



AQUACULTURE in Canada

Report to Launch the Aquaculture Sustainability Reporting Initiative

*A process for describing environmental, social, and
economic conditions and trends in the
Canadian aquaculture sector*



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CHAPTER 1: INTRODUCTION

Aquaculture is an established and growing industry in Canada and around the world and the future of aquaculture depends on effective regulation and management of key issues, including communication of relevant information. This report launches the Aquaculture Sustainability Reporting Initiative (ASRI), a process of Fisheries and Oceans Canada in collaboration with provincial and territorial governments for describing environmental, social, and economic conditions and trends in the Canadian aquaculture sector. This report sets the foundation for future reporting to illustrate responsibility and performance of the sector in Canada. The purpose of these future reports is to inform the Canadian public, managers and regulators, and the market about the state and sustainability of the aquaculture industry.

The Aquaculture Sustainability Reporting Initiative

This document is intended to launch and provide a foundation for the ASRI process. It presents a snapshot of the Canadian aquaculture sector and its related management and regulatory framework.

The ASRI emerged out of a growing desire to enhance transparency with respect to the aquaculture sector and to serve the information needs of federal, provincial, and territorial governments, industry, Aboriginal communities and other interests related to the social, economic and environmental aspects of aquaculture

Following are the objectives of the ASRI:

- Establish a means for reporting conditions and trends in the aquaculture industry in Canada;
- Provide relevant information on the sustainability of aquaculture in Canada; and
- Establish a baseline for evaluating the extent to which DFO program activities are working to foster a sustainable aquaculture sector in Canada.

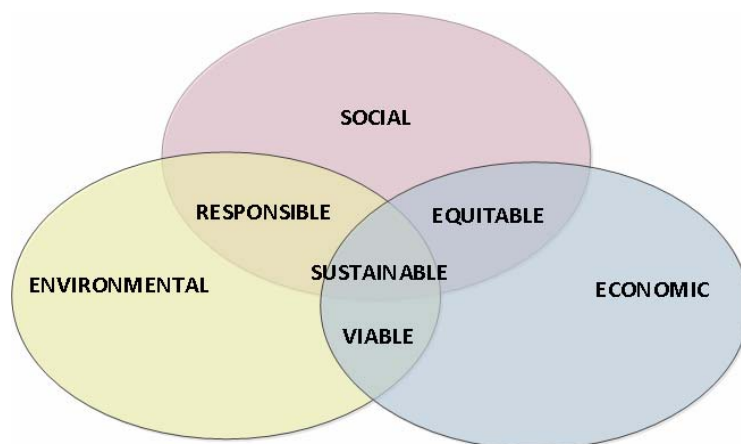
Through the ASRI process, DFO and its provincial and territorial partners will further engage stakeholders in the development of relevant performance measures and information for future reports. We hope this document will provide readers with an understanding of what the ASRI process will do, and the reports that will follow. We anticipate the ASRI and the resulting reports will help build public confidence and enhance the social license for aquaculture in Canada, as well as access to markets for Canadian aquaculture products.

What is Sustainability Reporting?

Sustainability reporting is the practice of measuring, disclosing, and being accountable to internal and external stakeholders for organizational performance toward the goal of sustainable development. Reporting must be relevant, balanced, substantive and transparent, addressing both positive and negative conditions and trends. (adapted from the Global Reporting Initiative

http://www.globalreporting.org/G3_GuidelinesENU.pdf)

The three interconnected principles of sustainable development – a concept now familiar to business and government as the “triple bottom line” – are often depicted graphically by overlying circles. As illustrated, sustainable development considers the three inter-related components of social well-being, environmental protection and economic prosperity.



Implementation of the ASRI is consistent with DFO's lead role in managing Canada's aquatic resources and ensuring economically prosperous maritime sectors and fisheries, safe and secure waterways and sustainable aquatic ecosystems for the benefit of present and future generations. As a sustainable development department, DFO aims to foster a sustainable aquaculture sector in Canada. This aim is shared by our provincial and territorial government partners.

Federal Sustainable Development Strategy (FSDS)

At the federal level, the ASRI supports the new Federal Sustainable Development Strategy (FSDS) (released October, 2010) (<http://www.ec.gc.ca/dd-sd/default.asp?lang=En&n=F93CD795-1>). The FSDS is a government-wide initiative that establishes a framework for sustainable development planning and reporting with clear goals, targets and implementation strategies. The first FSDS identifies specific implementation strategies to achieve the following sustainable aquaculture target: *To promote the conservation and optimum use of marine resources and the aquatic environment through improved aquaculture management by 2014.* The publication of this report and future reports is regarded as an implementation strategy that contributes to that goal.

CHAPTER 2: AQUACULTURE IN CANADA

This chapter provides an overview of aquaculture in Canada, where it takes place and the scale of the sector. The main types of aquaculture production, shellfish, marine and freshwater finfish, are described to support the development of sector based reporting.

Aquaculture is the fastest growing food production activity in the world (UN FAO). In 2008, aquaculture made up 50% of global seafood production and in 2009 global aquaculture production of 67 million tonnes, valued at \$86 billion USD, exceeded the value of capture fisheries.

What is Aquaculture?

As defined in Canadian law, aquaculture is “the cultivation of fish”. <http://laws.justice.gc.ca/eng/SOR-2010-270/index.html> More generally however, aquaculture is known as the cultivation of aquatic organisms, including finfish, molluscs, crustaceans and aquatic plants. Aquaculture implies some form of intervention in the rearing process to enhance production, such as regular stocking, feeding and protection from predators and disease.

<http://www.fao.org/fishery/cwp/handbook/J/en>

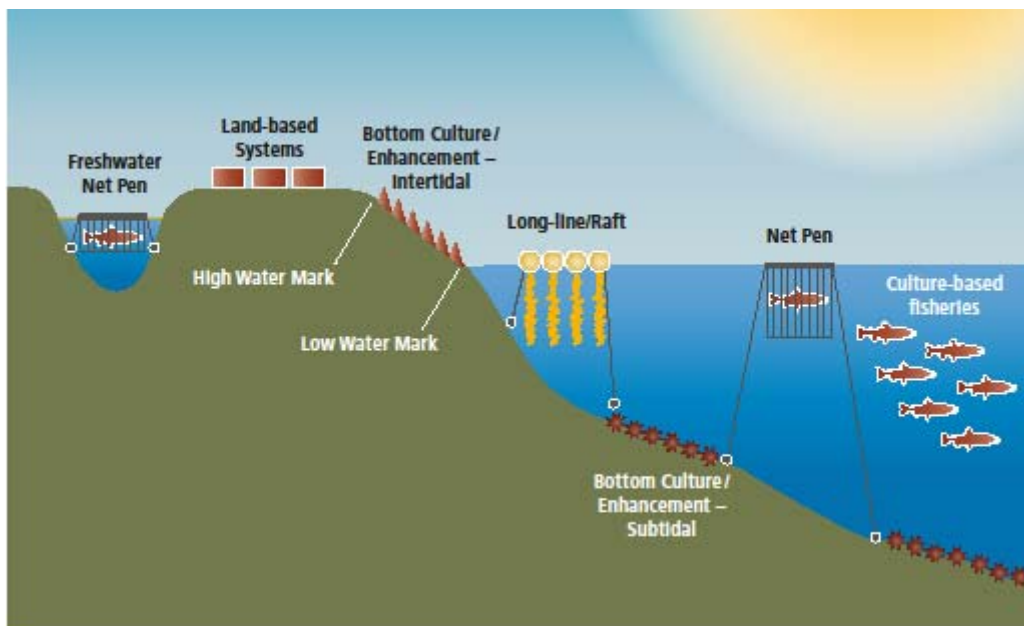
Farming also implies individual or corporate ownership of the stock being cultivated.



What Does Aquaculture Produce?

Seafood refers to any aquatic animal or plant that is served as food. Seafood includes marine animals such as finfish and shellfish and plants. The term seafood also applies to similar aquatic animals from freshwater. The production of farmed seafood has increased significantly to meet the growing global demand for fresh, nutritious and reliable sources of protein.
Indirect products of aquaculture include research and development, skilled workers in rural communities, and scientific and business knowledge.
Aquaculture produces an increasing array of non-food products used in pharmaceutical, cosmetic and biotechnological industries as well as textiles. New uses of aquaculture products are being developed and commercialized in a wide variety of ways such as high value compost from fish processing plants, biofuels and agricultural feeds.

Aquaculture production in Canada increased more than four-fold in the past 20 years. Aquaculture occurs in all provinces and in the Yukon Territory. Aquaculture operations for several marine finfish and shellfish species are well established on the east and west coasts, while fresh water trout operations can be found in almost every province. Canada is the fourth-largest producer of farmed salmon in the world (in terms of value) and a significant producer of blue mussels, Manila clams, American (or Eastern) and Pacific oysters, rainbow trout, and Arctic char. The scope of aquaculture operations vary across the country depending upon the species being farmed, the environment (marine, freshwater) and the culture technologies being used (land based, ocean/lake based).

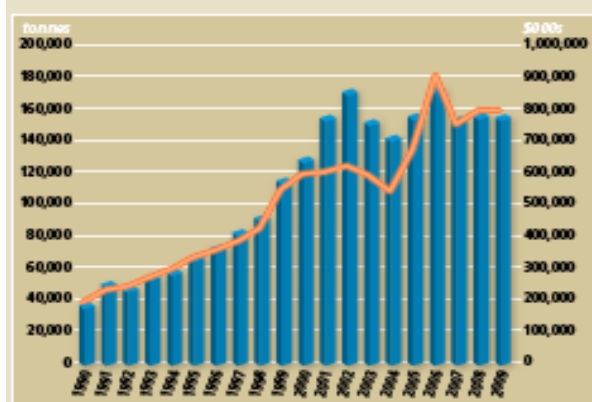


Aquaculture in Canada supports thousands of jobs and generates millions of dollars in income in many coastal and rural communities where aquaculture takes place. It also creates other spin-off economic benefits in other industries with which it has strong links—equipment and feed suppliers, processors, marketers and other services.

Production and Value

In 2009, Canadian farmed seafood was valued at \$800M (155,000 tonnes). Canada exported 69% of its grown seafood, of which 97% was to the United States.

Aquaculture Production in Canada (1990-2009)

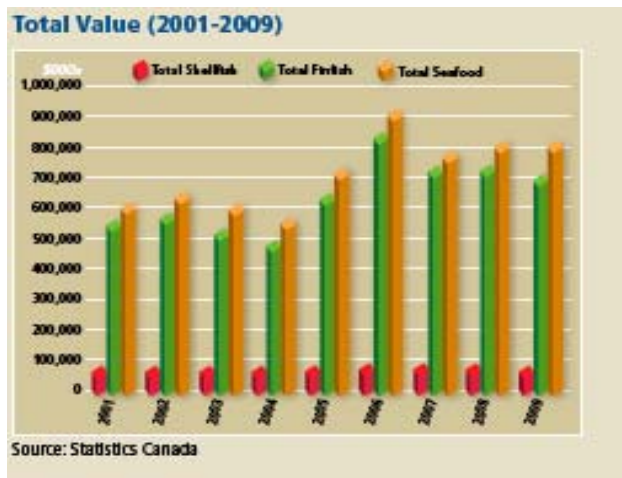


Source: Statistics Canada



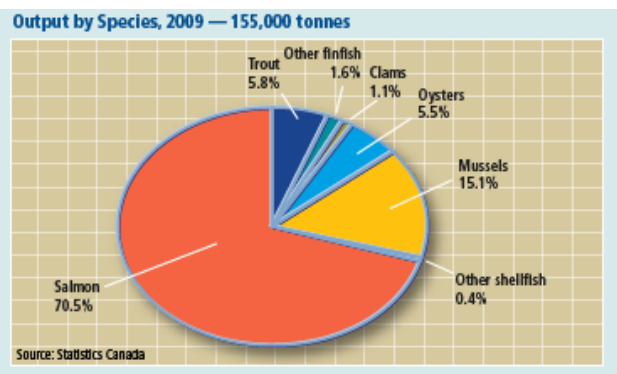
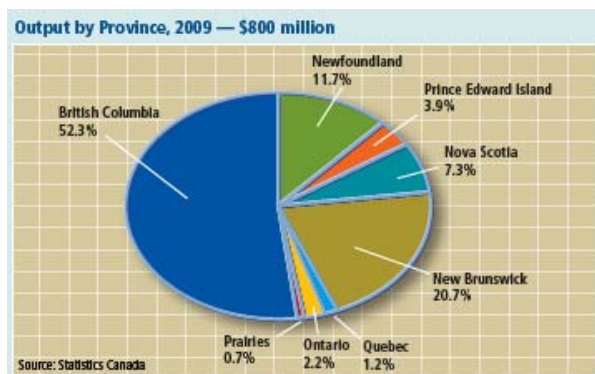
Aquaculture Sustainability Reporting Initiative

In 2009, finfish accounted for 76% of total aquaculture production in Canada, of which 93% was salmon. Over two thirds (69%) of shellfish production in Canada comes from mussels.



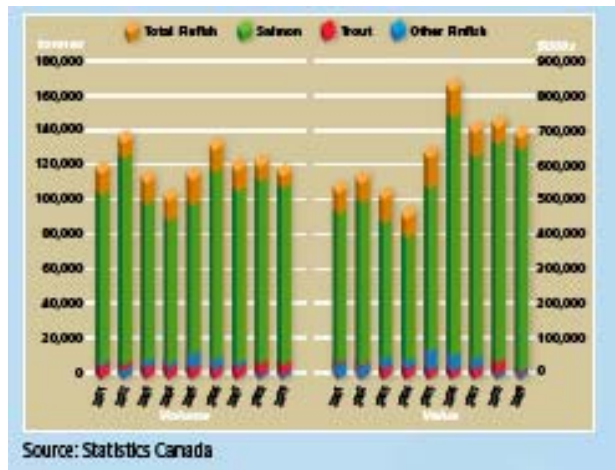
Production by Province and Major Species

The quantity and value of national output is divided about equally between the Pacific and Atlantic coasts. British Columbia leads all other provinces, accounting for about 50% of total production value followed by New Brunswick (21%) and Newfoundland (12%).



Finfish Production

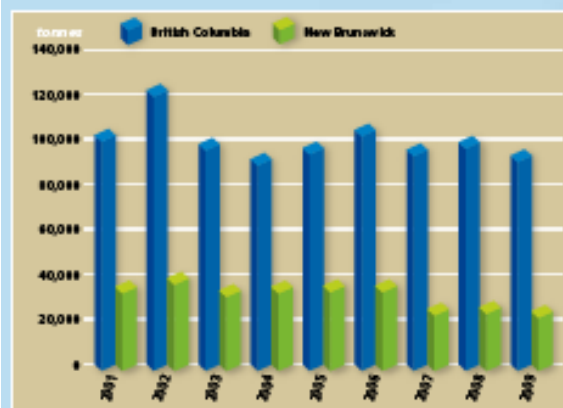
In 2009, finfish aquaculture accounted for about three quarters of total aquaculture production in Canada of which about 90% was salmon.



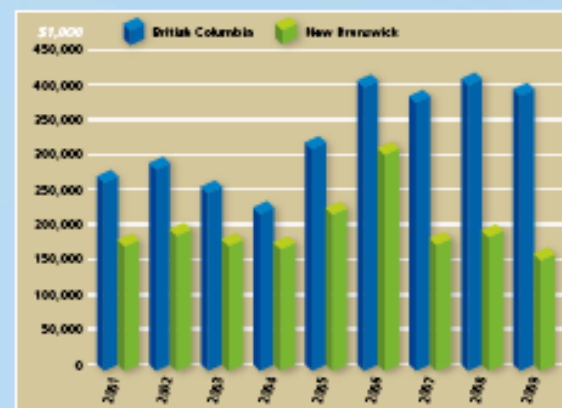
Salmon

British Columbia is the largest salmon producer with a market value of \$394M, followed by New Brunswick (\$159M) and the rest of Atlantic Canada (\$100M). In 2009, British Columbia and New Brunswick produced 93,000 tonnes of salmon, representing 85% of total salmon production in Canada.

Salmon Production (2001-2009)



Salmon Value (2001-2009)



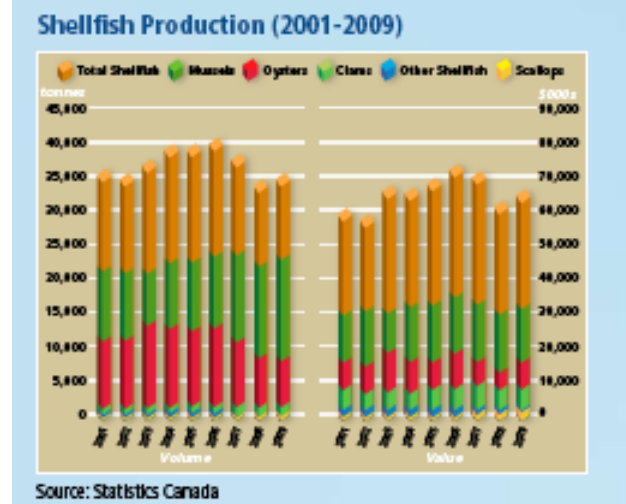
Trout

Freshwater trout production takes place in almost every province. Over 60% of output (mainly rainbow trout) is produced in Ontario, most of it in the waters off Manitoulin Island in the North Channel of Lake Huron.



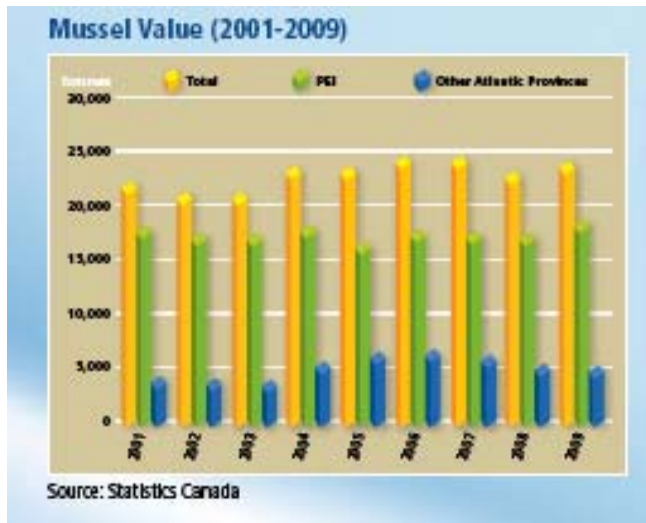
Shellfish Production

In 2009, shellfish production was 34,000 tonnes (\$64M value). Mussels accounted for two thirds of total shellfish production and half of the market value (\$32M).



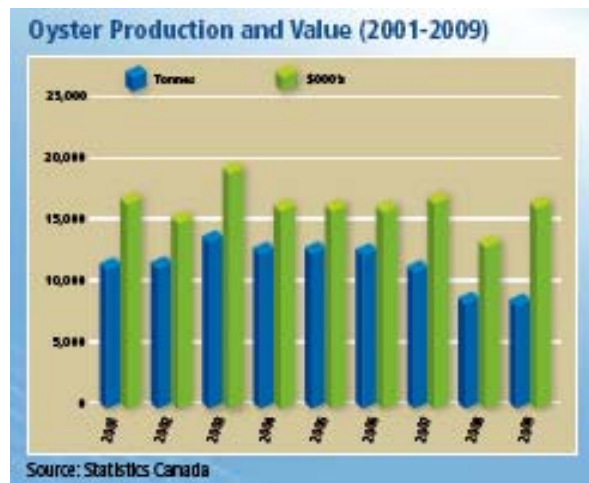
Mussels

Over two thirds of shellfish aquaculture production in Canada comes from mussels. In 2009, Canada produced 24,000 tonnes of mussels with 77% coming from PEI.



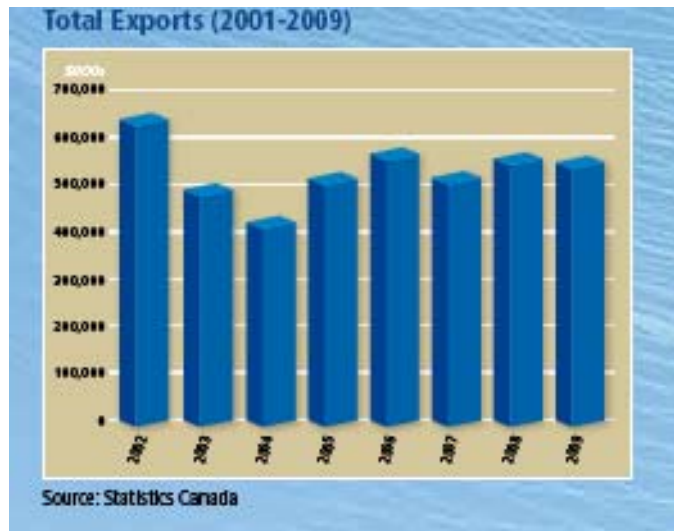
Oysters

In 2009, the total market value of oysters was just over \$16M. British Columbia accounted for 40% of that market share followed by PEI (31%), New Brunswick (25%) and Nova Scotia (4%).



Exports

About 73,000 tonnes of salmon valued at a half billion dollars were exported to the US along with 10,500 tonnes of mussels (\$30M).



CHAPTER 3: THE ROLE OF GOVERNMENTS AND INDUSTRY IN MANAGING AQUACULTURE

3.1 Roles and Responsibilities

This chapter presents an overview of the roles of government and industry to manage and regulate aquaculture in Canada.

There are many federal, provincial, and territorial government departments and agencies involved in regulating, managing, and enabling the aquaculture industry. Together these organizations maintain a range of laws, regulations, policies, operational guidelines and programs to support the sustainability of the aquaculture sector. Government departments and agencies and the aquaculture operators strive to support all three pillars of sustainability. The following table summarizes the roles and responsibilities of governments and industry in fostering a sustainable aquaculture sector.

Roles and Responsibilities of Governments and Industry

Environmental Protection	Social License	Economic Prosperity
Governments		
<ul style="list-style-type: none">Establish and enforce clear, science-based standards and operating protocols to conserve and protect healthy and productive aquatic environments and protect sensitive habitats	<ul style="list-style-type: none">Collect, compile, and communicate objective and accurate data and information regarding the economic, environmental, and social sustainability of the Canadian aquaculture sector in order to foster a more accessible and more transparent decision-making process	<ul style="list-style-type: none">Provide a policy and regulatory framework that enables the sector to pursue responsible and sustainable growth and developmentSupport innovation that will enhance industry competitiveness
Industry		
<ul style="list-style-type: none">Uphold environmental integrity and play its part in maintaining the healthy and productive aquatic ecosystems that the sector depends on to maintain productivity and produce wholesome products	<ul style="list-style-type: none">Share relevant data and information regarding the scope and nature of their operations in a transparent mannerAct as good corporate citizens	<ul style="list-style-type: none">Invest in innovation and continuous improvementContinue to advance responsible and sustainable development and to bring employment and prosperity to rural and coastal communities

Source: Adapted from the DFO 2010 National Aquaculture Strategic Action Plan Initiative.

Federal, Provincial, and Territorial Governance

Aquaculture management is a shared responsibility among the federal and provincial / territorial governments. There are many federal departments and agencies that relate directly or indirectly to aquaculture sustainability, particularly with respect to the industry's environmental effects, health and welfare of animals, the safety of its products, and protection of navigable waters. The principal federal departments and agencies involved, and their areas of responsibility, are listed in Appendix 1 with links to their respective websites. Readers are encouraged to refer to the DFO Sustainable Seafood website (<http://www.dfo-mpo.gc.ca/fm-gp/sustainable-durable/index-eng.htm>) for general information and to follow the links to each department for more detailed information.

Regulations and responsibilities for aquaculture vary between provinces. Provincial and territorial governments are generally responsible for issuing leases and licenses, and for regulating a wide range of aquaculture activities and impacts. Formal arrangements exist between the federal and most provincial governments to set out areas of respective and shared regulatory and management responsibilities.

Aquaculture Sustainability Reporting Initiative

Coordination of federal and provincial / territorial activities is also facilitated by the Canadian Council of Fisheries and Aquaculture Ministers (CCFAM) and its Strategic Management Committee (SMC) for aquaculture.

New Pacific Aquaculture Regulations

Since December 18, 2010, pursuant to the Pacific Aquaculture Regulations enacted under the Fisheries Act, DFO is issuing aquaculture licenses and is managing fisheries aspects of aquaculture in BC and in waters off its coast. The Province of BC continues to manage the use of provincial lands for aquaculture purposes. The Province of BC continues to manage the use of provincial lands for aquaculture purposes. DFO has developed and is implementing a new regional aquaculture program to administer, manage and regulate the aquaculture industry in B.C. For more information visit: <http://canadagazette.gc.ca/rp-pr/p2/2010/2010-12-08/html/sor-dors270-eng.html>

The following table provides contact information for the main agencies responsible for aquaculture in Canadian provinces and territories.

Province	Main Provincial / Territorial Contact Information for Aquaculture
New Brunswick	Department of Agriculture, Aquaculture and Fisheries, P. O. Box 6000, Fredericton, NB, E3B 5H1, Canada; http://www.gnb.ca/0027/Aqu/index-e.asp
Newfoundland and Labrador	Department of Fisheries and Aquaculture, 58 Hardy Avenue, P.O. Box 679, Grand Falls-Windsor, NL, A2A 2K2, Canada; http://www.fishaq.gov.nl.ca/aquaculture/index.html
Prince Edward Island	Department of Fisheries, Aquaculture and Rural Development, P.O. Box 2000 Charlottetown, PEI, C1A 7N8; Canada; http://www.gov.pe.ca/fard/index.php3?number=77919&lang=E Department of Agriculture, 5th Floor, Jones Building, 11 Kent Street, P.O. Box 2000, Charlottetown, PEI, C1A 7N8, Canada; http://www.gov.pe.ca/agriculture/index.php3?number=68962&lang=E
Nova Scotia	Department of Fisheries and Aquaculture, PO Box 2223, Halifax, NS, B3J 3C4, Canada; (Civic Address: 1741 Brunswick Street, 3rd floor, Halifax, NS) http://www.gov.ns.ca/fish/aquaculture/
Quebec	Ministère de l'Agriculture, des Pêcheries et de l'Alimentation, 200 Sainte-Foy Rd, 12th Fl, Québec, QC, G1R 4X6; Canada; http://www.mapaq.gouv.qc.ca/fr/Pêche/aquaculture/Pages/aquaculture.aspx Direction de l'aquaculture et de développement durable, 200 Sainte-Foy Rd, 11th Fl, Québec, QC, G1R 4X6, Canada; http://www.mapaq.gouv.qc.ca/fr/Ministere/structures/DGPAC/DADD/Pages/DADD.aspx

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Ontario	<p>Ministry of Natural Resources, Whitney Block, Rm 6540, 99 Wellesley St W, Toronto, ON, M7A 1W3; Canada; http://www.mnr.gov.on.ca/en/BiodiversityBranch, 300 Water St., P.O. Box 7000 Peterborough, ON, K9J 8M5; Canada; http://www.mnr.gov.on.ca/en/Business/Biodiversity/index.html?CSB_ic-name=specialInitiatives&CSB_ic-info=biodiversity_Eng Ministry of Environment, Environmental Assessment and Approvals Branch, 2 St. Clair Ave W, Fl 12A, Toronto, ON, M4V 1L5; Canada; http://www.ene.gov.on.ca/environment/en/industry/assessment_and_approvals/environmental_approvals/index.htm Agriculture, Food and Rural Affairs, Economic Development Division, Agriculture Development Branch, Beef Cattle, Sheep, Goats, Alternate Livestock and Aquaculture, Elora Resource Centre, 1 Stone Rd W, 3rd Flr NE, Guelph, ON, N1G4Y2, Canada; http://www.omafr.gov.on.ca/english/rural/red/index.html</p>
Manitoba	<p>Manitoba Agriculture, Food and Rural Initiatives, Agri-Industry Development Division, 825 – 405 Broadway Winnipeg, MB, R3C 3L6, Canada; http://www.gov.mb.ca/agriculture/intro/about09.html Business Development, 545 University Crescent, Winnipeg, MB, R3T 5S6, Canada; http://www.gov.mb.ca/business/businessdevelopment/index.html Licensing and statistics, Manitoba Water Stewardship (Fisheries Branch), Box 20 - 200 Saulteaux Crescent, Winnipeg, MB, R3J 3W3, Canada; http://www.gov.mb.ca/waterstewardship/licensing/index.html</p>
Saskatchewan	<p>Ministry of Environment, Fish and Wildlife Branch, 3211 Albert St. Regina, SK, S4S 5W6; Canada; Fish and Wildlife Branch, P.O. Box 3003, Prince Albert SK S6V 6G1 Canada;</p>
Alberta	<p>Sustainable Resource Development, Fish and Wildlife Division, 11th Fl Petroleum Plaza ST, 9915 - 108 St., Edmonton, AB, T5K 2G8, Canada; http://www.srd.alberta.ca/FishWildlife/Default.aspx Fisheries Management Branch, 2nd fl Great West Life Building, 9920 – 108 St., Edmonton, AB, T5K 2M4 Canada; http://www.srd.alberta.ca/FishWildlife/FisheriesManagement/Default.aspx</p>
British Columbia	<p>Ministry of Agriculture and Lands, Agriculture Science and Policy Division, P.O. Box 9120, STN: Prov Govt, Victoria, BC, V8W 9B4, Canada; http://www.agf.gov.bc.ca/ministry/branches.htm#agriculture_science Policy and Industry Competitiveness Branch, P.O. Box 9309, STN: Prov Gvt Victoria BC, V8W, Canada; http://www.env.gov.bc.ca/omfd/fishstats/index.html Fisheries and Oceans Canada, Suite 200 - 401 Burrard Street, Vancouver, BC, V6C 3S4, Canada; http://www.pac.dfo-mpo.gc.ca/index-eng.htm</p>

Yukon	Department of Environment, Yukon Government (V-5C) Box 2703, Whitehorse, YT, Y1A 2C6, Canada; http://www.env.gov.yk.ca/
Nunavut	Department of Environment, P.O. Box 1000, STN 1310, Iqaluit, NU, X0Z 0H0, Canada; http://env.gov.nu.ca/

The CCFAM SMC includes in its work ongoing advice on ASRI progress and facilitating relationship building among federal and provincial / territorial governments and the sectors they represent. DFO will continue to work with the Strategic Management Committee as the ASRI progresses and evolves.

DFO as the Lead Federal Agency

DFO is responsible for developing and implementing policies and programs in support of Canada's scientific, ecological, social and economic interests in oceans and fresh waters. Under the *Fisheries Act*, DFO is the lead federal agency responsible for managing aquatic resources including aquaculture. DFO has two roles with respect to aquaculture: that of enabler (to help improve the business climate for the industry) and regulator (to administer, monitor and enforce compliance with laws and regulations). The department is also responsible for managing wild fish stocks and their habitat.

Within DFO, the Program Policy Sector's Aquaculture Management Directorate (AMD) is the focal point for the department's aquaculture related policies and activities. Based in Ottawa, AMD brings together many branches within DFO and other federal groups to provide strategic direction to aquaculture. Aquaculture issues are managed across the country by the Directorate's Regional Aquaculture Coordination Offices (RACOs). The regional offices provide a local point for DFO to work with provinces, industry and other stakeholders.

Other divisions within DFO also have links to aquaculture including Strategic Policy (including International Affairs), Ecosystem and Fisheries Management, Oceans and Science, Communications, and other directorates of Program Policy, including Fisheries and Aboriginal Policy and Habitat and Species at Risk.

Role of Industry

Industry plays a hands-on and essential role in ensuring the sustainability of the aquaculture sector. Aquaculture producers and processors are responsible for operating safe, environmentally responsible and commercially successful operations. The aquaculture sector is to provide products that the markets value, while complying with applicable laws, regulations and site specific requirements set by conditions of their aquaculture licenses and/or permits or approvals. Responsibilities also include sharing data and information regarding their operations and maintaining a healthy and robust business to bring employment to rural and coastal communities.

3.2 DFO Sustainable Aquaculture Program

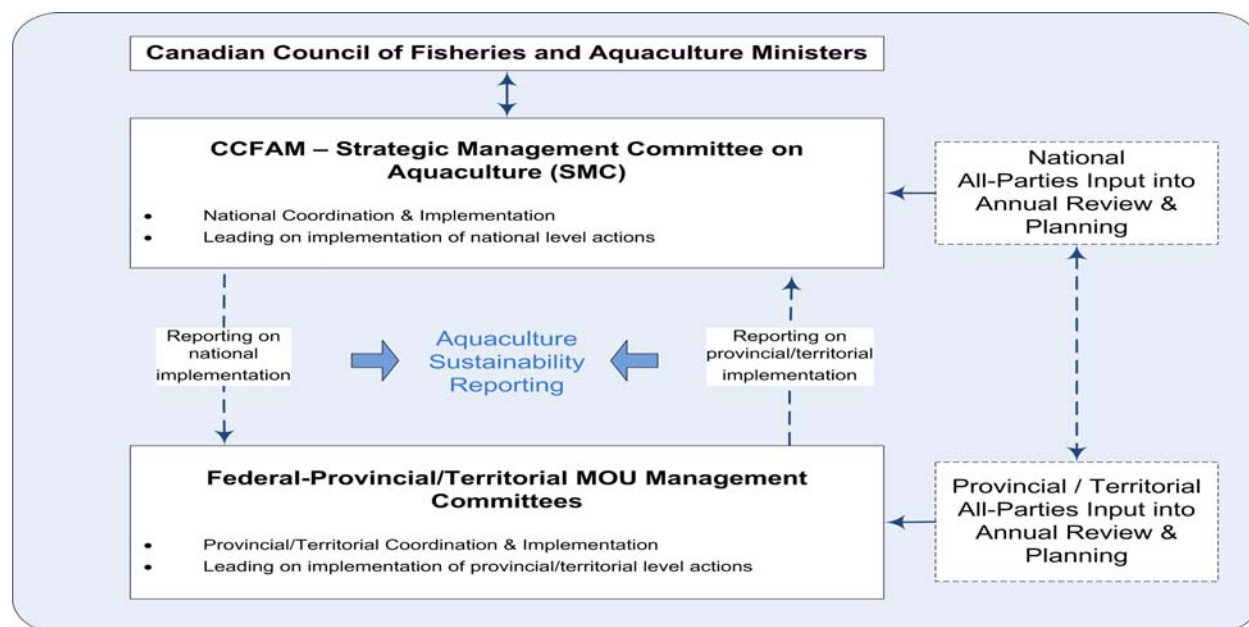
The DFO Sustainable Aquaculture Program (SAP) was put in place in 2008 to help catalyze changes so that aquaculture in Canada can realize its potential for sustainability, innovation and competitive success. Key program activities of the Sustainable Aquaculture Program are outlined below. Readers can visit the following link for more detailed information <http://www.dfo-mpo.gc.ca/aquaculture/sustainable-durable/sustainable-durable-eng.htm> The ASRI is an integral part of many of the SAP activities.

Aquaculture Sustainability Reporting Initiative

National Aquaculture Strategic Action Plan Initiative

The National Aquaculture Strategic Action Plan Initiative (NASAPI) was developed to enhance and advance economically, environmentally and socially sustainable aquaculture development in Canada. NASAPI, endorsed by the CCFAM in November 2010, sets out a strategic vision for the future sustainability of aquaculture and a series of specific actions needed to achieve this vision over the next five years (2011-2015). The five sector-based Strategic Action Plans represent a suite of widely agreed-upon action items to be led by the aquaculture industry, the provinces / territories, other federal government departments or DFO, depending on the activity and available resources. For more information visit: <http://www.dfo-mpo.gc.ca/aquaculture/lib-bib/nasapi-inpasa/index-eng.htm>

The NASAPI implementation structure involves federal and provincial / territorial governments, and includes the ASRI as a reporting vehicle.



Environmental Management and Regulatory Reform

The aquatic resources of the Canadian seafood industry are governed by the *Fisheries Act*, a piece of legislation that dates back to Confederation when aquaculture in Canada did not exist. Development of the aquaculture sector has been subject to a combination of federal and provincial / territorial regulations, many of them implemented before commercial-scale aquaculture was a significant activity, that can be fairly characterized in many instances as reactive and inefficient. Regulations governing aquaculture activities are broad in scope since the sector relies on access to, and responsible use of, resources shared with many other sectors, including fisheries, navigation and tourism.

DFO committed to the CCFAM that it would provide national leadership to reform the current environmental regulatory regime in place for aquaculture. The objective of this work is to ensure there is a credible, science-informed, efficient, and coordinated environmental regulatory regime in place across Canada that is based on risk-management principles, and that promotes healthy ecosystems, economic prosperity, and improved governance for the Canadian aquaculture sector. It is also intended to support the broader work of DFO to improve public, investor, and market confidence.

Aquaculture Sustainability Reporting Initiative

A component of sustainable aquaculture is that effective national and provincial / territorial laws, regulations and government programs be in place and enforced to support sustainable aquaculture in all three dimensions of sustainability: economic, environmental and social. Fisheries and Oceans Canada and provincial / territorial government agencies are working to ensure aquaculture in Canada takes place within an effective and efficient governance regime for sustainable aquaculture.

Measuring the effectiveness and efficiency of government programs is undertaken at all levels of government and we encourage readers to refer to the annual report to parliament of Fisheries and Oceans Canada's Plans and Priorities for details on DFO's performance measurement. For more information visit: <http://www.tbs-sct.gc.ca/rpp/2010-2011/inst/dfo/dfo00-eng.asp>

Aquaculture Innovation and Market Access Program

The Sustainable Aquaculture Program contributes to economic prosperity and responsible development by catalyzing industry and other private-sector investment through the Aquaculture Innovation and Market Access Program (AIMAP). Contribution funding under AIMAP is intended to enable recipients to plan, manage and complete projects that will improve the competitiveness of the industry by encouraging a sector that continuously develops and adopts innovative technologies and management techniques to enhance its global competitiveness and environmental performance. The program aims to position products of the Canadian aquaculture sector as having high value in the marketplace based on their environmental performance, traceability, and other considerations. For more information visit: <http://www.dfo-mpo.gc.ca/aquaculture/sustainable-durable/index-eng.htm>

Certification and Market Access

One of the goals of the Sustainable Aquaculture Program is to enable industry to achieve certification against a credible certification program. Independent, third-party certification is seen as a way of measuring and ensuring sustainable practices in the conduct of the fisheries industry and increasingly, aquaculture operations. Certification provides transparency of management regimes, helps ensure accuracy of statistics and validity of claims, and improves industry performance on sustainability issues. An increasing number of global seafood buyers are requiring certification as a way of obtaining assurance that a product, process or service conforms to the specified requirements of any of the standards that apply to the aquaculture sector. For industry, the ability to become certified is viewed as an objective demonstration of a company's commitment to safe and sustainable production. International standards and guidelines for aquaculture certification have been developed through the United Nations Food and Agricultural Organization (FAO) with standards for traceability under development through the International Standards Organization (ISO). Fisheries and Oceans Canada has worked to ensure Canadian interests are reflected in these processes. Similarly, Fisheries and Oceans is also monitoring and commenting on the development of third-party certification standards.

Science for Sustainable Aquaculture

Effective strategic action planning, regulatory reform, innovation and market access, certification and sustainability reporting are all founded on sound scientific knowledge. DFO science for sustainable fisheries and aquaculture provides knowledge and advice and recommendations based on scientific research, as well as providing products and services and the management of data on Canada's aquatic resources. The Canadian Science Advisory Secretariat (CSAS) coordinates the peer review of scientific issues for Fisheries and Oceans Canada and the communication of scientific review and advisory processes. In 2009, a CSAS peer-review meeting was held to evaluate seven pathways of effects for finfish and shellfish aquaculture. Research funded under the Program for Aquaculture Regulatory Research is intended to increase the relevant science knowledge base to support informed DFO ecosystem-based environmental regulation and decision-making for aquaculture. The science generated through this program and additional DFO programs such as the Aquaculture Collaborative Research and

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Development Program is provided through a network of DFO research facilities, in collaboration with other government departments, private sector, academia and international organizations. For more information visit: <http://www.dfo-mpo.gc.ca/science/index-eng.htm>.

CHAPTER 4: THE AQUACULTURE SUSTAINABILITY REPORTING INITIATIVE

The ASRI will follow accepted methodologies for public reporting. It is a reporting initiative that builds on existing relationships, programs and information sources. The ASRI is based on a strong foundation of work by DFO, its federal and provincial counterparts, and the industry. In developing the strategy and methodology for the reporting, guidance was sought from governments, industry, non-governmental groups, and Aboriginal communities. This important input has helped to identify issues, concerns, and opportunities. Following are some examples and work that has been done to support development of the ASRI:

Assessment of Established Sustainability Reporting Processes

Worldwide, aquaculture sustainability reporting is a new activity for industry and governments alike. The ASRI draws on the model of the Global Reporting Initiative (GRI), an internationally recognized sustainability reporting framework. Additionally, ASRI is informed by the reporting initiatives of other natural resource sectors and aquaculture sector reporting in other countries to develop a reporting process that fits the Canadian aquaculture context. For more information visit: <http://www.globalreporting.org/Home>

Federal-Provincial/Territorial Data Collection

With some exceptions, the collection of aquaculture statistics is commonly undertaken by provincial / territorial governments. This is largely for administrative and regulatory purposes. Consequently, the format and type of information collected on aquaculture is different in every province. In 1997, Statistics Canada began publishing an annual Aquaculture Statistics report that presents an overview of the aquaculture sector using data primarily collected from two survey programs (<http://www.statcan.gc.ca/pub/23-222-x/23-222-x2009000-eng.htm>). The statistics include Canadian aquaculture production and value data, as well as data related to economic production of goods and services from aquaculture ("value added"). DFO is working in close collaboration with Statistics Canada, provincial and territorial governments and industry to identify the opportunities and constraints to improving reporting on economic development of the sector.

In 2008, DFO commissioned Statistics Canada (in collaboration with the provinces and the aquaculture industry) to identify data gaps and constraints in the existing data sources. The recommendations from that study are being used to help develop the methodology for collecting data on future performance indicators to measure environmental and social responsibility.

In 2009, a series of workshops were held with the objective to assess the relevance, accuracy, and timeliness of data holdings of government departments who are responsible for regulating and monitoring the aquaculture industry in Canada. These workshops identified the common issues related to collecting and managing data on the aquaculture industry and revealed many regional differences. The feedback from these workshops will help in the next phase of the ASRI process in selecting key performance indicators that are national in scope and have a reliable data source.

Aquaculture Sustainability Reporting Initiative

Socio-Economic Assessment

The Economic Impact of Aquaculture in Canada (2009) study, for the first time, provided a benchmark of the economic and social contribution the industry makes to coastal and rural communities, as well as the direct and indirect contributions that the sector makes all across the country. The study also describes the challenges the industry faces in achieving its production potential. For more information visit: <http://www.dfo-mpo.gc.ca/aquaculture/ref/aqua-es2009-eng.htm>

Regulatory Assessment

In 2008, in collaboration with the provinces / territories, DFO developed an “Aquaculture Checklist” to support the assessment of the regulatory regime in place in Canada for aquaculture. This survey on the management and regulation of aquaculture determined the extent to which federal and provincial / territorial policies and regulations recognize the contribution of aquaculture to sustainable use of aquatic resources.

Public Reporting of Regulatory Data

As noted earlier, since December 18, 2010, DFO is issuing aquaculture licenses and is managing fisheries aspects of aquaculture in BC and in waters off its coast. Increased transparency has been a stated DFO goal in implementing the British Columbia Aquaculture Regulatory Program (BCARP) under the Pacific Aquaculture Regulations. Based on consultations during the development of the new regulatory regime and on trends in eco-certification, an important aspect of transparency for the public is access to data on environmental monitoring and outcomes as well as regulatory compliance. Public reporting of regulatory data will enable the public to be better informed concerning the environmental, scientific and operational status of aquaculture operations in British Columbia (BC) and should result in a higher level of public confidence in the aquaculture industry.

A Public Reporting Policy for BC Aquaculture is currently under development. As the British Columbia Aquaculture Regulatory Program becomes established, public reporting by DFO of aquaculture information shall be accomplished primarily via electronic publication on the following website: <http://www.pac.dfo-mpo.gc.ca/aquaculture/index-eng.htm>.

Public Reporting Options of Non-Regulatory Information for Aquaculture

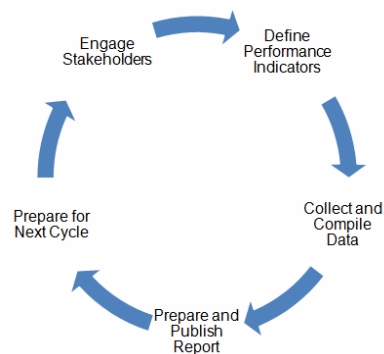
There is an opportunity for the ASRI to use non-regulatory data from current provincial and federal aquaculture data collection programs that could be used to report on the economic productivity, environmental performance and social license of the aquaculture sector. DFO commissioned a study to examine the existing data collection agreements and the implications of data sharing with other users. The results from this study will help develop a policy to allow other government departments and industry to share non-regulatory data while protecting the confidentiality and disclosure of the individual respondents.

Outreach and Engagement

Throughout the process of developing the strategy and methodology for the ASRI, DFO has actively engaged with data producers and users, those with regulatory responsibilities, and those with an interest in the social license of aquaculture. DFO has sought guidance from an Advisory Panel of experts from industry, government, non-government groups and Aboriginal communities. In 2010, a series of meetings across Canada were held with provincial governments and industry associations to get specific input into developing the ASRI process. As well, through conferences, the NASAPI meetings, certification and standard development processes DFO has presented and discussed plans to develop the reporting process and built a greater understanding of the key issues, concerns and opportunities moving forward.

THE REPORTING CYCLE

The ASRI is based on a general framework and steps for implementation that follow an annual cycle of reporting:



DFO and our provincial and territorial partners will gather feedback and prepare subsequent reports through continued stakeholder engagement, identification of appropriate performance indicators, and data collection.

As there are no widely agreed upon aquaculture sustainability performance indicators or a means for data collection, the ASRI will identify performance indicators that enable reporting on sustainability outcomes in a format that is nationally consistent and allows comparison over time. DFO will work with provincial and territorial governments and the aquaculture sector to develop a national information management process that will facilitate annual reporting on the economic, environmental and social sustainability of the Canadian aquaculture sector. This work aims to meet the information needs of federal departments, provincial and territorial governments, aquaculture and related industries, Aboriginal and other communities, environmental groups, international organizations and the public.

It is important to note that the ASRI requires the establishment of performance indicators, as well as associated data and information collection and management processes. While the list of potential indicators may be long, it is incumbent on participants in the ASRI to establish a focused suite of performance indicators that are relevant and can be maintained in the short and long term. Initial runs of the reporting cycle noted above will yield a small number of performance indicators that will build, within practical limitations, over time.

Example of Sustainability Reporting from Canada's Forestry Sector

The forestry sector has years of experience in sustainability reporting. The Canadian Criteria and Indicators Framework of the Canadian Council of Forest Ministers (CCFM) is a science-based framework used to define and measure Canada's progress in sustainable forest management. The criteria represent forest values that Canadians want to enhance or sustain, while the indicators identify scientific factors to assess the state of the forests and measure progress over time. The CCFM released its first framework of criteria and indicators (C&I) for sustainable forest management in 1995, and annual data has since been available for a suite of indicators. Today, many provinces and territories, non-government organizations, industry groups, certification bodies, researchers and even other countries are looking to the CCFM's framework for the many benefits it offers. For more information visit:

http://www.ccfm.org/pdf/CCFM_Measuring_our_progress.pdf

CHAPTER 5: REPORTING ON SUSTAINABILITY

Resulting from the work done to establish the ASRI, a number of aspects or themes of sustainable aquaculture have been identified. These themes will serve as an organizational framework for annual reporting. They address key issues that are important both in the public interest and important materially to aquaculture sustainability. The themes include:

- Maintaining Healthy and Productive Ecosystems
- Maintaining Animal Health and Welfare
- Ensuring Safe and Healthy Products of Aquaculture
- Using Resources Efficiently
- Encouraging Social Responsibility, and
- Ensuring an Economically Viable and Successful Industry.

DFO and our partners will work with stakeholders to prioritize issues and will develop methods and data to report on the conditions and trends of each priority issue and establish performance indicators. As noted above, and expanded upon in the following sections, the list of issues and thus potential performance indicators is extensive. It is incumbent on the ASRI process to refine and focus this list to enable reporting on a refined suite of relevant performance indicators.

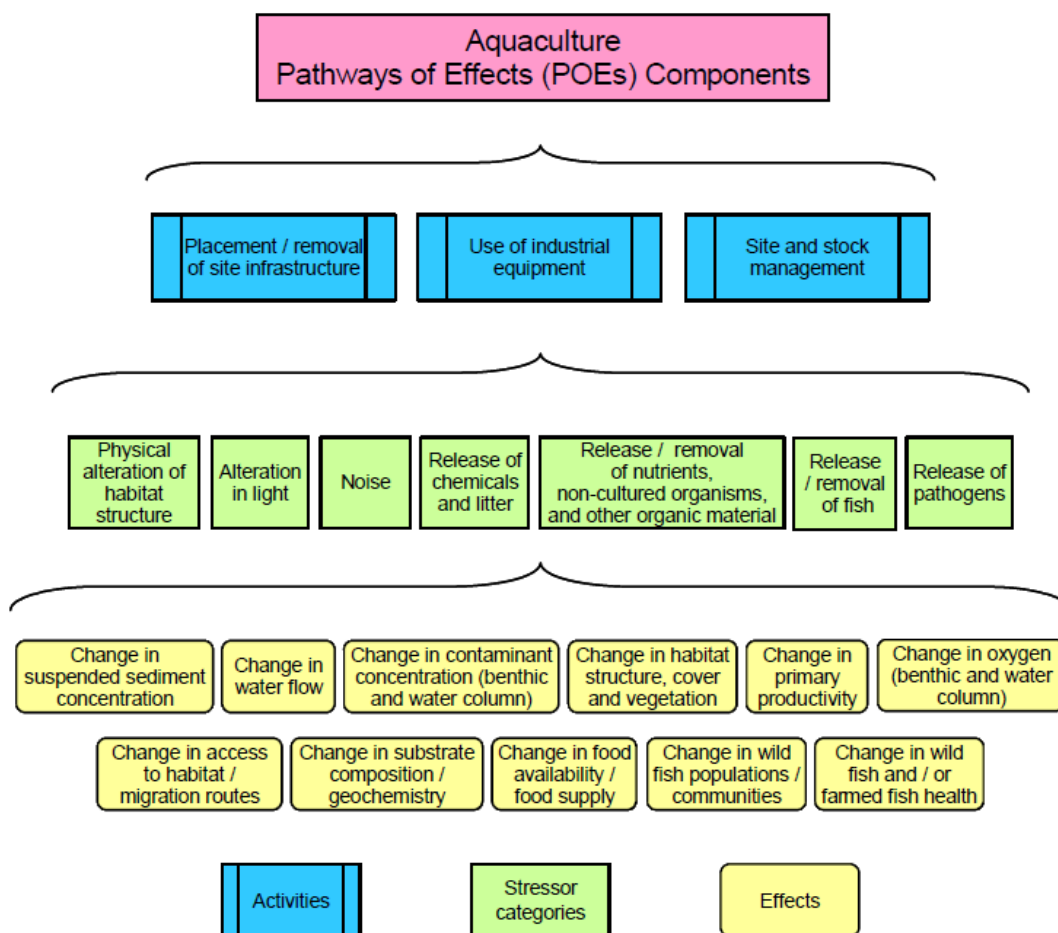
Sustainability Themes

1. Maintaining Healthy and Productive Ecosystems

Healthy and productive ecosystems are vital to the sustainability of aquaculture in Canada. An attribute of sustainable aquaculture is that the sector must operate in a manner that minimizes impacts on the health and productivity of the environment in which it operates, and on which it depends, to remain within acceptable limits. As with all natural resource-based and food production sectors, environmental change associated with aquaculture operations is expected. These changes may be supportive, neutral, or detrimental to ecosystem health and productivity. Sustainability depends on understanding, mitigating, and managing these changes.

Ecosystem health is generally understood in terms of habitat productivity, water quality, and benthic layer quality, fish health and aquatic animal communities. Scientific understanding of the effects of aquaculture continue to increase and the scientific review processes will help inform discussion on reporting on ecosystem health as it relates to aquaculture sustainability. The findings of the Canadian Science Advisory Secretariat review process of aquaculture Pathways of Effect (POE) provides a summary of the environmental effects of aquaculture activities. The activities of aquaculture are described in terms of potential stressors and the effects on the environment linkages.

PATHWAYS OF EFFECTS FOR FINFISH AND SHELLFISH AQUACULTURE



Source: DFO http://www.dfo-mpo.gc.ca/CSAS/Csas/Publications/SAR-AS/2009/2009_071_e.pdf

The ASRI process will establish reporting priorities on ecosystem health and productivity and develop supporting data and methods for reporting on conditions and trends in marine finfish and shellfish aquaculture as well as freshwater production in such issues as identified in the aquaculture POE findings.

2. Maintaining Animal Health and Welfare

Aquaculture practices that optimize animal health and welfare through minimizing stress, reducing disease risks including measures to minimize risks of introduction of pathogens of major international concern (<http://www.inspection.gc.ca/english/anima/aqua/aquae.shtml>), and maintaining a healthy culture environment contribute to a productive, competitive and sustainable aquaculture industry. Under such conditions the aquaculture operation, the species under culture, and the environment in which operations occur all benefit. The health and welfare of the farmed organisms is intricately linked with the animals and plants in the surrounding environment.

Successful animal health programs around the world are underpinned by internationally credible national laboratory systems that deliver accurate, reliable and consistent test results for disease detection. This capability, strengthened by technology development, targeted research, and access

to effective treatment options when disease or pest outbreaks do occur, provides a country with a sound scientific foundation to protect its animal populations from the introduction of disease, to design integral domestic disease management programs and to defend the certification of exported animals/products.

A National Aquaculture Fish Health Working Group (NAFWG) has been formed to coordinate collaborative initiatives to address data gaps in environmental information and other constraints related to accessing a range of therapeutic and non-therapeutic options to manage pests and pathogens and reduce risk of occurrence. Membership includes federal and provincial governments, industry, veterinarians and researchers.

As a basis for developing relevant performance measurement of animal health and welfare outcomes for the purposes of this reporting process, the ASRI will draw on programs such as the National Aquatic Animal Health Program and the Canadian Shellfish Sanitation Program to develop relevant, fact-based reporting on such issues as disease, therapeutants, introductions and transfers, mortalities, stock density, and humane handling and harvesting. The ASRI process will establish reporting priorities on animal health and welfare and develop supporting data and methods for reporting on conditions and trends.

3. Ensuring Safe and Healthy Products of Aquaculture

Seafood is an important part of a healthy and balanced diet. Ensuring the products of aquaculture are safe and healthy to eat and that the origin of these products is traceable at every stage of the production cycle are important aspects of the sustainability of aquaculture (and in fact of all food production systems). It is a reality of our modern world that risks to the safety of all foods exist through exposure to industrial and municipal contaminants, as well as naturally occurring diseases and toxins. Science is also demonstrating the nutritional values that are found in seafood.

Traceability
<p>Traceability identifies where a product is at any given time, where it has been prior to its current location, and what was done to it along the way. It weaves a common thread through all facets of production:</p> <ul style="list-style-type: none">• In finfish, from feed to egg to juvenile to adult fish through to the marketplace• In shellfish, from larvae to seed to market-size products through to final sale

The importance of traceability for aquaculture is evident in the work being done by the International Standards Organization (ISO) to develop traceability standards for aquaculture. ISO is the world's largest developer of international standards and is a network of national standards institutes from 163 countries. Canadian aquaculture industry experts are participating in the ISO working group developing international standards for seafood traceability (TC234) and DFO chairs the Canadian Advisory Committee. DFO will continue to follow the development of these and other standards for aquaculture to ensure any proposed standards do not conflict with Canadian regulations, policies or practices and are in Canada's interests.

Relevant programs such as the Canadian Shellfish Sanitation Program, the CCFAM Traceability Task Group and the ISO aquaculture standards working group will feed into the development of reporting on aspects of seafood safety and traceability. Through the ASRI issues such as contaminants in aquafeed, nutritional value such as omega 3 levels in products, food safety and traceability systems could be measured and reported on in future sustainability reports. As with other themes, the ASRI process will refine the list of potential indicators

4. Using Resources Efficiently

Sustainable aquaculture demands that resources required carry-out aquaculture operations, to feed, nurture and market the cultured organisms, be used in an efficient manner. The efficient use of resources can also be reflected in economic efficiencies such as reduced input and operating costs. In a highly competitive market, finding the most efficient manner to operate will ensure the viability of the sector.

Within the finfish aquaculture sector, fish feed is the largest single input in terms of the cost of inputs and in terms of environmental impacts resulting from the deposition of nutrients and other substances introduced through feed. Therefore continued sustainable development of the aquaculture sector in Canada will depend on the ability of the aquafeed industry to supply it with innovative and cost effective feed products.

Fish Feed

Farmed fish are fed nutrient rich extruded pellets. Different feeds are used depending on the life stage and species of the fish. The feeds have been developed to meet the nutritional requirements of healthy growing fish and contain a variety of ingredients, with fish protein meal and fish oil often being the major ones. They may also include vegetable proteins and cereals and ingredients from animal, microbial and algal sources.

Feed is the most significant cost factor in operating a finfish farm. Approximately 40 to 60 per cent of the farm's operating cost is spent on feed. Therefore, it is important to avoid wasting food. Farmed fish can convert food to energy very well, and today's fish feed is easier to digest. Underwater video cameras are often used to ensure that a minimal amount of uneaten food is settling beneath the net pen. This helps to ensure the amount of food required to produce fish is as low as possible. Marine and freshwater environments also have a capacity to absorb or assimilate organic materials. Strategic location of fish farms, for example sites with strong currents, combined with mitigation measures such as allowing for periods of site fallowing, help to minimize the environmental effects.

Canadian feed companies are currently researching the development of grain-based feeds for aquaculture. The Canadian aquafeed sector is a global leader in replacement of fishmeal and fish oil and continues to research and develop alternative feeds from numerous sources (animal, vegetable, microbial and algal). <http://www.dfo-mpo.gc.ca/fm-gp/sustainable-durable/aquaculture/resources-feed-eng.htm>

NASAPI consultations have identified a number of feed related constraints facing the Canadian aquaculture sector and as a result, specific strategic actions were agreed upon. As part of the NASAPI, the Canadian Aquafeed Working Group (CAWG) was formed to ensure the initiatives are effectively implemented and enhance the sustainable development of the sector. DFO co-chairs this group with the Canadian Aquaculture Industry Alliance and it is represented in its membership by aquafeed producers, industry associations, researchers and government.

The ASRI will work with the expertise of the aquafeed sector to establish measures of such issues as feed conversion ratios, use of wild fish ingredients and alternatives for the finfish sectors. With broad engagement with all sub-sectors, DFO will develop measures such as the use of land, energy and water, life cycle analysis and the use of green technologies in the form of relevant and robust indicators to track progress toward more efficient use of resources.

5. Encouraging Social Responsibility

Social responsibility is operating in a manner that is respectful of local communities and the environment for the benefit of all. Social responsibility is intertwined in each of the four previously described themes. As such, the aquaculture sector in Canada must be committed to earning and upholding public confidence, the so-called social license. It is important to note that social license extends beyond the area in which aquaculture operations occur, and includes the markets that aquaculture supplies with products.

Certification provides third party verification that a product conforms to specified requirements and fulfills a number of demands of the market. In aquaculture, individual companies make the decision to undertake certification.

The Aboriginal Aquaculture Association (AAA) is working to develop an integrated, aboriginal management and certification program for aquaculture in Canada. Under this AIMAP funded project, the AAA has developed a draft set of sustainability principles and audit standards for aquaculture operations that could be applied to any aquaculture organization in Canada that wishes to include the values and interests of Aboriginal communities in the management of their operations and obtain use of the *AAA Certified Sustainable* logo (<http://www.aboriginalaquaculture.com/>). The AAA Sustainability and Audit Standard will operate within the framework of current operational Codes of Practice, Best Management Practices, Environmental and Quality Management Systems and demonstrate that Canada's cultured fish and shellfish are produced and harvested in a sustainable manner that also ensures product safety.

Linking to groups such as the Aboriginal Aquaculture Association, national and provincial industry associations, the Canadian Aquaculture Sustainability Forum, the Interprovincial Partnership for Sustainable Freshwater Aquaculture Development (IPSFAD) and various standards processes, the ASRI will develop indicators measuring such issues as cooperation in resource use, interactions with local communities, respect for indigenous and aboriginal cultures and traditional territories, worker safety and training, labour force characteristics and industry certification.

6. Ensuring an Economically Viable and Successful Industry

The sustainability of the aquaculture sector in Canada is directly linked to its economic viability and success. A component of sustainable aquaculture is that it be conducted in a manner that it contributes to rural development, job creation, and domestic and international trade, and promotes food security and economic growth while respecting the environment. These objectives apply to the many activities of the aquaculture sector such as those associated with hatcheries, grow out, and processing operations, as well as the supply of goods and services. It also extends to the influence these aspects of aquaculture have on economic activity in the local community, the provinces, and the country at large.

In this report we provide examples of indicators that measure economic viability and success of the industry. In future reports, we intend to report on progress using specific performance indicators that will be developed according to our reporting framework. The examples provided here, are a starting point for discussion on developing these performance indicators.

Aquaculture Sustainability Reporting Initiative

Economic Impact of Aquaculture in Canada

Aquaculture in Canada generates about \$2 billion in total economic activity, over \$1 billion in GDP and about half a billion in labour income. It creates thousands of direct jobs, and many more in industries with which it has strong linkages. Aquaculture production occurs across Canada, with activity concentrated in British Columbia and the Atlantic Provinces.

Economic Indicator	Newfoundland and Labrador	Nova Scotia	Prince Edward Island	New Brunswick	Québec	Ontario	British Columbia	Canada
Employment (FTE)								
Direct	215	380	790	1,100	80	110	2,220	4,895
Indirect	120	170	125	790	35	55	2,330	6,400
Induced	70	120	250	530	45	51	1,410	3,200
Total	405	670	1,165	2,420	160	216	5,960	14,495
Income (\$thousand)								
Direct	6,200	12,200	22,000	32,700	2,600	2,720	78,400	156,820
Indirect	4,900	6,400	2,900	28,300	1,200	2,040	95,100	241,200
Induced	2,200	4,800	6,400	16,800	1,230	1,530	50,400	107,900
Total	13,300	23,400	31,300	77,800	5,030	6,290	223,900	505,920

Source: Socio-economic Impact of Aquaculture in Canada, 2009

Importance to Coastal and Rural Communities

The aquaculture industry makes a substantial economic and socio-economic contribution at the regional level in the coastal and rural communities where aquaculture takes place. In these communities, aquaculture generates thousands of jobs and millions of dollars in income. It does so through direct activity at the farm sites, and also in indirect ways through links to suppliers of equipment, feed and services, as well as links to processors and marketers. In many cases, these communities are in isolated areas where economic opportunity tends to be limited. The 2009 DFO commissioned study "The Economic and Socio-Economic Impact of Aquaculture in Canada (<http://www.dfo-mpo.gc.ca/aquaculture/ref/aqua-es2009-eng.htm>) provides case studies from British Columbia, Ontario, PEI and New Brunswick that illustrate the economic impacts of aquaculture at the community level.

Through the ASRI process, DFO will work with stakeholders to develop relevant and robust measures of economic viability in such areas as employment, productivity, revenue and profit, operating expenses and exports.

Aquaculture Sustainability Reporting Initiative

Summary of Sustainability Themes and Issues for Discussion

The following table summarizes the themes and lists issues related to each. Where relevant, the issues are outlined by sector. The list of issues is neither exhaustive nor conclusive but is intended to provide the basis for discussions that will result in the development of a suite of relevant, measurable and cost-effective indicators to report on the sustainability of aquaculture in Canada.

Sustainability Themes and Attributes

Sustainability Theme	Attributes of Sustainability	Key Issues of Theme
<i>Maintaining Healthy and Productive Ecosystems</i>	Operate in a manner that minimizes impacts on the health and productivity of the environment in which it operates, and on which it depends, to remain within acceptable limits	<ul style="list-style-type: none"> ▪ benthic quality and productivity ▪ water quality ▪ habitat ▪ biodiversity ▪ aquatic pathogens ▪ escapes ▪ waste management
<i>Maintaining Animal Health and Welfare</i>	Optimize health and welfare through minimizing stress, reducing disease risks and maintaining a healthy culture environment	<ul style="list-style-type: none"> ▪ disease and parasites (including sea lice (salmon)) ▪ animal welfare ▪ animal health (mortality, stress, density)
<i>Ensuring Safe and Healthy Products of Aquaculture</i>	The products of aquaculture are safe and healthy to eat and that the origin of these products is traceable at every stage of the production cycle	<ul style="list-style-type: none"> ▪ nutritional value ▪ feed source and quality (supply chain) (finfish) ▪ traceability
<i>Using Resources Efficiently</i>	Resources required to conduct operations, to provide the culture environment, and to provide nutrition to the cultured organisms be used in an efficient manner	<ul style="list-style-type: none"> ▪ area used for production (land and water optimization) ▪ feed use, type and efficiency (finfish) ▪ energy use ▪ water consumption ▪ alternative energy use ▪ efficient use of product ▪ life cycle analysis / supply chain
<i>Encouraging Social Responsibility</i>	Operating in a manner that is respectful of local communities and the environment for the benefit of all.	<ul style="list-style-type: none"> ▪ certification ▪ work place safety ▪ labour rights ▪ community development / investment ▪ labour force (employee demographics; workplace satisfaction) ▪ product availability at local level
<i>Ensuring an Economically Viable and Successful Industry</i>	Conducted in a manner that it contributes to corporate stability / profitability, rural development, job creation, and domestic and international trade, and promotes food security and economic growth.	<ul style="list-style-type: none"> ▪ revenue and profit ▪ employment (regional and national) ▪ productivity ▪ operating expenses ▪ exports

Aquaculture Sustainability Reporting Initiative

Moving forward, we plan to improve the quality of these indicators and develop others such as having updated information in key employment categories such as Aboriginal communities, the balance between men and women and older workers and younger workers within the industry, rural and urban profiles, annual incomes across sectors and business elements. Through the ASRI process, priority indicator issues will be identified and methods and data for measuring and reporting will be developed.

CHAPTER 6: CONCLUSION

This document marks the launch of the Aquaculture Sustainability Reporting Initiative, a process to report on the environmental, social, and economic status and trends of aquaculture in Canada. The description of a diverse food production sector developing across Canada and its contribution to the economic and social fabric of rural communities around our coasts and inland waters provides context for this reporting process. The summary of roles and responsibilities of government and industry in managing the sector points to common interests in developing fact-based, credible and timely information on the aquaculture sector.

This first report of the Aquaculture Sustainability Reporting Initiative establishes a methodology and structure for assessing the status and trends in the sustainability of aquaculture in Canada. Over the coming year and future reporting cycles, the ASRI will enhance understanding of key issues affecting the sustainability of the sector by developing a suite of indicators to measure the current status and trends in governance, environment, animal health, food safety, use of resources, social responsibility and economic viability. DFO and the provincial and territorial governments will continue to identify reporting priorities and data sources through a collaborative approach to developing relevant reporting on the aquaculture sector.

Successful implementation of the ASRI will result in annual reporting that builds on results and relationships to provide increasingly relevant information. By providing increased transparency and valued information, the ASRI will serve the needs of national and regional governments, industry, Aboriginal communities and other interests and allow a more informed evaluation of the social, economic and environmental dimensions of aquaculture. In this way, the ASRI will continue to foster sustainable aquaculture in Canada.

We Want to Hear From You

Questions and views on this report and on the ASRI may be directed to ASRI-IRDA@dfo-mpo.gc.ca

Appendix 1: Federal Departments and Agencies Involved in Aquaculture

Agriculture and Agri-Food Canada (AAFC) (<http://www.agr.ca>)

Canadian Environmental Assessment Agency (CEAA) (<http://www.ceaa.gc.ca>)

Canadian Food Inspection Agency (CFIA) (<http://www.cfia-acia.agr.ca>)

Canadian Heritage (<http://www.pch.gc.ca>)

Canadian International Development Agency (CIDA) (<http://www.acdi-cida.gc.ca>)

Department of Finance Canada (<http://www.fin.gc.ca>)

Department of Foreign Affairs and International Trade (DFAIT) (<http://www.dfait-maeci.gc.ca>)

Environment Canada (EC) (<http://www.ec.gc.ca>)

Farm Credit Canada (FCC) (<http://www.fcc-fac.ca>)

Fisheries and Oceans Canada (DFO) (<http://www.dfo-mpo.gc.ca>)

Health Canada (HC) (<http://www.hc-sc.gc.ca>)

- Veterinary Drugs Directorate (VDD)
- Pest Management Regulatory Agency (PMRA)

Human Resources Development Canada (HRDC) (<http://www.rhdcc-hrsdc.gc.ca>)

Indian and Northern Affairs Canada (INAC) (<http://www.ainc-inac.gc.ca>)

Industry Canada (<http://www.ic.gc.ca>)

- Atlantic Canada Opportunities Agency (ACOA)
- Canada Economic Development for Quebec Regions
- Federal Economic Development Initiative in Northern Ontario (FedNor)

National Research Council Canada (NRC) (<http://www.nrc-cnrc.gc.ca>)

- Institute for Marine Biosciences

Western Economic Diversification Canada (WD) (<http://www.wd.gc.ca>)

Natural Resources Canada (NRCan) (<http://www.nrcan-rncan.gc.ca>)

Natural Sciences and Engineering Research Council of Canada (NSERC) (<http://www.nserc-crsng.gc.ca>)

Statistics Canada (<http://www.statcan.gc.ca>)