

WINGRA WATERSHED NEWS

Promoting a healthy Lake Wingra through an active watershed community.

WINTER 2019 • VOLUME 16 • ISSUE 1

Happy New Year Lake Wingra Friend!

The winter is a great time to enjoy the treasures of Lake Wingra. As you'll see in this newsletter, there are lots of interesting things happening below the ice, and above. I hope you get an opportunity to get out in the watershed or on the Lake this winter to enjoy our natural communities.

Looking back at the past year, I can remember numerous great experiences on Lake Wingra- including Grilling for Peace, the field trip led by Friends of Lake Wingra for the Natural Resources Federation, Jazz in the Park, fishing, canoeing, bike rides along the Park and Pleasure Drive, walks on the Edgewood Boardwalk and in the Arboretum, picnics in the park, and ice skating on the glass-like surface of the lake following the early freeze last fall. What a wonderful place!

Friends of Lake Wingra is dedicated to protecting the Lake, and enhancing the surrounding watershed community. Admittedly, there are numerous challenges and threats to the health of the Lake, and to

the human enjoyment of the Lake. Hopefully we can all work together to best these challenges.

We also believe that it is essential to focus on our successes, and common goals- and as an Organization and a community we have some amazing successes to celebrate in 2018. Water quality sampling in Lake Wingra showed continued normal variations. We now have a naturalized and protected shoreline with a dedicated paddlesport launching area at Wingra Park. The reconstruction of Monroe Street includes special water quality treatment devices, rain gardens, and decorative features- as well as measures to improve pedestrian safety. After continued major damage following this summer's flooding- Glenwood Children's Park has been partially repaired. Volunteers noted healthy amphibian activity at Vilas Lagoon (from newly reconstructed bridges!). Less phosphorus is reaching our lake due to improved leaf collection practices in small areas- which will hopefully be expanding soon. Less salt is being spread on our roadways

and sidewalks due to messaging and programs by the City and County. Hundreds of students visited and learned about the lake, and literally thousands more witnessed the wonder of the monarch life cycle.

All of these successes included direct participation and engagement by the Friends of Lake Wingra. As we finalize our organizational strategic planning efforts, it is essential that we continue the momentum that made 2018 an incredible year. We are poised to do so with increased internal focus; and the spectacular opportunity to participate in the development of a Masterplan for Vilas Park. However, more than ever, we need support in these projects. Please consider learning more about joining our Board of Directors, the Advisory Committee for the Vilas Park Masterplan, or through a financial contribution.

Ben Yahr
Chairman of FoLW



Storm water runoff causes severe erosion at the gully in Glenwood Children's Park



Pipe damage caused by the August storm



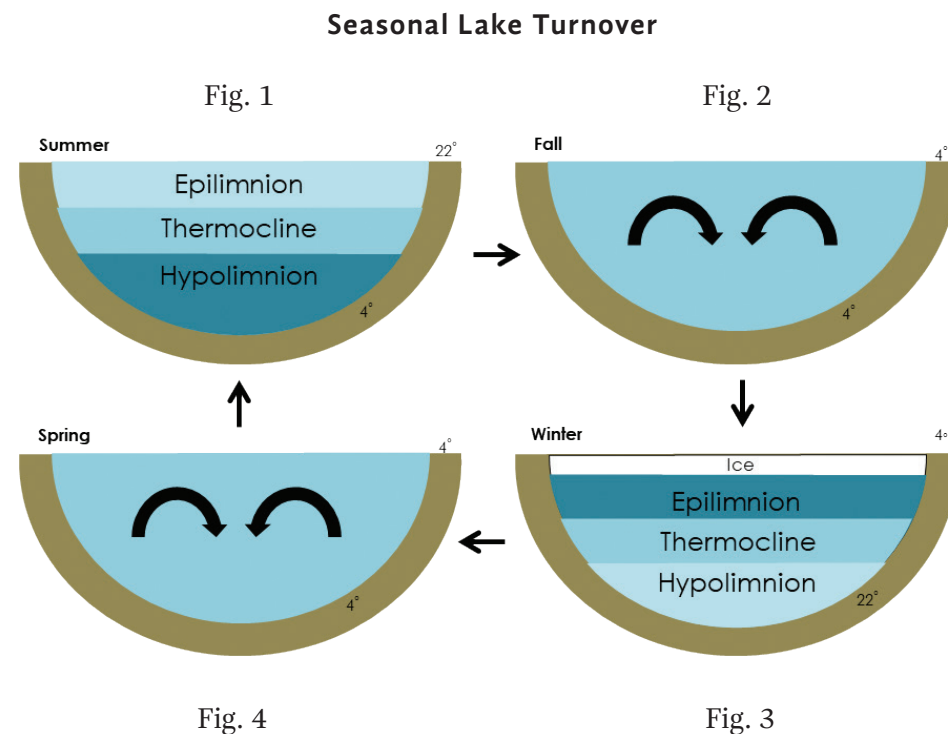
The new Vilas bridge, one of two new pedestrian bridges that cross the lagoon.

Under the Ice: How Organisms Survive Lake Wingra in Winter

by Grace Graham, WI Master
Naturalist Volunteer for
UW-Madison Arboretum

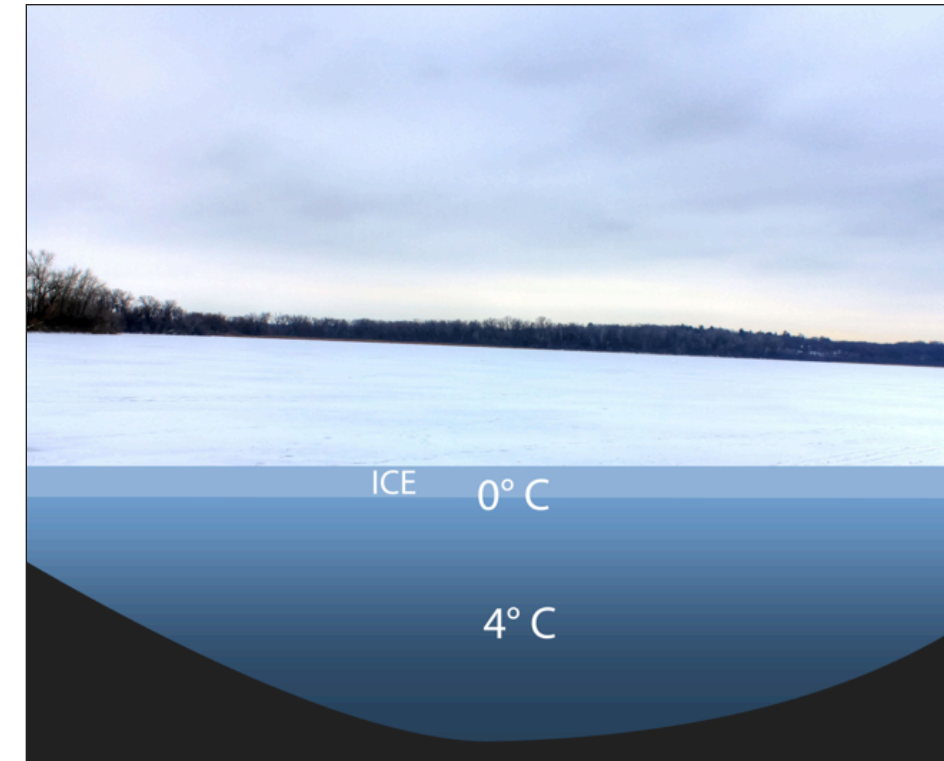
Just as we are experiencing the transformation to winter, the lakes around us are facing their own seasonal changes. During spring and fall, the water column experiences a process called turnover, the mixing of water from different depths, and a redistribution of oxygen and nutrients. This process supplies necessary sources of oxygen and nutrients for aquatic life to survive the winter.

First to understand the turnover process, it's important to recognize the unique characteristics of water. They are ultimately what make life in frozen lakes possible! When you look at ice in a glass of water, do you notice how it floats? Water is different than most substances in that it is less dense as a solid than a liquid, allowing ice to float above the water rather than sink. In fact, water is most dense at 4° C (39° F)— that's frigid water, but still 4 degrees above freezing. In the summer, when you dip your toes deep into the lake, you'll notice at a certain depth the water starts to feel cooler. That's because summer lake water is layered with the warmest water on top, and the cooler, denser water at the bottom (Fig.1). In fall, the turnover process begins and these layers break down. The warmer water in the upper layer cools and becomes easily mixed with the lower layers, often assisted by winds and storms



(Fig. 2). This mixing goes on until the temperature drops below 4° C (39° F)—, that critical number when water is densest. As ice-over approaches and temperatures continue to cool, the lake's water column becomes stratified again, this time with the warmest water on the bottom and coldest water on the top. Eventually, the uppermost water will freeze, forming an insulating layer of ice that actually helps the water underneath retain its relative warmth throughout the cold season (Fig. 3).

Life under the ice adapts to the quiet, cold, and often light-less winter. Fish will mostly stay to the bottom of the lake where the water is warmest. Frogs, turtles, and tiny invertebrate animals called zooplankton also migrate to the bottom, where they spend time in and out of the mud. While this might sound unbearable to the average human, these aquatic animals are all cold-blooded, meaning their internal temperatures adjust to match the temperature of their environment. In cold water, their



metabolism slows down, they don't need as much energy, they move more slowly, and they require less oxygen in winter. It does not make life any easier for them though. Despite things slowing down, interactions and competition between organisms does not stop. Predacious fish, for example, still need to eat.

The top challenge aquatic communities face in winter is the threat of running out of oxygen before the ice opens up in spring. Ice seals off water from atmospheric sources of oxygen. Ice also blocks sunlight, restricting plants from producing oxygen on their own through photosynthesis. Plants will grow where they can, at the underside of the ice, where the ice is least opaque. But plant growth is drastically more limited in winter than in other times of the

year. Most oxygen available to fish, turtles, zooplankton, and other lifeforms was brought into the system during fall turnover. The oxygen-replenishing act of mixing (and the unique density properties of water!) is an important process that sustains lake life year round.

This winter when you skate or walk on the ice, take a moment to appreciate the beauty of turnover and all the life underneath your feet, waiting to flourish as ice out nears. When ice does melt at winter's end, the spring storms will aid to mix the water from top to bottom. At this time photosynthesis increases, producing an abundance of dissolved oxygen once again for aquatic life to survive another season of dashing under your canoe or serenading you while you watch the Wingra sunsets.

Mission

We promote a healthy Lake Wingra through an active watershed community.

Friends of Lake Wingra Board

Ben Yahr, Chair
David Thompson, Vice-chair
Ian Krauss, Secretary
John Armstrong, Treasurer
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Advisors to the Board

Anne Forbes
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Become a Friend

To become a Friend of Lake Wingra, send your tax-deductible contribution to:

Friends of Lake Wingra, Inc.
PO Box 45071, Madison, WI 53744

Please make checks to:
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Wingra Watershed News

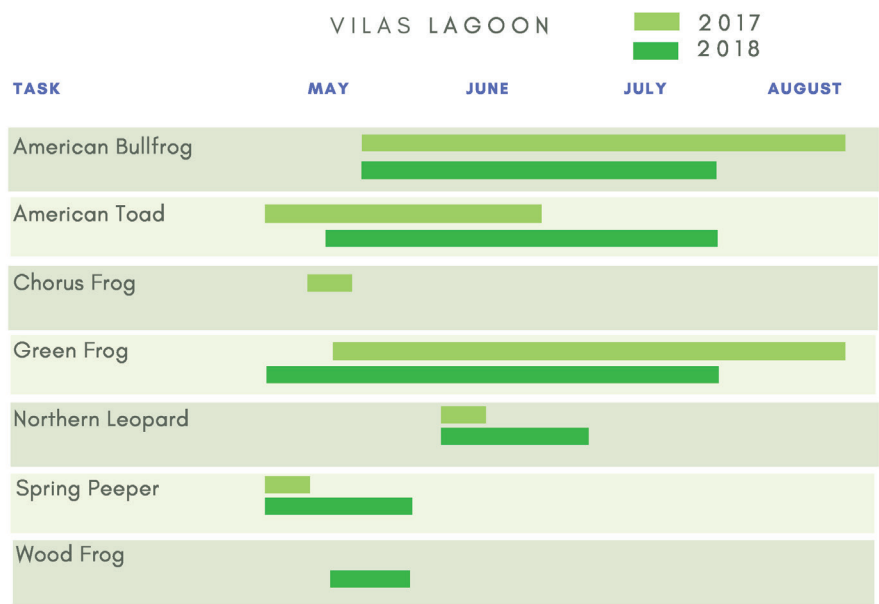
Winter 2019, Vol. 16, No. 1
Wingra Watershed News is published twice yearly by Friends of Lake Wingra, Inc.

Big Changes in 2018:

Friends of Lake Wingra Year in Review

A lot has happened around our watershed this year, both on the surface and behind the scenes. What new things are you most excited about?
by Casey Hanson

Amphibian Monitoring



Thank you to our 2018 volunteers Heidi Horn, Ann Rivlin, Barbara Sommerfield, and Anja Wanner - we appreciate you so much!

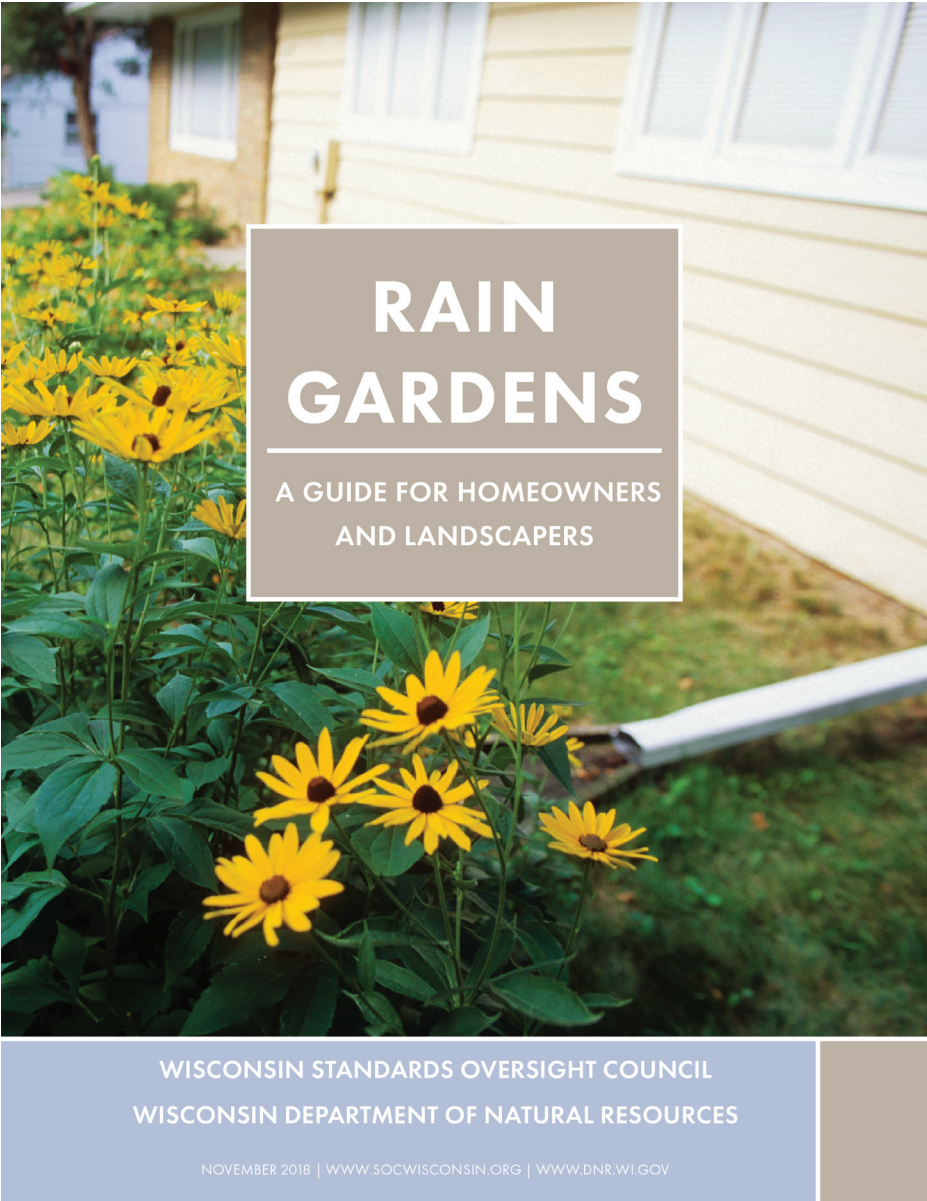
We completed our second year of frog and toad citizen science monitoring! Our volunteers heard six different species. See when we heard them and how it compares to last year (2017) in the chart. We heard more frequent calls in 2017 compared to 2018. For example, volunteers heard the American bullfrog 60 out of 92 (~65%) observations in 2017. In 2018 they only heard the bullfrog 4 times during the 41 (~10%) observations. While several factors can influence the activity of a frog or toad, we think the main reason for lower activity in 2018 was due to the Vilas Bridge Reconstruction. We will see if the activity picks up again in 2019!

A Statewide Accomplishment: A New DNR Rain Garden Manual

The Department of Natural Resources has a new and improved rain garden manual for your use! Rain Gardens: A Guide for Homeowners and Landscapers, the new manual, discusses the three main steps to designing a rain garden for your home: Step 1 - sizing and siting, Step 2 - constructing, and Step 3 - Planting and Maintaining. It also includes a list of recommended plants. The new manual is available for download in both a beautiful, full-color version and a more simplified, printer-friendly version. The DNR does not have plans to distribute hard copies. The PDF files are found here:

<https://dnr.wi.gov/topic/Storm-water/raingarden/>

More about the new manual: The DNR released the updated version in November 2018 after they updated the rain garden technical standard. A technical standard is a document that specifies a minimum practice or system of practices to provide a predicted benefit to water resources. A WI Standards Oversight Council (SOC) team worked together to update the standard. Fun fact: Roger Bannerman, one of our board members, was on the SOC team!



Overview of 2018 Efforts

Eight Outreach Events

- Ice walk
- Spring tour at Wingra Blessing
- NRF field trip
- Sequoia Library Anniversary Celebration
- Several monarch events: Olbrich's butterfly action day, IMAX Flight of the Butterflies, Children's Museum, Madison Library

Seven Partnerships

- UW Engineering
- Badger Volunteers
- Wingra Boats
- UW - Arboretum
- City Engineering
- Dudgeon Monroe Parks Committee
- Dane County

Four Public Engagement Projects

- Heritage plan
- Monarchs for Kids
- Amphibian Citizen Science Monitoring
- 3-year Strategic Planning

Thirteen Volunteer Events

- Badger Volunteers (11 weeks)
- Wingra Creek Clean Up
- Clean Lake Alliance Volunteer Event

Five Communication Projects

- Watershed bike map brochure
- Monthly e-newsletters
- Biannual newsletter
- Water quality monitoring blog updates
- Social media

MONARCHS FOR KIDS' GRANT

THIS PROJECT WAS A PARTNERSHIP BETWEEN FRIENDS OF LAKE WINGRA AND MONARCHS FOR KIDS TO PROMOTE ENVIRONMENTAL STEWARDSHIP AND AWARENESS IN CHILDREN'S LIVES THROUGH HANDS-ON EXPERIENCES

~1500 STUDENTS

saw a monarch's life cycle



85%

of teachers reported students had a greater sense of environmental stewardship after having the monarchs in the classroom



80 CLASSROOMS

across 16 schools, 4 preschools, and 1 day care center that serve Wingra watershed residents participated

5 EVENTS

- Monroe Street Farmers Market
- Olbrich's Butterfly Action Day
- Central Library Children's Event
- Madison Children's Museum event
- Flight of the Butterflies 3D IMAX



VOLUNTEERS 20



helped at events, provided milkweed, reared monarchs, created materials and packets for classrooms, or found eggs



A huge thank you to the Natural Resource Foundation of Wisconsin for helping fund part of this year's program.



Monarchs for Kids

- A grant for monarchs from the Wisconsin Natural Resource Foundation helped us to bring the life cycle of monarchs to classrooms that serve Wingra watershed residents this fall. One teacher said, "It was wonderful to watch 4Kers...They were THRILLED. Even during conferences in late November, family members were still sharing their child's excitement about raising and freeing butterflies..." The grant had a large, measurable impact on students (left).
- We had two new developments this year. To minimize releasing infected monarchs, Karen Oberhauser, Director of the UW – Madison Arboretum helped us learn how to test for the OE parasite. We also looked for a new sponsor better suited to ensure the long-term success of Monarchs for Kids. The project is very labor and resource intensive and we are thrilled to have found it with the Madison Children's Museum!
- Words cannot express the gratitude and pride we have for our board member and Monarchs for Kids founder David Thompson. He dedicated an immense amount of time in the program; it has quickly grown in popularity over the years. This year alone, with the help of many volunteers, he provided eggs to 144 classrooms at 33 schools (this is including schools outside of Monarchs for Kids' partnership with Friends of Lake Wingra). None of this would have happened without him.

Strategic Planning

Our strategic plan, the rudder to our kayak, will keep us on track when crosswinds try to reorient us. Using feedback from our supporters, Lake Wingra lovers, stakeholders and advisors, we will spend the next three years focusing on organizational sustainability, communications, and the Wingra Watershed Management Plan. By finalizing our action plans for each topic, we plan to wrap up our strategic planning process in early 2019. Learn a little bit more about what each strategic issue means:

• Organizational sustainability:

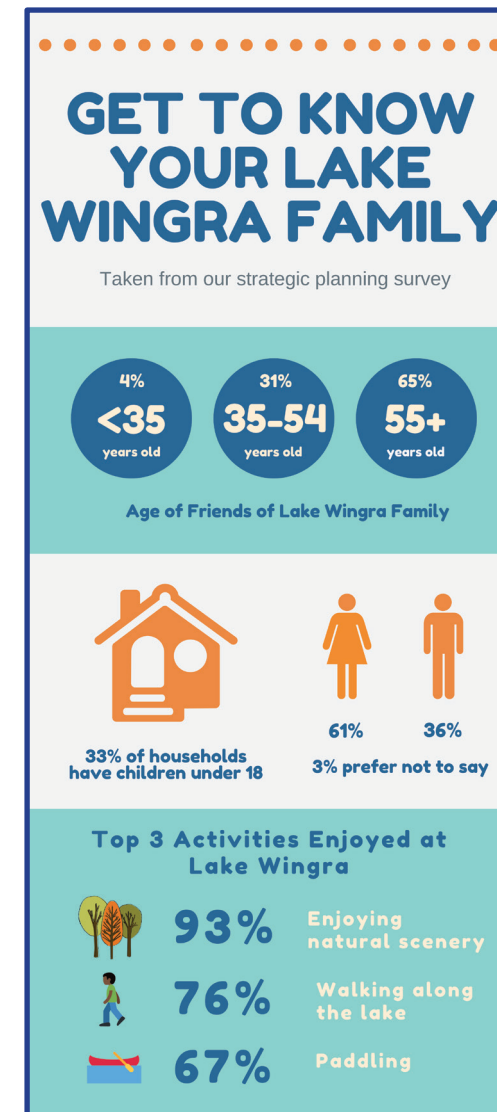
- Attract and retain board members.
- Reflect the demographics of our watershed in our board members.
- Increase financial health to provide more hands-on projects.

• Communications:

- Craft applicable messages to different audiences.
- Expand our network based on diversity (location, race, gender, age, etc.), professions (e.g., teacher, business), or enthusiasts (e.g., runners, paddlers, fisher people).
- Promote an active watershed by enhancing volunteer opportunities.

• Wingra Watershed Management Plan:

- Define one area to focus on.
- Identify partners to help implement the plan.
- Define funding sources.
- Define measurable criteria for success.



THANK YOU to all of our monarch volunteers this year!

Liz McBride, Amy Callies, Dawn Daly, John Gern, Kevin Thies, Bridgette Baldwin, Jodi Pahs, Alissa & Sylvia Bazsali, Gail & Anna Rogall, Cheryl DeWelt, Sheryl Henderson, Jennifer Liebert, Diane Drives, Sheryl Boser, Julie Rothwell, Nick Sanek, and Jessica Rowe

A special thank you to Inkworks for funding part of this year's newsletter issue!

How **Brown** Leaves Help Turn Lake Wingra **Green**

by Roger Bannerman

Every Fall the leaves accumulating in our residential streets contribute to making Lake Wingra turn green in the summer. Rain water running through the fallen leaves can release nutrients, such as phosphorus and carry it to the lake. If the leaves are left on the street for the few weeks of the fall, the amount of phosphorus released can amount to about 50% of all the phosphorus reaching the lake in one year (Selbig, 2016). Like most cities, the City of Madison reduces the exposure of the leaves to rainfall by picking up the leaves 3 or 4 times during the fall. Picking up the leaves includes running street cleaners down each street. Madison's leaf management program benefits all our lakes, but the benefit has not been quantified. The benefits of any leaf management program will depend on the accumulation rate of the leaves versus the frequency of rainfalls. Quantifying the reduction achieved with different leaf management programs is essential to understanding the role of any leaf management program in achieving the phosphorus reduction goals for Lake Wingra or any of our lakes.

Five years ago, the local United States Geological Survey (USGS) office assumed the responsibility of determining the amount of phosphorus reduction achieved with different leaf management programs. Funding sources for the project included the City of Madison, Wisconsin Department of Natural Resources, Madison



City of Madison leaf collection

Photos by Roger Bannerman

Metropolitan Sewerage District, Dane County, Lake Michigan Fund, and the USGS. Flow and water quality monitoring equipment was installed at the end of 5 storm sewer pipes in the City of Madison. The pipes drain a few acres of medium density residential area with mature trees overhanging the streets. Four different leaf management programs have been tested that mostly vary in the frequency of removing the leaves from the street. The extreme program was not allowing any leaves to accumulate, two programs removed leaves once per week, and the least frequent program picked up leaves 3 or 4 times a season. The results are very encouraging with the amount of reduction achieved with the three frequencies being 80, 60,

and 40 percent, respectively. These results now give Madison and other cities the opportunity to compare leaf management programs to other phosphorus reduction efforts.

Short term and long term phosphorus reduction goals for Lake Wingra are presented in the Lake Wingra Watershed Management (City of Madison, 2015). A list of methods to control phosphorus, such

| Frequency of Leaf Collection | % Phosphorus Reduced |
|------------------------------|----------------------|
| No leaf accumulation | 80 |
| Once per week | 60 |
| 3-4 times per season | 40 |

as better leaf control, are compared in the plan. These recent results from the study will certainly help update a comparison of the control methods and achieve the goals. Although the study focused on the city's leaf management program, the results also reveal the

important role homeowners can have by keeping the leaves they rake out of the street and removing leaves that fall on the street.

City of Madison; FOLW; and Strand Assoc., 2015 (<https://www.cityof-madison.com/engineering/stormwater/>

[documents/Section4-Phosphorus.pdf](#) Selbig, William, 2016. Evaluation of leaf removal as a means to reduce nutrient concentrations and loads in urban stormwater. Science of the Total Environment 571 (2016) 124–133



Incorrect placement of leaves for collection



Correct placement of leaves for collection

Volunteer with Friends of Lake Wingra

Let us know if you want to get involved with us to help improve the health and quality of our beautiful Lake Wingra. Sign up for our monthly e-newsletter on our website www.lakewingra.org.

Opportunities include education programs, working with schools, rain garden installation/planting/maintenance, graphic design, newsletter editing, event planning, marketing and grant writing and review.

Friends of Lake Wingra Board Meetings

Friends of Lake Wingra board meetings are open to the public and held at the Sequoya Library the first Thursday of the month from 6:30-8:30 p.m. Check our event webpage for any changes.

If you have an item to discuss with the board please email info@lakewingra.org a few days in advance of the meeting to be placed on the agenda.

Become a Friends of Lake Wingra Board Member

Do you want to help Lake Wingra on a deeper level? Consider becoming a board member! Start off by attending one or more of our board meetings or by emailing your interest to:

info@lakewingra.org.

We can arrange a personal meeting with a current board member or staff person to explore opportunities.

Native Plants Add Winter Interest to Your Garden

by Liz McBride

Spring through fall, native plants beautify our gardens and provide food for birds and insects. But even in the dead of winter, they lighten the heart and feed the hungry. Stripped of leaves and petals, native plants add form, texture, and even color to the home garden, especially when it is blanketed with snow. And while we enjoy their good looks, native plants shelter over-wintering insects and nourish birds with berries and seeds.

Here are a few examples.



What dreary winter day could not be brightened by the red berries of our native hawthorn (above, *Crataegus* sp.). About 40 species grow in Wisconsin, either as a large thorny shrub or small tree. Hawthorns prefer open sun or light shade and stand 16 to 50 feet tall, depending on the species.



Our native witch hazel (above, *Hamamelis virginiana* sp.) puts on a surprise show in late fall with lemon-yellow flowers that hug its branches and linger into winter. Witch hazel grows in sun or shade and forms a graceful shrub 8 to 15 feet tall depending on conditions — a welcome spot of color against the snow.

Another small tree or large shrub, American bladdernut (right, *Staphylea trifolia* sp.) tolerates shade, which makes it an attractive choice for an urban woodland garden. The papery bladder-like seed capsules hang in clusters deep into the winter.



Photos by David Thompson & Liz McBride

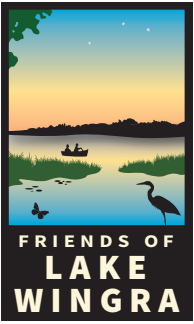


Growing up to 6 feet tall, Joe-Pye weed (above, *Eutrochium* sp.) makes a statement any time of year, including winter when its strong stems keep it upright and the persistent seed heads add fluffy texture. This native can spread enthusiastically, however, and needs room to grow or occasional digging up.

Goldenrod (below, *Solidago* sp.) stands tall and erect above shorter plants, and dabs of snow highlight its attractive form. About 20 species are found in Wisconsin with 6 to 10 of those common. They grow to various heights. Most like full sun but some species will tolerate shade.



The upright stalks of sweet black-eyed Susan (left, *Rudbeckia subtomentosa* sp.) offer an eye-catching vertical element. These natives are especially adorable when they sport tall white “hats” of new-fallen snow. This tough prairie plant thrives in sun, tolerates part shade, and grows from 2 to 5 feet tall.



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Madison, WI 53744

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