



# Friends of Lake Wingra



Promoting a healthy Lake Wingra  
through an active watershed community

## Wingra Watershed News

Fall/Winter 2011 volume 8, number 2

### Sustained Improvement in Lake Wingra Water Clarity

- Matt Diebel

*The main reason for the improvement is the removal of around half of the carp population in two netting efforts in 2008 and 2009. It was unclear whether the initial improvement would be sustained if carp rebounded quickly, but so far, the lake has remained in its new clear-water state.*

Improved water clarity in Lake Wingra first documented in 2008 has continued through 2011. The average Secchi depth in summer 2011 was 3.7 ft, which is almost twice as clear as the 2 ft average Secchi depth between 1996 and 2007.

The main reason for the improvement is the removal of around half of the carp population in two netting efforts in 2008 and 2009. It was unclear whether the initial improvement would be sustained if carp rebounded quickly, but so far, the lake has remained in its new clear-water state.

When lakes experience a major change such as the Wingra carp removal, they often “flip” suddenly from a turbid, algae-dominated state to a clear water state, rather than gradually changing over time.

The clear water allows sunlight to reach into deeper water, which lets aquatic plants grow over more of the lake. These plants stabilize the sediments on the lake bed, and prevent them from being stirred up by the remaining carp. This positive feedback helps keep the lake from “flipping” back to a turbid state.

Aquatic plants also benefit fish by supporting aquatic insects and by providing shelter from predators. Overall, Lake Wingra is more like its natural state than it has been in decades.

There is one unfortunate side effect of improved water clarity. In summer 2011, lake users noticed that aquatic plants covered almost half of Wingra’s surface area.

It became difficult or impossible to operate sailboats or motorboats in shallow water because their keels, rudders, and motors became entangled with plants.

Tyler Leeper, owner of Wingra Boats, stopped renting sailboats last summer because too many patrons had to be rescued after getting stuck in beds of aquatic plants.

Dane County has used mechanical harvesters to cut aquatic plants from the other Yahara Lakes, focusing primarily on the invasive Eurasian water-milfoil, but has avoided cutting on Wingra because it supports a high diversity of native plant species.

The County conducted limiting harvesting on Wingra in 2011 to clear access lanes from the shoreline to the deeper parts of the lake.

Friends of Lake Wingra plans to work with Dane County and the Wisconsin DNR to evaluate changes to the aquatic plant harvesting plan to provide recreational access without harming native plants and undermining recent gains in water clarity.



## Friends of Lake Wingra, Inc.

### Mission

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

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**Special Thanks to:** Arboretum Cohousing, for hosting a fundraising event for FOLW.

### Become a Friend

To become a Friend of Lake Wingra, send your tax-deductible contribution to Friends of Lake Wingra Inc. c/o Office of Advancement, Edgewood College, 1000 Edgewood College Drive, Madison, WI 53711-1977. Please make checks to: Edgewood College - FOLW.

### Friends of Lake Wingra, Inc.

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### Wingra Watershed News

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## Update – Watershed Management Planning

As reported earlier, Friends of Lake Wingra (FOLW) has partnered with City Engineering on an ambitious, watershed-wide planning effort designed to improve the condition of Lake Wingra.

This effort is intended to develop actionable steps that will move us toward realizing the specific, community-identified health goals found in our 2009 publication titled *Lake Wingra: A Vision for the Future*.

The City has already committed \$125,000 in Stormwater Utility funds for Year 1 of the project, and work is currently underway to engage the services of a qualified consultant.

It is our hope that this process, and the water quality outcomes it aims to produce, will serve as an effective model for improving ALL of Madison's lakes.

To date, a detailed and comprehensive Request for Proposals was developed and a number of consulting groups were interviewed.

FOLW is now negotiating with the City to finalize a hiring decision and agree to a schedule of activities that is most likely to achieve our shared objectives.

We are anxious to move ahead, and remain hopeful that continued progress can be made on this much-anticipated initiative.

## Dane County Clear Lakes Initiative



In November 2011, the Dane County Board announced a \$27 million plan to clean up the Yahara Lakes over the next five years. The main components of the plan include removing carp, buying land to reduce runoff pollution, improving stormwater management, and cleaning up beaches. This is great news for our lakes! The Friends of Lake Wingra will advocate for activities that will benefit Lake Wingra and will keep you up to date on the progress of this initiative through our website and newsletters.

## Volunteer Corner

Looking to do good works for Lake Wingra and the watershed community? To get involved, send an email expressing your interests to: info@lakewingra.org. Here are just a few of our needs for volunteer support:

- ◆ Anyone who is a team player and has time and energy!
- ◆ Fundraising & development expertise
- ◆ Community organizing
- ◆ Writing and editing
- ◆ Graphic design
- ◆ Archivist/Historian
- ◆ Shoreline caretakers
- ◆ Watershed watchers



*Looking across the new Manitou Pond toward the West Wingra Marsh*

## New Pond Protects Arboretum and Lake Wingra

*- David S. Liebl, Chair—UW-Arboretum Stormwater Committee*

Anyone living near or driving through the intersection of Nakoma Road and Manitou Way this summer has seen a dramatic transformation taking place. Degraded wetland around an eroded stormwater ditch and filled detention pond has been transformed into lovely new pond with an open wetland waterway.

The stormwater outfall at Manitou Way discharges 167 million gallons of urban stormwater runoff into the Arboretum and Lake Wingra each year from Madison's west side.

Neighborhoods as far west as Greentree, and the UW-Research Park contribute to flows running through the Odana Golf Course ponds and downstream through Nakoma, carrying with it about 140 thousand pounds of urban sediment into the Arboretum and Lake Wingra every year.

For the past five years, ecologists and engineers have worked closely to sift through many alternatives to find a design that both protects the Arboretum and Lake Wingra, while minimizing the

impact from construction of a stormwater management facility.

With funding from the State of Wisconsin and the City of Madison, a stormwater detention pond located at the Manitou Way outfall will capture 60% of the urban storm water sediment (85,000 lb/yr), preventing it from filling in Arboretum wetlands and Lake Wingra.

The completed Manitou Pond will be surrounded by wetland plants and other native species, nestled in the Arboretum horticultural garden. Downstream of Manitou Pond, the open ditch has been replaced by a grassy swale planted with sedges and other wetland plants and the accumulated urban sediment has been removed from Secret Pond, now restored as a wetland.



*Once filled with urban sediment, Secret Pond now hosts Wood Duck and Teal and Sandhill Crane.*



# Five Myths About Road Salt

- David H. Thompson

The City of Madison has been trying to reduce road salt use since 1977, when they set a target of no more than 2,846 tons each winter.

But over the last decade, average annual salt use was more than two and a half times that goal. Missing the goal by so much means we have a complex problem, which is not well understood by most city residents.



The following myths persist because the effects of salt on the environment are just beginning to be documented and understood.

## **1. I like salt with my fries, so it can't be toxic.**

Salt—a combination of sodium and chloride—has profound effects on life, especially small aquatic critters like the water flea (*daphnia*)—which is so important to the food chain. Do you remember when, as a kid, you put salt on a slug?

Road salt has analogous lethal effects on small aquatic organisms. Scientists found that water fleas started to die at chloride levels of 600-1100 milligrams per liter (mg/L). They all died at 1900

mg/L. Fathead minnows started to die at 4660-6290 mg/L of chloride.

Sampling in February of 2010 by the Health Department found runoff from East Towne private roads and parking lots reaching 4850 mg/L, and from nearby streets reaching 5890 mg/L.

Odana Pond receives runoff from the Westgate area and the beltline. From there, water flows towards Lake Wingra. At Odana Pond in early 2008, 2009, and 2010, chloride levels reached 1600, 1200, and over 900 mg/L.

Wingra chloride levels have increased at least 16 times above 1940 levels (from about 5 to over 80 mg/L).

Besides poisoning aquatic life, salt can have indirect effects on lakes. It can reduce the turnover of waters in lakes, leading to oxygen starvation of fish, and it can increase the release of toxic heavy metals from sediments. Elevated salt levels tip the balance in favor of invasive species.

According to the Public Health Department, "Over half of the City's drinking water wells have sodium levels that are trending higher.

Three wells are above the United States Environmental Protection Agency's drinking water guideline ... for individuals with a restricted sodium diet."

Some road salt has Ferrocyanide added to prevent caking. When dissolved in the presence of light, it produces free cyanide—a potent poison. Road salt also contains traces of toxic heavy metals.

## **2. If salt is a problem—then it's limited to early spring, or to areas near roads.**

All Madison's lakes show steadily increasing levels of salt.

Trees up to 150 feet from a highway can be damaged—sometimes a salty mist from tires can harm trees a mile away.

Salt splashes beyond streets, killing grass and gardens. Resulting bare

ground erodes, releasing sediment and nutrients to the lakes. Salt degrades soil quality and its ability to absorb rain-water, leading to increased flooding.

More than half the salt we spread goes into groundwater. During summer, lakes and streams get much of their water from groundwater seepage. So elevated levels of salt in streams are now persisting into summer and fall.

Peaks of chloride during spring thaw are now more harmful, because they add to lingering levels already present.

### **3. Salt is a cost-effective way to remove ice.**

Salt is effective at melting ice, and it seems cost-effective, because many of the hidden costs aren't paid by those who use it.

Salt is very corrosive, causing expensive damage to vehicles and structures. The AAA estimates that road salt ranks as the "primary degrader of automobile value."

Road salt can cause flaking of concrete. But the most serious damage to concrete structures occurs when reinforcing rods inside become corroded, causing a loss of structural strength.

One study "estimated that \$5 billion is spent annually by state and local agencies to repair infrastructure damage caused by" salt. Delays to traffic resulting from repairs increase the cost to society by ten times. Countless other structures near roads sustain similar damage, such as parking garages.

### **4. Salt makes highways safer.**

Unquestionably, salt melts ice, and drivers experience better conditions. But this "experience" isn't the same as safer roads.

When more salt is spread, driving speeds increase, resulting in more frequent and more dangerous accidents, according to a study in Canada.

There are better ways to increase winter safety—lower speed limits, a legal requirement for snow tires, and limiting driving when roads are bad.

### **5. All we need is a "technical fix."**

Whenever I discuss salt with my friends, they say "I hear the City is trying beet juice" or some other miracle de-icer.

So far, all these magic solutions have failed to be as cheap or effective as salt, or they have unwanted side effects. Anything organic (like beet juice) is likely to overfertilize our waterways, or use up the oxygen in waterways, suffocating fish.

To their credit, the Streets Department has tried new deicers and new application techniques over the years.

Despite 34 years of such improvements, salt use still increased by 265%. Increased traffic, increased miles of pavement, and increased public demand has outpaced their good efforts.



*Too much salt was applied to this sidewalk.*

One area where better techniques can work is with private business and shopping malls. They spread an amount of salt roughly equal to the 10,439 tons the City spreads in an average year. There's evidence that private businesses are overusing salt, and that better equipment, incentives, and training would help.

### **What citizens can do**

You can help reduce salt damage by shoveling your sidewalk frequently, then applying salt and sand in small amounts, only when ice persists.

If grains of salt remain after the pavement dries, then you've applied too much. The correct amount is about four pounds per 1000 square feet. A pound of salt is about the amount in a coffee mug.

You can also help by asking your employer and elected officials to enact policies that limit excessive salt use. If you are interested in helping monitor salt concentrations in area streams, visit the Wisconsin Citizen-Based Water Monitoring Network's website at: <http://watermonitoring.uwex.edu/level3/UrbanRoadSalt.html>

### **Our current love affair with salt isn't sustainable.**

It's a complex problem, because the damage is mostly invisible, and because so many stakeholders are involved.

Right now, concerns for roadway safety seem to trump all other concerns. We can only gain traction on salt overuse, when we learn to balance roadway safety against other equally important concerns, such as environmental health, purity of drinking water, and maintenance of urban structures.

See David's blog on road salt at <http://www.cutsalt.blogspot.com/> for more information, including reports referenced in this article.



## Climate Change and Wisconsin's Lakes

- David H. Thompson

An overwhelming number of scientists agree that global warming is underway. What does that mean for Madison and our lakes?

To see for yourself, just drive half an hour to Fish and Crystal lakes. They provide early warning because they are seepage lakes, with no surface outlet. So they respond to changes in rainfall, evaporation, and groundwater with changes in level. Between 1966 and 2002, Fish Lake rose by about nine feet, flooding homes along the shores.

A study of why the lakes are rising illustrates the complexity of climate change. Hydrologists found that increased snowfall had caused greater recharge of the groundwater. Most of the recharge occurred in the spring before the soil dried out. With more snowfall, there was more melt water in early spring. And because a blanket of snow kept the ground from freezing deeply, the melt water could start recharging groundwater sooner.

Looking forward, there's much uncertainty about how global warming will affect Dane County.

Many climate researchers believe it's still too soon to predict changes at the

state or regional level. Even if they could, some counties would probably experience increased rain, while others would see a decrease. The one thing we can count on is that weather will be more unpredictable and more extreme. As Thomas Friedman says, expect "global weirding."

At Fish Lake, there's early warning of other changes we can expect. Since the 1980s, invasive aquatic weeds (Eurasian watermilfoil) have clogged Fish Lake. The lake has also become more eutrophic, with blue-green algae blooms throughout the summer. Such blooms are expected to become more frequent statewide; partly because of increasing temperatures, but also because of increasing nutrients, which will wash to lakes during more intense storms.

Usually the algae blooms are just a stinky nuisance. But sometimes they suddenly produce toxins. In 1998, Jeff Hook took his dog to swim in what looked like a pristine pond in Massachusetts. There was no sign of algae. But within minutes of entering the water, his fifty-pound dog was dead. A few years later, another of Jeff's dogs died at the same pond.

Another sign of global weirding came during June of 2008, when a series of heavy storms swept across southern Wisconsin. Streets flooded in towns as stormwater structures were overwhelmed. There was massive flooding over 810 square miles. Private wells were contaminated, and raw sewage overflowed at 161 wastewater plants. FEMA paid \$34 million in damage claims. Expect extreme storms to become more common.

How do you prepare for something so vast and unpredictable? How does Madison adapt? We can start by recognizing the magnitude of the challenge.

Climate change is especially challenging because our lakes are already sick. The problem of road salt is a good example. In Madison, despite spreading less salt and making many other improvements in salt use, salt in our lakes has continued to rise.

We haven't learned how to protect our lakes with the current climate, let alone with global weirding. If we don't make major improvements in how we treat our lakes now, things are going to get a LOT worse.

There's also reason for optimism that we can adapt to more extreme weather. The City is beginning to use new "green" stormwater management tools, such as rain gardens. City Engineering, in partnership with FOLW, is starting to look at integrated management of the entire Lake Wingra basin.

And citizens don't have to wait for the City, because you can build rain gardens in your yard or between the sidewalk and street. Rain gardens will help blunt the effects of climate change by slowing runoff, and by keeping sediment and nutrients out of the lakes.

Rain barrels also keep roof runoff out of storm sewers and store it for watering gardens during dry periods.

For more information on predicted effects of climate change and adaptation strategies, see the Wisconsin Initiative on Climate Change Impacts website at: <http://www.wicci.wisc.edu/index.php>



# Love Boats on Lake Wingra!

- Rex Merrill

Looking at the frozen lake in winter, I try to remember how it looked last summer. The cattails were green and erect, while now they are brown and battered by the winds.

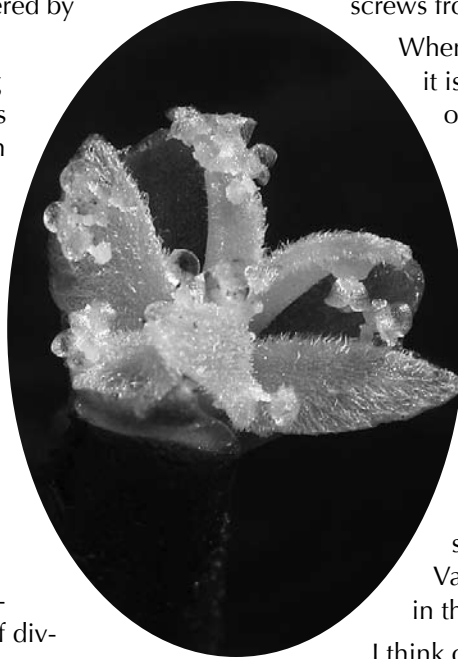
Last summer water lilies with their floating leaves bloomed garishly, while pondweeds and water-milfoil grew thickly just beneath the surface. Under the ice, all of these plants are now taking the winter off in a dormant state.

One of the submerged aquatics now overwintering is *Vallisneria americana*. Next spring from buds on the lake bottom, it will grow new rosettes of narrow, flexuous leaves. These leaves, over a meter long and less than a centimeter wide, give the plant many of its common names: tape grass, eel-grass, and ribbon grass.

Another common name is wild celery, perhaps because the plant is a favored food of diving ducks.

Towards the end of the summer when carousing beetles are pollinating the water lilies, *Vallisneria* is much more subtle in its sexual reproduction.

It produces tiny flowers that float at the lake's surface. Slender stems bearing the female flowers grow up like corkscrews from the leaf rosettes at the lake bottom.



When a female flower opens at the lake surface, it is only 5 mm (less than 1/4 inch) wide without showy petals but with an obvious three-lobed stigma for receiving pollen.

The male flowers are even smaller, consisting of little more than a pair of stamens that produce pollen. The male flowers, when released from the plants under water, float to the surface.

A dimple formed on the water's surface around the female flower will funnel male flowers toward the stigmatic surfaces.

It is a wonder that this chancy method of sexual reproduction works at all. Luckily, *Vallisneria* can spread asexually by runners in the lakebed.

I think of these flowers as little love boats, but their story is much more interesting than the old TV show.

Photo: *Vallisneria americana* female flower with several male flowers attached, by AlanCressler

The signs in the foreground, created by Terri Bleck as part of her project with Edgewood College's Sustainability Leadership Program and with support from Friends of Lake Wingra, are part of a larger effort to reduce the amount of bacteria at Vilas Beach caused by geese.

The fence in the background was put up by City Parks as part of this same effort. A sign on the fence says: "This fence was installed at the beach to discourage geese from entering the park from the lake. Large numbers of geese can negatively impact water and beach quality. It will be removed prior to next year's beach season."



# Friends of Lake Wingra, Inc.

c/o Office of Advancement  
Edgewood College  
1000 Edgewood College Dr.  
Madison, WI 53711-1977



## Upcoming Events

See our online calendar at [www.lakewingra.org](http://www.lakewingra.org) for more details on these and other upcoming events.

**FOLW Board Meetings** are held on the first Thursday of each month and are open to the public. Check the calendar at [www.lakewingra.org](http://www.lakewingra.org) to confirm the time, location, and meeting agenda.



A young performer entertains the crowd at Wingra Ripples, a fundraiser for Friends of Lake Wingra, hosted by Arboretum Co-housing. Photo by David Thompson.