ACFFA

Annual Report 2011

Strengthening **Atlantic Canada**

acffa Atlantic Canada Fish Farmers Association

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MESSAGE FROM THE EXECUTIVE DIRECTOR

Potential.

That's what comes to mind when I think about salmon aquaculture in Atlantic Canada.

The world's population has hit seven billion, and the number of hungry people will continue to grow, as will the need for healthy protein. Aquaculture is the world's fastest growing food production system, rivalling wild-capture fisheries as the source of seafood. Farming the ocean has been done by people around the world for centuries, but now it's becoming vital for the future of our planet; it will help feed the world.

Here in Atlantic Canada, we've got everything it takes to help realize aquaculture's incredible potential. We've got an abundant natural ocean environment that provides some of the best conditions for the well-being of farmed fish and the sustainability of the environment. We also have dedicated and hardworking people who are passionate about growing world-class Atlantic salmon and other finfish.

In 2011, the Atlantic Canada Fish Farmers Association moved forward with a solid plan to help our fish farmers continue to build a locally-based, globally competitive, sustainable aquaculture industry that can bring prosperity to our region, especially our coastal communities.

As this report details, we've made significant progress in achieving our goals. We've continued to lead the way on a research and development program that advances fish health priorities by working proactively with top scientists from the federal and provincial governments, universities and the private sector. We have focused significant efforts this year to meet the biggest fish health challenge facing our industry: sea lice. We compete in a global marketplace, and while we support sound regulation and research, we also need to be competitive. Other jurisdictions around the world have had access to a range of treatment products for sea lice, but Canada continues to lag behind. So, we've worked hard to gain broad support for a framework for an Integrated Pest Management Plan (IPMP) for sea lice in the Bay of Fundy. Sea lice, a naturally occurring parasite, can affect fish health in some of our farming areas. IPMP combines farm management practises with stable access to a variety of approved treatments that farmers can use strategically to target various life stages of sea lice while considering environmental constraints such as water temperatures. Progress on that issue hasn't moved as quickly as we would have liked, but a broad stakeholder consultation has now been achieved.

This fall marks one year since our Association expanded its focus to include farmers in Nova Scotia and changed our name to the Atlantic Canada Fish Farmers Association. There's tremendous potential for salmon aquaculture to grow in Nova Scotia and bring economic prosperity to rural, coastal communities there like it has in New Brunswick. To support development in Nova Scotia we are developing a white paper that sets out a strategy to support private investment as a catalyst to realize and optimize this potential. This opportunity for growth comes at a time when both provincial and federal governments are cutting back budgets. We urge them to maintain research and development funding to our industry, which has proven to provide a significant return on investment.

Our farmers are part of the communities in which they live and work. This report details our community involvement – from helping to organize the highly successful St. Andrews Seafood Festival and hosting farm tours on New Brunswick Open Farm Day to donating our time and expertise as part of an award-winning collaboration to help the recovery of Inner Bay of Fundy Atlantic salmon.

You'll find examples of our farmers' commitment to industry sustainability. Our fish farmers care about the marine environment. If sustainable farm practices are not a priority for us, not only will it impact our fish, it will impact our neighbour's ability to fish and the ocean we love will not be here in its present form in the future.

And finally, we've ramped up our efforts this year to inform the people who live in our region about our progressive and innovative industry. We took proactive steps to tell people about how we farm, how we use innovative "green" technologies and how we create jobs and strengthen communities.

We started to share our story – a story of outstanding potential for our region.

Pamela Parker
Executive Director

Who We Are

The Atlantic Canada Fish Farmers Association (ACFFA) is an industry-funded association that works on behalf of the salmon farming industry in New Brunswick and Nova Scotia. The ACFFA represents 95 per cent of salmon production in the Maritime region in addition to a wide range of supporting companies and organizations.

OUR VISION

Atlantic Canada's finfish aquaculture industry will continue to be an innovative, competitive economic sector that is a recognized world leader in sustainable finfish production.

OUR MISSION

To provide value to our members by taking a leadership role in the development and implementation of strategies that are focused on fish health and welfare, environmental stewardship, innovation and social responsibility within our communities.

ASSOCIATION GOALS

- Assure the ongoing improvement and implementation of fish health initiatives that support the production of safe, high-quality farmed finfish
- Build effective structures and relationships that result in a single voice for the finfish aquaculture industry in Atlantic Canada
- Facilitate the development and awareness of training and education programs that support increased career opportunities, especially in rural and coastal communities in Atlantic Canada
- Collaborate with all levels of government in developing sound regulatory frameworks and effective support structures and relationships
- Support scientific research and technological development that is industry-driven and ensures the ongoing sustainability of an innovative Atlantic aquaculture industry
- Continue to respect the environment in which our members operate and work with other stakeholders to enhance environmental stewardship
- Ensure a secure business climate that provides the infrastructure necessary to support growth in the Atlantic Canadian farmed finfish sector
- Build and maintain positive relationships with local communities, other marine resource users and conservation organizations
- Forge a positive image for Atlantic finfish aquaculture through regional, national and international initiatives
- Manage the Association ensuring it remains a strong, representative organization providing value to its members

Our Association

2011 ACFFA BOARD OF DIRECTORS

Our board of directors is representative of our membership.

Nell Halse (Chair)
Cooke Aquaculture Inc.

Larry Ingalls (Vice Chair)
Northern Harvest Sea Farms

Bob Sweeney (Secretary/Treasurer)
Sweeney International Management Inc.

Bev Bacon
RDI Strategies

Morton Benson
Benson Aquaculture

Glen Brown
Admiral Fish Farms

Ben Forward
Research Productivity Council

Allison MacKinnon
Novartis Animal Health Canada

Trevor W. Stanley
Skretting North America

Len Stewart
Ocean Salmon Farms

Tom Taylor
Northeast Nutrition Inc.

ACFFA MEMBERS

Our members are leaders in environmental stewardship and part of the social fabric of their communities. They adhere to rigorous, science-based environmental performance standards that are among the most stringent in the world.

Producer Members
Admiral Fish Farms Ltd.
Aqua Fish Farms Ltd.
Benson Aquaculture
Cooke Aquaculture Ltd.
Northern Harvest Sea Farms
Ocean Salmon Farms
Northeast Nutrition
Skretting

Associate Members
Aquaculture Engineering Group
Atlantic Veterinary College
CoastalSmith Inc.
Dominator Marine Services
Downeast Plastics Ltd.
Future Nets&Supplies
Marine Systems International
Marsh Canada Ltd.
Mitchell McConnell Insurance Ltd.
New Brunswick Community College
Novartis Animal Health Canada Inc.
Open Ocean Systems Inc.
Rainbow Net&Rigging Ltd.
RDI Strategies Ltd.
Research and Productivity Council (RPC)
Silk Stevens Ltd.
Sweeny International Management Corp.

ACFFA STAFF

The ACFFA is staffed by a dedicated team of full-time, part-time and contract individuals.

Pamela Parker *Executive Director*
Murray Hill *Nova Scotia Regional Manager*
Betty House *Research and Development Coordinator*
Kathy Kaufield *Communications Manager*
Sybil Smith *Director of Operations*
Doni McGee *Executive Assistant*
Jim Hanley *Wharf Manager*
Ayesha Hosain *Healthy Salmon Auditor*

Strengthening Atlantic Canada

Innovative and home-grown, Atlantic Canada's fish farming industry is filling a global need for healthy food while bringing prosperity to our region.

Atlantic Canada's abundant natural ocean environment makes it one of the best locations in the world to farm fish, especially Atlantic salmon. Our region's fish farmers have built the industry over the last 30 years, becoming recognized leaders in sustainable and environmentally responsible finfish production.

We are committed to maintaining the environment in which we work and live, following the highest farm management standards and producing high-quality and nutritious food. We are also dedicated to leading the way in research and development that will continue to grow and improve our industry.

Atlantic salmon is by far the most important finfish species grown by our fish farmers, but many companies are now expanding to include other species such as trout as well as mussels and seaweed from integrated multi-trophic aquaculture farms.

OUR INDUSTRY AT A GLANCE

- Has the capacity to generate over $270 million in revenue in New Brunswick and almost $50 million in Nova Scotia, which triggers over a half billion in economic activity across Canada
- Produces over 30 per cent of Canada's farmed salmon
- Creates over 2,600 jobs in New Brunswick and Nova Scotia alone
- Includes ocean farms, processing plants, hatcheries, feed plants, cage and equipment manufacturers, research facilities, diving, maintenance and a variety of support services

DID YOU KNOW?

- Farmed salmon is New Brunswick's biggest agri-based export and has the same potential in Nova Scotia.
- Atlantic Canadian salmon farms are locally owned and operated.
- The total cage area used for salmon production in New Brunswick is equivalent to one-tenth the size of Saint John's Rockwood Park.
- Salmon use less than four per cent of the space within each net pen.
- Salmon farming is transforming coastal, rural communities from areas of high unemployment to relative prosperity. In Charlotte County NB alone, the industry creates 1,870 jobs – 16 per cent of the workforce.

Part of our Communities

Our salmon is world-class.
Our commitment is local.

Atlantic Canada's salmon farmers love the communities where they work and raise their families and are proud to help contribute to their growth.

Over the past year, many of our members have been involved in a variety of local projects – from harbour authorities to beach clean-ups to flood relief work.

In 2011, the ACFFA, with the support of our members, contributed to our communities in a variety of ways:

- Participating in St. Andrews' annual food and wine festival, Indulge New Brunswick, by providing salmon for 20/20/20 and serving two salmon dishes at the gala event
- Volunteering on the organizing committee for the St. Andrews Seafood Festival and coordinating events that are part of the festival
- Continuing to operate the Limekiln Service Centre for the benefit of our industry, government, local fishers and recreational users
- Hosting tours as part of New Brunswick Open Farm Day, providing a complimentary salmon barbecue and tours of some of our farms
- Providing tourism and community information within our farming regions
- Providing expertise and funding to support wild salmon recovery through the Inner Bay of Fundy Salmon Recovery Project
- Participating in the Charlotte County Fall Fair at Ganong Nature Park

The ACFFA also supports the following local initiatives:

- Citizens for Sustainable Aquaculture, Shelburne, NS
- Musquash Advisory Committee
- Atlantic Salmon Advisory Committee
- Nova Scotia Salmon Association
- Lobster Science Symposium
- Bay of Fundy Marine Resource Planning Committee

Growing our Fish with Care

Atlantic fish farmers follow the highest fish health management standards and are dedicated to producing high quality and nutritious food.

HEALTHY SALMON PROGRAM

2011 marked the sixth year the ACFFA operated the Healthy Salmon Program in collaboration with the Canadian Aquaculture Industry Alliance. A. Hosain, program coordinator, conducts farm audits that ensure approved treatment use on fish farms complies with the requirements of the Canadian Food Inspection Agency. Audits will also include an assessment of: on-farm fish health management practices; therapeutant handling, storage and use; the recording system used for tracking treatments and withdrawal times.

INTEGRATED PEST MANAGEMENT PLAN

One of the most challenging fish health issues is the effective management of sea lice.

This year, the association focused significant efforts on continuing to gain broad support for an Integrated Pest Management Plan (IPMP) for sea lice in the Bay of Fundy.

Sea lice are naturally occurring parasites that affect wild and farmed fish alike. They do not pose a risk to human health, but too many sea lice can stress salmon, making them vulnerable to disease.

IPMPs combine farm management practises with stable access to a variety of approved treatments that farmers can use strategically to target various life stages of sea lice while considering environmental constraints such as water temperatures. This approach allows farmers to use the right product at the right time, thus reducing the overall amount of treatment product used while keeping lice numbers at an acceptable low level.

That plan and all of its components are still not in place and operational.

Since March 2011 the ACFFA has done the following:

- Participated with provincial and federal regulators in the development of a template for IPMP
- Worked with industry to develop a coordinated and synchronized IPMP treatment plan for sea lice based on our existing three bay management system
- Ensured access and scientific monitoring of Interox Paramove 50 and Salmosan for use in Newfoundland and New Brunswick with Interox also available in Nova Scotia
- Provided communication on IPMP and sea lice management in New Brunswick and Nova Scotia through research information meetings, the development and distribution of fact sheets, newspaper editorials, a media tour, public speaking events and farm tours, etc.
- Collaborated with a broad range of researchers to ensure a research and scientific monitoring strategy was in place to support the use of various sea lice treatment products
- Supported on-going evaluation of sea lice management
- Produced a Sea Lice Management Status Report that provided the context for sea lice management between August 2009 to August 2011
- Worked with the Atlantic Veterinary College to develop an analytical data base to house all relevant sea lice monitoring data

Sustainability and Innovation

Atlantic Canada's fish farmers are committed to building the most responsible and sustainable aquaculture industry in the world. We care about the marine environment in which we live and work. If sustainable farm practices are not a priority for us, not only will it impact our fish, it will impact our neighbour's ability to fish and the ocean we love won't be here in its present form for our children and grandchildren.




Our industry performs well within environmental standards. The Department of Environment website shows that seldom does a sulphide reading below a salmon farm exceed the allowable levels. Annual third party environmental monitoring and underwater videos show a variety of sea creatures that are alive and well on the ocean floor below our farms.

We support scientific research and technological development that are industry-driven and ensure the on-going sustainability of an innovative Atlantic aquaculture sector.

A PERFORMANCE-BASED SYSTEM FOR ENVIRONMENTAL MANAGEMENT OF FRESHWATER SALMON AQUACULTURE

This year, the ACFFA has been working with the NB Department of the Environment on the development of an environmental performance based management system and regulation for the freshwater sector.

The intent of a PBS supported by an industry code of practice is to assist in meeting regulatory requirements, promote operational efficiencies, enhance worker safety, provide environmental protection, enhance fish health management, facilitate interaction with other resource users, ensure product quality and safety and provide market assurance of all the above.

We're hopeful a draft will be ready for review by industry and regulators in early 2012.

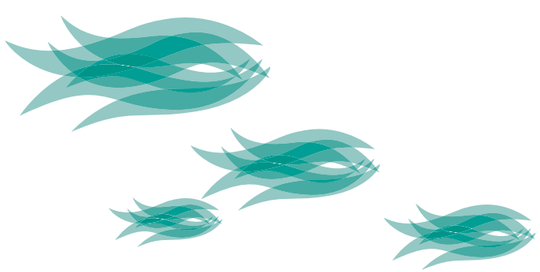
ENVIRONMENTAL STEWARDSHIP

The ACFFA also works collaboratively with other stakeholders to enhance environmental stewardship. In addition, our members participate in a variety of conservation-based projects from fund-raising dinners, direct donations and/or wild salmon rehabilitation activities such as Magaguadavic rehabilitation.

The ACFFA is a member of the Musquash Estuary MPA Advisory Committee. Murray Hill, our Nova Scotia Regional Manager, was elected to the Board of the Nova Scotia Salmon Association in 2011. The ACFFA continues to participate on the Atlantic Salmon Advisory Committee and is a member of the Canadian delegation to the North Atlantic Salmon Conservation Organization (NASCO) and on the NASCO/International Salmon Farmers Association (ISFA) Liaison Working Group. Some of our members have served for many years on the Bay of Fundy Marine Resource Planning Committee.

The ACFFA participated on the New Brunswick and Nova Scotia Aquaculture Environment Coordinating Committees in 2011. Our representatives have played a key role in shaping the research strategy and developing the performance based standards for fresh water operations.

For many years, the Atlantic salmon farming industry has actively supported projects aimed at restoring the diminishing wild salmon populations in this region's rivers by providing hatchery and fish health expertise, funding assistance and research support.



INNER BAY OF FUNDY SALMON RECOVERY PROJECT EARNS NATIONAL AWARD

The ACFFA in collaboration with Admiral Fish Farms participated for a third year in supporting the Inner Bay of Fundy Salmon Recovery Project.

This year, members of the project team earned national recognition for their collaborative work to help save endangered wild salmon. Parks Canada honoured individuals with the ACFFA, Admiral Fish Farms Ltd., the Department of Fisheries and Oceans and the Parks Canada Agency for their work. The CEO Award of Excellence in the Engaging Partners category was presented to team members by Parks Canada Agency CEO Alan Latourelle at a ceremony at the Georgian Bay Island National Park in Ontario.

Betty House, ACFFA's research coordinator, and Howard Streight, Director of Feed Management at Admiral Fish Farms Ltd., earned the award on behalf of the industry, but many salmon farming industry collaborators have been engaged for three years and have eagerly contributed their expertise, equipment, feed and labour to this worthwhile initiative.

This collaborative project will provide valuable insight into the mysterious marine life stage of wild salmon, and is poised to yield unprecedented numbers of mature adult Inner Bay of Fundy salmon for release to their host rivers to spawn.

The ACFFA continues to build and strengthen relationships with the environmental sector. In 2011, we have been involved in the following activities:

- WWF Salmon Aquaculture Dialogues
- ISFA/NASCO Liaison Group
- Atlantic Salmon Advisory Committee meetings
- Canadian delegation to NASCO
- Eco-Tourism Information Meetings – New Brunswick and Nova Scotia

In addition, we invite conservation organizations such as the Atlantic Salmon Federation and representatives from the Traditional Fishing Coalition and Atlantic Coalition for Aquaculture Reform to attend research meetings, industry open houses, etc. in both Nova Scotia and New Brunswick.

Research and Development

Atlantic Canada's salmon farmers are committed to building the most responsible and innovative aquaculture industry in the world. To help us accomplish that goal, we work proactively with top scientists from the federal and provincial governments, universities and the private sector.

The ACFFA leads the development of a research program that advances fish health priorities for the Atlantic finfish industry in eastern Canada.

On December 1, 2010 the ACFFA once again hosted a workshop that engaged a broad range of stakeholders in the development of a research agenda focused on gaining the necessary data to support continued use of sea lice bath treatments and their licensing in Canada in support of integrated pest management. The intent was to also include research that would address knowledge gaps to ensure all treatments achieve optimal results, to broaden our understanding of sea lice dynamics and the environment, to develop novel sea lice management, and to enhance eco-management practices.

The following is a sample of the collaborative research being conducted / investigated by a range of researchers within government departments and agencies, academic institutions and industry:

- Sea lice efficacy analysis
- Efficacy of mussels as a filter for sea lice
- Hydrogen peroxide bath effects on salmon skin epithelium
- Temporal and spatial morphological variation in L. salmonis
- Dye dispersion testing / analysis (includes Interox)
- Interox Paramove 50 efficacy and lice mortality study
- Non-target sub-lethal toxicity analysis
- Cleaner Fish
- Lab analysis of denaturing for AlphaMax
- Toxicity study of denaturing for AlphaMax
- Inner Bay of Fundy Wild Salmon Recovery
- Mesocosym study on pesticide effects on sediment dwelling non-target organisms
- EcoBath sea lice treatment delivery
- Broodstock development
- Quantifying salmon feed wastage
- Residue analysis for Ivermectin and Emamectin
- Clinical field trial of Ivermectin
- Salmosan mixing trials
- Litmus / ELIZA test kit development

"GREEN" WELL-BOAT TECHNOLOGY PROVES SUCCESSFUL

2011 saw the release of the ACFFA's formal evaluation of its cooperative pilot project on well-boat technology to deliver sea lice treatments. The pilot project saw the ACFFA bring well-boat technology to Canada for sea lice treatments for the first time by chartering one well boat – the Ronja Carrier – on behalf of a cooperative of all salmon farming companies in the region.

The evaluation determined that using well-boats can reduce the amount of approved product needed to treat sea lice by approximately 75 per cent compared to treatments delivered in skirted net pens. The study also found that treatment efficacy is significantly increased when well-boats are used and that Interox Paramove 50, an environmentally benign hydrogen peroxide product, is highly effective in treating most stages of sea lice.

New Brunswick salmon farmers were so impressed with the technology that local companies invested millions of dollars in purchasing their own well-boats and leased a third for use in 2011. Farm practises, the strategic use of approved treatment products and well boat technology all contributed to effective sea lice management in New Brunswick in 2011.

This fall, the ACFFA released New Brunswick Sea Lice Management (2009 to August 2011), an overview of the challenges and successes experienced by New Brunswick salmon farmers in sea lice management and the steps farmers have taken toward the implementation of a Integrated Pest Management Plan (IPMP). The report clearly showed the best approach to sea lice management is an Integrated Pest Management Plan (IPMP).

OTHER R&D PROJECTS

The ACFFA continues to facilitate, on behalf of the salmon farming industry, the refinement and use of a decision support system to record sea lice in New Brunswick and Newfoundland that can be used to inform future management decisions including when and how to treat for optimal results; to identify trends; to provide industry reports to regulators. This data base has the potential to eventually include other fish health data.

We provided equipment purchased as part of the Off Shore Aquaculture Project to assist in the dye dispersion work being conducted by Dr. Fred Page (DFO) and in the environmental assessments being conducted for new site development by SimpCorp/Sweeney International.

The ACFFA is proactive in maintaining relationships with R&D agencies and collaborators at the regional, national and international level by participating in research workshops and in the development of collaborative research programs. **This includes attendance at:**

- Aquaculture Association of Canada
- Integrated Multi-trophic Aquaculture Fisheries Workshop
- University of Maine / NB Sea Lice Meeting
- Lobster Science Symposium
- AquaNor
- Aquaculture Association of Canada/Department of Fisheries and Oceans Research Workshop Discussion
- Integrated Multi-Trophic Aquaculture & Fisheries Interaction Science Discovery Group
- Scottish Sea Lice Workshop
- Multi-Nation Sea Lice Workshop

The ACFFA has participated in the following R&D based committees and/or networks thus far in 2011:

- Atlantic Canada Aquaculture Industry Research and Development Network (ACAIRDN)
- National Fish Health Working Group
- Aquaculture Collaborative Research and Development Program – Regional Committee
- Aquaculture Collaborative Research and Development Program – National Committee
- Multi-Nation Sea Lice Working Group

The ACFFA's Research and Development Coordinator has offered the following workshops and/or training opportunities for Association members this year:

- Pesticide Applicators training
- New Brunswick Community College Priority Information Session
- Sea lice counting/certification
- DSS training session
- ACFFA R& D Workshop

Continuing to Build our Industry

This fall marks one year since the New Brunswick Salmon Growers' Association expanded its focus to include Nova Scotia and changed its name to the Atlantic Canada Fish Farmers Association.

Since that time, the ACFFA has worked to become recognized nationally as the voice for salmon aquaculture operations in both Nova Scotia and New Brunswick. The ACFFA, with strong support from our NS Regional Manager has worked to strengthen existing relationships and build new relationships with provincial and federal regulators and other stakeholders both in Nova Scotia and throughout the region.

The ACFFA is taking a leading role in the development of a Salmon Aquaculture Strategy for Nova Scotia aimed at supporting private investment in aquaculture as a catalyst to grow jobs and increase salmon production in Nova Scotia.

The association continues to build strong relationships with aquaculture interests across Canada and in our key areas of Nova Scotia and New Brunswick, including wild salmon interests in Nova Scotia and citizens supporting sustainable aquaculture.

SUPPORTING A SOUND REGULATORY SYSTEM

The ACFFA coordinates the industry review and input into regulatory enhancement at both the provincial and federal level. In 2011 we were very supportive of changes to provincial fish health regulations that set standards for sea lice monitoring.

The ACFFA has been very supportive of a comprehensive review of salmon aquaculture regulations in Atlantic Canada. The four Atlantic provinces established a steering committee to examine the various regulations and identify areas for regulatory reform and/or harmonization. This project began in early 2010 and is about to be finalized.

The ACFFA also continues to advocate for support of a Canadian aquaculture act to provide stability for our industry nationally.

We represent our industry on a provincial, national and international level through membership or participation in:

- Canadian Aquaculture Industry Alliance (CAIA)
- Aquaculture Association of Canada (AAC)
- Atlantic Canada Aquaculture Industry Research and Development Network (ACAIRDN)
- Aquaculture Collaborative Research Development Program (ACDRP) Steering Committee
- International Salmon Farmers' Federation (ISFA)
- National Fish Health Working Group
- Member of the Canadian delegation to NASCO
- WWF Salmon Aquaculture Dialogues
- Aquaculture Sustainability Reporting Initiative Technical Working Group
- NB Aquaculture Environmental Coordinating Committee
- NS Environmental Coordinating Committee
- NB Marine Finfish Development Committee
- Atlantic Canada Food and Beverage Sector Committee
- Traditional Fishery and Aquaculture Working Group (currently inactive)
- Inner Bay of Fundy Atlantic Salmon Recovery Team

The ACFFA also attended the Boston Seafood Show and AquaNor and participated in an Atlantic tour of US chefs and seafood writers.

We maintain close communication with industry associations across Canada and attend many of their meetings in addition to research meetings on behalf of our members.

The ACFFA also works to increase awareness of career opportunities that aquaculture brings to rural and coastal communities. Through collaboration with NB Community College, presentations have been made to the students in St. Andrews, Saint John, Harvey and Oromocto.

Telling our Story

We've got such a good story to tell.

We're proud of the industry we have built over the past 30 years, one that has created thousands of full-time jobs and revitalized coastal and rural communities.

But many people don't know how we farm, our commitment to protecting the marine environment and the value our industry brings to the region.

So the ACFFA ramped up its efforts in 2011 to ensure our communities are informed about our thriving sector.

The ACFFA took several steps to spread the word about our industry:

- We produced a new "Farming the Ocean" brochure that includes facts on everything from how salmon are farmed to why salmon is healthy for you. The brochures are available at eco-tourist operations and visitor information centres in the region.
- We also developed a series of fact sheets on:
  - Closed containment
  - The socio-economic benefits of fish farming
  - Integrated pest management
  - How salmon are farmed
  - Quality and safety
  - Environmental impact
  - Fish feed
- We developed several Op-eds which have appeared in the Telegraph Journal and the St. Croix Courier on closed containment, fish feed, quality food, integrated pest management, and environmental sustainability.
- We organized an information session with eco-tourist operators in Passamaquoddy Bay (NB) and Shelburne (NS).
- We launched a Twitter account (@AtlFishFarmers) and a Facebook page (Atlantic Fish Farmers Assoc).
- We held farm tours for local media to explain how we farm and showcase some of our latest innovations, including well-boat technology, new cage designs and Integrated Multi-Trophic Aquaculture.
- We designed tourism information panels on salmon aquaculture for display in key locations in New Brunswick and Nova Scotia (construction scheduled in 2012).
- We began the development of an Atlantic Canada salmon farming video for production in early 2012.
- We conducted farm tours for government representatives, international chefs, and senior Canadian policymakers.
- We hosted public farm tours as part of New Brunswick Open Farm Day.
- We made presentations about our industry to schools and community groups.

Get the Facts...

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Fish Farmers Association

ENVIRONMENTAL IMPACT

Innovative technology

Salmon farmers use underwater cameras and sensors to monitor feed delivery, avoid overfeeding and eliminate waste.

Safe for our ocean

Lobster landings have increased in many areas where salmon farming also thrives.

Only approved treatments deemed safe by regulators are used to treat sea lice. No sea lice treatments have been necessary in Nova Scotia.

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Committed to protecting the environment

Atlantic salmon farmers are local people who have built this industry over the past 30 years. They know that if they don't care about sustainability, then they can't farm, and their neighbours can't fish, and the ocean they love won't be here in its present form for their children and grandchildren.

Working to reduce waste

Pristine seawater is essential for the production of healthy, high quality salmon, so salmon farmers follow strict codes of practise regarding waste management. In addition to using underwater cameras and sensors to avoid overfeeding, farmers have tailored feed to suit the dietary needs of salmon at each life stage and improve feed digestibility – both of which significantly reduce waste.

Reducing our reliance on forage fish

Canada leads the development of fishmeal and fish oil replacement in fish feed. In the 1990s, wild fish-based ingredients in feeds were as high as 80 per cent. Today, it's as low as 30 per cent.

Monitoring our environmental performance

Farmers conduct regular government-audited sediment testing of the ocean floor to ensure farms meet high environmental standards. The results are publicly available. Other steps that farmers take to protect the marine environment include:

- Completing site-specific environmental assessments before farming begins and each year of production
- Regularly monitoring water conditions
- Regularly fallowing their farms between crops
- Conducting regular maintenance and inspection of net pens
- Training their staff to carefully monitor the environment and the health of their fish

Farming for our future

More than half of the world's seafood comes from farms. Fish farming reduces pressure on wild fish stocks.

May 2011

acffa Atlantic Canada Fish Farmers Association

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Atlantic Canada
Fish Farmers Association

HOW SALMON ARE FARMED

Keeping it natural

Salmon occupy less than four per cent of the space in their net pen and have plenty of room to mimic natural schooling patterns.

Innovative technology

Salmon farmers use underwater cameras and sensors to monitor feed delivery, avoid overfeeding and eliminate waste.

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The life cycle of farmed salmon

Farmed salmon grown in Atlantic Canada originate from St. John River wild salmon. They begin their life cycle as eggs, which are collected from adult salmon broodstock, and placed in temperature controlled tanks in a freshwater hatchery.

After about one year, the young salmon are moved to saltwater farms where they continue to grow for another 18-24 months in large floating net pens that are moored to the ocean floor. The pens rise and fall and are flushed by the tide.

Careful site selection

Salmon farm sites are carefully chosen in areas where water currents naturally provide the best conditions for fish well-being and environmental sustainability. Regulators oversee detailed site-specific environmental assessments before farming operations are permitted.

Approved farming practises

Atlantic salmon farmers adhere to environmental policies and codes of practice developed with government, researchers and the community. Fish farms are regulated by both the federal and provincial governments. Farms are inspected regularly and their records are audited. Some of their farming practices include:

- Monitoring water conditions
- Routinely fallowing their farms between crops
- Conducting regular maintenance and inspection of net pens
- Monitoring of the ocean floor, feed delivery and the health of their fish

Strong and effective net pens

Preventing escapes is a top priority for Atlantic fish farmers, who have developed a Code of Containment that details rigorous guidelines for the design of pens, their mooring systems and netting. Escapes have been dramatically reduced since the early 1990s and have been estimated at well below one per cent in every year since 1995. Regulation requires that all escapes are reported.

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FISH FEED

Au naturel

No dyes, chemicals or growth hormones are added to the diet of farmed salmon

What makes farmed salmon pink?

Carotenoids – the same natural ingredients found in carrots and egg yolks – are added to their diet to provide them with vitamin A and give them their pink colour

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What do farmed salmon eat?

Farmed salmon eat nutrient-dense, dry pellets made from animal, plant and fish proteins of natural origin and essential vitamins and minerals. All fish feed ingredients are approved for use by the Canada Food Inspection Agency.

Two important ingredients are fishmeal and fish oil, which ensure salmon contain high levels of omega-3 fatty acids that are good for your heart and mind. Fishmeal and fish oil primarily come from forage fish such as anchovies that are too small and bony to be eaten by humans. Our farmers source fishmeal from the byproducts of local fisheries when possible.

Feed conversion champions

Farmed salmon are incredibly efficient when it comes to growth. Wild salmon eat 10 times their weight in smaller fish throughout their lives. For every kilogram of feed a farmed salmon eats, it gains almost a kilogram of weight.

A cow needs to eat eight kilograms of feed to put on one kilogram of weight and a pig needs to eat three kilograms of feed.

Leading the way in research and innovation

Managed by the International Fishmeal and Fish Oil Organization, forage fish are plentiful. But with salmon production expected to increase globally, farmers want to make sure the forage fishery remains strong.

Canada leads the development of fishmeal and fish oil replacement. In the 1990s, wild fish based ingredients in feeds were as high as 80 per cent. Today, it's as low as 30 per cent.

Atlantic Canadian feed producers work with top researchers to develop their own feed using local ingredients whenever possible.

Feed is tailored to suit the dietary needs of salmon at each life stage, which improves digestibility and results in less waste. Our farmers also use underwater cameras to prevent overfeeding and avoid waste. This supports environmental management practices.

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INTEGRATED PEST MANAGEMENT FOR SEA LICE

What are sea lice?

Sea lice occur naturally in the ocean and live on many species of wild fish including salmon. They do not pose a human health risk.

Farmed salmon go into the water free of sea lice.

Not all salmon farms have sea lice. Sea lice treatments have not been necessary in Nova Scotia.

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A balanced and effective approach

Integrated Pest Management (IPM) is a strategic approach to sea lice that combines preventative farming practises like fish husbandry, fallowing and low stocking densities with approved treatments when necessary.

Avoiding sea lice treatment is the top priority of Atlantic salmon farmers, but sometimes our fish need to be treated by a veterinarian because some fish can become stressed by sea lice making them vulnerable to disease. Veterinarians use only approved products under the oversight of government regulators.

Under an IPM strategy, farmers would have access to a variety of approved products to use based on the life stage of the louse and on other factors like water temperature. That would mean farmers could use the right treatment at the right time, thus reducing the overall amount of approved product used.

Farmers in Chile, Scotland and Norway have had access to a variety of approved products for many years.

Committed to protecting our oceans

All sea lice treatment products undergo extensive risk assessments by Health Canada to ensure they are safe for salmon and other species, the environment and human health.

Extensive scientific field research and monitoring have shown that approved products have no negative impact on the marine system, on lobster or other species when used according to treatment protocols.

Working with researchers and government officials, farmers monitor sea lice at all farms. They work with top scientists and regulators to collaborate on research and monitoring projects and share information with fisheries groups and the community.

Investing in "green" technologies

Atlantic salmon farmers are investing millions of dollars into the research and development of alternative "green" sea lice technologies like well-boats, sea lice traps, "cleaner" fish and Eco-bath systems.

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QUALITY AND SAFETY

Naturally healthy

Salmon is one of the world's best sources of heart-healthy omega-3 fatty acids.

Health Canada recommends eating two to three servings of fish per week.

There are no dyes or growth hormones in farmed salmon.

Farmed salmon is not genetically modified.

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One of the healthiest foods in the world

Atlantic salmon is one of the most nutritious foods you can eat. It's high in protein, low in saturated fat and loaded with vitamin D and E.

Eating farmed salmon can help prevent heart disease, lower cholesterol and blood pressure, boost your brain function and reduce the risk of cancer, stroke, depression, Alzheimer's disease, arthritis, Crohn's disease and asthma.

A safe food choice

Atlantic salmon is fresh and safe. Farmed salmon are not dyed pink or injected with growth hormones or genetically modified.

Carotenoids – the same natural ingredients found in carrots and egg yolks – are added to the diet of salmon to provide them with vitamin A and give them their pink colour.

Antibiotics are not often used at salmon farms but if needed, they are used only under a veterinarian's direction. Antibiotic use on salmon farms is far lower than any other agricultural animal-producing industry. Strictly regulated withdrawal periods - far longer than any other agriculture sector - follow any use of medication. A regulated testing program ensures that no residues remain in salmon when harvested.

Trace amounts of contaminants like PCBs are in the environment and found in most foods we eat. Salmon has significantly lower levels than other foods such as butter, beef, chicken, pork, canned tuna and eggs. But levels found in all fall well below safety thresholds set by the Canadian Food Inspection Agency.

The enormous health benefits of omega-3 rich seafood outweigh any potential risks by at least 300:1 according to one Harvard researcher.

Traced from egg to plate

Atlantic salmon farmers document their fish from eggs in hatcheries, to their ocean pens, through processing and distribution to ensure the safe handling every step of the way.

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SOCIO-ECONOMIC BENEFITS OF SALMON FARMING

Homegrown industry

Atlantic Canadian salmon farms are locally owned and operated.

Aquaculture in Canada generates over $2 billion annually.

Farmed salmon is New Brunswick's biggest agriculture-based export and has the same potential in Nova Scotia.

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Bringing prosperity to Atlantic Canada

The salmon farming industry is one of this region's biggest economic drivers, generating over $270 million in revenue in New Brunswick alone and almost $50 million in Nova Scotia, which triggers over a half billion across Canada.

Our region produces 30 per cent of Canada's farmed salmon, and our industry has created over 2,600 jobs just in New Brunswick and Nova Scotia alone. Significant potential exists in Nova Scotia for the industry to grow. New farming sites and fish processing facilities are planned in that province.

The Maritime salmon farming industry includes ocean farms, processing plants and hatcheries - supported by feed plants, cage and equipment manufacturers, research facilities, diving, maintenance and transportation services creating thousands of spin-off jobs.

Strengthening rural communities

Salmon farming is transforming coastal, rural communities from areas of high unemployment to relative prosperity. As an example, in Charlotte County, N.B., the industry creates 1,870 jobs – 16 per cent of the workforce. Of the $205 million expended annually by the industry, $150 million was spent in this area buying equipment, supplies and services.

Over 90 per cent of the jobs in our industry are full-time. Seven per cent are part-time and only three per cent are seasonal.

Salmon farmers are part of an integrated working waterfront that includes the traditional fishery, tourism and recreation. They make a significant contribution to the social fabric of their communities.

Keeping our young people at home

We're building an industry that will keep our young people at home by offering them challenging, full-time work in their own communities. Over 50 per cent of direct industry jobs are held by individuals under the age of 40, and this employment stability means that fewer young people must leave the province in search of work.

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CLOSED CONTAINMENT

Did you know?

Developing land-based facilities for Atlantic Canada's salmon production would require about 8,000 football fields – over 50 times more space than we use to grow our fish to harvest in the ocean.

The capital costs to move Atlantic Canada's salmon production to land would be at least $1.5 billion.

There is no evidence that farmed salmon transfer disease to wild salmon.

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Not so environmentally-friendly

Salmon farmers are experts in closed containment because our fish spend the first third of their lives in land-based hatcheries where recirculation is used. We know the amount of continuous electricity needed to run land-based facilities would leave a huge carbon footprint by producing harmful greenhouse gas emissions that contribute to global warming.

Closed systems also require a consistent and abundant water supply at a time when many areas are facing water shortages.

Our industry has shown over the past 30 years we can grow Atlantic salmon in their natural environment with minimal risk to wild stocks or the marine habitat.

Farmers use government-audited ocean floor sampling, underwater cameras and sophisticated feed management techniques to prevent waste and minimize potential environmental impacts to the ocean.

Our production systems meet and exceed the stringent provincial and federal regulatory requirements for environmental and fish health standards.

Not so healthy for our fish

Closed systems result in cramped and stressed fish. A DFO study shows that to make closed containment marginally viable, farmers need to grow fish at a biomass of 50 kg/m3. Our fish are stocked at 15-17.

Atlantic salmon raised in open net pens swim in their natural environment, contained by a system of nets, cages and mooring systems that are designed to meet the challenging environment of the east coast.

Our salmon take up less than four per cent of their pen at maximum, giving them plenty of room to follow their natural schooling instinct.

Not so commercially viable

A study led by the Canadian Science Advisory Secretariat examined 44 closed containment trials conducted throughout the world, including New Brunswick. All failed. To date, no closed system has successfully grown Atlantic salmon on a commercial scale.

Further economic data showed only a four per cent return on equity after three years and return on investment would be two per cent.

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ACFFA Op-Eds Published in 2011

Debunking the 'fish stories' about what farmed salmon eat

By Pamela Parker

Salmon farmers are carelessly plundering the ocean's forage fish stocks to feed their hungry, carnivorous farmed fish that eat as much as 10 times their weight.

That's a popular and unfortunate 'fish story' about salmon farming.

Here's another myth: Atlantic salmon farmers pump chemical additives, dyes and growth hormones into their fish feed.

When it comes to what salmon eat, misinformation abounds. Let's debunk some myths.

Farmed salmon eat nutrient-dense, dry pellets made from animal, plant and fish proteins of natural origin, essential vitamins and minerals – approved for use by the Canada Food Inspection Agency. Carotenoids – the same natural ingredients found in carrots and egg yolks – are added to their diet to provide salmon with vitamin A and give them their pink colour.

No dyes are added. No chemicals. No growth hormones.

Two important ingredients in fish feed are fishmeal and fish oil, which ensure salmon contain high levels of omega-3 fatty acids that are good for your heart and your mind.

The fishmeal and oil primarily come from forage fish such as anchovies that are too small and bony to be used for human consumption. These forage fish are plentiful, and this sustainable fishery is managed by the International Fishmeal and Fish Oil Organization. The Food & Agriculture Organization of the United Nations says that forage fish are not overfished or depleted.

With farmed salmon production expected to increase globally, farmers want to make sure the forage fishery remains strong, so in recent years farmers have been reducing their reliance on wild fish stocks by replacing some of the fish-based ingredients with vegetable and other non-marine proteins. In the 1990s, wild fish based ingredients in feeds were as high as 80 per cent. Today, as the result of extensive research, it's as low as 15 per cent fishmeal and 15 per cent fish oil.

Salmon feed represents only nine per cent of the world's fishmeal consumption, otherwise used for fertilizer, livestock and poultry feed. In fact, worldwide annual fishmeal and fish oil production has remained fairly stable for the last 20 years, even though global salmon production has increased substantially.

Canada leads in the development of fish meal/oil replacements. Our industry is also working toward ensuring that not only do we have full traceability on our fish products, but also on the ingredients for our fish feed. In Atlantic Canada, some salmon farming companies work with top researchers to produce their own feed, using local ingredients whenever possible.

Our industry is continuously improving the nutritive value of salmon feed. Using ingredients that are tested for quality and purity, feed manufacturers now tailor feeds to suit the exact dietary requirements of the salmon at each stage of their life cycle. These improved feeds enhance the health of the salmon - and ensure that the fish grow into high quality food products. They also improve feed digestibility, which results in less waste. In addition, our farmers use underwater cameras to prevent overfeeding and avoid wasting feed.

Farmed salmon are incredibly efficient when it comes to growth. It's estimated that wild salmon eat 10 times their weight in smaller fish throughout their lives. For every kilogram of feed a farmed salmon eats, it gains almost a kilogram of weight. That's a pretty impressive feed to meat conversion ratio.

By comparison, a cow needs to eat eight kilograms of feed to put on one kilogram of weight and a pig needs to eat three kilograms of feed to gain one kilogram of weight.

Salmon are what they eat. Atlantic salmon farmers know that.

They also know they want to produce the highest quality, heart-healthy salmon in the world.

That's why they are absolutely committed to giving their fish the highest quality feed made with natural ingredients from safe and sustainable sources.

Pamela Parker is the Executive Director of the Atlantic Canada Fish Farmers Association, an industry-funded organization that works on behalf of the salmon farming industry in New Brunswick and Nova Scotia.

The scoop on fish poop – and other facts about how we protect the environment

By Pamela Parker

Here's my question for those who are upset at the thought of farmed salmon pooping in the ocean: Do you think wild salmon and other fish don't poop? What do they think happens to all their waste in our oceans?

Salmon poop is organic material after all, designed to be flushed away by the rise and the fall of the strong East Coast tides like the waste from other fish and lobster.

Granted, more waste could accumulate near a fish farm at the height of their growing season, but Atlantic salmon farmers use a myriad of tools and farming practises to reduce waste and protect the marine environment. We tailor our salmon feed, for example, to suit the dietary needs of salmon at each life stage, which improves digestibility and reduces waste. We also use underwater cameras to prevent overfeeding and avoid waste.

We know the recent expansion of salmon farming in Nova Scotia has prompted questions about our industry and its environmental sustainability. This thriving and innovative industry we've built over the past 30 years is complex, and we're happy to answer any questions about how we farm. Both the ACFFA and the companies involved have websites with factsheets that are also publicly available.

But what people should know is this: From how farms sites are chosen to what salmon eat to how they are raised, absolutely every aspect of salmon farming is based on science and research from veterinarians, marine biologists, ecologists, scientists and regulators.

When it comes to the environmental sustainability of our industry, we don't leave decisions to chance.

The careful, science-based approach begins before a farmer even receives a permit to establish a farm. Salmon farm sites are carefully chosen in areas where water currents naturally provide the best conditions for fish well-being and environmental sustainability.

Each potential new site undergoes a detailed, site-specific environmental review and assessment under the federal Canadian Environmental Assessment Act, Navigable Waters Protection Act, and Fisheries Act, plus the provincial Aquaculture Act and the Clean Environment Act.

These reviews scrutinize everything from the farm's potential impact on water quality, fish habitat, wild fish and shellfish populations, marine mammal and other wildlife populations, and the area's biodiversity. This process also examines potential impacts on human health, recreational and commercial fisheries, navigation, tourism, cultural or historical heritage or current use by First Nations.

Once a site is approved, farmers adhere to environmental policies and codes of practise developed with government, researchers and the community. Those practises include routinely fallowing between crops, conducting regular maintenance and inspection of net pens and monitoring water conditions. No dyes, chemicals or growth hormones are added to the diet of salmon, which get their distinctive pink colour from carotenoids – the same natural ingredients found in carrots and egg yolks – that are added to their feed.

Antibiotic use on salmon farms is uncommon and far lower than any other agricultural animal-producing industry. Antibiotics are used under a veterinarian's direction only. Sometimes, salmon in some areas need to be treated for sea lice. All treatments undergo extensive risk assessments by Health Canada to ensure they are safe for salmon and other species such as lobster, the environment and human health. Extensive scientific field research and monitoring has shown that approved treatment products have no negative impact on the marine system or lobster populations when used according to treatment protocols.

Both provincial and federal regulators monitor the environmental performance of fish farms.

The location and day-to-day operations of all Canadian aquaculture facilities are regulated by six federal agencies: Fisheries and Oceans Canada, Environment Canada, Canadian Food Inspection Agency, Canadian Environmental Assessment Agency, Transport Canada, and Health Canada. Provincially, the majority of regulations are administered through aquaculture and fisheries departments and departments of environment.

As part of this monitoring process, farmers conduct regular government-audited sediment testing of the ocean floor to ensure farms meet high environmental standards with results publicly available. In addition to the exhaustive environmental assessment conducted before a permit is issued, regulators conduct site-specific reviews of each farm during each year of production.

The bottom line is, Atlantic fish farmers have to be good stewards of the environment because pristine seawater is essential for the production of healthy, high quality salmon.

They know they'll be out of business if they don't make environmental sustainability a top priority.

But more than that, Atlantic fish farmers want to be good stewards of the environment because they are local people who love the coastal communities where they live and work. They know that if they don't care about environmental sustainability, the ocean they love won't be here in its present form for their children and grandchildren.

And that's not worth leaving to chance.

Pamela Parker is the Executive Director of the Atlantic Canada Fish Farmers Association, an industry-funded organization that works on behalf of the salmon farming industry in New Brunswick and Nova Scotia.

Closed containment: It's not as 'green' or as viable as it's cracked up to be

By Pamela Parker

At least eight thousand football fields.

That's approximately how much land would be needed to develop closed containment systems for Atlantic Canada's farmed salmon production. It's also about 50 times more space than needed to grow our fish in water.

The price tag?

The capital cost to develop land-based facilities for all of Atlantic Canada's farmed salmon production would be more than $1.5 billion – not including the cost of purchasing the enormous amount of land required.

While closed containment is often touted as a magic bullet for salmon farmers, the fact is, at this point and time, raising salmon in closed systems for their entire life cycle is neither viable nor as 'green' as it's cracked up to be.

The costs would be astronomical, and the carbon footprint would be exceptionally high.

A 2008 study led by the Department of Fisheries and Oceans examined 44 closed containment trials conducted around the world, including one here. All failed. To date, no closed system has successfully grown Atlantic salmon on a commercial scale.

Even if farmers could find and purchase the land necessary to support the buildings, tanks and other equipment needed, they must also have access to a consistent and abundant water and electrical supply and backup generators. The amount of continuous electricity needed to run closed systems would leave a huge carbon footprint.

And where would the water come from for these land-based tanks? Locating these operations close to shorelines wouldn't be an option, so the water would have to be pumped from the ground at a time when many areas are already facing freshwater shortages.

Closed containment systems are also not the best option for fish health because the salmon would have to be crowded into tanks to make the systems viable. A 2010 DFO economic study shows that to make closed containment marginally viable, farmers need to grow fish at a biomass of 50 kg/m3. Our fish are stocked at 15-17.

A pilot project with the Atlantic Salmon Federation and the U.S. based research facility operated by the Conservation Fund hopes to eventually grow 2,000 tonnes of salmon in tanks (about what one average NB farm would produce) which is still a long way from what a farming company needs to be commercially viable. There are also many other questions yet to be answered about its costs, greenhouse gas emissions, the quality of the salmon produced and freshwater requirements, including how much will be required to flush or depurate the fish before harvest.

It's somewhat baffling why a small faction is asking salmon farmers to move production to an unproven, unnatural and truly feed-lot style farming method. Atlantic salmon raised on east coast farms are healthy, native stocks that swim in their natural environment, contained by a system of nets, cages and mooring systems that are designed to meet the challenging, high-energy environments of the Bay of Fundy, the Atlantic Ocean and the Gulf of Maine. Fish are not crowded into their net pens. On average, salmon take up less than four per cent of their pen, which gives them room to follow their natural schooling instinct.

Why would we want to grow salmon in an unnatural closed system when we can grow them in a natural environment, uncrowded and using minimal energy?

Our farmers are experts in closed containment technology. Our fish spend the first third of their lives in land-based hatcheries where recirculation is used. We know it simply is not commercially viable to use these systems to grow our fish to harvest.

Our industry has demonstrated we can grow salmon in their natural environment with minimal impact on wild stocks or habitat. We have many tools – such as government-audited ocean floor sampling and underwater cameras and sophisticated feeding management systems to prevent waste – to minimize any potential impact on the environment.

Atlantic Canada's salmon farmers are committed to building the most responsible and innovative aquaculture industry in the world, and we're leading the way in research and development in our industry. We're wholeheartedly supportive of new ideas and improved technology, and we wish ASF well in their endeavour, but at this point in time, closed containment farming may work for specific niche markets, but at the commercial scale necessary to meet the growing demand for one of the world's most heart-healthy foods, it is not economically viable or environmentally-friendly.

Pamela Parker is the Executive Director of the Atlantic Canada Fish Farmers Association, an industry-funded organization that works on behalf of the salmon farming industry in New Brunswick and Nova Scotia.

The truth about salmon farming and sea lice

By Pamela Parker

Just enough to fill a one-ounce shot glass.

That's the approximate amount of approved chemical that Atlantic salmon farmers use to treat sea lice in an entire net pen.

And that bath treatment, which has been approved for use only after rigorous risk assessments and studies by federal and provincial regulators and scientists, is used only as a last resort, usually in a closed system and only under the supervision of a veterinarian.

Misconceptions about salmon farming have abounded in recent months, with the most notable mistaken notion being that farmers are haphazardly dumping chemicals into the ocean.

That is just not the case.

Atlantic Canada's salmon farmers are committed to building the most responsible and innovative aquaculture industry in the world. Although we already work in a heavily regulated industry, we continually strive to do more to ensure the health of our fish, to protect the marine environment and to grow high-quality and healthy food.

Why?

Because we are local people who have built this industry over the past 30 years and we care about its future and about the marine environment in which we live and work. If we don't care about sustainability, then we can't farm, and our neighbours can't fish, and the ocean we love won't be here in its present form for our children and grandchildren.

We recognize that traditional fishers and others have questions and concerns about our industry, especially about how we manage sea lice. We have worked hard through farm tours, media releases and our participation on working groups with the traditional fishery to share information about our sea lice management practises and on research and monitoring results, but yet, misinformation about our industry continues to show up everywhere.

We are concerned about these misconceptions and would like to share some information about our sea lice management practices.

Sea lice are a naturally occurring marine parasite found on a variety of fish stocks around the world but their populations vary from area to area. For example, salmon on farms in Nova Scotia have never been treated for sea lice while salmon in some areas of New Brunswick, like Grand Manan, were treated only once or twice this year. Sea lice do not pose a human health risk, but high levels of sea lice harm our fish and make them vulnerable to other potentially fatal infections.

Prevention has always been – and always will be – our first line of defence against sea lice. We've developed farm management practises to reduce the likelihood and severity of sea lice, including selecting sites with good water circulation, reducing stocking densities, regularly fallowing production sites and ensuring that only salmon born in a single year are grown at each farm site.

Like all other farmers, however, we sometimes have to rely on the professional advice of veterinarians who can prescribe approved treatments when our animals are infected with disease or threatened by parasites.

All products used to treat sea lice in Atlantic Canada undergo extensive risk assessments by Health Canada's Pest Management Regulatory Agency to ensure they do not harm the environment or non-target species such as lobster. Every product we use is strictly regulated and available only through a prescription by a veterinarian. The amount of active ingredient that is mixed with seawater in a bath treatment is extremely

small and the treatments are delivered most often in closed systems. In fact, Canadians use similar products in larger quantities to treat head lice and bed bugs.

The Atlantic Canada Fish Farmers Association does not condone the use of any product that has not been approved by the appropriate regulators. We do not know why trace amounts of cypermethrin, which is not approved for use in Canada, were detected in the Bay of Fundy, but we are cooperating fully with Environment Canada's investigation. What we do know from monitoring and research is that the products our farmers use do not harm the environment or non-target species.

During and following the use of the approved treatment Salmosan in the late 1990s, lobster landings in New Brunswick continued to increase. A comprehensive monitoring and surveillance program in New Brunswick in 2009 found the approved treatment AlphaMax was effective in treating sea lice with no effect on non-target species such as lobster and that no disruption to the normal life cycle of lobster was observed in the field at all stages of development. Some of these lobsters are still being monitored in the lab for long term impacts. In addition, AlphaMax has been used in Norway since 1997 and cumulative impact studies have shown no impact on their shrimp or crab fishery.

Managing sea lice is complex because farmers must deal with a wide range of biological and environmental factors including the various life stages of lice and variances in water temperatures. Some approved treatments don't work well on certain life stages of louse or in certain water temperatures.

Other salmon producing countries such as Norway, Chile and Scotland have had access to four or more sea lice treatment options for many years. However, here in Atlantic Canada, the aquaculture sector – unlike the agriculture sector – does not have a variety of products approved for use in treating parasites or disease. Between 2000-2008, New Brunswick salmon farmers had access to only one approved product, SLICE, which is an in-feed treatment.

For months now, we've been working with federal and provincial regulators, veterinarians as well as industry and fishery organizations to develop an Integrated Pest Management Program (IPMP). An integrated approach combines our current preventative farming practises with access to a variety of approved treatments that farmers can use strategically based on the life stage of the louse and environmental factors such as water temperatures. This approach will allow farmers to use the right product at the right time, thus reducing the amount of treatments used.

In 2010 we did see a higher than normal sea lice abundance in one area of New Brunswick, due to higher than normal water temperatures and our inability to follow an integrated approach because we did not obtain regulatory approvals for products when we needed them. Fish health professionals have shown that sea lice abundance is not related to the number of farms in an area or to stocking densities, which have already been reduced by 50 per cent in recent years.

Without approvals to use the right products at the right time, farmers were left with just one bath treatment option – Salmosan – from October 2009 to July 2010. This meant we couldn't target our treatments and were forced to use far more of this one product than we had planned. Our records show New Brunswick farmers used just over 400kg of the active ingredient - equivalent to about 20 bags of dog food - to treat 200 net pens of salmon in the Bay of Fundy during those eight months. We want to and can use less. If we have enough treatments so that we can use the right product at the right time as part of an integrated approach to managing the health of our fish, we can reduce the amount of products by 50 per cent. That is why we have invested millions of dollars in green technologies like tarps and well-boats for the delivery of sea lice bath treatments in enclosed systems.

We've invested over $1 million to support monitoring and research to make sure we understand potential impacts on the environment and on non-target species in collaboration with federal and provincial regulators, the Atlantic Veterinary College and private research institutions. We're also investing in research into other green technologies such as sea lice traps, cleaner fish and Ecobath systems.

We share our information on treatments, our research findings and our monitoring work in a variety of ways with fisheries organizations and other groups. We have invited those stakeholders to attend meetings in the past; we will continue to do so. We have sought their input into future research; we will continue to do so.

We've grown our industry into one of this region's major economic drivers. Our farms are owned and operated by local people and our working families are part of the social fabric of our coastal communities. Let is work together as neighbours so that we can farm for the future – yours and ours.

Pamela Parker is the Executive Director of the Atlantic Canada Fish Farmers Association (formerly known as the New Brunswick Salmon Growers' Association). The ACFFA is an industry-funded association that works on behalf of the salmon farming industry in New Brunswick and Nova Scotia. It represents over 95 per cent of salmon production in the Maritime region in addition to a wide range of supporting companies and organizations.

Why doesn't the drive-thru stir debate like farmed salmon?

By Pamela Parker

It never ceases to amaze me how many people don't think twice about eating doughnuts, fast-food hamburgers, soda pop, hotdogs and reams of other foods laden with preservatives, artificial flavourings, colourings, additives, artificial sweeteners and refined sugars.

Most people will pop into the drive-thru and order a fried, processed hamburger without giving too much thought to what's inside the meat and the bun and how it's been cooked.

Yet, too often, the thought of eating farmed salmon – arguably one of the world's healthiest foods – unfortunately stirs trepidation in some consumers.

Why is that? What is it about farmed salmon that prompts anxiety compared to so many other unhealthy and processed foods?

Much of the misplaced concern can be blamed on misinformation. You've all heard the myths: farmed salmon are dyed pink; they are injected with growth hormones and genetically modified to grow faster; they are laden with mercury and contaminants and pumped full of antibiotics. None of this is true.

Truth be told, farmed salmon is one of healthiest and most nutritious foods you can eat. Atlantic salmon is a source of high quality protein, rich in vitamins and minerals and incredibly low in saturated fat. According to nutritionists, food experts and regulatory agencies, eating farmed salmon, one of the best sources of DHA and EPA omega-3 fatty acids, can help prevent heart disease, reduce cancer risk, lower cholesterol, boost your brain function and help reduce the risk of everything from Alzheimer's disease and arthritis to Crohn's disease.

How do farmed salmon get their pink colour? Not by being injected with dye. In the wild, salmon get their pink colour by eating small crustaceans and fish whose food sources include the carotenoid-producing microalgae. Within their sea net pens, farmed salmon do not have access to small crustaceans and fish to meet their carotenoids requirements. So, carotenoids – the same natural ingredients found in carrots and egg yolks – are added to the salmon's diet to provide them with vitamin A and give them their pink colour.

Growth hormones are not used by the salmon farming industry; farmers are not growing genetically modified fish, and the industry does not support the commercial production of transgenic fish for human consumption.

Atlantic salmon commonly grow to maturity without the use of antibiotics. In fact, antibiotic use on salmon farms is now far lower than that of any other agricultural animal producing industry in the world. Sometimes, however, salmon, like all animals, will become ill and require antibiotics, which are used only when prescribed by a veterinarian. Following any antibiotic use, a strictly regulated withdrawal period and testing program ensures that no treated salmon is harvested until the medication has cleared from their system. Salmon farms have the longest regulated antibiotic withdrawal period of any agricultural sector in the world.

Trace amounts of PCBs (polychlorinated biphenyls) and dioxins are present in the most common foods we eat. Salmon has significantly lower levels than other foods such as butter, beef, chicken, pork, canned tuna and eggs. The levels of PCBs and dioxins in both wild and farmed salmon are well below the 2,000 parts per billion safety threshold set by both the US Food and Drug Administration and Canadian Food Inspection Agency. More than 90 per cent of the PCBs we eat come from meats, vegetables, and dairy products – not salmon.

Mercury levels in farmed salmon are negligible and do not pose a human health concern. It's species such as king mackerel, shark, swordfish, and tilefish that can have elevated levels of mercury.

One Harvard researcher has said the cardiovascular benefits of eating omega-3 rich seafood – like farmed salmon - are greater than the PCB/dioxin risks by a factor of at least 300:1.

The fact of the matter is the health benefits of eating farmed salmon are huge.

And you can't say that about most meals you order in a drive-thru.

Pamela Parker is the Executive Director of the Atlantic Canada Fish Farmers Association, an industry-funded organization that works on behalf of the salmon farming industry in New Brunswick and Nova Scotia.

acffa Atlantic Canada Fish Farmers Association

Farmed salmon: Good for you.
Good for your community.

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