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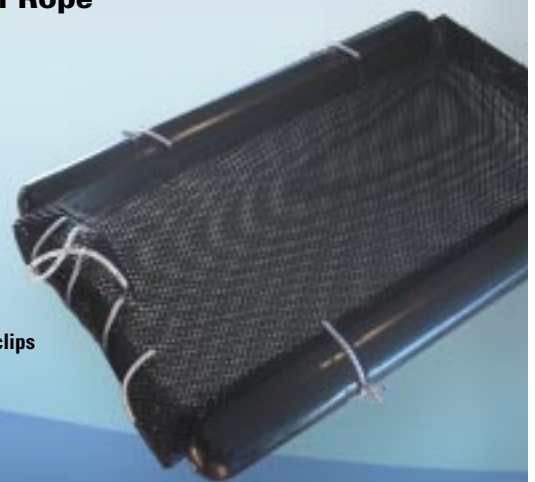
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this issue

Cod aquaculture in Newfoundland

The Department of Fisheries and Aquaculture commissioned a study to review the state of cod aquaculture.

P3



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the industry

Minister's Column

Supporting aquaculture development in Newfoundland and Labrador.

P6

Offshore aquaculture

The Bush Administration brings its national offshore aquaculture legislation to Capital Hill.

P9



AquaNor 2005

Delegation heading to Norway.

P14



Task Force

New Brunswick-led report on the financial state of the salmon farming industry in Atlantic Canada.

P11



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P17

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A close-up photograph of a yellow buoy, which is a common piece of equipment used in aquaculture.



NAIA

Executive Director

MIKE ROSE

Alice says to the Cheshire Cat, "Would you tell me, please, which way I ought to go from here?"

"That depends a good deal on where you want to get to," said the Cat.

"I don't much care where," said Alice. "Then it doesn't matter which way you go," said the Cat.

"... so long as I get somewhere," Alice added as an explanation. "Oh, you're sure to do that," said the Cat,

weeks ago our lead cod strategy consultant, Tom Clift, used the well-known exchange between Alice and the infamous cat as the lead-in to one of our final sessions on cod aquaculture. Then, shortly after that at an economic development forum in Marystown, I participated in a fisheries and aquaculture panel discussion which they titled, "Where to from here?"

As I thought about these coincidental references, I wondered whether those in the Canadian aquaculture industry must feel a little (or a lot) like Alice these past couple of years. Her journey through Wonderland truly became *curiouser and curiouser*, including the smiling pussycat who was always happy to give Alice advice, even though it was vague at best. Without getting into details, these past few years have been a frustrating maze for industry as it has struggled with global market changes, financing hurdles and pressure tactics from mad-hatter lobbyists, while, at the same time, continuing the (inexplicable need to) 'fight' for appropriate federal governmental recognition and support. So, as it relates to the future direction of the aquaculture industry, many of us wonder, "Where to from here?"

It is also coincidental that a local business reporter very recently used the phrase 'at a crossroads' when describing the Newfoundland mussel sector. It is an apt description which suggests opportunity or, possibly, roads not taken. If I may stick to my modest theme, however, this is further evidence that the question, "Where to from here?" is relevant, for different reasons perhaps, across sectors at this particular point in time.

It was unplanned, but this edition

of *The Cold Harvester* contains several stories underpinned by the "Where to from here?" theme. It was that very question that prompted NAIA to request the support of Minister Trevor Taylor last year to establish a strategic review of cod aquaculture. As the executive summary of Tom Clift's report indicates, we now have a clear, objective answer to the nagging directional question: natural progress, that's 'where to.'

Onward and upward for this industry, that's definitely 'where to.' That, in fact, could be the mantra of Brian Dobbin whose plainly expressed view can be found in his excellent article reproduced in this edition. His conclusions are inescapably bang on and should serve to strengthen the view that aquaculture is, inevitably, an industry of the future. That said, nobody suggests there won't be a few bumps on the way up. Just ask anyone associated with the Atlantic Salmon Task Force, a virtual, "Where-to-from-here?" hit team on behalf of the entire salmon industry in Atlantic Canada. A review of the Task Force report is provided in this edition.

Through all tribulations in recent times, NAIA remains focused on our fundamental goal which is wealth creation for the benefit of our province. In other words, we know 'where to,' but the evolving challenge is how to get there from here. With that in mind, NAIA continues to review the current status and direction of all four major species. Our cod study is now complete and we hope to participate in similar strategic updates on mussels, steelhead and salmon by September 2005. We look forward to providing a further "Where to from here" update in the next edition of *The Cold Harvester*.



Navigating Forward:

Where to from here?

"if you only walk long enough."

I have had two occasions recently to reflect on long-lost Alice in Wonderland memories. Several

COD AQUACULTURE IN NEWFOUNDLAND

Where to from here?

• BY TOM CLIFT •

EXECUTIVE SUMMARY

In December 2004, the Department of Fisheries and Aquaculture of the government of Newfoundland and Labrador commissioned a study that was designed to review the current state of cod aquaculture development in Newfoundland and Labrador. A six-phase study was proposed by the Newfoundland Aquaculture Industry Association, in conjunction with the P. J. Gardiner Institute of the Faculty of Business Administration, Memorial University.

The primary objectives of this study were as follows:

■ 1. To assess the current state of development of cod aquaculture in Newfoundland and Labrador;

■ 2. To review current perceptions with respect to the most recent business case that had been prepared for a Newfoundland-based cod aquaculture initiative;

■ 3. To examine current market perceptions of the Newfoundland farmed cod product that has been placed in the North American fish markets in recent years;

■ 4. To review recent scientific research activity and conclusions with respect to the scientific challenges associated with cod aquaculture development in Newfoundland and Labrador;

■ 5. To conduct a second-generation business case analysis based, in part, on information that might be gathered from other cod farming operations in other parts of the world;

■ 6. To draw conclusions based on the previous five stages of this review and to make recommendations as to the most reasonable approach to take in the next stage of development in the Newfoundland cod aquaculture industry.



Tom Clift leads a discussion at one of the many group meetings on commercial cod aquaculture development. Clift will outline his findings and recommendations during the Cod Forum in St. John's in July 2005.

THE CURRENT STATE OF DEVELOPMENT

The first phase of this project involved the facilitation of an all-party review of the Cod Aquaculture Industry in Newfoundland. Representatives from all parties involved in this sub-sector and those from the Newfoundland Fishing Industry at large (including provincial and federal government officials, industry members, academia and the Newfoundland Aquaculture Industry Association) came together for an all-day session designed to provide participants with a chance to assess recent developments in this sub-sector and at the same time comment on the cod aquaculture initiatives that had been undertaken in

Newfoundland in recent years.

Almost from the outset it was clear to all participants that the current environment in which the cod aquaculture operations in Newfoundland compete is a complex one – with multiple forces at play. At the same time it was also readily apparent that to date the Newfoundland-based aquaculture operations had yet to achieve sufficient economies to be deemed commercially viable.

It was generally agreed that from a marketing perspective, the large-scale or generic market is not where the opportunities lie for Newfoundland farmed cod. While it was noted that the

← Please see page 4

Cod aquaculture

From page 3

specialty market afforded the best opportunity for the Newfoundland farmed cod product, it was also noted that the most recent shipment of farmed cod from Newfoundland was perhaps not at the same high quality levels as the New England market had received some years earlier.

It was also noted that the Newfoundland farmed cod product would likely require a specialized processing equipment and particular attention to detail with respect to harvesting and market entry in order to achieve the premium product status that industry experts suggest is possible.

Current financing models are inappropriate and in spite of the recently announced feed financing program, operators continue to find it difficult to raise the capital that is required to move their operations up to the next scale – from 500t to 1,500t.

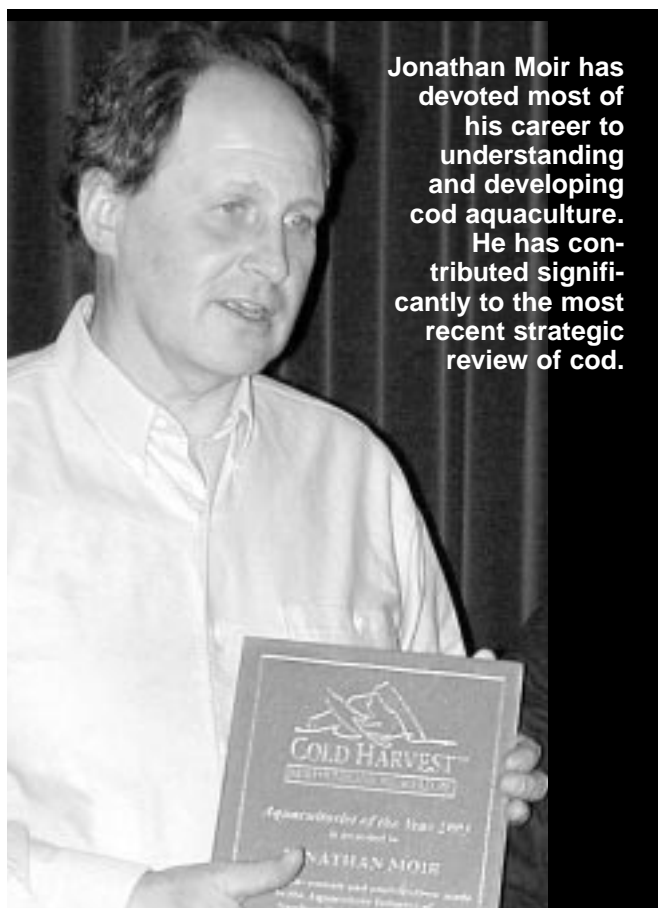
PRELIMINARY BUSINESS CASE ANALYSIS

After a detailed analysis of the 2002 Jacques Whitford/Goss Gilroy economic model assumptions (1,000t farm) and in consideration of the most recent farm-based experience in Pool's Cove, the group that was convened for economic review purposes reached a consensus that factors such as the high cost of operating capital and feed would make a farm of the size proposed by Jacques Whitford/Goss Gilroy unprofitable under the assumed market conditions of that time period. It was generally concluded that in order to be profitable under today's market conditions a Newfoundland-based cod farming operation would likely need to be at least 50 per cent larger (1,500t farm) and perhaps as much as 100 per cent larger (2,000t farm). The economic conditions that



Brian Rogers contributes at one of the business case reviews during the cod aquaculture review project.

← Please see page 5



Jonathan Moir has devoted most of his career to understanding and developing cod aquaculture. He has contributed significantly to the most recent strategic review of cod.

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This very healthy cod fish was introduced to a sea cage at 5 grams in 2002. It will now be part of our developing broodstock program. This photo was taken in June 2005.

Continued interest in the farmed cod product

From page 4

were considered included such factors as: prevailing market prices; currency valuation; access to capital and cost of capital.

CURRENT MARKET PERCEPTIONS

Virtually all of the individuals that participated in the market review session held in Boston, as well as those who were interviewed separately, agreed that there is continued interest in the farmed cod product. Those individuals who appeared most interested were the brokers and retailers of specialty fish products.

In almost every case these brokers and retailers spoke of the need for an integrated approach to the marketing and distribution of the Newfoundland farmed cod product. In fact, they suggested that to be truly successful the product would require a dedicated approach to market development – one that would be based on a unique approach to such marketing activities as promotion and advertising, distribution, harvesting and market entry.

On a negative note, those brokers and retailers who were familiar with the most recently marketed

Newfoundland-farmed cod product (2004) suggested that this product was somewhat below the standard that they had come to expect. In particular they noted that the product had some black veining, was slightly softer in texture and was less flaky. In addition, they noted that the entire production volume was essentially dumped on the market in a location (Gloucester) at a time when it could not possibly have commanded a premium price, even if the aforementioned product deficiencies had been overcome.

RESEARCH AND SCIENTIFIC ISSUES

No matter what the scientific issue, or the stage of product development, those researchers that gathered for the scientific review session on cod aquaculture agreed that the Newfoundland-farmed cod sector is well ahead of most other countries that are typically associated with cod farming – notably Norway and Scotland. In fact, a detailed review of the proposed business case for cod aquaculture in Scotland would seem to indicate that many of the development metrics proposed in Newfoundland have been adopted by the Scottish cod farmers.

The researchers further commented

that none of the issues that remain would be considered to be an impediment to further development at this pre-commercialization stage. In fact, it was their hope that further progress on the next stage of commercialization

← Please see page 30

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Department of Fisheries and Aquaculture

– Supporting Aquaculture Development in Newfoundland and Labrador

The Department of Fisheries and Aquaculture (DFA) is the lead agency for aquaculture in Newfoundland and Labrador. Its mission is to support and promote the development of sustainable and viable fishing and aquaculture industries and to ensure high quality and high value products. This is achieved by providing programs and services in the areas of fisheries and aquaculture development, quality assurance, processing, aquaculture capacity management and information services.

This commitment, along with extensive collaboration, has directly resulted in a significant provincial aquaculture industry. This is illustrated by the production increase over the past 20 years. Driven by the 2000 Strategic Plan for Aquaculture, which was initiated by the Newfoundland Aquaculture Industry Association in conjunction with other federal and provincial departments, the industry currently focuses on the commercial development of four species: Atlantic salmon, steelhead trout, blue mussels and Atlantic cod.

Atlantic salmon and steelhead production totaled 3,328 tonnes in 2004, up 28 per cent from the 2,603 tonnes produced in 2003. The higher production was a result of increased stocking levels in 2002 and 2003, as local companies expanded. Similarly, mussel production rose to 2,298 tonnes in 2004, up from 1,284 tonnes the previous year. The total value for the provincial aquaculture industry for 2004 was \$22 million, a significant contributor to both the provincial economy and the economies of rural com-

munities. The latter is illustrated by the fact that 500 people were employed by the industry in 2004.

Atlantic cod aquaculture, like that of all alternate species globally, is currently encountering difficulties with achieving commercial scale, mainly due to saturated global salmon markets reducing availability of investment capital among many large aquaculture companies. As a result, the Department of Fisheries and Aquaculture is currently working closely with the Newfoundland Aquaculture Industry Association to devise a Strategic Plan for the Commercialization of Atlantic Cod. The strategy will address the business case, research gaps, infrastructure requirements and financial support necessary for the further development of this sector.

The Department of Fisheries and Aquaculture also manages aquaculture licensing for the province, through a one-stop shop licensing system. Envied by many other jurisdictions in Canada, this streamlined approach allows a single point of contact for operators applying for new sites as well as renewing existing ones.

By establishing the Aquaculture Working Capital Loan Guarantee Initiative, in conjunction with current investment prospecting efforts, the department has also created a positive environment for investing in the Newfoundland and Labrador aquaculture industry. These investment prospecting efforts include highlighting the province's aquaculture industry to the global audience at several key events, including AquaNor in Trondheim, the St. Andrews AquaFair,

and the annual meetings of the Aquaculture Association of Canada, as well as providing an attractive investment package to potential investors. Furthermore, the department has also assisted local aquaculture companies to investigate investment in their own operations.

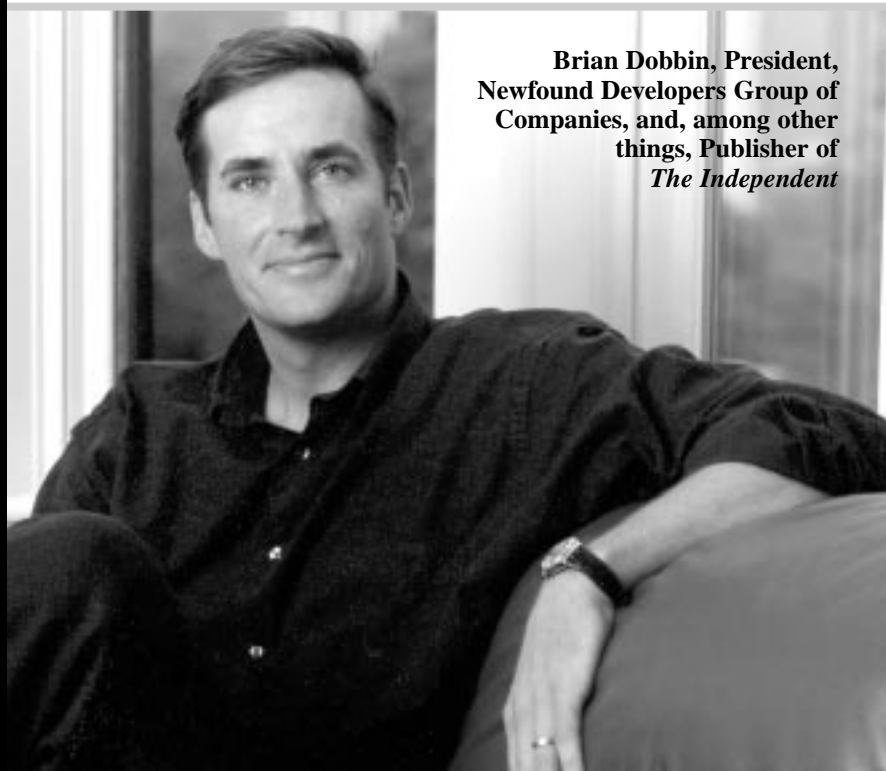
In addition to these investment exercises, the department recently completed an initiative to identify freshwater resources for rearing juvenile salmonids. This study evaluated freshwater sources, both groundwater and spring, in Newfoundland and Labrador; thereby, identifying potential locations for land-based juvenile fish and smolt production facilities.

The Department of Fisheries and Aquaculture also maintains several direct industry assistance programs. The goals of these programs are to help aquaculture companies increase efficiencies, address human resource and skills transfer requirements, and increase competitiveness. This year, three programs are underway, tailored from extensive industry consultations aimed at ensuring programs are adherent to industry needs. The Aquaculture Innovation Program is established to assist existing commercial aquaculture companies in adopting new and innovative production methods, both at the industry-wide level and site level. The Human Resource Development Program is intended to assist existing companies increase their human resource base and skills knowledge. The Marketing Intelligence Assistance Program aims to assist existing compa-

➤ Please see page 31

One More Time

BY BRIAN DOBBIN
President,
Newfound Developers



**Brian Dobbin, President,
Newfound Developers Group of
Companies, and, among other
things, Publisher of
*The Independent***

I have watched with interest and some distaste the passions and energies unleashed by the government's recent plan to re-organize the relationship between seafood harvesters and processors in our province.

I know too little (or maybe too much) to comment on the merits of the plan or the position of the harvesters and processors, but I cannot help but be moved to speak out again about the promise of aquaculture for this province.

It was my overwhelming frustration at our own experiences in this industry that moved me to write my first column for *The Independent*. Five or six attempts since then and some very kind comments back from my faithful reader(s), and I find myself in the unanticipated position of columnist.

So keeping in the theme of things that make me want to speak out, if one tenth the energy that has been spent on this new fishery plan was focused on aquaculture, in time the wild fishery would be a niche market and a secondary industry to aquaculture — and not that long a time.

Pretty bold statement. Saying that in the basement boardroom of the province's Fisheries and Aquaculture

department would generally cause a smile, rolling of the eyes, or fidgeting of buttocks on the bright orange weave chairs.

After almost 20 years involvement in the province's aquaculture effort, I believe that statement more now than when I sat and listened raptly to the passionate dreams of Cabot Martin and Craig Dobbin in the late 1980s for the future of this new industry.

I believe it now more than when I saw Jonathon Moir and his Seaforest team actually hatch and grow codfish and serve it to the St. John's Board of Trade luncheon in the 1990s.

I believe it especially now after investing \$15 million in the industry in this new century and seeing millions of pounds of our farmed fish being snapped up by American buyers raving about its quality, and a new cod hatchery sitting in Bay Roberts almost ready to produce up to 10 million new hatched cod a year.

Ten million a year! That represents potentially more than 30,000 tonnes of grown codfish a year — from one hatchery.

And yet with all these milestones behind us, I spoke two weeks ago to a couple who represent what the future could be for us and listened to them

tell me they were thinking of leaving the province.

Doug and Jennifer Caines are responsible for the salmon growing operations in Pool's Cove, a beautiful village of several hundred people on the south coast. Many times over the last five years I have brought potential investors to Pool's Cove to show them what aquaculture could become in this province.

Doug and Jennifer have a spectacular home perched on the cliffs above the cove, and you could smell the bustle of successful industry as you moved through the community. New equipment, houses well taken care of, and a positive energy that was palpable.

A trip in the new boat to the cages out in the bay teeming with tens of thousands of large salmon is very visceral. As a German partner said to me standing on the edge of the cage one glorious summer day as the fish were being fed and turning the water on top into a churning mass of seafood — "Now this is real business!"

Being from the institutional investment industry, he meant this was business that you could see, and feel, and taste.

➔ Please see page 8

One more time

From page 7

Since the receivers have moved into the management of the operations, Doug and Jennifer see the writing on the wall and recognize the coming end of what was a growing and profitable business.

As I explained in my inaugural column, the brick wall facing the industry in Newfoundland and Labrador is the lack of financing available for growing out the crops over a 30-month period. Having been all over the world looking for a solution, I can say with authority it is a tough sell. The only real solution is our government, as was the case in successful places like Norway, Chile, and New Brunswick.

What frustrates me is we are consuming so much energy on what can only be described as an earnest effort to regulate something that has evolved here over the last several hundred years. When looking at industry to invest in Newfoundland in the last 10 years, the only one we did not examine was the wild fishery. It is not the future of seafood. What do I mean? Well, let me tell you.

In 1985 the province of Newfoundland began investing small amounts in aquaculture. It was the same year Chile made its first investment. Today Chile has an industry worth over \$2 billion Cdn.

In 1985 only two per cent of seafood consumed daily in the world was farmed. By 2000 it was over 40 per cent.

In 1985, Canada was the world's leading exporter of seafood. By 2000 we had slipped to eighth, overtaken by aquaculture producers like China, Norway, and Chile, the top three.

This is not a crystal-ball situation. We are a natural place with numerous advantages for the aquaculture industry, not the least of which is our cod environment and infrastructure. If you do not believe the overwhelming majority of seafood in the coming future will be farmed, then go shoot yourself a wild cow and pick some leaves in the forest to have with it.

■ *Originally published in The Independent, May 15, 2005.*



Brian Dobbin refers to Doug Caines in his article. Doug is seen here leading a group of dedicated aquaculturists from North Atlantic Seafarms (Dobbin's former salmon company which was forced into receivership by Shurgain in 2004).



Another of Dobbin's companies focused on cod aquaculture. Jennifer Caines is seen here with the crew.

Bush opens door to offshore aquaculture

• BY SHERRY POWER, NAIA •

On June 7th, 2005, aquaculture, particularly offshore aquaculture, became an issue the U.S. government feels it can no longer ignore. The Bush Administration brought its national offshore aquaculture legislation to Capital Hill for Congressional action. Identified as a major contributor to the overall trade deficit, the U.S. currently imports over 60 per cent of its seafood. If passed, this all encompassing bill, which includes all federal U.S. waters, will potentially aid in reducing the seafood deficit that currently exceeds \$8 billion.

This legislation has been 10 years in the making with much iteration along the way and surely more to come as the bill is “tweaked” to its full potential. “As this is the second sitting for President Bush the success of this bill will ultimately depend on who NOAA has lined up in congress to support it,” says Chris Bridger of the Aquaculture

Collaborative Research Program, Oregon State University. “However, all this aside, this is an extremely important milestone, providing positive media coverage and positive hype for aquaculture,” Bridger continued.

The U.S. Department of Commerce



Offshore technology expertise will be in demand as new development strategies and open ocean sites are utilized.



Former NAIA employee Chris Bridger played an instrumental role in promoting the effective utilization of open ocean aquaculture expertise in St. John's.


policy, following the *National Oceanic and Atmospheric Administration* (NOAA) policy, emphasizes the many potential contributions aquaculture can bring to the economy. Not only a reduction of dependence on seafood imports was noted, but also the potential to provide jobs for economically depressed coastal communities and an increase in regional food security and supply.

A *National Offshore Aquaculture Act* will provide a safeguard for both the environment and multiple uses of the oceans and coasts by providing a regulatory framework outlining environmental requirements, site criteria,

← Please see page 10



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Act will provide regulatory framework

From page 9

environmental monitoring, and the enforcement of these requirements and permit conditions.

In a summary report NOAA outlines how legislation for offshore aquaculture and the Offshore Aquaculture Act will work together:

■ *Authorize the Secretary of Commerce to issue offshore aquaculture permits and to establish environmental requirements where existing requirements under current law are inadequate.*

■ *Exempt permitted offshore aquaculture from legal definitions of fishing that restrict size, season and harvest methods.*

■ *Authorize the establishment of a research and development program in support of offshore aquaculture.*

■ *Require the Secretary of Commerce to work with other Federal agencies to develop and implement a streamlined and coordinated permitting process for aquaculture in the EEZ (U.S. Exclusive Economic Zone).*

■ *Authorize to be appropriated "such sums as may be necessary" to carry out this Act.*

■ *Provide for enforcement of the Act.*

Currently the U.S. does not have a regulatory structure in place to allow aquaculture operations in federal marine waters. However, if this bill is not passed or if it goes through a long period before being passed, there are other options for offshore aquaculture. Any Regional Fisheries Council could encompass amendments to current fishery legislation to include aquaculture of this type within their jurisdiction.

The U.S. consumers are just becoming open to seafood; its palate becoming more diversified allowing for bigger markets with greater potential. Bridger also states that if offshore aquaculture becomes large scale in the



Members from the St. John's Open Ocean Aquaculture Centre of Excellence team pose near the Ocean Science Centre in Logy Bay.

U.S., it should not have an affect on pink flesh fish exports, such as salmon from Canada, but may have implications for Canadian cod development or other white flesh fish.

Finally, when offshore aquaculture does take off in the U.S. and elsewhere there is huge potential for business and partnerships for Newfoundland. NAIA and six St. John's Centres of Excellence have already formed a marketing consortium with a focus to increase awareness of local world-class capabilities, and a unique collaborative environment, for open ocean aquaculture technology. Collaborations resulting from this initiative will create a cluster of leading-edge services not available anywhere else in the world for aquaculture and technology companies interested in testing or developing offshore products, services or programs. The marketing group expects it will realize new business opportunities from the local and global aquaculture community that were previously unrealized, due to a lack of awareness of the existence of the cluster in St. John's.

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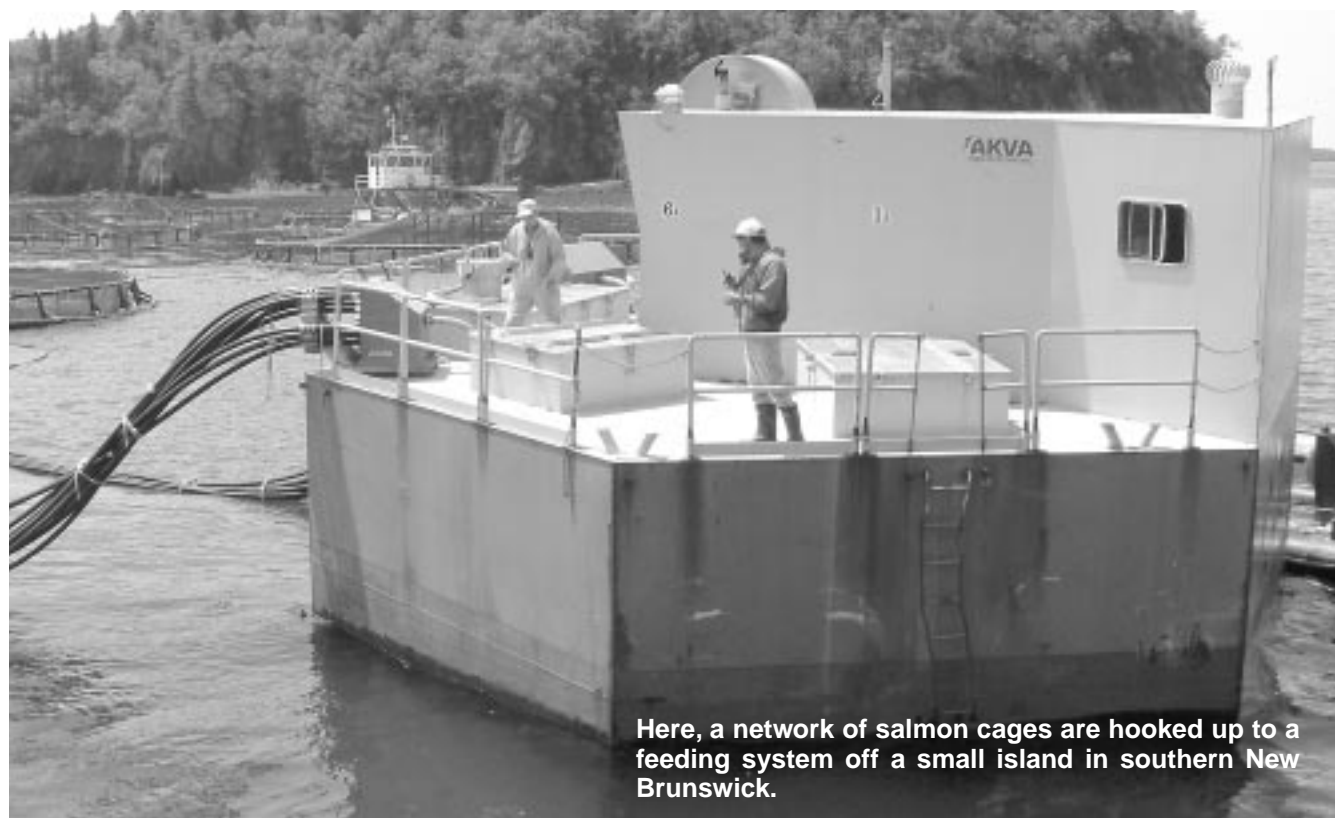
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Here, a network of salmon cages are hooked up to a feeding system off a small island in southern New Brunswick.

Task Force:

New Brunswick-led Atlantic report



Cooke Aquaculture is the leading company in New Brunswick and the Atlantic Salmon industry. Cooke's Communication's Director, Nell Halse, and former development manager, Glen Brown, provide direct information about their operations near St. George, New Brunswick.

• BY SHERRY POWER, NAIA •

While the Atlantic Canada salmon farming industry is facing significant challenges in the marketplace in terms of foreign competition (*Chile and Norway*), negative publicity (*PCB Scares*) and overall production related constraints, it does have its strengths (*Proximity to the main markets along the eastern portion of the U.S. and the ability to sell fresh anywhere in North America competitively*). Coupled with the current increase in pressure from international bodies (*High seas Conference May 1 –5*) to reduce catch quotas and access to international waters – it is a good time for Aquaculture to put its best foot forward.

The potential is there for the Atlantic Canada aquaculture industry to become a key competitor in the

global fish market and assist in the improved health of the ecosystem. But as outlined in the *Report of the Task Force on Fostering a Sustainable Salmon Farming Industry for Atlantic Canada*, released April 2005, much work needs to be done if the industry is stabilized.

The task force was led by the New Brunswick Department of Agriculture, Fisheries and Aquaculture (NB DAFA) and Fisheries and Oceans Canada (DFO) with inputs from Business New Brunswick (BNB), Atlantic Canada Opportunities Agency (ACOA), the New Brunswick Salmon Growers Association (NBSGA) and Departments of Aquaculture from the Atlantic Provinces. Their mandate was to review and report on the financial state of the salmon farming industry in

➔ Please see page 12

Approach should include funding

From page 11

Atlantic Canada and identify options and provide recommendations to ensure long-term survival and prosperity of the industry.

The report highlights that an approach to improve sustainability should include a requirement for immediate emergency funds to a mid- to long-term plan to improve a variety of areas. These areas include an overall farm management system based on environmental performance standards, the marketing of farmed salmon for the future, the implementation of an aquaculture framework agreement and finally a commitment from governments to work with industry to develop and approve financial assistance strategy relating directly to the pre-commercial development and culture of alternative species. Key areas of development addressed in the report also included reorganization and restructuring of the industry, and a transition from a product-driven industry to a market-driven industry.

Failure to address the current status of the salmon industry will greatly impact a multitude of sectors as well as rural communities that have come to rely upon fish farming as their primary economic generator. A ripple effect will take place causing lost business in processing, transportation, veterinarian services, feed and equipment suppliers, diving services, research investment and losses in employment and tax revenue.

According to the task force, the industry is in need of some sort of immediate short-term government financial intervention in order to survive. Overall industry losses for the period 2002 to 2005 were significant with 70 per cent of current companies expected to report losses during 2005. A steady drop in retained earnings and shareholder equity is a clear signal of the rising fragility of the sector.

Under normal operations producers must place their smolt in the marine environment between April and June of each year for the 18-month growout period. At this time the industry lacks



Very important talent and companies throughout Atlantic Canada await new directions. Newfoundlander and cod expert, Andy Walsh, seen here visiting the leading halibut and cod facility in Nova Scotia.

the capital to do this and financial institutions are not willing to extend the necessary credit to producers for grow out of smolt which are placed. If financial assistance is unsuccessful, the failure of many smaller independent producers and resulting sector implosion, will be a likely result.

According to the report, the industry requires a significant equity correction to maximize placement of smolt and to secure employment for Atlantic Canadians working in the salmon farming industry. This would also help support related industry including feed manufacturers and processing facilities.

Task force members also stated the importance of developing an overall farm management system to foster a market-driven industry rather than the current product-driven approach. Such an approach would include structural reform to enable the industry abilities to farm salmon on market-based principle. A review would be undertaken of a

variety of factors such as farm site system management and levels of environmental site quality and fish health quality. Development of a comprehensive system, once in place, can serve as a model for further development of the finfish industry in areas of Atlantic Canada where the type of management system used, are not yet an issue.

Transition of industry from product to market-driven is considered by the report as an essential component in ensuring the future of Atlantic Canada's salmon farming industry. It is recommended that a marketing program should be investigated by industry itself, with a primary responsibility for managing the global marketing of Canada's East Coast farmed Atlantic salmon. Additionally, the agency could also be responsible for developing a program based on country of origin labelling and overall integrity of the industry: including quality standards,

➤ Please see page 13

Need for a national Aquaculture Framework Agreement

From page 12

safety and sustainability through government regulation and monitoring; and establishing public confidence through product traceability.

Highlights from the proposed marketing strategy include promoting the Atlantic Canadian competitive advantages in the northeastern American market based on features such as freshness of product, reliability of supply, distribution providing better and fresher fish to market on a consistent basis, lower transportation costs resulting in stable prices for U.S. and Canadian markets, proximity to north-eastern market enabling selection and harvest of product and shipment in two days, and the Canadian reputation as a supplier of high quality seafood.

Also outlined, there is a need for a national Aquaculture Framework Agreement (AFA). This agreement is necessary for a variety of reasons including the decline in growth and production of the salmon industry, outdated federal programs related to aquaculture, share of the primary U.S. market taken by competitors such as Chile and a stalling in the development and diversification of farming alternate species.

The AFA would be developed to provide a set of national standards for the conduct of aquaculture in Canada. Primary elements of an AFA outlined by the task force include:

- Financing and Business Risk Management
- Environmental Stewardship (farm management planning)

- Food Safety and Traceability
- Marketing, labelling and branding
- National Aquatic Animal Health Partnership

- Science, Innovation, Diversification and Value – adding
- Wharf Infrastructure

The final major recommendation made by the task force addresses the importance of farming alternate species with the development of a financial assistance strategy to assist the development in the short term. Without adequate programming and funding to develop a commercialized alternate fin-fish industry in Atlantic Canada, it will be lost to other jurisdictions.

Overall, the report places much emphasis on the urgency of action.

← Please see page 23



Two leaders for the Nova Scotia industry also interested in a positive Task Force outcome are Brian Muise and Art Drysdale.

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AquaNor 2005

AquaNor 2005



Andrew Colford (left) is Managing Director of Aquaneuve Solutions. Colford's team is providing complete planning support services for NAIA in the delivery of the trade mission. Also

pictured is mussel grower and NAIA Board member Job Halfyard, who will be a delegate on the mission to AquaNor.

Atlantic Canadian delegation prepared to go!

NAIA is very excited to be playing a role in development of the Atlantic Canadian Aquaculture Industry Technology, Trade and Investment Mission to Norway in August, 2005. This event is strongly supported by the Atlantic Canada Opportunity Agency (ACOA), in partnership with the Department of Fisheries and Oceans, Agriculture and Agri-Food Canada, NRC-IRAP, the four Atlantic provinces, and the Embassy of Canada in Norway. Norway continues to be Canada's most important Nordic trading partner, with total Canadian exports totalling almost \$1.5 billion in 2004. Atlantic Canadian exports

accounted for some \$80 million in 2004.

Twenty-five Atlantic Canadian companies have been invited to participate in this pan-Atlantic trade mission. The anchor event is the AquaNor 2005 Aquaculture tradeshow held bi-annually in Trondheim, Norway. According to Mike Rose, NAIA's Executive Director, this mission will provide direct exposure for aquaculture and biotechnology companies from across Atlantic Canada to the world's premier aquaculture event. Says Rose, "the major objectives of the mission are to increase exports, generate new business leads, observe new technologies and form new alliances with com-

panies attending or exhibiting at the AquaNor tradeshow. Particular attention will be given to activities related to open ocean aquaculture, environmental management systems, waste management, genomics, food safety, traceability and marketing."

AquaNor, held every two years, attracts some 20,000 visitors with representation from over 50 nations. Several hundred exhibitors will use the tradeshow to showcase developments in the fields of aquaculture technology, fish health, fish feed, research, quality assurance, processing, packaging and training.

← Please see page 15

'Featured Nation'

From page 14

According to Rose, the strong participation by Atlantic Canadian companies on the NAIA-lead 2003 Trade Mission, has afforded Canada, "Featured Nation" status at the 2005 Tradeshow. He states "featured nation" status elevates the exposure of the Atlantic Canadian Trade Mission team and will be reflected in an ambitious trade mission agenda. Rose believes that participants on this Mission will gain a keen understanding of the Norwegian aquaculture industry, long considered a dominant market leader, in addition to highlighting international marketing opportunities and international research and development initiatives.

This year NAIA will provide two pre-tradeshow aquaculture site tours centreing around finfish and shellfish, respectively. Rose says the theme tours are presently being built taking into consideration what industry delegates would like to see. Currently, there is a lot of interest in visiting Ireland and Scotland to investigate the successes enjoyed by business enter-

➔ Please see page 16



Mary Ellen Walling, B.C. Salmon Farmers Association, visits Newfoundland to see a real "Cold Harvest" iceberg. Her organization will lead a west coast group to AquaNor 2005 as well. See you in Norway!



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Goal to promote, foster team building and networking events

From page 15

prises in those jurisdictions. His Association has engaged the services of one of its member companies, Aquaneuve Solutions, Inc., to provide all of the pre-mission event planning, logistics and consulting services associated with the trade mission.

Andrew Colford, Managing Director of Aquaneuve Solutions, says that while the AquaNor Tradeshow is the anchor event for the Trade Mission, the intent is to provide

more than a tradeshow event for participating companies. Says Colford, "our goal is to promote and foster team building and networking events throughout the trade mission. We are also devoting considerable time and effort in the early stages of planning to increase the value of all of the business-to-business events and all of our matchmaking services."

Mike Rose is quick to applaud the support his organization has received from ACOA to lead this Trade delegation. Rose says this

Technology, Trade and Investment Mission would not be possible without the commitment, dedicated effort, vision and leadership at the highest level at ACOA. According to Rose, "ACOA continues to demonstrate their belief that Aquaculture is one of Atlantic Canada's most promising industries."

The Atlantic Canadian delegation departs Canada in the early hours of August 3 for their 10-day Trade Mission, arriving back in Atlantic Canada, August 13.



Norwegian investment in Atlantic Canada is not a new thing. In 2003, Newfoundland's successful salmonid operator Vernon Watkins (right) participated in the mission to AquaNor.

Research and development essential ingredient to success of mussel industry

• BY CANADIAN COUNCIL
FOR FISHERIES INNOVATION •

Newfoundland's 32 commercial mussel growers sent \$5,055,000 of product to market last year. That value was produced from 2,300 tonnes of mussels, which were sold, not only in Canada and the United States, but also in Europe. In fact, mussel producers on the Island couldn't keep up with the demand in the EU.

Growth in the industry has been fast and steady. With an output of 377 tonnes in 1996, last year's production, at 2,300 tonnes, represents 500 per cent growth.

The last decade of research and development has played a huge part in the sector's growth. R&D on the species had started before the mid-1990s, but it wasn't until 1996 that a comprehensive approach to development was adopted. In that year, the Canadian Centre for Fisheries Innovation proposed and coordinated a major industry program involving the entire sector, the Marine Institute and both levels of government under the ACERA Program.

The resulting five-year program employed scientists and technologists from the Marine Institute, as well as a team of aquaculture students, who went to work on every major technical challenge facing the sector, using a science and technology-based approach.

Mussel scientist Cyr Couturier led the research team. According to Couturier, without this collaborative effort, recent industry growth would have been almost impossible: "We addressed all industry's major technical issues: improvements in seed supply, a wealth of productivity enhancements, a health survey and optimization of product quality. On participating mussel farms, yield was sometimes doubled and costs declined significantly."

According to Couturier, the team developed or transferred a long list of improvements to the Island's mussel farms. "We did a comprehensive review of the farms and their practices, identifying the best areas for seed supply, and



Cyr Couturier helps out on a local mussel farm.

uncovering weaknesses in operating practices. We then proceeded to test and implement a broad range of new methodologies and technologies with the end goal being to improve the productivity of the operations."

Researchers determined the spawning cycle of the mussel in Newfoundland

waters, developed reliable seed collection methods, conducted site assessments that measured food availability and determined the best areas to deploy, and introduced growing systems to optimize growth.

➔ Please see page 18

Continuous socking introduced to industry

From page 17

Among the improvements was the introduction of automated size grading prior to final socking. Researchers demonstrated the efficiencies to be gained with size graders and the response was an almost universal adoption of the technology. Ways to avoid the second-set problem were also devised, and in areas of the South Coast, by systematically analyzing the biological and environmental conditions on farms, the team discovered how to increase the yield from 30 per cent to 90 per cent.

Researchers also introduced continuous socking to the province's industry. A technology employed by New Zealanders, continuous socking cuts sock deployment time dramatically, allows for speedy harvests and cuts costs. It also reduces handling of the mussels and thereby reduces stresses on the animal, greatly improving quality. Farms using continuous socking in Newfoundland report significant benefits in streamlining operations.

The last major undertaking of the project was a health survey of mussels on participating farms. In fact,

Newfoundland and Labrador was the first Canadian province to conduct such a survey. And, aside from confirming to the industry that the stocks were healthy, the health survey was instrumental in providing food safety assurance and allowing the opening of markets in Europe to the provincial industry's product.

This industry-wide initiative has been finished for a few years, but the effects are still being felt in the province. The major obstacles and

← Please see page 19



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www.ccfi.ca



NAIA promoted Newfoundland mussels heavily at the 2005 Boston Seafood Show. Cyr Couturier and Andrew Colford speak with outgoing Marine Institute Executive Director Les O'Rielly.

Product and market development major concentration

From page 18

challenges that have been hampering the industry from growing have been solved, creating a platform for sustainable expansion and development.

Industry has been quick to move on, concentrating on new marketing opportunities and tackling other challenges. With Marine Institute and industry expertise, a handling guide has been developed for quality assurance for both farmers and processors. The procedures for assuring safety, traceability and quality encompass international standards, including the EU, and complement marketing efforts there.

Product and market development are now the major concentration for the industry in both Newfoundland and the Maritimes. Newfoundland's Allen's

Fisheries in Benoit's Cove has been steadily growing, and in partnership with a northeast coast farm, Badger Bay Farms, the company has adopted a marketing development strategy based on the ability to supply customers year-round. The company has asked CCFI and the Marine Institute to help develop an extended-period holding system that would allow for precisely timed sales. In tandem with this major initiative, the company is also investigating opportunities with CCFI and MI in new value-added products.

In the meantime, Badger Bay Farms is investigating new technologies for growing mussels with CCFI and the MI's Centre for Aquaculture and Seafood Development. The farm is testing the use of a new procedure in continuous socking and fuzzy rope

used in New Zealand. Testing is being done at greater depths than those of traditional operations. It is hoped that the new longer lines will produce greater productivity per hectare of farm.

Other experimentation on mussel growing technologies and protocols has been conducted by Icwater Shellfish Company Ltd. With the aim of creating greater production, diminishing the chances for secondary settlement, and decreasing the amount of time that mussels are in the water, the company and Connaigre Fish Farms Inc. worked with CCFI and the Marine Institute on a multi-faceted experiment in waters off the South Coast. Seed from northeast coast sites were transferred to the

← Please see page 20



Here we see a group of mussel producers, as well as interested support agency personnel at a recent mussel industry workshop in Gander.

Mussel aquaculture major focus of development

From page 19

South Coast and were placed in continuous socks at deep levels in the water column. The results were better than

expected, with yields surpassing the provincial average, and productivity greatly enhanced.

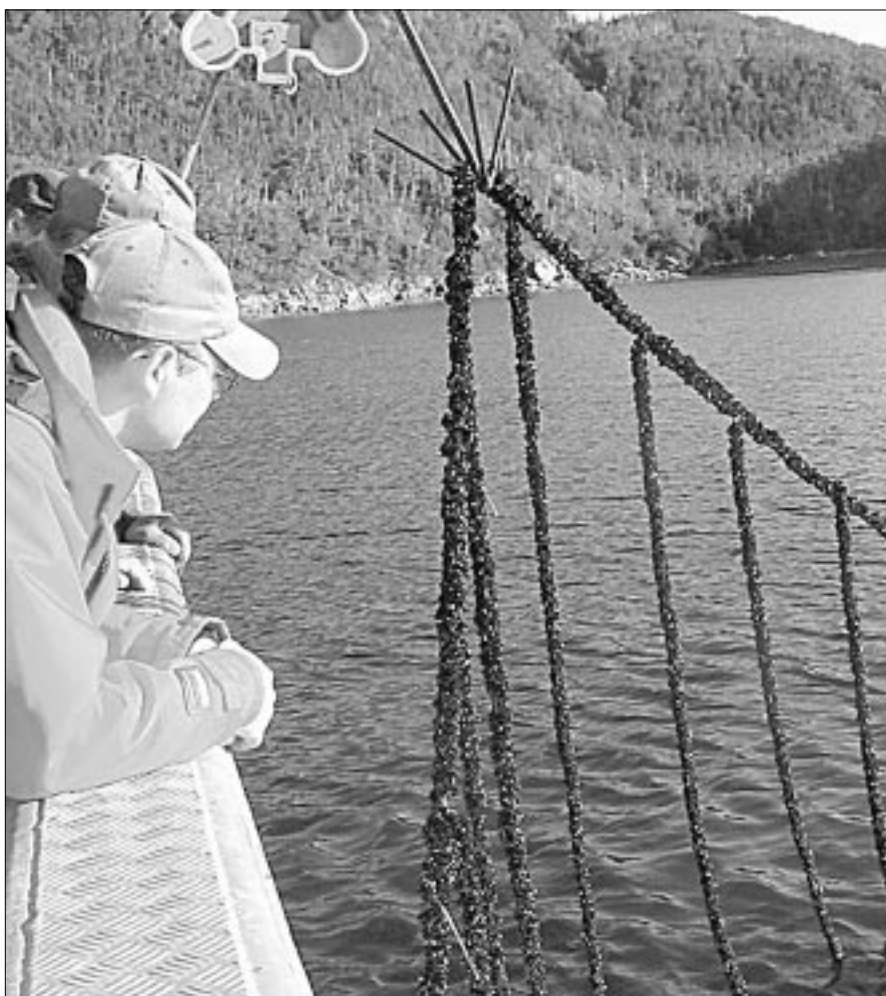
Newfoundland, of course, is only one of the Atlantic Province's mussel

producing regions and CCFI has been engaged with the farmers in the Maritimes to combat serious fouling problems with invasive species and to create value-added products.

Tunicate fouling is fast becoming a major challenge to the commercial producers of PEI and Nova Scotia. The Centre has partnered with Dalhousie University and the Marine Institute, industry, its associations and government agencies, to find a technology that will deal effectively with the pests. Work is ongoing again this summer with testing, and researchers are hopeful of a positive outcome.

With the growing potential of the sector, mussel aquaculture has become a major focus of development at the Centre. In the last two years, the organization has started a total of 12 projects valued at over \$1.4 million. In total the organization has engaged in 40 industrial projects worth approximately \$6 million. In this, the Centre has joined forces with not only industry clients, but also researchers at the Marine Institute, Dalhousie University, the University of Prince Edward Island and all levels of government, which have been actively participating in these initiatives. Without their dedication none of the industry's growth would have been possible.

For more information on the organization's cooperation with the mussel industry, the Web site www.ccfi.ca gives details on the Centre and its past projects. Industrial liaison staff can be reached in St. John's at 709-778-0517 and in Halifax at 902-835-4210.



Increased seed production is critical for increased production. Mainly, this might come from the Notre Dame Bay stock.



Fish offer more than heart smarts, says the *American Health Association*

BY THE COLD HARVESTER

As the world's aquaculture industries move into new frontiers expanding and improving upon industry technology, it has been given a helping hand through a resurgence in seafood consumption and demand in the U.S., Canada and the United Kingdom. Stories and advertisements containing scare tactics such as, "Eating farmed salmon may cause cancer," perpetrated by various NGOs, media types and other interest groups are being put to rest primarily through government recom-

mendations about the health benefits of fish consumption on a regular basis.

While the positive benefits of fish can be countered by negative images of over fishing, or the dangers of high levels of mercury in some fish, by and large the industry has a good image. In fact, as new recommendations for healthy eating arise, it seems fish is becoming a more commonly listed form of protein in many new healthier eating diets. Perhaps fish is on its way to becoming the chicken of the 21st century.

Seafood is documented

← Please see page 22



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Creative new ways must be adopted to get the message out that seafood is good for you!

Fish becoming more commonly listed form of protein in many new healthier eating diets

From page 21

as a good source of protein, vitamins, and minerals but there are many additional benefits from eating fish. Fish contains two important types of omega-3 fatty acids. These acids help keep blood thinner, lower levels of fat in the bloodstream (triglyceride levels) and prevent blood clot formation and cell inflammation.

There are over 200 species of shellfish and fish available for consumption and omega-3 fatty acids are found in all, the highest concentrations are present in “fatty” fish such as salmon, trout, tuna, sardines, halibut, herring and mackerel. *The American Health Organization* recommends that to obtain the protective effects of these

fatty acids, adults should eat *at least* two servings of seafood per week as part of a healthy diet.

In fact, recent studies conducted at *Harvard University* found that women who ate fish at least twice a week had a 30 per cent lower risk of dying from heart disease and men who ate fish at least twice, lowered their risk by 80 per cent!

Fish offer more than just heart smarts. Beneficial amino acids and omega-3 fatty acids found in seafood are reported by researchers and medical organizations as having an abundance of other health benefits. *The University of Cambridge* has published studies showing that eating fish high in omega-3 may protect against asthma and possibly reduce the number and

severity of asthma attacks for those with the disease. Other benefits reported include prevention of prostate cancer, Alzheimer’s disease and a lower risk of stroke in both men and women.

Additionally, resting the worries of pregnant women and fish consumption, a report in the *American Journal of Clinical Nutrition* found that women who consume fish during pregnancy are more likely to have babies with more developed brains.

Eating fish is by far the best way to get beneficial amounts of omega-3 fatty acids, proteins and other nutrients. While fish oil supplements can contain a level of omega-3s, they are not recommended as a substitute for fresh, frozen, or canned seafood, says the American Health Organization.

Task Force – Atlantic report

From page 13

Setting the tone that if no action is taken and soon, it will be to the demise of the Atlantic salmon farming industry, leading to mass closures of farms and an eventual breakdown of rural economies. Illustrating this tone further the report quotes the following;

Since the Task Force was initiated, two hatcheries and two salmon growout companies in Nova Scotia have gone into receivership, and one other hatchery has lost its contract to grow for a New Brunswick company and has no sales on the books for 2006. During the same period in New Brunswick, three marine sites have gone into receivership and at least two hatcheries are now challenged with no sales for 2005.



Glenn Cooke interviewed here by Mac Campbell.

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COUTURIER ON CULTURE

**BY CYR COUTURIER.
MARINE INSTITUTE OF MEMORIAL
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AQUACULTURE BUSINESS RISK

Managing potential conflict with fisheries interactions



Cyr Couturier is an aquaculture scientist with the Marine Institute of Memorial University.

BACKGROUND

Modern aquaculture and existing coastal marine users have the potential for conflict, and media headlines are often based on such conflicts. Humans are encroaching evermore on coastal areas, and it is no surprise that a variety of activities overlap including fisheries, tourism, urbanization, pleasure, agriculture, to name but a few. One of the areas with the greatest potential for conflict in Atlantic Canada has been between fish harvesters and aquaculture farm operators. The primary concerns relate to loss of traditional fishing grounds and the potential environmental impacts of farms on local organisms. This source of conflict has generated considerable public debate in recent years in areas where new farming operations are proposed, however much of the information is anecdotal at best, and not well documented by harvesters, aquaculturists or even governments. For instance, many of the concerns centre around the following:

- 1. *Shellfish and finfish farms are*

← Please see page 25



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Look to the far left of this picture (onshore) ... a commercial lobster fisherman from a nearby community keeps his gear and fishes next to the North Atlantic Sea Farm salmon operation near Pool's Cove. Peaceful coexistence.

Independent assessment of fishery and farming interactions

From page 24

perceived to result in harmful habitat alterations and subsequent decline in fishery landings, particularly in lobster fishing areas.

■ 2. Lobster fishers have expressed concerns about salmon feed pellets "baiting" the grounds, resulting in lower catch rates in the vicinity of salmon farms.

Surprisingly, in spite of over 20 years of commercial aquaculture development in Atlantic Canada, no clear answers to these questions are available. Most studies conducted by DFO or various provincial departments are either inconclusive, incomplete, or not available. Moreover, the public sometimes views findings from the regulatory agencies as biased towards one stakeholder or another, so whatever findings are available may

be viewed this way. There is a need for independent studies in this connection.

As a result, one of my graduate students undertook a recent study of the issues with the following objectives:

■ 3. To examine the relationship between finfish and shellfish aquaculture production and lobster landings in key areas such as the Bay of Fundy and southern Newfoundland,

■ 4. To examine whether lobster catch rates near farms are influenced by feed pellets, and

■ 5. To determine if there are long term impacts of fish and shellfish farming on lobster habitat.

The general objective of the study was to provide an independent assessment of fishery and farming interactions in Atlantic Canada. While the

study was somewhat limited in scope and duration, it involved compiling both published and unpublished data from DFO and DFA archives on lobster landings and fishery habitat interactions, comparing these figures, and undertaking quantitative surveys of commercial fishers in several finfish and shellfish farming zones including lobster fishing areas 36 (NB) and 11 (NL).

The study findings are detailed in a report available as follows: *McLaughlin, M. 2005. Aquaculture and Fisheries Interaction: Case Studies of Lobsters in Relation to Finfish and Shellfish Farming. Independent Research Option, Marine Institute of Memorial University, St. John's, NL. 51p.*

CATCH AND AQUACULTURE PRODUCTION STATISTICS

Interestingly, lobster catches in

➔ Please see page 28



The OSC is a world leader in the development and delivery of science related to cod aquaculture.

Workshop focuses on quality control, standardization of live feed in hatchery

*Aquaculture Research and Development Facility,
St. John's, NF Canada
Hosted by the Ocean Science Center
and INVE Aquaculture Nutrition*

• BY DANNY BOYCE, NICK KING
AND EAMONN O'BRIEN •

The three-day workshop attracted industry and research people from several regions within Canada, as well as from other countries including Norway, Ireland, and U.S.A.. The participants were mostly technicians responsible for live feed production, particularly among hatcheries farming cold-water species like cod, sablefish, haddock, and halibut. Nick King from INVE Aquaculture, Inc. set the tone early by identifying the role of

the live feed technician as a highly skilled and dedicated labourer. He went on to say that while the job can be labour-intensive, it does have many critical control points to keep in mind during the day-to-day routine. As such, the lack of standardization and quality control procedures in the live feed room can have direct impacts on fish production. With this in mind, the INVE group went through the workshop presenting facets of their Easy Concept, aimed at making live feed procedures easier with a more standard workflow – the end result being a more predictable feed supply, both in quality and cost-efficiency.

Eamonn O'Brien from INVE Aquaculture Nutrition provided most of the classroom instruction covering topics on biology of rotifers and

Artemia, new trends in enrichment formulations, enrichment kinetics, nutritional quality of live feeds, and current status of global Artemia resources. Emphasis was placed on a balanced nutrition for larval fish. O'Brien explained that enrichment formulas are no longer completely comprised of lipid, as was the case in the past. Now the technology and raw materials are available to include in enrichments, things like free amino acids, phospholipids, and algal extracts, all while maintaining critical levels and a balance of essential fatty acids (like DHA, EPA, and ARA), vitamins and minerals, according to the latest science on fish nutrition. Sharing in the classroom instruction, King presented on the

← Please see page 27

Opportunity to bring together live feed, larval experts from all over the world for 5 days in one place is great

From page 26

operational side of live feed production, detailing protocols, techniques, and equipment, illustrating with examples, from various live feed operations in Asia, Europe, and North America. He also reported on current trends and technology in live feed production, including automated feeding systems, recirculation rotifer culture, microbial control, and rotifer strains.

During lunch breaks, OSC staff member, V. Puvanendran (Puvy) and Newfoundland Aquaculture Industry Association executive Director, Mr. Mike Rose, spoke to the group on the many aquaculture projects at Memorial University and in Newfoundland, involving cod, salmon, halibut, and haddock. AquaNet student, Alexandre Sachida Garcia, also gave a presentation on cod, focusing on feeding strategies with respect to enrichments and fatty acid analysis work he is currently studying.

Practical sessions held in the Aquaculture Development and Research Facility (ARDF) (<http://www.osc.mun.ca/ardf/index.html>) were interactive and provided the participants an opportunity to get a first-hand look at new products from INVE before they are brought to market in 2005. Culture Selco Plus and Protein Selco Plus are two new rotifer solutions offered by INVE that allow clean, easy rotifer production and cutting-edge enrichment formulation. Application of these products was demonstrated, along with specialized techniques for obtaining cleaner rotifer cultures through proper tank set-up, maintenance, and harvesting procedures. Participants were also introduced to Embryon, INVE's latest breakthrough for easy Artemia production. Embryon is Artemia embryos ready to hatch, and made to replace the hazardous decapsulation process in the hatchery. Above all, quality assurance procedures were emphasized, as participants were guided through microscope checks to validate enrichment levels and cleanliness of live feeds, before cold storage and eventual delivery to

Workshop attendees included

- Nick King and Eamonn O'Brien-INVE-USA and Belgium
- Danny Boyce, Rodney Healey, Cathy Williams, Denise Tucker, Jennifer Monk, Lori Thorne, Francine Godden, Darrell Green and Puvy- Ocean Sciences Center
- Laura Halfyard from Fisheries and Marine Institute of Memorial University
- Alexander Garcia and Sarah Westelmajer-AquaNet
- Industry Staff – Jonathan Moir-NL. Nicole Rowsell-Uni-Aqua in Denmark
- Rob Dunn-Sablefn Hatcheries in Vancouver, Mark Harvey and Roisin O'Callaghan from MRI CARNA Research Lab in Ireland
- Hege Hovland from Cod Culture Norway (CCN) in Norway.

the fish production floor.

The workshop was free to participants, thanks to the efforts of Mr. Danny Boyce, Facility and Business Manager for ARDF, who acted quickly to mobilize resources and spread the word, as it was important to hold the workshop prior to the 2005 hatchery

season. Boyce pointed out the benefits of hosting a live feed workshop at the OSC. To get the opportunity to bring together live feed and larval experts from all over the world for five days in one place is great. The information

← Please see page 28

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STAY WITH US!

Classroom sessions positive

From page 27

shared during this workshop by all participants will certainly prove beneficial to the overall industry in years to come. This workshop has given us a new dimension to build upon with respect to possible research collaborations that were discussed during this time, with many participants. To work with INVE Aquaculture has been a pleasure and a good benchmark in which to judge our own live feed and larval production efforts.

QUOTES FROM PARTICIPANTS:

“The rotifer production and enrichment sessions were very useful and I found the sessions on Artemia to be particularly useful.”

“Classroom sessions – very interesting to hear about new products from INVE and to learn more about rotifers and Artemia. I find the informal tone the sessions were held in, very positive, easy to ask questions and comment on the lectures.”

The workshop closed with a group field trip to an ice hockey game and a night out in St. John’s. “Our goal was to provide a fresh awareness of live feed production for the participants to take back to their respective hatcheries,” stated King, “because quality-control points and standardization can really bring live feed production to a manufacturing level which is the ideal situation. If the fish production manager knows that he/she is receiving consistent quality from the live feed room, it really does allow them the confidence to act on intuition to improve other aspects of fish rearing.” With INVE’s latest ‘Easy Concept’ this goal becomes attainable in the hatchery.

Boyce stated that this workshop was made possible by contributions from the Canadian Centre for Fisheries Innovation, AquaNet, Memorial University, National Research Council Canada – Industrial Research Assistance Program NL, UNI-AQUA, and INVE Aquaculture Nutrition.

COUTURIER ON CULTURE

From page 25

areas of major commercial finfish and shellfish aquaculture have reached all-time records, according to official landing records. Landings have increased rapidly in parallel with aquaculture farm increases and production. Thus, if anything, aquaculture development does not appear to have reduced lobster catches to any extent.

LOBSTER FEEDING TRIALS

Recently harvested lobsters were fed for six weeks on a variety of diets including standard salmon pellets, mixed diet (pellets and bait), or bait only. The results of the feeding trials and behaviour tests suggest that lobsters avoid standard salmon pellets to the extent there is little consumption of such pellets in wild lobsters. As such, salmon feed baiting of fishing grounds is unlikely to be a cause of declines in lobster catches in an area. Rather, avoidance of areas of salmon farms might be a result if overfeeding occurs.

LOBSTER HARVESTER SURVEYS

The results of the lobster harvester surveys were very interesting. In general, if fishers were consulted prior to establishment of a farm site and were involved in recommending farm siting, there were few, if any, conflicts once farms were established. This was especially true in Newfoundland where sites were positioned in deeper waters (30 metres depth), and only slightly overlapping with major lobster trap ground. In fact, harvesters noted a significant improvement in lobster catches in the vicinity of shellfish and finfish farms and a noticeable reduction in illegal poaching of lobsters. In addition, several fishers noted that the establishment of farm sites in some areas resulted in the protection of lobster habitat from

the destructive activities caused by scallop dragging over potential lobster juvenile bottom.

However, in areas where farms were sited without full consultation or in spite of objections by fishers, continued negative perceptions on the effects of salmon farming were evident, even if there was no real evidence of habitat alteration. It should be noted that the negative perceptions existed in these areas even though lobster catches are at all-time record-high levels, in spite of significant increases in salmon farm development during the same time. Fishers in these areas generally agreed that aquaculture was good for long-term employment of local folks and they all expressed concern about the future of the fishery for the younger generations.

CONCLUSIONS

Although the present, independent study was limited in scope, it provided some useful insight into lobster and aquaculture interactions. There is very little evidence for long-term negative impacts on lobster habitat in areas of industrial aquaculture, particularly today, where environmental requirements are so stringent and the farming industry adheres to strict codes for responsible farming in fishery sensitive areas. In fact, there is evidence for fishery habitat protection from aquaculture farming activities, particularly for nursery protection and reduction in poaching.

The main conclusion is that farm siting boils down to communication, communication, and communication, and this cannot be underestimated or minimized in anyway. Where communication is frequent, straightforward and backed up with insights such as mentioned above, there is much reduced opportunity for long-term conflict, as long as each side honours their commitments to the other.

National Human Resource Conference for Seafood Industry slated for Moncton



• BY BRIAN HICKS,
NSSC REGIONAL
REPRESENTATIVE•

It is with great enthusiasm that the National Seafood Sector Council announces its second National Human Resource Conference for the seafood and food processing industry – *Skills and Learning for Market Success*. The conference will take place November 15 – 17, 2005 in Moncton, New Brunswick at the Delta Beausejour. The NSSC is partnering with Human Resources and Skills Development Canada (HRSDC), New Brunswick Department of Education and Training and New Brunswick Food & Beverage Association on this important event.

The first National Human Resource Conference took place in Halifax, Nova Scotia, November 15 – 16, 2002. This was the first-ever national conference of its kind with participation by employers and employees in the seafood processing industry from across Canada. Other groups who attended the conference were federal and provincial government agencies, industry associations, education institutions and other stakeholders. The conference was well received by the 160 people that attended, with lively and productive discussions in plenary sessions and small workgroups.

Our second HR Conference will bring together key personnel from the seafood and food processing industry. Invitations are being sent out across the country and to international contacts as well. This event will target both the seafood and food processing



The Canadian seafood industry must learn to compete in a global seafood market that is continuously reinventing itself.

sectors to address issues relevant to all levels of the industry.

Our conference committee has assisted us with creating an array of topics of growing importance to the industry, and this event will provide an excellent platform for discussions and

industry networking. Workshop topics will include: the increasing competition nationally and internationally, career awareness and low recruitment into the industry, recognizing the skills of cur-

➔ Please see page 31



There was no shortage of experience and brain power when it came to the scientific review component of the cod review. Here we see some of the participants hard at work.

COD AQUACULTURE IN NEWFOUNDLAND

From page 5

would take place soon so that they could move on to the next generation of research – those projects associated with larger-scale developments.

SECOND GENERATION BUSINESS CASE:

In order to facilitate a more comprehensive review of the current thinking with respect to the business case for the next generation of Newfoundland-based cod aquaculture, three distinct business cases were analyzed for purposes of this study. These included a Scottish-based initiative and two Newfoundland-based initiatives. Where possible, the assumptions of each case were analyzed and compared on the following bases: number of juveniles required; projected mortality rates; total harvest weight; product yield on a percentage basis; sale price; gross revenue; projected expenses; feed conversion ratios; and projected return on investment (ROI).

It was generally concluded that the next generation of Newfoundland cod farm should likely be in the range of 1,500t to 3,000t with the most reason-

able size being closer to 1,500t. It would appear reasonable to be able to put 500,000 fish in the water annually with such an operation and assuming a mortality rate of 10-12 per cent, an average harvested weight of 4-4.5 kg, a yield of 36 per cent, an average market price of US \$3.75, and a projected operating expenditure of \$6-7 million, one might still lose some money.

A FINAL NOTE

It is important to note at this juncture that, while scale economies likely exist at higher levels of farm activity and production, a Newfoundland cod farm has yet to successfully operate at the 1,500t level on a consistent basis. In truth, while the industry has been operating on a small scale for more than 15 years, in new product development terms it has not really progressed past the alpha prototype stage of development. A 1,500t development project would serve as a good Beta prototype and would, in a commercial sense, be proof that an economy of substance can be achieved. This is, in fact, a prerequisite to the development of the economies of scale that a number of groups have suggested are possible in this industry.

At the current stage in the evolution of this industry it would appear prudent to move toward a two-staged approach to further development – the first being proof of sustainability and substance in the industry, and the second being the scaling up of the industry to full, commercial scale operations. These operations would then be capable of being operated in a financially viable manner and also capable of sustaining the economies of some of the more remote areas of Newfoundland which also happen to have ideal sites for cod aquaculture and a workforce with skills that can be readily transferred from the traditional fishery.

At the present time such an opportunity exists in the Connaigre Peninsula/Harbour Breton area, where there are a number of excellent cod aquaculture sites that could be developed and there is a trained workforce, skilled in the processing of cod. The establishment of a number of 1,500t cod farms in this area could, in time, form the basis of a regional economic development strategy that sees a region maintain its workforce and culture while being less reliant on the traditional fishery.

National Human Resource Conference

From page 29

rent workers, immigration challenges and solutions, and new skill needs for new technologies.

Expected conference attendance is 250-plus people from across Canada and abroad. Our target audience ranges from processing plant owners...managers/supervisors...production workers...quality control personnel...ex-porters...academia...consultants...government officials...industry associations...and buyers. Space is available for 20 exhibitor booths.

This event will reinforce the importance of skills' investment and provide time to reflect on the seafood and food processing industry

challenges. There will be significant industry networking opportunities, and a variety of exhibitor booths from the industry. National and international industry experts will address issues that are of growing importance to the industry. A networking reception and the 2nd Annual Awards Banquet is also planned during the conference.

We welcome your support for the event as an official sponsor. This is your chance to involve your company and at the same time benefit from great public exposure. We accept cash sponsorships, and in some cases can accept your company's products and services as well. We are always looking for ways to increase benefits to

both your company, and the participants. As a non-profit organization, we assure you that the benefits of sponsorship greatly outweigh the costs involved. We offer four official levels of sponsorship:

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If you have any questions regarding the sponsorship packages or conference details, please feel free to contact me by phone at 707-747-1968 or by email at nssc.nl@nl.rogers.com.

Department supports aquaculture development

From page 6

nies with increasing markets and competitiveness.

Aside from programs and licensing, the Department of Fisheries and Aquaculture provides its greatest asset to industry: its staff. The Aquaculture Branch, primarily located in Grand Falls-Windsor since 2001, provides technical, scientific, policy and regulatory support to the provincial aquaculture industry. In addition, satellite offices in St. Alban's and Corner Brook provide departmental staff at the industry's doorstep.

The Department of Fisheries and Aquaculture, and the Province of Newfoundland and Labrador, look forward to continuing its key role in advancing the development and sustainability of the provincial aquaculture industry.



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President, Newfoundland Aquaculture Industry Association (NAIA)

JOAN STRICKLAND

Let's put the bad stories in a scrapbook

The last few months have been very challenging for the industry; we have continued our quest to survive in very trying times. I have learned a lot from the experience and hopefully we will all be wiser from it. Lately I have been giving more thought to the industry, from a global and national perspective, but I have looked at the aquaculture industry from a rural perspective moreso than ever before.

My career has always been fisheries-based; prior to becoming involved in aquaculture I was involved in the traditional fishery. My family and I have lived through both good times and bad times in both industries. I grew up in McCallum, a small community on the south coast of Newfoundland, at a time when the traditional fishery was flourishing. After completing school I came back to the south coast to work with a large fish company. My husband and I started our family in Gaultois and saw the benefits of the traditional fishery. As we trotted off to work each morning the kids ran happily off to school with their designer clothes that they could well afford at the time. Everyone in the town who wanted to work, worked. The late eighties and early

nineties saw a downturn in the fishery and a lot of people were left with no work. People moved away from our province and out-migration has spiraled upward since that point.

We moved to Bay d'Espoir in 1990 and I immediately started to work with the fishery of the future. I can remember the excitement I felt when I became involved in aquaculture, at actually being able to watch fish grow in pens in our clean waters, instead of waiting for trawlers to bring in a fully grown fish. I saw an opportunity then that would enable rural areas to survive if the fishery didn't rebound. Aquaculture is one of the few industries in the country and in the world that is completely rural-based. It is an industry that can allow people to make a good living, raise healthy families and stop the out-migration. All industries have some impact on the environment – aquaculture is no different, but proper ways of doing things ensure that our industry's environmental impacts are miniscule compared to the huge economic impacts.

The industry has come a long way but we need to take it that extra step where we can realize the benefits of economies of scale. Aquaculture must be recognized for

the sustainable economy it can deliver and we must begin to rebuild our communities, giving our people back the pride they so rightfully deserve. McCallum, once booming with full employment, has slowly gone downhill.

Gaultois, where everyone who could work, did so, no longer operates anywhere near that level. Harbour Breton is now

in a crisis situation. I have watched and lived through many upturns and downturns in this industry over the past 15



A regional emphasis on aquaculture can benefit communities from Harbour Breton to Grand Falls-Windsor to Triton, and all points in between. Aquaculture has been an engine for economic growth in many parts of the world. Properly supported, the aquaculture industry will become an important contributor to the central Newfoundland economy.

years. In spite of the uncertainty in recent months, however, I feel the coming weeks will see a renewal and more than ever before I look forward to the next 15 years.

We can all help this renewal whatever our role in the industry – my mother always said many hands make light work. We will store all the bad news stories in a scrapbook, turn out more good news stories, and continue to be proud Newfoundlanders and Labradorians contributing to a vibrant rural economy. Sounds good to me!



All key communities on the south coast can benefit from a growing and vibrant aquaculture industry.



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The Newfoundland Aquaculture Industry Association (NAIA) offers a constructive and personalized approach to help you develop positive relationships with experienced, reputable local partners. Please contact NAIA to learn how we can help.

For more information contact: Mike Rose, *Executive Director*
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