CNL(13)51

NASCO Implementation Plan for the period 2013-18

Canada

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The main purpose of this Implementation Plan is to demonstrate what actions are being taken by the jurisdiction to implement NASCO Resolutions, Agreements and Guidelines.

Questions in the Implementation Plan refer to the following documents:

- *NASCO Guidelines for Management of Salmon Fisheries, CNL(09)43 (referred to as the 'Fisheries Guidelines');*
- *Minimum Standard for Catch Statistics, CNL(93)51 (referred to as the 'Minimum Standard');*
- *NASCO Guidelines for Protection, Restoration and Enhancement of Atlantic Salmon Habitat, CNL(10)51 (referred to as the 'Habitat Guidelines');*
- *Williamsburg Resolution, CNL(06)48; and*
- *Guidance on Best Management Practices to address impacts of sea lice and escaped farmed salmon on wild salmon stocks (SLG(09)5) (referred to as the 'BMP Guidance').*

Party:	**Canada**
Jurisdiction/Region:	**Canada**

1. Introduction

1.1 What are the objectives for the management of wild salmon? *(Max 200 words)*

As per Canada's *Policy for the Conservation of Wild Atlantic Salmon*, the overarching goal is to maintain and restore healthy and diverse salmon populations and their habitat for the benefit and enjoyment of the people of Canada in perpetuity. To achieve this goal, three objectives have been identified:

1. Safeguard the genetic diversity of wild Atlantic salmon;
2. Maintain habitat and ecosystem integrity; and
3. Manage fisheries for sustainable use and benefits.

Consistency with the Precautionary Approach is an important aspect in the choosing of actions to meet these objectives, ensuring that decision-making is more cautious when information is uncertain.

In addition to actions outlined in the remainder of Canada's Implementation Plan, the Government of Canada invested $30 million in the Atlantic Salmon Endowment Fund in 2006. The Atlantic Salmon Conservation Foundation, a non-profit organization operating at arm's-length from government, is responsible for investing the $30 million grant and for disbursing the investment income to volunteer groups to complete projects that support wild Atlantic salmon. The purpose of Foundation's work is to achieve healthy and sustainable wild Atlantic salmon populations in Atlantic Canada and Quebec by working through community involvement and promoting partnerships. The types of projects that are eligible for funding through the Atlantic Salmon Endowment Fund include those that maintain, protect and enhance Atlantic salmon and their habitat, rebuild stocks and restore salmon populations, and are related to watershed planning.

1.2 What reference points (e.g. conservation limits, management targets or other measures of abundance) are used to assess the status of stocks? *(Max 200 words)* *(Reference: Sections 2.4 and 2.5 of the Fisheries Guidelines)*

Abundances of Atlantic salmon relative to conservation limits (CLs) are used in Canada to assess stock status. The management objective is to maintain spawning escapement at or above the CLs. Conservation limits and reference points consistent with those defined in the Precautionary Approach are to be reviewed in the coming year, with the goal of defining reference points (limits and targets) that conform to the Precautionary Approach and are consistent across jurisdictions in Canada.

Currently, CLs are defined regionally as follows:

- In the Maritime provinces (Nova Scotia, New Brunswick, and Prince Edward Island), the conservation limit is a spawning escapement objective that provides 240 eggs per 100 m^2 of fluvial habitat, to maximize freshwater production.
- In Newfoundland, the CLs are 240 eggs per 100 m^2 of fluvial area plus 368 eggs per hectare of pond area (or 105 eggs per hectare of pond area for the Northern Peninsula), to maximize freshwater production.
- In Labrador, the CL has been established at 190 eggs per 100 m^2 of fluvial habitat. Habitat areas for some rivers remain to be measured.
- In Quebec, the CL is 168 eggs per 100 m^2 of units of productive habitat, with the objective of maximizing the long-term harvest potential of adult salmon. The CLs for individual rivers are established using a stock-recruitment (S/R) model and measures of habitat capacity determined by various methods, including aerial photograph interpretation and field sampling. Work has begun on refining the S/R models to take into account the recent state of salmon stocks and data.

1.3 To provide a baseline for future comparison, what is the current status of stocks relative to the reference points described in 1.2, and how are threatened and endangered stocks identified?		
Category	Description of category and link to reference points	No. rivers
1	In 2011, rivers below 50% of their Conservation Limit (CL)	8
2	In 2011, rivers between 50% and 100% of their CL	14
3	In 2011, rivers at or over 100% of their CL	45
4		
Insert additional categories as required		
TOTAL:	In 2011	67

Additional comments:

Of Canada's 1,082 Atlantic salmon rivers tabulated in the NASCO rivers database, annual assessments of returns and status relative to the CLs are available from between 65 and 75 major rivers. In 2011, assessments of status relative to CLs are available from 67 rivers. CLs were met or exceeded in 67% of the 67 assessed rivers whereas spawning escapements were less than 50% of CLs in 12% of assessed rivers.

In Canada, species at risk are identified through processes put in place under the federal *Species at Risk Act* (SARA) and similar provincial laws. The Committee on the Status of Endangered Species in Canada (COSEWIC), which operates at arm's-length from government, assesses candidate species using established criteria to assign a designation. COSEWIC assessed that there were 16 Designatable Units (DUs) of Atlantic salmon in eastern Canada. Of these, one was assessed extirpated (Lake Ontario DU), five were assessed as endangered, one was assessed as threatened, with the remainder either as special concern, or not at risk. For the most northern DU, Ungava Bay, there was insufficient information to assess status. The DUs assessed as endangered encompass most of the rivers for which stock status was assessed as poor, stocks at less than 50% of CL, mostly located in the southern regions of Canada. In these DUs, most of the fisheries are closed or, where open, they are restricted to a few rivers for which individual status is better than the regional status and the fisheries are either catch and release for all size groups or are retention of only small salmon. Other factors, such as the socio-economic impacts of listing the species, are considered before a final listing decision is made. Additional details about Canada's species at risk and the listing process can be found at: http://www.sararegistry.gc.ca/approach/act/default_e.cfm

1.4 How is stock diversity (e.g. genetics, age composition, run-timing, etc.) taken into account in the management of salmon stocks? *(Max 200 words)*

Despite the assessment by COSEWIC of 16 Designatable Units, Atlantic salmon stocks are managed assuming that each river contains a distinct salmon stock. Management measures differ the most between salmon fishery management areas, based on stock characteristics and status. Management measures may be similar within a management area encompassing several rivers which have similar biological characteristics and status. In some management areas, measures may differ between rivers based on stock status and fisheries preferences.
Throughout eastern Canada, special consideration is given to large salmon (or multi-sea-winter salmon) as they are, in most areas, the important egg-bearing component of the stocks. Fisheries on bright salmon are generally open from early spring and close either at the end of August, September or October, depending upon run-timing of the stocks. Fisheries are prohibited during the spawning season which can extend from mid-October to late December depending upon geographic area. There are some fisheries in a few areas for black salmon (kelts, post-spawned salmon returning to the sea to recondition) in the spring and these are managed using similar regulations as those in place for bright salmon. In Quebec, runs' abundance are estimated annually on rivers offering a structured recreational fishery. In many cases, more than one evaluation of the annual run is performed, most times during mid-summer, and adjustments to management can be made based on realised and expected returns. Genetic diversity is currently the baseline of Quebec's and the Maritime provinces salmon stocking programs. Each river, bearing available genetic or population abundance data, has been submitted to analysis in order to determine its eligibility to stocking.

1.5 To provide a baseline for future comparison, what is the current and potential quantity of salmon habitat? *(Max 200 words)*
(Reference: Section 3.1 of the Habitat Guidelines)

With the exception of the Southern Uplands area of Nova Scotia, the contemporary habitat available for Atlantic salmon has not changed from historical values. Where dams have been installed, fish passage facilities have been provided. There are several examples, Torrent River, Terra Nova River, Exploits Rivers all in Newfoundland, where previously inaccessible habitat due to natural barriers was opened up to salmon through the installation of fishways.
In the Southern Uplands area of Nova Scotia encompassing Salmon Fishing Areas 20 and 21, it has been estimated that 40% of the historical habitat available to wild Atlantic salmon has been lost due to acidification and fish passage issues in relation to the construction of damns and hydroelectric facilities, with 13 of the 72 major watersheds containing no useable habitat.

1.6 What is the current extent of freshwater and marine salmonid aquaculture?

Number of marine farms	230 licences in Newfoundland Labrador, Nova Scotia, and New Brunswick (not all of these licenses are active)
Marine production (tonnes)	45,334 tonnes
Number of freshwater facilities	284* licences (not all of these licenses are active)
Freshwater production (tonnes)	Approximately 2,244 tonnes in Newfoundland and Labrador, New Brunswick, Nova Scotia, Prince Edward Island, and Quebec.

Append one or more maps showing the location of aquaculture facilities and aquaculture free zones in rivers and the sea.

The following are links to Canada's provincial aquaculture site maps:

http://gis8.nsgc.gov.ns.ca/scripts/esrimap.dll
http://www.gnb.ca/0027/Aqu/masm-e.asp
http://www.fishaq.gov.nl.ca/aquaculture/aquasite.pdf

1.7	**To aid in the interpretation of this Implementation Plan, have complete data on rivers within the jurisdiction been provided for the NASCO rivers database?** *Yes/no/comments*

Data on 1,082 Atlantic salmon rivers in Canada has been provided to NASCO. Assessment of status based on NASCO criteria was provided for 68% of these rivers. Of the rivers with a status category (773 rivers), 34% of these are not threatened with loss whereas 49% were considered to be threatened with loss, most of the latter are in the southern regions of eastern Canada.

2. Fisheries Management:

2.1	**What are the objectives for the management of the fisheries for wild salmon?** *(Max. 200 words)*

The primary goal for salmon management in Canada is conservation of stocks. Once conservation needs are met, Aboriginal fisheries for Food, Social and Ceremonial (FSC) purposes have first priority. If stock levels allow for it, a moderate and regulated recreational fishery is also permitted. There are no commercial fisheries for wild Atlantic salmon in Canada.

2.2	**What is the decision-making process for fisheries management, including predetermined decisions taken under different stock conditions (e.g. the stock level at which fisheries are closed)**? *(Max. 200 words)* *(This can be answered by providing a flow diagram if this is available.)* *(Reference: Sections 2.1 and 2.7 of the Fisheries Guidelines)*

Canada has an estimated 1,082 Atlantic salmon rivers. Annual assessments of returns and status relative to the Conservation Limits (CL) are available from between 65 and 75 major rivers. The status of Atlantic salmon in other rivers is extrapolated from the status of these index rivers (which have annual assessments of returns and status relative to CLs). Those populations of salmon that are biologically monitored are assumed to reflect the general health and stock status of their neighboring populations that are generally similar in terms of life history characteristics and the habitat type of the rivers in which they are produced.

Maritimes Region uses 2.4 eggs/m² of fluvial rearing habitat as the Atlantic salmon conservation requirement and that requirement is considered to be consistent with a lower reference point. Over 10 years ago, the Department of Fisheries and Oceans developed, with input from Aboriginal people, recreational users and other stakeholders, a set of management options for the Atlantic salmon fishery based on individual river stock status relative to its conservation spawner requirement (CSR) of 2.4 eggs/m^2. Given the status of salmon stocks in the Maritimes Region (almost all rivers fall below their respective CSR), only four rivers in the Region are currently open to catch and release angling and have modest food, social and ceremonial allocations.

Quebec has an exploitation framework which dictates the level of exploitation and fisheries' conditions for each river. The framework is based on the level at which the conservation threshold is reached for a given river. According to this level, the fishery may be closed, with mandatory catch and release for large salmon, or open to all segments. These fishing guidelines may be changed during the season considering population abundance indicators such as a mid-season run evaluation or in-season fishing results.

The Newfoundland and Labrador Region manages its salmon stocks on a river by river basis using a River Classification system to set harvest levels. River classification regulates the allowable harvest on a river/watershed and establishes retention levels that are considered

reasonable to manage fish that are surplus to meeting the conservation requirements. This approach considers the health of "individual" rivers as opposed to taking a global approach, and seeks to maximize both angling opportunities and socio-economic benefits for all user groups, while maintaining conservation objectives for a particular river/watershed. It has been shown that the River Classification system has resulted in a shift of angling effort and harvest from smaller rivers to rivers with the largest run sizes and greatest allowed harvest. Several rivers have an in-season review whereby allowable harvest can be increased if conservation limits are expected to meet or exceed 100%. The harvest limits for the food, social and ceremonial (FSC) net fisheries are negotiated on an annual basis with the various aboriginal groups in Labrador. Allocations consider resource status and the FSC needs of the aboriginal groups.

Gulf Region uses 2.4 eggs/m² of fluvial rearing habitat as the Atlantic salmon conservation requirement and that requirement is considered to be consistent with a lower reference point. When conservation objectives are not met in an individual river, science based risk management measures are taken to reduce fishing effort on the stock to help the system achieve conservation requirements. These may include a complete closure to all fisheries, closures to angling in preferred salmon habitat or mandatory catch and release to all age classes.

2.3 Are fisheries permitted to operate on salmon stocks that are below their reference point and, if so, how many such fisheries are there and what approach is taken to managing them that still promotes stock rebuilding? *(Max 200 words.)*
(Reference: Section 2.7 of the Fisheries Guidelines)

In Quebec, depending on the level at which a certain population is below its conservation threshold, a fishery may be completely closed or it may still be allowed but with certain conditions. In the cases where there is a fishery, catch and release is mandatory for large salmon (63 cm or longer from the fork of the tail to the tip of the nose). In all cases, if a population is below its conservation threshold, the keeping of large salmon is prohibited and the level of catch is closely monitored. For 2011 in Quebec, 44 rivers were open to salmon fishing on all segments, 11 rivers had a partial large salmon fishery, 27 rivers allowed the fishing of small salmon only and 32 rivers were closed to salmon fishing.

In the Maritimes Region, where salmon stocks are below the lower reference point (conservation requirement) fisheries are not authorized. There are two exceptions (Middle and Baddeck rivers in Cape Breton, Nova Scotia) where a Province-led stocking program replaces hook and release mortalities at a 4% level and provides for a modest number of 1 SW salmon annually for a FSC fishery which Aboriginal people have, so far, chosen not to harvest.

The Newfoundland and Labrador Region uses special management plans to allow angling on stocks that have historically not achieved their conservation limit. Under these special management plans, local residents have been encouraged to form conservation groups and to become stewards of the rivers in their area. Rivers under special management plans may be open to hook and release angling only, or may undergo an in-season review to determine if additional harvest can be permitted. However, stock status reports are only produced for the 15 monitored rivers in the Region. Therefore, it is not possible to know the exact number of the 170 scheduled salmon rivers in the Region that are achieving their conservation limit. In 2012, nine of the 15 monitored rivers did not achieve 100% of their conservation limit. However, the salmon populations in most of these rivers have been stable and therefore are not under any special management plan.

In the Gulf Region, where salmon stocks are below the lower reference point (conservation requirement) fisheries are individually risk management based on science advice and available data. If a river is below its lower reference point, restrictive management measures may be

required to reduce fishing effort by recreational anglers firstly, but fishing restrictions may apply to Aboriginal fisheries if they are required.

2.4 Are there any mixed-stock salmon fisheries and, if so, (a) how are these defined, (b) what was the mean catch in these fisheries in the last five years and (c) how are they managed to ensure that all the contributing stocks are meeting their conservation objectives? *(Max. 300 words in total)*
(Reference: Section 2.8 of the Fisheries Guidelines)

(a) There are two types of net fisheries in Labrador that authorize the harvest of Atlantic salmon in coastal waters that may harvest mixed stock fish:

- Resident subsistence trout fishery that permits a by-catch of Atlantic salmon
- Aboriginal FSC fisheries that direct for Atlantic salmon

(b) Mean catch for the last 5 years is 58 tonnes (9,606 grilse and 3,616 large).

(c) The fishing season and mesh sizes in the various fisheries have been modified to reduce the capture of large, multi-sea winter salmon, while at the same time providing an opportunity to harvest small salmon, trout and char. All FSC fisheries are controlled through the issuance of a communal licence by Fisheries and Oceans Canada.

Management measures implemented:

- Mono filament netting not permitted;
- Maximum net length of 25 fathoms;
- Nets set in a straight line;
- No weekend fishing (nets taken up);
- Gear must be attended every 24 hours;
- Fish must be tagged; and,
- Completed log book must be submitted at the end of season.

While the net fisheries are authorized for coastal waters, current fishing activity occurs very close to the communities which are located in deep bays along the coast away from the headlands where interception could be an issue.

To further understand the stock composition of salmon harvested in the subsistence fishery in coastal Labrador, a collaborative project is underway with the Atlantic Salmon Federation, the Nunatsiavut Government and the NunatuKavut Community Council. Genetic samples were collected from the 2011 catch and scales collected in the 2006-2010 period are also being examined. Genetic analysis of DNA from ~1600 Atlantic salmon has recently been completed. Preliminary analysis suggests regional salmon stock groupings can be identified with >95% accuracy, supporting the utility of this approach in determining catch composition. Analysis of the Labrador salmon fishery stock composition is expected to be available in late 2013.

2.5 How are socio-economic factors taken into account in making decisions on fisheries management? *(Max. 200 words)*
(Reference: Section 2.9 of the Fisheries Guidelines)

Management of wild Atlantic salmon fisheries in Canada is the responsibility of Fisheries and Oceans Canada, except in Quebec where the Province has responsibility for salmon fisheries management.

As per Canada's *Policy for the Conservation of Wild Atlantic Salmon*:

- Fisheries and Oceans Canada has a responsibility to provide sustainable fishing opportunities that will best meet its obligations to Aboriginal people, contribute to social well-being, and provide economic benefits to individuals and communities; and
- Sustainable use and benefits are important to the provinces who have a significant economic interest in many aspects of sustainable development and licence sales.

In Quebec, salmon fisheries are dedicated in priority to aboriginal subsistence. The Quebec government also works in close collaboration with the three main federations representing the interests of harvesters and of the delegated fisheries managers who operate almost every salmon river allowing for a recreational fishery. A socio-economic study aiming to portray Quebec's salmon harvester's habits, preferences and level of openness regarding possible future management tools is currently in preparation in collaboration with the above-mentioned partners.

The SARA process takes socio-economic factors into account. Before a final decision is made about whether or not to list a species as threatened or endangered, the socio-economic impacts of listing the species are studied and documented. Consultations on the listing proposal are conducted with stakeholders and the socio-economic impacts are part of those discussions, and are taken into account in the final decision.

2.6 What is the current level of unreported catch and what measures are being taken to reduce this? *(Max. 200 words)*
(Reference: Section 2.2 of the Fisheries Guidelines and the Minimum Standard)

The unreported catch estimate for Canada for 2011 is 29 tonnes. The majority of the unreported catch occurs in illegal fisheries occurring in rivers, estuaries and in marine areas. As stock status has declined in many areas, especially the southern regions, and with closures of directed salmon fisheries, illegal fisheries catches have also declined.

To curb some of the illegal fishing activities, federal fishery officers are participating in biannual enforcement planning sessions with provincial enforcement counterparts to enhance collaboration on achieving conservation of the resource and its habitat. As well, fishery officers engage in exchanges with users groups and fish harvesters at the field level.

2.7 What are the main threats to wild salmon and challenges for management in relation to fisheries, taking into account the Fisheries Guidelines and the specific issues on which action was recommended for this jurisdiction in the Final Report of the Fisheries Management FAR Review Group, (CNL(09)11)?

Threat/ challenge F1	The current period of low abundance of Atlantic salmon appears to be related to poor survival of salmon at sea. For some monitored stocks, marine mortality is currently two or more times greater than that experienced in the 1970s. Although there is little that NASCO parties can do about marine conditions affecting survival, the objective of fisheries management in Canada is to maintain populations at levels above their conservation spawner requirements (CSR). That objective is intended to maximize production and output of smolts to the marine environment, thereby increasing subsequent

	recruitment. Over the past two decades, Canadian fisheries managers have introduced increasingly restrictive measures in both Aboriginal and recreational fisheries in an attempt to compensate for declining marine survival. Other management actions focus on reducing negative impacts at all life stages, such as preserving and restoring fish habitat, minimizing fish passage constraints, and curbing poaching.
Threat/ challenge F2	There are a number of aquatic invasive species (AIS) that are a potential threat to Atlantic salmon populations in Canada. These include: rainbow trout in Quebec and Prince Edward Island, smallmouth bass and chain pickerel illegally introduced in Nova Scotia, smallmouth bass, largemouth bass, chain pickerel and muskellunge in the Saint John River, and smallmouth bass illegally introduced into the Miramichi watershed. Brown trout were introduced to insular Newfoundland approximately 150 years ago and are spreading, with limited study on the impact this introduction has had on wild Atlantic salmon populations. These threats are being managed as they arise, under various control regimes. For example, to deal with the threat of smallmouth bass in Miramichi Lake, Fisheries and Oceans Canada has a three-year containment and eradication plan in place.
Threat/ challenge F3	Acid rain, resulting from emission of pollutants from industrial sources is a serious problem known to cause sub-lethal impacts, premature mortality, and in some cases, extirpation of wild Atlantic salmon populations. In Canada, the area most impacted is the Southern Upland of Nova Scotia, where acid rain has a chronic impact in rivers because the geology of the area does not provide sufficient natural buffering.
Threat/ challenge F4	Illegal fishing (poaching)
Threat/ challenge F5	By-catch of Atlantic salmon in other fisheries.

2.8 What actions are planned to address each of the above threats and challenges in the five year period to 2018?

Action F1:	Description of action:	Fisheries management measures introduced to compensate for low marine survival include: • Reduced daily and season bag limits; • Mandatory catch and release fishing, especially of large salmon; • Salmon fishing closures in areas where the CSRs are not being met; and, • Restrictions on commercial pelagic fisheries to stop or minimize salmon by-catch, including moving these fisheries in time and space and modifying the fishing gear to avoid migrating salmon. In addition, Canada's fisheries managers have asked for a science-led review of reference points for Atlantic salmon which conforms to the Precautionary Approach (PA) for all areas of eastern Canada.

	Planned timescale:	Fisheries management measures are reviewed annually to assess their effectiveness, and adjustments are made as needed. The peer review process to establish guidance on Atlantic salmon reference points will take place in 2013.
	Expected outcome:	Fisheries management measures are designed to maintain or improve numbers of salmon returning to Canadian rivers. A consistent approach to Atlantic salmon reference points which conform to the PA will improve management of Atlantic salmon fisheries and overall conservation of the species.
	Approach for monitoring effectiveness & enforcement:	Ongoing monitoring of smolts and adult returns using index rivers, and analysis of trends to determine if management actions are working at levels sufficient to sustain populations despite low marine survival. The Atlantic Salmon Federation is also conducting a smolt tracking project in an attempt to determine their migration routes when they leave Canada's rivers, and fill knowledge gaps with respect to where and when marine mortality is occurring. By-catch of salmon in commercial fisheries is monitored through submission of logbooks by commercial harvesters. If a problem arises or reoccurs, further management measures are implemented. Compliance with management measures and submission of logbooks is mandatory. These requirements are monitored by Fisheries and Oceans Canada, and enforcement in the case of infractions is carried out by Fisheries and Oceans Canada fishery officers.
Action F2:	Description of action:	Canadian fisheries scientists and managers are already dealing with aquatic invasive species (AIS) using whatever tools are currently available. In some cases, these tools may not be adequate, and it is becoming more difficult to find resources to address all AIS issues. Fisheries and Oceans Canada is working with provincial and territorial partners to develop a national framework and regulations to manage the threat of AIS. The regulations will complement existing authorities and bridge gaps to enable a broad range of AIS management activities. This initiative will accommodate localized AIS issues, as well as provide a national framework for managing and controlling AIS in Canada. Biological risk assessments will identify those species that pose a risk based on probability of arrival, survival and establishment with ecological impacts. The proposed regulation will list AIS by geographical area, prohibit the live import, transport and possession of listed AIS, provide management authorities with a wide range of AIS control and eradication activities, including the use of deleterious substances, and enhance the ability to direct activities (including enforcement) to high risk areas. Along with these regulations, education and public awareness are considered key to achieving success.

		With respect to the increasing presence of rainbow trout in Quebec waters, at Canada's request in 2012, NASCO added a question for ICES advice on the impact of this "exotic salmonid's" expansion outside of its natural habitat through human intervention. This advice will guide actions, where necessary, to control this invasive species. In Nova Scotia, the provincial government enacted *Live Fish Possession Regulations* in 2012 to prohibit possession of live fish unless authorized, and has closed fishing for smallmouth bass where they are not found, to remove the incentive for illegal introductions. A three-year (2010-2012) containment and eradication plan is in place to control the spread of smallmouth bass in the Miramichi Lake and to eventually eradicate them from the watershed. The plan includes the use of barriers to contain the smallmouth bass, physical removal by intensive fishing and electrofishing, and location and removal of nests.
	Planned timescale:	Current activities to control and eradicate AIS are on-going. The effectiveness of the Miramichi Lake smallmouth bass containment and eradication plan will be assessed in 2013 and additional action will be taken if found to be necessary. The proposed regulations are under development and expected to come into force in 2013.
	Expected outcome:	The national framework and regulations are being designed to support management activities aimed at preventing the introduction of AIS into Canada and controlling the spread of AIS if they are introduced.
	Approach for monitoring effectiveness & enforcement:	The proposed regulations would be enforced by federal fishery officers and provincial conservation officers. As well, the Canadian Border Services Agency would enforce import prohibitions.
Action F3:	Description of action:	Reduction and elimination of acid rain-causing emissions are the ideal goals to mitigate losses of wild Atlantic salmon due to acidification. In the meanwhile, liming of watercourses is recognized as an acidification mitigation technique that provides benefits to salmon. In Nova Scotia, the Atlantic Salmon Federation (ASF) has been very involved with liming projects e.g. in West River, Sheet Harbour. The ASF and others have operated an automated lime doser for approximately 6 years.
	Planned timescale:	Ongoing. Liming of salmon waters should be planned for the long term (up to 50 years or more) to re-establish natural pH buffering capacity.

	Expected outcome:	The liming project in West River has had very positive results. Parr numbers have increased by more than 300% and new sections of the river are being recolonized. Liming can be fairly expensive and must be done repeatedly as long as the source of acidity remains.
	Approach for monitoring effectiveness & enforcement:	Not applicable
Action F4:	Description of action:	Education of the public about the importance of Atlantic salmon conservation is considered very important, as those with a stake in the resource will assist in deterring poaching. Regular patrols by federal fishery officers and provincial conservation officers, as well as undercover work and tips from the public are all used to detect and catch poachers. Fisheries and Oceans Canada has worked with its lawyers in recent years to educate the court system and judges about the seriousness of salmon poaching and its effects on Atlantic salmon populations. As a result, heftier fines and other penalties are now being imposed by the courts, which is a further deterrent.
	Planned timescale:	Ongoing
	Expected outcome:	Decreased incidence of poaching
	Approach for monitoring effectiveness & enforcement:	Annual post-season reviews of fishing activities include a review of poaching impacts. Where a need for increased surveillance is noted, additional resources can be targeted to problem areas.
Action F5:	Description of action:	Current Integrated Fisheries Management Plans (IFMP) for Atlantic salmon and commercial pelagic fisheries provide information on measures that are being taken to reduce salmon by-catch. As a general rule, wild Atlantic salmon that are caught incidentally in any fishery cannot be retained and must be returned to the water in a manner that causes the least harm to the salmon. In addition, Canada is moving towards a more rigorous catch monitoring and reporting regime that will encompass all catches, including by-catch and discards, as set out in Fisheries and Oceans Canad's *Policy on Managing By-catch*.
	Planned timescale:	The by-catch policy is now in place
	Expected Outcome:	Implementation of the policy, with ongoing monitoring of salmon by-catch and further improvements in management measures to avoid such by-catch, will enhance Atlantic salmon conservation.

	Approach for monitoring effectiveness & enforcement:	The COSEWIC has recently reviewed Atlantic salmon populations, including an assessment of the threat of being caught in other fisheries. COSEWIC concluded that "by-catch associated with monitored commercial fisheries is not considered significant (and) is thought to have significantly declined."

3. Protection and Restoration of Salmon Habitat:

3.1 How are risks to productive capacity identified and options for restoring degraded or lost salmon habitat prioritised, taking into account the principle of 'no net loss' and the need for inventories to provide baseline data? *(Max. 200 words)*
(*Reference: Section 3 of the Habitat Guidelines)*

The Policy for the Management of Fish Habitat (1986) has a policy objective of net gain of the productive capacity of fish habitat. It also has a guiding principle of no net loss of productive capacity, which guides project level decisions under Section 35 of the Fisheries Act. "Productive capacity" is the maximum natural capability of habitats to produce healthy fish, safe for human consumption, or to support or produce aquatic organisms upon which fish depend. Currently, under the Risk Management Framework for Fisheries and Oceans Canada Habitat Management Staff, Pathways of Effects models are used to identify potential negative effects to fish and fish habitat. A risk matrix risk that incorporates the sensitivity of fish and fish habitat and the severity of negative effect is used to assess risk to productive capacity.

Canada's federal Fisheries Act was amended in June 2012. Once these amendments come into force, they will focus the efforts of the Fisheries Protection Program and its resources on managing key threats to fish that are part of, or support, Canada's commercial, recreational and Aboriginal fisheries.

The amendments provide for the sustainability and ongoing productivity of commercial, recreational and Aboriginal fisheries. See Section 3.2 for further details on the decision-making framework that will be used to guide decisions on the issuance of authorizations of serious harm to fish under the Fisheries Act. Focus will remain on a risk-based approach to management. New standards and guidelines will be developed to manage low risk activities, and additional tools will be available to create Ecologically Significant Areas.

The principles contained in the current Habitat Policy, including the guiding principle "no net loss", will be reviewed to ensure consistency with the amended Fisheries Act, focusing on ensuring the sustainability and ongoing productivity of commercial, recreational or Aboriginal fisheries. A focus will also continue to be put on avoiding or mitigating harm to fish habitat in the first instance, and taking measures to offset impacts through habitat restoration or improvement where avoidance is not possible.

3.2 How are socio-economic factors taken into account in making decisions on salmon habitat management? *(Max. 200 words)*
(Reference: Section 3.9 of the Habitats Guidelines)

Fisheries and Oceans Canada's role is to manage Canada's fisheries. At the same time, Fisheries and Oceans Canada has a responsibility to advance economic development around recreational, commercial or Aboriginal fisheries while ensuring sustainability and ongoing productivity.

Under the amendments to Canada's Fisheries Act, any activity that causes serious harm to fish (killing of fish, permanent alteration or destruction of fish habitat) that are part of, or support, a

commercial, recreational or Aboriginal fishery will be prohibited unless authorized.

Decisions on the authorization of serious harm to fish will be guided by a set of key factors including: the contribution of the fish to the fishery; whether there are measures to avoid, mitigate or offset serious harm; and socio-economic factors such as the consideration of any relevant fisheries management objectives, and the public interest.

A detailed decision-making process that takes into account these key factors is currently under development.

3.3 What are the main threats to wild salmon and challenges for management in relation to estuarine and freshwater habitat taking into account the Habitat Guidelines, and the specific issues on which action was recommended for this jurisdiction in the Final Report of the Habitat Protection, Restoration and Enhancement FAR Review Group, (CNL(10)11)?	
Threat/ challenge H1	Wide-ranging threats to Canada's Atlantic salmon habitat continue to originate from transportation infrastructure, agriculture, forestry and mining operations (i.e. industrial land-use activities).
Threat/ challenge H2	The presence of five jurisdictions on the east coast of Canada presents important management challenges: the Government of Canada and the Provinces of Quebec, New Brunswick, Prince Edward Island, Nova Scotia, and Newfoundland and Labrador need to work in close collaboration to effectively manage threats to wild Atlantic salmon habitats.

3.4 What actions are planned to address each of the above threats and challenges in the five year period to 2018?		
Action H1:	Description of action:	**Focussed Legal Protection** The Fisheries Act was amended in 2012 to focus on providing for the sustainability and ongoing productivity of recreational, commercial and Aboriginal fisheries. This will require updated policy and decision-making frameworks. Fisheries and Oceans Canada's new Fisheries Protection Program will administer provisions of the Fisheries Act related to managing effects on fish and fish habitat, i.e., the fisheries protection provisions. Fisheries Protection Program staff will focus on managing specific activity and development types. Staff has been organized into teams that will focus on, among other areas: linear development including transportation infrastructure; marine and coastal development including coastal land use such as agriculture and forestry; and mining. These teams will develop specialized expertise to effectively address threats to important fisheries listed in section 3.3: transportation infrastructure, agriculture, forestry, and mining. To address these threats to fisheries, teams will complete several types of actions: development of standards for protection (to be enshrined in policy and regulation); implementation of regulatory requirements including regulatory reviews of development projects and activities under the Fisheries Act and the Species at Risk Act; and identification and protection of important habitats.

		In addition, a recovery strategy has been developed for the Inner Bay of Fundy Atlantic Salmon populations, under the Species at Risk Act. This document is intended to provide a strategy for the planning and implementation of recovery for Inner Bay of Fundy Salmon. It defines the goal for recovery of the species and outlines objectives to achieve this goal. It identifies activities to be undertaken as well as areas where knowledge is lacking and further information is required. It also includes a description of the species and its needs, and identifies the threats to its survival and recovery. Activities planned for 2013-2018 to implement the recovery strategy include: progress towards identification of critical habitat in the marine environment which is currently a knowledge gap, and protection of critical habitat identified for the population. As well, three federal funding programs provide ongoing support to conservation and enhancement activities for this population: the Atlantic Salmon Endowment Fund (ASEF), Habitat Stewardship Program (HSP), and the Aboriginal Funds for Species at Risk (AFSAR) program.
	Planned timescale:	Organizational, program, and Fisheries Act changes will be implemented in 2013. Implementation of the recovery strategy for Inner Bay of Fundy Atlantic Salmon is ongoing.
	Expected outcome:	Enhanced protection of recreational, commercial and Aboriginal fisheries, improved information sharing between Fisheries Protection officials, and clear, focused risk based decision making processes.
	Approach for monitoring effectiveness & enforcement:	Fisheries and Oceans Canada reports on the implementation of the habitat protection provisions of the Fisheries Act in an annual report to the Canadian Parliament. Fisheries and Oceans Canada will report on the fisheries protection provisions of the Act in this report, once the provisions are in force. As well, a Wild Atlantic Salmon Habitat Reporting Working Group has been convened to draft a multi-agency report on wild Atlantic salmon habitat every three years. This report will include a section on monitoring and assessment of the effectiveness of habitat management regulatory activities.
Action H2:	Description of action:	<u>Enforcement and Standards</u> The Fisheries Act was revised in 2012 and now includes a number of provisions that will enable enhanced compliance and protection of commercial, recreational and Aboriginal fisheries. A number of provisions enable enhanced protection of these fisheries by: • Aligning the Fisheries Act with the Environmental Enforcement Act (increased fines and penalties for offences); • Creating more easily enforceable conditions for Ministerial authorizations;

		• Modernizing inspector powers to assist them in ensuring compliance with section 35 (dealing with harm to fish and their habitat); and • Establishing a "duty to notify" provision to establish obligations on persons whose actions result in harm to fish habitat to report and to take corrective measures. These changes support the action of enforcing the fisheries protection provisions of the Fisheries Act, through activities aimed at both deterring activities that may harm fish and fish habitat, and at compelling compliance with the Act. Enforcement actions will help address the threats to fish and fish habitat listed in section 3.3 (H1). In addition, clear standards and guidelines for routine projects will be set in order to increase protection of commercial, recreation and Aboriginal fisheries.
	Planned timescale:	These amendments to the *Fisheries Act* are in force now. Standards and guidelines will be developed over the next 2-5 years.
	Expected outcome:	Enhanced protection of recreational, commercial and Aboriginal fisheries from works, undertakings and activities that represent the greatest threats.
	Approach for monitoring effectiveness & enforcement:	Focused compliance and effectiveness monitoring of impacts related to some development projects will continue to be part of Fisheries and Oceans Canada's regular activities. Fisheries and Oceans Canada reports on the implementation of the habitat protection provisions of the Fisheries Act in an annual report to the Canadian Parliament and will report on the fisheries protection provisions of the Act in this report, once the provisions are in force. Under the Wild Atlantic Salmon Conservation Policy, a Wild Atlantic Salmon Habitat Reporting Working Group has been convened to draft a multi-agency report on management of wild Atlantic salmon habitat every three years.
Action H3:	Description of action:	The amended Fisheries Act provides Canada's Minister with the ability to develop regulations in order to enter into agreements with other federal departments, provinces and others for the effective management of fisheries resources, including wild Atlantic salmon habitat. Threat H2 related to the presence of multiple jurisdictions, will be addressed through current and future partnerships. Reporting will be done by various means, including regular reports to Parliament and under the Multi-Agency Wild Atlantic Salmon Habitat Reporting Working Group. As well, jurisdictions within Atlantic Canada continue to work through informal arrangements and under the Wild Atlantic Salmon Conservation Policy to increase coordination on all key

		areas of management for Atlantic salmon.
	Planned timescale:	Formal agreements may be updated or established at any time, as opportunities arise, based on willingness of parties. Informal partnerships continue on an ongoing basis. In the short to medium term, the Multi-Agency Wild Atlantic Salmon Habitat Reporting Working group can support coordination of partnerships. However, development of a broader suite of partnership tools is planned.
	Expected outcome:	Increased agreements, partnerships and collaboration among jurisdictions in Atlantic Canada.
	Approach for monitoring effectiveness & enforcement:	A Wild Atlantic Salmon Habitat Reporting Working Group has been convened to draft a multi-agency report on management of wild Atlantic salmon habitat every three years. This report will be used to identify partnerships currently in place related to wild Atlantic salmon habitat management, as well as gaps and opportunities for additional future partnerships.

4. Management of Aquaculture, Introductions and Transfers, and Transgenics:

4.1 What is the approach for determining the location of aquaculture facilities in (a) freshwater and (b) marine environments to minimise the risks to wild salmon stocks? *(Max. 200 words for each)*

Within NASCO's Commission area in Canada, the responsibility for determining and licensing the location of freshwater and marine finfish aquaculture facilities is led by the Provinces. Fisheries and Oceans Canada provides scientific information and analysis on fish and fish habitat related to the review of a particular facility site to the Provinces when they are considering site locations through their permitting provincial processes.

The following are websites for Provinces in NASCO's Commission area in Canada:

- New Brunswick Agriculture, Aquaculture and Fisheries (http://www.gnb.ca/0027/index-e.asp)
- Nova Scotia Fisheries and Aquaculture (http://www.gov.ns.ca/fish/)
- Newfoundland and Labrador Department Fisheries and Aquaculture (http://www.fishaq.gov.nl.ca/)
- Prince Edward Island Fisheries, Aquaculture and Rural Development (http://www.gov.pe.ca/fa/dg.inc.php3)
- Québec Ministère de l'Agriculture, Pêcheries et Alimentation (http://www.mapaq.gouv.qc.ca/fr/Pages/Accueil.aspx)

In June 2012, the Government of Canada made changes to the *Fisheries Act* to support its focus on protecting commercial, recreational and Aboriginal fisheries (including the protection of Canada's wild Atlantic salmon) and the fish habitat on which they depend. Through these changes, the Government of Canada is focusing the Act's regulatory regime on:

  - managing threats to the sustainability and ongoing productivity of Canada's commercial, recreational and Aboriginal fisheries;

- providing enhanced compliance and protection tools;
- providing clarity, certainty and consistency of regulatory requirements through the use of standards and regulations; and,
- enabling enhanced partnerships to ensure agencies and organizations that are best placed to provide fisheries protection services to Canadians are enabled to do so.

These changes will enable new regulatory tools for providing greater certainty and consistency to industry and ensure a more efficient and effective regulatory regime for fisheries protection. Under the *Fisheries Act*, all activities (including aquaculture, fishing practices, industrial activities, etc.) are assessed on how they impact fish populations that support commercial, recreational and Aboriginal fisheries as well as the habitats that support them. These assessments are undertaken using a pathways of effects and valued ecosystem component approach.

4.2 What progress can be demonstrated towards the achievement of the international goals for effective sea lice management such that there is no increase in sea lice loads or lice-induced mortality of wild stocks attributable to sea lice? *(Max. 200 words)*
(Reference: BMP Guidance)

Canada has made significant progress towards achieving the international goals for sea lice, as defined by NASCO's Guidance on Best Management Practices to Address Impacts of Sea Lice and Escaped Farmed Salmon on Wild Stocks (2009 and revised in 2010), by supporting an integrated pest management approach and ensuring that all aquaculture sites in Atlantic Canada have implemented sea lice monitoring and management plans. In addition, Canada's fish health management system employs a proactive approach to husbandry that works to prevent the manifestation of disease and reduce its severity when it does occur. Extensive clinical support, on-farm inspections and local knowledge support work to maintain the health of farmed salmon, as well as to preclude ecological impacts of treatment and disease.

In November 2011, Fisheries and Oceans Canada published its "Notice of Intent with Respect to Regulations for Fish Pathogens and Pest Treatment" to outline the Departments intentions to develop regulations under the Fisheries Act to support responsible treatment and control of fish pathogen and pests in aquaculture facilities and under Canada's Health of Animals Act. The management of the release of aquaculture substances, including pathogen and pest treatments, is important in the protection of cultured and wild fish (including wild Atlantic salmon) from disease and pests. However, the environmental effects of undertaking treatments also need to be considered in determining whether to use treatments as well as to ensure that use of treatments does not adversely affect the environment, including fish populations and fish habitat, which therefore supports the protection of Canada's wild Atlantic salmon. The Fisheries Act regulations under consideration would provide greater clarity and coordination of federal and provincial environmental regulatory measures in the management of aquatic animal health and welfare. As of 2013, the proposed regulations and the proposed Release of Aquaculture Substances Regulatory Regime are under finalization, and public consultation will be undertaken through the Canada Gazette.

Canada has been active in using the "Bay Management Approach", a tool for fish health and parasite management that may help interrupt pathogen cycles through: regular fallowing; year class separation; stocking density; and, coordinated sea lice treatment and management plans. These activities may support minimizing the risk of pathogen and parasite transmission (including sea lice). This Approach is currently used in New Brunswick, while Nova Scotia is considering its utility in their context. Newfoundland and Labrador continues to invest in the

"Bay Management Approach".

In October 2011, New Brunswick introduced an Integrated Pest Management Plan (IPMP) for Sea Lice. The IPMP provides a comprehensive, strategic framework that promotes the health and welfare of cultured Atlantic salmon, while minimizing potential impacts to wild aquatic resources (including on wild Atlantic salmon) the surrounding environment. It includes prevention, research, monitoring (observation), and chemotheraputant and non-chemotheraputant control measures (intervention). The IPMP promotes access to a variety of management tools, as well as strategic and synchronized treatment plans to ensure optimal benefit of each treatment and minimize environmental exposure. This approach will not only reduce farm-level sea lice populations, but will also result in an overall reduction of treatments and chemotheraputants used and their release into the aquatic ecosystem, which in turn supports the protection of Canada's wild Atlantic salmon. The IPMP encourages continuous improvements in management, the application of new technologies, and the introduction of new products as new information and science advances become available. The IPMP will ensure management tools remain effective while reducing potential impact to the environment and wild resources.

A summary of fish health regulation, management, monitoring and reporting related to sea lice, is provided in the following table:

Regulations / policies in place for on-farm sea lice management	Sea lice management practices are identified in regulations and/or policies in all salmon producing provinces.
Integrated pest management (IPM) programs for sea lice in place	Integrated pest management is an approach endorsed by all salmon producing regions. Implementation is at various stages in the different provinces.
Sea lice monitoring with reporting to regulators	Sea lice monitoring is conducted and results are reported to the responsible authority in each salmon producing province. Sea lice monitoring results form the basis for management action by regulators as well as operators.In determining thresholds for action, possible impacts to both wild and farmed populations are considered. Provinces have developed management regimes that are appropriate to these two objectives and manage accordingly. Based on the regimes in place, Canada is confident that sea lice levels are being managed at levels that do not pose a risk to wild Atlantic salmonid populations.
Additional monitoring of outcomes and reporting on management actions	Management actions involving treatments by farms are reported to the regulator in all the salmon producing provinces.

Nationally, sea lice management has been identified as a key aquaculture sustainability reporting priority for the Canadian Council of Fisheries and Aquaculture Ministers (CCFAM). In collaboration with the CCFAM, Fisheries and Oceans Canada has developed the Aquaculture Sustainability Reporting Initiative (ASRI) with the goal of establishing a public reporting process for describing environmental, social and economic conditions and trends in the Canadian aquaculture sector. Through ASRI, regulations, policies and best management practices across the country for sea lice management are reported. To support this information, Fisheries and Oceans Canada and the Provinces are finalizing a sustainability performance indicator directly related to sea lice management. Under subsequent annual ASRI reports, jurisdictions would provide monitoring and reporting information against this new performance

indicator. Over time, results against this indicator will demonstrate trends in sea lice management results. The first ASRI report, *Aquaculture in Canada 2012*, is now available (Aquaculture in Canada 2012: A Report on Aquaculture Sustainability http://www.dfo-mpo.gc.ca/aquaculture/lib-bib/asri-irda/asri-irda-2012-eng.htm), and the second annual report is underway.

4.3 What progress can be demonstrated towards the achievement of the international goals for ensuring 100% containment in (a) freshwater and (b) marine aquaculture facilities? *(Max. 200 words each)*
(Reference: BMP Guidance)

(a) The majority of freshwater hatchery facilities for salmonids within the NASCO Commission area in Canada are closed recirculation systems. Operating licences and related policies dictate technical requirements for containment at freshwater facilities. For example, in Prince Edward Island, all hatcheries have double screening in place on effluent pipes to reduce the risk of escapes. Pond cages and outdoor tanks are also screened to prevent escapes and predation by birds.

(b) Canada has made significant progress towards achieving the international goals for containment as defined by the Guidance on Best Management Practices to address impacts of escaped farmed salmon on wild salmon stocks ensuring that all aquaculture sites in Canada have containment protocols in place.

Breaches in containment are uncommon in Canada despite the significant increases in numbers of salmonids being farmed in Eastern Canada. Newfoundland and Labrador, Nova Scotia, Prince Edward Island and New Brunswick which have net-pen farming of Atlantic salmon have standard operating procedures in place for containment on salmon farms. These procedures specify cage system design standards and mandatory reporting of escapes. The approach of these provincial operating procedures is consistent with NASCO's Guidelines on Containment of Farm Salmon (Annex 3 of the Williamsburg Resolution).

Federal and provincial governments and industry collaborate to establish provincial regulatory and operational measures to reduce the incidence and number of escapes. It is acknowledged that the goal must be as close as practicable to zero breaches of containment. Governments and industry driven guidelines and codes of containment have been developed and implemented on salmon farms that are consistent with the Guidelines on Containment of Farm Salmon (NASCO document CNL(01)53).

Canada's National Code on Introductions and Transfers of Aquatic Organisms, through its associated licensing application and evaluation process, takes into consideration the risk mitigation measures to be utilized by the proponent, such as the containment technology. In addition, aquaculture facility siting decision-making provides for the consideration of containment measures and possible impacts that could result from escapes.

A summary of containment regulation and management for marine rearing of salmon is provided in the following table:

Regulations / policies in place for containment	All relevant Provinces have regulatory requirements for the management of farm fish escapes as a condition of licence. These requirements typically include: risk-based site selection; containment plans; cage and mooring specifications; employee training; monitoring; and, reporting.

Mandatory monitoring and reporting of breaches of containment events	There are regulatory requirement to monitor and report breaches of containment events to the responsible authority in each salmon producing province. This information supports the development of management actions by regulators as well as operators. In determining the appropriate management action, impacts to wild and farmed populations are considered. Provinces have developed management regimes that are appropriate to these two objectives and manage accordingly. Based on the regimes in place, Canada is confident that improvement in containment continue to be made and that breaches are being managed at levels that do not pose a risk to wild salmonid populations.
Verification of compliance with management requirements	Government programs to verify compliance with escape management requirements are in place in two of the three provinces engaged in marine salmon aquaculture within the NASCO Commission area in Canada.
# breaches of containment events over the past 12 months - by jurisdiction - Causes	Government programs to verify compliance with breaches of escape management requirements are in place in two of the three provinces engaged in marine salmon aquaculture within the NASCO Commission area in Canada Canada reports detailed information on the number of breaches of containment events and the number of escaped fish to NASCO's North American Commission on an annual basis.

Nationally, managing farmed fish breaches of containment has also been identified as a key aquaculture sustainability reporting priority for the Canadian Council of Fisheries and Aquaculture Ministers (CCFAM). In collaboration with the CCFAM, DFO has developed the Aquaculture Sustainability Reporting Initiative (ASRI) with the goal of establishing a public reporting process for describing environmental, social and economic conditions and trends in the Canadian aquaculture sector. Through ASRI, regulations, policies and best management practices across the country for managing breaches of containment for farmed fish are reported based on regular monitoring, as required by permits and licences. To support this information, DFO and Provinces are finalizing a sustainability performance indicator directly related to the management of farmed fish breaches of containment. Under subsequent annual ASRI reports, jurisdictions would provide monitoring and reporting information against this new performance indicator. Over time, results against this indicator will demonstrate trends in results from farmed fish breaches of containment management. The first ASRI report, *Aquaculture in Canada 2012*, is now available (Aquaculture in Canada 2012: A Report on Aquaculture Sustainability), and the second annual report is underway.

4.4 What progress has been made to implement NASCO guidance on introductions, transfers and stocking? *(Max. 200 words)*
(Reference: Articles 5 and 6 and Annex 4 of the Williamsburg Resolution)

Potential disease, genetic and ecological risks to wild Atlantic salmon associated with introductions and transfers are managed under a variety of federal statutory and other instruments: the *Fisheries (General) Regulations;* the *Fish Health Protection Regulations* (FHPR); the *Health of Animals Act*; the National Code on Introductions and Transfers of Aquatic Organisms; and, the National Aquatic Animal Health Program (NAAHP). These instruments are described below:

- The FHPR are regulations specific to the salmonidae family and are administered under the *Fisheries Act*. The regulations are designed to minimize the risk of the spread of infectious diseases through inspection of wild and culture fish stocks and control of the movements of infected fish between provinces. The FHPR apply to live and uneviscerated dead cultured fish, eggs (including fertilized eggs or gametes) of cultured and wild fish and products of dead uneviscerated cultured fish across provincial boundaries within Canada. In the event of violation of these Regulations, seizure and other powers of the *Fisheries Act* apply. A permit for movements of salmonidae may be issued only to producers who have an FHPR certificate that shows their facility has been inspected by a certified provincial Fish Health Officer indicating the pathogen profile of the facility.
- The NAAHP is led by the Canadian Food Inspection Agency (CFIA) and is consistent with international standards set by the World Health Organization for Animal Health (OIE). Fisheries and Oceans Canada provides diagnostic/laboratory and analytical support under the NAAHP.
- Amendments to the *Health of Animals Act* entered into force in December 2011 and include a change in CFIA's authorities for management of the international movement of fish, including salmonids. Consequently, the import component of the FHPR has been repealed to reflect this change in legislative authority and to avoid duplication of regulatory effort. However, Fisheries and Oceans Canada will continue applying the FHPR to interprovincial movements of salmonids until the domestic component of the NAAHP is fully implemented by CFIA.
- Fisheries and Oceans Canad, in collaboration with Provinces, manages risks associated with the release of aquatic organisms into Canada's fish rearing facilities and fish bearing waters through the National Code on Introductions and Transfers of Aquatic Organisms. The Code is currently undergoing renewal, primarily to account for the new role of CFIA in managing aquatic animal disease risks under the NAAHP.

New Brunswick's recent *New Brunswick Marine Aquaculture Finfish Health Policy*, which will be incorporated into its legislation, provides detailed guidelines on a wide range of aspects related to prevention, health maintenance and minimizing pathogen loading and intergenerational transfer. Fish health surveillance includes regular veterinary visits to marine sites. The Province complements these veterinary visits through routine checks of the marine sites in which they audit disinfection protocols, assess overall fish health, and collect samples for disease testing. Upon the detection or suspicion of a disease of concern, the Province may immediately designate an area as a Controlled Aquaculture Area (CAA) under the authority of the Province's *Aquaculture Act*. In addition to this effort, the Atlantic Canada Fish Farmers Association has developed a Harvesting Code of Practice, which applies to all vessels and individuals on an aquaculture site. These fish health protection measures support meeting the Province's aquaculture goals and, as a result, also support the protection of Canada's wild Atlantic salmon.

4.5 What is the policy/strategy on use of transgenic salmon? *(Max. 200 words)*
(Reference: Article 7 and Annex 5 of the Williamsburg Resolution)

As of January 2013, no transgenic fish or eggs have been approved for commercial use or production in Canada.

Canada's policy on the protection of the environment from potential risks associated with living organism products of biotechnology, including transgenic salmon, is formally elaborated in law in the *Canadian Environmental Protection Act, 1999* (CEPA) and implemented through the *New Substances Notification Regulations (Organisms)* [the Regulations].

CEPA is the key authority for the Government of Canada to ensure that all new living organism products of biotechnology, including transgenic salmonids, are assessed for their potential to harm the Canadian environment prior to their import, production or sale in Canada.

Schedule 5 of the Regulations prescribes the information that must be provided to the Government of Canada at least 120 days prior to the proposed import or manufacture in Canada of a transgenic salmonid. This information is used to conduct a scientific risk assessment to determine whether the transgenic salmonid may have an immediate or long-term harmful effect on the Canadian environment or its biological diversity. The environmental assessment considers potential ecological, genetic, disease and other risks that the transgenic salmonid may pose, including potential impacts on wild salmon populations in Canada. Where such harmful effects are suspected, control measures, including containment requirements, may be imposed as required to manage those risks to the environment. Where such harmful effects are not suspected, the import or manufacture of the transgenic salmonid may proceed as proposed. Where it is suspected that a "significant new activity" (i.e. an activity other than that originally proposed) may pose a risk to the environment, the Government may specify the requirement to submit further information for consideration prior to the commencement of the significant new activity.

Transgenic salmonids used for research and development in land-based contained facilities are exempt from these Regulations provided the organism, its genetic material and any toxic material from the organism is contained in accordance with exemption criteria specified in the Regulations. Currently, only one hatchery breeding salmon operates within Prince Edward Island for research and development purposes and uses strict containment measures.

A mandatory requirement to submit new or corrected information that would reasonably support the conclusion that the organism may be harmful to the environment provides the opportunity for adaptive management.

Enforcement of the Regulations and adherence to any risk management measures that may have been imposed is conducted through formal inspections. Penalties for offences are specified in the legislation, including significant fines and imprisonment.

4.6 What measures are in place to prevent the introduction or further spread of *Gyrodactylus salaris*? *(Max. 200 words)*

Gyrodactylus salaris does not exist in Canada. It is an immediately notifiable disease under World Health Organization for Animal Health (OIE) and Canadian law (the *Health of Animals Act*). Laboratories are required to contact the Canadian Food Inspection Agency (CFIA) regarding the suspicion or diagnosis of these diseases. Facilities working with animal or zoonotic pathogens must comply with the Containment Standards for Facilities Handling Aquatic Animal Pathogens.

If gyrodactylus salaris were to be detected, the CFIA would undertake an investigation within the scope of the *Health of Animals Act* and within the activities under the National Aquatic Animal Health Program.

4.7	**What are the main threats to wild salmon and challenges for management in relation to aquaculture, introductions and transfers, and transgenics, taking into account the Williamsburg Resolution, the BMP Guidance and specific issues on which action was recommended for this jurisdiction in the Final Report of the Aquaculture FAR Review Group, (CNL(11)11)?**
Challenge A1	**Sea Lice Management** Canada meets international fish health standards set by the World Organization for Animal Health (OIE). Jurisdictions which have marine salmonid aquaculture within the NASCO Commission area in Canada have comprehensive and robust regulatory and management systems that meet OIE standards for farmed fish health, with provisions for sea lice management (planning, monitoring and reporting) as well as provisions for the consideration of potential impacts on wild populations (including on wild Atlantic salmon) in decision making. To support these regulatory and management systems, each jurisdiction undertakes continuous improvement of its tools (e.g. legislation, regulation, policy, standards, and public information). These improvements are made in order to take into account changes in the aquaculture sector, new environmental information on impacts on wild populations, new socio-economic information as well as new best management practices within Canada and in other countries. Government, industry and fish health professionals cooperate on an ongoing basis to ensure the effective implementation of these activities.
Challenge A2	**Containment of Farmed Fish** Jurisdictions which have marine salmonid aquaculture within the NASCO Commission area in Canada have comprehensive and robust regulatory and management systems for the containment of farmed fish that consider potential impacts on wild populations, including Atlantic salmon in decision making. Using provincial laws, and their associated regulations and policies, these systems are consistent with fisheries protection and approved recovery plans for aquatic species at risk. The regulatory and management systems are also based on strong cooperative efforts among government, industry and technology experts. Mitigation measures are in place to minimize the number and risk of breaches of containment of farmed fish on the aquatic environment, including on Canada's wild Atlantic salmon. While this federal and provincial management and regulatory system exists, each jurisdiction undertakes continuous improvement of its tools (e.g. legislation, regulation, policy, standards, and public information) in order to take into account changes in the aquaculture sector, new environmental information on impacts on wild populations, new socio-economic information as well as new best management practices within Canada or in other countries.
Challenge A3	**Regulation and Management of Introductions and Transfers** The management of risks to wild salmon associated with introductions and transfers is undertaken under a variety of federal statutory and other instruments, such as: the *Fisheries (General) Regulations*, the *Fish Health Protection Regulations*; the *Health of Animals Act*; the National Code on Introductions and Transfers of Aquatic Organisms*;* and, the National Aquatic Animal Health Program. These regulations, policies and programs manage

		the potential disease and ecological and genetic risks associated with the movement of aquatic organisms, including Atlantic salmon.
Challenge A4		**Commercial Production of Transgenics** Canada is well prepared to assess and manage potential environmental risks, including threats to wild salmon, which may be associated with the potential commercial production of transgenic salmonids. Canada's legislative and regulatory framework (see section 4.5) has been in place and successfully implemented and enforced since 1997. Although this framework does not *a priori* require that transgenic salmonids be confined to secure, self-contained, land-based facilities, the legislation provides authority to impose such containment requirements where needed based on the outcome of a science-based risk assessment. In keeping with Annex 5, paragraph d) of the Williamsburg Resolution, Fisheries and Oceans Canada has established the Centre of Expertise on Aquatic Biotechnology Regulatory Research where contained, land-based research is undertaken to provide scientific knowledge to inform the risk assessment, risk management and regulatory approaches for transgenic salmonids. To facilitate decision-making in the absence of full scientific certainty where there is a risk of serious or irreversible harm, the Government of Canada has elaborated a Policy Framework for the Application of Precaution in Science-Based Decision Making about Risk. This approach is aligned with Article 7 of the Williamsburg Resolution.
4.8 What actions are planned to address each of the above threats and challenges in the five year period to 2018?		
Action A1:	Description of action:	Implementation and improvement of current sea lice management tools (legislation, regulation, policy, standards, monitoring and reporting on sea lice management) and the development of new tools, where required. These tools include but are not limited to: the National Aquatic Animal Health Program; the development of Release of Aquaculture Substances Regulatory Regime under the *Fisheries Act*; the Bay Area Management approach; Integrated Pest Management; complimentary provincial policies and regulations; monitoring; and, annual reporting against a national sea lice sustainability performance indicator reporting under Aquaculture Sustainability Reporting Initiative. The combined objective of these tools is to ensure that all participants in the management of farmed fish health in general, and sea lice management in particular, throughout the NASCO Commission area in Canada do so in a coordinated manner that, using a risk and evidenced based approach, addresses impacts to fish populations that support commercial, recreational and Aboriginal fisheries as well as the habitats that support them.
	Planned timescale:	Ongoing

	Expected outcome:	Improved implementation and coordination of sea lice management through new agreements, regulations and policies, adoption of new standards, research, improved monitoring and dissemination of information on sea lice management.
	Approach for monitoring effectiveness:	i. Governance process of federal-provincial management committees and technical working groups, either existing or may be established as required. ii. Reporting of monitoring results to regulators and public reporting of measures and their outcomes.
Action A2:	Description of action:	Implementation and improvement of current management tools (legislation, regulation, policy, standards and public dissemination of information on the management of farmed fish which have breached containment) and the development of new tools, where required. These tools include but are not limited to: the development of: legislative authority to enforce requirements; development and adoption of containment standards; and annual reporting against a national farmed fish escape sustainability performance indicator reporting under Aquaculture Sustainability Reporting Initiative. The combined objective of these tools is to ensure that all participants in the containment of farmed fish throughout the throughout the NASCO Commission area in Canada do so in a manner that minimizes impacts to fish populations that support commercial, recreational and Aboriginal fisheries as well as the habitats that support them.
	Planned timescale:	Ongoing
	Expected outcome:	Improved implementation and coordination of farmed fish containment through new agreements, regulations and policies, adoption of new standards, research, improved monitoring and dissemination of information on farmed fish containment.
	Approach for monitoring effectiveness & enforcement:	i. Governance process of federal-provincial management committees and technical working groups, either existing or may be established as required ii. Public reporting of measures and outcomes
Action A3:	Description of action:	**Review of Canada's National Code on Introductions and Transfers of Aquatic Organisms** The objective of this action is to complete the review and update Canada's National Code on Introductions and Transfers of Aquatic Organisms.
	Planned timescale:	2014/15
	Expected outcome:	A renewed Code accounting for changes in federal authority over the management of aquatic animal disease risks and potential refinements.

	Approach for monitoring effectiveness & enforcement:	Renewal of the Code is being carried out under the Canadian Council of Fisheries and Aquaculture Ministers' Introductions and Transfers Renewal Task Group.
Action A4:	Description of action:	**Process to Assess Potential Commercial Production of Transgenics** Canada plans to continue to rigorously implement, and enforce our risk-based legislative and regulatory process for living organism products of biotechnology, including transgenic salmonids. Canada plans to continue to invest in contained, land-based laboratory research involving transgenic fish to generate scientific knowledge to inform risk assessment, risk management and regulatory approaches aimed at protecting the aquatic environment including wild salmon populations.
	Planned timescale:	Ongoing regulatory implementation and enforcement. Regulatory decisions are taken within 120 days of receiving a complete regulatory submission. Ongoing research as funding permits. Applicants required to submit environmental data.
	Expected outcome:	Government of Canada decision-makers have access to scientific knowledge for the risk assessment and regulation of fish products of biotechnology (immediate outcome). Fish products of biotechnology do not harm the environment or wild salmon populations (long-term outcome).
	Approach for monitoring effectiveness & enforcement:	A *Compliance and Enforcement Policy for the Canadian Environmental Protection Act, 1999* has been developed which specifies that: • Compliance with the Act and its regulations is mandatory; • Enforcement officers throughout Canada will apply the Act in a manner that is fair, predictable and consistent. They will use rules, sanctions and processes securely founded in law; • Enforcement officers will administer the Act with an emphasis on prevention of damage to the environment; • Enforcement officers will examine every suspected violation of which they have knowledge, and will take action consistent with this Compliance and Enforcement Policy; and, • Enforcement officers will encourage the reporting of suspected violations of the Act.