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NAC Annual Report 2010
(Tabled by the US)

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1. Summary of Salmonid disease incidences

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Northeast Fish Health Committee Guidelines for Fish Importation
The NEFHC, which currently has representation from the states of ME, NH, VT, MA, CT, RI, NY, NJ, PA, MD, VA, WV and DE, was born out of the New England Salmonid Health Committee at the request of the Northeast Fisheries Administrators Association due to ever growing concerns about fish health and disease effects on populations, introduction of exotic pathogens to states' waters, and an increasing awareness that diagnosis and effective disease control measures are available. The most recent accepted guidelines for fish importation into northeastern states are provided in the link at the end of this section. However, proposed revisions to the NEFHC guidelines were recently approved by the NFAA, including the proposed listing criteria (immediately below).

Listing Criteria

- The identified pathogen shall be an obligate pathogen that has the potential to cause significant economic or biological loss among wild and cultured fish;
- The pathogen has a repeatable and robust means of detection and diagnosis.

The revised guidelines also offer the methods to be used: Sampling and laboratory test methods should be conducted according to current international, national and/or regional standards including those published in the OIE Manual of Diagnostic Tests for Aquatic Animals and the AFS-Fish Health Section "Bluebook" Inspection Section, with the sampling levels and methods specifically recommended in these guidelines.

Compliance with the guidelines is not mandatory, and annually there is a survey taken on the States' compliance with the Northeast Fish Health Guidelines for Fish Importation. VT, MA and ME fully comply with all the components of the NEFHG. CT expects full compliance in the near future. NH and NY are mostly compliant but need legislative action to be fully compliant. WV, NJ, PA are moving toward compliance but legislative action is required. MD and VA are not compliant and legislative action is unlikely. RI has not participated in or contributed to meetings for the past several years due to budgetary inability to conduct fish health inspections of state hatcheries.

The New England Fish Health Committee Guidelines and the 2008 (unrevised) Northeast Fish Health Committee Guidelines are available on the Maine IFW website (http://www.state.me.us/ifw/fishing/health/index.htm).

Currently, all commercial Atlantic salmon aquaculture production is from a single company which tests all hatchery facilities according to Canadian FHPR regulations which exceed those requirements set forth by the State of Maine Department of Marine Resources in accordance with Northeast Fish Health Guidelines for Fish Importation. These requirements include a third party technician to screen 60 fish per lot for each facility twice per year, for the following pathogens:
Infectious Salmon Anemia
Infectious Pancreatic Necrosis Virus
Infectious Hemorrhagic Septicemia Virus
Viral Hemorrhagic Septicemia Virus
Oncorhyncus masou Virus
Aeromonas salmonicida
Bacterial Kidney Disease
Yersinia ruckeri
Myxobolus cerebralis
Ceratomyxa Shasta

In addition to twice annual inspections, 60 broodstock are sampled at time of spawning for the same items listed and 10 fish are tested for ISAV as part of a pre-spawn inspection. Any saltwater fish used for spawning must be sampled at a 100% inclusion rate. The above sampling is conducted as part of a lethal sampling protocol.

Routine testing is conducted prior to spring and fall stocking to help insure only healthy fish are transferred to other facilities including salt water sites. Additional brood stock testing on specific spawn dates is required to comply with the requirements of foreign countries to export eggs on a yearly basis.

The Maine Transfer Permit Application Process requires each facility to submit the most recent fish health test results at time of application to allow the DMR the ability to review the health status of the shipping facility prior to any approval or denial being granted for the movement of fish or eggs.

Updates on specific pathogens of concern detected in Atlantic salmon in New England

ISAV – The United States Fish and Wildlife Service screening procedure for ISAv in the blood of captive sea-run Atlantic salmon held as broodstock has been updated from standard RT-PCR to the much more sensitive and specific quantitative RT-PCR method published by Snow et al., 2006. In 2010 the q-RT-PCR assay detected the ISAv HPR0 genotype in nine of more than 600 pre-spawn fish taken from the Penobscot River, Maine, and one of 53 sea run salmon from the Merrimack River, NH. Sequence analysis confirmed the HPR0 genotype. Based on experience in salmon farms in Europe and North America, this genotype is non-pathogenic and is considered the 'wild type' of ISAv. As a precaution, all fish testing positive were removed from the holding facilities.

ISAv screening of the salmon farms in Maine continues as mandated by the State of Maine through a program formed in conjunction with USDA/APHIS which requires monthly veterinary inspections and ISAv-specific testing of selected moribund fish at all salmon farms. The last confirmed positive ISAv detection on salmon farms in Maine was made in Jan 2006. HPR0 has been detected over the years and in fewer and fewer farms in recent years, until 2010 when no detection of HPR0 was made from farms in Maine.

Ichthyophonus – Screening for *Ichthyophonus* in sea-run Atlantic salmon has been conducted during 2008 to 2010 following the discovery by USFWS of *Ichthyophonus* spores in tissues of Connecticut (CT) River 2007 broodstock. Heart, kidney and spleen taken from Connecticut River and Merrimack (MK) River sea-run salmon were assayed by culture of heart tissue and histology of all tissues. Fish were determined positive if spores and/or hyphae were observed in culture and/or histology. During 2007-2010, 24% (n=181) of CT River sea-runs were positive and during 2008-2010, 15% (n=115) of MK River sea-runs tested positive. Sequence analysis of representative *Ichthyophonus* cultures indicate two closely related strains in the ATS of both the Connecticut and Merrimack rivers. As a follow-on, NOAA is conducting a histologic survey of *Ichthyophonus* in ATS collected during the Salsea-NA and West Greenland projects in 2009 and 2010.

As a consequence of the detection of IPNv at the Cronin NSS in 2008, USFWS has been working on developing a q-RT-PCR assay for detection of IPNv in non-lethal samples of wild ATS.

2. Summary of breaches of containment of salmonids from net cages

Species (Strain, if applicable)	Number[1]	Average size of fish[2]	Location[3]	Result Cause of the breach[4]
NONE				

Notes:
The last reported escape event from U.S. commercial production facilities was in 2003.

3. Summary of Salmonid introductions from outside the Commission Area

Species (strain, if applicable)	Number	Life Stage	Origin [1]	Destination [2]	Purpose [3]
None					

Notes:
The report includes transfers from outside the commission area for all private and federal hatcheries in Maine that annually stock Atlantic salmon in support of commercial aquaculture and recovery of the Gulf of Maine Distinct Population Segment as listed under the U.S. Endangered Species Act.

Further, in 2007 Arctic Char eggs were transferred from Alaska Fish and Game to the United States Department of Agriculture (USDA), Aquatic Research Station National Cold Water Marine Aquaculture Center in Franklin, Maine, for research with a condition that they were not to be introduced to Maine waters.

In 2006, Atlantic salmon eggs were transferred from Troutlodge in Washington State to USDA facility for research.

4. Summary of Transgenic activities within the Country Annex 1 of NAC(10)6

The Food and Drug Administration received an application for approval to sell transgenic salmon in the United States. A private biotechnology company called Aqua Bounty, is pursuing legal authorization from the United States Food and Drug Administration (FDA) to distribute Genetically Engineered (GE) Atlantic salmon for commercial sale and human consumption in the U.S. The fish are being marketed as AquaAdvantage® salmon and will be sold in select retail stores as cleaned and gutted whole fish or further processed into filets. The application is being reviewed under the authority of the Federal Food, Drug and Cosmetic Act as a new animal drug because the genetic construct used to make genetically engineered animals is an "article" that meets the definition of a new animal drug. The FDA is reviewing this application in regards to food safety issues focusing on consumption hazards and associated risks posed to the public and will comply with all statutory requirements of the National Environmental Policy Act; which includes an Environmental Assessment (EA) and summary Finding of No Significant Impact (FONSI) or alternatively Environmental Impact Statement (EIS). The assessment of environmental impacts includes an evaluation for the following specific conditions of production and use; 1) production of eyed eggs in Prince Edward Island (PEI), Canada; 2) shipment of eyed eggs to Panama; 3) grow-out of fish in the highlands of Panama; 4) processing of fish in Panama; and 5) shipment of table-ready processed fish to the U.S. Therefore, because the fish is being grown outside of the U.S., only the importation and distribution of the processed whole fish and filets are being considered in the application. Any deviation from the above process will trigger a new action and will have to be reviewed under a separate application. Furthermore, the FDA is required to consult with NOAA Fisheries on environmental risks associated with GE seafood products, including the impact on wild fish stocks. Staff from NOAA Fisheries Aquaculture Program and Office of Protected Resources in Silver Springs, Maryland is currently consulting with the FDA on this manner. At this time, more research is needed to identify the impacts that escaped transgenic salmon would have on natural populations and their habitat before use for commercial aquaculture is considered.