

North American Commission

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Review of the Conservation Measures for Atlantic Salmon in the United States in 1999

Current Status

Documented total adult salmon returns to U.S. rivers in 1999 amounted to 1,452 salmon, 18% fewer than in 1998. The majority of the returns were recorded in Maine with the Penobscot River accounting for nearly 67% of the total New England returns. Overall 26% of the adult returns to New England were 1SW salmon and 74% were MSW salmon; most (65%) of these fish were of hatchery smolt origin. Of the total returns, approximately 34% were naturally reared.

A total of 13,664,000 juvenile salmon (fry, parr and smolts) were stocked in 1999. The Connecticut River received the largest percentage (47.2%), the majority of which was fry. Maine rivers received approximately 33% of the total, followed by the Merrimack River with 13%. In addition to the juveniles stocked, adults were stocked by the Maine and Merrimack programs.

The Annual Report of the U.S. Atlantic Salmon Assessment Committee (2000/12) can be found at www.fws.gov/r5crc.

Conservation and Management Highlights in 1999

Four obstructions to fish passage were removed in Maine in 1999. On the Kennebec River, the Edwards Dam was removed in July, providing all anadromous fish access to 17 miles of riverine habitat for the first time in more than 150 years. In addition, two dams in the Penobscot River drainage were removed, the Flour Mill Dam on Souadabscook Stream and the Brownville Dam on the Pleasant River. In addition, the Town of Hampden Recreation Area dam in the Penobscot River drainage was breached.

In recent years, the only directed fishing for sea run Atlantic salmon allowed in the U.S. was a catch and release fishery in Maine. In 1999, the estimated number of salmon caught and released in Maine was 212. In response to increased concern over the condition of the stocks, in December 1999, this catch and release fishery was closed by the State of Maine.

In 1999, the U.S. Fish and Wildlife Service and the National Marine Fisheries Service conducted an updated review of the status of the Gulf of Maine Distinct Population Segment of Atlantic salmon, including a review of the first year of implementation of the Maine Conservation Plan. A Distinct Population Segment of Atlantic salmon was identified in the U.S., which is discrete and significant. The biological status of that distinct population segment was updated including documented adult returns, redd counts and juvenile population estimates. In addition the following factors were examined: present or threatened destruction, modification, or curtailment of habitat or range; overutilization for commercial, recreational, scientific or educational purposes; predation, disease and competition; inadequacy of existing regulatory mechanisms; and other natural or manmade factors affecting the continued existence of salmon. The 1999 Status Review can be downloaded from the following web site:

<http://news.fws.gov/salmon/asalmon.html>. Based on this review, the U.S. Fish and Wildlife Service and the National Marine Fisheries Service concluded that the Gulf of Maine distinct population segment of Atlantic salmon is in danger of extinction and on November 17, 1999 proposed to list it as endangered under the U.S. Endangered Species Act. The comment period on this proposal has now closed and a decision as to whether or not to finalize the listing action is expected on or before November 17, 2000.

Under the 1996 Amendments to the federal fishery management act, the Magnuson-Stevens Fishery Management and Conservation Act, essential fish habitat has been designated for Atlantic salmon. Essential fish habitat for Atlantic salmon is described as all waters currently or historically accessible to Atlantic salmon within the streams, rivers, lakes, ponds, wetlands and other water bodies of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island and Connecticut. Federal action agencies which fund, permit or carry out activities that may adversely impact essential fish habitat are required to consult with the National Marine Fisheries Service.

Watershed Councils have been formed on many of the rivers in New England. These locally lead groups have made significant contributions to protection of Atlantic salmon and their habitat. Members assist in fry stocking and habitat assessment. Large portions of some watersheds have been protected through the acquisition of conservation easements. These groups also facilitate the implementation of and monitoring of best management practices for forestry and agricultural activities.

Water use management plans are being developed to ensure that requests for water withdrawals for agricultural irrigation are balanced with the need to protect habitat for salmon. While these plans are not yet complete, permits issued in 1999 were conditioned to protect minimum flows for Atlantic salmon and to prohibit withdrawals when water levels reached that minimum flow level.

A list of research activities in 1999 is attached.

Research Activities in 1999

Ongoing research is listed below by category, title and researcher. Additional details can be found in the U.S. Assessment Committee Report (www.fws.gov/r5crc).

Smoltification and Smolt Ecology

Effects of acidity and aluminum on Atlantic salmon smolts in Maine

Terry Haines

An individual-based approach to evaluating the relationship between habitat choice, life history strategies and smolt production

Benjamin Letcher

Impact of stream habitat improvement on smolting, maturation and survival of Atlantic salmon

Stephen McCormick, Mark Shrimpton, and Kevin Whalen

Bioenergetics of Age-1 Atlantic salmon in Vermont tributaries

Donna L. Parrish and James R. Olsen

Environmental and hormonal regulation of sensory biology and behavior of hatchery and wild populations of Atlantic salmon smolts

Stephen McCormick and Gayle Barbin

Smolt production dynamics of an Atlantic salmon population in eastern Maine

J.F. Kocik, K.F. Beland and T. Sheehan

Atlantic salmon overwinter survival and smolt production in the Narraguagus River

J.F. Kocik, K.F. Beland, T. Sheehan and L. Suslowicz

Marking

Reproduction and alevin marking techniques for Atlantic salmon

William F. Krise

Use of fast balneation (osmotic induction) techniques to induce a calcein mark in Atlantic salmon sac-fry

Jerre W. Mohler

Development of prototype hand-held calcein detection device

Jerre W. Mohler

Examining the feasibility of using strontium to mark Atlantic salmon fry

Ruth E. Haas-Castro

Investigations into striped bass ultrasonic tag retention rates

T.F. Sheehan, J.F. Kocik and K.F. Beland

Evaluation of successful migration, nearshore marine growth rates, and adult returns using marked hatchery smolts stocked at specific locations in the Penobscot River

R. Brown, F. Trasko, M. Loughlin, R. Haas-Castro

Culture / Life History

Growth pattern of Labrador Sea Atlantic salmon post-smolts and temporal scale of recruitment synchrony for North American salmon smolts

Kevin Friedland

Evaluation of alkalinity enhancement of Craig Brook National Fish Hatchery water on Atlantic salmon production

Terry Haines, Benjamin Spaulding, Stephen McCormick, Barnaby Watten and William F. Krise

Relative survival of hatchery Atlantic salmon fry released at different stages of development and from different maternal origin

Benjamin H. Letcher

Molecular mechanisms of olfactory transduction in Atlantic salmon

Weiming Li

Physiological and endocrine changes during hatchery rearing and release of Atlantic salmon in the hatchery and in the wild

Stephen McCormick

River-specific egg size for Downeast Maine Atlantic salmon: a pilot study

Ruth E. Haas-Castro

Atlantic Salmon Conservation / Management

Comparison of Atlantic salmon marine growth and scale characteristics for three Maine rivers

T.F. Sheehan, J.F. Kocik, E. Atkinson, G.Horton, and D. Ouellette

Northeastern watersheds and rivers

Mark Anderson and Michelle Babione

Assessment of triploidy as a tool for mitigating impacts of commercially cultured Atlantic salmon in wild stocks

Howard J. Kerby

Stock Identification

Stock identification of Atlantic salmon captured during the local use fishery in Greenland

D. Reddin, R. Brown, T. King, P. Kannenworff

Genetics

Genetic stock identification of Atlantic salmon inhabiting North America with emphasis on the Downeast Rivers in Maine

Tim L. King

Technical assistance in population dynamics and fish culture

Tim L. King

Evaluating the Connecticut River Atlantic salmon restoration effort: genetic variability, stocking success and habitat quality

Benjamin H. Letcher

Assessing the risk posed to native Atlantic salmon in Maine by escapement of European salmon with emphasis on the potential for outbreeding depression

Philip E. McAllister and Clifford E. Starliper

Assessment of spatial and temporal distribution of genetic diversity in Atlantic salmon

William B. Schill

Fish Health / Nutrition

Resistance of Atlantic salmon to major bacterial pathogens

Rocco C. Cipriano and Clifford E Starliper

Detection of covert *Aeromonas salmonicida* infection in Atlantic salmon and other salmonids

Rocco C. Cipriano

Enhanced survival of Atlantic salmon after vaccination against furunculosis

Rocco C. Cipriano

Prevalence and contagion of *Aeromonas salmonicida* based on interactions between hatchery and free-ranging fish

Rocco C. Cipriano

Further investigations on the nature of vertical transmission of *Aeromonas salmonicida*

Rocco Cipriano

Relationship between bacterial pathogens and survival among mature, sea-run Atlantic salmon

Rocco Cipriano

Pathology and mortality associated with newly emergent fry from Penobscot and Downeast river stocks of Atlantic salmon

Rocco Cipriano

Detection and transmission of a retrovirus disease from broodstock from the Pleasant River

Rocco Cipriano

Development of monoclonal antibodies to Infectious Salmon Anemia Virus (ISAV) and partial characterization of ISAV antigens recognized by Atlantic salmon antibodies

Chris Ottinger and Philip E. McAllister

Production of monoclonal antibodies for immunoassay development and protein purification

Chris Ottinger

Population Estimates / Tracking

A comparison of night seining and day electrofishing to sample juvenile Atlantic salmon in streams

Gabe Gries and Benjamin H. Letcher

Estimation of Atlantic salmon smolt passage and outmigration in the Connecticut River by remote acoustic telemetry

Alex Haro, Stephen McCormick, and Benjamin H. Letcher

Movements and habitats of Atlantic salmon adults in the Westfield River

Donald Pugh and Boyd Kynard

Movement and spawning activity of adult sea-run Atlantic salmon in the Merrimack River watershed - 1999

Douglas A. Smithwood, Joseph F. McKeon, and David F. Batchelder