



The lake system is much larger than its surface area may suggest

Dance of the Lake

Lake Champlain is home to 87 fish species, ranking it among the most species-diverse bodies of fresh water in all of New York and New England. Its basin area in New York, Canada and Vermont extends some 8,232 square miles, an area just a bit smaller than the state of Vermont and it is fed by eight primary inflows: Otter Creek and the Winooski, Missisquoi, Lamoille, Ausable, Chazy, Boquet and Saranac Rivers, with a single primary outflow at the Richelieu River.

These tributary rivers connect the lands they flow through to Lake Champlain and vice versa, making for a complex, interconnected system that must be managed as such.

“The Conservancy’s mission has always revolved around species diversity,” says Tom Berry, Director of the Conservancy’s Lake Champlain Program. “What we are doing with the Program is extending our mandate from the land into the water, so to speak. What we’ve discovered already is that you can’t address biodiversity without talking about tributaries in and out of the lake. They play a crucial role in maintaining a vibrant ecosystem, and frankly, many of them are in trouble.”

The trouble Berry refers to is a perfect storm of pollution coming from agriculture runoff, development, depletion of the natural buffer zones around rivers and loss of connectivity, or how readily animal species can move from stream or rivers to the lake and back again. Solving connectivity issues will be a pivotal task for the Program.

“For fish and other animal species, dams represent an unmistakable connectivity barrier,” Berry says. “The land-locked Atlantic salmon’s access to the Winooski River past the hydro power station is the classic example...or the lake

sturgeon’s access to the Lamoille and Missisquoi Rivers, but keep in mind, too, that well over half of the thousands of road crossings in the basin are not passable by aquatic organisms.”

The Vermont Chapter is currently seeking a grant from the Fish and Wildlife Service to begin repairing or replacing priority crossings or culverts, and if funding is obtained, engineering work could begin as soon as the middle of 2009.

Bird’s Eye View

If you were to take flight over the lake as a Caspian turn, herring gull or great egret, you’d be in an enviable position to observe not only the diversity of fish and other aquatic species, but to what extent the area is a haven for your winged cousins. The basin is home to 318 species of birds, 16 of which are listed by New York, Vermont and/or the federal government as endangered or threatened.

“There are 13 species of birds nesting on Conservancy managed islands alone,” Berry adds. “Great blue heron, black crested night heron, great egret, herring gull...and various ducks. Much of this diversity of bird species depends on proper lake function to survive, which in turn reinforces the need for connectivity. When fish stocks decline because of lack of access to river spawning grounds or nesting sites are crowded out due to development, bird populations are affected.

“Connectivity has ripples that extend even into the air,” Berry says.

A Model for Recovery

When Conservancy staff point to shining examples of watershed preservation, the remarkable and ongoing work being done in and around the Poultney River ranks high on the list. In an effort that has stretched over ten years, the Conservancy has protected between eight and nine miles of banks on both sides of the river, all the way up to the dam at Carver Falls. No fewer than 41 fish call the Poultney home



Tom Berry/INC



at least part of the time, including the globally rare eastern sand darter, the state endangered channel darter and the lake sturgeon, along with twelve species of mussels, including five state-endangered varieties. This habitat conservation will help ensure their survival.

“The lake sturgeon is a particularly good example of how critical river area protection is to the lake,” says Berry. “They only reach reproductive maturity after twenty years, and then only spawn every four years or so after that. Without ready access to river spawning grounds, they’re in real trouble.”

Part of the Poultney’s conservation effort was made possible through a cooperative arrangement between the Conservancy and both the U.S. Fish & Wildlife Service Partners for Fish and Wildlife Program and the federal Natural Resources Conservation Service (NRCS). Now in its 14th year, the program works to protect and reestablish buffers along streams and wetlands and to keep livestock out of the water.

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Sometimes the solution is as simple as building a fence. Knowing that farmers want to help but often lack the time or resources to dedicate to such a task, the program provides the time, expertise and funding to get the job done.

“The Poultney was the first project that we took on with the partnership,” explains Joan Allen, Associate Director of Land Protection. “It’s an efficient way for us to work. Landowners contact the NRCS, the two come up with a plan and then the NRCS asks us if we want to get involved. That way, we keep our focus on priority areas.” Ongoing partnership work includes buffer repair in the Lemon Fair River, East Creek and other waterways vulnerable to agricultural and animal waste runoff.

In some situations, a combination of protection and restoration are necessary to ensure the health of a system. Such is the case with the floodplains of many of the smaller rivers and streams that ultimately feed the lake. There is ongoing Conservancy work throughout Vermont’s floodplains, such as efforts to restore the natural processes that connect those of the Otter Creek Swamp. There, the emphasis is on encouraging connectivity among the various parcels of land the Vermont Chapter currently protects in order to restore the wetlands framework as well as extensive tree planting, particularly in riparian areas.

Back to the Future

For 12,000 years, the Lake Champlain basin functioned as a more or less undisturbed system. Species changed, rivers rose and fell and the watershed evolved, but at a pace that allowed for adaptation. Within the last 100 years of human interaction with the lake, more than 15 new species of fish have been introduced, along with dozens of other invasive plants and animals. Streams and rivers have had their natural flows altered. This fact, along with all the inevitable pollution by-products of agriculture and other development, have combined to replace the naturally interconnected relationship between lake, river and the land with an array of semi-isolated and often stressed areas. If the Vermont Chapter and its Lake Champlain Program have one goal, it is to restore the lake as a system, in the expectation that diversity, resilience and overall basin vitality will naturally follow.

“People are often inclined to see things in isolation,” adds Phil Huffman, Director of Conservation Programs. “They concentrate on a particular species of fish or bird and in the process perhaps lose sight of the fact that the lake is a whole—that we need to restore the entirety of its natural processes and functions so that all of the lake’s native species are sustained. This holistic systems approach is part of what drives us.”

“It’s a dance,” says Berry, smiling. “There will times when we alter the beat a bit, but if we just learn to move to the rhythm of the lake, it will heal itself...and maybe even us in the bargain.”