
HABITAT HOTLINE ATLANTIC

Atlantic States Marine Fisheries Commission

Spring 2006, Volume XIII, Number 2



Fish Passage Restoration Efforts Continue

U.S. Fish & Wildlife Service National Fish Passage

In the few hundred year history of the United States, millions of culverts, dikes, dams and other artificial barriers have been erected on waterways to provide drinking water, irrigation water, flood control, electricity and transportation. Although functionally important, these barriers have dramatically altered the landscape and block passage of fish and other fauna that move up and down river systems.

In 1999, in response to growing concern from the public, the U.S. Fish and Wildlife Service (FWS) initiated the National Fish Passage Program to work with state, tribal and non-governmental partners to address the problems of fish passage. The National Fish Passage Program (NFPP) uses a voluntary, non-regulatory approach to remove and bypass barriers. Although the NFPP is a nation-wide effort, projects are implemented on a regional or state-level. Since 1999, the NFPP has leveraged partner contributions totaling \$6.2 million to support 76 fish passage projects and restore access to over 3,443 miles of river habitat and 65,088 acres of wetlands for fish spawning and growth.

Restoring fish passage benefits people, fish and other animals. Fish passage projects increase habitat available for fish spawning and growth. Commercial and subsistence fishermen and recreational anglers all benefit from larger fish populations, which are distributed across more available habitats. More natural flows, temperatures, and improved spawning habitat benefit Atlantic salmon, sturgeon, striped bass, shad and river herring, and other flora and fauna associated with river systems.

Northeast Region Accomplishments

From 1999-2002, the FWS Northeast Region (Region 5) worked with 38 different partners to implement 11 projects that have improved fish passage by removing dams or de-

signing fishways that allow passage beyond barriers. These projects have directly improved passage to 508 miles of riverine habitat and over 1,000 acres of wetland area. Region 5 has worked with partners to identify and prioritize fish passage barriers within state or watershed boundaries as part of a larger, national initiative to develop an inventory of all fish passage barriers (*See Around the Coast: Spotlight on Fish Passage Decision Support System, page 4*).

East Machias Dam, Maine

The East Machias Dam was located on one of Maine's eight "wild" salmon rivers. The dam was constructed in 1926 to produce power but had not produced power since the late 1950s. The waters immediately downstream of the East Machias Dam served as a holding pen for adult Atlantic salmon and other searun fish waiting to move upstream, and provided harbor seals and cormorants with easy feeding opportunities. Unfortunately the dam became a community eyesore and safety hazard that required annual maintenance to clear away debris jams and maintain access for migrating fish. In 2000 the dam was removed. Dam removal minimized predation on fish trapped behind the barrier and eliminated the need for annual maintenance. Dam removal also provided free passage to 296 river miles for Atlantic salmon, alewife, shad, blueback herring and rainbow smelt.

Good Hope Dam, Pennsylvania

The Good Hope Dam was removed from Conodoguinet Creek, a tributary of the Susquehanna River, in 2001. At the time of removal, Good Hope Dam was not functional, was in an advanced state of disrepair, and had no identifiable owner. The dam was the first blockage to migratory fishes on Conodoguinet Creek. Removal of the dam opened 22 miles of riverine habitat. In addition to removing the dam, the

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project included before and after monitoring of dam removal conditions and a restoration component to provide additional spawning and rearing habitat for shad, river herring and other fish. Removal also restored a significant reach of free flowing river and its ecology, as well as eliminating a serious public safety hazard. A number of federal and state partners were involved including the EPA, Army Corps of Engineers and Pennsylvania Fish & Game.

Southeast Region Accomplishments

The southeastern U.S has a rich aquatic fauna that support recreational and commercial fisheries valued at hundreds of millions of dollars. Dams, channelization, dredging, mining, and exotic species have heavily impacted aquatic resources in the Southeast by degrading habitats, decreasing or eliminating water flows, and fragmenting native populations.

Since 1999, the Southeast Region (Region 4) and its partners have initiated 17 projects to improve fish passage, such as planning watershed passage needs, removing artificial barriers, providing fishway designs and structures, and identifying alternative operating procedures for locks and dams. These projects have directly improved passage to over 800 miles of riverine habitat. An additional 1,500 miles have been indirectly improved by these projects.

Dike Removal at Merritt Island National Wildlife Refuge, Florida

The Merritt Island National Wildlife Refuge lies within the Mosquito Lagoon-Indian River-Banana River estuary complex of east-central Florida. During construction of the Kennedy Space Center over 40 years ago, high marsh habitats were completely cut off by a 1.02 miles dike. The impoundment had been previously breached for tidal access at the north and south ends, however, true hydrological restoration was not achieved due to the remaining dike. Removal of the dike, followed by flow improvements, allowed unrestricted tidal flows and fish passage into 38 acres of former salt marsh at the Merritt Island National Wildlife Refuge. Red drum, snook, tarpon, black drum, spot, and striped mullet can now pass between the marsh and ocean habitats.

Rains Mill Dam Removal - Neuse River Basin, North Carolina

Rains Mill Dam on the Little River in the Neuse River Basin was removed in November 1999. A U.S. Fish and Wildlife Service led partnership removed the barrier as part of a larger initiative to restore fish passage at five sites in the Neuse River Basin. Removal of dam

opened up 151 miles of suitable spawning and rearing habitat for alewife, blueback herring, American shad, American eel, hickory shad, striped bass, Atlantic sturgeon, and shortnose sturgeon.

2006 Funded Projects

On April 22, 2006, Acting Interior Secretary Lynn Scarlett announced that the U.S. Fish and Wildlife Service and a variety of partners will spend more than \$8 million this year to remove or bypass 98 barriers to fish passage in 26 states. The Service will spend \$3 million in federal dollars on the 2006 projects, which will be matched by \$5.6 million from partners. Completion of all the 2006 projects will open a total of 811 miles of additional habitat. In Maryland, work will be done to improve passage for migratory American eels. In North Carolina, program partners will survey river herring spawning habitat on the Nottoway-Blackwater-Chowan River Basin. In Maine, work continues on the Pensobscot River restoration which will improve habitat for Atlantic salmon and other diadromous fish.

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ASMFC HAPPENINGS

COMPLETE SET OF ASMFC SPECIES HABITAT FACTSHEETS AVAILABLE

With the recent publication of 12 new species-specific habitat fact sheets, detailed habitat information is now available for all species managed by the Commission. The fact sheets are all contained in the Commission publication "Healthy Fisheries Need Healthy Habitats," which was first released in December 2004 and profiled habitat information on the first 14 species. The fact sheets include information on habitat use, areas of particular concern, habitat threats, and recommended research needs and management considerations. They are intended to provide habitat managers and others interested in habitat conservation with a quick guide to fishery-related habitat issues along the coast, aiding managers in their efforts to minimize impacts and restore important habitat areas. The fact sheets are also available online via the Commission's website at <http://www.asmfc.org/habitatInfo.htm>. To obtain the new fact sheets or a complete set, please contact Jessie Thomas, Habitat Coordinator, at (202)289-6400 or jthomas@asmfc.org.



COMMISSION WELCOMES NEW HABITAT COORDINATOR

The Atlantic States Marine Fisheries Commission welcomes Jessie Thomas. Jessie is the new coordinator for the ASMFC Habitat Program. Jessie recently earned her Master's Degree from Delaware State University. She investigated American eel habitat utilization and movement patterns. Since January, she has been an intern at the Natural Resources Defense Council in Washington, DC working on legislative issues such as Magnuson-Stevens Act and Endangered Species Act reauthorizations and endangered species. Welcome Jessie!

AROUND THE COAST: COMPUTER PROGRAMS HELP RESTORATION DECISIONS

A Decision Support System (DSS) is a computer-based system that helps decision makers integrate technologies, data, documents, knowledge and/or models to identify and solve problems, complete decision process tasks, and make decisions. Generally speaking, the possibilities for types of DSS are limited only by the needs of the users and the developer's imagination. There is no one DSS; they are as diverse as the problems they help solve. This diversity requires that decision support systems are built in a variety of ways using the most appropriate methods and tools for the individual application. The skills of potential DSS users vary widely as well, further necessitating multiple approaches to DSS development. Some small, highly trained user groups may want a powerful modeling tool with extensive functionality at the expense of ease of use. Other user groups less familiar with geographic information system (GIS) and spatial data may want an extremely easy-to-use application for a wide public or otherwise non-technical audience. In the natural resources management arena, DSS tools are becoming more prevalent.

In 1999, the U.S. Fish & Wildlife Service (FWS) initiated a project to develop a comprehensive inventory of all fish passage barriers that could be used for planning and prioritizing restoration efforts. The end result is a powerful tool—the Fish Passage Decision Support System.

What is the Fish Passage Decision Support System?

The Fish Passage Decision Support System (FPDSS) is a comprehensive database of barriers preventing fish movement. The database provides barrier information, such as location, type, size, owner, passage capabilities, associated fish species, and local habitat information. The inventory of barriers is complemented by a host of analytical tools. Most importantly, the FPDSS is an internet-based, geographically-referenced system. It provides on-line data entry, and a mapping utility program with analytical capabilities. The goal of the FPDSS is to include all barriers that prevent or inhibit fish or other aquatic species from reaching historic habitats, including dams, culverts, inefficient fishways, water diversions, ineffective screens, and inadequate flows or water quality.

What does the Fish Passage Decision Support System do?

The FPDSS helps fisheries scientists prioritize fish passage projects, identify critical areas, and make better management decisions for implementing projects. The many tools embedded in the FPDSS allow users to access data quickly using just a few simple "hot" buttons. Point-and-click operation is used wherever possible.

How does the Fish Passage Decision Support System work?

The FPDSS receives data on barriers from various local, state, and federal barrier inventories. Upon receipt, the data are mapped into the FPDSS data structure. A complete list of barrier/dam data sources is available on the website at:

<http://fpdss.fws.gov>. Note that barriers in the inventory have not been ground-truthed by the U.S. FWS and therefore are considered potential barriers.

The FPDSS also has an analytical tool to model the effects of barrier removals. The barrier removal modeling operation allows a user to better understand how the removal of a barrier from a stream affects the local aquatic environment. The modeling tool allows the user to select one or more barriers in a watershed and calculate the number of stream miles that would be connected if the barrier(s) were removed. The model uses the 1:100,000 National Hydrography Dataset (NHD). The NHD is a database of flow-networked stream "reaches". Walking upstream and downstream of the selected barrier(s), the model adds up all NHD stream reaches, including tributaries, until it encounters another barrier or the end of the stream. The tallied reaches are then added together to provide total stream miles opened.

The model operation returns information for only one factor in evaluating which barriers are good candidates for removal - total stream miles opened. Factors such as the presence of non-native (exotic) species, contaminants, land-owner cooperation, and the availability of funds are also important. If a barrier is not adjacent to a NHD stream reach, the FPDSS cannot determine which reach will be opened for species passage when the barrier is removed. As the NHD becomes more comprehensive, this error will become less frequent.

IN THE NEWS

The National Fish Passage Program is cooperating with partners and other FWService programs to enhance the FPDSS and to incorporate other sources of information. The FPDSS currently includes databases such as the Army Corps of Engineers' National Inventory of Dams, 30 state dam databases and barriers from the Pacific States Marine Fishery Commission's StreamNet database. USFWS biologists are entering data from recent inventory projects, and data on dams, culverts, dikes, and irrigation diversions from numerous cooperating agencies and organizations are also being added on a continuous basis.

The Future of the Fish Passage Decision Support System

Additional partnerships are needed to expand the data layers within the FPDSS. The National Fish Passage Program is looking for access to databases that have barrier, fish, and habitat information. If you would like to cooperate with this important effort or would like more information about the FPDSS, please contact the National Fish Passage Coordinator.

For more information, contact:

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Increased Chesapeake Bay SAV Acreage in 2005

Chesapeake Bay underwater grass acreage increased 7 percent in 2005 to 78,260 acres, reaching 42 percent of baywide restoration goals, according to data released by the federal-state Chesapeake Bay Program. The 2005 acreage marks the second consecutive year of moderate gains for underwater grasses, which are critical to the Bay ecosystem. While the increased acreage is encouraging, scientists in Maryland and Virginia are concerned about 2006 abundance due to a widespread defoliation of eelgrass in lower and mid-bay areas that occurred several months after those areas were surveyed. Scientists believe last summer's unusually high water temperatures and calm conditions caused this unusual and extensive loss of eelgrass in the Bay's higher salinity areas in August and September. Scientists conducting field observations to assess the potential impact on 2006 bay grass abundance report that many areas are recovering rapidly, but the full recovery will not be known until late-June when aerial surveys of those areas are completed. Source: Chesapeake Bay Foundation

Beaver Dams Create Healthy Downstream Ecosystems

Beavers, long known for their beneficial effects on the environment near their dams, are also critical to maintaining healthy ecosystems downstream. Researchers have found that ponds created by beaver dams raised downstream groundwater levels in the Colorado River valley, keeping soil water levels high and providing moisture to plants in the otherwise dry valley bottom. Researchers at the Colorado State University and the U.S. Geological Survey noted that water diverted by beaver dams is forced out of the natural stream channel and spreads across and down the valley for hundreds of meters. In addition, dams built on the river changed the direction of groundwater flow in the valley. The changes caused water to infiltrate the riverbanks and flow underground toward the sides of the valley, instead of down the center of the valley. Source: American Geophysical Union

Alien Iguanas Overrun Florida Island

The tiny island town of Boca Grande, Florida in the Gulf of Mexico, normally known for tarpon fishing, is now becoming known for a new resident, black, spinytail iguanas. The reptiles ruin landscaping, spark power outages, and weaken protective sand dunes with their burrows. Although the iguanas have been on the island for several years, only recently have county officials focused on eradication. Lee County commissioners recently approved a special tax on Boca Grande residents to cover the cost of removing the invasive species. Source: National Geographic

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Early Visit From Rays Decimates River Oysters

A surprise visit by cow-nosed rays wiped out hundreds of thousands of oysters just days after the shellfish were planted in the Piankatank River. Rays ate an estimated 90 percent of the 775,000 oysters that the Chesapeake Bay Foundation (CBF) and The Nature Conservancy (TNC) placed on a man-made reef in the river. Rays have become an annoyance and sometimes a major threat to oyster restoration efforts. They have eaten Corps of Engineers' oyster plantings in the Great Wicomico River on the Northern Neck. Rays also appear to be increasing, and some think declines in shark populations, their natural predator, are contributing to increased numbers of rays. Rays migrate north along the Atlantic coast and enter the bay in the spring to calve. Rays entered the bay ahead of schedule this spring, possibly in response to warmer-than-normal water temperatures. Source: Richmond Times Dispatch

Undersea Volcano's Eruption Captured on Video

A NOAA-led team of ocean explorers captured dramatic video and sound recordings of a long-term deep sea volcanic eruption first discovered in 2004 on the Mariana

Arc. The volcano is one of many on the Mariana Arc, part of the "Submarine Ring of Fire" that circles the Pacific Ocean basin. Bob Embley, an oceanographer with the NOAA Pacific Marine Environmental Lab and chief scientist on the 2004 and 2006 missions along with his co-authors, reported the findings of the missions in the May 25 issue of *Nature*. The paper presents the first observations of a deep-sea eruption on a submarine arc volcano and its effects on the surrounding ocean, and describes plumes of sulfur-rich fluids and volcanic ash expelled in pulses from a crater that in 2004 measured nearly 50 feet in diameter at a depth of about 1,800 feet. A 2006 NOAA-sponsored mission completed earlier this month obtained new and dramatic video and audio recordings of the continuing eruption. An interdisciplinary team of 21 scientists from the U.S., Japan, Canada and New Zealand sailed on the research vessel *Melville*, operated by the Scripps Institution of Oceanography. The science team worked closely with the Deep Submergence Operations Group of Woods Hole Oceanographic Institution to use the remotely operated vehicle *Jason II* to explore and collect samples on nine different active submarine volcanoes. A chronicle of the mission, including eruptive sounds and images, is available at <http://oceanexplorer.noaa.gov/explorations/06fire/>. Source: NOAA Public Affairs

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