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August 8

DOCKS TO DOORWAYSNew project calls for public access,green space and a resource center

BY MECHELE COOPER Staff Writer

BELGRADE -- "Oh yea!" Whitney King exclaimed. "We got it this time!"

The Colby College chemistry professor had been anxiously waiting for Josie Thiele, a 20-year-old chemistry major, to pull in a metal contraption with jaws that scooped up muck 60 feet below the surface at an official sampling site on Great Pond.

King and his three student assistants were out on the lake earlier this month to conduct a sediment analysis.

They want to know how much phosphorus is contained in the material that settled on the bottom of the lake. He said sediments can be a significant source of phosphorus in a lake. Phosphorus is essential for plant growth and can trigger algae blooms, he said.

Meanwhile, another student research assistant at the helm of the 24-foot pontoon boat, Katherine Murray, of Birmingham, Ala., struggled to keep the floating laboratory from drifting away from the sampling site.

The boat was equipped with measuring instruments, a GPS sensor, sampling gear, computer, a small crane, and a hole in the floor, which can be clamped shut when not in use, for collecting water and sediment samples.

It took Thiele several attempts to retrieve the smelly, dark gray bottom sediment.

"A day of sampling will generate a week-and-a-half to two weeks of lab work," King said.

King and his students have been monitoring temperature, oxygen and phosphorus levels in Belgrade-area lakes for the past 10 years.

This year, he said the thermocline was at 23 feet in Great Pond, which is fairly typical thermocline depth for the lake.

A thermocline is the transition layer between the mixed layer at the surface and the deep-water layer. The mixing is caused by wave action on the surface. He said each lake has a different thermocline depth because big lakes have bigger waves, allowing mixing at greater depths.

His team also found the oxygen concentration of the deep water had decreased 60 percent since spring turnover.

"What does it mean?" King said. "The thermocline serves as a barrier for water mass mixing. Warm water floats on top of cold water. Oxygen is consumed in the deep water and can't be replenished until mixing occurs in the fall. The decrease in oxygen has a significant impact on fish like lake trout that need cold, well-oxygenated water as a habitat. The low oxygen conditions also release nutrients from the sediments."

King said there are a number of research teams out on the lakes this summer participating in the Belgrade Lakes Watershed Sustainability Project.

He said the Belgrade Lakes region is being used as a model because it provides a unique laboratory to understand the complex dynamics between environmental, bio-geochemical and socioeconomic systems.

The project is a collaborative effort between the Belgrade Regional Conservation Alliance, Colby College, the University of Maine, the Maine Congress of Lake Associations, the Belgrade Lakes Association and the Maine Department of Environmental Protection.

The consortium is funded by a multiyear grant from the National Science Foundation,

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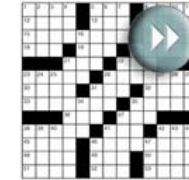
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which last year granted Colby College and the Belgrade Regional Conservation Alliance \$99,964 for such research.

Other projects include a group headed by Herbert Wilson Jr., a professor of biosciences at Colby. His team is identifying the presence or absence of damsel flies on all seven lakes, which can serve as indicators of lake health and provide a baseline for environmental changes that can be judged in the future.

Indicator species are organisms that -- by their presence, abundance or chemical composition -- demonstrate some distinctive aspect of the character or quality of the environment.

"This is the first year. I hope to do at least three years altogether," Wilson said. "We're setting up a baseline right now. This has never been done in the Belgrade lakes in an organized fashion. We have already found two species of concern, which is a species that is rare or unusual enough in Maine to be worth watching. It's not made it to the endangered species list or threatened list, but is a species that is really notable and could make it on those lists."

The Maine Department of Environmental Protection is in its fourth year of removing white perch from East Pond to shift the biological balances in the lake and reduce summer algae levels.

The state has removed nearly 20 tons of fish, according to Melissa Evers of the Maine Department of Environmental Protection.

She said the effectiveness of this project will be measured by sustained lake clarity.

A preliminary review of past algae blooms on East Pond found the average bloom date was Aug. 16. In 2009, it was Sept. 15.

She said delayed onset of blooms is a measure of success that DEP will continue to monitor.

All these studies are pretty exciting, but Pete Kallin, executive director of the Belgrade Regional Conservation Alliance, said property owners must come on board and adopt best conservation practices to make a real difference.

Phosphorus from a fertilized lawns and faulty septic systems are leaching into the water. Cleared shore lots disrupt natural filtration of runoff.

Human activity in the watershed adds more phosphorus than the lake system can handle, he said.

Kallin said the watershed sustainability project is tied in with a community effort to provide homeowners with the know-how and needed resources.

The effort started a year ago with a small group of concerned citizens and community leaders. Now, as part of the effort, the Belgrade Lakes Association's Docks to Doorways campaign is in the process of raising \$2.5 million to restore public docks in the Belgrade Lakes village; provide green space on Mill Stream, which runs between Great and Long ponds; and build a new conservation resource center.

"We want to create a center to help people learn more about the lakes and better understand how their actions affect the lakes," Kallin said. "More importantly, learn how to modify their behavior and the way they live along the lake so the water quality stays the same or even improves."

At the center, people would learn how to plant rain gardens that filter runoff from roofs, streets and driveways and the importance of buffer strips and porous paving materials that let water infiltrate down through the soil instead of running off.

He said homeowners also will learn how their actions -- the way they cut grass and apply fertilizer and pesticides to their lawns, for example -- adds up to poor water quality.

"The kind of technologies demonstrated at the center will not only be for the Belgrade lakes," he said. "We want to build on our model so lake associations throughout the state can benefit from what we develop here in partnership with Colby and DEP and others participating in our center."

The Maine Congress of Lakes Association would have offices in the 3,500-square-foot center, along with the Belgrade Lakes Association and the Belgrade Regional Conservation Alliance. There also will be research space for environmental scientists.

Polly Parkhill Beatie, president of the Belgrade Lakes Association, an organization founded in 1908, said Maine lakes are faced with many challenges.

The Docks to Doorways initiative is designed to help all lakes, not just the seven Belgrade Lakes.

With the support of the Maine Congress of Lakes Association and other statewide environmental groups, it will reach many more people than a small lake association is able to and should have positive political ramifications as well.

"Lake lovers will become educated stewards, not destroyers, of the lakes that generate so much of Maine's economy," Parkhill Beatie said. "Together with other resources, environmental scientists can collaborate to find ways to restore our lakes. In addition the entire watershed community, and indeed the state, will benefit from the shared activities and educational opportunities that are to be part of the Maine Lakes Resource Center. Conservation best practices will be on display."

The Belgrade chain consists of seven very large, interconnected bodies of water: North, East, Salmon, McGrath, Great and Long ponds; and Messalonskee Lake.

For water to flow from East Pond through Messalonskee Lake, he said, takes about seven years.

"What that means is, the lakes are dependent on each other," he said. "Any incremental improvements we make will take a long time for the lake water quality to change."

Great Pond has recently been placed on the Department of Environmental Protection's list of "impaired" water bodies -- meaning that, during the past 30 years, water clarity on Great Pond has declined. Long Pond and East Pond also are on that list.

Water clarity is measured by a small disk attached to a chain that is lowered down into the lake. Trained volunteers watch until it disappears. The depth at which the disk is no longer visible is considered the "Secchi depth," and is taken as a measure of the transparency of the water.

"We've been doing this since the 1970s," Kallin said. "That's one of the reasons we're able to document the fact that the water quality is declining."

"In the 1970s, you could see seven to nine meters down below the water. Now, you can only see five to six. It's still pretty good, but no where nears to seven or nine (meters)."

Teaching people environmentally sound practices will be difficult, according to Scott Finlay, finance chairman for Belgrade Lakes Association and Docks to Doorways campaign.

Reorienting people won't be free and will take everyone, not just a concerned few, to make a difference.

He said the lakes and surrounding watershed are the economic engine that drive real estate sales, construction, the trades, boating, fishing, restaurants and general stores.

"Each, in some way, is connected to the vibrancy and health of our lakes," Finlay said. "Revenue to the town is highly dependent upon property values. Everything in interconnected."

"But the lakes are under attack. We are literally loving them to death."

Finlay said the benefits of these initiatives are not limited to Great Pond and Long Pond, but include the entire lake region from North Pond and East Pond to Messalonskee Lake.

"We are all part of the same watershed," he said. "Our goal is to make the Belgrade lakes the shining example of best conservation practices for the entire state of Maine and perhaps all of New England."

"We want it to become socially unacceptable to be anything else. Like throwing trash out the window of your car, change happens, but it takes a concerted effort. We owe it to our children, and we owe it to the community."

Information about the watershed sustainability project and Docks to Doorways campaign can be found at

<http://web.colby.edu/epscor/about/> and at www.dockstodoorways.com.

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