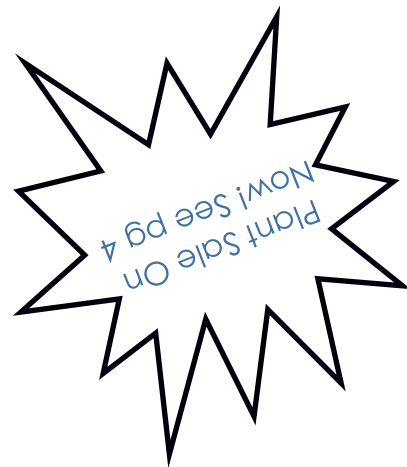


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Vol. 27, No. 1

Winter 2020

FROM THE HELM

Over the past two months I've had several residents ask me about what happens to the lake when it doesn't freeze very solidly or doesn't stay frozen.

The first thing that comes to mind is we can't ice fish on the lake. From the early age of three my father took me ice fishing at first ice, usually around Thanksgiving time, and I remember us being the very first ones out on the lake many years in a row. Many others would join us soon after and the ice skaters, skiers and fisherman would all enjoy these outdoor activities to help break up the long winters in Wisconsin.



I then started to research some of the studies that have been done to better understand what to expect on Lake Ripley. As one biologist explains, the ice on a lake is like a rest button for the lake. The ice sits like a cap on top and keeps the water cool and still, serving several functions.

Plankton, which includes the microscopic eggs and larva of macroinvertebrates, get cues from ice cover, so without it, may hatch too early. The smallest fish rely on the new hatches for food. Slightly bigger fish rely on the success of the small fish. And so on up the food chain. More on this on pages 3-4.

A second effect is that the lake water evaporates at a faster rate, causing the lake to warm more quickly. This upsets the timing between algae and lake plant growth, potentially leading to harmful algae blooms. As water warms sooner and stays warm longer in the season, it becomes more sensitive to future warming. The cycle of shortened or curtailed ice seasons feeds on itself.

John Magnuson, Director Emeritus of the UW-Madison world famous Center for Limnology, warned that it is important to understand that the loss of lake ice won't happen all at once.

"In reality, winters are very variable. It isn't going to be like we have ice and bang no ice," he said. It will be an increasing frequency of winters without ice.

Decreasing ice cover joins the things we evaluate as we update our management plan. Changes to the budget – to accommodate the possibility of harvesting lake weeds longer during the summer months - may follow.

As global temperatures continue to increase in the coming decades the big implications for lake ecology and winter activities will need to be dealt with. For now, less ice means less ice-skating, ice fishing and skiing. Let's work together to make sure the next generation can love the winter activities we all grew up with. *Jimmy DeGidio, Chair*

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Muck Memories: History of Lake Ripley

Most natural lakes in the state of Wisconsin, including Lake Ripley, are thought to be about 12,000 years old. This was the time of the retreat of the last glaciers. Because it is unusual to have written records of lakes that are even as old as 100 years, scientists have needed to read a different type of record in order piece together their past.

Because each lake sedimentizes at different rates, for different reasons, and with different materials, each lake has its own story to tell. The deeper the core sample, the longer the record that can be read. Over 200 of Wisconsin's estimated 11,000 natural lakes have had a sediment core analysis conducted.

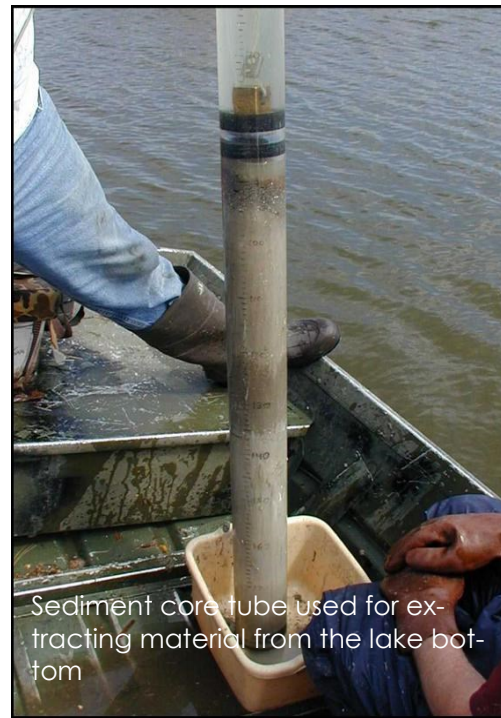
Lake Ripley is one of the lucky 200. Paul Garrison, a retired paleolimnologist from the Wisconsin Department of Natural Resources, who now works as a part-time lake planner for a private lake contractor, and who is donating time to help the Lake Ripley Management District with its ten-year comprehensive plan update, recently recounted his findings on Lake Ripley and other lakes, during a talk in Madison sponsored by the Clean Lakes Alliance.

Garrison also shares this information every September during the Pontoon Classroom event that the Lake District organizes, which brings together local high school students, scientists, and volunteer area pontoon captains, who take the students out on the lake to study its history, among other lessons.

From the sediment core taken from Lake Ripley in 2007, Garrison can infer what was happening in the Lake Ripley watershed from days before European settlement. During presettlement, there was little erosion because the lake was surrounded by stable, soil-protecting communities of woodlands, prairies and wetlands.

By comparing the core with known history, Garrison can track changes in the watershed. In the 1830s, when European settlers started to populate the area, the core dated from this time reveals the start of largescale watershed changes. Logging and wetland draining had an impact on the amount and type of materials that made their way into the lake, and eventually settled on the bottom to be covered by newer materials. Specifically, the muck of this section contained a higher sediment infilling rate, and higher phosphorus concentrations in the lake.

The core tracked the influx of population aided by the railroad line between Milwaukee and Madison that was completed in 1881. (continued page 7)



Sediment core tube used for extracting material from the lake bottom

Photo from Lake District archive

One of the records that these scientists have learned to read is called a sediment core. To obtain this record, they conduct a sediment biopsy, usually at the deepest part of the lake. A plastic tube, usually 5

feet long, is

forced into the sediment of the lake to get a deep slice of the material, and then raised it back up.

The scientist then performs an analysis. A full core analysis involves bagging sections of the core approximately every 1/2 inch to allow in-depth study of each sample. This gives a story over time. It is akin to looking at the rings of a tree, and deciphering the clues that are embedded in them.

The sediment that makes up each section is age tested. Scientists have multiple ways to approximate the age of each section; they use more than one to cross check their work and to increase accuracy. Lead-210 dating, and cesium-137 dating are two methods they've discovered.

Hold the Salt

Oakland Township has been working to reduce the winter salt that they use to keep roads safe.

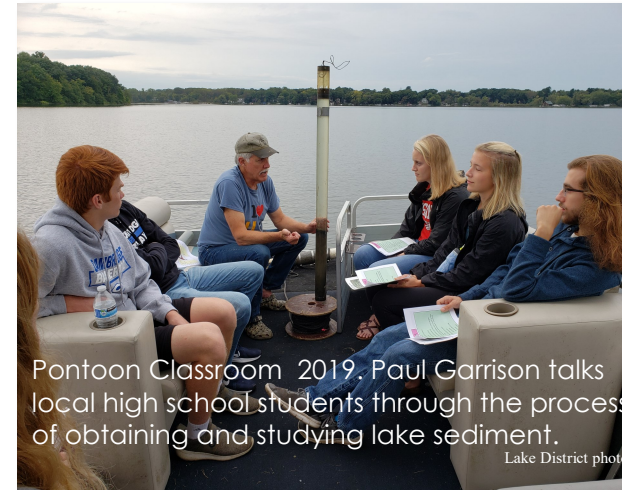
Jeff Scheel, Public Works Supervisor, estimates that since he started working for the town in 1994 they've reduced the amount of salt used from 500 - 600 pounds per mile to closer to 300.

Scheel is motivated to keep the roads as safe as possible while reducing costs and minimizing the undesirable ecological effects of salt use.

According to the Wisconsin Salt Wise Partnership, a coalition of organizations working together to reduce salt pollution in our environment, road salt irritates pet paws, weakens and damages the concrete, brick, and stone that makes up our homes, garages, bridges and roads, and has negative effects on sensitive aquatic life.

Once salt is in the environment it doesn't go away. It ends up in our lakes, rivers and streams. Lake Ripley data has not been updated recently, but shows a gradual rise, all well within safe tolerances, from 1973-1998. Chloride measurements will be added to our management goals as part of our updated lake improvement plan. Madison's Lake Wingra shows that chloride concentration has increased from 5 mg/L before the use of road salt to 115 mg/L today. There are spikes during winter events and depending on where snows is piled.

Contractors, public employees and homeowners "have a liability, but they also have a responsibility," said Scheel, to learn best practices and use the right amount of salt for conditions. For more see wisaltwise.com.



Pontoon Classroom 2019. Paul Garrison talks local high school students through the process of obtaining and studying lake sediment.

Lake District photo

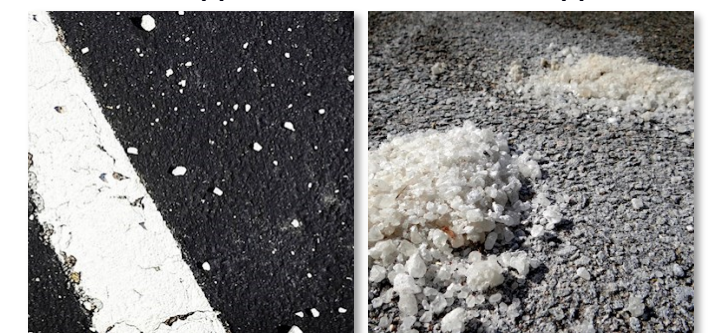
A spur to Cambridge in the rail line was completed a few years later, making the area easily accessible to summer visitors from Chicago and Milwaukee. Summer houses started to crop up along the shoreline. The effect this had on sedimentation is clear from the sediment record.

The next notable changes took place after World War II when agricultural mechanization and greatly heightened uses of commercial fertilizers became the norm. This effect is shown through the increase in soil delivery to the lake and an increase in phosphorus concentrations.

The peak of phosphorus loading ended through the enactment of programs spurred by the Lake Ripley Priority Lakes Project of the 1990s - early 2000s. The sediment core reveals the changes resulted in a healthier lake. Continued improvements in agricultural practices, the restoration of wetlands, and establishment of shoreline conservation measures resulted in a reduction in the lake's sedimentation rate and phosphorus concentration.

The value of learning to read sediment cores is not only to solve mysteries of the past. Sediment cores provide evidence that what happens on the watershed has direct, lasting and trackable impacts on the lake. It helps us to predict how today's and tomorrow's changes will affect the lake, and to manage those inputs to work toward the goals we identify together as a District.

Correct salt application Incorrect salt application



One coffee mug of salt, spread correctly, is enough to treat an entire 20-foot driveway.

Reducing Bird Collisions: A Chance for Citizen Scientists

No one likes to hear the thud of a bird crashing into a window. It's distressing to think that a beautiful life form has met with injury or death so suddenly.



Bird Collision Corps volunteers monitor sites that experience many bird collisions in order to work with owners to make modifications that fix the problem. Most bird-window collisions take place on first and second stories.

Researchers at the US Fish and Wildlife Service have been working on reducing bird collisions by providing guidance for building owners to reduce the reflectivity of their glass and to take a bird-friendly approach to their lighting. They've come up with a list of recommendations for residential and commercial property owners.

While most people consider bird/glass collisions an urban problem involving tall, mirrored-glass skyscrapers, the reality is that 56% of the collision mortality occurs on one to three story buildings.

On the UW-Madison campus, a volunteer effort coordinated by Madison Audubon has formed, called the Bird Collision Corps. They monitor buildings of high concern on public property using the methods and tools provided by the program. They simply walk around these buildings daily or every other day during migration seasons to document any dead or stunned birds. They report these observations to the program's data portal, available through a free smartphone app called iNaturalist.

Madison Audubon staff analyze the data at the end of each season, and report back to volunteers, building managers, and other stakeholders. Together they start exploring options for how to fix the high-risk areas.

Ways to Help

The Madison Audubon is looking to expand the Corps to areas that have both a high concentration of bird life and buildings with large glass surface area. Homes around lakes and wetlands often meet these criteria. The District is exploring if residents of the Lake Ripley area may be interested in being part of this research project.

Here are options if you'd like to help:

1. Do you own a home or business with large windows that experience a number of bird collisions? Would you be interested in attending a 1-hour training in the Oakland Town Hall to learn how to become a monitor? Or are you willing to allow a monitor on your property daily during the spring and fall migrations to check for injured birds?
2. Would you be willing to be trained as a monitor and be assigned to a property that you would check daily during the spring and fall migration?
3. Would you be interested in a copy of the US Fish and Wildlife Service pamphlet, "Reducing Bird Collisions with Buildings and Building Glass Best Practices" to read at home?

If the answer to any of these questions is yes, please contact the district at ripley@oaklandtown.com, or 608-423-4537, and tell the Lake Manager the way(s) you may be willing to help. If enough interest is expressed, a free training will be organized. You will be notified of time and place.

The Lake Ripley data will be added to data from other areas and used to inform glass and window designs to reduce mortality from bird collisions.



The District is updating its management plan and would like to include great supporting photos of the lake, preserve and watershed. If you have photos that would help tell the story of our lake and lake district, and would like to see them used in the plan or other material, please send a digital copy to ripley@oaklandtown.com. We will credit your photos.

Icing on the Lake - Trends and Impact

A lake is considered ice covered when the deepest part of the lake is ice covered. It takes at least a week of below freezing weather for the lake to freeze.

The early cold snap of Oct/Nov resulted in a relatively early ice-on date this year. The exact date is not known at the District at the time of this writing; if there is a reader who tracked the date this year, please contact us so we can correct this oversight in the record.

People were ice-fishing on Dec 21, but the ice was off the deepest part of the lake on Jan 2, with temperatures for the final week of 2019 averaging in the high 30s. Ice covered the lake again Jan 16th.

Volunteer monitors have been tracking ice-on/ice-off dates for many years. This is not the first time that there are multiple dates for ice-on/off/then on again.

In 1991-92, 2002-03, and 2013-14, 2014-15 there were freezes and thaws. Earliest recorded ice-on date took place in 1996 when the Deep Hole was frozen by November 27. Conversely, in 2007, it took until January 17 for ice-on, which is the latest recorded ice on date.

The average number of days for there to be ice cover on Ripley between the years of 1989 and 2009 was approximately 97. The average number of ice-on days between 2009 and 2019 was 94. There was a high of 125 days of ice cover in 1992-93. The low of 51 days took place in 2016-17. The second shortest number of ice-on days took place in 2015-16 with 65 days.

Ice cover for freshwaters in the northern hemisphere has steadily declined during the last 150 years, according to the Center for Limnology at UW-Madison. Lake Ripley is exhibiting this trend, So how might this difference have an impact? (Story continues pg 5.)



Photo from Google Images



Microplastics in the Mississippi

Water Action Volunteers (WAV) help Lake Ripley by monitoring the water leaving the lake through its outlet, where it flows into Koshkonong Creek, the Rock River, the Mississippi and finally, the Gulf of Mexico.

During the summer of 2019, undergraduate researcher and former WAV Volunteer, Maya Dizack kayaked the Mississippi River sampling for microplastic abundance. She will be discussing her sampling design, results, and how this research plays a greater role in understanding the state of our environment and society in a free webinar that you can view from your home computer or come to the District office to view with the Lake Manager. The webinar will be held on Feb 5, from 12 noon—1 pm. Register for Webinar to watch from home: [at watermonitoring.uwex.edu](http://watermonitoring.uwex.edu)

RSVPs required to watch with Lake Manager to assure we reserve a large enough space in the Town Hall. Discussion will follow the webinar. Call 608-423-4537 to RSVP.



Lake District photo

The Cost-Share Program Going Strong

Seed and garden catalogues appearing in snowy mailboxes are a reminder that winter gives way to spring in a few short months. This is a good time to introduce new lake residents to our successful Cost-Share Program, and to remind "experienced" lake residents of Cost-Share funds set aside just for them.

The District began this far-reaching program years ago to encourage property owners to install projects in their yards or along shorelines —whether self-owned or co-owned by your Homeowners Association — that would benefit our whole lake. Examples are planting native trees and native flower gardens such as ones that would prevent shoreline erosion, increase stormwater infiltration, and/or increase beneficial habitat for local wildlife.

The Lake District estimates that agricultural and shoreline Cost-Shares since the 1990s have prevented 2600 tons of sediment from reaching Lake Ripley each year!

The Lake District estimates that our agricultural and shoreline Cost-Shares since the 1990s have prevented 2600 tons of sediment from reaching the lake each year! Your landscaping decisions impact the effort to keep the lake healthy.

One way that the District encourages these projects on private property is to offer to share the expenses of making them happen – up to 50%!

You can learn more about our Cost-Share Program by visiting our website (www.lakeripley.org) and following the "Programs" tab. Download our *Cost Share Program Participant's Guide*. You are also welcome to contact the Lake Manager, who can meet with you and walk you through project eligibility, applications and action steps.

We've been offering cost-shares for so many years now that some of our first projects are in need of refurbishing. We have funding set aside for these as well. If you have a Cost-Share project that needs a redo, we can walk you through the process to receive up to 50% of the restoration work to get it back to new. Call the Lake Manager for more info.

Native Plant Sale On Now!

Everyone, whether a cost-share participant or not, is welcome to place an order for native plants from Agrecol, a reputable local grower. The District organizes a wholesale order and does the pick-up for you, bringing flats to the District office in time for spring planting.



There are hundreds of species to choose from; something for every condition of soil, moisture and sun/shade requirements. There are plants of every size, height, shape and color. See <http://www.agrecol.com> and browse on-line. If you prefer to look at a catalog, request one to be sent to you by calling 608--223-3571 or stop by the District office to pick one up.

If you would like help making choices for plants that would grow well on your property, please contact the Lake Manager before March 1. 608-423-4537.

When you are ready to place your order, leave the info with the Lake Manager via email, phone, drop box or mail. Make sure to leave your phone number in case we have questions for you about your order.

One order will be placed by the District at noon on Friday, March 27, 2020. You must have your order into the District before this time to be included in the wholesale pricing.

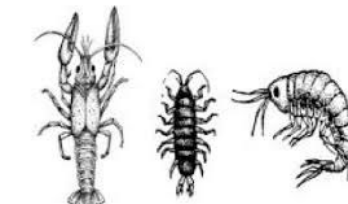
These are native perennial flowers, grasses and sedges that will enhance your yard or shoreline for years. We promote native plants because of their ability to solve erosion problems around our lake. See the illustration on pg. 8 that shows the deep undercover lives of native plants' roots in comparison to lawn grass roots.

Perennial plants, those that come up year-after-year after being planted once, also can be more affordable and easier to maintain in the long run.

Ice Cover Changes (cont.)

Declining lake ice is a significant factor to monitor and manage for the Lake District. According to Kristopher Wright, aquatic biologist with the University of Wisconsin-Platteville, reduced ice cover and warm winters will impact the timing of macroinvertebrate hatching, development and growth.

Aquatic macroinvertebrates are the diverse group of critters that connect the upper levels of the food chain (small fish, reptiles, amphibians, etc.) to the lower levels (phytoplankton, macrophytes, etc.) They are vital connectors that transfer energy up the system and live all or part of their lives in water.



Aquatic Macroinvertebrates

Some common aquatic macroinvertebrates are clams, water beetles and the larval or nymph stages of insects such as dragonflies and damselflies.

Since native macroinvertebrates and native fish, turtles and frogs evolved together in the Wisconsin climate, they depend upon one another for food, and their rhythms of development are in sync. If the macroinvertebrates get out of sync, it may prove devastating for the animals up the food chain that depend on them as food sources at critical times of their own development.

Reduced ice cover and warmer winters are being watched for their impact on dissolved oxygen levels in lakes, as algae and plant production adjusts to fluctuating light and temperatures. There is already evidence that different lakes react differently to weather pattern changes.

Humans react differently, as well. For some, the warmer winters are mostly welcome. For others, there is a pain at the loss of winter culture.

"As places across the northern hemisphere deal with warmer winters, events...like ice fishing tournaments and cross-country skiing and

Ice skating races, are increasingly postponed or cancelled," said John J. Magnuson, Professor Emeritus of the Department of Integrative Biology, as quoted in a January blog post from the Center for Limnology at UW-Madison.

"While each of these issues may seem like only a local concern, for the millions of people living in places where winter ice is in retreat, they add up to a major shift in human relationships to winter," he said.

Managing our relationship to winter may be the one thing we have most control over. For those of you missing some winter traditions due to lack of ice cover on the lake, reach out to others. You are not alone, and together we may be able to do something about it.

A Community to Which We Belong

Aldo Leopold wrote in 1948, "When we see land as a community to which we belong, we may begin to use it with love and respect. . .That land is a community is the basic concept of ecology...The land ethic simply enlarges the boundaries of community to include soils, waters, plants and animals." And of course, us! The people.

One might suppose that the Lake Ripley Community is just those folks living around the lake. Lake Ripley would tell us that this community includes *everything* within our watershed — the streams, wetlands, and the groundwater underneath, because all the waters are connected hydrologically.

Lake Ripley is replenished not only by its only inlet stream, but also by rain and snow falling on it, and the underlying groundwater.

Groundwater replenishes us, too! Groundwater provides drinking water to 70% of Wisconsin citizens. When we are acting with a land ethic, we are helping the lake, too. When we restore prairies and wetlands, and create rain gardens, these places help recharge the groundwater. Conservation works for all of us.

Loving our lake, our streams, wetlands and yes, the groundwater, is worthwhile. We are all community.