



CRYSTAL WHITECAPS

The Newsletter of the Crystal Lake & Watershed Association

Protecting Crystal Lake Now for Generations to Come.

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COMPLETED WATERSHED PLAN LOOKS TO CRYSTAL LAKE'S FUTURE

The eagerly anticipated Betsie River/Crystal Lake Watershed Management Plan has been submitted to state and federal environmental agencies for final review.

The 160-page document, a multi-year project sponsored by CLWA and several partners, identifies significant water quality issues and proposes long-term options for dealing with those problems. Of particular concern to local swimmers are the issues of E. coli contamination and swimmer's itch on Crystal Lake beaches. Following approval by the Michigan Department of Environmental Quality (MDEQ) and the United States Environmental Protection Agency (EPA), the plan will help our region qualify for grant funding to address those water quality concerns.

The project was initiated in 2011 by a group that included CLWA, the Grand Traverse Regional Land Conservancy (GTRLC), the Green Lake and Duck Lake Association, and the Benzie Conservation District. Funding was provided through a state MDEQ grant of \$162,000 to Networks Northwest (formerly the Northwest Michigan Council of Governments). The plan covers a 242-square-mile watershed that begins south of Traverse City and extends through Betsie Bay to the Frankfort lighthouse. The Crystal Lake Watershed makes up about 20 percent of that total.

The plan notes that actions are already under way that aim to solve two of the significant issues on Crystal Lake. With support from a generous donor, the City of Frankfort will improve Bellows Park and eliminate the severe erosion that occurs there. In addition, CLWA has joined a statewide partnership addressing the gnawing problem of swimmer's itch (see this issue, pages 4-5).

Other ongoing issues cited in the document that affect Crystal Lake (along with potential actions) include:

- Flooding at the Crystal Lake Outlet. (GTRLC, CLWA and Benzie County have purchased the affected site and are working to restore the flood plain.)
- Maintaining proper water levels on Crystal Lake. (CLWA's real-time monitoring system at the Outlet should improve lake-level management.)
- Aquatic invasive Species. (The CLWA boat-washing station at the Mollineaux Road DNR access is a good beginning; more sites may be needed.)
- Sediment and E. coli problems at Beulah Beach. (This complex site will require detailed engineering studies and likely grant funding from the state.)
- Zoning for environmental protection. (The Crystal Lake Watershed Overlay District may require updates to strengthen guidelines for timber cutting and development on steep slopes.)

In the larger Betsie River watershed, major concerns include: inadequate or failing bridges and culverts, eroding streambanks, the need for better public access on the upper stretches of the river, invasive species, and a desire to maintain up-to-date surveys of fish and wildlife. The plan cites a preference for the use of "low-impact development" strategies for sites that are likely to see building in the near future, including the "gateway" area at Interlochen and the former railroad yards in Elberta.

CLWA has been active in every aspect of the project. President Joel Buzzell chaired the watershed plan steering committee, and CLWA board member Stacy L. Daniels also served as a steering committee member. Past CLWA president Ed Hoogterp served as a consultant for writing and assembling the plan. CLWA interns Jodi Montieth and Erica Plesha conducted photographic surveys of the shorelines of Crystal, Green and Duck lakes. The Crystal Lake survey was taken on boats provided by CLWA Board members Jim Hamp and Rick Cassard.

Continued on page 2



Fishing at Beulah Beach



PRESIDENT'S MESSAGE

Much has been done by your organization dedicated to the protection of Crystal Lake's pristine waters and preservation of the essential character of the watershed that surrounds it. Your commitment and your action allow the dedicated CLWA officers, directors, and volunteers to carry out this mission.

In this issue, you will find articles describing several projects that your CLWA has identified as priorities:

■ The Betsie River/Crystal Lake Watershed Management Plan, for which the CLWA took a major leadership role, is in the hands of the U.S. Environmental Protection Agency for final review.

■ The swimmer's itch (SI) control program, with enhanced regional collaborative and scientific initiatives, is taking a serious turn this year with projects that will establish the scientific benchmarks necessary to manage SI. These measures are in part the result

of our leading role in the Michigan Swimmer's Itch Partnership.

■ Erosion control around the lake will be significantly enhanced by the purchase of a property in the Outlet floodplain that previously severely inhibited our ability to optimize lake drawdown events. This project is led by the Grand Traverse Regional Land Conservancy and has been funded in part by your CLWA.

■ Educating and communicating with our CLWA members and our community continues. Last October we held our annual CLWA Walkabout, when middle school students from all of Benzie County took a day out to engage in activities around our beautiful watershed. It is imperative that all segments of our community – for whom Crystal Lake is a vital economic, recreational, and aesthetic resource – understand the issues impacting the Lake and what the CLWA is doing to generate positive outcomes.

The summer of 2016 will bring the launch of a new initiative to study the aquatic invasive species present on Crystal Lake. By identifying and mapping the aquatic invasives currently resident, and profiling locations where future invasives are most likely to enter Crystal, we will be able to establish programs to control proliferation and prevent infestations. This type of project is designed to help us understand and act before we fall into a much more difficult – but all too common – situation of defensive damage control.

Your support in 2016 is essential. As you will see in the following articles, your CLWA is investing considerable effort and funds toward our goals. Please give generously and renew your membership when your notice arrives. Your investment now will pay significant dividends in the near future! ■

- Joel A. Buzzell, President
Crystal Lake & Watershed Association

COMPLETED WATERSHED PLAN LOOKS TO CRYSTAL LAKE'S FUTURE

Continued from front page

The Betsie River/Crystal Lake Watershed Plan and accompanying maps may be viewed in the planning section of the Networks Northwest website, www.networksnorthwest.org. A link to the document site is also on the CLWA website. When the agency review is complete, paper copies will be made available at public libraries in Benzie County. ■

CLWA ANNUAL MEMBERS MEETING 2016

**SATURDAY
JULY 23 AT 9:30 A.M.
CONGREGATIONAL SUMMER ASSEMBLY
COMMUNITY BUILDING**

All are welcome to come and hear reports on CLWA's current activities, featuring a presentation on swimmer's itch by SICON, LLC.



ANNUAL CLWA FALL WALKABOUT – 23 YEARS OF WATERSHED EDUCATION

Since 1993 the CLWA has sponsored a day-long, hands-on program for Benzie County middle school students. Christened the “Walkabout” by its creator, Dr. Stacy L. Daniels, the event strives to foster an understanding of, an appreciation for, and a sense of responsibility toward the Crystal Lake watershed. Each year CLWA enlists local experts to help lead this educational effort, which raises awareness of the connection between the community and the surrounding water systems.

Now being led by CLWA board member Susan Brown, the 23rd Annual Fall Walkabout continued this successful tradition despite the drizzly weather on October 8, 2015. Volunteer presenters from the Benzie Conservation District, the Grand Traverse Conservation District, the U.S. Coast Guard Station, the Frankfort Planning Commission, and our own experts from the CLWA combined efforts to share their expertise and enthusiasm for the Crystal Lake watershed area and its needs. Over 140 students from the Frankfort-Elberta and Benzie Central school systems participated.

Four locations served as stations for presentations: the CLWA boat wash at the Mollineaux Road access site, the Crystal Lake Outlet, Bellows Beach, and the U.S. Coast Guard Station-Frankfort. Students and their teachers moved via school buses from station to station, where at each spot the team of experts and CLWA volunteers guided the students through a wide range of topics.

Some of the topics covered during the day were:

❑ **Invasive aquatic species** such as zebra and quagga mussels and Eurasian milfoil, which devour the local food sources that feed our indigenous species;

❑ **Invasive terrestrial species** such as phragmites, honeysuckle, garlic mustard, baby’s breath, and others, which release harmful toxins into the environment and crowd out natural plant life;

❑ The need for **monitoring the lake level** to minimize erosion caused by ice expansion and wave action in the winter and summer seasons;

❑ The ongoing problem and the efforts to control **swimmer’s itch**;

❑ The upcoming **improvements to the swimming area and pavilion at Bellows Beach**;

❑ A **pyrotechnic demonstration** showing how the CLWA is disrupting the local merganser flock in the ongoing assault on the swimmer’s itch problem; and

❑ The great work being done at the U.S. Coast Guard station located in Frankfort, where the Coast Guard protects our shores and the citizenry, not just with rescue operations but also teaching and promoting **boating and swimming safety** on the local waterways.

Each student received a small “passport” documenting each stop and providing space for notes. This proved an instant hit with both students and teachers,

especially due to the convenient pen attached. (Now, if we could just get those pens to work on wet paper!)

Afterward the adult participants concluded that CLWA’s goals—engaging students in the life of the watershed and helping them to understand and appreciate this wonderful resource in their community – had been successfully met. In the words of one volunteer, “The students were excited and, for the most part, well-engaged. They answered many of the questions posed and asked very thoughtful questions of their own.”

CLWA wishes to thank the great group of volunteers and presenters who donated their valuable time and expertise: John Ransom, Emily Cook, Josh Mills, Erica Anderson, Al Flory, Gary Herbert, Ed Hoogterp, Tom Kucera, Ted Fisher, Sharon Fuller, Doug Fuller, Jan Wynne, Dave Wynne, Barbara Fisher, Monica Schulz, Wally Herrick, Stacy L. Daniels, and Joel Buzzell.

Plans are already under way for the 2016 edition of the Annual Walkabout. If you are interested in volunteering to help, please contact Sue Brown at susan.browsu01@gmail.com. ❑



John Ransom, Benzie Conservation District, with Walkabout students at the Crystal Lake Outlet.



CLWA INTENSIFIES ACTION AGAINST SWIMMER'S ITCH IN SUMMER 2016

NEW RESEARCH TEAM JOINS CRYSTAL LAKE ACTIVITIES

In order to significantly expand its efforts to bring swimmer's itch control to Crystal Lake, the CLWA board of directors voted in February to contract with SICON ("Swimmer's Itch Control") LLC to carry out a multi-faceted program of research and assessment during the summer of 2016.

Led by Dr. Curt Blankespoor from Calvin College and the University of Michigan and Ron Reimink, a biologist, and incorporating the expertise of Dr. Harvey Blankespoor who has 50 years of experience studying swimmer's itch, SICON has previously carried out control programs on Glen Lake and other lakes. Their results have documented a reduction in lake-wide snail infection rates from approximately 2% down to 0.1% after three years. SICON's current control methods largely rely on trapping and relocating broods of common mergansers to lakes that do not have the snail species necessary to sustain the life cycle of the parasite that causes the swimmer's itch allergic reaction in humans.

SICON's work on Crystal Lake this summer will consist of a pilot program with the following components:

Avian Schistosome Species Assessment

SICON will survey Crystal Lake to determine the presence and relative abundance of all snail species, then examine a subset of those species with a large enough population size to contribute to significant swimmer's itch. All cercaria types released from the snails will receive species identification through DNA analysis.

The study will include at least two complete bird surveys along the entire

shoreline, to assess waterfowl population size and diversity. Fecal samples from hatch-year birds will be collected later in the summer when parasite eggs may be present for possible identification. Both eggs and hatched miracidia will receive identification through DNA analysis.

Results from the species analyses of both cercaria (from snails) and eggs/miracidia (from waterfowl) should provide an accurate assessment of the schistosome species causing swimmer's itch on Crystal Lake.

Whole-Lake Snail Infection Rate Assessment

Snail infection rate is currently the best diagnostic metric for assessing the effectiveness of various swimmer's itch control measures. Between mid-June and mid-August SICON will collect approximately 200 host snails from each of 10 sites a minimum of 5 times (total 10,000 snails). Collected snails will be checked for schistosome infections through microscopy. All parasite infections, including non-schistosomes, will be documented and identified to species (where possible) in order to provide a complete set of biological diagnostics for Crystal Lake.

Education and Outreach Activities

SICON scientists will join with the CLWA's community outreach by making a formal presentation at the CLWA's annual meeting (July 23), dedicating a page on its website (www.swimmersitch.org) to the CLWA, and providing personalized answers to questions through the contact link and periodic social media updates on its website. SICON's end-of-season report will be summarized in the Fall 2016 issue of *Crystal Whitecaps* and posted in full on CLWA's website.

CLWA will evaluate the results of SICON's 2016 program to determine whether

it should be expanded into a broader 3-year project that SICON has proposed. SICON's premise is that following an intensive three years of control activities, a properly designed, less costly maintenance program can be effective.

RESULTS OF SWIMMER'S ITCH RESEARCH IN SUMMER 2015 AND CONTINUING INITIATIVES

The addition of SICON adds one exciting new dimension to CLWA's well-established programs to combat swimmer's itch, which will be continuing during Summer 2016.

CLWA continues its partnership with Oakland University for summer 2016, supporting research under the direction of Dr. Thomas Raffel of the Biological Sciences department measuring the distribution and abundance of swimmer's itch parasites in Michigan lakes. This will build on the studies carried out by Madelyn Messner in 2015 on eight northern Michigan lakes, including Crystal (see *Crystal Whitecaps*, Fall 2015). For 2016, the number of lakes studied will double and the total number of individual sites will increase from 14 to 35.

Preliminary results from Ms. Messner's work last summer provide the following information:

- █ Cercaria (parasite that causes swimmer's itch) abundance can double from one day to the next.
- █ There are a great deal more cercaria in large/deep lakes than in smaller lakes.
- █ Lakes containing more forested areas in their watersheds had higher levels of cercaria (possibly due to having more bird nesting habitat).



- There are positive correlations between maximum light levels, chlorophyll (algal biomass) and cercaria levels.

- Wave energy (rough water days) seems to be an important predictor of cercaria.

Specific results concerning Crystal Lake showed above average cercaria levels compared to the seven other lakes sampled, the third highest cercaria level over all.

The four sites where testing was done on Crystal Lake produced the following individual characteristics:

- Congregational Summer Assembly (CSA) – Only site with below average cercaria levels. Higher levels during first two weeks of July, tapered off as survey continued, with one large peak on July 22.

- Chimney Corners – Had the most day to day variation.

- Orchard Hill (near Beulah) – Highest cercaria concentration of four sites tested. Steady increase from July 19 – July 28 (July 17 worst day).

- Onkeonwe – Lower levels around early July, then very stable and steady climb from July 20 – July 27.

As described in the last issue of *Crystal Whitecaps* (Fall 2015), CLWA has helped form a coalition of thirteen lake associations, the Michigan Swimmer's Itch Partnership (MSIP), that have joined forces to work together to expand knowledge about swimmer's itch and increase funding for its eradication, to advance the search for long term, permanent solutions. This group continued to be active over the winter, seeking funding from both public and private sources as they continue to seek ways to break the life cycle of the

swimmer's itch parasite, reduce the number of parasites in lake waters, and develop preventive barrier-type skin products.

CLWA's well-tested programs of pyrotechnics and hunting are also continuing in 2016, along with the expanded research initiatives. Our expectation is that ultimately more knowledge about the biology and processes of swimmer's itch infection will lead to the long-term solutions that lake lovers are seeking.

- Ted Fisher, Chair
Crystal Lake Swimmer's Itch Partnership



Has swimmer's itch emptied Crystal Lake's beaches?



A GENEROUS GIFT INVESTS IN CRYSTAL LAKE'S CLEAR WATERS

One of the long-time concerns of the CLWA has been shoreline erosion and water contamination due to intermittent flooding and high lake levels, a threat that the recently completed Watershed Management Plan has also highlighted. For years one of the trouble spots has been private property near M-115, downstream from the Crystal Lake Outlet and in the Outlet's floodplain. When this area floods – as it does frequently – the backed-up water impedes outflow from the lake, thus keeping the lake higher than its regulation level and causing severe erosion around the shoreline.

This fall the problematic property was put up for sale, and the Grand Traverse Regional Land Conservancy (GTRLC) approached the CLWA to join an effort to purchase the property and remediate the issues causing damage to Crystal Lake. Removal of the existing domestic structure and restoration of the floodplain would allow the water outflow to be unimpeded following significant flooding events, enabling the lake level

to be more accurately and immediately managed to target levels. Ultimately ownership of the property will transition to Benzie County Parks and Recreation, as is the nearby Railroad Point Conservancy.

The CLWA was able to help provide the needed funds for this vital watershed management project thanks to a bequest received last year, arranged by Jack and Betty Frost many years ago (mentioned in the Fall 2015 issue of *Crystal Whitecaps*). The Frosts' ever-present foresight and love of Crystal Lake left the CLWA with a large gift in trust that had grown over the years. Those who knew the many and considerable personal commitments the Frosts made to our Crystal Lake community felt that this opportunity to make a positive investment in the betterment of Crystal Lake was one they would heartily endorse.



Flooded property near Crystal Lake Outlet, April 2016

Ultimately the CLWA contributed \$13,000, joining with substantial funding from the GTRLC and additional public and private support, to purchase the property and begin the remediation process. (The balance of the Frost gift has been directed to CLWA's long-term endowment.)

The impact of this major project will benefit all who enjoy Crystal Lake's beautiful shoreline and help protect its pristine water for generations to come. 🌿

NEW HISTORICAL MARKER INSTALLED AT CRYSTAL LAKE OUTLET

A new historical marker at the Outlet commemorates the event that created Crystal Lake as we know it today.

Sponsored by the Beulah Boosters and the Benzie Area Historical Museum, with CLWA assistance, the marker recalls the actions of entrepreneur Archibald Jones, who in 1873 founded the Benzie County River Improvement Company to develop water-lots on Crystal Lake, construct canals between Crystal Lake and Betsie Bay, and build a steamboat to transport settlers and goods within Benzie County. When a major storm washed away a temporary dam, Crystal Lake was

drained to a much greater extent than was originally planned.

Although the dramatic lowering of the lake brought failure to Jones's plans, it created twenty-one miles of sandy

beach that form the basis of today's prime recreational area. The widened shoreline made possible the founding of the Village of Beulah, the coming of the railroad, installation of telegraph and telephone lines, development of lakeside resorts and private cottages connected by perimeter roads.



Historical marker near the Crystal Lake Outlet.

To reach the marker: park in the small lot where the Betsie Valley Trail crosses Mollineaux Road, and follow the Trail a short distance toward the dirt path that leads to the Outlet. 🌿



NEW PROGRAM PROVIDES GUIDANCE FOR LAKEFRONT LANDSCAPES

The CLWA has long advocated lakeside management practices that minimize erosion, inhibit the spread of invasive species, and prevent the introduction of pollutants. The ideal is to establish procedures that preserve aquatic habitats, water quality and natural scenery, while accommodating swimming, docking and the other uses that are important to shoreland owners.

Most lakefront property owners are ready to do their part in protecting water quality and aquatic habitat along their shoreline. In fact, in a recent survey, more than 90 percent of property owners in the Crystal Lake and Betsie River Watershed agreed with the statement: "It is my personal responsibility to help protect water quality."

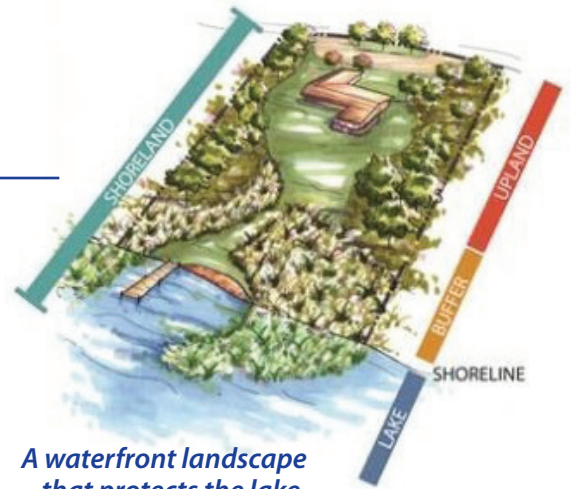
Of course, wanting to do the right thing is not the same as knowing how to go about it. The same survey showed that property owners need and want more information to guide their actions.

That's why CLWA has teamed up with the Michigan Department of Environmental Quality (DEQ) and Michigan Natural Shoreline Partnership to help create an education and recognition program for lakeshore property owners.

CLWA and five other lake associations worked cooperatively over the past year to develop the Michigan Shoreland Stewards. The program offers a voluntary web-based survey that asks property owners about how they manage their land and includes tips and educational material for "best management practices" to both enjoy and protect the water. Questions are broken down into four main landscape areas: the upland, the buffer or greenbelt area, the immediate shoreline, and the lake.

The survey, which takes 15 to 30 minutes, includes questions about such topics as lawn fertilization, impervious surfaces, storage of docks, handling of animal waste, and so forth. At completion, the website provides a rating for the individual property, along with a list of possible changes to better protect the water. Depending on the property's score, the site can generate a certificate, recognizing the property owner as a "Shoreland Steward."

The scoring criteria emphasize the benefits of natural shorelands, with deep-rooted perennial vegetation in most areas except those needed to access docks or swimming areas. Sites managed in that



A waterfront landscape that protects the lake.

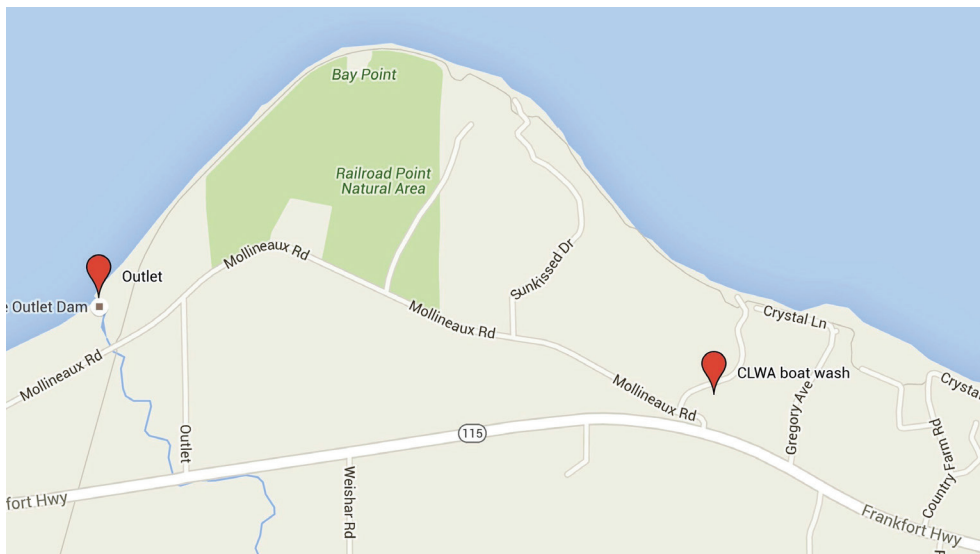
way tend to preserve habitat for fish and bottom-dwelling organisms in ways that benefit the entire lake.

The program also acknowledges that truly natural conditions may not be reasonable on shorelines that were developed or altered in past years. So the guidelines include best practices for altered shorelines, or where seawalls were constructed in the past. For example, seawall impacts may be softened by placing rock rip-rap below the seawall and/or native perennial plants on the landward side of the structure.

It also recognizes that property owners on some sites – such as the downwind shores of large lakes – must contend with ice push, "high-energy" wave action and other conditions which have an impact on shoreland management.

The "Shoreland Steward" certificates are offered free of charge. Outdoor signs, about the size of an auto license plate, are available at a nominal charge.

The website survey – found at Mishorelandstewards.org – became operational on May 1. Check it out and see how YOUR shoreland measures up!



CLWA projects on the southeast shore of Crystal Lake.



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SAVE THE DATE FOR “BLITZING” INVASIVE SPECIES ON JULY 2

CLWA will join forces with the Northwest Michigan Invasive Species Network and the Benzie Conservation District to host a public outreach event featuring strategies and actions to prevent the spread of invasive species into our lakes. All watercraft operators are invited to stop by for demonstrations and the latest information on how they can help protect Crystal Lake.

Saturday, July 2, 9:00 a.m. to Noon
Crystal Lake Public Access Site
(Boat Launch) at Mollineaux Road



MEET THE CLWA!

The CLWA will be participating in these local events during the summer of 2015. Please visit our booth and say hello! Information on protecting our watershed will be available. CLWA T-shirts and watershed maps will be for sale.

July 2..... “Landing Blitz” at the Mollineaux Road DNR boat launch

July 9..... Beulah Art Fair

July 27..... Congregational Summer Assembly Arts & Crafts Fair

August 19-20..... Frankfort Art Fair



Joel Buzzell, Ann Pepper, Ellen Herscher, Hugh Walton and Jim Hamp at the Frankfort Art Fair August 2015.