CNL(14)75

NASCO Implementation Plan for the period 2013-18

United States

Updated 1 December 2014

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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:	**United States**
Jurisdiction/Region:	**N/A**

1. Introduction

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

At present, the primary objective for the management of wild salmon in the United States is to rebuild the Gulf of Maine Distinct Population Segment (GOM DPS) of Atlantic salmon (and the ecosystems upon which they depend) to a point where the protections of the Endangered Species Act are no longer required (see the following website for a summary of these protections - http://www.nmfs.noaa.gov/pr/laws/esa/). The freshwater range of the Gulf of Maine Distinct Population Segment is comprised of all anadromous Atlantic salmon whose freshwater range occurs in the watersheds from the Androscoggin northward along the Maine coast to the Dennys. There are currently no specific objectives for the management of wild salmon in rivers outside of the GOM DPS.

In addition to the recovery program for endangered salmon, there are two salmon programs south of the GOM DPS. The state of Connecticut has established the Connecticut River Legacy Program to replace the Connecticut River Atlantic Salmon Restoration Program that was terminated in 2012. On the Saco River (in the state of Maine), the U.S. Fish and Wildlife Service, Maine Department of Marine Resources, and the Saco River Salmon Club maintain an Atlantic salmon enhancement project at a private hatchery. These programs seek to maintain small populations of salmon in targeted watersheds for the purposes of perpetuating the ecological and cultural presence of salmon in the region. The objectives also include supporting biodiversity, public education and awareness about salmon, and scientific research on Atlantic salmon.

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)

The Endangered Species Act compels the National Marine Fisheries Service and the U.S. Fish and Wildlife Service to develop measurable criteria that must be met in order to remove an endangered species from the endangered species list. A draft set of these recovery criteria have been developed for the Gulf of Maine Distinct Population Segment of Atlantic salmon and are summarized as follows:

- Roughly 6,000 wild adult returns per year
- 90,000 fully accessible habitat units (1 unit = $100m^2$ of rearing habitat)
- Threats that were identified at the time of listing (in 2009) are reduced

These recovery criteria informed the development of the rebuilding objectives recently adopted within the North American Commission and the West Greenland Commission (see NAC(13)4). Beginning in 2015, these new rebuilding objectives will be used by ICES in the provision of catch advice. It is, however, important to note that these rebuilding objectives provide no binding authority with respect to how domestic agencies may pursue salmon recovery and
restoration work in the United States.

Conservation spawning escapement (CSE) provides the minimum adult abundance needed to seed available freshwater nursery habitat. This number is based on a single spawning cohort (2SW adults), not the standing stock of all age groups. The CSE for New England is set at 29,199 adults. The CSE for the Gulf of Maine Distinct Population Segment is 15,670 adults. Given the precarious state of Atlantic salmon in the United States, the recovery criteria identified above will be the most important reference points for the foreseeable future.

There are no set reference points for the Connecticut River Legacy Program. Approximately 200,000 fry will be stocked annually to support a continual parr population. The number of sea returns will be dictated by the many ecological factors that control survival with no specific management target. There are no set reference points for the Saco River program. The U.S. Fish and Wildlife Service will produce approximately 25,000 fall parr and 400,000 eyed eggs (for fry releases) annually.

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	Endangered	25
2	Threatened	0
3	Recovered	0
4	*Historic Salmon River	20
Insert additional categories as required		
TOTAL:		45

Additional comments: The process for designating threatened and endangered stocks is specified in the US Endangered Species Act. The process is summarized in the U.S. Implementation Plan for the period 2007 -2011 (CNL(07)16). In short, the National Marine Fisheries Service or US Fish and Wildlife Service conducts a review of the species status. The report is called a Status Review which is typically peer-reviewed by an external panel of experts. The agencies then use the information in a Status Review and other scientific information to make a proposed listing decision. That proposal (to list as threatened, to list as endangered, or not to list) is published in the Federal Register and the

public is invited to comment. The agencies review public comments and any new scientific information before publishing a final decision in the Federal Register.

*Historic Salmon River – Historically, salmon occurred in most major watersheds south of the Androscoggin River (Maine) to the Housatonic River in the south (Connecticut), roughly 20 rivers all together. From the 1960s through 2013, there were substantial restoration programs occurring in many of these rivers. Fiscal constraints, a flood at an important conservation hatchery, and poor returns led to many of these salmon restoration programs coming to an end in 2012 and 2013. Currently, there is only a "legacy program" in the Connecticut River and the enhancement program on the Saco River.

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)*

Low marine survival and the reduction in productivity of freshwater habitats have led to drastic population declines. Decreased population sizes could result in the loss of genetic diversity and increased risk of inbreeding. Reliance on hatchery supplementation could lead to artificial selection. Thus, maintaining genetic diversity levels within each of the Atlantic salmon populations is a primary tenet of salmon management in the United States. Maintaining genetic diversity is critical to preventing the extinction in the United States. As such, a rigorous genetic research and management program has been implemented in recent years. The first major milestone of this program was the development of a broodstock management plan in 2006. This plan set forth a rigorous broodstock genetic management program that provides screening, mating guidance, and assessment information for hatchery activities. To monitor if genetic diversity is being maintained over time, metrics such as allelic variability and heterozygosity are assessed annually, using a suite of variable molecular markers. Thus, a science-based broodstock management program is implemented to support Atlantic salmon recovery and restoration programs at the federal hatcheries in the United States.

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)

Quantitative estimates are available for the GOM DPS only. Within the GOM DPS, there are approximately 39,000 accessible and suitable habitat units. The recovery goal is 90,000 accessible and suitable habitat units. This represents a shortfall of 51,000 units. Further actions to improve passage through dam removal and culvert replacement are clearly needed.

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

Number of marine farms	28 leases authorized to raise finfish in Maine
Marine production (tonnes)	5,100 mt (estimated)
Number of freshwater facilities	3 hatcheries in Maine supporting U.S. east coast Atlantic salmon farming industry
Freshwater production (tonnes)	n/a – The freshwater facilities raise smolts to support the marine sites. Commercial smolt production is approximately 2 million annually.

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

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

Yes; although, the information provided within the NASCO rivers database is more extensive than what is provided within this implementation plan. As such there may be apparent inconsistencies, but this is due to the need to condense information within the implementation plan and changing conditions of management programs, particularly areas south of the GOM DPS.

2. Fisheries Management:

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

The objective is to facilitate recovery of the endangered populations and their ecosystems to a level where: 1) Native Americans can once again exercise their rights to ceremonial and sustenance purposes; and 2) recreational fisheries can once again be considered. This can only occur after the endangered populations are either "downlisted" to threatened or "de-listed" because they are recovered (meeting the recovery criteria outlined in section 1.1).

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)

Fishing for endangered salmon is not allowable under the U.S. Endangered Species Act. A fishery could be considered if the populations were listed as threatened (a less protective category under the U.S. Endangered Species Act) if the fishery had a net conservation benefit to the species. This could occur through several mechanisms such as:

- proceeds from license sales funding habitat restoration work; and
- increased public awareness of salmon and threats to salmon populations.

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)

Not domestically, but U.S. salmon stocks below their reference points are harvested in mixed-stock fisheries in Greenland, St. Pierre et Miquelon, and Canada (Labrador).

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) Not domestically, but as noted above, U.S. stocks are harvested in mixed-stock fisheries in Greenland and St. Pierre et Miquelon. Recent evidence from sampling programs in Labrador suggest that some level of harvest of U.S.-origin salmon is also occurring in Canada (Labrador).

(b) See ICES WGNAS reports for detailed summaries of the fisheries at West Greenland and Labrador. Some information on the catch at St. Pierre et Miquelon is available in reports tabled by France (in respect of St. Pierre et Miquelon) at the NASCO Annual Meeting, most recently in CNL(14)15.

(c) The fisheries in Greenland, St. Pierre et Miquelon, and Labrador are not managed to ensure that all contributing stocks are meeting their conservation objectives. Scientists from the United States continue to work with Canadian scientists to improve representation of U.S. stocks within the North American genetics baseline, and the United States fully supports the sampling of all three mixed-stock fisheries to provide the most accurate estimates of harvest of U.S.-origin salmon in all three fisheries. Genetic analyses from the fishery at West Greenland are monitored extensively, including the use of genetic methods developed by U.S. scientists to track the number of U.S. fish harvested in the internal-use fishery. As a member of the West Greenland Commission, the United States is able to actively participate in discussions and negotiations regarding the fishery in Greenland. The United States remains very interested in continuing and expanding genetic testing of the salmon intercepted

in the St. Pierre et Miquelon fishery to improve our collective understanding of the composition of the mixed stock so that informed management decisions can be made regarding this fishery. The United States receives information on the fishery through the reporting France (in respect of St. Pierre et Miquelon) has been making annually to the NASCO meeting but neither NASCO nor the United States has specific knowledge or a role in how management decisions are made regarding the salmon fisheries in St. Pierre et Miquelon. Canada's Labrador fishery is closely monitored and controlled. Recent genetic information obtained through scientific sampling programs indicates that some level of U.S.-origin salmon may be taken in this fishery. Additional information is expected from ICES (and other sources) in 2015 to further clarify the likely harvest levels. Canada and the United States are members of the North American Commission where management measures to address interceptions of U.S.-origin salmon can be discussed and, as appropriate, the North American Commission can adopt regulatory measures to address such harvests.

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)

Endangered populations

Legally, socio-economic factors can not be taken into account when decisions are made regarding listing species as endangered or threatened under the U.S. Endangered Species Act. The law requires that these decisions be based solely on the best scientific and commercial data available. This law (specifically the "take" prohibitions of Section 9 of the ESA) currently prevents a directed fishery from being executed anywhere within the freshwater range of endangered salmon populations in Maine.

Historic Salmon Rivers

Socio-economic factors are considered when deciding whether or not to execute a fishery involving restoration populations. However, the severely depressed status of these populations has prevented managers from executing fisheries for sea-run salmon in these rivers in recent years. There is, however, a small recreational fishery on post-spawned domestic broodstock in the Merrimack River and in two small rivers in Connecticut, areas south of the GOM DPS. Approximately 3,000 hatchery broodstock have been released annually in these streams to support the fisheries with approximately 1,200 permits sold each year. As these programs continue to be phased out, the availability of broodstock to support these fisheries is likely to decline with time.

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 in the U.S. is zero tons. In order to detect any catch of Atlantic salmon in the United States, commercial fishermen are required to report any bycatch and observers are also placed on a sample of vessels to document catch. Databases from the NMFS observer program and fish dealers are queried each year; it is rare to observe more than five salmon (individuals) in either database on an annual basis. For recreational fisheries that may encounter salmon as bycatch (e.g., brook trout fisheries), law enforcement officers operate surveillance programs to ensure that salmon bycatch is limited. In addition, angler education is emphasized to ensure that anglers can differentiate between juvenile brook trout and salmon parr.

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	Interception of U.S.-origin salmon in West Greenland, St. Pierre et Miquelon, and Canada (Labrador)
Threat/ challenge F2	Bycatch of salmon parr in brook trout fisheries.
Threat/ challenge F3	Poaching.
Threat/ challenge F4	

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:	Continue to remain active in the West Greenland Commission and the North American Commission
	Planned timescale:	2013-2018
	Expected outcome:	Continued collaborative management of the fishery at West Greenland, enhanced collaboration with France (in respect of St. Pierre et Miquelon) regarding the fishery at St. Pierre et Miquelon, and enhanced collaboration with Canada regarding the fishery in Labrador
	Approach for monitoring effectiveness & enforcement:	Continued sampling at West Greenland and work with Canada and France (in respect of St. Pierre et Miquelon) to continue and expand genetic testing of the salmon intercepted off St. Pierre et Miquelon and Labrador to improve our collective understanding of the composition of the mixed stock.
Action F2:	Description of action:	Work with state authorities to ensure that recreational fisheries for other species, such as brook trout, reduce bycatch of salmon to the maximum extent possible.
	Planned timescale:	2013-2018
	Expected outcome:	Closures of certain areas of rivers, gear restrictions, bag limit reductions and other means could be agreed to within the context of a conservation plan for recreational fishing permitted by the State of Maine.
	Approach for monitoring effectiveness & enforcement:	Publication of protective fishing regulations coupled with continued surveillance of existing regulations and closed areas by law enforcement.
Action F3:	Description of action:	Maintain closures for all directed fisheries for Atlantic salmon
	Planned timescale:	2013-2018
	Expected outcome:	Reduced risk to productive capacity.
	Approach for monitoring effectiveness & enforcement:	Continued surveillance by law enforcement.

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)*

Identifying priority habitats and risks to productive capacity is a primary focus of Atlantic salmon recovery and restoration efforts in the United States. Prioritization of key habitats occurs at a variety of scales, ranging from the entire United States down to as fine as the river reach scale. At the national level, listing the populations within the GOM DPS as endangered and designating critical habitat for them reflects a desire to ensure that local adaptations and the habitats that created those adaptations are not lost.

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)

Endangered populations – When considering whether or not to list populations as threatened or endangered, by law, socio-economic factors cannot be considered. When federal agencies are considering effects of their actions on listed species, they must avoid jeopardizing the species and also avoid adversely modifying critical habitat. For actions that may cause some impact to the species or the habitats, when identifying alternative actions to avoid or minimize impacts, comparative economic impact of those alternatives are sometimes considered.

Restoration populations – A variety of cost-benefit analyses may be conducted through a number of state and federal environmental reviews for projects that may affect salmon. Similarly, NGOs and government agencies often consider restoration options with the highest biological benefit and lowest economic costs. Methods used by agencies, organizations and entities are different, however, making consideration of these factors less transparent.

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	Lack of accessibility
Threat/ challenge H2	Diminished productive capacity (reduced water quality and physical habitat structure)
Threat/ challenge H3	
Threat/ challenge H4	

Copy and paste lines to add further threats/challenges which should be labelled H5, H6, etc.

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:	Improve fish passage by removing dams, installing fishways, removing culverts, decommission roads, and upgrading road-stream crossings
	Planned timescale:	2013-2018
	Expected outcome:	Enhanced connectivity between freshwater habitats and the Atlantic Ocean
	Approach for monitoring effectiveness & enforcement:	Enumerate the number of habitat units and/or stream miles made accessible.
Action H2:	Description of action:	Continue to implement Clean Water Act and other federal and state laws
	Planned timescale:	2013-2018
	Expected outcome:	Continued water quality improvement
	Approach for monitoring effectiveness & enforcement:	Publication of attainment of state standards by U.S. Environmental Protection Agency
Action H3:	Description of action:	Conduct consultations on all federal actions in areas where Atlantic salmon Essential Fish Habitat is designated and issue conservation recommendations to avoid, minimize or mitigate impacts to salmon habitat
	Planned timescale:	2013-2018
	Expected outcome:	No net loss of productive capacity
	Approach for monitoring effectiveness & enforcement:	Completion of consultations under the Magnuson-Stevens Fishery Conservation Act
Action H4:	Description of action:	Issue conservation recommendations to avoid and minimize impacts to salmon habitat on all federal actions in areas where Atlantic salmon are listed as endangered and Critical Habitat is designated
	Planned timescale:	2013-2018
	Expected outcome:	No net loss of productive capacity
	Approach for monitoring effectiveness & enforcement:	Completion of consultations under the Endangered Species Act

Copy and paste lines to add further actions which should be labelled H5, H6, etc

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)*

(a) Private companies seek out locations for a fish culture facility based on suitable natural resources (i.e., sufficient water quality and quantity) which can provide optimal growing conditions for the species they are rearing. A formal application includes information on the species being cultured and an environmental characterization and baseline including a description of the anticipated physical and environmental impacts as a result of the operation of the facility. The baseline serves as a benchmark for monitoring the effects of fish culture operations on the receiving body of water and subsequent water quality. Active salmon hatcheries require a variety of state and federal permits to conduct their activities, these include measures required to minimize impacts to wild Atlantic salmon. The potential ecological and environmental impacts are considered during the federal consultation and permit review process.

(b) Private companies seek out locations for a lease site based on suitable environmental characteristics which can provide optimal growing conditions for the species they are farming. A formal application includes information on the species being cultured and an environmental characterization and baseline including a description of the anticipated physical and environmental impacts as a result of the operation of the farm. The baseline serves as a benchmark for monitoring the effects of farm operations on sediments, marine organisms, and water quality. Active salmon farms require a variety of state and federal permits to conduct their activities including protective measures to minimize impacts to wild Atlantic salmon. The potential ecological and environmental impacts are considered during the federal consultation and permit review process for authorizing new and existing lease sites.

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)

Sea lice treatments are administered under the direction of a certified veterinarian with the active drugs being regulated by the U.S. Food and Drug Administration. More recently, Hydrogen peroxide is being used more to control sea lice in marine salmon net pens. There is also a requirement that farms lie fallow between production cycles in order to reduce the likelihood of lice transferring from one year class of salmon to the next. These measures have been successful at reducing the amount of pesticides used to treat sea lice infestations and reduce impacts to the environment.

Most noticeably, there has been a change to the distribution and abundance of sea lice (*Lepeophtheirus* and *Caligus*) in Maine waters. More recently, the distribution of these species has overlapped between production areas showing a greater abundance of each in both zones. However, the overall numbers of sea lice found on farmed salmon in recent years are much lower than the counts in 2008-2009 where the salmon farming industry in the United States and Canada faced a major outbreak of *Lepeophtheirus* on marine sites located in Cobscook and Passamaquoddy Bays.

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) There have been no escapes of farmed salmon reported since implementing measures to reduce escapes as part of a Containment Management System (CMS) plans developed for each facility in 2005. The annual CMS audits demonstrate 100% compliance rates for commercial freshwater hatcheries in Maine.	
(b) There have been no escapes of farmed salmon reported from U.S. commercial marine salmon farms since implementing measures to reduce escapes as part of CMS plans developed for each facility in 2005. The annual CMS audits demonstrate 100% compliance rates for commercial marine salmon farms in Maine. However, putative aquaculture origin escapes have entered Maine rivers in 2011 and 2012 indicating escapes of farmed fish are occurring. With the possible exception of one fish in 2012, genetic analyses conducted on farmed fish captured at fish passage facilities in Maine have indicated the origin of these fish are not from U.S. farms. The Dept. of Agriculture, Fisheries and Aquaculture in the province of New Brunswick, Canada, has reported several escape incidences occurring at marine salmon farms (2010-2012) that could have presumably led to farmed fish escapees entering U.S. rivers.	
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)*
Article 5 (Aquaculture) -- In 2003, the National Marine Fisheries Service analysed the effects from continued operations of commercial Atlantic salmon aquaculture facilities in Maine. The recommended protective measures include the following: 1) use only local North American salmon stocks for production; 2) implementation of containment measures to reduce escapes; 3) audits and reporting requirements; 4) prohibitions on stocking transgenic salmon, and; 5) marking all farmed salmon placed in marine pens within the United States. Article 6 (State stocking programs) – None to report. Hatcheries still produce and stock brown trout in certain areas. Within each state there is, however, considerable coordination of inland and sea-run programs to minimize risks. Annex 4 (Stocking Atlantic salmon) – As referenced in other parts of this implementation plan, the United States has developed a rigorous broodstock management plan for federal hatcheries involved with salmon recovery efforts for the GOM DPS. This broodstock management plan is closely aligned with stocking plans developed by the State of Maine. Programs to restore runs of wild salmon were conducted on rivers south of the GOM DPS for many years. These were government-run programs that were supported by large scale hatchery stocking programs. These stocking programs had genetic management and broodstock management plans similar to the ones in place in Maine for the GOM DPS and consistent with NASCO guidelines. Due to damage to a key hatchery, poor returns, and severe budget reductions, all of these programs have been terminated as of 2014. The only stocking program south of the GOM DPS that continues is a limited fry stocking effort (~200,000 fry per year) to support the Connecticut River Legacy program, which seeks not to restore a self-sustained run but to maintain the ecological and cultural presence of Atlantic salmon in small areas of historic habitat within the state of Connecticut. The source of the fry is a hatchery domestic broodstock which has been developed over 30+ years from wild	

sea-returns of Atlantic salmon from the previous restoration program.

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)

Existing federal and State of Maine permits prohibit rearing transgenic salmon for commercial aquaculture within the United States. The U.S. Food and Drug Administration (FDA) is currently considering approval of Genetically Engineered (GE) Atlantic salmon for commercial sale and human consumption in the United States. The application filed by a private biotechnology company in the United States called Aqua Bounty specifically requested approval from the FDA for fish that are being grown outside of the United States that will be sold under the label AquaAdvantage® salmon as cleaned and gutted whole fish or further processed into filets. The FDA is considering information provided from the applicant and public comments before making a final determination.
http://www.fda.gov/AnimalVeterinary/DevelopmentApprovalProcess/GeneticEngineering/GeneticallyEngineeredAnimals/ucm280853.htm

In addition, The U.S. Department of Commerce (DOC) and the National Atmospheric and Atmospheric Administration (NOAA) have recently published Aquaculture policies that reflect broad goals including (1) encouraging and fostering sustainable aquaculture within the context of the National Ocean Policy; (2) protecting wild species and ocean ecosystems; (3) working internationally to learn from aquaculture best practices around the world and encourage the adoption of science-based sustainable practices; among others. There is, however, no specific mention of transgenic animals in these policies.

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

The United States has strict importation guidelines in place to minimize the risk of disease transfer between U.S. states and between the United States and foreign countries. The United States has a disease certification program in place for State, Federal and private commercial facilities rearing fish for commercial aquaculture, recreational fisheries and/or supporting the baitfish industry. Both State and Federal regulations are intended to complement one another to minimize the spread of pathogens into and across the United States. The United States is working to develop effective surveillance procedures and diagnostic testing techniques for all approved diseases of concern.

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)?

Threat/ Challenge A1	Genetic introgression and disease transfer from escapes of farmed fish and continued operations of commercial Atlantic salmon aquaculture
Threat/ challenge A2	Disease transmission from baitfish trade
Threat/ challenge A3	Loss of diversity in wild stocks
Threat/ challenge A4	State stocking programs for non-salmon recreational fisheries

Copy and paste lines to add further threats/challenges which should be labelled A5, A6, etc.

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:	Continue to monitor implementation of protective measures identified in the Biological Opinion from 2003. Continue collaboration with Canadian provincial and federal agencies to inform new regulations for consistency with U.S. federal permit requirements.
	Planned timescale:	2013-2018 (ongoing)
	Expected outcome:	Zero escapes, reduced disease transfer
	Approach for monitoring effectiveness:	Annual audits and follow up audits after escape events. Existing notification of escape events and formal NAC reports as a way to notify Canada if and when an escape event occurs.
Action A2:	Description of action:	Implement specific regulations and guidelines for importation of baitfish described in State laws and a National Aquatic Animal Health Plan (NAAHP).
	Planned timescale:	2013-2018 (ongoing)
	Expected outcome:	Reduced transmission of diseases of concern including; Viral Hemorrhagic Septicemia and Bacterial Kidney Disease.
	Approach for monitoring effectiveness & enforcement:	Wild fish health surveys, baitfish dealers surveys and pathogen screening at fish culture facilities. Enforcement of appropriate disease certifications required for distribution and importation.
Action A3:	Description of action:	Implement broodstock management protocols at conservation hatcheries.
	Planned timescale:	2013-2018
	Expected outcome:	Slow the rate of the loss of genetic diversity.
	Approach for monitoring effectiveness & enforcement:	Estimates of genetic diversity, such as alleleic variability (i.e. number of alleles per locus, alleleic diversity), and heterozygosity are obtained through the use of a comparable suite of molecular markers that are consistently used to monitor diversity over time.
Action A4:	Description of action:	Coordination with state programs that stock salmonids to support recreational fisheries.
	Planned timescale:	2013-2018
	Expected outcome:	Identification of potential areas of overlap of salmon and other stocked salmonids.
	Approach for monitoring effectiveness & enforcement:	Review of stocking reports and consultation with state authorities.

Copy and paste lines to add further actions which should be labelled A5, A6, etc

Appendix 1. Location of salmon aquaculture facilities.