

Fish Passage in the Southern New England-New York Bight Coastal Program Area

Restoring Riverine Habitat

Fish Barriers in the Southern New England New York-Bight Coastal Program Area

There are over 5,400 large dams in Massachusetts, Rhode Island, Connecticut, New York, and New Jersey as well as thousands of low head dams, water control structures and culverts that prevent fish movement and migrations. Many of these obstacles are within the boundaries of the Southern New England New York-Bight Coastal Program (SNEP) area and block important riverine habitat for resident and several migratory fish species. Removing barriers is critical for the survival of several migratory species including alewife and blueback herring, American shad, sea-run brook trout and American eel. In order to protect and restore habitat for fish, SNEP develops partnerships, provides funding and technical expertise, and collaborates with U.S. Fish and Wildlife Service offices, other federal and state agencies, NGOs, private landowners and corporate interests. Restoring rivers and increasing fish populations boosts the biological productivity of the entire river corridor, as well as estuaries and oceans for every living thing including aquatic insects, mussels, waterbirds, furbearing mammals, seabirds, marine mammals and commercially and recreationally important fish.



Horseshoe Falls in Washington County, Rhode Island is a barrier to many species of migratory fish.

Restoring Riverine Habitat

Dam removal can be the best all around method for achieving fish passage because it removes a barrier and restores full ecological function to a natural system. While dam removal would provide the best habitat for fish, often dams need to be maintained because of their function: hydro power generation, water supply, flood control, or their historical or aesthetic significance. When removing or partially breaching a dam is not an option, we turn to fish passage opportunities.

Fish Passage Options

Fish passage can be achieved in a number of ways and is determined by the sites individual characteristics. SNEP staff inspect the site and choose from three types of fishways: engineered technical fishway, nature like fishway, or rock ramp. Technical fishways employ engineering designs that are typically concrete or aluminum fish ladders in a style known as a Denil fishway design. These structures provide a cascading effect which slows the water velocity and allows for design of specific swimming speed that the desired species can manage. Nature-like fishways are designed to mimic nature by providing a smaller bypass stream around a dam. Lastly, rock ramps create a rock cascade covering the entire width of the channel, making a white-water ramp that goes up and over the existing dam. This design is effective for passing diadromous as well as resident species and is constrained to low head dams.

After the type of fishway is determined, SNEP staff provide support, biological expertise and partner building as well as access to our U.S. Fish & Wildlife Service Fisheries Division hydraulic engineers who are highly regarded fish passage experts in North America. Working closely with state fish biologist, we provide a conceptual plan for a fishway; location, basic design, slope, and



NOAA

River herring

configuration. This information is then used by a professional engineer with experience in fishway design to develop plans suitable for construction.

SNEP Fish Passage Projects Completed and Ongoing in Rhode Island

Wood-Pawcatuck River Lower Pawcatuck River Restoration Team

The Bradford Fishway repair involved the redesign and rehabilitation of the Bradford Fishway to prevent structural failure, improve efficiency and ensure sustained anadromous fish passage to the Pawcatuck River system. By improving fish access to ten miles of upstream spawning and nursery habitat, the team, led by the Wood/Pawcatuck Watershed Association, aims to increase the size of anadromous fish runs. Target species include American shad, river herring, alewife, blueback herring, American eel and brook trout.

Fish Passage Restoration in the Upper Pawcatuck River

Fish passage through the upper Pawcatuck River will be provided by either removing dams or constructing fishways at Fishing Falls Dam, Horseshoe Falls Dam, and Kenyon Dam. Providing passage at the three dams will restore access to seven miles of riverine habitat and nearly 1,300 acres of spawning or rearing habitat, including the 1,000-acre Worden Pond, on the upper Pawcatuck River.

Ten Mile River

The Ten Mile River was dammed at its mouth early in the twentieth century to create an industrial water supply, today called Omega Pond. This first dam and the next two dams upstream, the Hunts Mill and Turner Reservoir dams,



Fishway at the Wood-Pawcatuck River is an example of a technical fishway.

are the proposed sites for fish ladders. Building fishways at these three dams will provide river herring with access to approximately 340 acres of spawning habitat and three miles of riverine habitat. This spawning habitat will support a fish run of over 200,000 river herring and potentially 25,000 American shad.

Pawtuxet River

The Pawtuxet River once supported annual runs of river herring, shad and Atlantic salmon. Dam construction during the 19th century blocked fish passage into the river system, leading to the decline of the runs. The project will restore fish passage with a partial dam removal, reopening seven river miles of fish habitat in the main stem of the Pawtuxet River.

Lower Blackstone River

Over the last 10 years SNEP biologists have worked with several working groups in the Blackstone Watershed. Fish passage projects at the Main Street Dam, Old Slater Mill Dam, Valley

Falls Dam, and possibly the dam at Elizabeth Webbing, are well on their way to becoming a reality. The Blackstone River Fish Passage Restoration Project final Environmental Assessment details all aspects of the project and is now available. Over \$4 million is being secured from both private and federal sources.

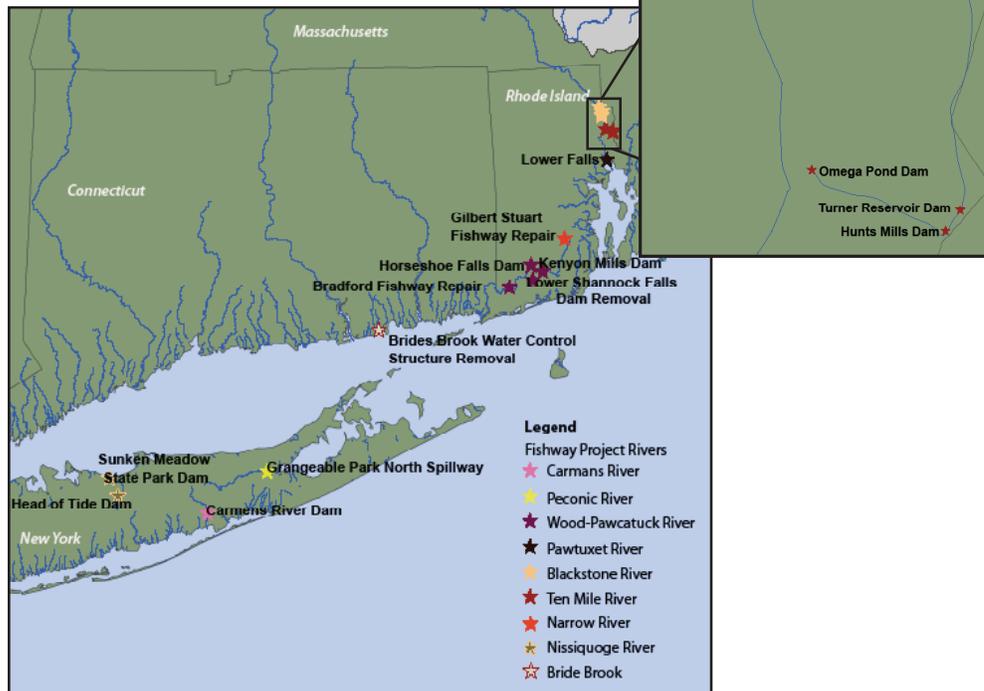
Narrow River

Narrow River has a natural channel to the mouth of Narragansett Bay. The first obstruction on this river is a dam serving the historic grist mill at Gilbert Stuarts Birthplace Museum. Diversion of water to run the mill attracts fish away from the fishway presently in place. SNEP has worked with the Rhode Island Department of Environmental Management to design and secure funding to make improvements to the existing fishway. The original fishway project allowed nearly 300,000 fish access to the lake.

Other Fish Passage Completed or Construction Underway

Shad Factory Brook, Massachusetts

The completed reconstruction on this fishway will promote the recovery of American shad, one of two extant populations in all of the Narragansett Bay Watershed.



Bride Brook, Connecticut

Replacing two 150 foot by six foot culverts on Bride Brook with an open channel will restore diadromous fish populations including the catadromous American eel. Additionally, this project will restore 50 acres of salt marsh.

Carmens River, New York

A fish ladder installed at the Hards Lake Dam allows native fish to move upstream beyond a previously impassable barrier to spawn in Hards Lake. Preliminary designs are being prepared for the next two impediments, Upper and Lower Lake Dams.

Peconic River, New York

Construction of a rock ramp at the south spillway in Grangebel Park will replace a seasonally installed aluminum fishway that has been in place since 2002. Because we manually lifted fish over the dam for four years prior to installation, when the fishway was in place, fish immediately used it.

Nissiquoge River, New York

A partial dam removal engineering study is underway to increase fish passage and to reconnect 50 acres of salt marsh. We are also working further upstream at the head of tide dam in Caleb Smith State Park on a design of a rock ramp.



Fishway at the Carmens River is an example of an Alaska steep pass fishway.

For additional information or questions contact:

U.S. Fish and Wildlife Service
Southern New England - New York
Bight Coastal Program
50 Bend Road
Charlestown, RI 02813
401/364-9124
401/364-0170 fax

Federal Relay Service
for the deaf and hard-of-hearing
1 800/877-8339

U.S. Fish & Wildlife Service
1 800/344 WILD
<http://www.fws.gov>



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