



# CRYSTAL WHITECAPS

The Newsletter of the Crystal Lake & Watershed Association

Protecting Crystal Lake Now for Generations to Come.

Vol. 17, No. 2

Fall 2022

## PROGRESS CONTROLLING INVASIVE WATERMILFOIL

The CLWA's multi-year project to control the invasive aquatic plant Eurasian watermilfoil ("EWM," *Myriophyllum spicatum*) reached a successful hiatus during the summer of 2022. After three drone-assisted herbicide treatments and several visual inspections, the density appears to have diminished 85% to 90%. Due to these positive results, an additional treatment planned for July 2022 was cancelled: this is consistent with CLWA's goal of using only the absolute minimal treatment. Any interventions in future years will be subject to continued monitoring and evaluation.

The work was authorized by the Michigan Department of Environment, Great Lakes, and Energy under Aquatic Nuisance Control Permit No. ANC9805924. Lakefront property owners whose bottomland would be treated also gave written permission. (For background, see *Crystal Whitecaps* 15:2, Fall 2019; 16:1, Spring 2020; 16:2, Spring 2022.)

CLWA contracted with Clear Water Lake Management, a licensed pest management professional, to apply the recommended chemical product (mainly 2,4-D) that attacks only the invasive EWM and not any native plants present. Zero Gravity Aerial provided drone supervision of the treatment that ensured accurate placement and avoided excessive use of the product. Drone oversight has revolutionized chemical control by providing highly accurate visual images of the plant mass to guide the applicator.

In 2021 the CLWA team carried out two treatments on approximately seven acres of EWM infestation, including very heavy growth at the east end of the lake. By late summer dying plants showed that there had been a good response. An underwater inspection of regrowth in mid-June 2022 showed that the extent (footprint) of the plant had decreased to five acres and that

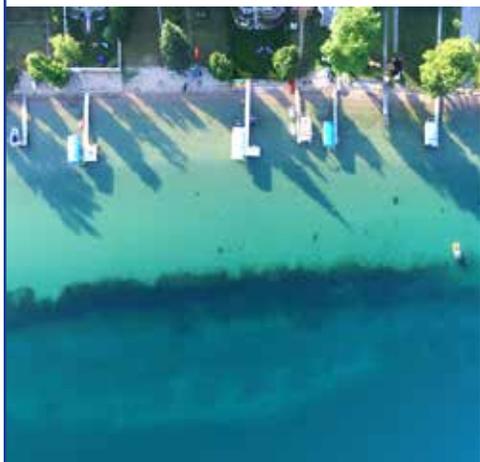
the density (biomass) was now very sparse: a footprint reduction of almost 30% and a biomass reduction of 90%. These results reflect a high rate of success.

On the other hand, a few small new colonies of EWM had appeared since 2021. These are – tellingly – in the area of the Lobb road-end secondary launch site, which is heavily used by boaters but has no provision for hitchhiking invasives to be removed by boat washing.

Clear Water Lake Management and Zero Gravity Aerial carried out a third treatment on June 29, 2022. Inspection a month later indicated that the response was positive enough and control of the EWM was sufficient that an additional treatment planned for the end of July was not necessary. CLWA will conduct a complete lake survey in July 2023 and evaluate steps for the future.

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*Eurasian watermilfoil control at Crystal Lake east end*



**July 2017**



**June 23, 2022, after 2021 treatment**



*Sign posted during EWM treatment*



# PRESIDENT'S MESSAGE



When I came onto the CLWA board about 8 years ago, I knew only that I wanted to help in some way, to be a small part of an organization that was focused on preserving this incredible lake. I did what I always do in a new situation – I participated in just about every committee. Though I'm not an expert in any specific area (my background includes 15 years of teaching 16th & 17th century British Literature, with a smattering of Earth Science), I was eager to learn all I could about each of the critical areas regarding the lake. I've raked

the lake bottom for invasive species, taken water samples to help in our efforts to control swimmer's itch, and organized the Walkabout. Every activity heightened my love of this ever-changing, always fragile place we love to call home. I look forward to continuing to help this amazing group advocate for the Watershed as I learn what it really means to preserve and protect this incredible resource "...now for generations to come."

**Sue Brown, CLWA President**

## PROGRESS CONTROLLING INVASIVE WATERMILFOIL

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Eurasian watermilfoil is present in virtually every county in Michigan and efforts to control it have become the main budgetary item for state and private lake organizations. Over \$24 million is spent annually in Michigan for chemical control of aquatic nuisance plants, most of it for EWM. These products are extensively tested, have a proven long-term record, and are cost effective. CLWA has examined other available treatment options, but none so far appear to be suitable for conditions on Crystal Lake.

Fortunately Crystal Lake's EWM was caught at an early stage and

is relatively limited in comparison to many other lakes. EWM is also – so far – the only invasive aquatic plant identified in Crystal Lake, while many lakes in the state host other harmful plants as well. But we should not become complacent. Increasing boat traffic and climate change favor invasives over native species. Starry stonewort, which has been documented in Portage Lake, is the biggest current threat to Crystal, but others are no doubt working their way toward our community.

Once a lake has an invasive plant or animal (such as zebra mussels) they are present forever and the goal

becomes control not elimination. Prevention with sound boating education and thorough boat cleaning prior to launching can prevent introduction in the first place.

CLWA believes Crystal's infestation of EWM is coming under control. We will continue to monitor it closely and to evaluate other control techniques that may be useful in the future. We know this is a challenge for the long term, and are grateful for the ongoing support of our members and friends.

**Jim Hamp,**  
*CLWA Water Quality Committee*



*Treatment boat viewing image from drone*



*Launching oversight drone*

*Protecting Crystal Lake Now for Generations to Come.*



# STUDENTS “WALK ABOUT” CRYSTAL LAKE ONCE AGAIN

The 27<sup>th</sup> Crystal Lake Walkabout for middle school students took place on May 23, 2022. One hundred ten 6<sup>th</sup> graders from Benzie Central and Frankfort-Elberta Area schools emerged from their classrooms to learn about the science and environment that make Crystal Lake so central to Benzie County.

An annual tradition until 2018, recent Walkabouts were cancelled due to Covid and then severe weather. The 2022 Walkabout woke from hibernation in beautiful spring weather, with some new presenters, a revised Field Notebook, and enthusiastic students and volunteers.

Hands-on learning experiences covered a variety of topics related to the Lake and its watershed, and emphasized the need to protect them.

Jodi Monteith from the Benzie Conservation District showed how wetlands function within the

watershed. John Ransom (BCD) and Bruce Gerhart (CLWA) demonstrated the methods they use to monitor water quality. Emily Cook (BCD) worked with students to show the impact that invasive species have on the lake.

Other local experts also brought their knowledge and experience to the students. Carolyn Thayer (Designs in Bloom) debuted a teaching module about rain gardens. Jim Hamp (CLWA) and Dennis Wiand (Zero Gravity Aerial) demonstrated how drone technology can help track invasive species and detect shoreline threats to the Lake. Gary Herbert and Alison Barker from the CLWA boat wash staff, and County Drain Commissioner Ed Hoogterp let the students practice using the washing equipment to thoroughly remove hitchhiking invasives. At the lower boat launch the group learned how water travels into the lake from the surrounding land (the “watershed”).

Led by retired teacher (and now CLWA President) Sue Brown since 2015, the Crystal Lake Walkabout is now educating a second generation of local residents about this precious resource. Brown developed the innovative Field Notebook which serves as a workbook to complement the demonstrations and reinforce the scientific practices of careful observation and record-keeping.

Special thanks to the Benzie Conservation District for its collaboration and to the volunteers from the Benzie Sunrise Rotary Club.

*“It’s such a great event for these sixth graders! They can’t help but take away so many things that will help them make better decisions for themselves and our planet!”*  
– a Rotary volunteer



Emily Cook with students at Bellows Beach



John Ransom at Bellows showing students an “aquatic bug” (megaloptera): studying these in streams can help assess the water quality



Students practice boat washing at Mollineaux Road launch



# STATE GRANT TO BEULAH WILL PROTECT THE LAKE

We look at our lake, and it appears “crystal clear.” So why does *E. coli* sometimes close down Beulah Beach and why does thick invasive milfoil grow in places? This is due to invisible pollution entering the lake, providing nutrition for the unwanted plants and introducing contaminants from sources in the surrounding land.

Unlike pollution that may be emptying into a water body from a single “point” (like an easily seen drain pipe), it can be very hard to identify the origin of “non-point source” pollution. Strong storms – which climate change will intensify in the future – increase the flow carrying the pollutants.

Beulah Village has long sought to solve the problem of its beach closures. And CLWA’s recent treatment for Eurasian watermilfoil (see p. 1) clearly showed that the thickest and most extensive infestation of this harmful plant in Crystal Lake is in the waters off Beulah Beach. Nonpoint source pollution is the likely cause.

For this reason, the award of a \$519,949 Nonpoint Source Pollution Control Grant to Beulah Village from the Michigan Department of Environment, Great Lakes, and Energy (EGLE) in 2021 was a cause for celebration. Officially the “Crystal Lake Beulah Beach Remediation and Stormwater Water Reduction” project, it will reduce the *E. coli*, sediments, and excess nutrients (mainly phosphorus) entering Crystal Lake from Cold Creek and stormwater runoff originating in the Village.

The grant will pay for designing and installing green infrastructure

that will minimize the runoff carrying the pollution. By slowing the flow of water, it can sink into the ground and filter through the soil. Current plans (see map) are to construct three large underground infiltration chambers (pink dots) near the intersection of Crystal Avenue and Lake Street, rain gardens (purple dots) at the west ends of 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> Streets, and several inlet filtration systems (blue dots).

According to Dan Hook, the Trustee of the Village of Beulah Council who is responsible for the project, ground breaking should begin in spring 2023 with construction of the rain gardens. The heaviest work is scheduled for 2024. Throughout the project, the Village will attempt to minimize traffic disruption during the peak summer season.

For several years Beulah Village and its partners (CLWA, Benzie Conservation District, and County Drain Commissioner Ed Hoogterp) have worked to make this project a reality. They first applied for a

highly competitive Nonpoint Source Pollution Control grant from EGLE in 2017. After two rejections and reapplications, they produced the winning proposal.

The grant requires \$186,000 in matching funds, and the CLWA has taken the lead with a pledge of \$50,000 in cash and/or in-kind services. Benzie County has agreed to provide \$7,000 but additional funds are still needed. Mr. Hook expressed the group’s concerns that recent inflation will impact the original budget.

Beulah’s particular topography creates the problem: its low lying site surrounded by hills forms a spout-like contour that directs drainage into the lake from a wide area. The CLWA is concerned because ultimately this runoff affects the entire lake. The Remediation and Stormwater Water Reduction project will improve the long-term water quality in Crystal Lake, helping to maintain the vibrant tourism and local economy of the entire county.

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*Beulah beach closed due to E. coli*



# STATE GRANT TO BEULAH WILL PROTECT THE LAKE

*Continued from page 4*

The current grant only addresses infrastructure within Beulah Village, but ultimately most of the environmental problems affecting Crystal Lake originate in the farther reaches of the Cold Creek tributary system (for an overview, see *Crystal Whitecaps*, 15:2, Fall 2019).

The Cold Creek system carries drainage from the mucky Trapp

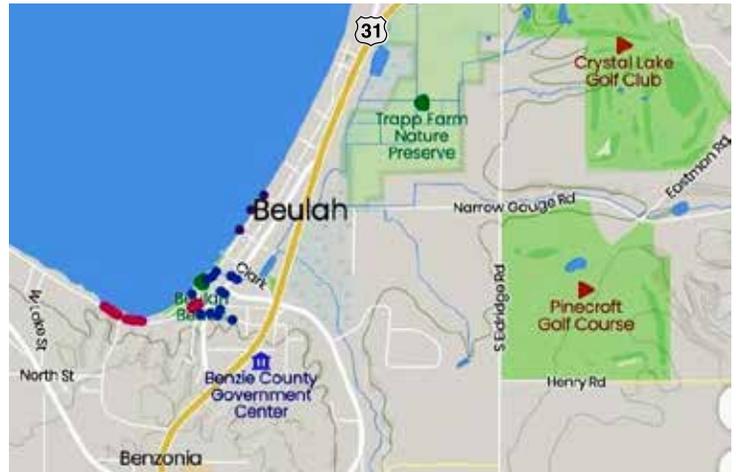
Farm area, two golf courses with manicured turf grass, agricultural land and homes that rely on septic systems. A retention basin in Beulah attempts to slow this flow and decrease the amount of sediment entering the lake, but that requires expensive maintenance to be effective. The CLWA is carrying out testing and gathering detailed scientific data to support

a proposal that will address the more widespread problems of Cold Creek in the future.

*Detailed plans for the project can be viewed at the Benzie Conservation District office or the Village of Beulah office.*



*Cold Creek discharging after rain event*



*Map of Beulah showing project installations (courtesy John Ransom, Benzie Conservation District)*

## **Does the right mitten know what the left mitten is doing?**

At the same time that Beulah and its partners were preparing to spend hundreds of thousands of dollars from Michigan EGLE to control drainage and protect Crystal Lake's water, the Michigan Department of Transportation (MDOT) began reconstructing US-31 through the Village. The durability of this highway has been problematic ever since it was originally laid out to run through the muck of the Trapp celery farm.

MDOT's project included the installation of a catch basin and stormwater drains to prevent water from collecting on the

roadway. Unfortunately for Crystal Lake, the drains – carrying water contaminated with road deposits – would empty into Cold Creek, the stream that Beulah is trying to clean up. CLWA's Water Quality committee was skeptical that the installations would adequately filter the waste water before it entered the Creek.

Representatives of CLWA met with MDOT's engineer in August to examine the situation and explore modifications. Several suggestions proved to be unworkable. Our conclusion is that MDOT made a major mistake by not holding a public meeting for comment before beginning the reconstruction.

CLWA, the Benzie Conservation District, and the County Drain Commissioner are continuing to monitor the effluent after significant rainfall, and attempting to document the amount of water in the catch basin.



*Catch basin west of US-31 near BP station in Beulah*



# SWIMMER'S ITCH RESEARCH 2022

As reported in the “Summer Update 2022” issue of *Crystal Whitecaps*, the Michigan Department of Natural Resources (DNR) cancelled all current permits for common merganser trapping and relocation due to the presence of highly pathogenic avian influenza in the state.

When this notice arrived at the end of March, the CLWA was ready to carry out another season of its successful program for controlling swimmer’s itch (*cercarial dermatitis*) on Crystal Lake. Since trapping and relocation of mergansers began in the summer of 2017, the lake community has experienced a sharp decline in cases of swimmer’s itch. So the CLWA is greatly concerned about what the effect of this interruption will be.

Despite the disappointment, the CLWA continued its established swimmer’s itch research program, in collaboration with Swimmer’s Itch Solutions (SIS).

On July 27, Tim Reznich (CLWA) and Curt Blankespoor (SIS) carried out a full count of waterfowl on Crystal Lake. The aim was to count all mergansers before this year’s

hatchlings were able to fly. The team recorded 92 mergansers, 82 mallards, and 5 Canada geese (all Canada geese were at the green lawn expanse in the northeast corner of the lake). The number of mergansers was close to the number trapped and relocated last year. Unlike relocated ducklings, these birds are likely to return to Crystal Lake looking for nesting spots next year.

Beginning in 2018 and repeating every two years, the CLWA has measured the rate of infection in the Crystal Lake snails that carry swimmer’s itch. In mid-July of each testing year Swimmer’s Itch Solutions collects at least 2,000 *Stagnicola emarginata* snails from ten fixed locations around the lake and determines what percentage of the snails is infected with the SI parasite. From 2016 (the year before the control program began) through 2020, the lake-wide rate of infection declined from 1.05% to 0.045%, a reduction of 99%.

In 2020, CLWA also collected *helisoma* snails, which carry SI on some other lakes. None of those found on Crystal carried the

parasite. Snails were also collected from an 11<sup>th</sup> location, near where the Canada geese congregate: those snails did not indicate that the geese are SI carriers.

Since the usual mid-July snail collection captures snails that hatched the previous year, the results generally are reflecting the thoroughness of that year’s merganser relocation. Those year-old snails – if infected -- would be shedding schistosomes that are seeking an avian host and causing swimmer’s itch. The collection done on July 13, 2022, showed a very low infection rate.

In order to determine the infection level of the snails being hatched *this* year and document any changes, CLWA carried out a second collection in 2022, on September 10. This later assessment would reflect the infection rate of the snails that were infected by the merganser broods which CLWA could not relocate this year. These are the snails that are expected to impact swimmers *next* summer.

Final results and analysis are not yet available for the 2022

*Continued on page 7*



*St. Lawrence pondsnail (Stagnicola emarginata)*



*Collecting snails for analysis*



# SWIMMER'S ITCH RESEARCH 2022

*Continued from page 6*

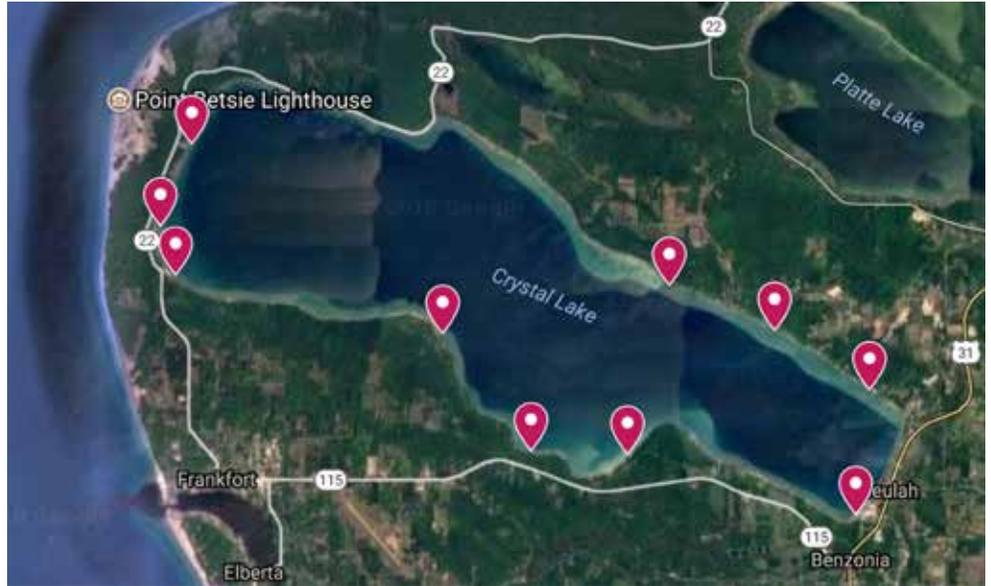
testing program. The CLWA hopes that these data will demonstrate the effectiveness of the trapping and relocation control system. A meeting with the Michigan DNR is scheduled for March 2023 to discuss a permit renewal, and the CLWA intends to make a strong case for the importance of swimmer's itch control and the need to resume our program. At the same time, the CLWA continues to explore alternative control strategies.

The low rate of snail infection found in July is in keeping with the low level of SI reported this year. Once again, the public could report SI cases at the CLWA website and to the waterfront staff at the Congregational Summer Assembly beach. (There was no brood reporting, since the CLWA was not capturing them.) Final analyses will be posted later, but both locations

received significantly low numbers of reports. The CSA data reflect the usual variability based on conditions such as morning/afternoon and onshore wind. Local pharmacists

also reported few inquiries about treatment products.

We all hope this respite from swimmer's itch will continue!



*Map of snail collection locations*

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#### CRYSTAL WHITECAPS

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[crystallakewatershed.org/education/newsletter](http://crystallakewatershed.org/education/newsletter)

## CALL FOR NOMINATIONS TO THE CLWA BOARD OF DIRECTORS

The CLWA is an all-volunteer organization and welcomes new members to its board and committees. It looks for individuals from throughout the watershed area – special skills are helpful, but most important are enthusiasm and willingness to pitch in for the many tasks that help the CLWA preserve and protect Crystal Lake.

If you would like to recommend yourself or someone you know, please contact the Nominating committee at [info@CrystalLakeWatershed.org](mailto:info@CrystalLakeWatershed.org). For information on terms and duties, see the Bylaws posted on the CLWA website: [www.crystallakewatershed.org](http://www.crystallakewatershed.org). If you are interested in a committee, contact information for the chairs is also available on the CLWA website.



*Young mergansers ready to fly South*

## CLWA ANNUAL MEETING 2022

The annual members meeting of the CLWA was held on Saturday, July 23, from 9:30 to 11:00 a.m. at the Congregational Summer Assembly Community Building, with over 50 members and other interested persons attending. Outgoing President Dave Wynne surveyed the association's current programs, accomplishments and future plans. Treasurer Bruce Gerhart reviewed the organization's financial situation. Election of officers and board members had taken place by mail.

#### The following officers and board members were elected:

Elected President: Susan Brown (2022-2024)

Re-elected Secretary: Ellen Herscher (2022-2024)

New board members: Dave Wynne (2022-2025), Mary Ferens (2022-2024)

Re-elected board members (2022-2025): James Hamp, Dirk Nelson, Wanda Shreiner, Hugh Walton

Draft minutes of the meeting are available on the CLWA website [CrystalLakeWatershed.org](http://CrystalLakeWatershed.org).

**CLWA thanks the Assembly for the use of its facility!**