

Helping the Environment and Serving Neighbors

Holyoke Community College Students Research Tannery Brook

Can first-year community college students just starting to learn about the environment have an impact on their community and their environment?

Holyoke Community College (HCC) Earth Science Instructor Steve Winters believes they can.

As part of HCC's Service Learning Program, Winters teaches introductory geology students field research techniques that introduce them to basic environmental science and enable them to gather data that help community partners and non-profit organizations solve important environmental problems. For the second year, students at Holyoke Community College participated in original research on the environmental health of Holyoke's Tannery Brook and its impact on the Connecticut River.

Tannery Brook is a particularly appropriate study stream for HCC science students. Its headwaters are located on campus and the stream runs through many of the neighborhoods where students grew up and explored as children. But as a heavily impacted urban stream, much of Tannery Brook's 2 ½ miles is not readily visible. Large segments run through culverts under schools, streets, and shopping malls before the brook drains into the Connecticut River. "Much of the challenge, and much of the fun, of studying Tannery Brook," reports Winters, "is finding it and, where it briefly emerges, taking its environmental 'pulse,' as it were."

But students were not looking for just any vital signs. After meeting personally with Holyoke community partners such as the Connecticut River Watershed Council, the Sisters of Saint Joseph, the Sisters of Providence, the City of Holyoke Conservation Commission, and The Trustees of Reservations students were briefed on environmental issues important to these stakeholders.



Typical riparian conditions of Tannery Brook, a tributary to the Connecticut River, in the city of Holyoke, MA.

Students were especially pleased that CRWC River Steward Andrea Donlon took time to visit the class in early October to discuss current watershed concerns and threats to the Connecticut River. Students learned first-hand from Andrea the wide-spread problems that combined sewer overflows



Holyoke Community College students assess flow conditions in Tannery Brook, a tributary to the Connecticut River in Holyoke, MA.

(CSO's) pose within the watershed and what has been done to stem the problem of E. coli bacterial contamination. With the information and guidance Andrea provided, students were well prepared to start their own investigation via the Council's new interactive website, www.ConnecticutRiver.us, tracking local E. coli levels in Holyoke and Chicopee. Following briefings by community science partners, Instructor Winters then helped student teams formulate research questions and plan data-collection strategies.

Students' specific questions about Tannery Brook focused on one of four themes: stream flow and watershed dynamics; developmental pressures and their negative impacts on urban streams; the threat of combined sewer overflows on small urban streams and the Connecticut River; and the feasibility of transforming Tannery Brook from a degraded urban stream to a vital Green Waterway Park. The students then devoted several on-campus and off-campus field work sessions to Tannery Brook and Connecticut River investigations.

"Community science experiences like this," says Lisa Mahon, HCC's Service-Learning Coordinator, "help students see the practical applications of the knowledge they gain in the classroom and bring their critical thinking skills to a new level."

Over two days in December 2012, HCC students presented their research findings to their peers, faculty, and community partners. Representatives from all partner organizations marveled at the quality of the research presented and the poise with which these first- and second-year students presented their research and answered questions from the community partners in the audience.

"It is not this distant thing anymore," remarked one student about his experience with Tannery Brook. "It's become more personal. I walk by it every day and it will be great if our research helps make a difference. After all, this is my community."

Thank you to Steve Winters and Lisa Mahon for their contributions to this article.

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“This process will greatly affect the Connecticut River for years to come,” says CRWC River Steward Andrea Donlon. “Our mission is to protect the Connecticut River and the land, people and creatures connected to that water. CRWC views this as one of our most significant projects of the decade.” Donlon and fellow River Steward David Deen are participating in the formal proceedings and are working to engage the public in the process.

There are many issues that are likely to be studied, discussed and negotiated during relicensing that are near and dear to us. For starters, the ecology and recreational use of the river are affected by flow adjustments, such as the minimum downstream river flows below each station, flow fluctuations and ramping rates, reservoir fluctuations and their impacts on habitat and bank erosion.

Habitat and fisheries issues of interest include upstream and downstream passage for American shad up to the Bellows Falls Dam, American eel passage at all facilities, impacts on federally endangered shortnose sturgeon below the Turners Falls Dam, impacts to dwarf wedgemussel at several of the dams, entrainment at all dams – especially Northfield Mountain turbine intakes – and interrelationships of Vernon Dam operations with the Vermont Yankee Nuclear Power plant. CRWC and partner organizations will also be looking at improvements to recreational facilities, fish ladder viewing facilities, and ease of portage around dams.

Wilder, Bellows Falls, and Vernon Dams are all owned by TransCanada, who also owns Fifteen Mile Falls on the Connecticut River and most of the hydropower facilities on the Deerfield River in VT and MA, a large tributary to the Connecticut. Turners Falls and Northfield Mountain are owned by FirstLight Power Resources, a subsidiary of GDF Suez. The upper river facilities operate in daily peaking mode, meaning they generate power at peak times and then let the pools fill up until it is time to generate again. In the case of Northfield Mountain pumped storage facility, water is pumped from the River to an upper reservoir and power is generated by spilling water back into the Connecticut River during peak demand periods. Turners Falls Dam is a peaking facility that is operated in coordination with Northfield Mountain to maintain the Turners Falls “pond” height within a specified range.

Entrainment: The incidental trapping of any life stage of fish within waterways or structures that carry water being diverted for human use.



This is your once-in-a-lifetime opportunity to impact 175 miles of river for public recreation, fish passage & habitat, invasive species management, erosion control, and more.

The dams themselves were built between the late 1700s (Turners Falls Dam) and 1950 (Wilder Dam), and have interesting histories. Northfield Mountain became operational in 1972 and the Turners Falls dam was raised to accommodate extra water for Northfield Mountain to use. The current FERC licenses date from 1968 to the 1980s. Many of the licenses were developed before the National Environmental Policy Act (NEPA), the Clean Water Act, or the Endangered Species Act were in place. The current licensing process places a higher priority on natural resources and recreational uses than its predecessors. With licenses that will last for many decades, this is a once-in-a-lifetime opportunity to make positive changes that will benefit the river.

CRWC’s leadership – and the support of our members – significantly shaped other large relicensing efforts over the last 10-15 years. Previous dam relicensing resulted in improved fish passage and flows at Holyoke, MA, a \$15 million mitigation and enhancement fund at Fifteen Mile Falls, VT/NH and increased recreational opportunities. The “Class of 2018” will be our largest relicensing effort by far.

Your input is integral to this effort. We invite you – especially if you live near or regularly spend time in the areas of the dams – to share your input and personal observations. This is your chance to help make these licenses stronger for the health and wellbeing of more than 175 miles of the Connecticut River.

For more information about these projects, visit our website: www.ctriver.org. To learn how you can be involved, contact CRWC River Steward Andrea Donlon at 413-772-2020, ext. 205 or adonlon@ctriver.org.

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