Cattail Chronicles

Issues Affecting the Surface Waters of Lake County

Volume 23, Issue 1 Winter 2016

Special points of interest:

- Behind the scenes look at a shoreline restoration project
- What is the latest news on zebra mussels?
- Why are aquatic plants essential for fisheries?
- Learn why and how to report blue-green algae blooms.

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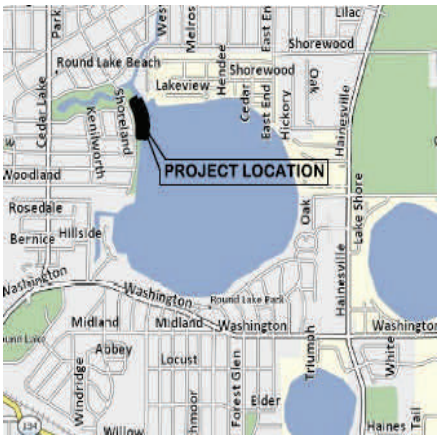
Behind the Scenes: Shoreline Restoration on Round Lake

By: Alana Bartolai (LCHD), Frank Palmisano (Round Lake Area Park District) and Timothy Pasternak (RLMC)

Round Lake is a 230-acre glacial lake in west-central Lake County. In 2012 the Round Lake Management Commission (RLMC), which is made up of appointed volunteer commissioners from the Villages of Round Lake, Round Lake Beach, and Round Lake Park, met with staff from the Village of Round Lake Beach and the environmental consulting firm Integrated Lakes Management, Inc. (ILM) to discuss concerns about shoreline erosion and options for restoration.

Photo of the restoration site facing south along the walking path before restoration (Integrated Lakes Management, Inc.)

The goal of the project was to find a way to begin restoring the shoreline at Lakefront Park on Round Lake using best practices. They also wanted to present a way to educate not only the residents, but surrounding communities, on methods to repair, restore, and stabilize lake shorelines. Once completed, the restoration area will be a physical improvement to the lake. The demonstration area will include interpretive signs and other educational materials to inform the public on the benefits of the restoration project and actions individuals or communities can take to improve their lake shorelines.



Images: Integrated Lakes Management, Inc.

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LakeCounty
Health Department and
Community Health Center

Zebra Mussels: An Update

By: Mike Hawkins, Iowa DNR, Guest Contributor

Image: texasinvasives.org

"...the transition between the initial discovery of the first mussel to seeing tens of thousands of mussels per boat hoist takes about 3 years. " - Mike Hawkins, Iowa DNR

Image: texasinvasives.org

The zebra mussel population in Iowa is undergoing rapid expansion. Invading species, like zebra mussels, have great advantages over native animals as they invade new areas. For example, young native mussels need to attach to specific hosts (such as fish or amphibians) to develop, whereas young zebra mussels develop in the water without needing to attach to anything. In addition, the predators, diseases, and parasites that keep zebra mussel populations in check in their native habitat are missing in North America.

Zebra mussel population expansion can't go on forever though. We will eventually see them reach or even exceed their carrying capacity in these lakes. Their population will likely crash and then rebound to a more modest level with less intense fluctuations through time. It is difficult to predict the timeline of these events, but we will be monitoring the population as time goes on.

There have been several zebra mussel news stories coming from Minnesota and Canada in recent months. In particular, the news stories from Christmas Lake (Minnesota) have been a bit conflicting. The attempt to eradicate zebra mussels in Christmas Lake last summer was initially reported as a success, but surveys in 2015 indicate the project was ultimately unsuccessful. To discuss the Christmas Lake treatment and its relevance to our situation requires a description of what probably occurs in lakes during the first years of a zebra mussel infestation.

As we have seen in the Iowa Great Lakes, the transition between the initial discovery of the first mussel to seeing tens of thousands of mussels per boat hoist takes about 3 years. During the first few years, the numbers of zebra mussels slowly grow. This slow population growth is limited simply by the proximity of male and female mussels to each other. A female zebra mussel expels eggs into the water and a male mussel must be very close to fertilize those eggs. Eventually the number of breeding mussels in close proximity to each other increases, population growth is no longer limited, and the lake experiences a population explosion.

At Christmas Lake, sampling in 2014 indicated they may have found the first and only early colonizing zebra mussels in the lake near a single boat ramp. The community and Minnesota DNR quickly mobilized a plan and encircled the area with a curtain to keep any larval mussels from leaving that area of the lake. The treatment of the public access area in Christmas Lake consisted of three parts. Zequanox was first applied to the treatment area in September, 2014. That application was followed by a copper treatment of EarthTec QZ in October and November, 2014. In December, a contractor working with the DNR injected 1,000 pounds of potassium chloride (potash) under the ice near the public boat access. The applications of potash and EarthTec QZ were experimental and required special emergency permission.

Continued on page 3...

Zebra Mussels: An Update (continued)

Initial sampling indicated they had succeeded at killing all zebra mussels within the containment area. However, additional surveys in the summer of 2015 indicated zebra mussels are in other parts of the lake. The failed effort at Christmas Lake was not a result of a failure to act quickly or a failure of the eradication techniques used in the containment area. They failed because mussels were likely already established in small, undetectable numbers in other parts of the lake far outside of the containment area prior to the first discovery near the boat ramp.

Many agencies and communities were monitoring the Christmas Lake effort. It was one of the first times rapid eradication techniques had been utilized after early detection. Many biologists were hopeful for a successful project but also skeptical since undetected colonization beyond the containment area was likely. Development of an early detection and eradication strategy is still being considered by agencies in the event an introduction, like an infected boat hoist, is reported in the first days after it is in the lake. If caught early, many believe this strategy could be successful and worth pursuing.

The management of zebra mussels continues to be a frustrating endeavor in North America. At least 756 lakes in the United States have become infested since zebra mussels were first discovered in 1988. To date, there have only been a couple of successful eradications.

Research is currently proposed and underway to further develop control and eradication strategies. The newest approved pesticides that are only available for spot treatment of small areas around intakes and sensitive areas include Zequanox and EarthTec QZ. Other research is focusing on parasites and disease identification from areas around the zebra mussel's native habitat in the Caspian Sea.

Lake wide treatments, especially at the scale of the Iowa Great Lakes, remain unfeasible. For a sense of scale, the volume of water treated at Christmas Lake in the attempt to eliminate zebra mussels was 4 acre-ft. (1 acre in size and approximately 4 ft. in average depth). The volume of the West Okoboji Lake alone is over 146,000 acre-ft.

Obviously, we would be far better off without this invading species in our lakes. With limited options however, we must face this challenge and adjust our habits and the management of the lakes. This will be a learning process for everyone with many unknowns ahead. Our best defense will be to prevent additional invasions and improve the health of our native lake plants and animals. Continuing efforts to improve water quality provides benefits for the native ecosystem which in turn creates better resilience against current and future invaders.

" Our best defense will be to prevent additional invasions and improve the health of our native lake plants and animals."

Year	Lakes with discovered Zebra Mussels in Lake County, IL
2000	Independence Grove Lake
2001	Sterling Lake, Fox Chain'O'Lakes, Gages Lake,, West Loon Lake, Tower Lake, Third Lake, Gages Lake
2002	Lake Minear, Lake Zurich
2003	Bangs Lake, Cedar Lake, East Loon Lake
2004	Druce Lake, East Loon Lake
2007	Slocum Lake
2008	Diamond Lake
2010	Acorn Pond
2012	Cedar Lake, Deep Lake, Long Lake, Round Lake.
2013	Forest Lake
2015	Island Lake, St. Mary's Lake,

Behind the Scenes: Shoreline Restoration on Round Lake (continued)

The shoreline restoration process started with the initial meetings involving representatives from the Village of Round Lake Beach, the RLMC and staff from ILM. ILM was contracted in 2013 to do a comprehensive lake report, which highlighted shoreline erosion and restoration needs on Round Lake. Utilizing the lake report from ILM, and continued meetings with all entities involved, the RLMC was able to request a proposal outlining potential projects and methods for the restoration, including costs. Concurrently, the RLMC in partnership with the Round Lake Area Park District and the Huebner Fishery Management Foundation was able to develop a plan for funding the project, which included project design and engineering, surveying, permitting, and implementation.

The next step was to finalize the project proposal in preparation of bringing it before the Village Mayor and Trustees. The plan was approved and the permitting phase with the Army Corp of Engineers and Lake County Stormwater Management Commission was able to begin in the Fall and Winter of 2015.

The shoreline restoration and demonstration projects involve repairing and restoring the northwestern shoreline of Round Lake utilizing various erosion control techniques such as vegetated geogrids, coconut fiber rolls, and native plantings.

Advice for other lake associations thinking about restoration? Make sure you do your research. As with most major projects securing funding and approval from all of the interested parties and stakeholders can sometimes be a challenge. When dealing with multiple entities, have your plan well developed so that you can make a strong presentation. While lake groups have a duty to act on behalf of the well-being of their respective lakes, you also have a responsibility to the community and local entities that you represent as well. This means knowing what the finished product will look like, what the benefits will be, the timeline for the project, and where the funding will come from.

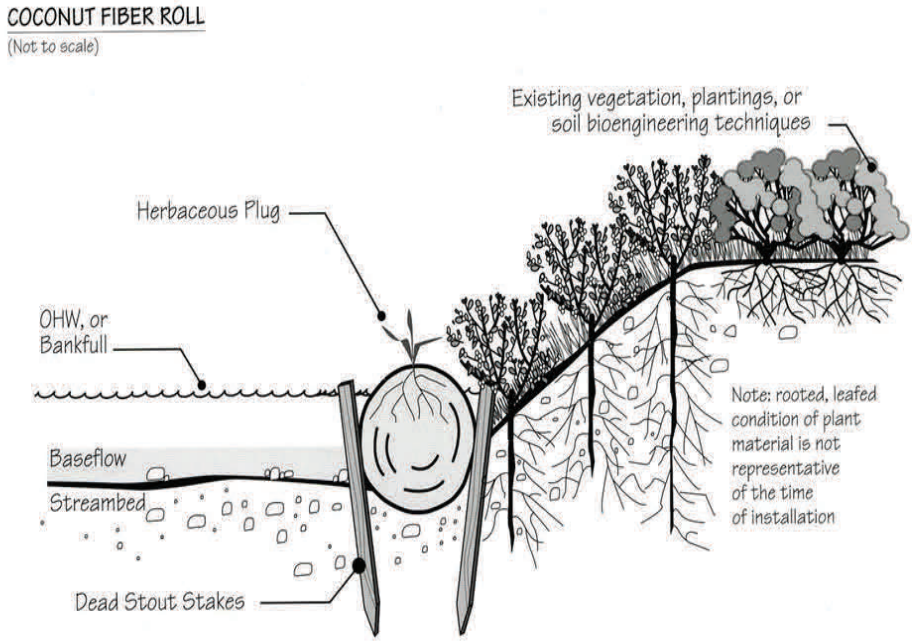

Image via USDA Forest Service

Coconut fiber rolls are one of the shoreline erosion control methods proposed on Round Lake. Coconut fiber rolls are cylindrical structures composed of coconut husk fibers bound together with twine woven from coconut. It is staked in place at the toe of the slope and the fiber rolls function as breakwaters along the shores of the lake. It reduces wave energy, and this product can help contain substrate and encourage development of wetland plant communities.

Reporting Harmful Algal Blooms

We know that all too familiar green color we end up seeing during the summer months in our lakes, but how do we know if the algae you are seeing in your lake may carry toxins and what do you do if you see it? Blooms can be found in most bodies of waters in the Great Lakes region and tend to thrive in shallow, warm, non-moving bodies of waters. A harmful algae bloom (HAB) is a bloom of blue-green algae that contains toxins which can cause fish kills, foul up nearby coastlines, and produce conditions that may have a health risk to aquatic life, humans and their pets.

If you suspect a blue-green algal bloom on your lake or on a public lake you've visited, you can report it to the Lake County Health Department by calling 847-377-8030. If possible, take two photographs of the bloom. One photo should be a close-up of the algal bloom or scum, and the other photo should include the surrounding landscape to help identify the location of the bloom or scum on the lake. You should also take general information of where the bloom is occurring. For example, a nearby address or latitude/longitude.

If the Bloom Report and photos support the occurrence of an actual blue-green algal bloom, a HAB responder may be sent to investigate the bloom.

Lake users and lake homeowners are some of the best people to keep an eye on the water quality of your lake. If you suspect there is a Harmful Algal Bloom in your lake, call 847-377-8030 to report it to the Lake County Health Department to allow for further investigation.

If a HAB responder is sent to investigate they may also collect a sample for analysis of microcystins. Microcystins is the most common toxin found in HABs, but is one of many different stands. If they do, they may analyze the sample using a qualitative test kit (which provides results within 1 hrs.). If microcystin is detected above concentrations of concern, the person reporting the bloom and the lake management entity will be notified.

The remaining sample may also be sent for quantitative analysis (with a longer turn-around for results). Again, if levels of microcystin are of concern, results will be provided to the person reporting the bloom and if identifiable, to the lake management entity.

Illinois EPA will not issue an advisory or close a lake due to microcystin concentrations that exceed the high recreational threshold (according to World Health Organization Guidelines). Illinois EPA will provide information to the lake owner and may make recommendations. With information in hand, the lake owner or association, at their discretion, may choose to post an advisory (or close a portion of the lake), warning people of the elevated microcystin levels in the lake.

Follow-up qualitative or quantitative samples may be taken, on a site specific basis, as time and resources allow.

Invasive Species Spotlight: Purple Loosestrife

By: Alana Bartolai, LCHD

AIS SPOTLIGHT

Purple loosestrife is a wetland plant from Europe and Asia, originally introduced into the east coast of North America in the 1800's. Purple loosestrife invades marshes and lakeshores and can form dense, impenetrable stands which are unsuitable as cover, food or nesting sites for a wide range of native wetland animals.

The best time to control purple loosestrife is in late June, July or early August when it is in flower (so you can easily identify it) and this is before it goes to seed. Once the flower petals start to drop from the bottom of the spike, the plant begins to produce seed. You can continue to control for it when this happens, but you have to be more careful so seeds are not shaken and spread. For sites where plants have already gone to seed, you can remove all of the flowering spikes first by bending them over a plastic garbage bag and cutting them off into the bag. You can then cut or pull stems without fear of spreading any tiny seeds.

For areas where there are only a few plants and it can be easily accessed, it is best to manually remove the plants. Purple loosestrife can be cut or pulled. It's easiest to hand pull when the plants are young, when they are older they have longer roots, and you may also have to use a garden fork to remove as much of the root system as possible. Removing flowering spikes will prevent this year's seeds from producing more plants in future years . Each mature plant can produce over 2 million seeds per year!

For areas with greater populations of purple loosestrife, there are options for biological or chemical control. Persistence is key as controlling purple loosestrife can take several years.

Two leaf beatles (*Galerucella pusilla* and *G. Calmariensis)* and two weevils, one a root-feeder (*Hylobius transversovittatus*) and one a flower-feeder (*Nanophyes marmoratus*) have offered some hope to control purple loosestrife by biological control. The beetles eventually weaken and kill the plant, or in the case of the flower-feeder, prevent seeding. In large stands of loosestrife, the beetles and weevils naturally reproduce and reduce plant densities. The insects are host specific, meaning that they will attack no other plant but purple loosestrife. The beetles have been released in Lake County and appear to have done well. Citizens may notice these beetles on their plants, and should leave them alone so they can reproduce and reduce the purple loosestrife densities.

Proper disposal of plant material is important – you can take bags to a sanitary landfill site, but make sure to check with the landfill to see if they need bags to be broken open for composting; composting is not recommended as purple loosestrife seeds may not be destroyed. Another possibility is incineration as it can be an effective way to dispose of the plant material.

Never intentionally plant purple loosestrife on your property. There are several native plant species that look similar to purple loosestrife that can be used as planting alternatives such as swamp milkweed, fireweed, blazing star, and spotted Joe-Pye-weed to name a few.

Never intentionally plant purple loosestrife. Instead, consider planting one of the many native plants that look similar, but are beneficial for the environment.

Join the Volunteer Lake Monitoring Program

The Volunteer Lake Monitoring Program (VLMP) was established in 1981 to gather information on Illinois inland lakes, and to provide an educational program for citizens. In the Basic Monitoring Program, citizens select a lake in which they have an interest in and are then trained to measure water clarity (transparency) using a Secchi disk. This increases citizen knowledge and awareness of the factors that affect lake quality so they can understand the lake watershed and ecosystem and make informed decisions. Other observations recorded by volunteers include water color, suspended algae and sediment, aquatic plants and odor are also recorded. Volunteers monitor twice a month, May through October. If you would like more information or are interested in joining VLMP for a lake of your interest, please contact:

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Dick Schick
32 year VLMP
www.epa.state.il.us/water/vlmp/index.html

Illinois Lakes Management Association 31st Annual Conference

Joint Conference with ILMA and ILAFS
February 29—March 2, 2016
Wyndham Springfield City Centre, IL
www.ilma-lakes.org

The Illinois Lake Management Association (ILMA) and Illinois Chapter of the American Fisheries Society (ILAFS) are hosting a joint conference at the Springfield Hilton Hotel & Conference Center in Springfield, Illinois on February 29th through March 2nd, 2016.

The conference offers two full days of presentations from over 30 experts in the water quality field, and a third day of workshops. Come take advantage of having the opportunity to learn and network with persons throughout the industry. This is a great opportunity to learn about current lake management issues. For more information and to register, please visit the Illinois Lakes Management webpage at: www.ilma-lakes.org

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Happy Plants, Happy Fish

By: Gerard Urbanozo, LCHD

Aquatic plant density and variety can dictate the quality of your lake's fishery. Aquatic plants are beneficial to fish by providing oxygen and competing with algae for nutrients which can limit algae blooms from occurring. Aquatic macroinvertebrates are also attracted to plants and play an important role as a food source for fish.

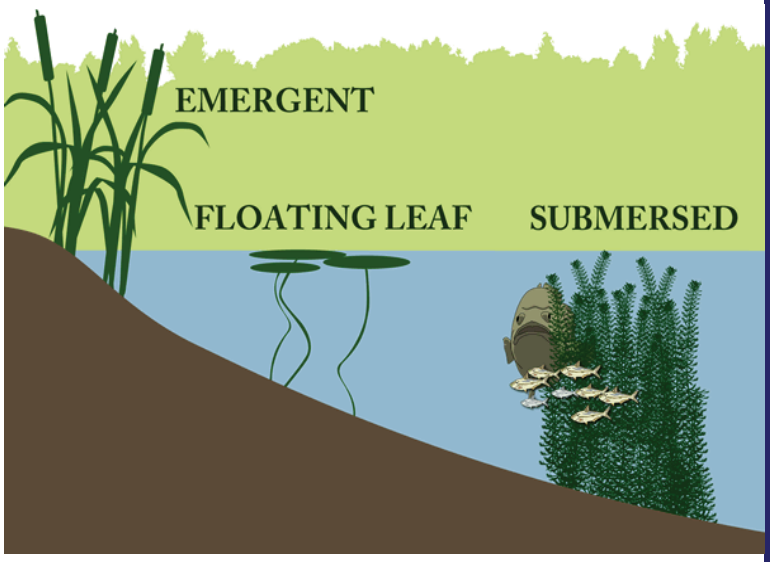

Image courtesy of The Lakes of Missouri Volunteer Program

Lakes receive some of their dissolved oxygen through plants and the rest from the atmosphere where wind and wave activity can increase absorption. Plants release dissolved oxygen into the water through photosynthesis. Oxygen levels below 5 mg/l can lead to biological stress. Inland lakes with little or no aquatic plants can experience fish kills during the summer when the water temperature exceeds 90°F and oxygen levels drop below 2 mg/l. Chemical treatment of plants during the summer can cause large amounts of plant matter to decompose, resulting in oxygen deficiency. Fish kill can occur in the winter due to low oxygen conditions when thick snow accumulation on top of the ice blocks sunlight preventing photosynthesis. Eventually fish, decaying plants, and other organisms will use up the remaining oxygen in the lake.

Pike in pondweed. Image http://underwaterfishphotos.blogspot.com/

Fish use aquatic plants for food and cover. Minnows, perch and northern pike often lay their eggs on aquatic plants which then act as a nursery for the newly hatched fish. Aquatic plants provide a perfect place for small fish to hide from predator fish and other animals, although largemouth bass and northern pike are adept at feeding in aquatic plants. Northern pike will lie and wait for prey in the edges of the aquatic plants while bass will stalk their prey. Aquatic insects and macroinvertebrates prefer to live around aquatic plants and are an important food source for panfish and juvenile gamefish.

Lakes with excessive aquatic plants can lead to problems as well, such as a stunted population of fish. Invasive plants such as Eurasian Watermilfoil can grow thick monoculture stands that block sunlight from reaching the lake bottom, thus preventing native plants growth. The lack of plant diversity

Continued on page 9…..

Happy Plants, Happy Fish (continued)

provides poor habitat for fish and macroinvertebrates. Native plants such as Illinois pondweed are less likely to form dense cover and are preferred by gamefish. Bluegills are the most common panfish found in our local lakes and they can easily hide from predators in thick vegetation. They can quickly deplete their food supply, causing them to grow slowly. Gamefish in these lakes may also suffer in size when they are unable to access their food sources.

Particles in the water, including free-floating algae as well as other solids including bottom substrate and nutrients, can be minimized by rooted aquatic plants. Increase in water clarity results in more sunlight penetration into the water column, allowing plants to grow deeper in the lake. Phosphorous is usually the limiting nutrient for plants and algae in lakes. Aquatic plants help limit algae blooms by using phosphorous and nitrogen that could otherwise be available for algae. Algae blooms reduce the amount of sunlight available for plants. After the bloom, decaying algae is broken down by bacteria which cause the dissolved oxygen levels to drop.

Finding a balance of aquatic plants in your lake takes careful planning. Removing invasive species will help promote native plants which are more beneficial to a healthier fish population. A fish survey is necessary to get information about the size distribution of the fish in the lake. If your lake has been determined to have a stunted population of panfish, it may be necessary to stock more gamefish while reducing invasive aquatic plants. This will allow gamefish to feed more effectively and control panfish populations resulting in bigger bass and other gamefish.

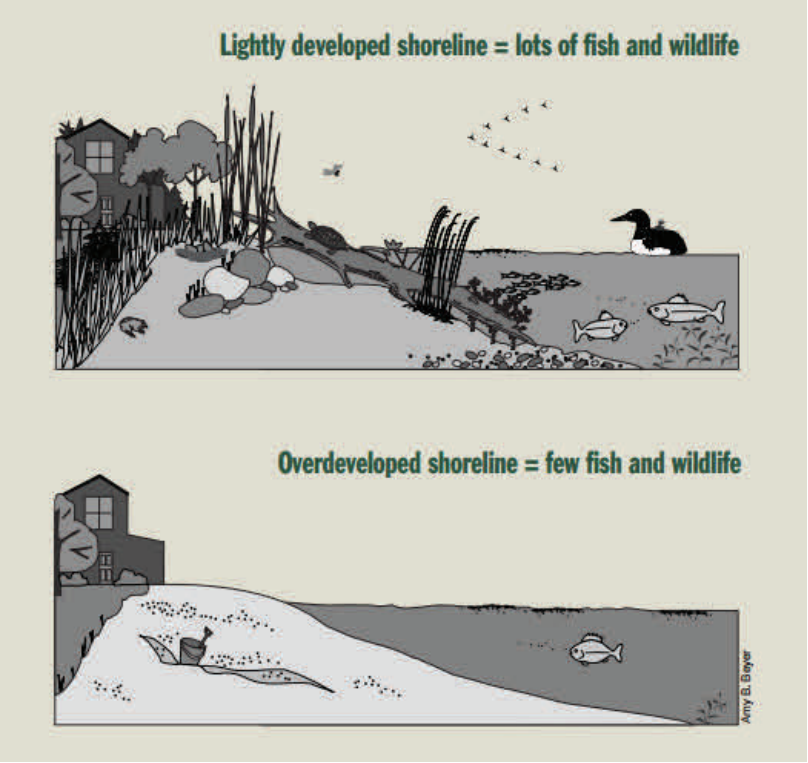

Image courtesy of Michigan Department of Natural Resources

What can you do?

- **Leave aquatic plants along the shoreline**
- **Consider re-establishing aquatic plants along the lakeshore**
- **Understand what aquatic herbicides are used on your lake and how it may impact native vegetation in your lake.**

Lake County
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847- 377- 8030

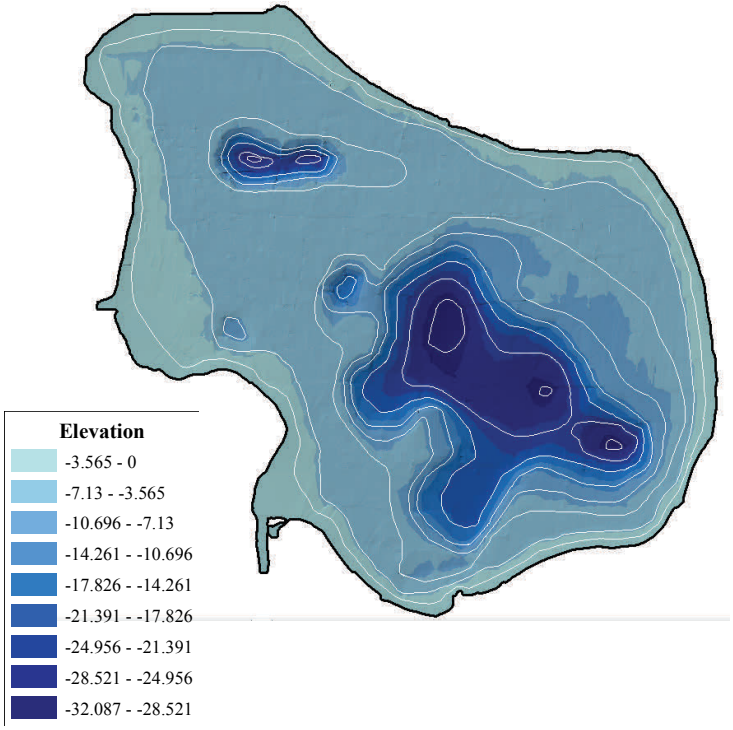
Mike Adam:
Senior Biologist

Gerard Urbanozo:
Water Quality Specialist

Alana Bartolai:
Water Quality Specialist

Peggy Ratliff:
Administrative Assistant

Can you name this lake?



Clues:

- **Max Depth:** 32 ft.
- **Surface Area:** 232 acres
- **Average Depth:** 8.16 ft.
- **Located in:** Flint Creek Watershed
- **Shoreline Length** 2.82 miles
- **Shares name with a city in Switzerland**

Think you know the answer? Email your best guess to abartolai2@lakecountyil.gov.

We're on the web! Visit
http://health.lakecountyil.gov/Population/LMU/
to find out information about your local lake,
beach advisories, and more.

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