

Guilford Lakes Fishway

Guilford Lakes Association and Connecticut Department of Environmental Protection Fisheries Guilford, CT

The Guilford Lake community consists of 240 homes around a six-acre upper lake and a fourteen-acre lower lake. The dam on the lower of the two impoundments has two spillways. The primary spillway is 12-feet high, and the secondary spillway is 2-feet high with an additional four feet of head to overcome within the steep bedrock ledge bypass channel, downstream of the lower spillway. Both spillways are concrete structures and were recently reconstructed. The CTDEP ordered the Lake Association to install a fishway on the lower dam when it was reconstructed and a technical fishway estimated at \$70,000-\$100,000 was designed by others for the larger of the two spillways.

Ms. Laura Wildman, while Chief Engineer with American Rivers, now an associate engineer with Princeton Hydro, was asked to investigate other fish passage options at the site that might help to reduce the cost of the fish passage work. Ms. Wildman enrolled the help of some graduate students at Yale to start investigating the option of constructing a nature-like fishway, bypass channel within the downstream bypass channel below the smaller of the two spillways. Ms. Wildman's final fish passage design consisted of two sections of rock step-pool nature-like fishway and two small sections of Alaskan Steeppass fishway at a cost of \$31,000, for which two grants were obtained through the American Rivers-NOAA Community-Based Restoration Program Partnership and USFWS.

The step-pools were designed to mimic a naturally occurring steep step-pool system and provide streaming flow between the gaps of the boulders such that alewife could pass up the river into the lower lake. With this nature-like system, in-stream habitat was created as well as diadromous fish passage, in an aesthetically pleasing fishway design. Within the first migratory season after construction of the fishway, alewife were seen jumping in the lower lake. A detailed fish tagging analysis was later completed by a UMASS graduate student that showed alewife were utilizing the fishway to pass into the lower lake. In addition Ms. Wildman completed a separate study on this site and another site that she had done the conceptual design work for, entitled "Hydraulics of Nature-like Fishways: Velocity Cross-Section Analyses of Sennebec and Guilford Lakes Nature-Like Fishways" as part of her masters work at Yale. The Yale study investigated the complex velocity pathways available to a wide variety of fish species and life stages when using the nature-like fishway approach.

In the end, the nature-like fishway option cost significantly less than the technical fishway proposed by others and, by applying for and receiving restoration grants, the entire project was done at no cost to the Lake Association.



After

