AT the CENTER

THE LILLY CENTER FOR LAKES & STREAMS QUARTERLY NEWSLETTER | FALL 2019

LILLY CENTER FOR LAKES & STREAMS

Dedicated to making our lakes & streams clean, healthy, safe & beautiful

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A Study in Cyan

Cyanobacteria, that is.

Did you know that public health and safety can be found in a lab? They can, and Ryanne Rinaldi, a second-year student at Grace College, is ready to turn the discovery into a career.

Ryanne's calling is closely tied to something that matters a lot to our county: blue-green algae. Guided by intensive research and analysis, classes in environmental biology and chemistry, and an internship at the Lilly Center, Ryanne has spent her spring and summer focusing on cyanobacteria (or blue-green algae) and the harmful toxin it can secrete: microcystin. "Cyanobacteria is a harmful algae found in many lakes around the world, including those in Kosciusko County," Ryanne explains.

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ELISA is a chemical detection technology used around the world to study a number of substances. Thanks to funding from the K21 Foundation, the Lilly Center now owns the necessary equipment. Using ELISA, the Lilly Center can determine the concentration of microcystin in 12 all-sport lakes in Kosciusko County. "The overarching goal for this research project is to be able to protect public health around the lakes, becuse microcystin is harmful to peple and pets," Ryanne added. The testing is monitored by Adrienne Funderburg, research program specialist, and Dr. Nate Bosch.

Ryanne's personal interests are related to blue-green algae, too. "I'm studying these organisms on a species level," Ryanne said. "In the spring, I began an in-depth study of cyanobacteria and the species' ability to secrete microcystin. My work will hopefully help define relationships between each cyanobacteria species and varying microcystin concentrations in our local lakes."

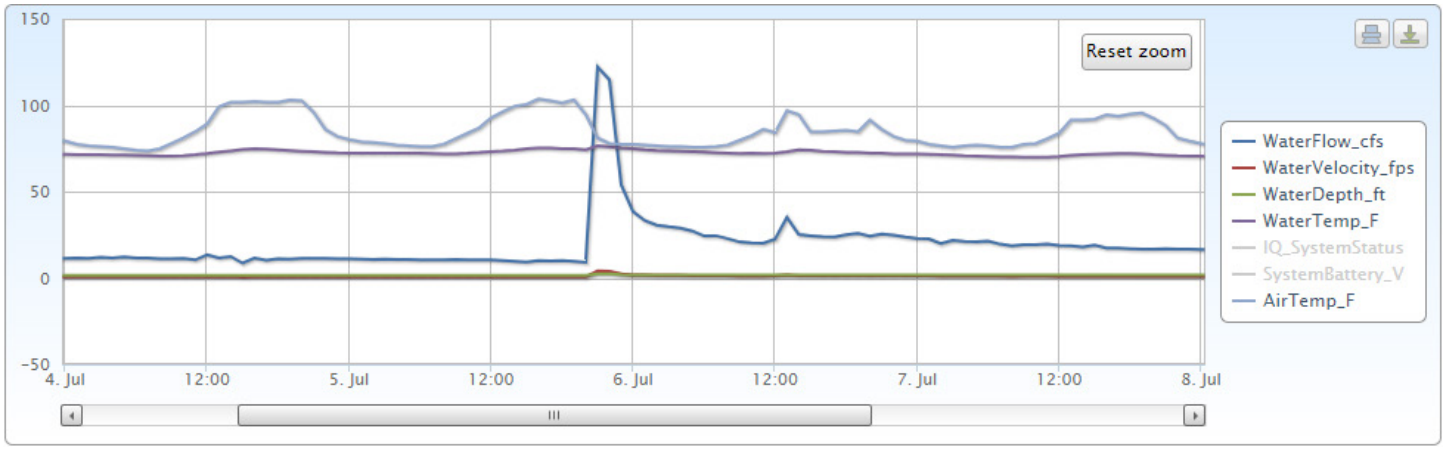
By the end of the summer, Ryanne plans to identify and count cyanobacteria cells from lake samples with a high-powered microscope. "The next step is to analyze and compile the data and interpret the results alongside professionals, like Dr. Bosch and Adrienne," Ryanne added. Although still in its first stages, the ELISA analysis will ultimately create a data-driven report on toxin levels that will be posted weekly on the Lilly Center's website.

Ryanne's project is one of many studies completed by Lilly Center student team members. Over the years, students have done the primary research for projects like the economic impact study, and contributed to on-going goals, like the study of blue-green algae.

Projects like these require countywide generosity. Supporters from Tippecanoe, Wawasee and Winona lakes, for instance, have provided sponsorships which allow students like Ryanne to become equipped as future environmental professionals. The Lilly Center wants to increase its momentum in student talent and attraction through summer fellowships and academic scholarships.

Support Ryanne's research, and that of other students, by contacting us today:

Email lakes@grace.edu
Phone 574-372-5100, ext. 6445



A large rain event occurred in the Winona Lake area the night of July 5, 2019, and the graph illustrates how Cherry Creek "reacted" to the influx of water. The depth of the creek doubled and the velocity was almost six times higher than normal, which explains the huge blue spike in overall flow. The graph also shows that Cherry Creek's flow remained slightly higher for the next two days than it had been before the rain.

7 Ways Stream Sensors Inform Lake Science

The Lilly Center is already sampling 12 key local streams bi-weekly, but with improved data-gathering technology, we can construct a much fuller picture of what is going into and out of the lakes. That means more reliable data... and more results for you to use as you work to preserve your lake!

Stream sensors are among the best, expert-tested and technologically sound ways to better understand lake water levels and flooding predictions, agriculture and urban runoff impacts, and nutrients and sediments entering and leaving our lakes. Here are seven parameters we collect:

Water flow: Volume of water moving through the stream over a set amount of time. (We measure flow rate in cubic feet per second.)

Water depth: Stream depth, measured in feet.

Water velocity: Average speed of the water since the last reading, measured in feet per second.

Water temperature: Temperature of the water in Fahrenheit.

IQ system status: This isn't about the stream; it's a binary parameter showing whether or not our system is operating!

System battery: This displays the current voltage of the batteries that power the flow monitors. This is important for us to monitor at the office to make sure the solar panels are functioning properly and that the system has continual power.

Air temperature: Temperature of the air around the transmitter in Fahrenheit. (Essentially, air temperature.)

The data continuously collected is immediately available on the Lilly Center's website: lakes.grace.edu/research/live-data. You can view it today! We use this data alongside our manual stream sampling to inform our research studies.

Five sensors have already been installed around Syracuse, Tippecanoe, Wawasee and Winona lakes, and we are seeking funding for seven more in 2019! Will you support this ambitious mission with us? Visit lakes.grace.edu/donate, or email lakes@grace.edu, to get started.

Volvox

FEATURED EVENTS

AUGUST .....P4C River Clean-Up

The Lilly Center is partnering with Paddlers for Conservation to remove logjams, trash and other obstructions that are preventing a portion of Tippecanoe River from flowing well.

SEPTEMBER .....Deeds Creek Clean-Up

The Lilly Center is partnering with local organizations to clean up trash and remove branches and fallen trees from a segment of Deeds Creek in Warsaw.

Follow us on Facebook (@centerforlakes) to learn the full details of these events as we have them.

LILLY CENTER FOR
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Daphnia

'Scoping Out the Future

Did you know that daphnia use their limbs to push water through their body so they can filter out and eat algae? Meanwhile, volvox live in large, coordinated colonies that appear completely spherical. Each sphere is one colony, and each colony has smaller spheres inside.

High-powered microscopes allow K-12 students (and our own Lilly Center research team) to literally take the health of a lake into their own hands. With microscopes, they can see underwater microorganisms, like the volvox and daphnia, and explore the relationships between them.

Making sure our lakes have a cleaner, healthier future involves studying hundreds of acres of watershed area all the way down to tiny droplets of water containing microscopic organisms like these. High-powered 'scopes will allow us to look for species that might indicate the presence of harmful toxins in the waterways. Help us understand what's in our lakes, and understand the best way to care for them! Give a microscope today: lakes.grace.edu/donate.