



Sandy Brook Fish Passage Restoration Project

Farmington River

Success Stories



February 2002

Connecticut Department of Environmental Protection, 79 Elm Street, Hartford, CT 06106-5127
Arthur J. Rocque, Jr., Commissioner

The Resource

Sandy Brook is a small tributary to the Farmington River, which in turn enters the Connecticut River in north-central Connecticut. It is a very high-quality, steep-gradient, coldwater stream surrounded by a mostly forested watershed — ideal spawning habitat for Atlantic salmon and trout. The Atlantic salmon is an anadromous fish, which means it spends most of its life in the sea and returns to freshwater only to reproduce, after which they die. After hatching, juvenile salmon remain in the stream for two to three years before migrating downstream to the sea, where they remain for one or more years before repeating the cycle. Trout are resident fish, which means they spend their entire lives in freshwater, but they need to be able migrate up and down the stream to access suitable habitat for spawning and other critical life stages.



As part of the interstate Connecticut River Atlantic Salmon Restoration Program, the CT DEP Inland Fisheries Division stocks Sandy Brook with about 100,000 salmon fry (newly-hatched fish) each spring. During this time, it is important that the salmon be able to move freely throughout the stream so that they can access critical habitat (different habitat needs for different sizes of fish) and relieve localized high population density. In addition, as the number of adult salmon returning to the Farmington River watershed increases in the future, some adults will want to continue upstream to Sandy Brook to spawn.

In Connecticut and the northeast, the migration of Atlantic salmon and other anadromous fish, and passage of resident fish among different stream sections has been severely limited by physical barriers, including dams, culverts, tide gates, and sections of river with inadequate water volume.

A dam on Sandy Brook in Colebrook, CT blocked the upstream migration of Atlantic salmon and free movement of trout and other species. However, in the early 1990s, the owner of the property on which the dam is located installed a fish ladder to allow fish to access approximately three miles of stream habitat above the dam.

Nonpoint Source Pollution Nonpoint source (NPS) pollution is diffuse in nature, both in terms of its origin and in the manner in which it enters surface and ground waters. It results from a variety of human activities that take place over a wide geographic area. Pollutants usually find their way into waters in sudden surges, often in large quantities and are associated with rainfall, thunderstorms, or snow melt. NPS pollution generally results from land runoff, precipitation, atmospheric dry deposition, drainage, or seepage. Hydromodification – physical disturbances to a water resource caused by filling, draining, ditching, damming or other wise altering wetlands and stream courses – is also considered a nonpoint source problem.

What is a fishway? A fishway is usually a structure to allow fish to pass over or past obstacles in a river or stream. Structures include fish ladders or bypass channels over or around dams and other numerous obstructions.

Environmental Problems

In 1997, the fish ladder was damaged by a winter ice jam, which again prevented free movement by fish past the dam. In effect, the dam and the damaged fish ladder constituted a “hydromodification,” which is considered a form of nonpoint source pollution (see **Nonpoint Source Pollution** sidebar). Because this hydromodification prevented Sandy Brook from supporting its historic populations of fish, the stream was placed by CT DEP on a list of waterbodies in need of restoration. This listing is required under Section 303(d) of the federal Clean Water Act.

303(d) list The [303\(d\) List](#) (PDF, 142 K) identifies waterbodies within the State which may not currently meet Connecticut Water Quality Standards (WQS). The list has been compiled by the Water Management Bureau of the Connecticut Department of Environmental Protection based on all readily available information regarding the condition of the State’s waters. The WQS include two key elements: the designated uses for the waterbody, and quality criteria necessary to support these uses. In evaluating attainment of WQS, the Department considers both conformance with adopted numeric criteria for specific pollutants, as well as information regarding whether the waterbody meets desirable uses such as supporting healthy populations of fish and other aquatic life.

The Solution

The goal of the Sandy Brook Fish Passage Restoration Project was to restore resident and anadromous fish passage over a barrier to upstream migration. The CT DEP Inland Fisheries Division surveyed the damage, prepared a materials list for the needed repairs, and secured permission from the dam owner to repair the fish ladder. Section 319 funds were used to purchase the materials (pressure-treated timbers, lumber, screws, saw blades, etc.), and matching in-kind services, in the form of labor, were provided by Inland Fisheries Division staff. The project was carried out over a three-day period in August 2000, and involved the following components:

- Removal of broken and damaged timbers
- Replacement of removed and previously lost timbers with new pressure-treated timbers to restore the individual pools
- Replacement and reconfiguring of notches in the weirs where the water flows out of one pool into the next pool
- Installation of wooden floors in lower pools to help hold water in pools instead of seeping out underneath the weirs (which was previously done for the upper two pools and proven effective)
- Construction of a raised ice/trash barrier at the top of the fish ladder to prevent ice, logs, etc. from damaging or blocking the fishway by deflecting them to the dam spillway
- Improved exit gate for de-watering the fish ladder (for necessary repairs)
- Moving of boulders in the stream, piling them up against the fish ladder walls to increase their stability, and clearing a better approach channel at the entrance of the fishway.



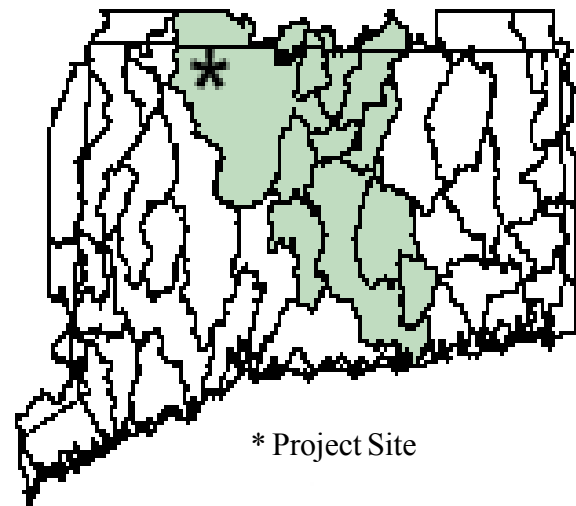
Results

The repaired fish ladder now resembles the original construction, except for improvements to the design that were incorporated into the repair plan. The minor changes that were made resulted in improved water flow from top to bottom, and from one pool to the next. Visual observation by experienced fisheries biologists determined that the volume of water flowing down the fish ladder would allow passage of targeted fish species (e.g., brown, rainbow, and brook trout and juvenile Atlantic salmon) and non-targeted species (e.g., white sucker, American eel, and fallfish and common shiner). The fish ladder was successfully returned to operation in the fall of 2000 and provided passage to pre-spawning trout and access to approximately three miles of high-quality spawning habitat.



Work crew on site, starting with and clockwise from the person with hat, Joe Ravita, are Bruce Williams, Steve Michaud, Anthony Morales, Dave Dembosky.

Connecticut Basin



Future Plans

The fish ladder will be closely monitored over the next several years by the Inland Fisheries Division to ensure its continued operation and determine the overall success of the project. Fisheries staff will close the fish ladder each November to prevent winter ice build-up and damage, and re-open it in April to allow fish passage. During seasonal maintenance, the fishway will be cleared of any debris, assessed for damage, and repaired as necessary. Cooperation by the land owners is greatly appreciated.



Project Partners and Funding

This project was accomplished as a result of efforts provided by staff in the CT DEP Inland Fisheries Division and the Bureau of Water Management, and Norman and Sarah Nelson of New York, NY, owners of the Sandy Brook dam and fish ladder who graciously provided site access. The project required a modest \$2,340 of section 319 funds to purchase construction materials. CT DEP Inland Fisheries Division staff labor provided a significant over-match.

Section 319 of the Federal Clean Water act authorizes EPA to award grants to states and tribes to support their NPS management programs. The CT DEP passes through a portion of these funds to other state, regional and local government agency and non-government organization to implement programs and projects.

Contacts

For more information regarding the Sandy Brook Fish Passage Restoration Project contact:

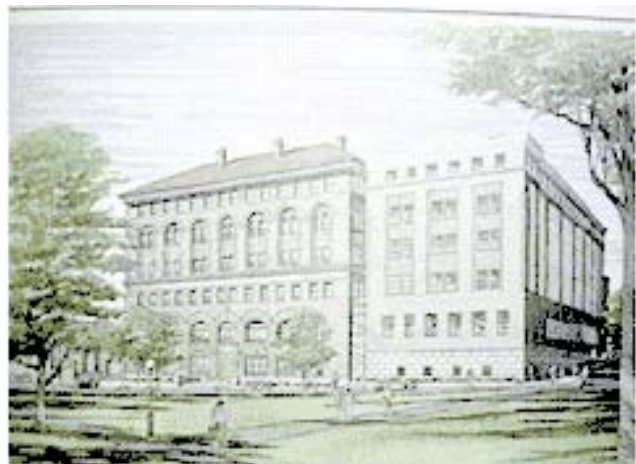
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CT DEP and US EPA websites
<http://dep.state.ct.us>
<http://www.epa.gov/owow/nps/education.html>

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