Lake Tides
The newsletter for people interested in Wisconsin lakes

Getting to the Bottom of Lake Science

History and Current Research from the Center for Limnology

By Adam Hinterthuer, University Relations Specialist, Media and Outreach, Center for Limnology

In the late 1800s, a University of Wisconsin-Madison zoology professor named E. A. Birge rowed out from the campus shoreline to plumb the depths of Lake Mendota. Birge was interested in the daily migration of tiny zooplankton between deeper and shallower parts of the lake, but his excursion signified something much larger.

It was the launch of limnology, or the study of inland waters, in North America.

From Birge and Chancey Juday's groundbreaking early work characterizing the basic physics, water chemistry and biology of lakes, to the whole-lake experiments and extensive laboratory work of Art Hasler, to the establishment of long-term ecological research under John Magnuson, the history of limnology in Wisconsin is filled with notable scientists trying to get to the bottom of what makes our aquatic ecosystems tick.

At the end of 2017, the Center for Limnology (CFL) saw another scientist add his name to this list of remarkable retired researchers. After 28 years, Steve Carpenter has moved into a role he's calling "free range" scientist.

Widely recognized as one of the world's most influential researchers in aquatic ecology, Carpenter leaves a legacy that will endure throughout the ecological sciences and in lakes, rivers and streams across Wisconsin and the globe.

"If you went to any freshwater research institute in the world and asked them who the leading scientist was in their field, they would all say 'Steve Carpenter,'" says CFL

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Photo: Adam Hinterthuer

Even in winter, the CFL's Long-term Ecological Research project keeps scientists out monitoring lakes.

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Wisconsin Lakes Partnership

Photo: UW-Madison Communications

Steve Carpenter stands in the shallows of Lake Mendota.

Carpenter Speaks at Lakes Convention in April

Interested in the work Steve Carpenter has done over the years and what he's working on now? You're in luck! He will be a keynote speaker at the 2018 Wisconsin Lakes Partnership Convention and Water Action Volunteers Symposium. Read more on page 13.

professor Jake Vander Zanden. "Steve helped change not only the way we study freshwater systems, but also how we manage them and work to conserve them."

While officially "retired," Carpenter will continue work that contributes to our understanding of aquatic ecosystems from his new office space in Hasler Lab. But he is handing directorship duties off to Vander Zanden, who says he looks forward to carrying on world-class research while also exploring opportunities for "growth and re-invention."

CFL's proximity to Lake Mendota is proving quite useful as "the most studied lake in the world" continues to highlight the importance of freshwater research and offers up ideas for future directions.

CFL is Growing

One area of this growth is the addition of Hilary Dugan to the CFL faculty. Originally from Woodstock, Ontario, Dugan has explored lakes across the world – from the Arctic to Antarctica. But, from her new station on the shores of Lake Mendota, she's now excited about delving into more "local" topics like the impacts of road salt on freshwater ecosystems.

In fact, the CFL's proximity to Lake Mendota is proving quite useful as "the most studied lake in the world" continues to highlight the importance of freshwater research and offers up ideas for future directions.

One such suggestion came last Father's Day when a massive harmful algal bloom turned the lake blue, shut down beaches and induced a large fish kill. The event underscored the importance of studying the causes of these blooms and working on potential mitigation measures – especially as intense precipitation events are predicted to become more frequent in a warmer world. In December, a paper in the journal *Limnology & Oceanography* revealed the connection between phosphorus loading in Lake Mendota and extreme rain events,

The CFL's buoy, nicknamed "David Buoy," keeps track of weather conditions, water temperature, algae growth and chemistry on Lake Mendota throughout the open-water season.

Photo: UW-Madison Communications

(Getting to the Bottom of Lake Science, continued)

advancing our understanding of the causes of such nutrient pollution. The CFL is also working to increase our capabilities to predict harmful algae blooms and give communities advance warning of these events that can impair beaches, compromise water supplies and threaten public health.

Read more about the connection between algal blooms and extreme precipitation here: http://blog.limnology.wisc.edu/blame-it-on-the-rain-study-ties-phosphorus-loading-in-lakes-to-extreme-precipitation-events/

In the fall of 2015, zebra mussel populations were low in Lake Mendota, as evidenced by this single stowaway when the Hasler Lab pier came out for winter.

By the fall of 2016, pier removal on Lake Mendota looked more like this. Zebra mussel populations had exploded. The blurred specs at the top are all zebra mussels!

Photos: Adam Hinterthuer

Another area of focus in current CFL research is the ecology of aquatic invasive species. In the fall of 2015, undergraduate students in a limnology lab class discovered a single zebra mussel on a metal pole just off the Hasler Lab dock. The find was eerily reminiscent of a 2009 class trip that discovered invasive spiny water fleas in Mendota's waters.

Unfortunately, only two years later, the story of zebra mussels has followed that same path. "Today, zebra mussels carpet the rocky bottom of nearshore Lake Mendota," says graduate student Mike Spear who, when the zebra mussels were detected in 2015, put his original PhD project on hold, threw on his scuba gear and has been documenting the explosion of mussels ever since. The hope is that, by being able to study this invasive from its earliest stages, he will be able to learn more about how zebra mussels spread and what factors make certain lakes more susceptible than others. Whatever he finds, Spear says, "We should brace for impacts."

Read "It's a Jungle Down There: Zebra Mussels Transforming Depths of Lake Mendota" on the CFL blog for more information: http://blog.limnology.wisc.edu/its-a-jungle-down-there-zebra-mussels-transforming-depths-of-lake-mendota/

One silver lining may be an increase in Lake Mendota's water clarity as the filter-feeding mussels take massive amounts of algae and nutrients out of the water column. But that clear water comes with a price. "Thick, stringy mats of algae already coated Mendota's rocks early this summer as they found nice, hard shells to grow on and a buffet of nutrients at the bottom of the lake," says Spear. When those mats of algae wash ashore, it can create unpleasant conditions for beach goers in addition to the sharp zebra mussel shells now waiting for unsuspecting feet.

CFL graduate student, Mike Spear, holds up pieces of nearshore cobble colonized by zebra mussels.

Photo: Adam Hinterthuer

CFL Up North

Of course, CFL research doesn't stop at the shores of Lake Mendota. Up in northern Wisconsin at our research station on Trout Lake, CFL scientists are currently working on a study of bass and walleye dynamics, trying to help the Wisconsin Department of Natural Resources uncover what's behind declining walleye numbers and develop a management plan to keep these prized sportfish populations thriving for avid Northwoods anglers.

Graduate students in professor Pete McIntyre's lab are driving circles around Lake Michigan, cataloging barriers like dams and road culverts as they develop a management tool that will help in efforts to boost fish migrations in Great Lakes tributaries.

(Continued on page 4)

Photo: Adam Hinterthuer

The Hasler Laboratory for Limnology has been on the Lake Mendota shoreline since the 1960s. The study of limnology, however, goes much further back.

And professor Emily Stanley still heads up the North Temperate Lakes Long-Term Ecological Research (LTER) project, a National Science Foundation-funded project that has been monitoring eleven Wisconsin lakes since 1981. The LTER project has helped CFL scientists with all sorts of new insights into lake dynamics – from trends in water levels, to changes in fish populations, to variations in water chemistry. Notably, increased carbon dioxide concentrations in water are, as Stanley recently told *The New York Times*, "monkeying with the very chemical foundation of these ecosystems."

Read the full article, from the January 11, 2018 edition of *The New York Times* here: https://www.nytimes.com/2018/01/11/science/climate-change-lakes-streams.html

As that article asserts, studying lakes and rivers may be a gigantic "unplanned" experiment, but thanks to its history, location and current crop of faculty, staff and students, the CFL is uniquely positioned to watch and document as it all plays out.

Throughout its history, the CFL has worked to continue the legacy of E.A. Birge. While his efforts began in the waters of a single inland lake, they rippled outward to lakes, rivers, streams and wetlands across Wisconsin and the world. Today we're still committed to continuing that mission of helping inform the management and conservation of our most precious resource.

Did you know loons require a runway for takeoff?

DYK

By Mitchel Block, UWSP Student

Loons are perfectly adapted birds for water. They have large bodies, small wings, and legs located near the rear of their body, making them agile divers and swimmers. Although these traits greatly aid in a loon's water-bound lifestyle, they prove to be a great hindrance on land. In fact, loons have difficulty even walking on land, and takeoff from it is nearly impossible!

So, in order to achieve takeoff, loons often require a water runway. To position their runway, loons must first determine which way the wind is blowing. Then, they will begin to run across the top of the water, straight into the wind, while rapidly flapping their wings. This allows air to rush underneath them, and with enough air, they will be able to take flight. During ideal conditions, it usually only takes a runway of about thirty yards to gather enough air for lift-off. However, in unfavorable conditions, loons may require runways of up to an astonishing quarter mile in length!

Due to their takeoff troubles, loons must be particularly cautious of where they choose to land. Choosing a lake that is too small could leave them stranded without enough room to take flight. Because of this, loons tend to prefer long lakes that run parallel to the direction the wind normally blows.

So, next time you see a loon, think of how many lakes it had to fly past in order to find the perfect one, and keep in mind all of the specifics that need to be in place for the loon to do something as regular as take flight. Maybe, if you're lucky, you will witness the loon in action on its water runway!

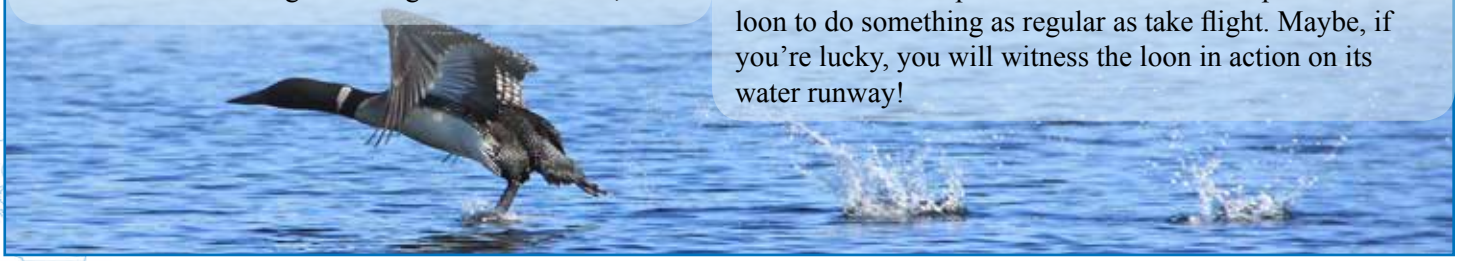


Photo: Glenda Henning

Lakes 101

By Michala Feigal, UWSP Student

Lakes 101 is a recurring section of Lake Tides *that is meant to help explain the basics of lake related topics. If you are curious about a lake issue or water related topic, let us know and we will explore it in a future issue (uwexlakes@uwsp.edu or 715-346-4744). You can also connect with us on Facebook by typing "Wisconsin Lakes Partnership" into the search box at http://www.facebook.com.*

Topic: Trophic State of Lakes

This Lakes 101 segment is a continuation of last issue's "Not All Lakes Are The Same" (Vol. 42, No. 4). Here, we continue the explanation of how we classify lakes.

Much like humans, lakes age throughout their lifetime. This process is well defined by a lake's trophic state. A lake's trophic state is a snapshot of its water quality, nutrients and clarity during its aging process. Trophic state is divided into three categories: oligotrophic, mesotrophic and eutrophic. A lake in its early life is oligotrophic and eventually is filled in with sediment and lots of vegetation.

Oligotrophic

Oligotrophic lakes are generally clear and deep with little aquatic vegetation. Often times they are low in nutrients and are therefore free of algae blooms. These lakes do not support large fish populations. Although, they do consist of a food chain that can support desirable fish species such as trout. The bottom of these lakes tend to be sandy or rocky, and the shores may be steeply sloped. An example of an oligotrophic lake is Lake Superior.

Mesotrophic

Mesotrophic lakes are in between oligotrophic and eutrophic lakes. These lakes are slightly nutrient enriched and have some aquatic vegetation, along with an accumulation of organic matter on the bottom. Along the shoreline of mesotrophic lakes you may find wetlands, cattails and wild rice beds. A lake in the mesotrophic state is at the midpoint of its life. These lakes can expect to see more aquatic vegetation in the years to come.

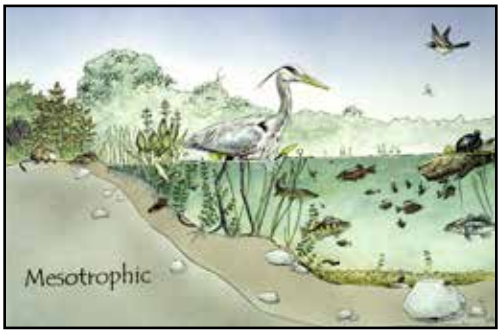
A lake's trophic state is a snapshot of its water quality, nutrients and clarity during its aging process.

Eutrophic

Eutrophic types of lakes are very productive and have high levels of nutrients, organic matter and sediments. Because of the high levels of nutrients, the lake is able to sustain lots of aquatic vegetation. High nutrient levels can also lead to large algal blooms in the hot summer months. Aquatic vegetation attracts waterfowl and wildlife to the lake, which in turn makes the lake more aesthetically appealing. Eutrophic lakes usually support large fish populations. Many of the fish within these populations are considered to be rough fish. Rough fish are often able to withstand warm temperatures, poor water quality and limited oxygen. These conditions are present in late summer months. A eutrophic state is the last stop along a lake's lifetime. Eventually the lake will become much like a wetland: filled in and fully vegetated.

Oligotrophic

- Clear water, low productivity
- Very desirable fishery of large game fish



Mesotrophic

- Increased production
- Accumulated organic matter
- Occasional algal bloom
- Good fishery

Eutrophic

- Very productive
- May experience oxygen depletion
- Rough fish common

Capacity Corner

Focus: Membership

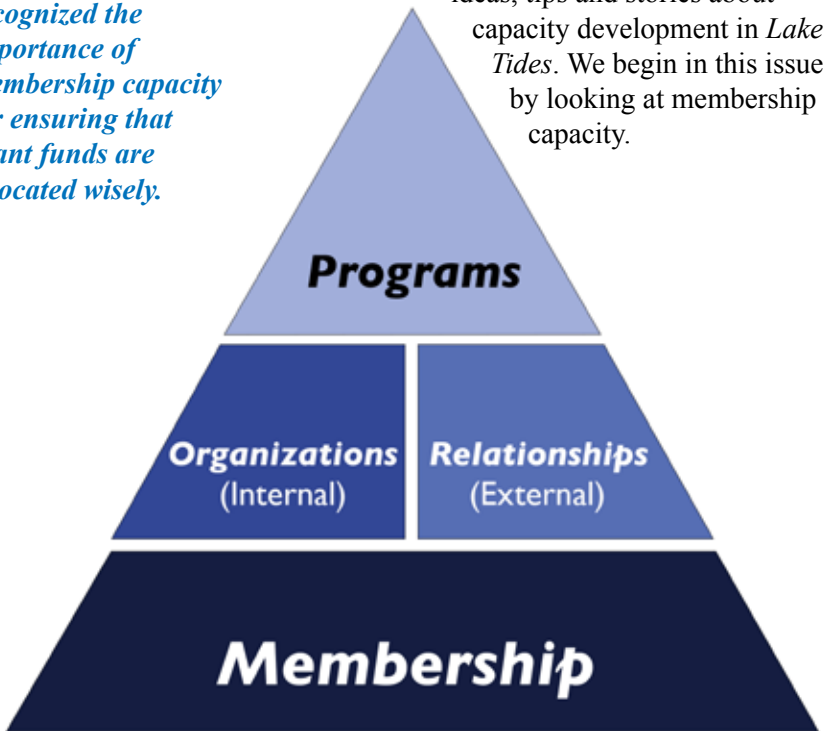
By Eric Olson, Director and Lake Specialist, UW-Extension Lakes

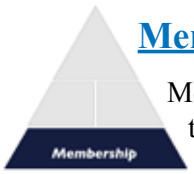
"Member engagement is fundamental to community responses to water resource problems."
- Mae Davenport and Erin Seekamp

The Lakes Partnership is renewing our emphasis on assisting lake organizations to be forces of change in protecting lake health. Our mental model of lake organization capacity is built around four related parts: *membership*, *organization*, *relationships*, and *programs*. *Membership* is the foundation 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 three types of capacity to increase their ability to get things done: *programmatic* capacity.

Wisconsin's surface water grant program, through the Department of Natural Resources (DNR), has long recognized the importance of membership capacity for ensuring that grant funds are allocated wisely.

These four dimensions of capacity will serve as quarterly guideposts for our efforts to share ideas, tips and stories about capacity development in *Lake Tides*. We begin in this issue by looking at membership capacity.





Membership Capacity

Membership capacity reflects the value of an organization to the population of its possible supporters. People and households tend to join organizations if they believe doing so will reflect well on them, if they understand and believe in what the organization seeks to accomplish, and perhaps if they may receive something beneficial in return for their support. Lake associations attract members who believe that by joining forces with neighbors, they can have a collective impact on the health of their lake. Lake districts, in contrast, typically have boundaries drawn to include all those landowners who would benefit from the lake district; once the district is formed, the landowners become compulsory "members" of the district.

Wisconsin's surface water grant program, through the Department of Natural Resources (DNR), has long recognized the importance of membership capacity for ensuring that grant funds are allocated wisely. Lake districts and other local governments are automatically eligible for grants; lake associations must meet the DNR's standards for a qualified lake association. Several of the standards focus on membership aspects of the lake group, specifically:

- The lake association must have at least 25 members
- Membership fees must be no less than $5 or more than $50
- Any individual who owns real estate or resides (seasonally or year-round) within one mile of the lake must be allowed to become a member;
- Members cannot be denied the right to vote in lake association affairs

The overall thrust of these requirements is that a qualified lake association should be relatively open and non-discriminatory when determining who is eligible to become

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(Capacity Corner, continued)

members. Many lake associations choose to be even more open, allowing anyone who wishes to support lake preservation or conservation efforts to become a member.

Attracting members is only one step in an ongoing process of membership management and development. Experienced lake organizations know that membership turns over: new people move to the lake as long-timers move away, and members need to be continuously cultivated if they are to be more than "just a member" and become volunteers, board members, donors and ambassadors.

Drawing on the research of Mae Davenport and Erin Seekamp, Aaron Thompson at the UW-Stevens Point College of Natural Resources identified five facets of membership capacity that lake organizations would ideally be prioritizing in order to build a solid foundation for their efforts:

1. **Raise Awareness:** Develop and maintain a high level of knowledge among members about lake conditions and management options.

2. **Access Technical Skills:** Intentionally recruit volunteers or paid staff to provide critical expertise, such as project management, water quality management, accounting, communication, fundraising, etc.

3. **Identify Issues:** Collect information (meetings, interviews, etc.) from both members of your organization and the community to document their priorities for lake management or improvement.

4. **Create a Process for Involvement:** Use an open, transparent approach to engage citizens, recruit new members, and increase discussion within the larger community about issues important to your organization.

5. **Conduct Outreach:** Ask members (including those who don't currently hold a leadership role) to actively promote your mission to their connections. This can lead to new members and donations that support your efforts.

Photo: Amy Kowalski

Kim Becken helps facilitate and capture a discussion with Lake Leaders about how to raise awareness within an organization.

Each of these five facets is easier said than done, but we can learn from each other to minimize reinventing the wheel and hone in on *best practices*. In 2017, the Lakes Partnership worked with lake groups to brainstorm some of the basic steps and ingredients needed to actually carry out these sorts of activities. For example, at Advanced Lake Leaders this past fall, two groups discussed what works and what doesn't work when a group needs to *Raise Awareness*. There are several practices that Lake Leaders reported as working well:

- Producing newsletters, and printing enough copies so that they can be shared at local "hotspots" (grocery stores, taverns, bait shops, etc.)
- Maintaining websites and social media (Facebook)
- Holding well-planned annual meetings with guest speakers
- Regularly sending emails to members with updates and news they can use

Attracting members is only one step in an ongoing process of membership management and development.

Lake Leaders also stressed that a lake association board or lake district committee needs to spend time thinking through and developing an awareness strategy: what exactly are you trying to raise awareness about? How would you measure progress: do you have benchmarks of awareness that you are comparing against?

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(Capacity Corner, continued)

A controversial issue has often served as a starting point to have a larger conversation about the lake.

They also noted that in the past, a controversial issue has often served as a starting point to have a larger conversation about their lake. For example, a heavy rainfall during a road construction project near a lake resulted in a visible plume of sediment in water near the lake. This provided an opportunity to discuss the lake's watershed in a newsletter article, exploring all the different points where polluted runoff could easily make its way into the lake.

While it may seem daunting to think strategically about how your lake organization raises awareness among its members, there are a number of tools that can help. There are numerous online tools that can help connect some of your group's basic needs like managing a list of members to awareness-raising tools like your email and Facebook communications. These range from simple, free tools for small organizations to multi-faceted suites that while somewhat more expensive, can provide powerful and easy-to-use tools that you can start using today.

Find links and articles about developing collaborative capacity on our UW-Extension Lakes website (www.uwsp.edu/uwexlakes).

Want to learn more about using technology to increase organizational capacity?

Chris Hanson, Co-founder and CEO of *thedatabank, gbc* posted a short blog that introduces an 18-page guide for building capacity through the strategic use of technology. The blog also includes a link to a short presentation by Chris recorded in 2017. View the webinar and access the guide here: https://www.thedatabank.com/2017/07/hey-you-got-strategic-technology-in-my-organizational-capacity/

Keep the *Lake Tides* Trial Balloon Flying

Last spring's *Lake Tides* article, "Can We Fly this Balloon...Forever?" talked about how lake lovers like you could help create a permanent, forever funding source for lake education efforts. We included a reminder of this opportunity in the last two editions, and we're happy to report that after several donations, we have received over $7,500 toward our first goal of $250,000. To get a better understanding of our funding vision, read the article mentioned above by visiting www.uwsp.edu/uwexlakes, and clicking on "Search Lake Tides Archives" in the *News* section on our main page, then type the article name (or part of it) in the *Text search* box.

We would like to whole-heartedly thank those who have already invested in lake education by donating to a permanent future for their and your *Lake Tides* newsletter. Join them by donating today!

Help Us Reach Our Goal: Steps to Giving

Step 1: Go to https://give.uwsp.edu/give-now
Step 2: Enter an amount in the appropriate space.
Step 3: Select Designation by choosing, "Other Specific Fund."
Step 4: Type "Wisconsin Lakes Partnership" in the box.
Step 5: Fill out the rest of the form and click the Give Now button

or contact Steve Menzel at the UW-Stevens Point College of Natural Resources (Steve.Menzel@uwsp.edu or 715-346-2032)

WELCOME ABOARD!

Welcome to Alison (Ali) Mikulyuk as the new Team Leader for the Department of Natural Resources' Lakes & Rivers Section! Here's what she has to say about her new position:

I am extremely excited for the opportunity to work with you all on the lakes and rivers team! For those of you who don't know me, I'll be transitioning to this new position after 13 years as an LTE in lakes research and monitoring. In this capacity, I worked to help us understand aquatic plant communities and littoral habitat. I focused on developing monitoring protocols, assessing aquatic plant management actions, understanding site-specific vulnerability to aquatic invasive species, and assessing ecological condition. I have a B.A. in biology from Grinnell College in Iowa and a Ph.D. in Freshwater and Marine Sciences from UW-Madison. As an ecologist, I value actionable science and solving real-world problems, so I am glad I can continue to contribute to our excellent lakes and rivers program. In this new position, I will strive to support the ongoing development of smart stewardship programs, further science-based management, and foster citizen engagement and education. I am excited to work with you all to build strong and resilient waterbodies now and into the future!

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).

Featuring: Chute Pond, Oconto County

Photo: Floyd Schmidt

Chute Pond is a 433-acre flowage nestled within the boundaries of the Chequamegon Nicolet National Forest. Chute is the destination for campers and anglers, as well as the home of the YMCA Camp U-Nah-Li-Ya. One of the recommendations of the most recent Comprehensive Management Plan of Chute is to increase shoreline improvement for individual lakefront property owners. In 2017, the Chute Pond District applied for a Department of Natural Resources Healthy Lakes grant and received funding to implement shoreline improvement on 10 different parcels. These consisted of rain gardens and native plantings strategically placed to absorb erosion and runoff going into the lake.

The project has sparked considerable interest with eight more property owners who also wish to do some shoreline improvements. These new projects have expanded to include rock infiltration and diversion used to catch the runoff on the upland portion of properties. Additionally, Chute partnered with the Oconto County Parks Department to install rain gardens and native plantings near the public beach and picnic grounds scheduled for installation this spring. Congratulations to the Chute Pond residents for their efforts to make Healthy Lakes!

healthylakeswi.com

Join Us - Heed the Call

2018 Wisconsin Lakes Partnership Convention and Water Action Volunteers Symposium

Agenda ...at a glance

Agenda subject to change.

Wednesday, April 18

Pre-convention Workshops/Sessions

8:00 am	Registration opens
9:00 am-4:30 pm	**All Day Workshops**
9:00 am-Noon	**Morning Workshops**
Noon-1:30 pm	Lunch on your own (pre-register for on-site)
1:30-4:30 pm	**Afternoon Workshops**
4:45-5:45 pm	**Special Technical Sessions**
5:45-7:00 pm	Networking time - Dinner on your own
7:00-11:00 pm	**Welcome Reception**

Thursday, April 19

6:30-7:15 am	Sunrise Yoga
7:30 am	Registration opens
8:00 am	Exhibits open (until 6:00 pm)
8:00-8:50 am	**Concurrent Sessions 1**
9:00-10:45 am	**Welcome and Keynote Loon Watch Panel**
11:00 am-Noon	**Concurrent Sessions 2**
12:15-1:30 pm	Lunch
1:45-2:25 pm	**Concurrent Sessions 3**
2:35-3:15 pm	**Concurrent Sessions 4**
3:30-5:00 pm	**Poster Presentations**
	Visit Exhibitors and Educational Displays
5:00-6:00 pm	Networking time/WAV Overview & Refresher
6:00-8:00 pm	**Awards Banquet/Ceremony**
8:00-11:00 pm	Lakes Partnership After Hours

Friday, April 20

6:30-7:15 am	Sunrise Yoga
7:30 am	Registration opens
8:00 am	Exhibits open
8:00-9:00 am	**Concurrent Sessions 5**
9:15-10:15 am	**Concurrent Sessions 6**
10:45-11:35 am	**Concurrent Sessions 7**
11:45 am-1:15 pm	Lunch/**Keynote Steve Carpenter**
1:30-2:30 pm	**Concurrent Sessions 8 + SER sessions**
3:00-4:00 pm	**Concurrent Sessions 9 + SER sessions**
5:30-7:30 pm	**Poster Session** for Society for Ecological Restoration Midwest-Great Lakes Chapter

Join us, heed the call!

April 18-20, 2018 ~ Stevens Point

The wail call of the loon, with its mournful and calming howl, often signals social interactions between individuals. Loons use it to reconnect, to find each other in the fog or on a moonless night. Like the loon's wail, we send out this annual call to water lovers everywhere to reconnect with us in Stevens Point at the annual Lakes Partnership Convention and Water Action Volunteers Symposium. We call you to connect with each other too: with fellow organization leaders, volunteer monitors, resource managers, researchers, service providers and educators. We call you to learn, to share, and to socialize. We especially call those who have never come to our event in the past. We welcome you to join our unique gathering. Together, we will create the great cacophony, the informed discussion about protecting and restoring lake health that cannot be ignored. Join us, heed the call! *(Find out more on pages 11-13.)*

Don't miss these convention deadlines!

February 16: Lake Stewardship Nominations

March 12: Call for Posters Photo Contest

March 21: Early Bird Registration

Photo: Linda Grenzer

Convention Workshops - Wednesday, April 18

Your 40th annual Wisconsin Lakes Partnership and Water Action Volunteers Symposium will include several hands-on workshop opportunities. Get all the details and pre-register at www.uwsp.edu/uwexlakes before all the spots are taken!

Morning Workshops ~ 9:00 am-12:00 pm

The Art & Science of Volunteer Coordination (Limit 30)
Michelle Miller, Volunteer Cooridnator, UW-Stevens Point

Citizen Lake Monitoring Network Refresher (Limit 40)
Steve Greb, Natural Resource Research Scientist, WDNR and WDNR Water Resource Management Specialists: Katie Hein, Rachel Sabre, Kris Larsen, and Sandy Wickman

SWIMS and Lakes/AIS Viewer Workshop (Limit 25)
Dennis Wiese, IS Business Automation and Jacob Dickmann, IS Data Services, WDNR

Aquatic Plant Ecology and Identification (Limit 25)
Susan Knight, Interim Director Trout Lake Station, UW-Madison Center for Limnology; Michelle Nault, Water Resource Management Specialist, WDNR; Paul Skawinski, CLMN Statewide Educator, UW-Extension Lakes

Lake District Commissioner Trng - Beginner (Limit 48)
Patrick Nehring, Community Resource Development Educator, Waushara Co.; Attorneys William O'Connor & Mary Beth Peranteau, Wheeler Van Sickle & Anderson S.C.

Building Websites for Lake Organizations (Limit 20)
Ken Justiniano, Northern Graphics OPS; Current Network Members

Shoreland and Floodplain Management and Community Action (Limit 40)
Lynn Markham, Center for Land Use Education, UW-Stevens Point and WDNR Water, Regulations and Zoning Specialists: Kay Lutze, Dale Rezabek, and Michelle Staff

Afternoon Workshops ~ 1:30-4:30 pm

Loon Ranger (Limit 30)
Erica LeMoine, Loon Watch Coord., Northland College

Water Action Volunteers (WAV) Macroinvertebrate Identification: A Deeper Dive (Limit 20)
Tom Wilda
Jeremy Williamson, Water Quality Specialist & Aquatic Invasive Species Biologist, Polk Co. Land & Water Resources Department

Lake District Advanced Topic: Dams (Limit 40)
(Additional fee $40)
Attorneys William O'Connor and Mary Beth Peranteau, Wheeler Van Sickle & Anderson S.C.

Lake District Treasurer Training (Limit 25)
Bo DeDeker, Associate Lecturer, UW-Stevens Point

Blue-green Algae in Wisconsin: Identification, Potential Health Effects, and Determination of Safe Levels for Recreation (Limit 20)
Gina LaLiberte, Water Resource Management Specialist, Wisconsin DNR

An Introduction to Lake Eutrophication Modeling (Limit 25)
Paul McGinley, University of Wisconsin Extension Water Quality Specialist, UW-Stevens Point

Wild Rose State Fish Hatchery Tour (Limit 28)
(Additional fee $10) - off-site, transportation provided
Joan Voigt, Naturalist Guide, Wisconsin DNR

All Day Workshops ~ 9:00 am-12:00 pm (break) 1:30-4:30 pm

Only $25 half-day and $50 all-day workshops

Focusing on Healthy Lakes: Breakouts and Fieldwork (Limit 35) - off-site
Patrick Goggin, Lake Specialist, UW-Extension Lakes; Pamela Toshner, Water Resources Management Specialist, Wisconsin DNR; others to be announced

Project RED (Riverine Early Detector) (Limit 20) - off-site
Scott Caven, La Crosse Area Aquatic Invasive Species Coordinator, River Alliance of Wisconsin

Water Action Volunteer (WAV) Basic Training (Limit 15) - off-site
Peggy Compton, Water Action Volunteers Coordinator, University of Wisconsin Extension

Capacity Building for Lake Organizations (Limit 40)
Eric Olson, Lake Specialist, UW-Extension Lakes, UW-Stevens Point; Aaron Thompson, Assistant Professor of Natural Resource Planning, UW-Stevens Point and Specialist, UW-Extension Center for Land Use Education; Buzz Sorge, Wisconsin DNR (retired); Mike Engleson, Director, Wisconsin Lakes

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(Convention, continued)

Thursday Kickoff Keynote Loon Watch Panel

Online Details & Registration

More details about workshops, speakers, special sessions, concurrent sessions, networking opportunities and more can be found on the convention website.

If you do not have access to our website, please give us a call and we would be happy to help you (715-346-2116).

www.uwsp.edu/uwexlakes

Thursday, April 19 ~ 9:00-10:45 am

In the winter 1978 issue of this newsletter, Tom Sinclair and Stan Temple from UW-Madison discussed the myriad threats facing Wisconsin's iconic loons. That summer, Gary Chowlek posted an item in the subsequent Lake Tides *to solicit volunteers to participate in "Project Loon Watch" at Northland College. Thus began four decades (and counting!) of formally organized citizen science around loons and their habits on Wisconsin lakes. This panel will review the history of the LoonWatch program and highlight scientific discoveries about loons made possible with citizen data. We will also look to the future of this beautiful water bird as its population expands and new challenges emerge.*

Panelists

Erica LeMoine is the LoonWatch and Citizen Science Coordinator at Northland College in Ashland, Wisconsin. She conducts Loon Ranger trainings across the state and plans and implements the Annual Lakes Monitoring Program and a statewide five-year census of loons. She also implements the Loon Appreciation Week poster, Speakers' Bureau program, Get the Lead Out program, and the Sigurd T. Olson Loon Research Award.

Michael Meyer is a retired wildlife toxicologist with the Wisconsin DNR. His work focused on wildlife contaminants, inland lakeshore management and climate change. While studying the effects of mercury on loons in Wisconsin, Mike and colleagues banded and sampled over 3000 loons in northern Wisconsin. He also coordinated a citizen science research project focused on loon reproduction in the Northern Highlands. In retirement, Mike is continuing to conduct research and outreach through his firm, NOVA Ecological Services.

Terry Daulton is an environmental educator, consulting biologist and artist who served as the LoonWatch coordinator at Northland College from 1989- to 1997. She studied loons as a field biologist from 1998-2004 for the Wisconsin DNR and the US Geological Survey. Terry developed the *Drawing Water* program at UW-Trout Lake Research Station, a collaboration among artists and scientists, and currently coordinates that program as a volunteer. She also serves as Board President for Wisconsin's Green Fire, a non-profit organization of Wisconsin conservation scientists. During graduate school, Terry studied under Lowell Klessig and edited the *Lake Tides* newsletter, so the Wisconsin Lakes Convention is always like a homecoming for her.

Gary Zimmer is the Assistant Executive Director of the Wisconsin County Forests Association and currently serves on the Wisconsin Natural Resources Board. Gary was a graduate student of Dr. Ray Anderson at UW-Stevens Point and conducted the first statewide assessment of loons in Wisconsin in 1977 and 1978. After completing his thesis in 1979, Gary became a member of the Project LoonWatch advisory committee. In his career Gary worked for the Wisconsin DNR conducting waterfowl research on the Horicon and Grand River Marsh Wildlife Areas, was a District Wildlife Biologist on the Lakewood/Laona District of the Chequamegon/Nicolet National Forest and was the Coordinating Biologist for the Ruffed Grouse Society covering the Western Great Lakes Region. He has lived in Northern Wisconsin's loon country for over 50 years.

Friday Keynote Lunch Speaker

Friday, April 20 ~ 11:45 am-1:15 pm

Past and Future Change in the Yahara Watershed: An Ecological Experiment Using Scenarios

Steve Carpenter, Free-Range Scientist and S. A. Forbes Professor of Zoology at the UW-Madison Center for Limnology

Winner of the 2011 Stockholm Water Prize, Dr. Stephen Carpenter is a leader of whole-ecosystem experiments focused on questions about lake ecosystems. He is a member of the U.S. National Academy of Sciences, a Fellow of the American Academy of Arts and Sciences, and a foreign member of the Royal Swedish Academy of Sciences. Other notable awards include a Pew Fellowship in Conservation and Environment, the G. Evelyn Hutchinson Medal of the American Society of Limnology and Oceanography, the Robert H. MacArthur Award from the Ecological Society of America, the Excellence in Ecology Prize from the Ecology Institute, and the Naumann-Thienemann medal of the International Society for Limnology. Carpenter is a former President of the Ecological Society of America and has published 5 books and more than 450 scientific papers, book chapters, reviewed reports and commentaries. After ten years teaching and conducting research at Notre Dame, Carpenter joined the UW-Madison faculty in 1989 and mentored dozens of graduate students addressing lake and ecological issues over nearly three decades of theoretical and applied research. This talk will draw on Carpenter's research concerning the dynamic challenges facing the Madison area lakes and the Yahara watershed. Most recently, Carpenter and a team of researchers designed intricate scenarios that explore alternate futures for the lakes by combining sociological, climatological, landscape and lake variables. The findings suggest numerous practices that people and communities should adopt to better protect lakes and their watersheds in a turbulent future.

Restoration through Collaboration

The Wisconsin Lakes Partnership is all about collaboration. To be most effective we need to be aware of additional organizations that we can and should be working with. The Midwest-Great Lakes Chapter of the Society for Ecological Restoration is a terrific example of a group that lake lovers should know more about. Their mission is to promote the science and practice of ecological restoration to assist with the recovery and management of degraded ecosystems throughout the Midwestern and Great Lakes region of the United States. The Chapter was formed in 2008 and covers Illinois, Indiana, Iowa, Michigan, Minnesota, Ohio and Wisconsin. Their membership is largely made up of scientists and practitioners who carry out the complicated and evolving work of improving landscape health.

The art and science of ecological restoration has deep Wisconsin roots. Aldo Leopold is often cited as the forefather of restoration. His efforts to systematically bring back prairie and savanna conditions at the UW-Madison Arboretum, as well as his famous toilings at "The Shack," represent some of the best documented early attempts at healing an ecosystem. In the 1980s, UW-Madison faculty John Aber and William Jordan worked with others to formalize the science and theory underlying restoration ecology; they initiated an academic journal and an international society to advance both the science and practice of restoration. The spirit of Leopold is evident in Wisconsin every spring as professionals carry out prescribed burns of prairies and savannas. It is also evident when a lakeshore owner carefully nurtures a native garden as part of a restoration effort, or volunteers with neighbors to remove invasive species.

We are excited to be joined by the Midwest-Great Lakes Chapter of the Society for Ecological Restoration on the Friday of our 2018 Convention. Their presenters will give us all new perspectives on caring for lakes and watersheds. If you are passionate about restoration, you should consider sticking around for the weekend, as the chapter meeting will provide additional workshops, plenaries, and concurrent sessions, as well as tours and hands-on restoration projects on Sunday. The chapter is making it more cost effective for you to participate over the weekend by giving Lakes Convention attendees "member" registration rates without requiring membership dues, meaning that you can add the weekend of learning for as little as $50. Learn more on our Convention website!

Campaigning to Slow the Spread of Aquatic Invasive Species

Wisconsin's Aquatic Invasive Species (AIS) partners are ramping up for a busy 2018. The two most popular summer campaigns to educate boaters about the role they play in controlling the spread of AIS are back.

✓ INSPECT
✓ REMOVE
✓ DRAIN
✓ NEVER MOVE

Drain Campaign

To reach more first-time anglers, the 2018 Drain Campaign is scheduled for June 1-3, overlapping the annual Free Fishing Weekend. That Saturday and Sunday, fishing licenses are not required, and many first-timers will give fishing a try at Fisherees and Free Fishing Clinics. During the Drain Campaign, Clean Boats, Clean Waters (CBCW) watercraft inspectors will give anglers a free, reusable ice pack with the Ice Your Catch logo to remind them that it's the law to drain live wells and buckets before leaving the landing. If you're a volunteer and looking for a great way to share the *Stop Aquatic Hitchhikers!* message, there will be morning events with hands-on activities across the state for kids and adults, followed by afternoon inspection opportunities at local boat launches.

Landing Blitz

The 2018 Landing Blitz will take place June 29-July 4. This year, two huge boating weekends will bookend the holiday. Both recreational boaters and anglers appreciate the *Stop Aquatic Hitchhikers!* towels handed out with guidance on how to inspect their boats.

Stopping AIS is a family affair, as kids help clean plants off their boat while parents are busy pulling boat plugs and draining live wells and motors. Many of the boaters that CBCW watercraft inspectors meet have become our water's best ambassadors when it comes to stopping the spread of AIS, directing their holiday passengers to help inspect the boat before leaving the launch. But our work's not done. Every year, CBCW staff and volunteers meet many people who are new to the AIS law or still don't understand its importance in protecting Wisconsin's waters and the recreational opportunities they enjoy.

Ice packs and towels will be ordered soon so they can be distributed well before the campaigns. They are provided to AIS Coordinators who then share them with their local partners conducting CBCW boat inspections and AIS education. If you have a CBCW project at your lake, regardless of whether it is grant funded or not, contact your nearest AIS Coordinator to find out how you can participate. You can find your county AIS Coordinator by typing "AIS contacts" in the search bar on the dnr.wi.gov website.

Questions can be directed to Jeanne Scherer, UW-Extension AIS Outreach Specialist, at 608-266-0061 or jeanne.scherer@ces.uwex.edu.

Need AIS Publications?

UWEX and DNR AIS staff will be filling publication orders at this year's Lakes Convention. Come prepared with your publication needs or fill out an order form while at the convention. There is a quick link to access the AIS publication catalogue in the Highlights section on our home page: www.uwsp.edu/uwexlakes Questions? Email DNRAISinfo@wisconsin.gov.

New General Permit for Stream Habitat

The Wisconsin Department of Natural Resources (DNR) recently finalized a new stream habitat general permit, which will be available for 2018 restoration projects. The general permit authorizes numerous activities, including placement of fish habitat structures, placement of wildlife habitat structures, and dredging of or adding material to a previously channelized stream. The general permit is only available for stream habitat projects designed by staff from the DNR, NRCS, US Fish and Wildlife Service, and Land Conservation Departments or other county agencies. The general permit is available by visiting dnr.wi.gov and searching for "water permit."

For questions about the new general permit, contact Josie Lathrop, DNR Waterway and Wetland Policy Coordinator, at (608) 267-7662 or johanna.lathrop@wisconsin.gov.

CALENDAR

February 20-22, 2018 – Wetland Science Conference - Lake Geneva, WI
For more information: http://conference.wisconsinwetlands.org/

February 28-March 1, 2018 – International Conference on Water Management Modeling - Toronto, Canada
For more information: http://www.icwmm.org/

March 6-7, 2018 – Fox-Wolf Watershed Alliance Conference - Green Bay, WI
For more information: http://fwwa.org/conference/

March 8, 2018 – Red Cedar Watershed Conference - Menomonie, WI
For more information: http://www.uwstout.edu/profed/redcedar

March 8-9, 2018 – Wisconsin AWRA Annual Meeting - Appleton, WI
For more information: http://state.awra.org/wisconsin/

March 14-16, 2018 – Wisconsin Land+Water Conference - Lake Geneva, WI
For more information: http://wisconsinlandwater.org/events/annual-conference

March 21, 2018 – EARLY-BIRD DEADLINE, Wisconsin Lakes Partnership Convention & Water Action Volunteers Symposium - Stevens Point, WI
For more information: http://www.uwsp.edu/uwexlakes or see pages 10-13 of this issue.

March 22-24, 2018 – Wisconsin Summit for Natural Resource Volunteers - Eau Claire, WI
For more information: https://www.wimasternaturalist.org/news/summit2018

March 26-29, 2018 – Wisconsin Rural Water Association Technical Conference - La Crosse, WI
For more information: http://www.wrwa.org/wrwa-annual-technical-conference/

April 4, 2018 – Science on Tap: Salt and Our Lakes - Minocqua, WI
Stop in to the Minocqua Brewing Company and listen to Hilary Dugan, UW-Madison Center for Limnology, talk about how salt is affecting our lakes.
For more information: http://www.scienceontapminocqua.org/

April 18-20, 2018 – Wisconsin Lakes Partnership Convention & Water Action Volunteers Symposium - Stevens Point, WI
Agenda details and online registration now available!
For more information: http://www.uwsp.edu/uwexlakes or see pages 10-13 of this issue.

April 20-22, 2018 – Society for Ecological Restoration Midwest-Great Lakes Chapter Annual Meeting - Stevens Point, WI
For more information: http://chapter.ser.org/midwestgreatlakes/current-meeting/

Lake Tides -- *PRJ85HX*
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Reflections

We lie awake in dark
so black we swear
we've gone blind waiting
for your screech,
but no sound comes
until sleep takes us
long enough to be thrown
awake by the split-level
scream of the mad old lady
in your throat, lowered
there at birth, kept
for the nightly ritual
you tend to,
proclaiming this pond
as your own.

~ Dan Masterson
(*Loon*)