

**BUILDING STRONG COMMUNITIES.
GROWING HEALTHY FOOD.**



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Message from the Executive Director



PAMELA PARKER

What a wonderful view I have from the ACFFA office.

When I arrive at work, I am greeted by the magnificent Limekiln Bay - with salmon farms nestled close to the shore and a busy working wharf.

Whether it's a gorgeous, sunny day or a blustery, snowy one, that view never fails to inspire me. It brings me back to what I love about salmon farming: the hardworking people and the promise this industry holds for our region.

As I look out the window at the farmers caring for their fish, I feel proud to work in an industry where local people are producing healthy food with a minimal ecological footprint. As I watch the whirlwind of activity on the wharf, I'm reminded that in coastal communities across Atlantic Canada, our salmon farmers are working alongside traditional fishermen and tourism operators as an integral part of a diversified economic base.

As I prepare to finish my over six-year tenure as Executive Director, I've been reflecting on the past and on what the future could bring this industry as we continue to set the stage for responsible growth.

Together, the ACFFA board and staff have accomplished much over the past several years. Adopting a Pan-Atlantic approach to all finfish-related activities is one of the most viable ways to support sustainable growth in our industry. We've worked hard to lead in Pan-Atlantic collaborations on topics such as ISA management, codes of containment, issues management, generic marketing and communications. We expanded our focus to include the salmon sector in Nova Scotia, under the new name of the Atlantic Canada Fish Farmers' Association. We've played a greater role at the national and international level as the voice of salmon farming in Atlantic Canada.

We organized two successful Atlantic Aquaculture Missions to Europe (2013 and 2015) that went a long way toward strengthening community relationships and sharing accurate information about salmon farming. We've also been able to help make significant progress toward a much-needed national Aquaculture Act.

None of the progress made over the past several years would have been possible without the support of the ACFFA board, its staff and our national and international colleagues. To the board, thank you from the bottom of my heart for your guidance and mentorship. The contributions of the ACFFA staff – Betty House, Murray Hill, Kathy Kaufield, Tobi Taylor and Jim Hanley, along with Sybil Smith and Doni McGee – have been invaluable. Thank you for your hard work, professionalism and dedication to our industry and our members. Progress in this industry – or any industry – just isn't possible without solid working relationships with both national and international colleagues. I'm grateful for the opportunity to learn from them and collaborate with them as we continue to build and strengthen this sector.

Challenges remain, of course. Farmers need more investment in industry-driven development research, new tools to support fish health management and more efficient regulatory frameworks.

But those challenges pale compared to the opportunity this industry presents. World food supply needs to double by 2050. Land and fresh water resources are shrinking. Aquaculture not only helps to meet the growing demand for food, but also fits within the ecosystem without changing it. No other food producing sector can say that.

Our region can help fill the need for protein while bringing jobs and prosperity to our communities. Our abundant natural ocean environment makes it one of the best places in the world to farm fish, especially Atlantic salmon, in an environmentally sustainable way. In New Brunswick alone, salmon farming could generate over \$100 million more to the provincial economy if the industry could just maximize its existing capacity. That's \$100 million more without adding one new farm. Nova Scotia has room to grow too.

During the past year, the Association adopted a new five-year strategic plan to tackle our challenges and move our industry forward. I'm confident the ACFFA will continue to lead the evolution of this sector and be a strong voice for our industry under the leadership of new Executive Director Sue Farquharson. Our industry will benefit from the obvious passion she brought to her past work as the Executive Director of Eastern Charlotte Waterways Inc. and the Canadian Rivers Institute.

Salmon farming has come of age, and I firmly believe its future in our region is bright if we work together to continue to grow and evolve this industry like the pioneers we are.

I feel privileged to have worked here in Atlantic Canada with people who are so passionate about farming the ocean – from the farm workers who brave the bone-chilling cold to care for their fish every day to the company CEOs who have the courage, drive and vision to continue to build this innovative industry.

Although I will be departing from this role, I won't be leaving this industry that I love. From my new perch in British Columbia, I will continue to work to develop policies and programs to support the continued evolution of aquaculture in Canada.

And on the days when I'm in need of a little inspiration, I'll close my eyes and remember the incredible view of Limekiln Bay.

Pamela Parker
Executive Director

WHO WE ARE

The Atlantic Canada Fish Farmers Association (ACFFA) is an industry-funded association working on behalf of the salmon farming industry in New Brunswick and Nova Scotia. The ACFFA represents salmon producers in addition to a wide range of supporting companies and organizations. Salmon farming employs over 3000 people in our region and generates over \$356 million to our provincial economies.

Our Vision

Atlantic Canada's finfish aquaculture industry will continue to be an innovative, competitive economic sector that is globally recognized for sustainable finfish production.

Our Mission

To provide value to our members by continuing to be a strong, regional voice on behalf of the industry and by taking a leadership role in the development and implementation of strategies that maximize growth potential, advance fish health and welfare, encourage innovation, research and environmental stewardship while increasing socio-economic benefits within our communities.

Association Goals

- Build effective structures and relationships that support the sustainable growth of the Atlantic Canadian finfish aquaculture industry
- Maintain our position as a world leader in fish health initiatives that support the production of safe, high-quality farmed finfish
- Support scientific research and technological development that is industry-driven and ensures the ongoing sustainability of an innovative Atlantic Canadian finfish aquaculture industry
- Increase the positive awareness of Atlantic Canada's finfish farming industry
- Manage the Association efficiently and effectively to ensure it remains a strong, representative organization that provides value to its members

Our Association

2015 ACFFA BOARD OF DIRECTORS

Our board of directors is elected from the membership.

Larry Ingalls (Chair) | *Northern Harvest Sea Farms*
Nell Halse (Vice Chair) | *Cooke Aquaculture Inc.*
Bob Sweeney (Secretary/Treasurer) | *Sweeney International Marine Corp.*
Bev Bacon | *RDI Strategies*
Morton Benson | *Benson Aquaculture*
Christy Bourque | *Mitchell McConnell Insurance*
Terry Drost | *Four Links Marketing*
Ben Forward | *Research and Productivity Council*
Allison MacKinnon | *Elanco*
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.

SALMON PRODUCER MEMBERS

Cooke Aquaculture Ltd.
Northern Harvest Sea Farms
Gray's Aqua Farms Ltd.
Ocean Salmon Farms
Benson Aquaculture

FEED COMPANY MEMBERS

Northeast Nutrition
Skretting

ASSOCIATE MEMBERS

Aqua Pharma Inc.
Atlantic Veterinary College
Big Falls Fish Growers Ltd.
Brittney Hill Farms
Dartek
Don Atkinson Trucking
Downeast Plastics Ltd.
Dover Fish Hatchery
Elanco
EWOS Canada Ltd.
Four Links Marketing
Future Nets and Supplies
Huntsman Marine Science Center
International Seafood and Bait
Intrinsic Environmental Sciences Inc.
Marsh Canada Ltd.
Merlin Fish Farms
Mitchell McConnell Insurance Ltd.
New Brunswick Community College
Ocean Trout Farms Inc.
Pharmaq AS
RDI Strategies Ltd.
Research and Productivity Council (RPC)
Sweeney International Marine Corp.
VEMCO

ACFFA STAFF

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

Pamela Parker | *Executive Director*
Tobi Taylor | *Operations Manager*
Betty House | *Research and Development Coordinator*
Murray Hill | *Nova Scotia Regional Manager*
Kathy Kaufield | *Communications Manager*
Jim Hanley | *Wharf Manager*

BUILDING STRONG COMMUNITIES

OVER 300 MILLION MEALS

of farmed Atlantic salmon are grown in New Brunswick and Nova Scotia every year

\$356 MILLION contributed to NB and NS economies



OVER 3,000 JOBS



14.8 billion meals. 121,000 jobs. \$10 Billion (USD) in annual production. That's what salmon farmers world-wide produced in 2012-13 from only .00008 per cent of the world's oceans (262 sq km), according to a report released this year by the International Salmon Farmers Association.

For an industry that didn't exist 40 years ago, that's quite a success story.

And Atlantic Canadian salmon farmers played – and will continue to play – an integral role in that success.

Too few Atlantic Canadians realize our region's role in the development of the global salmon farming industry and the depth of expertise and specialized aquaculture knowledge that exists here. Our region boasts: highly skilled engineers and specialists in the design and retrofit of Recirculated Aquaculture Systems (RAS) for fish hatcheries and specialized containment systems to meet our unique marine environment; veterinarians who are experts in fish health and aquatic sciences; scientists and innovators who are leading in fish feed development, environmental monitoring and innovative farming practices.

These men and women are world-class experts in their fields. They are also people who have shared working waterfronts with traditional fishermen and tourism operators since the industry began. Such world-class expertise and industry collaboration is a vital asset in a diversified economy as our region attempts to move forward amidst unprecedented financial challenges.

Globally, as the need for food is growing, land and fresh water resources are shrinking. This makes farming the ocean crucial to help supply healthy protein for future generations. Aquaculture not only helps to meet the growing demand for food, but also fits

within the marine ecosystem without changing it. Aquaculture systems use less land, less fresh water, cause little water pollution and emit less greenhouse gases than terrestrial systems.

Salmon farming has come of age. Farms today thrive in coastal communities and make a significant and positive impact on the socio economic health of the region where they operate.

Our region's abundant natural ocean environment makes it one of the best places in the world to farm fish, especially Atlantic salmon, in an environmentally sustainable way.

The potential exists for salmon farming to ignite our region's economy even more than it does now.

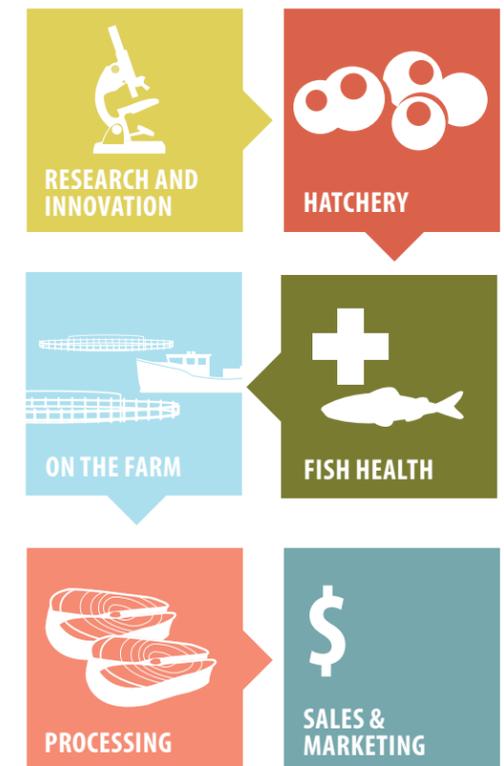
OUR INDUSTRY AT A GLANCE:

- *Farmed salmon is the biggest agriculture-based export in both New Brunswick and Nova Scotia.*
- *Our region produces over 30 per cent of Canada's farmed salmon.*
- *Approximately 51 per cent of direct industry jobs are held by individuals 39 years of age or younger and 30 per cent between 40 and 49 – for a total of 81 per cent of employees under age 49.*
- *Our industry includes ocean farms, processing plants, hatcheries, feed plants, cage and equipment manufacturers, research facilities, and a range of service and supply companies including environmental management, diving, engineering, maintenance and transportation.*
- *Atlantic salmon is the aquaculture industry's primary product, accounting for about 82 per cent of the value of farmed seafood, followed by mussels. Other farmed species include trout, Arctic char, oysters and clams.*
- *More than 50 per cent of all fish and seafood consumed world-wide already originates from aquaculture.*

REVITALIZING COASTAL COMMUNITIES

Salmon farming is a vital part of a diversified economic base for rural, coastal communities along with traditional fisheries and tourism. It represents one of the most promising approaches to help revitalize our coastal communities and reverse the trend of young people leaving rural areas to work and live in larger urban centres. Over 90 per cent of the jobs in the salmon farming industry are full-time.

SALMON FARMING



“ In New Brunswick alone, salmon farming could generate over \$100 million more to the provincial economy if the industry could maximize its existing capacity. ”

GROWING HEALTHY FOOD



Farmed salmon: one of the healthiest foods you can eat

Helps prevent heart disease and boosts brain function

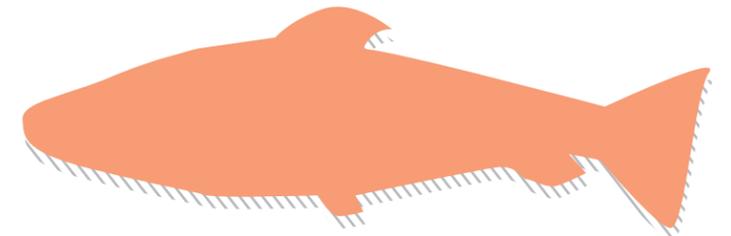
OMEGA 3

Strong bones and teeth

VITAMIN D

Helps energy metabolism and tissue formation

VITAMIN B12 + ZINC



P

Phosphorus – Strong bones and teeth

PROTEIN

Needed to build and maintain every cell in the body

VITAMIN A

Healthy skin, strong bones and teeth

FOOD FOR THE FUTURE

Farming the ocean is crucial for supplying the world's food needs and for keeping the population healthy.



“ From the point of view of an ecological footprint, aquaculture does very well compared to terrestrial animal food production systems. ”

Arni Mathiesen, Assistant Deputy-General of the Fisheries and Aquaculture Department of the United Nations' Food and Agriculture Organization. (March 2015)

PART OF OUR COMMUNITIES

World-class salmon. Local commitment.

Atlantic Canada's salmon farmers are part of the communities where they live, work and raise their families; they are proud to contribute to the growth and well-being of those communities.

All salmon farming companies growing fish in Atlantic Canada are owned and operated by Atlantic Canadians. Our members have a long history of working with their friends, neighbours and colleagues to get investment in infrastructure like wharves, to promote the region's quality seafood to buyers from around the world, to invest in research, and to cooperate on award-winning projects such as the Inner Bay of Fundy Wild Salmon Recovery Project.

In 2015 – in addition to the wide range of activities our members and their employees participate in – the ACFFA also contributed to our communities in a variety of ways:

- *Hosting salmon farm tours as part of Bay of Fundy Seafood Week and New Brunswick Open Farm Day*
- *Continuing to operate the Limekiln Service Centre for the benefit of our industry, government, local fishers and recreational users*
- *Providing tourism and community information within our farming regions*
- *Speaking to local business organizations and service groups as part of their member services*

The ACFFA also supported the following local initiatives:

- *Atlantic Salmon Advisory Committee*
- *Inner Bay of Fundy Wild Salmon Recovery Project*
- *Heart and Stroke Foundation's Heart Truth Campaign*
- *Musquash Estuary Advisory Committee*
- *Nova Scotia Regulatory Review*
- *Saint John River Management Advisory Committee*
- *Marine Debris Working Group*
- *Bay of Fundy Seafood Festival*



FROM OUR HEARTS TO YOURS

In 2015, the ACFFA and its members continued their efforts to raise awareness and support research into heart disease and stroke. **We raised \$2,400.00 for the Heart and Stroke Foundation through our 4th Annual Five Easy Pieces Challenge and other fundraising activities.**



The total amount of money raised over the past three years is about \$13,000, which is not too bad at all from our small staff.

Every seven minutes in Canada, someone dies from heart disease or stroke. Heart disease and stroke are two of the three leading causes of death in Canada. Eating salmon is one of the best ways to help ensure you have a healthy heart. Thanks to all who have supported our fundraising efforts.



GROWING OUR FISH WITH CARE

Atlantic salmon farmers follow the highest fish health management standards and are dedicated to producing high quality and nutritious food. They work with biologists, oceanographic specialists, private and government veterinarians and regulators to support continued responsible farming practices.

The ACFFA continued to work hard in 2015 to support the ongoing improvement and implementation of fish health initiatives that foster the production of high quality farmed fish.

Integrated Pest Management Plan

The ACFFA continues to focus significant resources on gaining support for a science-based Integrated Pest Management Plan (IPMP) for sea lice in the Bay of Fundy. While we do have broad support this initiative, we continue to be challenged by the lack of variety of approved products and tools. This remains an area of priority.

Integrated Pest Management (IPM) is a strategic approach to managing sea lice. It combines preventative farming practises like fish husbandry, single year class stocking on a farm, fallowing and low stocking densities with treatments only when necessary. Approved treatments are used only as a last resort and as directed by a veterinarian.

Sea lice are naturally occurring parasites that affect wild and farmed fish alike. They do not pose a risk to human health. Too many sea lice can stress salmon, making them vulnerable to disease. Not all salmon farms have sea lice or require treatment for sea lice. Sea lice abundance will depend on many factors including water temperature and salinity, and other finfish species in the area.

Managing sea lice is complex; farmers must deal with a wide range of biological and environmental factors, including water temperatures and salinity in addition to the various life stages of the lice. Farmers rely on an integrated pest management approach because using a single management plan or method of control simply does not work.

While an IPMP framework for sea lice exists, salmon farmers remain concerned that the access to a variety of treatment and management options in Canada is limited. Fundamental to an effective IPMP are regulatory approvals for a full suite of options and timely authorizations to evaluate efficacy. Canadian fish farmers do not have access to feed formulations that are available in other jurisdictions despite the fact that salmon being fed these alternative ingredients are allowed to be imported into our country.

In 2015, we continued to work with a variety of partners to increase collaboration toward a fully functional IPMP, which includes coordinating and/or working together on R&D activities. In the coming year, the ACFFA will work with our members to better support sea lice management based on areas, water temperature and hydrology data to enable optimization of equipment and crews required for sea lice management.

We will continue to provide traditional fishing organizations and other stakeholders with an overview of our industry's annual coordinated management and treatment plan and the ACFFA issues notifications in advance of any sea lice bath treatment. The ACFFA also issues an annual Sea Lice Management Report that summarizes the status of sea lice populations and treatments during the past year. This report is based on audited data provided through a centralized Fish iTrends data base at the Atlantic Veterinary College.

The Annual Performance Report issued by regulators in for 2014/2015 showed that the Atlantic salmon farming industry had a very high level of success in meeting all performance measures within the IPMP Framework.

Pan-Atlantic Approach to ISA

Our farmers know that Infectious Salmon Anemia (ISA) is a serious threat to the health of their fish, so rigorous testing and monitoring is an integral part of farm management.

Since 1996 when ISA was identified in New Brunswick, salmon farmers have worked with scientists, veterinarians and government to help prevent and manage outbreaks.

In 2015, the ACFFA continued to seek support for a Pan-Atlantic ISA Management and Control Strategy developed through a collaborative process in 2013 and 2014. The strategy - developed with input from industry, provincial regulators, provincial veterinarians and federal regulators, including the Canadian Food Inspection Agency (CFIA) – includes protocols and Standard Operating Practises to support all phases and activities that are required as part of the management of reportable disease in Atlantic Canada.

This strategy was effectively employed by the industry in 2015 in New Brunswick. It is hoped that support will be received by all Atlantic Provinces for this strategy following the release of the new Nova Scotia fish health regulations.

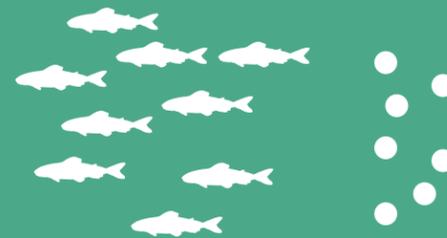
MUMS Program

On a national level, the ACFFA continues to work in collaboration with our national colleagues towards the development of a Minor Use, Minor Species (MUMS) program to support research and registrations for new fish health medicines in Canada. "Minor Use" refers to medicines for diseases that occur infrequently or in limited geographic areas and in a small number of animals annually. "Minor Species" are all animals other than humans that are not one of the major species (i.e. beef, pork, poultry). Examples of a minor species include honey bees, fish, sheep and goats.

All salmon enter the marine environment disease free; less than three per cent of salmon ever require an antibiotic (clearly the definition of minor use and minor species); however, it is important that veterinarians have options available to protect their fish if the need arises.

In 2015, the ACFFA worked closely with the Canadian Aquaculture Industry Alliance to gain support for a national pilot project for MUMS.

DID YOU KNOW?



SALMON OCCUPY LESS THAN FOUR PER CENT OF THE SPACE IN THEIR NET PEN SO THEY HAVE PLENTY OF ROOM TO MIMIC NATURAL SCHOOLING PATTERNS.



SALMON EAT NUTRIENT DENSE, DRY PELLETS MADE FROM ANIMAL, PLANT AND FISH PROTEIN. NO DYES, CHEMICALS OR GROWTH HORMONES ARE ADDED TO THE DIET OF FARMED SALMON.



NO PROPHYLACTIC ANTIBIOTICS ARE EVER USED IN SALMON PRODUCTION.



SALMON FARMERS USE UNDERWATER CAMERAS AND SENSORS TO MONITOR FEED DELIVERY, AVOID OVERFEEDING AND ELIMINATE WASTE.



SALMON FARM SITES ARE CAREFULLY CHOSEN IN AREAS WHERE WATER CURRENTS NATURALLY PROVIDE THE BEST CONDITIONS FOR FISH WELL-BEING AND ENVIRONMENTAL SUSTAINABILITY.



DIVERS AND OTHER FARM STAFF CONDUCT REGULAR MAINTENANCE AND INSPECTION OF NET PENS.



SUSTAINABILITY AND INNOVATION

Conservation and Environmental Stewardship

The ACFFA and our members work collaboratively with a range of organizations to enhance our environmental stewardship. Our members participate in a variety of conservation-based activities from providing hatchery services for wild salmon rehabilitation projects to contributing direct donations to conservation programs.

The ACFFA participates in a range of committees and working groups aimed at supporting industry-driven research, advancing the conservation activities of our industry and sharing accurate information about salmon farming.

In 2015, the ACFFA was a member of the following organizations:

- *Aquaculture Environmental Coordinating Committees (and subcommittees) in Nova Scotia and New Brunswick*
- *Inner Bay of Fundy Wild Salmon Recovery Steering Committee*
- *Atlantic Salmon Advisory Committee*
- *New Brunswick Marine Advisory Committee*
- *Marine Debris Working Group*
- *North Atlantic Salmon Conservation Organization Canadian Delegation*
- *ACRDP National Steering Committee*
- *Galway Initiative Working Group*
- *Saint John River Advisory Committee*
- *Musquash Estuary Advisory Committee*

In addition, the ACFFA met with the following fisheries organizations to share information about our industry:

- *New Brunswick Traditional Fishing Association*
- *New Brunswick Salmon Council*
- *Atlantic Salmon Federation*

The ACFFA and Sweeney International Marine Corp, through the Aquaculture Collaborative Research and Development Program (ACRDP) continued in 2015 to support a two-year project focused on the development of robust methodologies for sulfide probe calibration and sediment sampling. This project will inform any new standards of practice for environmental monitoring. The ACFFA continues to support clear and measurable criteria as the foundation for site classifications and performance based standards. The project is in its final stage.

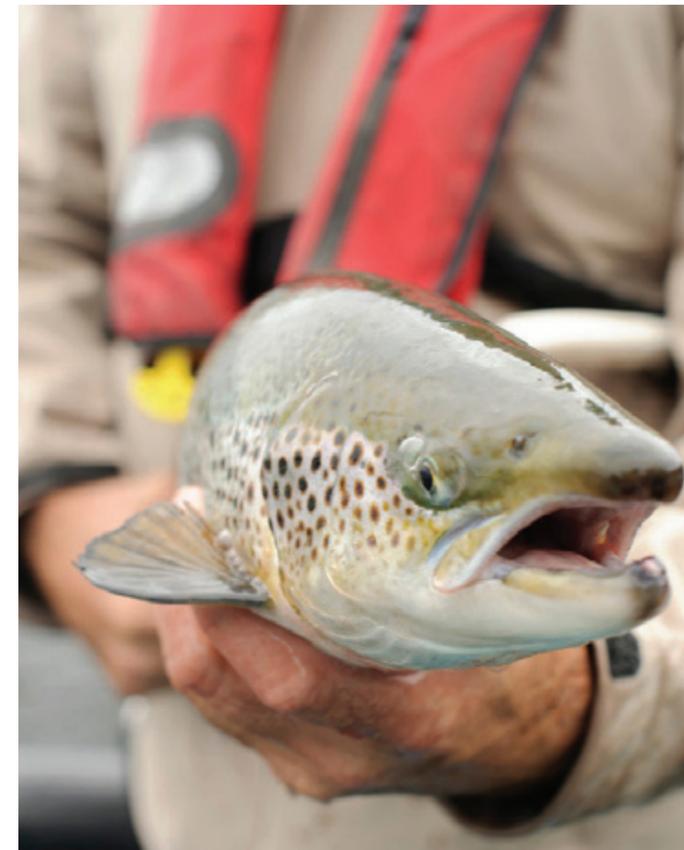
We also continue to invite conservation organizations such as the Atlantic Salmon Federation and representatives from the Atlantic Coalition for Aquaculture Reform to attend and participate in research meetings and industry open houses in both Nova Scotia and New Brunswick.

Groundbreaking Lobster Survey

Results of a comprehensive and groundbreaking lobster survey will soon be prepared and submitted for publication.

In 2015, the ACFFA provided funding that will support the publication of data from an almost nine-year study of berried female and other lobster before and after the siting of a salmon farm in Grand Manan, New Brunswick. This study, the first of its kind, is a result of collaboration between Benson Aquaculture and Sweeney International Marine Corp. The ACFFA was also able to retain the support of Dr. Jon Grant, the NSERC-Cooke Industrial Research Chair in Sustainable Aquaculture at Dalhousie University, in collating and preparing the data for submission and publication through a peer reviewed science journal. This work is being carried out in 2015 and should be published in 2016.

Preliminary results from 2009-10 found that the number of berried female lobsters more than tripled in an area near Grand Manan after a salmon farm began operation. The project involved sending divers down to swim along several transects a 1000 feet in length along the ocean floor so they could identify the lobsters, measure them, compile numbers of males, females and berried females as well as count scallops. All the surveys were videotaped; the divers, scientists and designated survey locations were approved by the Department of Fisheries and Oceans. Following the first study, a production increase for the farm was approved and the dive surveys continued. Again an increase in lobster abundance was recorded.



Climate Change Workshop

Climate change has the potential to not only impact wild fish but could significantly impact aquaculture operations in all jurisdictions.

In 2015, the ACFFA helped lead the development of a climate change workshop program that brought together researchers and aquaculture professionals from the Atlantic region to discuss the potential impacts of climate change on our industry and how we might become better informed on this topic. The template we developed was used for a similar workshop in western Canada. The outcomes from these workshops will be summarized in an Aquaculture Association of Canada publication that will also identify future research needs.



Parks Canada/Nigel Fearon Photography

As a result of the striking success of this pilot, the ACFFA was able to help facilitate a collaboration between industry partner Cooke Aquaculture, Fundy National Park, Fort Folly First Nation Habitat Recovery Program, the Huntsman Marine Science Centre and the New Brunswick Department of Agriculture, Aquaculture and Fisheries that saw this project extended for six years. The ACFFA was able to secure funding from the Wildlife Trust Fund to support this project in 2015 and continues to help to coordinate the project.

As part of this new phase, wild Atlantic salmon smolts are caught as they migrate downstream to the bay and moved to salt-water quarantine facilities at Huntsman for fish health testing. They are then transferred to a marine farm and into specially designed pens for rearing until the grilse stage (one sea-winter salmon) in the autumn of next year. They are then released back into their home river at the time they would naturally return from the Bay of Fundy. Salmon from the Mactaquac Biodiversity Facility also join their wild caught counterparts for the grow-out period.

In 2015, several hundred wild salmon were released back into the Pollett and Upper Salmon rivers from aquaculture cages.

Once numbering 40,000 adult returns, the Inner Bay of Fundy wild salmon numbers had dropped to a low of 250 adults by the year 2000. If early results are a good indication, the wild salmon recovery method pioneered by this project could become a significant factor in helping recover wild salmon stocks in the Bay of Fundy and beyond. In fact, this fall Fundy National Park welcomed its first guests to “swim with the salmon” in the Upper Salmon River, something that would not have been possible without the recovery program.

The Inner Bay of Fundy Wild Salmon Recovery Project is an excellent example of how New Brunswick salmon farmers can use their expertise to work with government, First Nations, conservationists and others to have a positive impact on conservation that would not be possible otherwise. This project will be featured in the upcoming Striking Balance documentary series about Canada’s UNESCO Worlds Biosphere Reserves.



Fish farmers help save endangered wild salmon

The award-winning, collaborative Inner Bay of Fundy Wild Salmon Recovery Project progressed nicely in 2015, and we couldn’t be more proud of the work our salmon farmers contribute to help recover this endangered wild salmon population.

This innovative program sees wild smolts from the Point Wolf and Upper Salmon River in Fundy National Park and the Petitcodiac River system reared in custom-designed aquaculture net pens in a New Brunswick salmon farm before being released back into their home river prior to spawning. This six-year project will build upon a pilot project to continue to evaluate whether rearing wild smolt to maturity in marine pens during their first typical saltwater life phase helps improve wild fitness and survival, as compared to siblings that spent their lives in a freshwater hatchery. This new project will also evaluate the broader ecosystem benefits of having wild salmon once again depositing marine nutrients and spawning in the river system.

Early results from the three-year pilot of this collaboration suggest that fish with less exposure to captivity had better surviving offspring and overall wild fitness advantages. Scientists at Fundy National Park counted over 40 fish in the Upper Salmon River in the fall of 2012 – most from the cage reared group - and the most salmon seen in the area in over 20 years, showing double the return success of their hatchery-reared counterparts.

Approximately 2,000 additional smolts were also moved into marine cages. Industry was successful in obtaining approval for a farm site in the Grand Manan area for this project that is operated by a dedicated farm crew knowledgeable in the unique features of growing wild salmon. The ACFFA has been able to help facilitate broader exposure for this project so that it is now gaining interest from people in other watershed areas in Nova Scotia and New Brunswick and through the CART initiative. The ACFFA also committed industry support for a NSERC proposal that would result in a dedicated scientist who will conduct and document various research activities and scientific monitoring for publication in peer reviewed journals.

In addition to industry designing specialized net pens for this project, they also contribute feed, equipment, maintenance and transportation services along with on-farm and fish health personnel to care for these wild salmon. ACFFA’s Research and Development Coordinator Betty House helps to oversee, monitor and manage the project.

In 2011 the pilot project was recognized nationally with a Parks Canada CEO Award of Excellence for innovation in engaging partners for conservation and being a significant contributor to Parks Canada’s mandate to help preserve the wildness of our parks.



RESEARCH AND DEVELOPMENT



Atlantic Canada's salmon farmers work with top researchers from the federal and provincial governments, universities and the private sector on a wide variety of projects aimed at strengthening and improving their industry.

The ACFFA plays a lead role on behalf of our sector in advocating for scientific research and technological development that is industry-driven and ensures the ongoing sustainability of an innovative aquaculture industry.

Since 2011, the aquaculture industry has seen a significant reduction in funding available for industry driven R&D and a shift by government toward regulatory research. We also remain concerned that the research facilities at the St. Andrews Biological Station continue to be underutilized.

In 2015, the ACFFA continued to work in the region and nationally in partnership with the Canadian Aquaculture Industry Alliance to advocate for a return to development research and new tools to support improved fish health management.

The ACFFA also continues to explore non-traditional collaborative opportunities and to work with a range of research institutions. We supported a successful proposal by the Huntsman Marine Science Centre for a research chair in Aquatic Bioscience that will enable a coordinated and collaborative approach to research. We have supported a proposal research cluster through collaboration between the Atlantic Veterinary College (AVC) and Dalhousie University (still pending) and one to support mitigating climate-related challenges on salmon aquaculture between Memorial University, University of Waterloo, AVC and others.

The ACFFA continues to host an annual research forum with a broad base of researchers and also to network with colleagues throughout the year at a range of R&D meetings.

The ACFFA continues to make staff available for the management or coordination of any industry inclusive R&D projects.



Research / activities in which the ACFFA has been or is an active participant on behalf of the salmon industry include:

- Supported the continued hydrological study to support improved modeling and future Aquaculture Bay Management Area (ABMA) review through an Aquaculture Collaborative Research and Development Program (ACRDP) project
- Continued support and use of the Fish iTrends decision support system throughout Atlantic Canada
- Investigation/evaluation of new technologies on Atlantic salmon farms for sea lice management (i.e. lasers, improved delivery systems for tarp treatments, etc.)
- Supporting a collaborative project for the development of a robust methodology for sulphide probe calibration and sediment sampling with Sweeney International Marine Corp to improve environmental monitoring practices
- Supporting ACFFA members in a range of research activities (broodstock development, green innovations for sea lice management, new drug evaluations, etc.) and communicating data when/where appropriate
- Leading in the development of a field study on the potential impact of treatment products on non-target species through a two phase project beginning in the fall of 2015 and continuing in 2016



Research and Development



CONTINUING TO BUILD OUR INDUSTRY

Other research projects that are being led by salmon farming companies include:

- *Cleaner fish research (Cunner fish and other species)*
- *Residue testing for various fish health medicines*
- *Hydrogen peroxide bath effects on salmon skin epithelium*
- *Broodstock development*
- *Quantifying salmon feed waste*
- *Feed trials to test alternate feed ingredients*
- *Sediment profile imagery*

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.

ACFFA Research and Development Coordinator (RDC), Betty House serves on the Board of Directors of the Aquaculture Association of Canada and as Chair of the publication committee as well as participating on other committees. Our RDC is also a key member of the Atlantic Canada Aquaculture Industry Research and Development Network (ACAIRDN).

In 2015, the ACFFA staff attended the following meetings and conferences that provided information on scientific and/or social science research:

- *Newfoundland Aquaculture Industry Association's Cold Harvest Conference*
- *Aquaculture Association of Nova Scotia's Sea Farmers Conference*
- *Northeast Aquaculture Conference and Exposition*
- *Aquaculture Association of Canada*
- *Sea Web*
- *AquaNor and associated seminars*
- *North American Seafood Expo*
- *Climate Change Workshop*
- *Canadian Aquaculture Industry Alliance AGM and Forum*

The ACFFA participates on a variety of R&D based committees and/or networks including:

- *Aquaculture Association of Canada*
- *Atlantic Canada Aquaculture Industry Research and Development Network (ACAIRDN)*
- *Aquaculture Collaborative Research and Development Program – Steering Committee*
- *Inner Bay of Fundy Wild Salmon Recovery Project Steering Committee*
- *Galway Initiative Working Group*



Atlantic Aquaculture Mission 2015

If Atlantic Canada truly wants to reap the benefits that salmon farming could bring our region, we have to continue to look to some other global aquaculture leaders.

That's why in 2015 the ACFFA led an Atlantic Aquaculture Trade Mission to Ireland and Norway from August 13-21, 2015.

Our 46 participants represented all four Atlantic provinces and included professionals who work in almost all facets of the aquaculture industry – from fish farming, net-making, research, communications, consulting as well as federal, First Nations, provincial and municipal officials and aquaculture association representatives.

Mission participants toured fish farms, hatcheries and processing plants to see first-hand how new technology is being applied in Ireland and Norway. They met with community officials, regulators and industry representatives in both countries and attended AquaNor 2015, the biggest aquaculture trade exhibition in the northern hemisphere.



The Mission gave participants the chance to see aquaculture's potential by observing operations at a scale significantly greater than what we see in Atlantic Canada. They learned that other countries like Ireland and Norway have visions and sustainable plans to grow their aquaculture industries. The lessons learned will help us continue to grow our industry here at home.

The first stop was Ireland, a country that punches above its weight when it comes to aquaculture. Its fish and shellfish farmers have stubbornly persevered through a multitude of challenges to develop niche markets for seafood products and to expand their industry.

We learned about the country's seafood marketing efforts, public investment plans, sea lice monitoring program, mussel farming, salmon farming and aquaculture licensing. Ireland is now looking to all its farmers – fish and shellfish farmers included – to help pull the country out of the economic turmoil following the Celtic Tiger. Ireland's national aquaculture strategy is firmly focused on increasing production, new enterprises, new species, multi-trophic aquaculture and organic aquaculture.



Norway is the largest producer of Atlantic salmon in the world. An incredible 14 million meals of Norwegian salmon are served every day around the globe.

In Norway, participants took part in a full-day on-the-water tour that included a stop at SalMar's harvesting plant InnovaMar – the largest and most efficient facility of its kind in the world. Built in 2010 at a cost of \$70 million (Euros), this facility processes 128 salmon per minute. The plant's 600 workers process 150,000 metric tonnes of farmed salmon every year – which is approximately the equivalent of Canada's entire farmed salmon production. The tour also included a stop at Seaweed Energy Solutions and Biotral – a sustainable seaweed cultivation and processing company – and Aqualine, a leading supplier of plastic cages.

Participants also attended AquaNor 2015, which played host to exhibitors, professional conferences, seminars and presentations on the latest technology and aquaculture research. Displays featured everything from feed and feed equipment, processing equipment, net pens, moorings, packaging systems, work clothes and safety equipment to boats, fish pumps, fish sorters, tanks, and feed barges. ACFFA also co-hosted an international seminar at AquaNor on salmon farming economics, technology and research.

In Norway, participants also toured SalMar's lumpfish hatchery. This former freshwater salmon hatchery now produces farmed lumpfish as one of the cleaner fish Norwegian farmers use to help control sea lice. Lumpfish are one of the most successful non-medicinal remedies for battling sea lice.

Participants arrived home in Canada at the end of our Mission on an emotional high – energized and inspired by knowledge gained, connections made and opportunities discovered.

Farmed salmon continues to be in high demand around the world. Tremendous opportunity awaits this sector in Atlantic Canada. Many of our participants returned home from our Mission saying, "Let's get to it!"

To read a more detailed account of our Mission, please visit our blog "Memos from the Mission" at memosfromthemission.wordpress.com.



Pan-Atlantic Approach

In 2015, the ACFFA continued to work hard to support the sustainable growth of Atlantic Canada's finfish aquaculture industry throughout the region.

Adopting a Pan-Atlantic approach to all finfish-related activities is one of the most viable ways to achieve sustainable growth in our industry. In 2015, the ACFFA continued to make it a priority to lead in collaborations that will result in a unified and coordinated Pan-Atlantic approach to all finfish-related activities.

The ACFFA is playing a greater role at the national and international level as the voice of salmon farming in Atlantic Canada. We're continuing to build strong relationships with aquaculture interests around the world, across Canada and in Atlantic Canada. We're working hard to help ensure our farmers can continue to build a locally-based, globally competitive, sustainable aquaculture industry.

In 2015, the ACFFA continued to support the creation of a national Aquaculture Act. We worked with our provincial leaders toward a strong Atlantic coalition in support of programs and policies that will contribute to the continued responsible growth of our sector. The ACFFA hosted farm tours, met with a range of stakeholders and facilitated meetings and information sessions.

The ACFFA has led in the following activities that support broad industry coordination and collaboration:

- *Pan-Atlantic approach to the development and adoption of an ISA Management and Control Program and standards of practice for viral management and emergency preparedness. This strategy was effectively employed by the industry in 2015 in New Brunswick. It is hoped that support will be received by all Atlantic Provinces for this strategy following the release of the new Nova Scotia fish health regulations.*
- *Pan-Atlantic approach to the amendment of Codes of Containment and escape mitigation which is pending a final review and adoption by the four Atlantic provinces, pending the release of the new Nova Scotia aquaculture regulations.*
- *Continued implementation of a Pan-Atlantic Industry Communications Strategy*
- *Represent Atlantic salmon farming on the National Industry/Government Working Group*
- *Represent salmon farmers on the Atlantic Aquaculture Working Group and the Atlantic Food & Beverage Sector Group*

Other activities the ACFFA continues to pursue include:

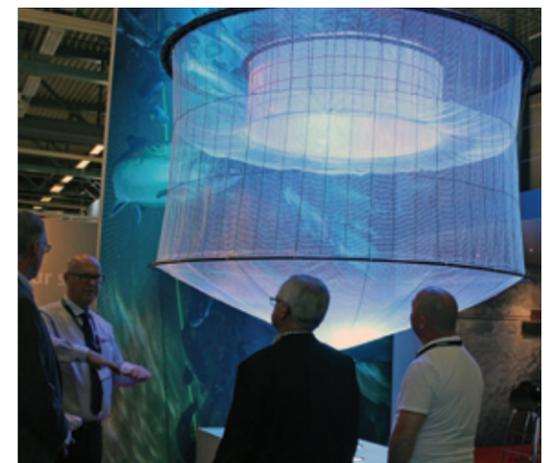
- *Effective regulatory structures in both New Brunswick and Nova Scotia including support for a harmonized regulatory system that makes sense for industry and supports the optimization of resources within government and industry*
- *Strong relationships with aquaculture interests across Canada and in our key areas of Nova Scotia and New Brunswick, including municipal governments*

Infrastructure Investment

In 2015, the ACFFA led in the development of initiatives that foster investment in the necessary infrastructure to support the operations of the finfish aquaculture industry.

Infrastructure can come in the form of physical structures such as plants and wharves but also in program and policy frameworks - all of which provide the foundation for investor confidence in finfish farming. To date during 2015, our key focus areas have been on providing accurate consumer and public information, the development of a business risk program for farmers, approvals for fish health products and research and scientific monitoring.

We have also supported enhancements to small craft harbours. The ACFFA and our members have supported traditional fisheries requests for improved wharf infrastructure; we are supporting advocacy for changes to Small Craft Harbour policy regarding the status of aquaculture as a user group. The latter has now been brought forward for inclusion in the national development strategy and has become part of federal advocacy action.



Continuing to Build our Industry



Association Renewal

In 2015, the ACFFA Board of Directors held a strategic planning session to ensure that the goals and objectives of the association will remain relevant and effectively meet the needs of the sector moving toward 2020. The ACFFA has supported this initiative and, working with our members, continued to expand our membership in Nova Scotia and New Brunswick during 2015.

Workforce Development

The ACFFA continued its collaboration with the New Brunswick Community College to raise awareness in high schools of career opportunities available in aquaculture. The ACFFA provides support materials for their use in these presentations as requested.

Raising awareness of our industry with high school students and communities is intended to support workforce development, but it also helps to support an understanding of the salmon farming industry in the communities where we operate and in our region as a whole.

In 2015, we hosted farm / industry tours for 4H students visiting from Alberta, for students from Dalhousie University and Université de Moncton. We open our fall Forum to aquaculture students and subsidize their attendance.



TELLING OUR STORY

The story of our industry is one of hard work, perseverance, innovation, collaboration and optimism. Our people are Atlantic Canadians who are passionate about farming the ocean, building the coastal communities where they live and providing healthy protein to a growing population.

In 2015, the ACFFA continued to work hard to tell people how we farm, what we do to protect the marine environment and how we bring prosperity to our region while growing one of the world's healthiest foods.

We continued to embrace a Pan-Atlantic communications approach because having a single voice speaking for industry contributes to greater harmonization throughout the region.

The ACFFA continued to spread the word about our industry in 2015 by:

- Maintaining a social media presence through our website, Facebook and Twitter
- Issuing Op-Eds and commentaries to print media on issues in the news
- Challenging misinformation about our industry through Act for Aquaculture blogs (www.ActforAquaculture.ca) and direct mailers to key stakeholders
- Responding to media on an ongoing basis
- Providing print collateral materials to the "Buy Local" NB summer farm campaign
- Providing point of sale collateral material on the quality of our farmed salmon
- Collaborating with other provincial aquaculture associations to ensure accurate information about salmon farming is made available to media and the public
- Maintaining our generic marketing program All About Salmon under the banner of the Canadian Atlantic Aquaculture Council
- Submitting advertising and commentary articles for special aquaculture/ agriculture editions of the Chronicle Herald and the Telegraph Journal



The Voice of our Members

Representing our sector on federal and provincial committees and working groups is important to ensure our industry can operate within an enabling regulatory environment and to ensure industry issues and concerns are addressed.

In 2015, the ACFFA participated in the following regional committees and/or working groups:

- Aquaculture Environmental Coordinating Committees – Nova Scotia and New Brunswick
- Atlantic Canadian Aquaculture Industry Research Development Network
- Inner Bay of Fundy Wild Salmon Recovery Project Steering Committee
- New Brunswick Industry/Government Fish Health/IPMP Working Group
- Musquash Advisory Committee
- Aquaculture Collaborative Research Development Program National Steering Committee & Technical Review Committee
- Atlantic Salmon Advisory Committee
- Marine Debris Working Group
- Atlantic Aquaculture Working Group
- Atlantic Canada Food and Beverage Sector Working Group

The ACFFA is also active in the following national and international organizations:

- Canadian Aquaculture Industry Alliance
- National Aquaculture Strategy Industry Government Working Group and Technical Committee
- Aquaculture Association of Canada
- International Salmon Farmers Association
- North Atlantic Salmon Conservation Organization

Membership in Canadian aquaculture industry associations and participation in national projects ensures members of the ACFFA have a voice in influencing decisions that are made on behalf of the industry and keeps them informed on activities that could impact their sector.

The ACFFA staff participated in two meetings with the Senate Committee for Fisheries and Oceans in 2015, making formal presentations on behalf of the industry. In Nova Scotia, ACFFA met and /or made presentations to the Pugwash community economic development group and the economic development officer for the Municipality of Argyle. The ACFFA staff also meet other municipal, provincial and federal officials on a regular basis.



ISFA

Global Salmon Report

In 2015, the ACFFA – on behalf of the International Salmon Farmers Association – led the development of a groundbreaking socio-economic report on salmon farming globally that showed the industry has come of age.

The report, entitled *Salmon Farming: Sustaining Communities and Feeding the World*, showed that global salmon farmers produced 14.8 billion meals in 2012-13 from only .00008 per cent of the world's oceans. The report, based in 2012-13 data, also showed the global salmon farming industry produced \$10 billion (USD) worth of salmon, created 121,000 direct and indirect jobs around the world and stimulated thousands more spin-off jobs and economic growth in a wide variety of other sectors.

The ACFFA also helped to coordinate its successful launch at Seafood Expo North America in Boston to mark the International Salmon Farmers Association's 25th anniversary. The report and its accompanying infographics on key salmon farming statistics resulted in numerous international media stories and a flurry of social media activity on Facebook and Twitter.

The report has been used as a key education piece for elected representatives, during public speaking engagements and with government officials. The ACFFA also prepared a presentation on this report that was given during the International Seminar at AquaNor.

The full report can be found at www.salmonfarming.org.



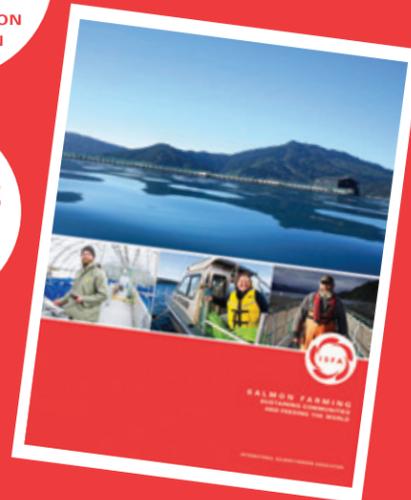
14.8 BILLION MEALS EVERY YEAR

\$10 BILLION (USD)

GLOBAL SALMON PRODUCTION

45,358 DIRECT JOBS

75,554 INDIRECT JOBS



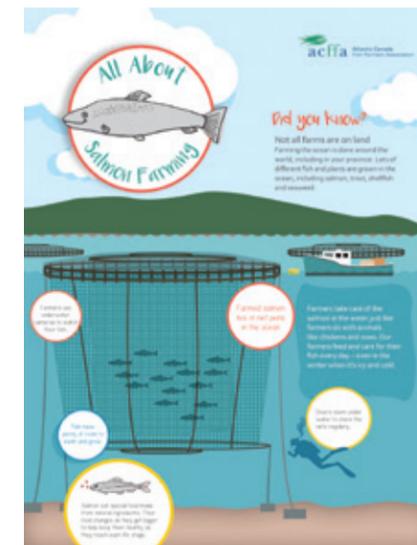
Reaching Out to Chefs

The ACFFA and our project team embarked on Phase 2 of a Food Service Education Project aimed at chefs and culinary schools.

Chefs play an increasingly important role in influencing the food choices of consumers.

Developed in collaboration with the Atlantic Food and Beverage Sector, the Atlantic Canada Opportunities Agency and provincial seafood marketing organizations, this project aims to educate them about a variety of seafood species.

Educational videos and information guides were developed about six species of Atlantic seafood – some farmed and some wild - including Atlantic salmon. The final three videos and guides were completed this fall. The others have already been distributed to chefs and culinary schools in Canada and abroad.



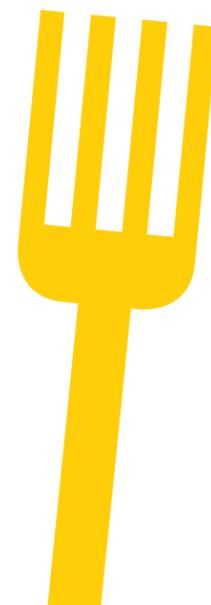
Teaching Youth about Salmon Farming

We developed an "All About Salmon Farming" activity sheet aimed at Grade 6 students. This activity sheet uses games to educate children about salmon farming and also serves to raise awareness about our industry generally. It will be distributed to students during tours at marine centres, schools and at community events. A career awareness brochure aimed at Grade 11 students is also in the works. This print brochure will be distributed to high schools to raise awareness of our industry and the career opportunities throughout the sector.

Memos from the Mission

The ACFFA once again used a blog – entitled Memos from the Mission – to communicate the activities of the 2015 Atlantic Aquaculture Mission. The daily blog and photos chronicled what our mission participants saw and learned on our tours in Ireland and Norway. The blogs were posted on Facebook and Twitter, which generated significant interest. Our Facebook reach increased 165 per cent compared to our 2013 mission.

Read our blogs at: www.memosfromthemission.wordpress.com.





ACT FOR AQUACULTURE BLOG POSTS

Ten Reasons to Feel Good about Buying Farmed Atlantic Salmon this Christmas

December 22, 2014

At Act for Aquaculture we focus on correcting misinformation about our industry. However, 'tis the season for good cheer, so let's talk about why you should feel good about buying and eating farmed Atlantic salmon grown right in your own backyard this Christmas!

1) It's one of the healthiest foods in the world.

Atlantic salmon is an excellent source of lean protein, low in saturated fat and calories and one of the best natural sources of vitamin D. Eating farmed salmon can help 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.

2) Your heart will thank you.

Atlantic salmon is high in heart-healthy omega-3 polyunsaturated fatty acids. According to a recent study, eating just 3 oz of farmed salmon a week reduced the risk of death from coronary heart disease by 36 per cent.

3) It's yummy!

With its melt-in-your-mouth texture and delicate flavour, Atlantic salmon is delicious no matter how you prepare it. And unlike so many other foods served during the holidays, you don't have to feel one speck of guilt about eating it.

4) Serving Atlantic salmon will save you time.

When you cook with Atlantic salmon, you don't have to spend all day in the kitchen to pull off an elegant meal. It's easy and fast to prepare and available fresh all year round.

5) Atlantic salmon makes entertaining easy and stress-free.

Two words: candied salmon! Two more words: smoked salmon! When unexpected visitors show up at your door, just bring out some candied salmon and voilà! Happy guests! Hot or cold smoked Atlantic salmon also make smashing appetizers. Add some wine and you've got all the makings of a great holiday gathering.

6) Atlantic salmon is locally grown by farmers (maybe your neighbours) from right here in Atlantic Canada.

Farmers from small, coastal communities across Atlantic Canada have been growing salmon in the best place possible – their natural,

native ocean – for nearly 40 years. So you're not only getting a delicious and healthy food for your family, you are also supporting a homegrown industry that creates thousands of jobs in rural areas of our region. Do you realize that two Atlantic Canadian family-owned companies produce 50 per cent of Canada's farmed Atlantic salmon?

7) Atlantic salmon does not contain any artificial dyes, growth hormones or preservatives.

It's naturally fresh... and tasty.

8) Atlantic salmon is not genetically modified in any way.

Salmon grown in Atlantic Canada originated from the real, native fish that have been swimming in waters off the eastern coast of Canada for hundreds of thousands of years.

9) You don't have to worry about mercury or PCBs when serving Atlantic salmon.

Tests conducted by the United States Food and Drug Administration consistently rate farmed salmon among the fish with the lowest mercury levels. And not only that, Atlantic salmon also has significantly lower levels of PCBs than many other popular foods such as butter, canned tuna, chicken breasts, pork, beef and steak.

10) Eating farmed salmon comes with a low environmental footprint.

It takes 15,000L of fresh water to produce 1KG of beef. It takes 3,500L of fresh water to produce 1KG of rice. It takes only 900L of fresh water to produce one farmed salmon (we're counting the water it takes to grow the feed ingredients too). Energy and oxygen to grow our fish after they leave their freshwater hatcheries comes from the tides supplied by Mother Nature. In a world where fresh water resources are shrinking and we need to reduce our carbon footprint, that's something to feel good about.

Did you know that in the United Kingdom last year, The Telegraph reported that salmon was just as important as turkey? We don't think Canadians are going to give up their turkey on December 25th – but we highly recommend salmon for Christmas Eve or Boxing Day!

And remember: salmon isn't just for the holidays. If every Canadian ate just two servings of salmon every week, over 5,800 of lives would be saved. That has a potential benefit to Canada worth \$42 to \$50 billion, to say nothing of the billions we would save in health care costs.

Merry Fish'mas everyone!

Words matter: enough already with the hype

February 24, 2015

One of the biggest challenges facing the salmon farming industry may come as a surprise.

Words.

Divisive, exaggerated and inaccurate words.

Words are powerful. Sometimes, it takes only a few choice ones to shape a perception, which in the case of salmon farming is usually misguided.

We at Act for Aquaculture watched in dismay recently as once again false perceptions about our industry took center stage in the coverage about the federal government's proposed Aquaculture Activities Regulation.

In this case, over-hyped words and an inaccurate press release shaped this false perception: "Evil fish farmers bent on destroying the ocean are literally at war with lobster fishermen desperate to stop the dumping of toxic chemicals into the Bay of Fundy while the feds turn a blind eye".

Okay, okay, it's hard not to get carried away by this week's tide of sensational language, but you get our drift, right?

Act for Aquaculture separates fact from fiction. Let's take a closer look at some of the inaccurate words thrown around this week.

Hype: Salmon farmers and lobster fishermen are "at war".

Fact: They've worked alongside each other since the salmon farming industry began nearly 40 years ago. Some salmon farmers are also lobster fishermen. They share the water and the wharves and are quick to help one another when in need. Most are neighbors and some are even relatives or friends! Yes, they sometimes disagree, but there's no secret Fight Club, no swords drawn. Both know that pristine seawater is essential for the production of healthy, high quality seafood. Sometimes, they even work together to get investment in infrastructure like wharves or promote the region's quality seafood to buyers from around the world. Imagine!

Hype: Anti-salmon activists launched a "salvo" at salmon farmers this week.

Fact: A salvo is defined as a simultaneous discharge of artillery or other guns in a battle or a sudden, vigorous, or aggressive act or series of acts. A group of citizens wrote a letter to the Prime Minister and issued a media release. That's right – a letter and a media release. While both contained inaccurate information about a proposed new regulation, they certainly have a right to say it. That's what happens in a peaceful democracy. Unfortunately, their claims often aren't scrutinized before being published. We live in a world where controversy sells.

Hype: The proposed regulations allow salmon farmers to routinely "dump" toxic chemicals into the ocean.

Fact: Farmers never have and never will "dump" chemicals into the water. The active ingredient in most products approved for sea lice treatments actually equals mere ounces. Ounces. Delivered in an ENCLOSED system. No "dumping" involved.

Hype: Salmon are farmed in "open-net pens".

Fact: This is an odd term coined by opponents of salmon farming and picked up by some media as well. And it doesn't make sense. Open? As in fish being able to swim in and out? Seals and other predators



can come and go as they wish? Not likely! But it paints a picture. The fact is they are fully closed, well-engineered and sophisticated systems of nets and cages that are securely moored and anchored. They are inspected daily by the farm crew using underwater cameras for feeding and cleaning and weekly by divers who swim all around and across the bottom of the pen.

Hype: Salmon farmers are self-regulated.

Fact: Salmon farming is regulated by more than 10 different federal and provincial departments and agencies. Salmon farming is one of the most regulated food production businesses – one of the most regulated businesses of any kind, really – in the country. Not only are we regulated by governments, we must also answer to the third party auditors who review our practices to determine if we meet their tough certification standards – standards our customers demand. On top of that, salmon farms operate in plain sight. Anyone living nearby or anyone with a boat can see what we do and how we do it. We welcome visitor and tour requests, and we’re always happy to answer questions about our farms – as long as it’s respectful dialogue and not shouting at us through bullhorns, waving signs with skulls and crossbones or some of the other not-so-friendly communication techniques our opponents use – including misleading the media.

Words matter.

We urge people discussing our industry to choose them wisely and to take the time to learn the facts about how we farm.

Then, maybe someday, misguided perceptions won’t be such a challenge for our farmers, and they can focus on what they do best: raising healthy fish in a responsible way to meet our growing demand for quality protein.

Aquaculture Critics Out of Their Depth

June 2, 2015

Check out the terrific letter below from Jon Grant, NSERC-Cooke Industrial Research Chair in Sustainable Aquaculture, Dalhousie University.

Googling about aquaculture doesn’t make anyone an expert on the sustainability of salmon farming or fish health.

It’s time the public paid better attention to the trained and qualified researchers and scientists who study aquaculture.

Atlantic salmon farmers do.

They rely on science and new innovations and technologies to help manage their farms and continue to reduce their environmental footprint. For years, they have worked with our region’s world-class universities and research institutions for science expertise on best management practices, specifically in the areas of fish health and environmental protection.

Read Jon Grant’s letter here: <http://thechronicleherald.ca/letters/1290358-counterpoint-aquaculture-critics-out-of-their-depth>



PARTNERS IN A WORKING WATERFRONT

Coastal communities benefit from a diversified economic base that includes salmon farming, traditional fisheries, recreational fishery and tourism. Salmon farming has successfully co-existed with a thriving wild fishery and a vibrant tourism industry for nearly 40 years in Atlantic Canada and elsewhere.

Our region’s salmon farmers are passionate and hardworking people who are committed to building a locally based, globally competitive and environmentally sustainable industry that will continue to bring prosperity to our coastal communities. They are committed to making sure that traditional fisheries and aquaculture continue to thrive as partners in our region’s working waterfronts.

NOT TO BLAME FOR WILD SALMON DECLINE

Salmon farming began because the commercial fishery for Atlantic salmon was in decline. Studies and monitoring data show wild salmon populations fluctuate in areas with and without salmon farms.

Wild salmon in the Bay of Fundy are impacted by a variety of issues such as acid rain, seal predation, unhealthy watersheds, hydro dams, habitat loss, invasive species and over-fishing. Environmental assessments show that salmon farms do not pose a significant or permanent risk to wild salmon or habitat.

LOBSTER LANDINGS GROW

Lobster landings have increased since the 1990s according to the Department of Fisheries and Oceans. A study conducted by the School of Fisheries, Marine Institute of Memorial University in 2005 showed that after 25 years of commercial fish farming, lobster landings are at historic high levels particularly in areas with active fish and shellfish farm sites

TOURISM ENHANCED

In most coastal communities, salmon farmers work alongside tourism operators. Many visitors to our shores and communities are interested in learning more about salmon farming. Tourism industries will flourish when visitors can be drawn to a community because there is a variety of experiences available to them.

SAFE FOR OUR OCEAN

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

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

Wild salmon runs fluctuate from year to year whether salmon farms are in the area or not.



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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 40 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 practice 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 following 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. As the world's population continues to grow, fish farming is the only way to provide the growing demand for healthy food.

HOW SALMON ARE FARMED



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 PRACTICES

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 following 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

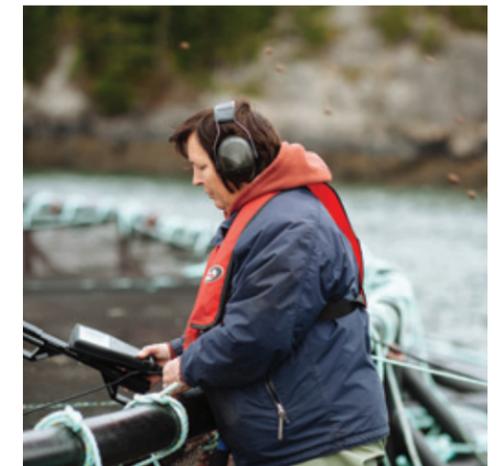
Preventing escapes is a top priority for Atlantic fish farmers, who have developed a Code of Containment that details rigorous guidelines for the design of pens, their mooring systems and netting. Escapes have been dramatically reduced since the early 1990s and have been estimated at well below one per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

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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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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CLOSED CONTAINMENT

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 landbased facilities would leave a huge carbon footprint by producing harmful greenhouse gas emissions that contribute to global warming.

Closed systems require a consistent and abundant water supply at a time when many areas are facing water shortages. Huge amounts of water are needed to depurate salmon in closed systems prior to harvest.

Depurating the annual New Brunswick production of farmed Atlantic salmon would require the equivalent of diverting more than double the flow of the St. John River in “new” water from wells, streams or rivers.

Our industry has shown over the past 40 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 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 COMMERCIALY 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.



DID YOU KNOW?

Developing land-based facilities for Atlantic Canada's salmon production would require about 8,500 football fields. Net pens need only a fraction of that space 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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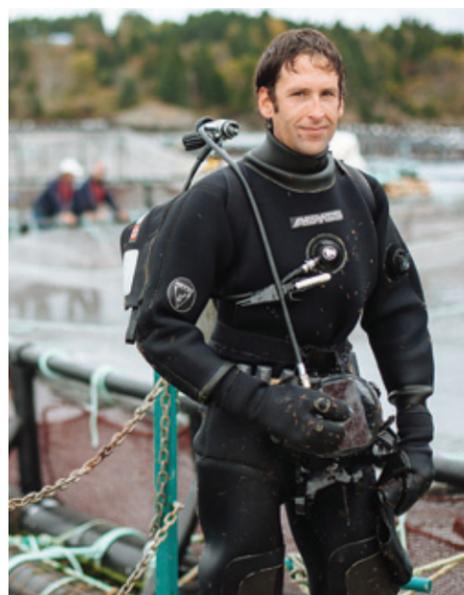
SOCIO-ECONOMIC BENEFITS OF SALMON FARMING

HOMEGROWN INDUSTRY

Atlantic Canadian salmon farms are locally owned and operated.

Salmon farming employs over 3,000 people in our region and generates \$356 million dollars.

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



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AN UNPRECEDENTED OPPORTUNITY

- The amount of food that will be consumed in the world in the next 50 years will exceed ALL the food eaten in the rest of human history.
- One in five persons worldwide relies on fish for their primary source of protein.
- Global population is expected to rise from 7 billion to over 9 billion by 2050.
- Global production of seafood is rising rapidly at a pace of seven to nine per cent each year.
- Salmon has now surpassed beef in world-wide consumption.

Aquaculture is crucial for supplying the world's food needs. No region in the world is better poised than Atlantic Canada to reap the benefits of aquaculture's potential and revitalize its rural, coastal communities.

BRINGING PROSPERITY TO ATLANTIC CANADA

The salmon farming industry is one of this region's biggest economic drivers. Our region produces 30 per cent of Canada's farmed salmon.

The 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. 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 our region in search of work.

INTEGRATED PEST MANAGEMENT FOR SEA LICE

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 wellboats, sea lice traps, and "cleaner" fish.

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. No sea lice treatments have been necessary in Nova Scotia for over 20 years.



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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.

Eating omega-3 rich seafood like salmon can reduce the risk of coronary death by 36 per cent and increase life expectancy by 2.2 years.

There are no dyes or growth hormones in farmed salmon. Farmed salmon is not genetically modified.



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.

Fish consumption has been associated strongly with a lower risk of heart disease. If Canadians increased their consumption of fish to Canada Food Guide recommended levels, 5,800 lives could be saved per year.

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. Less than three per cent of the feed given to farmed salmon contains an antibiotic. 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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