

Quaggas Drift Inland From the Freshwater Seas

Adrift in the freshwater seas, an unfathomable number of microscopic veligers (invasive mussel larvae) move through the Great Lakes at the mercy of wind, waves, and currents. Within a few days of inception, veligers develop new organs and a minute shell. Between 20 to 90 days, they begin to attach to rocks, wood, or even to other mussels on the lake bottom. Their reproductive and colonization strategies have given quagga (and zebra) mussels a competitive edge that has resulted in their spread to freshwater lakes and streams across the entire planet. Of course, humans and our global economy have greatly accelerated their spread with mussels hitching rides on boats and trailers.

While conducting an aquatic vegetation survey on Crooked Lake in early July, a handful of tiny mussels on the stems of aquatic plants caught the attention of AmeriCorps volunteer Matt Claucherty. Watershed Council field staff are accustomed to finding zebra mussels clinging to aquatic plants, which is why we strongly encourage removing weeds from boats and trailers, and why state law requires it. But these were different. Matt noticed slightly different coloration and patterns, but the clincher was the hinge side of the shell – it was rounded, not flat like that of the zebra mussel. Suspecting quagga mussels, specimens were sent to Ann Arbor where mussel researcher Ashley Baldrige, PhD, confirmed that there was a new invasive mussel in Crooked Lake.

Practicing due diligence, Matt immediately reported the infestation to the Midwest Invasive Species Information Network (MISIN), where he found this was the first report of quagga mussels in an inland lake in Michigan. Upon learning this, the Watershed Council shared the discovery with partner organizations, State and


Federal agencies, and the media. This breaking news reverberated throughout the State, picked up by newspapers from Petoskey to Detroit.

Quagga mussels were first discovered in Lake Erie in 1989, just three years after the discovery of zebra mussels, but they did not spread and proliferate as quickly as the zebras. Mussel studies in Lake Michigan showed an explosion in quagga mussel populations in the early 2000s, reaching an estimated 950 trillion by 2011 – that's well over 100,000 mussels for every human on earth, and just in Lake Michigan! It seemed inevitable that they would spread to our inland lakes.

Although Matt only found quaggas at three locations near the Little Traverse Boat Launch on US31, subsequent surveys by the Pickerel-Crooked Lake Association determined they are present in other areas of the Lake. In addition, we learned that quagga mussels were found in Mullett Lake in 2012, but never reported on MISIN. Therefore, these invasive mussels will invariably spread to other lakes and streams throughout the Inland Water Route, if they haven't done so already.

What are the implications to the lake and stream ecosystems of the Inland Water Route? The answer is that we are unsure. Little research has been conducted on quagga mussel infestations in inland waterways. However, if changes brought on by quagga mussels in the Great Lakes are any indication, there may be serious and perhaps dire ecosystem changes on the horizon. Nutrient cycles and food webs could be significantly disrupted, which could lead to problems such as excessive algae growth and reductions in top predator (sports fish) populations.

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Although quagga mussels were only recorded at three locations on Crooked Lake near the boat launch on US31, subsequent surveys by the Pickerel-Crooked Lakes Association determined quaggas are present in other areas of the Lake as well.



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Reflections From Our Executive Director

One of the challenges for any organization is to communicate accomplishments and information with their audience. This is a particularly difficult task for an organization like the Watershed Council. The mission of protecting water may sound simple enough, but the work we do to accomplish this mission is diverse and, well, let's just say it's complicated. As you can see, this newsletter is packed with articles retelling our work from this summer and fall. This work varies from extensive restoration work, lake-wide surveys, pipeline research and outreach, and a season of events and policy initiatives. What do they all have in common? Collectively, these in-

dividual programs combine to further our purpose – to protect the environmental quality of Northern Michigan for current and future generations.

Our hope is that this newsletter conveys to you as our members the value of our work. We write about activities and topics that we feel are important to those of you that value Northern Michigan's waters. We hope we convey how our work benefits our waters and your interests, and we try to direct you to ways that you can get involved.

Because your lives are likely as complicated as ours, we realize that absorbing, understanding, and then engaging in our work may be a challenge. Our hope is that we tell our story in a way that is meaningful for you and helps you understand these sometimes complicated issues. We also hope that you take advantage of our other communication tools – particularly our newly remodeled website, and call us if you have questions or concerns.

Why is this important? Because you, as Watershed Council members, become the messengers of this information to others. You become the ambassadors for the Watershed Council, helping to further our mission and protect the waters we all care about.

We value your input on this newsletter and any other information you see from the Watershed Council. And as always, if something within these pages catches your attention and you want to engage further, give us a call. We'd love to hear from you!

Quaggas Drift Inland From the Freshwater Seas *(continued)*

In spite of this setback, the Watershed Council has not lost hope and is taking action. We hope to work with a consulting company on a trial open-water application of Zequanox in Crooked Lake, which is an environmentally-safe quagga and zebra mussel control product. An aquatic vegetation survey scheduled next year will help determine if quaggas are present in Burt Lake.

And most importantly, the Watershed Council is intent upon reducing the spread to other lakes and streams by redoubling invasive species outreach and education efforts to the boating community.

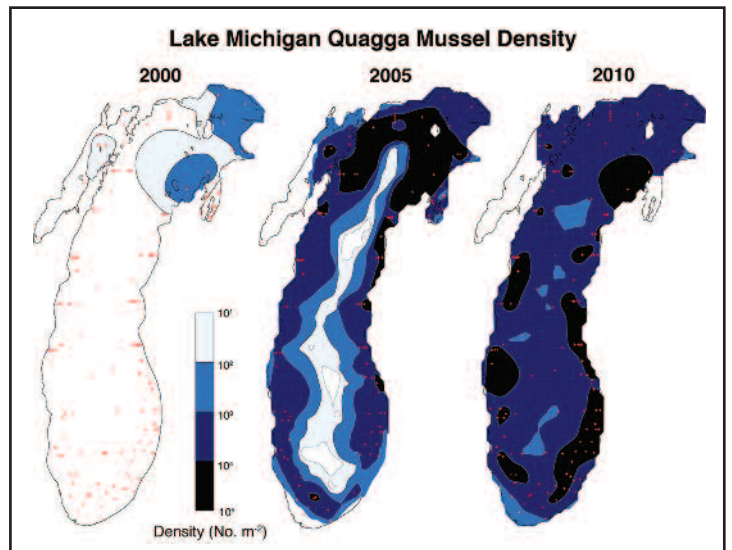


Illustration: Tom Nalepa, National Oceanic and Atmospheric Administration