

A SENSE OF PLACE: LESSONS LEARNED BY WADING IN A STREAM

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A high school student stands in a shallow stream, shuffling her long-handled net along the pebbly bottom. She is practically swimming in a pair of tan waders. She watches as the water around the fabric clouds, then lifts the net to her face, poking it and peering inside before dumping its contents into a pool of water in a yellow, plastic tray. All around her, other students in waders are doing the same, scooping up the contents of the stream bottom, craning their necks to observe what's inside their nets, and laughing or exclaiming while showing their friends.

As they tilt the nets towards the trays, small animals fall out. Creatures frantically swim in the shallow water or hide beneath tangles of decomposing leaves swept up by the nets. Hellgrammites—also known as dobsonfly larvae—prowl through the containers with distressingly large



THE WATERSHED COUNCIL'S ELI BAKER DEBRIEFES BEAVER ISLAND STUDENTS ON WATER QUALITY MONITORING EQUIPMENT BEFORE STARTING DATA COLLECTION.

mandibles. Dragonfly nymphs battle to escape. Crane fly larvae twist and turn, and the students shout with excitement every time they find a fish.

Why are students wading through the creek and collecting aquatic creatures? It's all part of Watershed

Academy (WA), one of Tip of the Mitt Watershed Council's environmental education programs. Water Resources Education Coordinator Eli Baker visits schools in Antrim, Charlevoix, Cheboygan, and Emmet counties each year to teach biology classes about the importance of watershed health.

Collecting bugs is more than just an academic exercise. Students gather data that will inform the entire state about the health of Northern Michigan's waters. The macroinvertebrates they collect—small animals that lack backbones and are visible without a microscope—are key to understanding water quality.

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CHARLEVOIX HIGH SCHOOL STUDENTS IDENTIFY THE MACROINVERTEBRATES THEY'VE COLLECTED.



Readers likely already know about the importance of macroinvertebrates like stoneflies and caddisflies from previous issues of *The Michigan Riparian*. These aquatic insects are indicators of stream health. In the presence of a lot of pollutants, a stream might only support midges and blackfly larvae, while a healthy stream contains a diverse range of macroinvertebrates. Macroinvertebrates are food for other species, meaning these small creatures can make a huge impact on aquatic wildlife. Students in WA programs are contributing to an enormous long-term data set on watershed health by collecting and counting these creatures.

A SENSE OF PLACE

Watershed Academy is about more than collecting data on macroinvertebrates and water chemistry. It's also about developing a sense of place; a feeling of understanding and belonging to one's home environment.

The Watershed Council's Eli Baker is no stranger to acquainting students with local watersheds. Baker has been teaching for WA since 2016. His ease and patience with students and the critters they catch is inspiring. He loves giving folks the opportunity to spend time outdoors with the waters he knows well, and he fishes in his spare time.

"When students learn about water resources in school, they often hear about pollution in other parts of the world or fictional watersheds," explained Baker. "Programs like the Watershed Academy are designed to connect what students are learning in the classroom to the lakes, rivers, and wetlands in their own community. As students learn about and explore



BELLAIRE HIGH SCHOOL STUDENTS COLLECT MACROINVERTEBRATES IN THEIR NETS.

their local watersheds, they develop an attachment to and pride in their community."

Anna Walker, a science teacher at East Jordan High School, is on board with Baker's experiential programs. Her students have been in Watershed Academy since 2015. She loves WA because it gives students the opportunity to see how professional scientists collect data in the field. Their experiences have a ripple effect, as students share stories about unique aquatic critters and water quality with family and friends. Walker believes that students sharing what they've learned at Watershed Academy can have a huge effect on Northern Michigan's waters.

Walker is also interested in the program's impact on students' sense of place. "I find that our students aren't used to getting outside," said Walker. "A lot of them are on their screens all day, and for some it's the first time they've worn waders or held a net." WA gives students time

to explore the outdoors, get dirty, and meet the important denizens of local waterways. Walker finds that they're excited to see a dragonfly larva moving in a net or to catch a fish. They're sometimes scared of how foreign the macroinvertebrates can look.

"In such a digital age, students are disconnected from nature and exploring. Watershed Academy really gives them a chance to pause and reflect in the outdoors," said Walker.

THE NEXT GENERATION

We always say that with Watershed Academy, we're training the next generation of watershed stewards. Some of our students have moved on to careers in natural resources conservation. Take, for example, Rebecca Drenth, one of Walker's students. Drenth was in the first cohort of East Jordan High School students to participate in WA. Now, she's finishing up her last semester at

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Michigan State University, working on a degree in fisheries and wildlife with a concentration in water sciences. She's got her sights set on a job in wetlands restoration.

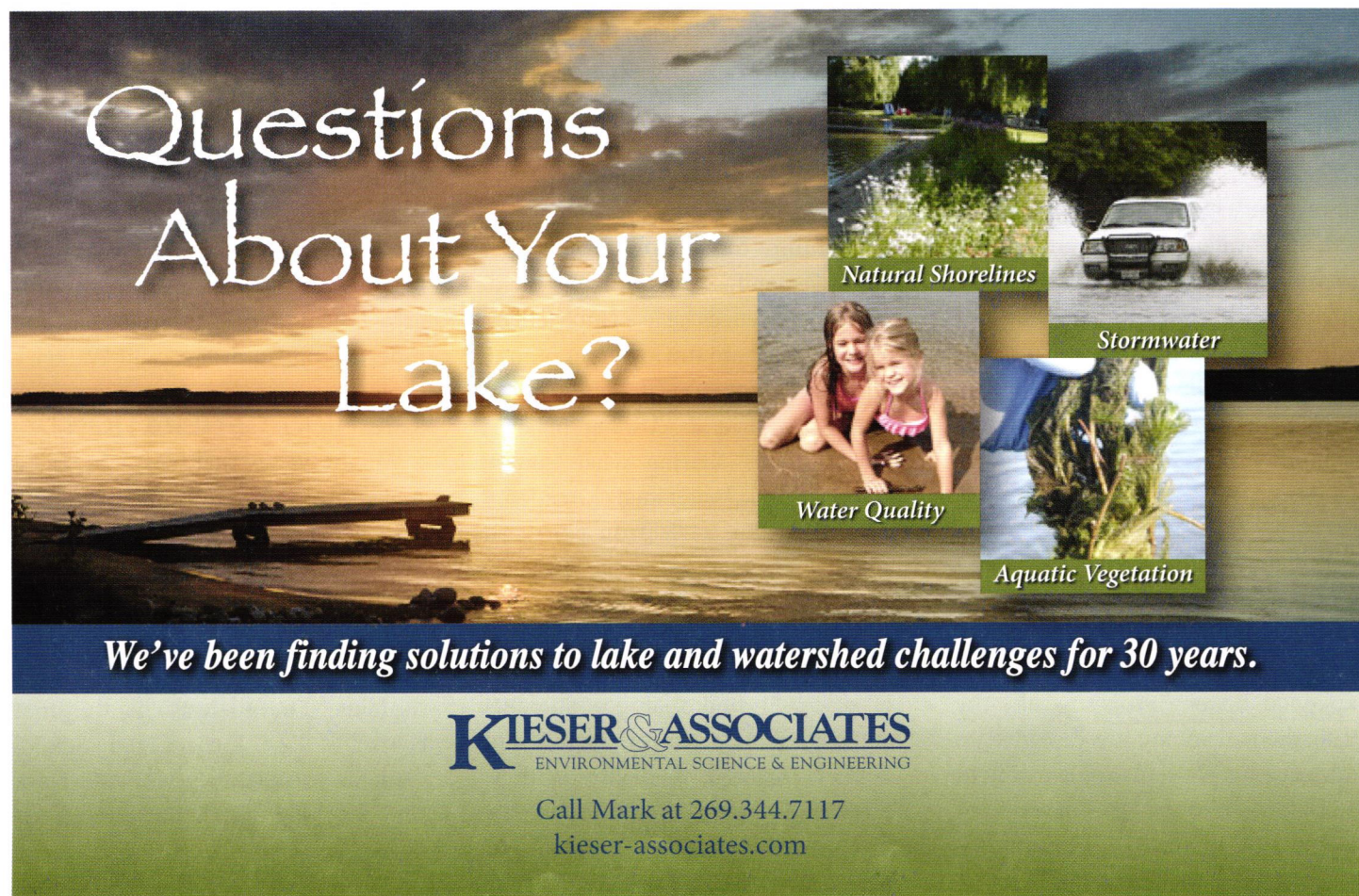
For Drenth, who grew up in East Jordan, being surrounded by water was just a normal part of her life. Then Watershed Academy took her into the Jordan River and opened her eyes to a hidden world of aquatic wildlife. "Being in the streams and seeing how much water plays a role in our lives really inspired me to carry on with my studies and get a degree in water sciences," she said.

Her experiences with WA and studies have paid off. Last summer

Drenth worked with the U.S. Fish and Wildlife Service. She got to travel through the U.P. and treat streams for invasive sea lamprey. "It was just like being in Watershed Academy," she said. "It was great to be in the streams and know that years of experience and learning are coming together for a career." Drenth is looking for a position in Michigan after graduation.

Should other schools consider bringing programs like Watershed Academy into their science curriculum? Drenth certainly thinks so. WA shows students how a career in science can work to keep people outdoors and protecting the waters they care about. "It was a life-changing experience," said Drenth.

Macroinvertebrates are incredible creatures. They show us so much about how we're treating the waters. Despite lacking spines, they help comprise the backbone of aquatic environments. And for some, they're so much more. They can inspire wonder, a little bit of trepidation, and careers in service to our freshwater resources. Watershed Council staff are proud to train freshwater stewards all over Northern Michigan, with these fascinating, resilient creatures as a huge part of our curriculum. We look forward to seeing you out on these waters we all love. *R*



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