

# Fishways: Providing Fish Access to Critical Habitat

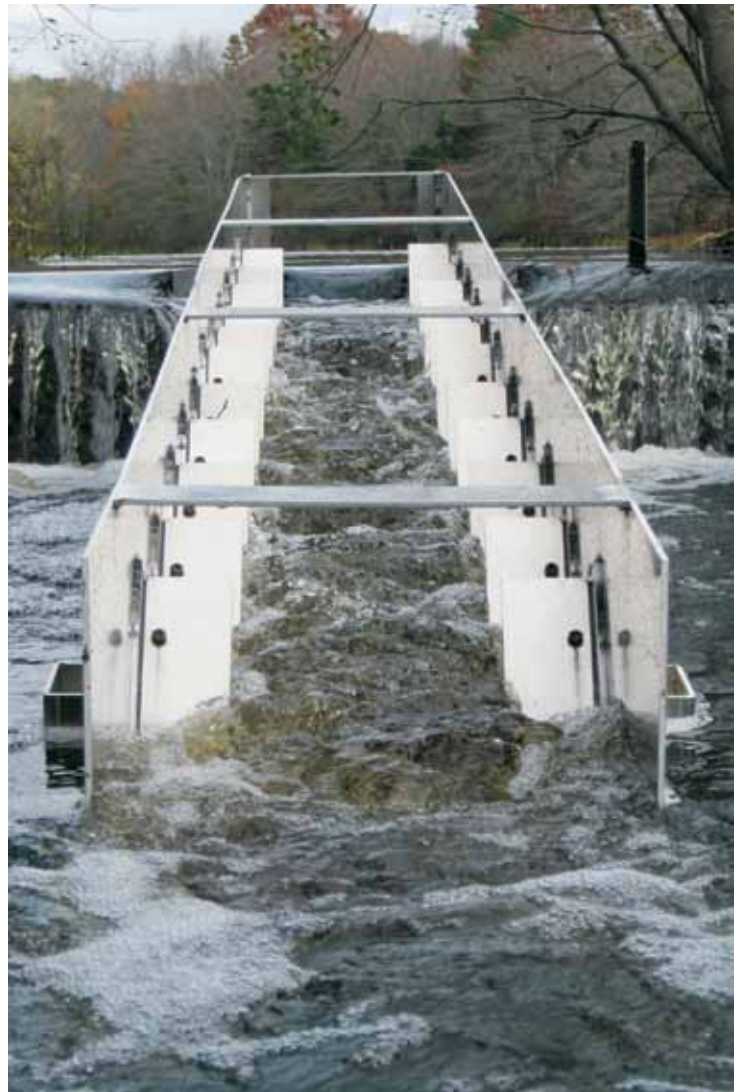
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The migratory fish runs in Connecticut rivers and streams that flow to Long Island Sound observed by the first Europeans are legendary. The historic record is clear: the runs of salmon, shad, river herring, sturgeon, striped bass, lamprey, smelt, and eels were abundant. Today, these runs are diminished and many are gone. While the causes are numerous, the main culprit has been dams. From the early gristmills of the 1600s, to the textile mills of the 1700s and 1800s, and the water supply reservoirs and hydroelectric dams of the 1900s, practically every one of our streams has been blocked by dams. Dams block the migration of fish, preventing them from reaching crucial spawning habitat upstream. In some cases, spawning habitat downstream of the first dam exist and the run could persist, even if at smaller numbers. The shad run on the Connecticut River is a good example of this scenario. In other cases, such as the Atlantic salmon run on the Farmington River, dams blocked migratory species from reaching any spawning habitat and those runs died out completely.

## Restoring Runs of Migratory Fishes

The DEEP's Inland Fisheries Division seeks to restore runs of migratory fishes and that means reconnecting these species to their spawning habitat and solving the problem of barrier dams. The best solution is to remove dams. That is often not possible so the next best option is to build fishways. Fishways are structures

specifically designed to allow fish to get around dams, either in an upstream or downstream manner. Fishways come in a variety of sizes and styles. A fishway must be custom designed to take into account the biology and swimming ability of the targeted species; the height, configuration, and purpose of the dam; and how water flows around it. The planning and design of fishways involve a collaboration of hydraulic and civil engineers and fish biologists knowledgeable in the behavior of fish. In Connecticut, this means the



The Vargas Pond Fishway on Stony Brook in Stonington is a town-owned Denil fishway that allows alewives to spawn in an old ice pond.



The Mianus Pond Fishway on the Mianus River in Greenwich is a steeppass fishway with two resting pools. It has annually passed 90,000 herring in recent years.

involvement of the Inland Fisheries Division Diadromous Fisheries Program staff, engineers with the U.S. Fish and Wildlife Service (Region 5), and trained engineers with private consulting firms that are hired to complete the design. Much of the planning for these fishways is supported through the monies received from the federal Sport Fish Restoration Program.

Currently, there are about 55 fishways in Connecticut, which range in size and can facilitate fish

movement over dams from 18 inches to 58 feet high. Most are located on coastal streams and major river systems like the Naugatuck, Farmington, and Shetucket, and these are operated to support the spawning runs of anadromous fishes, such as salmon, shad, and river herring. There are a few fishways in tributary streams, like Furnace Brook (Cornwall) and Bissell Brook (Granby), that enable trout and other resident species to move around former obstacles.

There are a variety of designs, such as pool-and-weir fishways, in which water spills six inches between a series of stair-step pools; steeppass fishways, which are prefabricated aluminum troughs with internal vanes that slow down the rush of

water; Denil fishways, which are generally larger concrete fishways with wooden angled baffles; and 'hybrid fishways' that have one section of one style and sections of other styles. Other fishways are built to appear more natural-looking. Some resemble natural streams that gradually wind around a dam. One is a rocky ramp fishway, where rocks are piled in a steep stretch of stream to create a natural-looking ramp. In the case of American eels, which are not strong swimmers, there are even specialized devices called eel passes to help them get over dams. Additionally, at some of the larger dams, there are fishlifts, which crowd fish into a tub or hopper that is then lifted in elevator-like fashion above the dam and dumped into an exit flume.

### ***More Fishways on the Way!***

In fall 2011, construction began on the Wallace Dam Fishway on the Quinnipiac River in Wallingford. The fishway should be operational by April 2012 when the fish runs begin. A stone pool-and-weir fishway should be completed at the Wequetequock Dam on Anguilla Brook in Stonington during 2012, along with a new steeppass fishway at the Hallville Dam on Poquetanuck Brook in Preston. Work will begin in 2012 on a long-awaited (staff has been working on this project for over 20 years!) Denil fishway at the StanChem Dam on the Mattabesset River in East Berlin.

Some of these fishways are owned by the DEEP or a town and can be visited by the public. Others are privately-owned and are not open to the public. However, even privately-owned fishways benefit



**The Wallace Dam Fishway on the Quinnipiac River in Wallingford is currently under construction. The dam is to the left of the photo.**

the public by allowing fish to proceed upstream to spawn.

Several fishways are equipped with electronic fish counters or windows with cameras that allow the Inland Fisheries Division to count the number of fish that ascend. Data collected from these facilities are used to evaluate the fishway and monitor the progress of the restoration program on that stream.

### ***How Do Fishways Get Built?***

Sometimes the DEEP can request that a fishway be a condition of a federal hydroelectric license or mandate a

fishway as a condition to a State dam repair permit. More often, however, the project is voluntary, in which the Inland Fisheries Division cooperates with a town or conservation group to plan, raise funds through grants, apply for permits, and build the fishway. Often, these projects take five years to complete. If you own a dam that you suspect is blocking fish runs, you are encouraged to contact the Inland Fisheries Division ([steve.gephard@ct.gov](mailto:steve.gephard@ct.gov)) to discuss the possibility of acquiring grants and other potential funds to either remove the dam or build a fishway.

## ***Visit the State's Largest Fishway at Rainbow Dam on June 2***

The DEEP owns and operates the largest fishway in Connecticut — in fact, one of the largest on the East Coast! The Rainbow Dam is a hydroelectric project owned by the Farmington River Power Company. It is located eight miles up the Farmington River from where it enters the Connecticut River. The dam is the first barrier to anadromous fish migrating up the Connecticut and Farmington Rivers to spawn. The 58-foot tall vertical slot fishway was built in 1976 by the DEEP and is operated annually to pass American shad, alewife, blueback herring, sea-run trout, sea lamprey, American eel, and many other species. It also is a primary trapping facility for returning adult Atlantic salmon.

The DEEP Inland Fisheries Division is hosting the annual Open House at Rainbow Dam Fishway on June 2, 2012, from 10:00 AM until 3:30 PM. The inner gates will be opened and the public will be allowed to enter areas normally off-limits. Visitors can go downstairs and watch fish swim past the observation window, visit the sampling tank for the downstream passage facility, tour the hydroelectric powerhouse, and watch biologists raise the trap and even trap salmon, if any happen to ascend the fishway that day.

To get to the fishway, take I-91 to exit 40 (Rt. 20) and proceed as if going to Bradley Airport. Take the Rt. 20 exit labeled Hamilton Road South, turn left at the end of the ramp, and then turn right at the first stop sign at Rainbow Road. Drive about ¼ mile and look for signs on the left side of the road.



**The Rainbow Fishway on the Farmington River is the only vertical slot fishway in the state.**