

# Public Confidence in Aquaculture

## A Community Engagement Protocol for the Development Of Aquaculture in Nova Scotia

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# Executive Summary

Most Nova Scotians have a very positive view of aquaculture.

Research conducted for this project, including a random telephone survey of 673 residents, has revealed that a strong majority of Nova Scotians believe that aquaculture operations are clean and produce a quality product. They believe that aquaculture does not have a negative impact on the environment, that it does not conflict with the traditional fishing industry or other uses of the ocean resource, and that it does not reduce the value of nearby properties. They also believe that raising farmed fish is a good idea and that the industry provides needed jobs and economic development for rural coastal areas.

People become more concerned though when a particular operation is discussed in their own communities. While they still see the benefits that a local operation can bring, many people become concerned that there might be negative local impacts on their environment, and other uses of the coastal zone. Most people do not want to prevent aquaculture in their communities; they just want to make sure it is a good fit.

In order to increase public confidence in aquaculture, it is necessary to ensure that the industry is, and is perceived to be, environmentally, economically and socially sustainable.

The approach to developing public confidence, outlined in this report, is based on qualitative and quantitative research, conducted in the form of:

1. A literature review;
2. A random telephone survey;
3. Focus groups; and
4. Interviews.

The strategy described in this report is community-based, and emphasizes increasing confidence through personal contact, as opposed to a traditional mass-media advertising campaign.

The recommended system includes:

1. Development of an industry that warrants greater confidence through the promotion and adoption of best management practices and a goal of environmental, economic and social sustainability;
2. Strategies to foster increased political support for the industry at all levels of government;
3. Communications strategies to ensure Nova Scotians are aware of the site-specific monitoring in the Environmental Management Program, and to improve transparency by increasing the accessibility of its findings through regular reporting;
4. Development of improved communications materials with an emphasis on a sustainable industry;
5. Modern social media strategies to improve communications reach;
6. Programs to bring greater awareness of aquaculture through such elements as visits to operations and opportunities to talk with industry representatives;
7. Strategies to correct misinformation about the local aquaculture industry, and to disseminate factual information on such important issues as the environment, economics, fish health and harmony with other coastal activities;
8. Efforts to put a face on the industry and make people more aware that aquaculture is being conducted by local people in local communities;
9. Strategies to develop a connection in people's minds about the aquaculture industry and the fish people are already consuming;
10. Changes to the site application process to require that applicants engage local stakeholders before submitting an application; and,
11. Changes to meeting formats to allow for better public engagement, transfer of information, and reduction of unnecessary conflict.

The strategy is summarized in a format which describes the steps to be taken and a schedule for implementation.

# I Background

The aquaculture industry has been expanding worldwide over the past few decades, as wild fish stocks have declined and demand for fish products has increased. Based on population growth and seafood consumption projections, global seafood demand is expected to increase over 60% in the next 30 years. The World Commission on Environment and Development has recognized aquaculture's potential role in sustainable development, through contributions to food security, economic growth, and community development.

In Canada, aquaculture production represents approximately 25% of the national commercial fishery, or 170 million tonnes of fish and seafood with a value of \$845.4 million (2007 numbers).<sup>1</sup> British Columbia and New Brunswick are leaders in the industry, with 58.4% and 27.3% of national production respectively in 2007.<sup>2</sup> Nova Scotia accounted for 5% of national aquaculture production in the same year, farming Atlantic salmon, steelhead, blue mussels, quahogs, oysters and scallops. The industry supports an estimated 14,000 full-time year-round jobs in Canada, illustrating aquaculture's contribution to economic development across the country.

Despite the opportunities, expansion of the aquaculture industry worldwide has not been without its challenges. In Nova Scotia, new aquaculture projects are difficult to establish, with reports of slow approval processes and strong community opposition in some areas. Environmental impacts are a key source of contention. The industry in Nova Scotia is frequently compared with the aquaculture industry in British Columbia, despite the fact that many of the issues raised publicly on the West Coast are not applicable to the East (e.g. mixed breeding of farmed and wild salmon stock). As a result many aquaculture operations have historically chosen to set up in the neighbouring provinces of Newfoundland and New Brunswick, where less red-tape and less local resistance makes it easier to become established.

The Nova Scotia Department of Fisheries and Aquaculture is actively assisting the provincial aquaculture industry in addressing these barriers to stem the loss of potential economic and community benefits to the province.

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<sup>1</sup> Statistics Canada "Aquaculture Statistics" Ottawa, 2007

<sup>2</sup> Statistics Canada "Aquaculture Statistics" Ottawa, 2007

In 1996, the Province developed the Nova Scotia Aquaculture Development Strategy to provide a framework for the growth of the industry (subsequently revised in 2000), and in 2005 the department released a discussion paper to engage the public in conversation about the aquaculture industry. The Province is expected to release a new strategy in 2010/2011. The Department recognizes the need for transparency and an informed public as keys to the success of the aquaculture industry in Nova Scotia. It is actively pursuing strategies to reach communities across the province to help people understand the opportunities and constraints in aquaculture.

This report summarizes the main findings from intensive research on the perceptions of aquaculture in Nova Scotia, and presents a strategy for moving forward in increasing public confidence in the industry. Results have been drawn from a variety of activities conducted in 2009 including a literature review of worldwide aquaculture operations, telephone surveys to 673 residents in the province, interviews with key stakeholders, and focus groups with the public, fisheries managers, and government representatives. Through these activities the challenges and opportunities facing aquaculture have been unveiled to inform a uniquely Nova Scotian strategy for greater public confidence in a sustainable aquaculture industry.



## 2 Approach and Research Methods

The approach employed to gather the information necessary to develop a Nova Scotia strategy for communications, engagement, and increasing public confidence in aquaculture comprised four research elements. This included a background literature review of aquaculture projects around the world, a province-wide survey administered to residents of Nova Scotia, focus groups with community members, government agencies, and fisheries management staff, and targeted stakeholder interviews. Each of these research methods is discussed in more detail below.

### 2.1 Literature Review

The aim of the literature review was to identify best practices that have increased public confidence in aquaculture at other sites around the world, barriers and opportunities for initiating aquaculture operations in these communities, and possible lessons that can be applied to the Nova Scotia context. Nine case study communities in North America, Europe, and Australia were selected from a thorough review of on-line and print resources. The selection criteria included communities that had (1) future plans for existing or historical aquaculture industry activity; (2) a program aimed at promoting the image of aquaculture, and/or (3) had conducted a study on the public perception of the aquaculture industry.

Detailed information was collected from each case study through in-depth internet research, literature reviews, and phone surveys, including:

- The historical context of the region and aquaculture in the area;
- Barriers and opportunities to aquaculture that had been identified;
- Strategies that have been used to change the community/public perspective and perceptions about the aquaculture industry; and
- Any identified success factors and/or indicators of success.

From the review of these nine case studies, a variety of lessons learned were drawn that can be applied to the Nova Scotia context.

## 2.2 Province-wide Survey

The aim of the survey was to determine the average level of understanding, perceptions and concerns among the general public about aquaculture, its benefits, and any concerns regarding further development of the industry within the province. A telephone survey was designed and administered randomly to residents across Nova Scotia in 2009. A total of 673 residents completed the telephone survey, a sample that is statistically significant with a 96.2% confidence level, 19 times out of 20.

Each survey lasted ten to fifteen minutes, during which respondents were asked to answer a number of questions regarding their:

- Familiarity with aquaculture;
- Consumption of fish products and aquaculture products specifically;
- Perception of the value/benefits of aquaculture (overall and local);
- Concerns with aquaculture operations (overall and local);
- Sources of information about aquaculture and their level of confidence in this information; and
- General demographics.

## 2.3 Focus Groups

Focus groups were carried out with key target audiences, with specific aims and lines of questioning tailored to each group. In addition, the research group considered previous focus group work conducted by the Department of Fisheries and Oceans<sup>3</sup> (Createc, 2005).

### 2.3.1 Government Agencies

Three focus groups were carried out within the provincial government – one with the Coastal Resource Coordinators within the Department of Fisheries and Aquaculture, one with the Department’s managers, and the other with a multi-departmental group concerned with the conservation and development of coastal resources in Nova Scotia (Provincial Oceans Network). These focus groups were carried out after a thorough review of the Department’s current public engagement mechanisms with respect to aquaculture. Participants were asked to comment on the effectiveness of current community engagement techniques, the role of governmental departments, current challenges and success factors, and areas where communication strategies can be strengthened. Each focus group had up to 12 participants, and lasted approximately 2 hours.

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<sup>3</sup> Createc, “Qualitative Research Exploring Canadian’s Perceptions, Attitudes and Concerns Towards Aquaculture”, 2005.

### 2.3.2 *Community Members*

Two focus groups were carried out in targeted Nova Scotia communities to further explore perceptions and issues with respect to the barriers and opportunities of aquaculture, and to test and probe particular findings from the province-wide survey. One focus group each was carried out in Shelburne, Shelburne County, and St. Ann's Harbour, Cape Breton. Both of these are communities where an aquaculture facility is currently in operation. In the case of St. Ann's Harbour there was significant community resistance to the placement of the aquaculture facilities that exist there today. The focus groups comprised eight to nine randomly selected participants from the local community, and lasted 1 ½ hours. Participants were asked a variety of questions about their familiarity with aquaculture, benefits to their community specifically, and key concerns, as well as being asked to identify how public confidence in aquaculture could be increased.

## 2.4 Interviews

In addition to the above research methods, interviews were carried out with more than 20 individuals over the study period to probe specific issues and to explore mechanisms to overcome identified barriers and promote the benefits of aquaculture. Interviews were conducted with a wide range of people, including:

- Operators of aquaculture facilities and company personnel from across the province;
- Community members engaged in aquaculture dialog in their communities but not part of the industry;
- Managers and communication specialists of large aquaculture facilities;
- A representative of a key grocery chain in Nova Scotia;
- A celebrity chef; and
- Representatives of aquaculture industry organizations.

## 2.5 Analysis

Results and lessons learned from the above research methods were integrated into a comprehensive analysis, providing key insights for the Community Engagement Strategy. Emphasis in the overall analysis included examination of:

- Barriers to the acceptance of aquaculture, and associated perceptions and perspectives supporting these barriers;
- Perceived opportunities in aquaculture and effectiveness of these opportunities in enhancing community receptiveness to aquaculture; and

- Social marketing tools which have achieved or have the potential to address each barrier and capitalize on identified opportunities.

## 3 General Research Findings

The research revealed the attitude and awareness of aquaculture amongst Nova Scotians at both the provincial level and the community level. It should be noted that the findings of the qualitative and quantitative research conducted in this study supported earlier quantitative research by Createc for Department of Fisheries and Oceans in 2005, particularly as it related to the focus groups held in Atlantic Canada.

### 3.1 Provincial Level Finding

#### 3.1.1 *Nova Scotians are positive about aquaculture*

The random sample telephone survey revealed that Nova Scotians are generally quite positive about aquaculture. In particular, a large majority of Nova Scotians stated that aquaculture operations:

- Provide a high quality product that is safe to eat (80%);
- Create economic development in coastal communities (94%);
- Do not have a negative impact on the environment (63%);
- Do not conflict with the traditional fishery (69%).

Although most people do not have concerns about aquaculture and the environment, viewplanes, recreation or conflicting use of the ocean, they do not believe aquaculture operations should be placed in areas where these kinds of concerns could develop. This is an important distinction, as it reflects the feeling that these values should be protected, but generally aquaculture is not seen to be a threat.

Nova Scotians agree that establishing aquaculture operations in the coastal waters is a good idea (69%), and that aquaculture is necessary because of the pressure on wild fish stocks (79%). There is an appreciation of the economic potential that aquaculture can bring to coastal communities in the province.

### **3.1.2 Many Nova Scotians are uncertain about some aspects of aquaculture**

There was a substantial level of uncertainty amongst survey respondents about aquaculture in some cases. When asked specific questions probing attitudes and perceptions such as those mentioned above, the percentage of people who replied that they “did not know” ranged in between 15% to 25%, reflecting a lack of knowledge of aquaculture operations. These respondents have yet to form an opinion, which means that opinions are susceptible to change as people become more informed. The source and content of additional information to these undecided Nova Scotians could have an important influence on whether the expressed opinions become more or less favourable.

## **3.2 Community Level Findings**

### **3.2.1 There is general support for aquaculture in local communities**

In communities where aquaculture operations exist, perceptions of the overall industry may be directly related to the perceptions of local operations. In focus group discussions this was borne out as participants were likely to use the local operation as an example when providing their thoughts. In some cases the perceptions were very positive, and in other cases they were very negative.

Regardless of their view of the local operation, however, participants in focus groups stated that they were not against aquaculture in general and cited its job creation and ability to provide food to replace dwindling wild stocks as positive attributes. Even the most critical participants of specific operations did not condemn aquaculture outright.

### **3.2.2 Knowledge gaps**

The survey and focus groups revealed important knowledge gaps.

***There is a low level of knowledge about the size of the industry and how much aquaculture is going on in the province.*** Only 50% of survey respondents reported having visited an aquaculture operation and approximately 7 in 10 reported they were familiar with fish-farming. That may not seem too concerning, but it is difficult to foster public confidence in aquaculture when at least 3 in 10 people report that they are unfamiliar with the practice.

In focus group discussions with randomly selected community members, ***there was little awareness about environmental monitoring being conducted.*** In fact, in a focus group of random participants held in St.

Anne's Harbour, there was a very strongly held position that there was no environmental monitoring being conducted at all at the local aquaculture operations, when in fact there is a high level of environmental monitoring at that site. This lack of awareness of the monitoring that was being conducted led a participant to conclude that there was significant environmental damage being caused, shortcuts being taken by the company, and that the product from the operations was likely dangerous for human consumption.

In exploring this issue, the participants in the St. Anne's Harbour focus group reported that they would be much more comfortable if:

- There was regular environmental monitoring of the operation;
- The results of the monitoring were public and accessible; and,
- That action to mitigate problems would be automatically taken if monitoring indicated that acceptable limits were being surpassed.

This indicates a need to ensure that the local public is aware of the monitoring programs which do exist and the effects of those programs. As well, it would likely increase confidence if the public was aware of regulations pertaining to operations in their communities.

***There can be misinformation about the effect of fish farming on local wild species.*** Some survey participants assume, or have been told, that fish farming has a negative impact on traditional fishing, particularly lobsters. However, anecdotal evidence from some local lobster fishermen and aquaculture operators, and observations by some scientists, suggest that lobster populations have increased in the vicinity of aquaculture operations. It is important to provide clarity as the lack of scientific proof one way or another contributes to a lack of confidence in the local effect of aquaculture operations.

***There is also a significant lack of awareness of the connection between farmed fish and fish consumption amongst Nova Scotians.*** For instance:

- While approximately 75% of survey respondents reported that they eat Atlantic salmon, only 1 in 3 of them report that they eat Atlantic salmon from aquaculture operations;
- While approximately 60% of respondents reported that they ate mussels, only 1 in 3 reported that they ate mussels from aquaculture operations;
- When those who reported that they ate fish were asked if they generally ate farmed fish products, approximately 35% of respondents answered yes, 35% answered no, and almost 30% stated that they did not know;

- When asked if they knew where their fish came from when they purchased it at restaurants or in grocery stores, slightly more than half of respondents said they never knew where it came from.

Because almost 100% of consumed Atlantic salmon and mussels come from aquaculture operations, the results of the survey indicate that 2 in 3 Nova Scotians who eat these foods are unaware that they are eating products of fish farms. It is likely that most people who have been buying and enjoying aquaculture products, in most cases without knowing it, will have more confidence in the industry when they realize that the products came from fish farms.

### ***3.2.3 Local residents are unaware of environmental monitoring***

Concerns about the environment and conflicting use of the water were cited by some participants in focus groups. Randomly selected focus group participants had little knowledge of the environmental monitoring requirements of local operators, with some feeling that there was no environmental monitoring occurring at all. In exploring the issue with focus group participants in Shelburne and St. Ann's Harbour, even the most concerned participants felt that they would be much more comfortable if there was environmental monitoring being conducted, accompanied by transparent reporting of the results and mitigation when acceptable limits were surpassed.

### ***3.2.4 There is concern about fish health in finfish***

In the St. Anne's Harbour focus group, concerns were raised about disease in cultivated fish, primarily finfish, and the antibiotics applied to combat it. The concerns were related to the use of chemicals in a food source, and were described as similar to perceived problems related to using antibiotics in agriculture. It is likely that people who are concerned about the use of medicine to treat livestock hold the same concern about farmed fish.

### ***3.2.5 Job creation is an important positive factor***

Economic opportunity was a significant issue at the community level. In fact, in the Shelburne focus group there was a consensus that the only problem with aquaculture in that particularly economically-depressed community was that there was not enough of it. However, in each case the lack of local processing jobs was mentioned as a shortfall of the current industry. Participants were keenly aware that there could be many more local jobs if

processing was done locally rather than out-of-province. In St. Anne's Harbour, it was a sore point that a local processing plant had initially been part of the business plan when the owner of the operation was seeking approvals for the project, but that it was never built. As a result, some people felt that the community had only received about 20% of the jobs that they were promised (15 rather than 60).

### **3.2.6 Finfish versus Shellfish**

There appears to be more comfort with shellfish farm operations than with finfish operations.

Many participants in focus groups were at least aware of, and some expressed concern about, the following aspects of finfish aquaculture:

- Antibiotics used to treat disease in fish;
- Chemicals used in food;
- Breeding for rapid growth;
- Disease cultivating in enclosed places and spreading to wild fish; and
- The impact on wild fish of escapes of cultivated fish.

Some participants also stated that a cultivated fish did not have the same quality of taste and texture as a wild fish. A few participants said that it is not possible to produce a cultivated fish with the same qualities as a wild fish.

There was much more comfort with shellfish, as participants were not concerned about escapes or diseases that could create a problem for wild stocks as the species do not travel.

Interestingly, there was no mention of the difference in the appearance or footprint of the finfish operations as opposed to the shellfish operations. However, that may be simply because finfish operations are not common in Nova Scotia.

## **3.3 Assessment of Existing Department Outreach**

The current outreach efforts by the Department of Fisheries and Aquaculture can be categorized into two categories, traditional government communications and aquaculture-specific community outreach:

### **Traditional Government Communications**

- Press Releases and Communications
- Industry liaison

- Coastal Resource Coordinators (CRCs)

### **Community Outreach**

- Harvest Festival
- The Incredible Picnic
- Catch Festival
- The travelling touch tank display
- RADACs
- Community Liaison Committees
- Public Meetings
- Presentations

The traditional government communications were not reviewed as part of this project as they are not the community-based communications that are usually part of a Community-based Social Marketing (CBSM) Campaign. Although the CRCs are out in the community and can play an important role in a CBSM campaign, they are not currently engaged in public outreach to the extent that their efforts in that regard merit evaluation. It should be said though that the CRC's provided excellent information about their respective communities and ideas on how best to approach local communities about aquaculture. As well, industry representatives spoke very well of the support they received from the CRCs and from staff at the Department of Fisheries and Aquaculture.

A review of the materials that are used for presentations and displays concludes that an aquaculture communications outreach strategy should be developed, including the development of desired messages, target audiences and vehicles for messaging. Existing materials, especially those used in the travelling touch tank display, have been developed over time by Department of Fisheries and Aquaculture staff members who have been responsible for that operation. These staff members have done a commendable job considering that they have not been trained marketing or public relations professionals, but the materials lack the effectiveness of a professional marketing campaign and professional graphics. It is important that when a member of the public's attention is captured, effective and persuasive messaging is employed to make best use of that time when they are available and teach them about aquaculture. Improved communications materials are required in order to accomplish that goal.

**The Harvest Festival and 2009's Catch Festival** are examples of effective and engaging opportunities to deliver a message about aquaculture. In the case of the Harvest Festival, local operators were on hand with product for sale and enthusiastic attitudes, and the festival atmosphere with good food provided an excellent opportunity to deliver a positive message on the benefits of aquaculture. In addition, the communications work done to

report the event was particularly effective, utilizing not only press releases but audio and video clips and a vibrant web page about the event. Messages from the Minister and from local members of the community provided the convincing and effective voice of leadership and accomplishment. It was truly a celebration, and it garnered significant attention, even providing a catalyst for very supportive comments in the legislature from 3 MLAs.

**The Catch Festival** was also a good example of celebration, with a good mix of seafood product available and an opportunity to learn, from how to shuck oysters to how to cook seafood to how to match wines with seafood dishes. Because Catch was about much more than just aquaculture, the message on aquaculture was not as strong as it might have been. However, having a captive audience of people enjoying delicious seafood presents a tremendous opportunity for one-on-one dialog about the benefits of aquaculture. More has to be done to provide more information about aquaculture at such an event, including training booth personnel to give a 30 second explanation of where the product comes from.

**The travelling touch tank** is a good example of an engaging display that grabs the attention of people. The touch tank provides people with the opportunity to see and even feel sea creatures that they might never have seen before. Particularly children crowd around it to see the very interesting live specimens.

However, the touch tank display does not seem to be effective in delivering a message about aquaculture. While children are present, the attendants are busy answering many questions not related to aquaculture and protecting the species from eager hands. There is little opportunity to engage people in conversation about aquaculture and answer specific questions people might have. Without changes to how the touch tank is operated and how people are engaged, its effectiveness in teaching about aquaculture is questionable. If it cannot be made to be an effective vehicle for delivering aquaculture messaging, it should be abandoned.

The touch tank display itself does not provide information on aquaculture. It could be made to be much more informative with interactive materials, opportunities to win items through quizzes, videos, and food. While having people engaged, it is essential that the message on aquaculture is delivered.

More information on communicating with the public can be found in Section 4.6 Communicating with Nova Scotians.

**Regional Aquaculture Development Advisory Committees (RADACs)** were established to allow for a dialog between aquaculture developers and communities in order to create agreements could be formed on how to proceed with an aquaculture operation. RADACs still exist in some parts of the province, but their use has been dwindling over the years. RADAC members come from the local community. The local RADAC reviews

applications and makes recommendations to the Minister of Fisheries and Aquaculture.

The people who sit on RADACs are appointed by the Minister. This can be perceived by local people as a way of ensuring that the Committee is populated by people who are supportive of aquaculture development in order to ensure an application is supported. Such a perception can erode confidence in the process for siting aquaculture sites.

Another shortcoming of RADACs is that their use can cause significant differences in aquaculture operational requirements in different communities. While this is fine to address valid local issues, it can lead to significant confusion on the part of the industry on how to operate in Nova Scotia if there is a large degree of variance in requirements from one community to the next.

RADACs are recommended to be discontinued and replaced by a more open and interactive community dialog through open house format meetings where more members of the community can engage in discussions.

**Public Meetings** for site applications have been evolving in Nova Scotia, and for the better. More recent public meetings have included representatives from government regulators and industry operators, in order to have people on hand to answer as many questions as possible. This is a good approach as people will be less wary if they can get a straight answer to their questions. However, the meetings are still set up as an adversarial process where the proponent and government people can be grilled by people who do not want answers to questions but instead want to simply stop an operation from being approved.

Communicating with communities on applications for aquaculture sites is discussed in more detail in Section 4.7, Protocol for Community Engagement for Siting.

**Presentations** are made by department staff at schools, conferences, meetings and events.

New materials should be developed to be used at all opportunities for interaction with the public. The materials should be integrated in brand, design and messaging so that consistent messaging is being delivered. It should highlight the benefits of aquaculture, dispel myths and remove barriers to support. It should also be interactive, entertaining and interesting.

Effective communications is discussed in more depth in Section 4.6, Communicating with Nova Scotians.

## 4 Community-based Social Marketing Findings

As discussed in Section 3 General Research Findings, the research conducted for this project uncovered knowledge and attitude towards aquaculture in Nova Scotia, both at the provincial and community levels. This information helps to establish the basis for a CBSM strategy. More information on CBSM can be found in Appendix A.

In developing a Community-based Social Marketing strategy, specific tasks are undertaken:

1. Conduct research;
2. Determine desired behaviours and the target audience for them;
3. Identify barriers and benefits;
4. Develop strategies to remove barriers;
5. Develop strategies to use behaviour promotion tools:
  - a. Prompts
  - b. Commitment Strategies
  - c. Social Norm Development
6. Develop Communications Strategy

The following outlines a Community-based Social Marketing strategy to build public confidence in aquaculture.

### 4.1 Desired Behaviours and Target Audience

This purpose of this project is to increase public confidence in aquaculture in Nova Scotia. Therefore, the target audience for the CBSM campaign is all Nova Scotians. The targeted behaviour is to have confidence in aquaculture in the province.

### 4.2 Barriers and Barrier Removal Strategies

Barriers are obstacles which make it less likely for people to adopt desired behaviours. In the case of aquaculture, the desired behaviour is that people have confidence in aquaculture. It is an important part of the CBSM process to determine the barriers that prevent people from having confidence in aquaculture, and then develop strategies to remove those barriers.

Not all of the barriers are applicable to all people. However, the barriers outlined below are significant and can apply to many people.

#### **4.2.1 Barriers Overview**

The research uncovered several barriers to public confidence in aquaculture. They include:

1. Lack of knowledge about aquaculture is an important barrier to having confidence in the industry. This includes:
  - a. Lack of awareness about the industry, including what is farmed, how it is produced, the amount of aquaculture activity in the province, and the economic, social and environmental effects of the industry;
  - b. Lack of knowledge of the positive impacts of the industry;
  - c. Misconceptions about the industry; and,
  - d. Lack of understanding of regulations and environmental monitoring of operations.
2. Concern about local environmental impacts and a lack of confidence in environmental oversight.
3. A lack of awareness of the connection between local aquaculture operations and the food on people's plates.
4. Lack of political support, particularly for establishing new sites.
5. Perception of the industry as unsustainable.

#### **4.2.2 Removing the Barriers**

##### **Barrier: Lack of Industry Awareness**

The lack of knowledge about the industry is a significant barrier for many Nova Scotians. The survey found that 30% of Nova Scotians report that they are unfamiliar with aquaculture. When asked about whether aquaculture had a negative impact on the environment, on property values and on other ocean resource issues, approximately 25% of Nova Scotians reported that they did not know.

Interestingly, there is a link between awareness of the industry and support for it. In the survey, people who reported that they had visited aquaculture sites, or reported that they were familiar with aquaculture, were generally more supportive than those who had not.

Similarly, randomly selected focus group members were more likely to be supportive of local aquaculture operations if they could link them to local job creation and economic development. Some people who were unaware of environmental monitoring felt that operators were allowed to run their operations unchecked with unlimited impact on the environment.

The survey report indicates that although people are concerned about the environment, traditional fishing and recreation, a large majority of those who have made up their minds feel that aquaculture does not conflict with these issues (see section 3.1.1). It is important to increase aquaculture knowledge to foster more confidence in the industry.

### **Removing the Barriers to Industry Awareness**

The following steps are recommended to increase awareness of the aquaculture industry.

#### **Open Fish Farm Day**

The agriculture industry has a successful awareness campaign called Open Farm Day. In 2009 it was held on September 20, and on that day 52 farm families opened their farms up for visits from the public. Over 9,000 Nova Scotians visited farms on that day, learning more about farm practices and where their food comes from.

The aquaculture industry should take on a similar program. Opening up fish farm operations would remove the mystery behind the operations while at the same time educating people about the industry. Providing sample product for tasting on shore would make the visit more memorable for visitors. Visits to offshore facilities could be made possible with the assistance of local boat captains and tour boat operators, which would help build a positive working relationship with them as well.

#### **Establish Regular Tours**

Around the shores of Nova Scotia there are many tour boat operators and kayak expedition operators who offer tours of local areas and whale-watching opportunities.

These tour operators should be encouraged to include visits to aquaculture operations as part of their tours. In addition, the aquaculture industry should work with tour operators, providing them scripts, talking points and facts and figures to assist them in entertaining and educating their passengers.

### **Establish Interpretive Signage**

Interpretive signage is used by the tourism industry in Nova Scotia to highlight many of the interesting and beautiful aspects of our coastline, our culture, and our history.

Interpretive signage should also be placed in areas where aquaculture sites are visible. The signage should provide information about the existing site, as well as information on the economic benefit of aquaculture sites, environmental monitoring, how much product is produced, and where it is marketed.

### **Barrier: Lack of Confidence in Environmental Oversight**

When national research companies poll Canadians, they almost always find that the three biggest issues are the economy, health care and the environment. The order of priority sometimes shifts, but these are usually the top three issues on the minds of Canadians.

Clearly, many people are concerned about the environmental impact of aquaculture operations in their communities. Although generally the majority of people do not believe aquaculture is a threat to the environment, they want assurance of that for operations in their communities.

Assuring people of local environmental protection is a formidable challenge for any industry, not just aquaculture. For instance, although the general public supports a move to renewable energy production, there is very significant opposition to establishing wind farms in proximity or even in distant view of residents. Similarly, although many people think that we should harness the power of our tides, particularly in the Bay of Fundy, there are some who are completely against it because of concern for the environment. While people want waste collected from their curbside and want to have access to recycling and composting programs to reduce the environmental impact of their household waste, they do not want landfills, recycling plants or composting operations anywhere near where they live.

It is essential that people who are facing aquaculture operations in their communities have confidence that independent environmental monitoring is ensuring that the environment is protected.

### **Removing the Barrier to Confidence in Environmental Oversight**

The Department of Fisheries and Aquaculture's Environmental Monitoring Program (EMP) is an essential part of the picture in

developing the confidence people have in aquaculture operations. It is essential that people know about the program and have an understanding that:

- It regularly monitors for environmental indicators;
- The results are publically accessible;
- There are consequences and mitigation that occurs if the indicators are above certain thresholds; and
- That the mitigation will bring the site back into compliance.

The Environmental Monitoring Program should be promoted widely as an integral component of the Department's aquaculture program. The existing materials, such as the document describing the EMP that is available on the website (EMP Summary Report.pdf) should be updated (it is dated 2006) to reflect a more current time. The summary report is concise and effective and does a good job of communicating the program and monitoring results, however the results are out of date. The lack of current information will cause some people to believe that poor results are being hidden, undermining confidence.

As well, a companion document that is easier to read by the general public should be developed, as most lay people would not be able to understand the content of the summary report. These documents should be updated annually to report the findings of the EMP effectively and in a timely manner. This will increase public confidence in the industry.

The aquaculture website is underutilized for results of the EMP. It should have current information on environmental monitoring, and particularly the results of monitoring. It is recommended that more specific information be added, particularly for sites which are non-compliant. It would increase the public's confidence to know that, when there is a situation of non-compliance, particular action is being taken to rectify the situation and that progress is being monitored. Currently, someone reading the website can learn about the program, but not the results. It is access to the results and the follow-up that will make people more confident.

A review of the Environmental Monitoring Program itself is beyond the scope of this project. However, it is important to note that the EMP program must be designed and funded to ensure environmental protection is achieved. Accordingly, the parameters measured and the methodology should be routinely reviewed and adjusted as necessary to ensure that the program is effective in protecting the environment.

## **Barrier: Lack of Connection Between Local Aquaculture and Food on People's Plates**

With 75% of Nova Scotians eating cultivated Atlantic salmon and 66% eating cultivated mussels, one would expect that would translate into support for cultivated seafood. However, according to the survey 2 in 3 of those people are not aware that they are eating aquaculture products when they eat Atlantic salmon and mussels.

It is likely that most people will be less concerned about issues such as fish health and environmental issues if they come to realize that they have been long-term, satisfied consumers of aquaculture products.

Eating cultivated seafood is an unknown cultural norm in Nova Scotia, and it should be exposed in order to increase public confidence.

## **Removing the Barrier to Connecting Aquaculture to Food**

The Department of Fisheries and Aquaculture should work to make people understand the connection between the food on their plate and the activity of raising the food in aquaculture operations on their coast. This should be done by raising awareness that the products have been grown locally. Until processing is done in Nova Scotia, the products will have to be promoted as being from Atlantic Canada. However, as Nova Scotia processing grows, the product should be promoted as a home-grown product, as is done with blueberries, maple syrup and milk.

This can be achieved with the following initiatives.

### **Grocery Store Promotion/Research**

Pilot test a project where people in grocery stores are given an opportunity to taste test a local product, like Atlantic salmon and mussels. While they are eating the products, people should be asked if they realize that they are eating aquaculture products, and told a little about it. Then ask an exit question before the person leaves: "What do you think about farmed fish?"

There is some potential that people who are against aquaculture may stop eating cultivated fish if they find out that it is farm-raised. On the other hand, they might feel that aquaculture must be okay because they have enjoyed the product for so long. It is important to test this out in a pilot project before rolling out a broader social marketing campaign. Should the pilot project show that there is a positive response to people making the connection between the fish they eat and aquaculture, a broader campaign should be pursued.

Making people aware that their fish is farmed can be accomplished in many different ways. A “Grown in Atlantic Canada” logo (or something similar) can be used, such as with the “Taste of Nova Scotia” brand. The logo could be used on printed packaging and rolls of stickers could be provided to fishmongers to place on packages of fresh fish sold at the seafood counter.

As well, discount coupons could be distributed that promote the benefits of local aquaculture products, including job creation, and also provide the consumer with an opportunity to save some money on their next purchase of cultivated seafood. As coupons can be tracked by their barcodes, the campaign could be used to measure the willingness of people to buy the products after they have been informed about their source.

This project could be funded by the Department of Fisheries and Aquaculture, but conducted by the Aquaculture Association of Nova Scotia, in partnership with retailers and processors.

### **Buy Local Campaign**

There is a growing interest on the part of consumers in buying locally grown and produced food. This interest is showing up in campaigns such as Buy Local, the 100-Mile Diet and the Slow Food campaign. It is the idea behind the Taste of Nova Scotia, a successful program that promotes Nova Scotian food, and is funded in part by the Province.

The movement towards locally produced food is based on sustainability. The idea is that by buying food locally, people are making a difference in the environment (for instance in reducing carbon emissions from long distance shipping and refrigeration) and supporting local jobs, businesses and the economy.

By demonstrating to consumers that seafood can be part of their 100-mile diet, the industry can piggy-back on a social norm that is already developing to support local food producers. Encouraging local processing by producers would allow more Nova Scotia product to be identified as such, which would make it more local and more attractive to people looking for that attribute when shopping. It would also allow for more product to be sold at the source, which would be even more attractive.

Currently some but not all local seafood growers are listed on the Taste of Nova Scotia website. The Department of Aquaculture should work towards getting more producers into the program. It should also include aquaculture products in its own communications materials.

## **Barrier: Lack of Political Support**

In interviews with people in the aquaculture industry, it was revealed that there is a feeling that there has been a lack of political support for aquaculture in Nova Scotia, and that more political support could assist the industry in its efforts towards sustainable growth.

Industry operators feel that local support for operations is lacking at the time of siting, and that local elected officials are quick to support vocal minority groups that are opposed to siting. There is also a feeling that despite the good work of the Department of Fisheries and Aquaculture, there is not perceived support at the political level. The moratorium on aquaculture expansion in Port Mouton is often cited as an example of a lack of political support for the industry.

## **Improving Political Support**

The following describes how political support could be encouraged and how it could benefit the growth of a sustainable industry.

### **Federal Level Support**

More support at the federal level could clear the way for more efficient and timely response to aquaculture applications on the part of regulators, in particular the Department of Fisheries and Oceans, Transport Canada and Environment Canada. People within the industry feel that faster response times would reduce cost and reduce the incidence and severity of community opposition to planned sites. There is a feeling that some regulators are not anxious to provide timely responses to applications if there is a sense of opposition in local communities, because of the potential discomfort that could be felt by elected officials if the site is approved.

Federal political support could take the form of requiring responses to applications to be provided within a specific timeframe. The timeframe should be chosen to give sufficient time for comprehensive evaluation, but short enough to ensure that there is no unnecessary delay.

### **Provincial Level Support**

Increasing public confidence in Nova Scotia's Aquaculture industry cannot be accomplished without strong leadership at the very top of the provincial government. That is, the Premier, Cabinet and Minister of Fisheries and Aquaculture have to be squarely behind this industry if it is to have an opportunity to grow with the confidence of Nova Scotians. A lack of political support for the industry will undermine all other efforts to foster support among the public. No amount of communications and

strategic planning will be able to overcome a lack of tangible leadership from the government.

At the provincial level, MLAs should be told how much support there is for aquaculture across the province. The survey indicates that Nova Scotians believe aquaculture provides important and needed jobs in coastal communities in the rural parts of the province. Although they want to be sure that there are no negative impacts locally, Nova Scotians are of the opinion that aquaculture does not generally have a negative impact on the environment, that it does not conflict with other uses such as traditional fishing, and that it does not have a negative impact on property values. They also believe that aquaculture facilities produce a clean, quality product. Providing MLAs with the evidence that Nova Scotians support aquaculture, will make it easier for them to make their own support known.

### **Municipal Level Support**

At the municipal level elected officials should realize that a sustainable local industry, where environmental impacts are successfully mitigated and aquaculture coexists with other ocean resource users, can create economic development.

Municipal elected officials should make themselves aware of the economic opportunities that aquaculture brings to their communities, including:

- Direct and indirect jobs;
- More opportunity to attract financial support for waterfront infrastructure;
- Opportunities to support economic expansion and a new industry in their own community;
- Potential for increased tax revenue from new businesses.

### **Barrier: Perception that Industry is Unsustainable**

There is significant concern by some people around the world that aquaculture is an unsustainable industry. Those who feel that way express concerns about:

- The amount of fish needed in finfish feed;
- Impacts on wild finfish stocks;
- Medicine and food additives;
- Impacts on other activities in the coastal zone.

These concerns are held by many people and are the subject of frequent discussion and of information campaigns by people who are concerned about the effects of an unsustainable industry.

There are persistent myths about the industry being unsustainable and there are persistent truths as well. Both must be addressed in order to foster public confidence. The best way to do that is for the Province of Nova Scotia to commit to a sustainable aquaculture industry and to take the necessary action to develop it.

### **Establishing a Sustainable Industry**

The Province should declare that Nova Scotia will have a strong, vibrant aquaculture industry that employs best practices to ensure environmental, economic, and social sustainability while pursuing growth. The industry will take advantage of the vast and rich coastline of the province, while doing so in harmony with all other uses of this precious resource and with the environment.

This is a call for leadership for an industry in which Nova Scotians can have confidence and pride. It is also a call for leadership to develop a sustainable industry with strong and effective environmental monitoring and regulations to ensure the protection of all other interests of Nova Scotians. In this manner, the Department of Fisheries and Aquaculture can pursue its roles as regulator and promoter of Aquaculture harmoniously.

As well, a sustainable industry is better able to weather challenges that may develop in the future. The state of the cod fishery is a stark example of what can happen to an unsustainable industry.

A key component of the success of the industry will be the social licence to operate in our coastal zone. By being a truly sustainable industry, Nova Scotia's aquaculture industry will earn its right to take its place on the coastlines of the province. It will have a social licence to operate in the resource that is common to all Nova Scotians.

The following section defines a vibrant, sustainable aquaculture industry that deserves the confidence of Nova Scotians.

### **Defining a Vibrant, Sustainable Aquaculture Industry**

A vibrant, sustainable aquaculture industry has the following characteristics:

#### **Employs Best Available Practices**

The aquaculture industry is one that is evolving quickly, as advances in research, medicine, equipment and operational practices are rapidly occurring. The Province will assist the industry in ensuring best practices are followed and continuously updated creating a strong, competitive and sustainable industry.

### **Has Stringent Environmental Monitoring**

The Nova Scotia Department of Aquaculture's environmental monitoring program is a mature and effective means of monitoring individual sites as well as the larger impact of aquaculture on a larger scale. As the industry evolves, so too must the environmental monitoring program as an insurance policy against environmental impact. The environmental monitoring program will need to integrate with communities, provide local reporting and transparency in order to assure local residents that their communities and local resources are being protected.

As well, the environmental monitoring program must undergo regular evaluation to determine the need for new measurable indicators where necessary. In addition, the environmental monitoring program should be further refined such that it will be able to provide predictive modelling capabilities and predict, through trend analysis, where problems may occur before they do (as an example, a trend of increasing sulphides could signal the need for mitigation before regulatory thresholds are exceeded).

### **Has Transparency as a Guiding Principle**

The industry will need to operate in as transparent a manner as possible, while affording operators the necessary ability to protect their business interests and information from their competitors. However, results from environmental monitoring must be accessible at the community level so that local people can have confidence in the operations around them.

### **Strives to Maximize Economic Opportunity**

A sustainable aquaculture industry must be internationally competitive while maximizing economic return to the people of the Province of Nova Scotia. This includes maximizing job creation by ensuring that processing of aquaculture products is done in Nova Scotia and not in neighbouring provinces or other parts of the world. The development of the industry must include the development of local processing if it is to enjoy the confidence of Nova Scotians. This is simply a matter of getting the most return from the use of the province's natural resources.

Additionally, there must be support for associated economic development that supports the industry, such as businesses providing services and products to operations, training facilities, research, etc. The jobs need not all be on the water and in processing plants.

### **Is In Harmony with Other Resource Uses**

Aquaculture operations must be developed in a manner that is harmonious with other local interests for the coastal resources, including:

- Commercial fishing;
- Recreation;
- Transportation; and
- Tourism.

If the industry is seen to be developed at the expense of other uses of the common coastal resource, it will not gather and maintain the confidence of Nova Scotians. It must be, and must be seen to be, an economic benefit that does not detract from other uses of our ocean resource.

## **4.3 Benefits**

There are a number of significant benefits of aquaculture, and it is important that people are aware of them. It is a principle of CBSM that awareness of associated benefits is key to adopting a particular behaviour. In this case, that means people are much more likely to support aquaculture if they know and understand the benefits of the industry.

The benefits to a sustainable aquaculture industry include:

- Economic growth and job creation;
- Substantial spin-off economic development;
- Providing food for the world at a time when traditional stocks of fish are dwindling; and,
- Opportunities to support wharf infrastructure in coastal communities.

These benefits should be communicated at every opportunity. They should appear on the website, on communications materials and in presentations. The communication of benefits should be integral in all communications pieces.

## **4.4 Prompts and Commitment Strategies**

CBSM communications strategies make use of prompts (reminders) and commitment strategies to support the adoption of behaviours.

The design of prompts and commitment strategies are developed at the pilot design stage of CBSM program development, and therefore these elements have not been developed yet. However, the following are examples of how prompts and commitment strategies may be implemented.

Some examples of potential prompts, all of which have been discussed in other portions of this report, include:

- Waterfront interpretive signage that raises awareness of the presence of sites;
- Stickers on fish product packaging that notes that the product is locally grown; and,
- Coupons which provide people with a discount off of a purchase of locally-grown seafood.

Commitment to try aquaculture products can be powerful in establishing a social norm. They can be sought at such places as:

- Events;
- Presentations;
- In-store product promotions; and,
- On the Department's website.

## 4.5 Building a Social Norm

Social norms are a very powerful aspect of societies, and breaking or changing social norms is very difficult. For instance, there is now a social norm of not smoking indoors. Twenty years ago, it would have been very difficult to ask someone not to smoke indoors as the cultural norm was that to smoke in a home, at a restaurant table, even in an elevator was fine. Now, the social norm has been reversed and to light up a cigarette in any of those scenarios would be done at one's peril. Similarly, even though aquaculture has been practised in Nova Scotia since the 1970's, the social norm that remains is that seafood is acquired through traditional fishing methods.

It is imperative that aquaculture be made to be a norm for the supply of seafood, just as farming is for other food types, if it is to have the confidence of Nova Scotians.

Aquaculture is something that is not top of mind in Nova Scotia. People generally do not give the industry much thought, and it is likely that most people are unaware of how much aquaculture activity is taking place in the province, nor how close operations are to where they live.

If people are unaware of aquaculture as an industry, they are less likely to be accepting of it as a part of the local fabric of life in the Maritimes. As they become more familiar with the industry and more knowledgeable about it, they are more likely to have more confidence in it. In fact, the research conducted for this project demonstrates clearly that support for the industry increases with awareness.

Interestingly, there is already a norm of eating cultivated fish in Nova Scotia, as was revealed by the survey research. That is, 75% of Nova Scotians are eating cultivated Atlantic salmon and 60% are eating cultivated mussels. However, two substantial issues with this status quo work against this reality helping to establish a recognized cultural norm. They are:

- Most of the Atlantic salmon and blue mussels eaten in Nova Scotia have been raised and/or processed out of province; and,
- Only 1 in 3 people who eat these species realize that they are eating aquaculture products.

As the number of aquaculture operations in Nova Scotia increase, people will become more aware and more comfortable with them. In the meantime, there are 3 important steps that can be taken:

- Make Nova Scotians more aware of the existing operations in Nova Scotia;
- Make Nova Scotians more aware that they are eating aquaculture products;
- Make Nova Scotians aware that they are likely eating farmed fish from Atlantic Canada when they are eating salmon and mussels.

Communications efforts should include a social marketing campaign to make people appreciate that they are already part of the aquaculture industry in Nova Scotia as consumers, and thank them for their support. This will make them realize aquaculture is already a normal part of their lives.

The campaign should also put a local face on the aquaculture operator, similar to the campaign Farmer's uses on the side of their milk containers which show dairy producers as members of local communities. The fact that the local aquaculture industry is made up of people working in local coastal communities should be made clear to everyone.

The following are recommended CBSM approaches to building the social norm.

#### ***4.5.1 Putting a Face on the Industry***

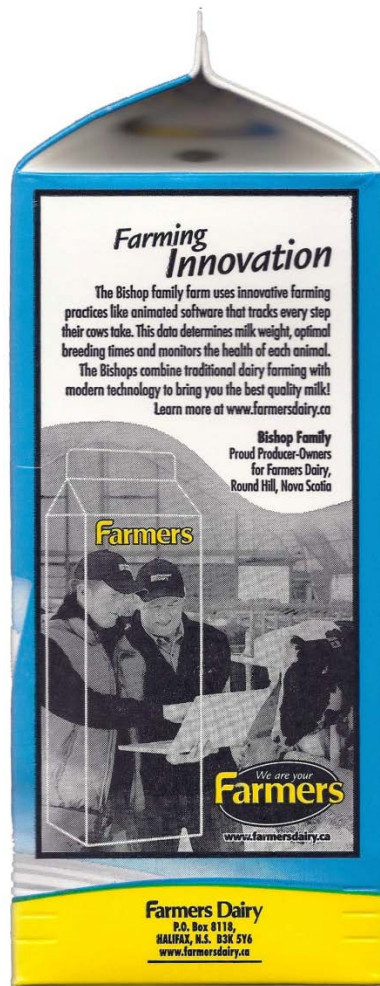
In focus group discussions, many people spoke about local aquaculture operations but did not know who was involved in them. They may have

known people who worked there, but they did not know who managed and operated the facility. They did say that they would like to know who it was, and how to contact them if necessary.

People can be wary of things when they do not have sufficient information and there is not transparency. Many people will automatically assume that there is something to hide if they feel that there is a cloud of secrecy over an operation.

In discussing community relations with aquaculture operators, there was a spectrum of opinion on how to communicate with the local community. On one end of the spectrum were operators who felt that it was best to operate “under the radar” so that no unnecessary attention was brought to the operation. On the other end were operators who believed that communications with the community was so important that you could never do enough. Operators holding that view felt that transparency was important to good community relations.

A good example of a CBSM approach to putting a face on the industry can be seen on the side of Farmers Dairy milk cartons. Each panel in the series depicts a farmer in a photograph on his/her farm, has a brief paragraph of the farm operation, and says where the farm is located in Nova Scotia. It is a solid, grassroots campaign that tells Nova Scotians that their milk does not just come from the store; it comes from hard working people like themselves, in their community. It makes an important connection between the industry and the consumer and between the farm and the food on the table.



The Department of Fisheries and Aquaculture should work with AANS and individual operators to put a face on the industry. The following should be undertaken.

### **Recruit Articulate Spokespeople for the Industry**

During the research phase of this project, the consulting team spoke with many articulate and down-to-earth aquaculture operators who are

excellent communicators and would do a wonderful job of representing the industry and their communities. A communications strategy should be developed that would identify a number of these operators and a profile should be created on each of them. The outreach strategy should include:

- Stories in local newspapers (weeklies and monthlies) highlighting what is going on in the local aquaculture operation, how many jobs are created, how much product is produced, etcetera. The stories should include a picture and name of the operator/spokesperson for the company. Other subjects could include supporting business owners, RDAs, local Chamber of Commerce representatives or elected officials. It may also include others in the traditional fishing industry that may benefit from local aquaculture operations, such as lobster fishers.
- Series of videos of aquaculture operations, like a virtual tour. They should comprise vivid scenes, like finfish feeding and mussel harvesting. Have a company representative as the main spokesperson, but also others from the community. They should include shots of product ready for eating to connect the production to the plate. The videos should be placed on the website, offered to media, used for presentations in booths, at schools, events and conferences.
- A local celebrity chef could be chosen to promote aquaculture. The chef would develop recipes for different products, would participate at events, and be featured in magazine articles and videos highlighting seafood. The chef would integrate into existing programs such as the Harvest Festival and Catch, and would emphasize the benefits of eating locally produced seafood.

## 4.6 Communicating with Nova Scotians

Although generally Nova Scotians have a positive attitude towards aquaculture, when it comes to siting aquaculture operations there is often significant opposition to the establishment of new operations and expansion of existing ones. This is not a new phenomenon; in fact it is common to many different industries. For instance, although most people believe that harnessing wind energy is a good idea, there is often vehement local opposition to the establishment of new facilities.

Similarly, local opposition should be expected when siting aquaculture facilities. It is likely that the amount of opposition will vary from community to community, as well as the effectiveness of local organizations that may form to oppose the establishment of facilities.

As well, in many communities there will be support, although it may not be visible as supporters do not usually become engaged and organize others as those people who oppose things. The amount of support may vary from one community to the next, depending on many factors including:

- Existing uses of the coastal resource;
- The need for jobs and economic development;
- The people who are establishing the operation (local owners/operators are likely to receive local support more readily than outsiders);
- The level of concern with respect to environmental protection.

To overcome this local opposition and develop confidence in aquaculture a strategic approach is necessary that employs the following aspects:

- Develop a positive track record of sustainable aquaculture operations;
- Deal with people honestly and fairly;
- Listen to and respond to the concerns of local communities;
- Educate Nova Scotians on the facts of aquaculture;
- Maximize local economic benefits.

The following explores each of these strategic elements.

### **Develop a positive track record of aquaculture operations**

As more and more aquaculture operations are established and are proven to be harmonious contributors to local communities, there will be less concern and anxiety regarding new operations. Accordingly, data should be gathered and disseminated on the positive aspects of aquaculture, including:

- Job creation;
- Economic development;
- Production;
- Markets (let people know that fish grown locally are being consumed all over the world).

This information should be collected and updated regularly, and made readily available through the internet and in newsletters, newspaper articles, social media and other venues. In particular, the performance and the opportunities for growth in the industry should be part of every communications piece and effort that the Department of Fisheries and Aquaculture and the industry produces.

An aspect of this is increased transparency with existing operations. In discussions with local operators, it was often mentioned that the best thing to do is to “stay under the radar” and avoid attention. In fact, local operators should be encouraged to robustly engage their local communities to inform them about the successes they are having and what it means to the community, and to listen to and react quickly to concerns which may arise before they have time to fester. Local operators should be encouraged to open up their operations to tours, either conducting them themselves or partnering with local tourism companies (tour boat and kayaking operations are good examples). Staying under the radar may have short term local benefits, but engaging the local community and promoting the benefits that the local operation brings to the community will foster increased public confidence and make expansion and siting of new facilities easier. A rising tide floats all boats.

### **Deal with people honestly and fairly**

While it is not suggested that they are not doing so now, it is important that aquaculture operators and the Department of Fisheries and Aquaculture deal with people honestly and fairly, and be perceived to do so. In particular, it is important that reasonable expectations be established at the time of siting.

For instance, there should not be promises of processing plant jobs unless there is a guarantee that a processing plant will be built. Although there may be short-term siting benefits to dangling an array of potential benefits in front of a local community, public confidence will be seriously undermined if promises are not kept. If a processing plant is possible depending on business and economic factors, then the opportunity should be discussed in that context. If an operator intends to establish an aquaculture operation and take the product out of province for processing, then that should be stated clearly in the business plan.

### **Listen to and respond to the concerns of local communities**

Local communities must have confidence that local operators are listening to them and responding to their concerns. This is part of community engagement. If an operator responds quickly and effectively to community issues then the community will have increased confidence that the operation is being conducted responsibly now and will be in the future. If the operator does not respond quickly and effectively to the community, trust and confidence will be lacking.

In order to promote and ensure that community concerns are addressed, each operation should be required to develop their own community engagement protocol which works best for their community. This need not be expensive or burdensome and could take the form of such elements as:

- A telephone number posted at the wharf for people to call if they have concerns or questions about the operation;
- Regular community briefings through a newsletter, website or open house;
- Involvement in the local RDA or business community;
- Sponsorship of local community events.

### **Educate Nova Scotians on the facts about aquaculture**

There is a lot of opportunity in a sustainable growing aquaculture industry in Nova Scotia, and they should be communicated to Nova Scotians. This includes opportunity for:

- Jobs, including re-employment for people who used to work in the commercial fishery and processing industry;
- Economic development;
- International trade;
- Replacement of wild stocks with cultivated seafood products in cases where wild stocks have been depleted and can no longer be sustainably harvested;
- Contributions to the provincial tax base by a robust industry;
- Opportunities for investment in infrastructure, such as wharfs, landing areas and transportation which can benefit other local industries.

In addition, there are many misconceptions and misunderstandings as well as incorrect or out-of-date information sources circulating about the industry. There is fear about food safety and about the transfer of disease from cultivated fish to wild fish stocks and other species. There are misconceptions about the effects of medicine and the contents of food.

The communications strategy mentioned above must target these myths in an education campaign that is aimed at delivering facts and eliminating

falsehoods and misconceptions. A credible spokesperson should be chosen, one that will be trusted and believed. Such a spokesperson should have the academic credentials to back up the statements and also the ability to speak in everyday language.

### **Maximize Local Benefits**

The more benefit there is to local aquaculture operations, the more support there will be for them. The opportunity for the most benefit is in the area of economic activity and job creation.

Currently, there is little processing of Atlantic salmon from Nova Scotia aquaculture being done in the province. Most of what is produced is being shipped to New Brunswick, Prince Edward Island and Newfoundland for processing there. This represents a lost opportunity for job creation in the province, not only in fish processing, but also in marketing of product, provision of services and materials to processing plants and other opportunities. It also means that Nova Scotians do not have direct access to seafood grown in their own communities. They accommodate the industry, but do not have direct access to the product. This is something that is well understood by people in coastal communities where aquaculture operations exist.

The Province of Nova Scotia should take steps to ensure that the aquaculture industry is structured in such a way to maximize benefits to Nova Scotians. It is recognized that caution must be taken in the approach, because government intervention in markets can have negative consequences. However, there should be a plan developed and implemented to move the industry in the direction of processing product locally to ensure maximum benefits are realized.

### **Staffing Requirements for Community Outreach**

It is recommended that the Department hire a full time Community Outreach Coordinator (COC) to work on communicating with Nova Scotians about aquaculture. The Coordinator would be responsible for coordination of outreach programs and the development of communications materials. As well, the COC would liaise with the industry association to assist in the development of training information and materials.

The COC would also be responsible for:

- Coordinating the development and maintenance of a new and engaging website;
- Developing social media outreach programs in order to take advantage of the newest technologies for reaching people;

- Coordinating the development and implementation of communications strategies with targeted messaging, target audiences and effective media approaches;
- Organizing events such as the Harvest Festival;
- Organizing public events;
- Answering calls from the public about aquaculture;
- Conducting presentations in schools and to community groups around the province.

The COC would be responsible for coordinating community outreach for the Aquaculture Division.

### **Use of Social Media**

Social media is a rapidly growing communications element that should be a component of the aquaculture communications effort. Social media includes Facebook pages, Twitter, YouTube, blogs and other internet based communications elements.

Social media is often used by people to access the most up-to-date information possible. Twitter allows people who write information, including bloggers and traditional journalists, to announce stories that they have written before they even get published. Facebook has been used by people to develop and nurture groups with a common interest, and allows people to cooperate in finding and sharing research. It is also being used more and more for organization around causes and events, for creating support groups, and even for fundraising.

As part of the research for this project, the study team examined aquaculture communications on Twitter and Facebook over a period of 6 months.

Aquaculture is already prominent on both Twitter and Facebook, and the level of activity is growing. On Twitter, industry representatives, opponents and observers share information daily. Usually new information is announced on Twitter before it shows up in the traditional media. At the national level, the Canadian Aquaculture Industry Alliance has a strong presence on Twitter, and often addresses negative campaigns within hours, citing facts and research.

Nova Scotia's aquaculture community so far has been virtually absent in social media, and there is not a significant presence by local opponents either. The traffic on social media sites is more about aquaculture in general and in other countries. When Canadian aquaculture is discussed, it is usually in the context of salmon farming in British Columbia.

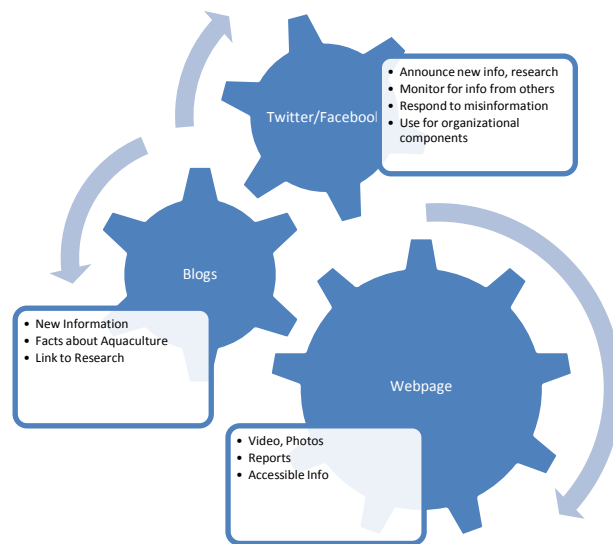
The Nova Scotia Department of Fisheries and Aquaculture should seize the opportunity to be first out of the gate on Nova Scotia aquaculture

communications through social media. There is an opportunity to disseminate information in a manner that is quicker and more direct than other media. Unlike other media, there is no need to convince a news editor to carry a story, which can be difficult if the story is not bad news. Twitter and Facebook integrate well with print media, reports, photos and videos through direct links, so there is a tremendous opportunity to put effective communications materials directly in the hands of interested people. Twitter is used by many bloggers to announce that they have posted a new story on their website, which allows them instant publication and readership.

Social media works well with Community-based Social Marketing because of the social diffusion that is inherent in its elements.

The Department should launch a strategic initiative in Social Media that comprises an integrated approach of a revamped website, blogging of current information, and use of twitter for immediate dissemination. The following graphic depicts how these elements would work and support one another in an effective and integrated social media campaign.

*Figure 1: Nova Scotia Aquaculture Social Media Approach*



## 4.7 Protocol for Community Engagement for Siting

The most difficult issue facing the growth of the aquaculture industry in Nova Scotia is siting. There has been significant difficulty in establishing new operations and expanding where operations already exist. On occasion, the siting of aquaculture operations can become a difficult and protracted battle

between proponents and community members. It is made even more difficult as politics becomes integral to the conflict.

Even with a large number of approved leases, it is difficult to get new operations in place, particularly for finfish sites.

In order to reduce the conflict in communities, a new process for siting must be developed. What follows is a description of how siting should be followed to reduce conflict in communities, reduce the time taken to establish sites, and to increase the frequency of successful siting.

### **Siting Criteria**

Currently, siting of aquaculture facilities is based on regulatory criteria, which are based on environmental, fisheries and transportation issues. None of these criteria take into account the community in which the site is being pursued. Although public meetings are held and members of the community can raise concerns, there are no regulatory criteria to address many of the concerns.

It is recommended that 2 other levels of criteria be established. They are:

1. Community criteria; and,
2. Opportunity criteria.

### **Community Criteria**

While community criteria would not be required to be met by a proponent, the siting process would require an effort to determine and accommodate the criteria that members of a community might expect to be met. This could include:

- Siting of the operation in an area or manner that accommodates other uses, such as fishing, recreation, tourism and view planes;
- Coordination with nearby, existing aquaculture operations;
- Placement in an area known to have good flushing;
- Placement in an area in poor fishing grounds;
- Coordination with municipal planning;
- Local job creation; and,
- Integration with local economic development plans.

### **Opportunity Criteria**

There may be some opportunities for siting that may make a site more desirable than others. For instance, opportunities for:

- Multi-trophic operations;
- Enhancing wild populations;
- Increasing the use of a municipal wharf and other infrastructure;
- Supporting other industries; and,
- Employing local residents.

### **Determining the Criteria**

As part of the application process for a lease, proponents would be required to contact or meet with local community leaders, municipal officials, other waterfront and coast users, local business organizations (such as RDAs) and other important stakeholders in the community. They would be required to submit a report which would list community and opportunity criteria which have been developed, and would articulate a plan to best address those criteria, showing what would be done to accommodate the criteria where possible and why not when it is not possible.

It is believed that taking this approach of engaging the community early in the siting process in a respectful and constructive manner will increase public confidence within the community, reduce unnecessary opposition to establishing the operation, develop a level of trust between the proponent and the community, and develop a relationship that will allow future concerns to be resolved in a reasonable manner.

### **Open Houses**

In order to improve communications with the public, the public meetings that are required to be a part of the approvals process should be made to be in the form of Open Houses where information is made available on display panels situated around the room and people can move around, examine them, and have one on one conversations with people involved in the operation or with government regulators. The setup is less confrontational and gives everyone the opportunity to ask questions and get them answered. It also allows for constructive suggestions and discussion about how an operation could best fit in a local community.

The public meeting format, where one person at a time has the floor and questions are asked of a panel at the front of the room are often antagonistic and domineered by only a few attendees. Many people are intimidated by having to ask their questions in a large group setting, and those who may be supportive or have suggestions may not wish to speak in front of people who are voicing their opposition. In short, the public meeting format does not allow for free discussion and sharing of ideas, and should be replaced by a friendlier and more congenial format that will allow all people to participate without reservation.

## 5 Conclusion

It is said that John Cabot was awestruck by the amount of fish he found on Canada's east coast when he arrived from England in 1497. He reported that his crew could lower a bucket over the side of the ship and fill it with fish. It was this observation that began centuries of European fishing off of the coast of a land which many years later became settled as Canada.

Now, half a millennium later, not only Canada but the entire world has seen drastic declines in fish stocks and the industries that were built upon them. In Nova Scotia we have seen entire communities decimated by the lack of fishing and fish processing jobs.

Aquaculture is growing rapidly around the world, and for good reason. As the development of land-based agriculture increases the availability of food and makes its acquisition less taxing, so too does aquaculture increase the availability of sea foods, particularly in this time of declining wild fish stocks.

Nova Scotia has a tremendous resource: miles and miles of coastline, much of it very well suited for the cultivation of seafood products. This represents an opportunity to grow food to feed the world while at the same time developing jobs and economic opportunity at a time when it is much needed.

The growth of aquaculture in Nova Scotia is going to require the support of Nova Scotians.. In this day and age of educated consumers and wary skeptics, that confidence must be earned.

The strategy presented in this report comprises a series of recommendations for the development of public confidence in aquaculture through the pursuit of a vibrant, sustainable aquaculture industry that exists in harmony with the other uses of Nova Scotia's coastline, and ensures economic, environmental sustainability. It boils down to just a few overarching principles:

- Environmental Protection;
- Economic Development;
- Social License;
- Respectful Consultation; and,
- Transparent Monitoring.

The rest is simply good, effective communications.

Appendix B is a summary table of the recommended approaches to improving public confidence in aquaculture in Nova Scotia.

## Appendix A – Summary of Best Practices for CBSM Programs

Information and educational campaigns and other traditional programs have proven very successful in building awareness and understanding of sustainability issues. Techniques that rely heavily or exclusively on media advertising however, are limited in their ability to foster behavioural change. Community-based social marketing (CBSM) includes a variety of effective “tools” for promoting behaviour change, which are often most effective when used in combination. These tool categories are as follows:

- 1. Commitment:** Many CBSM-based programs ask people for a pledge or agreement to carry out a specific action. Research shows that once people make a commitment to one activity, they are not only more likely to follow through with it, but also more likely to agree to more demanding commitments in the future. Commitments can take public, written or verbal forms. Research indicates that written commitments are stronger than verbal ones, but public commitments are even stronger.
- 2. Prompts:** Are visual or auditory aids that are effective in reminding people to engage in sustainable behaviours. The purpose of a prompt is to remind people of a commitment they have made and/or to perform a particular action. The prompts may be in the form of a sticker, memo card, or tag in appropriate locations that provide a visual reminder to engage in certain behaviour. For example, placing a sticker on a light switch which reads “The last person to leave must turn off the lights” can be effective in conserving electricity.
- 3. Norms:** People often mirror their attitudes and behaviours by observing those around them, particularly those people they interact with the most often, such as family or co-workers, or those they interact with within their community. Often referred to as peer pressure, these social norms make it difficult for people not to adopt the accepted behaviour. An example of a strong norm, developed in the last decade in Nova Scotia, is curbside recycling.

**4. Personalized / Vivid Communication:** People are much more likely to remember information that is tailored to their needs and evokes images that are personal to them. Word of mouth and personal contact are supporting elements of personalized / vivid communication. **Word of mouth** builds on the assumption that people often respond best to information received from people they interact with in their communities and whom they trust.

**Personal contact** relates to the major influence that our contact with other people has upon our attitudes and behaviour. Discussions about topics are much more likely to change behaviours than passively receiving information about the topic. For example, if you watch a documentary on outdoor water use, and subsequently discuss it, the conversation you have may convince you to make your lawn caring and gardening efficient.

**Feedback**<sup>4</sup> is a process for providing participants with information about the impact of their actions. Individual feedback provides information on the impact of an individual's participation, whereas community feedback provides the results of an entire group's efforts. A sub-type of feedback is **cognitive dissonance** which builds on the "uncomfortable feeling" caused by holding two contradictory ideas simultaneously. The "ideas" or "cognitions" in question may include attitudes and beliefs, the awareness of one's behaviour, and facts. The situation is solved by changing their attitudes, beliefs, and behaviours, or by justifying or rationalizing their attitudes, beliefs, and behaviours.

#### **5. Incentives Disincentives, Awards and Recognition**

Incentives are particularly effective when motivation to engage in action is low or where people are not doing the activity as effectively as they could be. Incentives include initiatives such as discounts and bottle deposits that entice people by rewarding them for taking action. Disincentives, such as fines, discourage people from taking actions you want them to avoid. Awards and recognition are meant to provide social recognition to people on their efforts towards positive change.

#### **6. Convenience**

Many of the tools mentioned above, although very effective, may not change behaviours if significant barriers exist that make the behaviour inconvenient or difficult to adopt. CBSM strategies are developed to be as convenient as possible to overcome specific barriers to changing behaviour. For example, if it is difficult to install low-flow toilets, then program design should consider developing a program where toilets are installed for the resident.

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<sup>4</sup> <http://www.toolsofchange.com/en/tools-of-change/feedback/>

## Appendix B – Aquaculture CBSM Initiative Table

<b>CBSM Initiative</b>	<b>Approach</b>	<b>Benefits</b>	<b>Timing</b>
<b>Increase Awareness</b>			
<b>Open Fish Farm Day</b>	Allow people to visit aquaculture operations	Increases awareness, increases comfort level, increases transparency	One per year starting in Fall 2010
<b>Establish Regular Tours</b>	Allow people to visit aquaculture operations, try pilot project with 2 interested operators.	Increases awareness, increases comfort level, shows nothing to hide	Pilot project in Fall, 2010
<b>Establish Interpretive Signage</b>	Use interpretive signage to show people that an aquaculture site is present. Target 5 signs per year for 2 years.	Increases awareness, opportunity to promote benefits	Fall, 2010
<b>Environmental Oversight</b>			
<b>Update EMP Summary</b>	Update the document on the website and keep it current by making it an annual report. Make the language easier to understand. Announce when the new report is ready through traditional and social media.	Increases transparency, reinforces environmental monitoring is happening, demonstrates accountability	Start in 2011 on report for 2010.
<b>Connect Operations to Plate</b>			

Community Engagement Strategy for Aquaculture

<b>CBSM Initiative</b>	<b>Approach</b>	<b>Benefits</b>	<b>Timing</b>
<b>Grocery Store Pilot</b>	Pilot program to test consumer reaction to aquaculture product. Include discount coupons.	Tests strategy to make more people aware that they are already eating aquaculture products.	2 week period in Fall, 2010
<b>100-Mile Diet</b>	Develop marketing campaign materials for 100-mile diet approach. Review existing materials for opportunities to promote aquaculture products as local food.	Piggy-backs on existing interest in 100-mile diet.	Ongoing
<b>Leadership</b>			
<b>Increase Political Support</b>	Establish campaign to educate MLAs, local MPs, RDAs, Chambers of Commerce about aquaculture and economic development opps, and to communicate level of support for aquaculture across the province.	Raises level of understanding, dispels myths, reduce opposition, recruit proponents, improve timeliness in regulatory approval process	Ongoing
<b>Establish Goal of Sustainable Industry</b>	Provide leadership towards sustainable industry; R&D for BMP; Training; Monitoring; promote certification	Increases confidence; competitive edge; further business opps; goodwill	
<b>CBSM Element – Prompts</b>	Develop prompts (such as stickers to be affixed on packaging by fishmongers, signage, etc.)	Reminds people of prevalence of aquaculture products, helps build confidence and social norm	Begin Summer of 2010
<b>CBSM Element - Commitment Strategies</b>	Train staff and industry people how to secure commitments at every contact; Develop handbook.	Ensures likelihood of confidence in industry, trying product, etcetera	Develop handbook spring, 2010. Training in spring, 2010 when students are hired, and again in 2011
<b>CBSM Element – Establish Social Norm</b>	Develop and implement “put a face on it” campaign	Connects aquaculture industry to people in community who operate fish farms	Develop Fall of 2010 for launch in Winter of 2010
<b>Communications Strategy and Materials</b>	Develop a strategy for communications to support programs mentioned above	Provides strategic message, brand, print and video materials	Ongoing
<b>Outreach Coordinator</b>	Hire a person who will be tasked with outreach campaign organization	Provides dedicated resources to effort	Ongoing
<b>Changes to Application</b>	Ensure that community engagement is	Encourages dialogue with community,	Spring 2011

<b>CBSM Initiative</b>	<b>Approach</b>	<b>Benefits</b>	<b>Timing</b>
<b>Process</b>	conducted before an application is submitted	stakeholders. Identifies potential issues and mitigative measures.	
<b>Changes to Public Meeting Structure</b>	Change to Open House format. Training session for staff and industry.	Encourages discussion, information sharing, prevents public consultation from degrading to a few people shouting	Summer 2010