



Lake Highs and Lows How They Can Be Affecting the Clarity of Your Lake

By Katie Hein, Lake Monitoring Lead, Wisconsin Department of Natural Resources

Have you ever lost sections of your pier because they floated away when the lake flooded? Has the water's edge been hundreds of feet out from the end of your pier? Have you noticed a rhythm to these highs and lows? Do you wonder how these fluctuating lake levels affect the lake?

Lake levels do fluctuate over time, and on some lakes, they move a lot. The vertical change can be as much as 18 feet, but is usually less than six feet. Seepage lakes, those without a stream inlet or outlet, fluctuate much more dramatically because there is nowhere for the water to go when it floods. Conversely, there is not a stream replenishing water to a seepage lake during a drought.

Lakes and Groundwater in Unison

Researchers examined water level records that date back to 1942 from Lake Superior, Lake Michigan-Huron, and inland lakes and groundwater wells in northeast Wisconsin. They found that the highs and lows occur on a 13-year cycle and that these waterbodies fluctuate in unison! This coherence points toward a large, climatic signal driving water level fluctuations, perhaps as far afield as atmospheric circulation patterns in the midlatitudes of the North Pacific that bring moisture up from the Gulf of Mexico. Though these patterns are suggestive, more research is necessary to explain why a 13-year water level cycle occurs.

(Continued on page 2)

Robert Korth



HIGHS

Tim Asplund



LOWS

(Lakes Highs and Lows, continued)

Another team of scientists compiled lake level and groundwater level records from all of Wisconsin and found that during 2000-2015, lakes and wells north of a line from Oshkosh to La Crosse fluctuated in unison, with a severe drought in 2007-2009. Lakes and wells south of that line were also coherent with one another, but water levels were highest in 2008-2010. These patterns reflect precipitation across the state: whilst northern Wisconsin was in an extreme drought, southern Wisconsin experienced such extreme flooding that Lake Delton broke its dam and drained out.

Precipitation is a good predictor of lake level fluctuations on unregulated lakes. Lake levels will go up immediately after a large storm, but it takes an accumulation of storms over a long period of time to raise lake levels to the highest highs. We can now accurately hindcast lake level fluctuations by determining if recent precipitation is above or below normal compared to the last 8 years. This model can help us better understand past lake level fluctuations in places where we lack data and could possibly help us prepare for future fluctuations, particularly with a new climate.

Closer to Home

Climate drives natural lake level fluctuations, but what does this mean for lake ecosystems? Studies from around the world show that water level fluctuations influence water quality, habitat, fish, invasive species, and recreation. Closer to home, Peter Lisi and I found that lake levels influence water clarity. Peter's parents help monitor water clarity on Lake Desair in

Barron County, carrying on a long-term record that began in 1993 with the Olson family. As a post doctorate at UW-Madison's Center for Limnology, Peter's curiosity got the better of him. What was driving long-term changes in water clarity on Lake Desair? Could it have to do with precipitation or lake level fluctuations? And what was happening in lakes nearby?

Pretty soon, the two of us found ourselves scouring water clarity, climate, and lake level data. We gathered water clarity data from 24 lakes in Northwest Wisconsin enrolled in the Citizen Lake Monitoring Network. Some of these records dated back to 1987. We also found one of the most comprehensive lake level records in the state, which we used as a proxy for lake level fluctuations in the other 23 lakes. The City of Shell Lake has meticulously recorded weekly lake levels on Shell Lake since 1983, and the U.S. Geological survey has records going back to the 1930s. Thinking that other measures of climatic variability could be more important, we also obtained precipitation and drought records.

Lake Levels and Water Clarity

This is when things became really interesting. We found that lake levels affect water clarity, but with opposite effects in different types of lakes. At one extreme was Staples Lake. It had the best water clarity when lake levels were high and the worst when lake levels were low. At the other extreme was Silver Lake with, you guessed it, good water clarity at low lake levels and bad water clarity at high lake levels. What was different about these two lakes and the lakes that responded like them?

The City of Shell Lake in Washburn County has meticulously recorded weekly lake levels on Shell Lake since 1983, and the U.S. Geological survey has records going back to the 1930s.

Many lakes and reservoirs in the world suffer from algal blooms during drought. Water volume declines and water spends more time in the lake.

Provided by Dale Robertson, USGS



Robertson, D.M., Rose, W.J., and Fitzpatrick, F.A., 2009, Water quality and hydrology of Silver Lake, Barron County, Wisconsin, with special emphasis on responses of a terminal lake to changes in phosphorus loading and water level: U.S. Geological Survey, Scientific Investigations Report 2009-5077, 38 p.



Staples Lake and Silver Lake are like night and day. Whereas Staples Lake is green with very high concentrations of phosphorus and chlorophyll a (algae), Silver Lake is clear with very little phosphorus and chlorophyll a. Staples Lake is shallow, but Silver Lake is much deeper. Thus, the entire water column in Staples Lake mixes throughout the summer, but Silver Lake develops layers, with warm water on top and cold water near the bottom. Finally, the entire volume of water in Staples Lake replaces itself in less than a year. It takes two to ten years to replace the water in Silver Lake.

So why do these differing lake characteristics result in opposite responses to lake levels? We do not have enough data on each individual lake to be certain about mechanisms, but we can lean on studies elsewhere to shed light on the question. Silver Lake behaves as we initially expected. Conventional wisdom says that high lake levels result from periods with a lot of rainfall. That water runs off the surrounding land, eroding soil into the lake and washing in nutrients that later contribute to algae blooms. In dry years, there is less runoff and the lake remains clean and clear. The U.S. Geological Survey has studied Silver Lake in detail. As expected, phosphorus and chlorophyll a concentrations were higher when lake levels were high.

The response of eutrophic lakes like Staples Lake to water level fluctuations surprised us at first. After reading further, we learned that many lakes and reservoirs in the world suffer from algal blooms during drought. Water volume declines and water spends more time in the lake. Combined, this results in a greater concentration of nutrients and warmer water, both of which favor blue green algae. Low lake levels may also allow the lake to mix more frequently throughout the summer, bringing nutrient rich water from the bottom to the surface where it can fuel algal growth. In high water years, nutrients and algae are diluted, and the lakes can be flushed clean.

Future Expectations

This research offers several lessons regarding lake levels and how you as a lake user can interact with Wisconsin lakes. First, be

prepared for lake levels to change, especially on seepage lakes. Not only can you expect decadal cycles of high and low lake levels, the natural lake level regime might shift with a changing climate as well. From 1950 to 2006, Wisconsin has warmed 1.1°F and annual precipitation has increased by 3.1 inches. Southern and western Wisconsin became wetter, whereas northern Wisconsin became drier. Wisconsin is projected to warm 4-9°F by 2055, but future precipitation remains uncertain. If future climatic changes alter the balance between precipitation and evaporation, then lake levels will also change.

Second, realize that changes you observe in water quality over time could stem from lake level fluctuations. If so, you may need to account for lake level fluctuations to determine whether water quality is getting better or worse over time. You may also need to explicitly plan for lake level fluctuations when trying to improve water quality. For example, you may need to set lower nutrient load targets to anticipate high water years that deliver more nutrients to the lake.

Finally, we can all help the lake be resilient during the highs and lows. Get to know your lake better by monitoring lake levels over time. You can reach out to your Citizen Lake Monitoring Network coordinator to learn how to monitor lake levels. To prevent erosion during floods, maintain a natural, vegetated shoreline and implement slow no wake regulations. During drought, leave dead branches and logs on the nearshore lake bed; they provide habitat for fish and turtles when lake levels rise. On lakes that fluctuate a lot, build floating or rolling piers that can easily move with changing lake levels. Develop and implement policies to improve infiltration and reduce stormwater flow. Use agricultural and urban practices that conserve water use, especially during drought. Protect and restore wetlands, which buffer water level fluctuations. Manage dams to anticipate future highs and lows.

Like humans, lakes are far from static. The sooner we recognize the cycles that lakes go through, the better lake stewards we can be. 💧

Be prepared for lake levels to change, especially on seepage lakes.

Realize that changes you observe in water quality over time could stem from lake level fluctuations.

Get to know your lake better by monitoring lake levels over time.



The Plight of Wisconsin's Freshwater Mussels

By Jesse Weinzinger, Conservation Biologist, Wisconsin DNR

Chris Barnhart



Mussels are long-lived, filter-feeding sessile organisms, with a complex life cycle dependent upon a fish host during their early life stage.

If you are an avid Lake Tides reader, you know that last Fall we included the article, "Show Us Your Mussels: Wisconsin DNR Seeks Native Mussel Observations in Your Lake." We want to remind you that your help is still needed and now that the ice is out, it's time to get your feet wet! We also thought you might like to learn a little bit more about our native mussels.

Freshwater mussels play a significant role in aquatic ecosystems. They filter several gallons of water a day for food, making them an excellent purification system. Mussels also churn substrates which benefit other organisms found in the bottom sediments, and they provide food and shelter for several species of fish and wildlife. They are also sensitive to declines in water quality and habitat condition, making them good indicators of lake and stream health.

substrate

noun, /'səb, strāt/

an underlying substance or layer. the surface or material on or from which an organism lives, grows, or obtains its nourishment.

Although their lives appear simple, their reproductive strategies are quite fascinating. Mussels are long-lived, filter-feeding sessile organisms, with a complex life cycle dependent upon a fish host during their

Be A Mussel Monitor



Native mussels are commonly found in shallow water just beyond the wave zone, usually in open sandy areas with little aquatic vegetation. The best way to take a photo of a mussel is to hold it so the whole side of the shell is visible. If you have dead shells, you can take a picture of both the inside and outside, which helps with identification. Remember to put the live ones back! Just lay them on their side and they will dig in. You can post the pictures on iNaturalist, a free phone app, or go to the iNaturalist website and look for the Wisconsin Mussel Monitoring Program. You can also e-mail your photos to Lisie.Kitchel@wi.gov or Jesse.Weinzinger@wi.gov, and we will let you know what you collected. You can keep the dead shells if you wish, just be sure to clean them thoroughly to get rid of the algae and other lake bacteria.

Lisie Kitchel




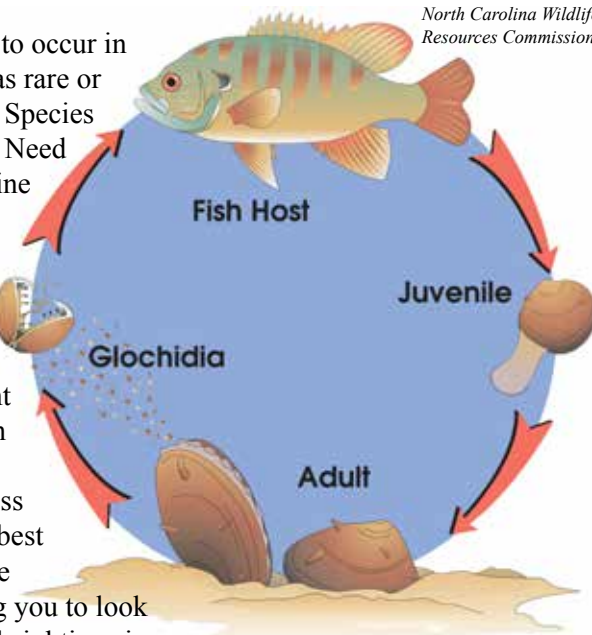
<http://wiatri.net/inventory/mussels/>



sessile
adjective, /'sesəl, 'se, sɪl/
fixed in one place; immobile.

early life stage. Most species of freshwater mussels reproduce sexually. Males release sperm into the water. As the water moves, the sperm drift downstream with hopes of finding an active siphoning female who has produced eggs for breeding. After successful fertilization, eggs develop into an intermediate larval stage, called glochidia. The glochidia are stored in the female's special brood pouch called the marsupium, sometimes for several months. In the spring and summer, several species of female adult mussels become "underwater fishermen" as they attract a specific fish host using a modified tissue that acts as a lure. When the target fish approaches, the female mussel ejects her glochidia at the fish. The larvae must then attach to the fish's gills or fins to transform into the next life stage - it's a lot to ask so early in life! The ejected glochidia resemble mini Pac-Man with their shell gaped wide open and ready to clamp down as soon as the fish is present. Once attached, the mussels hitch a ride for a few weeks while they continue their transformation into a juvenile mussel. When the transformation is complete, they drop off the unharmed fish and onto the immediate substrate. If habitat conditions are suitable and the mussels avoid predation, they begin their life as a young adult mussel. Not only is this method of reproduction interesting to biologists and inquisitive students, but the fact that mussels require specific species of fish to reproduce means that mussels are also good indicators of the health of their host fish populations.

Of the 52 species known to occur in Wisconsin, 24 are listed as rare or declining and considered Species of Greatest Conservation Need (WDNR 2016). The decline of several populations across the state has resulted from failure to recruit young mussels to populations. The cause of these recruitment failures is associated with declines in water quality, habitat conditions, and loss of host fish presence. To best address local declines, the Wisconsin DNR is asking you to look for and report any mussel sightings in your lake or stream to the Wisconsin Mussel Monitoring Program. With your help, these efforts will provide much needed up-to-date information on mussel distribution and status on a statewide level. For more information on freshwater mussels and ways you can volunteer with the Wisconsin Mussel Monitoring Program, please visit: <http://wiatri.net/inventory/mussels/> 



Of the 52 species known to occur in Wisconsin, 24 are listed as rare or declining and considered Species of Greatest Conservation Need (WDNR 2016).

Literature Cited:
Wisconsin Department of Natural Resources. 2016. Wisconsin Wildlife Action Plan: Planning for the Future of Species of Greatest Conservation Need and their Habitat. Bureau of Natural Heritage Conservation, Wisconsin Department of Natural Resources.



Become a Volunteer Weather Observer!

The Community Collaborative Rain, Hail and Snow Network (CoCoRaHS) needs you to be a volunteer weather observer! Everyone can participate! The only requirements are an enthusiasm for watching weather and reporting conditions, and a desire to learn more about how weather can impact our lives. You will help ground-truth weather events, providing valuable information for improving weather forecasting models.

Join more than 480 Wisconsin agronomists, lakeshore property owners, and citizen scientists who report rainfall, snowfall and weather facts! All you need to do is sign up, get trained, and you can purchase a high-quality rain gauge to measure rain and snow, create your own "hail pad" to study hail storms, or simply use a ruler to measure snowfall. It only takes a few minutes a day and gives you the chance to participate in real hands-on science.

<https://www.cocorahs.org/application.aspx>



A Helpful Hint When Using Bleach Solution for Watercraft Decontamination

Provided by Robert Baker



Self Service Decontamination Station in Burnett County, WI

Clearly, the protection provided by the plastic bucket was sufficient to prevent degradation of the chlorine bleach solution, allowing the solution to remain viable for considerably longer than 24-hours.

By Robert W. Baker, Lake Management Committee Chair, Lipsett Lake Association & Pamela J. Toshner, Lake and Watershed Protection Specialist, Wisconsin DNR

Many rivers across Wisconsin have established self-decontamination stations that use inexpensive pump sprayers with bleach to help prevent the spread of zebra mussels and other aquatic invasive species (AIS). The bleach concentration is extremely low (<1%) - so minimal that it doesn't mark

clothing it contacts. A problem, however, is that there is confusion about how long the bleach solution used at these stations remains potent enough after being exposed to sunlight to kill zebra mussel veligers and other AIS.

To examine this question, volunteers conducted a series of experiments involving shielded and unshielded pump sprayers. When the bleach solution is first mixed as typically recommended, the chlorine concentration is 500 ppm. If an unshielded sprayer is placed where it will receive full sunlight for much of the day, similar to the situation at a decontamination station, the bleach loses its effectiveness in about a day (see Figure 1). However, if a pump sprayer is shielded in a plastic bucket, the bleach solution maintains

the 500 ppm strength for over six days (see Figure 2). In our experiments, two-gallon pump sprayers were placed in two-gallon plastic buckets. Clearly, the protection provided by the plastic bucket was sufficient to prevent degradation of the chlorine bleach solution, allowing the solution to remain viable for considerably longer than 24-hours.

As a consequence of our tests, we recommend that all lakes and rivers with self-service decontamination stations place their bleach solution-filled pump sprayers in two-gallon or larger plastic buckets as shown here. This will ensure that the chlorine bleach remains potent enough to kill zebra mussel veligers for 5-6 days. For most boat landings with at least moderate boat traffic, two-gallon pump sprayers will be emptied in two or three days and require refilling. Our study shows, however, that daily replacement of the bleach solution is not necessary if stored correctly. 💧

Provided by Robert Baker



Pump Sprayer Shielded in Two-gallon Plastic Bucket

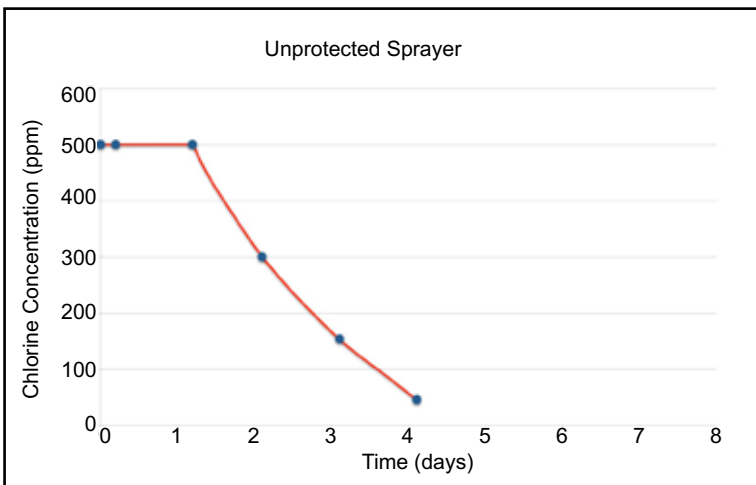


Figure 1. Unshielded Pump Sprayer with Bleach Solution

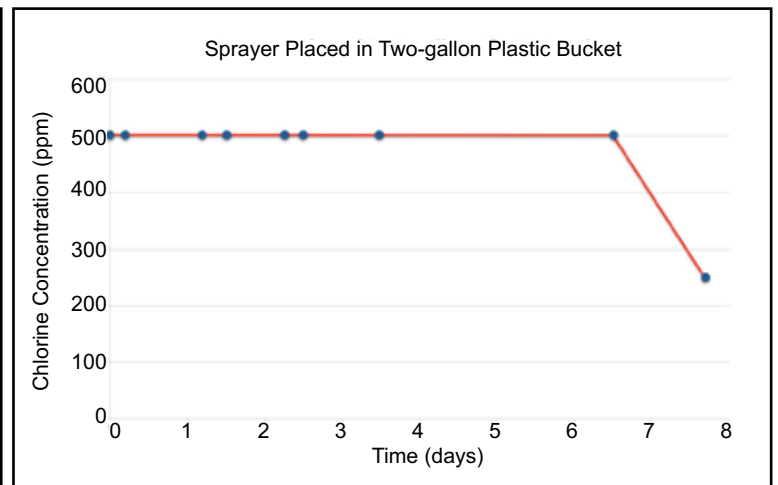


Figure 2. Shielded Pump Sprayer with Bleach Solution

WELCOME ABOARD!

Madison Johansen is the new Aquatic Plant Management (APM) Team Leader for the Wisconsin Department of Natural Resources. “Madi” is stationed in Madison and began her position in late April. She has a background in environmental policy, horticulture and conservation. Madi believes passionate public service is crucial for effective environmental policy decision-making. Her last three years were spent designing native plant communities in residential Madison, and she has extensive experience managing grant programs and conservation easements. Madi brings with her a bachelor’s degree in Environmental Policy from Drake University, and is also a Wisconsin Master Gardener. Madi spends most of her free time hiking, kayaking and camping.



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Wonderful Wetlands

New Wetland Video Suite Promotes Benefits of Wetlands

Are you curious about wetlands and how they benefit our waters and communities? A new video series from Wisconsin Wetlands Association promotes the many benefits of wetlands and seeks to encourage and inspire more community-based wetland conservation work in Wisconsin. One video highlights the community of Stone Lake working to protect the quality of their lake by protecting wetlands. The videos were widely distributed on social media throughout the month of May and are also available for free download and distribution. Use them to help start and enrich conversations and programs that will improve the health of Wisconsin communities and natural resources! To view the videos, visit wisconsinwetlands.org/videos.



Lakes 101

Ten Great Things to Know About Your Favorite Lake

By Ted J. Rulseh, Writer and Lake Advocate

When you look out on your favorite lake, what do you see? Beautiful blue water? A place for a refreshing dip on a summer day? A surface on which to paddle a canoe or kayak? Favored spots to catch fish for sport or dinner?

Your lake is all this, but also much more. A lake is a fascinating living system, full of mysteries and things to discover, if you look closely. Here are ten things you may not know about the world beneath the waves.

1. It all starts with the sun.

That's right. The walleye you fry up for supper owes its existence, first and foremost, to the sun. It's sunlight that enables plants and algae in the lake to manufacture food through photosynthesis. The food these primary producers make forms the base of the lake's food chain.

2. Your lake's water is a thin soup.

The water is the broth; the meat and vegetables consist of tiny organisms called plankton. The vegetables are the cells of algae that float freely in the water; they're called phytoplankton. The meat is made up of small creatures, called zooplankton, that swim through the water, feeding as they go. They feed on the algae and in turn become food for fish in the very early stages of their lives.

3. Your lake has 'fleas.'

Tiny creatures called Daphnia, crustaceans related to crayfish and shrimp, float in the thin soup. They're often called water fleas because their herky-jerky swimming patterns remind observers of the jumping of fleas (those you hope never infest your dog). Daphnia are an essential food source for baby fish (called fry), water insects and the immature forms of frogs and toads. You don't need a microscope to see them – they're about a millimeter long. So if you scooped up a jar of lake water and looked through it, you'd probably see a Daphnia or two kicking about.

Don't confuse these native, helpful creatures with the non-native aquatic invasive species spiny waterfleas. The larger spiny waterfleas feed upon the Daphnia, dramatically decreasing their populations and robbing the fry and other animals of their primary food source.

4. Your lake has layers.

The water is not a pool with a uniform temperature, at least not in the warm months of the year. As spring turns to summer, the lake separates into layers. Cold water lies at the bottom. Warmer water, being less dense, floats on top. The zone where warm water transitions to cold is called the thermocline. You can experience the thermocline by swimming out into fairly deep water, then doing a feet-first surface dive. When your feet reach a depth of about 12 to 15 feet, you will likely feel a sudden change from warm to cool. You've entered the thermocline.

The zone where warm water transitions to cold is called the thermocline.

Mark Picard



5. There's only "one water."

There are lakes, rivers, and the vast resource known as groundwater. These are not really separate entities. They are all part of the same system. The top of the groundwater is called the water table. In an important sense, a lake is a depression in the land that intersects and exposes the water table.

6. Your lake has a "skin."

You've seen the rounded shape of water droplets on a lakeside leaf. What gives that droplet its shape is something called surface tension – it's as if the water had a very thin, invisible skin. That's why the insects called water striders can skim across your lake's surface on their long, spindly legs: the surface tension keeps them from sinking.

7. Water has a unique behavior.

Most liquids, as they cool, become progressively denser. Water is different. It becomes denser until it reaches 39 degrees F. Below that temperature it becomes less dense, until finally it becomes ice, only about 90 percent as dense as water (this is why ice floats). That's important, because imagine what would happen if ice were denser than water and would sink. Through the winter, ice forming on the lake's surface would drop to the bottom, and eventually the entire bowl of the lake would be frozen solid. It might never thaw; almost everything in it would be dead.

8. Making ice is hard work.

Your lake can take a long time to freeze, even with a number of cold and wintry days and nights. Because of a property of water called the heat of fusion, it is eighty times harder to freeze a given volume of water than to lower

its temperature by one Celsius degree. Put another way, a drop of water has to release as much energy to freeze as it would give up to lower its temperature by 80 Celsius degrees!

9. Your lake breathes.

Dissolved oxygen in your lake is the single most important component of water quality, because without adequate oxygen, next to nothing could live. Your lake breathes by taking in oxygen from the air (with help from the stirring action of waves) and as a product of photosynthesis, the process by which algae and plants use sunlight to create food. The air we breathe contains about 20 percent oxygen. By comparison, the amount in lake water is tiny. A healthy lake contains 6 to 10 parts per million of oxygen – or 0.0006 to 0.0010 percent. Yet, that's enough to enable fish to breathe, because of the miraculous structures they have called gills.

10. Your lake is aging.

All lakes go through a long, slow process of getting older and filling in. Every year, silt enters the lake with runoff from rainfall. Water plants grow and die, and their remains sink to the bottom. Gradually, the lake takes on more nutrients, and more plants grow and die. It's called eutrophication. We can all help slow this process down by keeping nutrients out of the lake. We do this by foregoing the use of fertilizers on our lakefront lots, keeping our septic systems maintained and in good repair, and limiting runoff into the water by keeping land near the water's edge in a natural condition.

The closer you look at your lake, the more you'll discover; and the more you will treasure and want to protect that natural wonder. 💧

A drop of water has to release as much energy to freeze as it would give up to lower its temperature by 80 Celsius degrees!

Capacity Corner

Organizational Capacity

By Eric Olson, Director and Lakes Specialist, Extension Lakes



Organizational capacity is a direct reflection of a lake group's internal culture, history, and day-to-day operations. A group with high levels of organizational capacity would have written policies, defined roles for board members and volunteers, a process in place for working through disagreements or conflicts, a communication plan for working with members and the general public, and clear ways to connect with advisors and experts as issues arise. These five aspects are not exclusive, but they capture several different facets of what constitutes organizational capacity.

The Lakes Partnership is working to help lake organizations be effective forces of change in protecting lake health. Our model of lake organization capacity is built around four related parts: membership, organization, relationships, and programs. Membership is the basis for the other three: a group needs members who provide financial and volunteer support that fuels all other efforts. Organizational capacity is mostly about how a lake association or lake district conducts its internal affairs, and organizations develop relational capacity by collaborating and networking with external people and groups. Lake groups leverage these first three types of capacity to increase their ability to get things done: programmatic capacity.

Having defined roles is one way to clarify how the group operates and who exactly is responsible for what actions and activities.

Each issue of Lake Tides is highlighting one of these four dimensions. We first discussed organizational capacity last spring/summer (Vol. 43 No. 2) and this issue picks up where we left off. You can find all the Capacity Corner articles in the Lake Tides online archive.

Last year we shared some thoughts on the different ways that written policies and guidance can help keep a lake group on track. For this edition, we will look more closely at defining roles within a lake group. Having defined roles is one way to clarify how the



group operates and who exactly is responsible for what actions and activities.

Basic roles for lake district leaders are spelled out by Wisconsin state statute. Specifically, Chapter 33.29 lays out the seven major responsibilities of a lake district's board of commissioners:

- a. *Initiating and coordinating research and surveys for the purpose of gathering data on the lake, related shorelands and the drainage basin;*
- b. *Planning lake protection and rehabilitation projects;*
- c. *Contacting and attempting to secure the cooperation of officials of units of general purpose government in the area for the purpose of enacting ordinances deemed necessary by the board (...)*
- d. *Adopting and carrying out lake protection and rehabilitation plans (...)*
- e. *Maintaining liaison with those officials of state government involved in lake protection and rehabilitation (...)*
- f. *Scheduling the annual meeting of the district; and*
- g. *Preparing the proposed annual budget for presentation at the annual meeting of the district.*

The board is also responsible for annually electing from among its members three officers: a chairperson, a secretary, and a treasurer. These roles are given specific responsibilities:

- a. The chairperson shall preside at the annual meeting, at all special meetings and meetings of the board and at all public hearings held by the board.
- b. The secretary shall keep minutes of all meetings of the board and hearings held by it. The secretary shall prepare and send the notices required for the annual meeting, any special meeting, and any meeting of the board.
- c. The treasurer shall receive and take charge of all monies of the district, and pay out the same only on order of the board.


We advise lake districts to adhere to these statutory role definitions. They do not, however, limit the ability of a district to create

additional roles. For example, the board may choose a financial specialist to aid the treasurer. This may be a volunteer role, or a complex organization with a large budget may choose to contract with an accountant.

In such cases, the board should spend some time sorting between responsibilities that are being delegated and those remaining with the elected officer, and ultimately it falls back on the elected official to ensure that the duties are being carried out.

An incorporated lake association will have similar officer positions, though they are more commonly titled President, Vice-President, Secretary and Treasurer. State statutes governing corporations are found in chapter 181, and 181.25 specifically addresses board officers. The articles of incorporation spell out the duties of a non-profit's officers. Our guide, *People of the Lakes*, includes boilerplate language that many groups have used to start up their organization.

This covers some of the basic leadership roles for lake organizations. You likely have additional roles and definitions within your group. Share them with us, and send your capacity questions to eolson@uwsp.edu 💧

 WISCONSIN STATE LEGISLATURE

The online version of state statutes is continually updated to reflect bills that have been signed into law by the Governor (known as acts). Chapter 33 is found at <https://docs.legis.wisconsin.gov/statutes/statutes/33>

Our guide, People of the Lakes, includes boilerplate language that many groups have used to start up their organization.

Lake Group Resource

People of the Lakes: A Guide for Wisconsin Lake Organizations includes the model bylaws for a lake association as Appendix A. You can

download it as a PDF or order a printed copy from our bookstore at www.uwsp.edu/uwexlakes.



Paying It Forward

Statewide Networking and Education

SAVE THE DATE
April 1-3, 2020
 Wisconsin Lakes & Rivers
 Partnership Convention

The Wisconsin Lakes Partnership Convention and Water Action Volunteer Symposium had a successful 2019. Convention-goers took advantage of opportunities to both network and learn at this year's statewide gathering of citizen scientists, water management professionals, biologists, legislators, professors, specialists and businesses. And now, they are back on their "home turf" paying it forward so folks in their community can reap the benefits of their attendance. Whether taking home actual

resources to share, or simply the enthusiasm that ensues after attending this annual gathering, "paying it forward" seems to happen organically.

One way the convention planning team chose to pay it forward was by recording the 101 sessions in this year's topic areas. These are available on our convention archive page and we encourage water groups to use them as educational pieces at a meeting or other gathering. Also, if you weren't able to attend the convention this year, or you were busy in another session, you can enjoy the recordings online at your leisure. Just go to our website at uwsp.edu/uwexlakes, and click on the main picture that says, "Click for Archives."



"This was my first time attending and I went to the seminars on membership and the people side of things. I look forward to bringing back new ways to get more people involved in our Lake District"
 ~ 2019 Convention Participant

"The 'Pay It Forward' theme inspired me to make volunteerism the focus for our annual newsletter."
 ~ 2019 Convention Participant



This photo, "Two Sisters Lake Color Explosion" by Brian Wichman, is best seen in color! Check out our online version of Lake Tides to get the full effect. This photo won the People's Choice award and took 2nd place in the Natural Features In and Around Lakes and Underwater category of this year's Photo Contest. Find all the winners on the convention archive page at uwsp.edu/uwexlakes.

Convention Archives

Looking for a digital production from a couple of years ago? Want to check back to a presentation you saw this year? We have you covered - use our searchable database of past convention archives (back to 2007)! Need a little help to find what you're looking for? Give Amy a call at 715-346-4744 and she'll walk you through it.

New Deadline for Lake Stewardship Award Nominations: December 2

Do you know an outstanding person or group who dedicates time and talent to our state's water resources? We encourage you to nominate them for the prestigious Wisconsin Lake Stewardship Award. Find out more at wisconsinlakes.org.



2019 Wisconsin Lake Stewardship and Volunteer Stream Monitoring Award Winners

For the first time ever, the Wisconsin Lakes Partnership and Water Action Volunteers presented their separate annual awards in one presentation! As all waters are one, we jointly recognized our lake and stream champions. Congratulations to the 2019 Wisconsin Lake Stewardship and Volunteer Stream Monitoring award winners and new nominees! These folks were celebrated at the Lakes Convention & WAV Symposium on the evening of April 11, 2019 in Stevens Point. To view videos of some of the amazing accomplishments of these lake stewards and stream volunteers, check out the convention archives at www.uwsp.edu/uwexplakes.

An award was also given to each of the three Citizen Lake Monitoring Network volunteers who have been monitoring their lake for 30 years!!! Congratulations to Marj Mehring - Squash Lake, Oneida County, John Sipos - Golden Lake, Waukesha County and Lisa Conley - Lac la Belle, Waukesha County.

Doug Moore



Citizen(s)
Nate and Jessica Rice

Doug Moore



Group (Multiple Lakes/Regional)
Beaver Dam Lake Management District
District
Pictured here: Tom Schroeder, President

Doug Moore



Group (Multiple Lakes/Regional)
North Lakeland Discovery Center
Pictured here (L to R): Rolf Ethun, John Heusinkveld, Emily Heald, Karen Dixon and Glen Wildenberg

Not pictured:
Public Service
Sandy Wickman

Youth/Educator
Communities of Oshkosh North, Fall of 2017

Doug Moore



Stream Monitoring Award Winners

Pictured here (L to R): Ilana Haimes, Water Action Volunteers Stream Monitoring Coordinator; Wisconsin DNR;

Employee: Bob Sampson, Grande Cheese;

Group: UW-Whitewater Sustainability Office Student Volunteers (Max Grueneberg accepting);

Rookie: Green Lake Watershed WAV (Eric Godfrey and Tom Wagner accepting);

Pioneer: Ron Martin (Richard Wedepohl accepting on behalf of the family);

Peggy Compton, Water Action Volunteers Baseline Monitoring and Outreach, Extension at UW-Madison

Not pictured:

Adult Volunteers

Bob and Linda Merline



Lake Tides 44(2)



Let's Make Healthy Lakes Together!

The Healthy Lakes initiative is a statewide effort providing outreach, technical assistance and funding for five simple and inexpensive best practices that are appropriate for most lakeshore properties. Pitch your Healthy Lakes feature story to Pamela Toshner (pamela.toshner@wi.gov) or Amy Kowalski (amy.kowalski@uwsp.edu).

Four Years of Funding - Hundreds of Projects Completed!

Since 2015, the Wisconsin Department of Natural Resources has funded small-scale Healthy Lakes projects to improve habitat and water quality on lakeshore property. For a mere \$750,000 investment, there have been 804 best practices on 88 lakes across the state! Check out the stats:



healthylakeswi.com

Making Memories at the Lake

Create a new family tradition at the lake! Find fun facts about plants, insects and wildlife in and around Wisconsin's lakes. This unique, interactive journal invites youth and adults to explore lakeshore life by collecting plant samples, recording observations of fish and other animals



and their shoreland habitats. Contact us for a discount on large orders at 715-346-2116 or uwexlakes@uwsp.edu.

June is Invasive Species Action Month



STOP AQUATIC HITCHHIKERS!

Take action and join others in helping to prevent the spread of invasive species in Wisconsin. Contact your local Land and Water Conservation Department or your local aquatic invasive species coordinator (<https://dnr.wi.gov/lakes/invasives/topics.aspx>) to find out if there are any events in your area.

Hey Anglers! Spread the Word!

When you are out on the water this year taking pictures of your big catch (or maybe not so big), make sure to share the important message to other anglers to, "drain all water from boats, vehicles and equipment, including livewells and buckets containing fish." If you post on social media, use #JustDrainIt.

Paul Ogie



- ✓ Inspect
- ✓ Remove
- ✓ Drain
- ✓ Never move



R A D N E L E A C

May 31-June 2 – Drain Campaign, Statewide

Volunteers and staff across the state will give anglers ice packs with the reminder to “Drain your Catch” and always dump water from buckets and live wells before leaving the lake or river.

June 2-7 – International Symposium on Society & Resource Management (ISSRM), Oshkosh

This year’s conference theme is “Sustainability and the Land Ethic in the Anthropocene.” Attendees will be immersed in the big ideas and innovative approaches to understanding and addressing the myriad issues for society and natural resources that have emerged from the new geological epoch humans have created. For more information: <https://www4.iasnr.org/>

June 3-8 – Upper Michigan Plant ID Workshop, Isle Royale National Park

This is an excellent chance to visit a remote and wild portion of the northernmost part of Michigan near Lake Superior and learn the flora of the area at the same time. Both of these workshop locations feature rugged bedrock shorelines, ridges (with amazing views!), forests and wetlands, which provide diverse habitat for numerous plant species, including boreal species and rare arctic disjuncts. For more information: <https://irkpa.org/media/workshops/IsleRoyaleBotanyWorkshop2019.pdf>

June 4-6 – 2019 Water Summit, Egg Harbor

Jill Heinerth of the Royal Canadian Geographical Society will kick off this three-day event which includes field trips, educational sessions and a Science Poster Project for students. Join Celebrate Door County at this event: <https://celebratewaterdoorcounty.org/2019summit/>

June 11-12 – Southern Wisconsin Aquatic Plant Training, Green Lake

Experts Susan Knight of UW-Trout Lake Station, Paul Skawinski from Extension Lakes, and Ali Mikulyuk and Michelle Nault from the Wisconsin DNR will introduce you to the many groups of aquatic plants that call Wisconsin lakes home. Learn how to distinguish between the various species and which plant species like to grow in Wisconsin’s various aquatic habitats. For more information: <https://www.uwsp.edu/cnr-ap/UWEXLakes/Pages/programs/training/plantID.aspx>

June 21 – Northwest Lakes Conference, Hayward

A popular regional event of lake science, policy, and culture sponsored by Wisconsin’s five northwest counties (Burnett, Douglas, Bayfield, Sawyer, and Washburn). The all-day program will again be a great opportunity for lake enthusiasts, local government officials and others interested in enjoying and protecting our lakes to take in a number of educational presentations, visit many informative exhibits and network with fellow conference attendees. For more information: <https://www.stcroixriverassociation.org/event/northwest-wisconsin-lakes-conference-2/>

June 25-27 – Northern Wisconsin Aquatic Plant Training, Woodruff

See description and website in “Southern Wisconsin Aquatic Plant Training” above.

July 3-7 – Landing Blitz, Statewide

This year’s 4th of July weekend marks the ten-year anniversary of the Landing Blitz campaign. If you haven’t already contacted your regional WDNR AIS Coordinator or the regional/county AIS Coordinator for your area to participate, do it as soon as possible. For more information: <https://dnr.wi.gov/lakes/invasives/topics.aspx>

July 9 – Upper Michigan Plant ID Workshop, Keweenaw Peninsula

Enjoy three days of exploring diverse habitats, including boreal and swamp forests, fens, lakes and bedrock shoreline/ridge tops with amazing views! Using field guides and dichotomous keys, you’ll learn to identify the Keweenaw’s flora. For more information: <https://irkpa.org/media/workshops/KeweenawBotanyWorkshop2019.pdf>



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Reflections

You can't run a supermarket on just bread, and you can't run an ecosystem on just lawn...Lawns and foundation plantings are a lot simpler than the wild landscapes they replace."

~ Sara Stein
(from *Noah's Garden: Restoring the Ecology of Our Own Back Yards*)

