriculture and Aquaculture (DAA) are the lead federal and provincial agencies for aquaculture development. The responsibilities of the two levels of government are identified in the 1989 Canada-New Brunswick Memorandum of Understanding on Aquaculture Development. The New Brunswick Professional Shellfish Growers Association (NBPSGA) represents the industry position on shellfish aquaculture issues. These development partners are committed to working together to enhance the competitive position and overall sustainability of the shellfish aquaculture industry in New Brunswick.

This five-year strategy focuses on the development needs of the shellfish aquaculture industry in New Brunswick, addressing regulatory issues only as they pertain to development and removal of barriers in that regard. The strategy will provide guidance as to priority areas for collaborative action and project funding and will be reviewed on an annual basis by the development partners to ensure that the overall elements remain strategic and relevant.

As noted, the provincial and federal governments are committed to collaborating with a view to the continued sustainable development of the aquaculture industry. While the New Brunswick Department of Agriculture and Aquaculture and Fisheries and Oceans Canada serve as the lead provincial and federal departments, a wide range of government departments and agencies are involved in the support, development, and regulation of the aquaculture industry. In New Brunswick, these include:

- Atlantic Canada Opportunities Agency (ACOA)
- Transport Canada (TC)
- Environment Canada (EC)
- Health Canada (HC)
- Agriculture and Agri-Food Canada (AAFC)
- Canadian Food Inspection Agency (CFIA)
- Farm Credit Corporation (FCC)
- New Brunswick Department of Fisheries (DOF)
- New Brunswick Department of Natural Resources (DNR)
- New Brunswick Department of the Environment (DENV)
- Regional Development Corporation (RDC)
- Business New Brunswick (BNB)
- Community Business Development Corporation (CBDC)
- Community Economic Development Agencies (CEDAs)
- Indian and Northern Affairs Canada (INAC)
- Canada/New Brunswick Joint Economic Development Initiative (JEDI)

Introduction

The shellfish aquaculture industry is an important generator of employment and economic activity in rural coastal communities along the shores of eastern New Brunswick. Benefits to the province include the creation of year-round employment in rural and coastal communities, an increased tax base, and the ability to retain young persons in their home communities or repatriate young persons who have left. The development potential of the shellfish aquaculture industry and its prospective contribution towards the provincial goal of economic self-sufficiency have been recognized; however, the industry must develop in harmony with the environment and users of the marine resource, including the fisheries, tourism and the local community. Species currently grown at a commercial scale include the American oyster and the blue mussel. Other species that are of interest for continuing development include the bay scallop, giant scallop, and quahog.

Oyster aquaculture has a long history in New Brunswick, yet the industry remained relatively small until the introduction of new suspended culture techniques in 1998. Use of suspension techniques to grow oysters in the water column, rather than on the sea floor, has resulted in faster growth and a higher meat yield due to increased food availability for the oyster. Modern floating systems make it possible to produce “cocktail” oysters (<76 mm) in approximately four to five years, whereas bottom culture takes a minimum of seven years to reach marketable size. As of April 2010, there were 276 oyster leases licensed for bottom culture and 233 oyster leases licensed for suspended culture, covering 1036 and 1806 hectares, respectively.

In 2008, annual sales were estimated to have reached approximately 11 million aquaculture oysters, over 70% of which were sold at the “cocktail” size. This translated into approximately \$3.4 million in sales at the farm gate level and \$6.2 million in sales at the processing level. Additional growth in the industry is expected, with much of that to come from maximizing utilization of existing leases and the continued improvements to culture technology.



The mussel aquaculture industry on New Brunswick’s east coast has been in decline for several years as a result of various factors, including corporate debt, cash flow challenges, low prices paid to producers, insufficient production capacity and product volume, and market conditions. While expansion of the industry is not likely at this time, physical growing conditions in New Brunswick are conducive to mussels, and there is potential for growth given the right business conditions. In the Bay of Fundy region, shellfish culture has been limited to research and development subject to assessing both the economic viability of operations and the ability to meet the requirements of the CFIA relating to resource and product testing. Through research and development efforts surrounding Integrated Multi-tropic Aquaculture, a protocol to ensure product safety has been accepted by the CFIA. As a result, the province has begun licensing mussel culture at existing marine finfish sites. Over the next several years, it is anticipated that the culture of shellfish in the Bay of Fundy region will increase.

Purpose

This five-year strategy seeks to address the development needs of the New Brunswick shellfish aquaculture industry while recognizing the importance of environmental and socio-economic sustainability and coexistence with other marine resource user groups and interests. The following have been identified as strategic areas for investment (financial and/or human resources) in the New Brunswick shellfish aquaculture sector:

- governance,
- competitiveness and business financing,
- business risk management,
- shellfish health and biosecurity,
- market access and consumer confidence,
- strategic infrastructure, and
- species diversification.

Strategic actions are identified under each area of investment and are intended for collaborative action by industry and the two levels of government. This is to be accomplished utilizing the committee structure established under the Canada-New Brunswick

Memorandum of Understanding on Aquaculture Development (MOU), which includes representatives from the aquaculture industry as well as federal and provincial agencies involved in the development and regulation of the aquaculture industry. The Shellfish Development Committee, the Shellfish Aquaculture Environmental Coordinating Committee, and the Aquaculture Health and Biossecurity Committee, reporting to the Management Committee responsible for the MOU, will be responsible for the annual review of this document and the suggestion of priority actions and projects as pertains to the scope of their respective mandates. Recommended priorities and a work plan to address priority areas are to be presented annually by each committee to the MOU Management Committee for consideration. Where possible, potential projects, proponents, and funding avenues are to be identified for priority areas. Government support for priority initiatives may come in the form of financial investment or programming, human resource effort, advocacy efforts, or other means as identified during work planning.



1. Governance

Sustainable development is a cornerstone of government policy. The challenge for economic developers, regulators, and the industry is to demonstrate the environmental, economic, and social sustainability of aquaculture to the public. Reputation and image are seen as a significant challenge for the shellfish aquaculture industry, particularly for suspended culture operations, which may not be aesthetically pleasing to adjacent communities. As such, efforts to improve public acceptance at the local level are regarded as very important when it comes to enabling growth in the industry and increasing the potential for successful lease applications. When considering lease applications, the Department of Agriculture and Aquaculture will engage First Nations communities and the Aboriginal peoples of New Brunswick and consult whenever there is real or constructive knowledge that a lease may result in infringement of a proven or asserted Aboriginal or treaty right.

In order to support the development of effective public policy and regulatory tools, greater knowledge is required in the areas of marine ecosystems, near and far field effects, site remediation and mitigation methods, etc. To promote the orderly development of the aquaculture industry, identification of areas where farms can best be located to ensure respect of the environment and other resource user groups, including Aboriginal fisheries, and to meet regulatory requirements is seen as essential. While challenging, this sort of initiative can be important with a view to improving communications, social acceptance of the aquaculture industry, and coexistence with other aquatic resource users and coastal populations.

To facilitate orderly development and a streamlined application process for the growing oyster aquaculture industry, a Bay Management Planning exercise for all bays on New Brunswick's east coast was initiated in 2003. The Bay Plans, which were finalized in 2007, identify zones conducive to oyster aquaculture where farms could best be located to protect the environment, minimize interference with other resource user groups, and meet regulatory requirements. A replacement class screening report (RSCR) was developed in

conjunction with the Bay Plans in order to facilitate the environmental risk assessment process for applications within zones of minimal conflict, otherwise known as "blue zones," and streamline the review process for water column oyster aquaculture sites. The RSCR is in effect for a period of five years and must be revisited by 2012 in order to be renewed; September 2011 is seen as a prudent time to start the review to ensure that it is completed in sufficient time. There is a need to ensure that gaps in regulatory science do not impede progress in the review and renewal of the RSCR. Therefore, identifying and addressing those gaps is considered a high priority in the interim. Given the relationship between the Bay Plans and the RCSR, it is certain that the Bay Plans will also be reviewed and revised in conjunction with RSCR renewal.

Use of Crown land is a privilege granted for specific purposes. In the case of aquaculture development, the public has a right to expect that land leased for aquaculture purposes will be used as such. In the case of the oyster aquaculture industry, optimal use of current lease areas should be promoted prior to considering development in additional areas beyond the "blue zones" identified as areas of minimal conflict within the





Bay Plans. It is estimated that 64% of the lease area for suspended culture sites is being used at the present time, leaving much room for growth.

A long-standing challenge for aquaculturists in general is the lack of aquaculture-specific legislation and/or regulations at the federal level. In particular, the application of certain sections of the *Fisheries Act* and associated regulations can result in unintended operational impediments. In the case of shellfish culture, major impediments include prohibiting the sale of undersized product (< 76mm), and prohibiting the transfer of product from one lease to another for purposes of depuration or overwintering. The differences between aquaculture and fisheries activities are usually recognized at the operational level of agencies involved in regulation of the industry, and innovative solutions are generally found to address challenges that arise; however, such solutions cannot be considered acceptable for the long term. Differences between aquaculture and fisheries activities should be formally recognized and clearly delineated since these types of regulatory issues can act as disincentives to investment and future growth of the industry.

Strategic Actions:

- 1.1 *DAA to review current leasing and licencing policies in the context of promoting optimal use of the 'blue zones' and existing sites.*

- 1.2 *Support the continued use and refinement of Codes of Practice and/or Standard Operating Procedures relating to environmental stewardship, health of the marine environment, and minimizing conflict with other users of the marine resource.*
- 1.3 *Support initiatives aimed at promoting the social, economic, and biological benefits of shellfish culture, with emphasis on communications and community relations regarding future revisions to Bay Plans.*
- 1.4 *Identify and prioritize research and initiatives that address potential interactions among aquaculture, the environment, wildlife, and other users of the marine resource, with emphasis on filling gaps in knowledge that may be required for renewal of the RSCR.*
- 1.5 *Advocate for the specific needs and realities of the New Brunswick aquaculture industry to ensure suitability and stability with respect to regulation of the industry.*

2. Competitiveness and Business Financing

Financing: Farming, including aquatic farming, is recognized as an inherently risky business. In addition, continued fluctuations in the value of the Canadian dollar puts pressure on many export-oriented Canadian industries and drives home the need for New Brunswick aquaculture operations to lower costs to remain competitive. Access to capital and operating lines of credit appears to be a universal challenge since several years without sales or revenue (variable according to the species cultured) are required for newly placed inventory to reach marketable size. In the absence of safety-net programming to assist with the management of business risk, many traditional lenders are reluctant to finance established aquaculture operations. For new operators or developing sectors where a history of financial viability has not yet been established, finding private financing represents an even more significant challenge. The credit crisis currently affecting the global economy will likely complicate this issue.

In this context, government programming has become increasingly important. ACOA provides financial assistance for research and development, establishment, expansion and modernization of aquaculture operations, as well as the development and marketing of value-added products. The provincial government, through the Fisheries and Aquaculture Development Board, has the ability to provide loans and loan guarantees on operating lines of credit. The government's Regional Development Corporation may also support aquaculture operations through its regional development funds.

New production technologies have promoted significant expansion of shellfish culture operations over the past decade and lead culturists to modify or change the equipment that they employ. As such, government financial assistance programming should be reviewed in the context of its ability to support this growth. It is important to recognize that the needs of existing operators (cash flow) differ from the needs of new entrants (capital + cash flow). Current programming through ACOA offsets the cost of capital investments for operators wishing to upgrade their technology (i.e. changing from bottom oyster culture to the floating-bag system); therefore, capital expenses are generally not limiting existing operations. Access to operating lines of credit is a challenge for all given that several years are required for newly placed inventory to reach marketable size. Programming will likely be needed for a few years to support operators until such time as their sales volumes are sufficient to sustain ongoing operating expenses and expenses related to continuing development efforts. Given the labour-intensive nature of shellfish aquaculture operations, there is strong interest in programming to provide assistance with wages. New Brunswick Aboriginal groups involved in shellfish aquaculture have also highlighted access to financing as a challenge to development.

Improvement through Technological and Biological Advances: Since suspended culture techniques are still relatively new to the New Brunswick industry, continuing improvements to technology are a priority with respect to improving efficiencies or enabling expansion of operations. In particular, industry has identified the need for mechanization of processes



related to defouling of equipment and product and grading of product, as well as the development of facilities for product depuration and/or holding of product to ensure inventory for marketing during times of harvest closures or severe weather. Genetic factors can also have an important impact on the economics of any farm operations, the selection and maintenance of stock with resistance to major diseases of concern being a priority for shellfish culturists. A number of government programs, such as DFO's Aquaculture Innovation and Market Access Program, DAA's Total Development Fund, and others through ACOA and the National Research Council's Industrial Research Assistance Program, are available to support industry initiatives in this regard.

Labour and Training: New Brunswick is experiencing shortages of skilled and semi-skilled workers, a challenge that is exacerbated in industries whose workforce requirements fluctuate seasonally. The seasonality of site-related positions in the shellfish industry poses some difficulties with respect to

recruitment and retention. While the shellfish industry reports experiencing little turnover in its workforce, qualified workers are scarce. This presents a challenge for companies wishing to expand, as new employees need to be trained on the job. While most skills and knowledge required by workers in the shellfish aquaculture industry are gained on the job, the increasing sophistication of the industry from both the technical and business perspectives may create a need when it comes to upgrading specific aspects of the education and skill base of existing entrepreneurs and employees, as well as providing basic husbandry and operational guidance for new entrants to the industry. New Brunswick Aboriginal groups involved in shellfish aquaculture have highlighted the need for additional training with respect to continual improvements in operational practice. The New Brunswick Community College (NBCC) in Caraquet offers programs in aquaculture as well as in business management for small and medium-size enterprises, but current enrollment in the aquaculture program is not high. The college is interested in working with government and industry to assess the situation with a view to increasing enrollment.

Strategic Actions:

- 2.1 *Review financial programming available to the shellfish aquaculture industry in conjunction with other appropriate parties involved in financing operations with a view to longer-term (4 to 5 years) solutions.*
- 2.2 *Support projects to evaluate:*
 - *suitability of new equipment and/or technologies for New Brunswick conditions, and*
 - *adaptations of current equipment and/or technologies to improve performance, durability or functionality (i.e. reduction of biofouling, bird deterrent devices).*
- 2.3 *Support projects that seek to facilitate year-round harvesting.*
- 2.4 *Support projects aimed at improving industry processes and efficiency and/or reducing costs of production at shellfish operations.*

- 2.5 *Support technical missions, technology transfer, and workshops providing information for the industry on recent developments and new technologies.*
- 2.6 *Support advances in genetics through broodstock improvement.*
- 2.7 *Work with the industry to evaluate and update their current training requirements.*
- 2.8 *Work with the NBCC to evaluate current programs as well as adaptations to the delivery and format of modules in order to meet the current needs of industry, increase accessibility, and improve enrollment.*
- 2.9 *Support industry workshops that provide opportunities for hands-on technology transfer and relevant training courses through appropriate New Brunswick training facilities, including community colleges and universities.*
- 2.10 *Develop incentives that encourage aquaculturists to hire skilled workers.*

3. Business Risk Management

Aquaculture is still widely perceived as a high-risk sector. As such, investors lack confidence in the industry, and financing is difficult to attract. Developing a more attractive investment climate for all scales of production is imperative, and thus both industry and governments must define measures to quantify and reduce the risks inherent in aquaculture.

For aquatic farmers, the current lack of available coverage for critical risks such as sudden mortalities, severe weather events, invasive species, disease, and harvest closures related to environmental biotoxin levels is a critical weakness in their ability to manage business risk and protect their investments. Government can assist by supporting industry-led initiatives, such as best management practices (BMPs), standard operating procedures (SOPs), and improved biosecurity at both the farm and other industry facilities. These initiatives can reduce risk of loss and minimize the impact when such an event does occur. This is important not only to the operators themselves but also in order to reassure the private-sector financial services industry (FSI) that

operators are actively managing their operational risks, thereby reducing the risk to FSI involvement/ investments in those operations.

There are some commonalities between what would be beneficial from a risk-reduction perspective and what may be required in the future for market certification purposes. In that regard, the development and implementation of auditable risk-control protocols could be useful as a background for certification. By demonstrating compliance with BMPs and SOPs, investor and public confidence should increase. In addition to reducing on-farm risk, practical and profound supplemental benefits would accrue in the areas of food safety, environmental sustainability, and public confidence through a common performance measurement system put in place by a given company and multi-purpose third party audit. This would serve to enhance industry productivity, competitiveness, profitability and social licence. Nevertheless, applying such risk management strategies across a broad sector of small and medium-size ventures remains a challenge.

Strategic Actions:

- 3.1 *Encourage the identification and development of appropriate business risk-reduction programming or tools for the shellfish aquaculture industry, with a view to development of a comprehensive risk-control process.*
- 3.2 *Support measures that would be expected to reduce industry exposure to critical business risks, increase confidence, and support the insurability of the industry.*
- 3.3 *Prioritize the review of overwintering site applications in order to reduce the risk to existing operators.*
- 3.4 *Support industry initiatives that investigate and seek coverage for critical risks.*
- 3.5 *Encourage an increase in the number of stations and frequency of sampling for phycotoxins in shellfish growing areas to minimize the geographic area and financial impact of shellfish harvest closure zones in the event of toxic algal blooms.*

4. Shellfish Health and Biosecurity

The New Brunswick shellfish aquaculture industry currently does not have disease issues and has not been affected by aquatic invasive species, such as tunicates, that are causing damage to shellfish industries in other jurisdictions. It is critical that government and industry take proactive measures to prevent the introduction of disease and invasive species in New Brunswick waters. Education of marine resource users regarding diseases of concern and potential impacts of invasive species is a proactive approach to minimizing the risk of introduction. In addition, improved industry management practices and continued surveillance are imperative to minimize spread and impact, if and when an introduction occurs.

Strategic Actions:

- 4.1 *Support research through shellfish health projects, with emphasis on developing/improving diagnostic techniques for shellfish diseases of concern and improving stock health and survival.*
- 4.2 *Support initiatives that further the development of a bio-secure environment to prevent and/or manage disease and invasive species issues.*
- 4.3 *Proactive delineation of hydrographic zones to inform the establishment of Controlled Aquaculture Areas as a management tool in the event of the introduction of disease or aquatic invasive species.*
- 4.4 *Support educational and awareness initiatives for all users of the marine environment, including development of a communications plan to better educate marine stakeholders regarding Introductions and Transfers requirements as relates to aquatic invasive species.*
- 4.5 *Finalize an Aquaculture Shellfish Health Policy for New Brunswick.*



5. Market Access and Consumer Confidence

Currently, it is estimated that just over 60% of New Brunswick cultured shellfish, particularly oysters, is sold in Canada, with the rest going predominantly to markets in the United States (U.S.). For the oyster industry, product demand exceeds supply at this time, and there are plans for industry expansion that would see sales increasing threefold over the next few years. It is unclear whether this increase would result in market saturation, and therefore, market development will be essential in the coming years.

Shellfish aquaculture is a carefully regulated industry in Canada, in particular with respect to shellfish sanitation and public health. The Canadian Shellfish Sanitation Program (CSSP), co-managed by DFO, the CFIA and EC, outlines the regulatory framework related to the classification and patrolling of shellfish harvesting areas and the harvesting, processing and distribution of shellfish. While some differences exist between the CSSP and the U.S. National Shellfish Sanitation Program (NSSP), the programs are equivalent in providing reasonable assurance that bivalve molluscs are safe for consumption.

Demands by consumers, retailers, and foreign governments for additional assurance of food safety and product traceability throughout the value chain are increasing. While such demands do not currently pose a barrier to product sales for the New Brunswick shellfish aquaculture industry, it is important to stay on top of market trends and potential implications. Additionally, certification of products with respect to sustainability of production methods is becoming an important market driver. Identifying cultured shellfish products from New Brunswick-based companies via development of premium brands, niche or specialty products and programming for quality standards, environmentally sustainable production methods, and traceability will enable local producers to continue to command top price for their product and increase their access to new markets. At the same time, there is a need to address the lack of knowledge at the consumer and retailer (fish counter) level with respect to standards for quality and traceability as well as the meaning and value of third party-certification where applicable.

Strategic Actions:

- 5.1 *Support gathering of intelligence to further define new market opportunities.*
- 5.2 *Support the development and implementation of Codes of Practice, Standard Operating Procedures, and/or initiatives relating to improving product quality, demonstrating sustainable production methods, and enhanced food safety and traceability.*
- 5.3 *Support ongoing efforts to work with the CFIA and the United States Food and Drug Administration to ensure that industry harvesting and processing procedures meet both Canadian and U.S. standards.*
- 5.4 *Support the development and implementation of informational/promotional initiatives based on product safety, nutritional value, and environmentally sustainable production methods.*
- 5.5 *Support initiatives related to the development of value-added product in response to market demand.*

6. Strategic Infrastructure

With expansion of the New Brunswick shellfish aquaculture industry, there is increased demand on existing infrastructure as well as the need for new infrastructure in more recently developed areas. Currently, limiting infrastructure differs by location, but issues range from wharf or landing areas to access to electricity. The main infrastructure improvements that have been identified are additional small-boat launch ramps and floating docks to improve accessibility to lease locations. Growers in some areas have indicated a desire to develop common onshore facilities where they could conduct activities such as sorting, grading, etc. in a sheltered environment. With additional industry expansion, other infrastructure considerations, including biosecurity and waste disposal requirements, may need to be assessed and addressed in a proactive manner.

Ensuring a continuous supply of product during times of severe weather or harvest closures can pose a challenge for the shellfish aquaculture industry. Strategic infrastructure would be beneficial at the processor/marketer level to enable either depuration or the holding of sufficient product to cover demand for sales during such times. This type of infrastructure would also provide benefits with respect to improved product quality.

Strategic Actions:

- 6.1 *Support strategic initiatives aimed at identifying, establishing, or improving/refurbishing infrastructure to support existing operations and enable expansion of the aquaculture industry, with an emphasis on projects that benefit the industry as a whole.*
- 6.2 *Support the modernization of the shellfish processing industry, with emphasis on means to enable holding of product to ensure continuity of supply.*

7. Species Diversification

Research into the potential for culture of alternate shellfish species on the east coast and in the Bay of Fundy region of New Brunswick is ongoing, with the focus being on bay scallops, giant scallops, and quahogs. Limited demonstration of commercial/biological viability is a barrier to investment at this time.

The future commercial production of alternative shellfish species will require extensive investment to perform pre-commercial pilot scale projects to assess technical and financial feasibility and to obtain consistent results. While a number of federal and provincial programs exist to assist funding of research and development, and financing of the commercialization of alternative species, different programs focus on different phases, and there remain significant challenges in addressing the gaps in funding for moving forward. In the absence of programming to cover the entire process of bringing projects from the research phase through development and on to commercialization, companies working on the development of alternative shellfish species are financing development by taking on debt.

Strategic Actions:

- 7.1 *Through existing programs, support viable species diversification projects that:*
 - *result in significant net incremental economic activity,*
 - *are supported by a positive market outlook, and*
 - *are led by individual companies or consortia with financial capacity to commercialize the research and development project where results are positive.*
- 7.2 *Pursue the development of appropriate, multi-year programming to address the gap in funding pre-commercial development work for alternative species.*
- 7.3 *Support the gathering of market intelligence that would be used to define future development and growth opportunities.*
- 7.4 *Where sufficient companies and/or partners have indicated interest, support the development of species-specific development strategies.*



