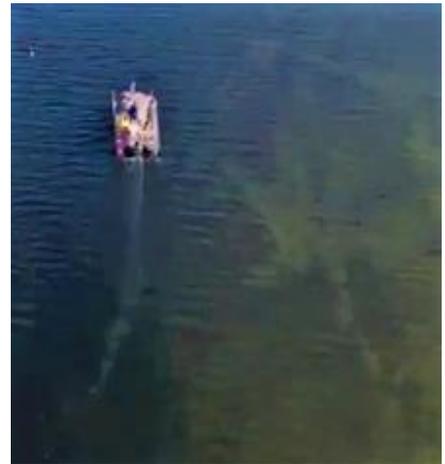


A Summer Under Water



*A Diver's Perspective on Removing Eurasian Water Milfoil from Lake Leelanau by Annalise Povolo**

When I first agreed to work as the scuba diver for the Lake Leelanau Eurasian water milfoil (EWM) project for the Lake Leelanau Lake Association, I did not really know what to expect. Since I have spent the majority of my time underwater in salty, tropical waters, I had never worked with EWM nor seen firsthand how big a problem it can be. Within moments of my first dive in Lake Leelanau, I began to gain an understanding of the magnitude of the task at hand.



During my first dive, I recorded video while swimming the perimeter of the burlap blankets, which had been installed earlier in the summer by the Association to “smother” and kill large swaths of EWM which were growing in the lake. My goal was to document how the burlap blankets were working. Since the barriers were covering areas with the largest infestations of EWM,

the growth of the weed around the edges of the blankets was very dense and tall. But what occurred at the edges of the burlap was different from what was underneath it. As part of our monitoring protocol, I cut a one-meter square into the burlap to observe how well it was killing the EWM, and to see if other invertebrates or vegetation were able to survive. I made the first hole only a few weeks after the burlap had been placed, so there was still a decent amount of vegetation growing underneath, although less dense than what was growing along the edges. I finished the first day feeling a bit intimidated and



overwhelmed by the extent of the problem, knowing that a large portion of our efforts relied on my ability to remove the smaller areas by hand.

The first couple weeks were quite the learning experience. As I was the only diver in the water, I had to figure out the best ways to hand pull and collect EWM from the smaller infestations. The first site I attempted was a relatively small patch, with a diameter of approximately six to nine feet. We came prepared with a few different options for collection, ranging from a simple mesh onion bag to a circular crate made of a metal tomato cage wrapped in small mesh and attached to an anchor and buoy to allow me to move freely. After switching back and forth between the methods that first day, I concluded that the onion bag was the easiest and allowed me to avoid entanglement in the weeds, crucial since I was a lone diver.



Another factor I had to learn to manage was visibility: how far I could see underwater. The visibility in Lake Leelanau in general is fairly poor, especially in the middle of the summer when algal blooms take place. But the disturbance created by removing EWM by the roots created much more significant clouds of silt. The problem was greater where the lake bottom was soft and silty; less so in rocky and cobbly areas. As the summer progressed, I learned different techniques to allow me to see what I was doing. For patches that were relatively small and more circular, I could loop

around it, continuously moving away from the cloud of silt as I worked. That worked better on calm weather days. On windy days, I learned to use the water movement to my advantage: I went back and forth along a line on the downwind end of the patch, so the cloud of silt was carried away with the current. Still, stirring up the sediment was unavoidable. Sometimes, I had to go up to the surface to switch out my bag for an empty one, just to give sediment time to settle.

Beyond visibility, the most troublesome factor I had to consider was fragmentation, which is crucial to avoid as EWM can re-root from small fragments. In areas where the EWM had not grown as tall, it was easy to pull it from the root and stuff it in the bag. However, when the EWM had the right conditions to grow taller, it became much more difficult to collect it without creating fragments. One example was a patch of about twelve feet in diameter, in about ten to twelve feet of water with strands growing all the way up to the surface. It was exclusively EWM and grew so thick that, from my perspective diving on the bottom, it looked like a bamboo forest. I figured out that I had to take less in my hand and do a movement similar to pulling a rope from the water, in which I would grab at the remainder of the strand multiple times, reeling it into a ball before cramming it into the bag. This tedious strategy meant it took several days to complete this section. The most complex sites to handle were the ones intermixed with EWM and native plants, which I wanted to protect. Often, vegetation would be several feet tall, which made it very difficult to get down to see and pull EWM from the root. In those cases, I had to duck my head down into the vegetation to locate the EWM roots among the other plants. However, quick descents require frequent equalization, a technique divers use relieve the air pressure in our heads. Having to equalize so frequently while reaching down to pull EWM made these tall, intermixed sites incredibly difficult to hand pull efficiently – not to mention safely.

After seeing and dealing with the variety of infestations of EWM in different sites, I eventually learned how to assess a site, deciding when a single diver could handle it, when it needed to be saved for the DASH crew, or even if a barrier would be a better solution. There were days when I pulled up to eight five-gallon buckets full of EWM from a larger patch; on others, I would not find much at all. On these days I would swim in a snake pattern, in about four to fifteen feet of water, to survey an area, for mapping

the distribution of EWM in Lake Leelanau. Sometimes I would do this in areas where I would pick up just a few strands of EWM here and there, other times there would be nothing, or occasionally, this method led to the discovery of previously unknown larger infestations. No day was ever the same.

I finished the last day of work at the end of September shivering, but with the feeling that we had accomplished a great amount and contributed towards reducing the spread of Eurasian watermilfoil in Lake Leelanau.

**Annalise Povolo spent the summer of 2020 working as a contractor for the Lake Leelanau Lake Association on its project to control the Eurasian water milfoil in Lake Leelanau. She is currently completing her M.Sc. degree in International Studies Tropical Aquatic Ecology at the University of Bremen in Bremen, Germany. She received her B.A. from the University of Michigan in the field of environmental, fisheries and aquatics studies. Her prior work experience includes working as a SCUBA instructor for the Center for Oceanic Research and Education in Thailand.*

