## Autumn Discovery Day



A "**Citizen Science Day**" aimed at kids and their families was held at the Lake District Preserve on October 27th. Naturalist-led activity stations focused on finding and identifying insects and birds, examining different soil types, collecting and planting prairie seeds, learning how to use a GPS unit to find hidden treats, and discovering how conservancy lands are helping to protect Lake Ripley.



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# Ripples

Lake Ripley Management District

Vol. 19, No. 3 Winter 2011-2012

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## FROM THE HELM

In 1999, I was privileged to be nominated and invited to attend the Wisconsin Lake Leaders Institute. This program was designed by the UW-Extension in coordination with the Wisconsin DNR and Wisconsin Lakes. I joined 20 individuals from across the state for three, two-day retreats. I traveled to Amherst Junction, Woodruff and Baraboo. At the time, I had already been a member of the Lake District Board for several years, but this opportunity proved unique, rewarding and, in many ways, life changing. The experience even led to long-term friendships that I treasure to this day.

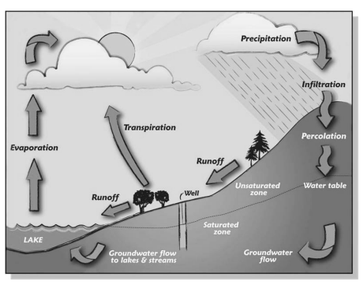
The information I took away about lakes and lake management has been important to my understanding of why we do what we do. Since I attended the Lake Leaders Institute, other board members and staff have joined later groups. In this newsletter, we discuss the land-water connection, the impact of the Lake District Preserve, and what we as individuals can do to improve lake quality. If I could share with you two things from my experience with the Lake Leaders Program and my time on the Lake District Board, here is what I would tell you:

One, get a copy of *A Sand County Almanac* by Aldo Leopold. This little book really makes you appreciate how land and water are invariably connected. I give copies to all my nephews and nieces when they graduate from high school. Second, know that we can love our lakes to death. Lakes, like all living things, go through an aging process and eventually "die." For lakes, dying should involve an excruciatingly slow progression from open water to shallow marsh to prairie. This process is supposed to occur over thousands of years when left to nature's design. Unfortunately, Man and development have profoundly accelerated the aging process. Our job is to slow that acceleration and create a balance between use and preservation.

Wishing you all a happy and healthy holiday season,

*John Molinaro, Chair*

## It's the Journey that Matters




For millennia, the land has shed rainwater and snowmelt into Lake Ripley. Land topography and gravity funneled water toward the lake's deep, glacial basin. It was a journey of twists and turns through oak woodlands, rich prairies and thirsty marshes.

On its journey, water was absorbed and filtered by spongy soils and lush vegetation. Much of it seeped down into the soil and became groundwater, bubbling up as cool springs found in and around the lake. Some collected in the lake's tributary stream, winding a slow and wetland-fringed path down to the lakeshore. Like kidneys that remove waste products from our blood, our indigenous landscapes naturally "treated" the water on its cross-watershed journey down to the lake.

*Continued >>*

## Lessons from the Land

As our landscapes have changed, so has Lake Ripley. This is because lakes are reflections of the land areas that drain to them. By altering or removing the land's natural "treatment" mechanisms, we increase the amount and velocity of runoff (water that can't be absorbed into the landscape). This extra runoff, in turn, leads to more soil erosion and carries more contaminants to the lake.

The relationship between land cover and lake quality is well documented. This relationship serves to guide today's lake-improvement efforts, while providing useful insights for how we might manage our own individual properties, farming operations and building practices to ensure clean water.

**When it rains, soil devoid of adequate plant cover, crop residue or other erosion controls is likely to wash into nearby lakes and streams.** *Credit: Lynn Betts, USDA/NRCS*

History tells us that lake conditions suffered greatly when we drained, farmed and built over our water-cleansing marshes. They suffered when shorelines were stripped of their natural vegetation, when invasive pests were introduced, and before soil-conservation and erosion-control measures were widely incorporated into our farming and building practices. And they suffered when Lake Ripley's inlet stream was artificially straightened and linked to a network of drainage ditches. This we know. And the impacts of some of these earlier landscape manipulations linger to this day.

## An Unfolding Tale of Recovery

The good news is that with awareness comes change, and change is well underway in the Lake Ripley watershed. The 167-acre Lake District Preserve was established to buffer and protect the lake's only stream inlet. Some of Lake Ripley's most threatened marshes are now permanently protected and the focus of ongoing restoration. Polluting drainage ditches are gradually being plugged. Soggy farm fields are being converted to prairie or returned back to wetland. Battles are being waged on invasive pests that harm the health and function of our streamside woodlands and natural areas. Lakeshore lawns and sand beaches are giving way to scenic wildflower gardens. And while more and more farmers are following nutrient-management plans and adopting conservation farming practices, more and more homeowners are rethinking yard care and directing gutter downspouts into rain gardens.

Viewed in isolation, each individual action we take on our own properties may seem inconsequential. But once we take a step back and recognize their cumulative effect, it becomes clear that we are progressing along a path toward recovery.

So, while change may be inevitable, it is up to us as neighbors and landowners to make sure that we choose the type of change that pushes us in the right direction. Whether it's volunteering out at the Preserve, working with us to complete a lake-friendly property improvement, or being a responsible steward of our land and water, people are already making a real difference. Are you one of them?

**TIP:** Inspect your yard or cropland while it's raining to see where water flows. Use the opportunity to pinpoint areas to fix or tweak. Can gutter downspouts be pointed away from a driveway and into a rain barrel or rain garden? Can no-till planting, contour strip cropping, or a grass waterway help absorb and infiltrate erosive water flows?

UW-Eau Claire

**"Contour strip cropping" slows runoff and limits erosion by alternating cultivated and sod-forming crops that follow the contour of the land.**

**Multiple rain gardens and lakeshore plantings are installed at the Lake Ripley Bed & Breakfast (Ripley Rd.) with the help of Lake District cost sharing.**

Call or send us an email if you'd like information packets covering any of the following topics:

- ► **RAIN GARDEN DESIGN**
- ► **CONSERVATION FARMING METHODS**
- ► **SHORELINE-ENHANCEMENT STRATEGIES**
- ► **LAKE/WILDLIFE-FRIENDLY LANDSCAPING**
- ► **YARD CARE FOR WATER QUALITY**
- ► **NUTRIENT MANAGEMENT PLANS**
- ► **HOUSEHOLD RAIN BARRELS**
- ► **VOLUNTARY LAND-CONSERVATION AGREEMENTS**
- ► **DITCH PLUGS/WETLAND RESTORATIONS**
- ► **CONSTRUCTION SITE EROSION CONTROL**
- ► **WELL-WATER TESTING (free test kits also available)**

Don't forget to inquire whether your project is eligible for funding assistance! ♦

## Should I Register My Pier?

Waterfront property owners now have until April 1, 2012, in which to complete a free, one-time registration if they have a larger pier that exceeds size standards set in 2004.

The vast majority of piers statewide do not need to be registered because they already fit the size standards that lawmakers established for piers to be exempt from state permitting processes, according to Martye Griffin, who coordinates the pier registration program for the Department of Natural Resources. Exempt piers are no wider than 6 feet but can have a loading platform area up to 8 feet wide located on the water-ward end of the pier; don't interfere with neighbors or public boating and fishing; and have no more than two boat slips for the first 50 feet of shoreline frontage owned and an additional boat slip for every full 50 feet owned thereafter.

**A typical Lake Ripley pier that meets the standards and does not require registration.** *Credit: Janice Hoiby*

Lawmakers created the registration process for piers that were first placed in the water before Feb. 6, 2004, to grandfather in most of the larger existing piers that exceeded the size standards. Having the pier registered protects property owners if neighbors or others complain about the pier's size in future years, allows DNR and local governments to know the larger pier is legal, and is helpful if there is an eventual property ownership transfer, Griffin says.

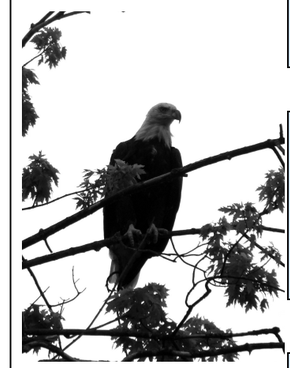
Waterfront property owners now have more time to learn if their pier qualifies to be grandfathered through registration, and to complete the process if it does. Only piers first placed in the water before February 2004 qualify for registration if they meet specific size criteria. A very small number of large piers will not qualify to register but can be downsized by their owners to a size that qualifies for registration or must go through the individual permitting processes with no fee, Griffin says.

A registration form and instructions can be downloaded at **http://dnr.wi.gov/waterways/recreation/piers_registration.html**.

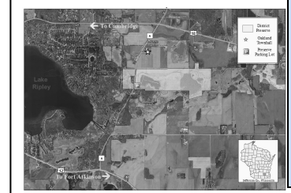
*Reprinted from a summer 2011 Wisconsin DNR press release. For more information, contact Martye Griffin at (608) 266-2997.*



Thank you, **citizen audit committee**! Debra Kutz, Chuck Seeley and George Kledzik (pictured) volunteer their time and talents to verify the accuracy and completeness of our financial reporting. We also commend our treasurer, Mike Sabella, for expertly overseeing the District's fiscal affairs.



A pair of **bald eagles** took up residence on the shores of Lake Ripley this summer. Jenna Neumiller, one of our Facebook photo contest winners, was able to capture this shot of the majestic raptor.



Work is currently underway to chart out a **20-year plan** for managing and restoring the Lake District Preserve. The 167-acre property protects Lake Ripley and its water quality by conserving critical headwater areas around the lake's inlet.

Winter anglers are reminded to look around and **clean up trash** prior to leaving the ice. Bait containers, old fishing line, cans, food wrappers and cigarette butts can quickly get lost and forgotten in the snow. Come spring, these items end up littering shorelines and the lake bottom.

Congratulations Facebook **photo contest** winners! Prize awards went to: Adam Heinlein, Jenna Neumiller, Nikki Smithback, William Quirk, Barb Killen, Danielle Lund, Linda Winn, Don Mehltretter ("yesteryear" picture at left), Beth Anderson, Rosey Snellman and Jeff Veesenmeyer. Visit our Facebook page to see all the photos.

# Did You Know...

**Converting 15-25 feet of your lakeshore lawn into a stunning, prairie-wildflower garden is enough to benefit water quality and lakeshore habitat?**

A conventional lawn is really a low-grade open prairie that attracts little wildlife other than geese. Native wildflowers outperform turf in absorbing runoff, curbing shoreline erosion, enhancing natural scenic beauty, and providing a sanctuary for dragonflies, frogs, turtles and songbirds.

*Lakeshore habitat* refers to the trees, shrubs and tall grasses that grow along the lakeshore and overhang the water. Poor lakeshore habitat occurs when native trees and shrubs are removed from around the lake and replaced by manicured lawns, armored bulkheads, buildings, patios and docks.

####

**Farmers who test their soil and adopt Nutrient Management Plans save money and promote clean water by eliminating unneeded fertilizer applications?**

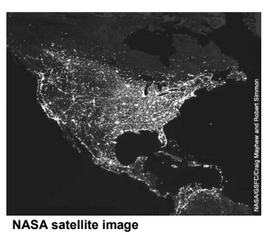
Participants in the Wisconsin Farmland Preservation Program are reminded that nutrient management plans are required to be in place by September 30, 2012, to maintain tax-credit eligibility. A copy of your signed nutrient-management checklist must also be submitted to the Jefferson County Land and Water Conservation Department (LWCD) by this date. For more information, call the Jefferson County LWCD (920-674-7110) or UW-Extension (920-674-7197).

**Taking a soil sample to test for nutrients.**
*Credit: UW-Extension.*

####

**Artificially lighting the night sky detracts from stargazing, wastes energy, and leads to the death of untold millions of birds?**

Light pollution is shown to attract and disorient birds, causing them to slam into buildings or drop exhausted to the ground after circling endlessly around light sources. Birds are not the only species affected. Studies show that excess night-time light disrupts the migration, breeding and feeding patterns of a variety of species—from sea turtles to salamanders to fireflies. Research also indicates that it inhibits hormone production and disrupts biological rhythms, increasing the risk of certain cancers in some mammals, including humans. If you must have outdoor lighting, try using lower-intensity bulbs, motion-activated security lighting, and fixtures that cast light downward rather than up.



**NASA satellite image**

####

**Clean lakes are economic powerhouses?**

Healthy, well-maintained lakes attract visitors who spend money in the community. They also provide aesthetic value, safe recreation, higher property values, jobs, and a stronger tax base. Maine and Minnesota conducted two studies linking good lake quality with higher property values. The 2005 Maine study found that good water quality on lakes can increase recreational revenues by millions and individual property values by billions over time. Similar findings were revealed on Wisconsin's own Delavan Lake, where a study compared property values and economic activity before and after the completion of major lake-rehabilitation efforts.

## The Timid Traveler

**Blanding's Turtle**: *A Wisconsin Threatened Species*

Length: 8-10 inches
Habitat: marshes, quiet streams, shallow ponds
Threats: Loss of natural habitat; collisions with vehicles when crossing roads to lay eggs.

Recognized by its bright yellow chin and neck, this turtle has been known to live 80 years. It is an agile swimmer that subsists on mostly crayfish, snails, aquatic plants and insects. When frightened, it will dive to the bottom of the water, remaining there for up to several hours.

The turtle's carapace, or upper shell, is speckled with yellow and brown spots and streaks. Its plastron, or lower shell, is yellow with symmetrical black splotches. It has a "hinge," similar to a box turtle, allowing it to close up like a box when threatened. Females will travel up to 1.5 miles to find a suitable nesting site on sandy soils. Blanding's turtles have recently been spotted in the vicinity of Lake Ripley's protected marshes.



# Keep Lake Ripley on a Low-Salt Diet

Who can forget that sinking feeling you get when the car starts to slide on an icy, snow-packed road. This kind of white-knuckle experience has us instinctively clamoring for heavier salting. Conventional wisdom says there's no such thing as too much salt when it comes to safer roads and fewer accidents. The same can be said for the salt we throw on our sidewalks, driveways and parking lots.

But were you aware that too much salt is harmful to lakes, our drinking water, and many varieties of fish and aquatic organisms? Salt dissolved in water can quickly reach toxic concentrations, and is able to easily move through the soil to contaminate groundwater. Too much salt also reduces the useful lives of our vehicles, roads and bridges that are vulnerable to its corrosive properties.

And did you realize that salt loses much of its effectiveness when temperatures fall below 15-20˚F? This means some salt applications can be as costly and environmentally destructive as they are ineffective from an ice-melting standpoint.

Research further shows that public works departments can usually reduce salt use by at least 25% without compromising public safety. Considering the damages caused by over-salting, that's a goal worth pursuing. Also, don't forget to evaluate your own salt-spreading habits. You may be surprised by how much you can cut back without sacrificing life and limb.

**Tips for a low-salt diet:**

► Avoid using salt when temperatures fall below 15-20˚F. Salt melts five times as much ice at 30˚F as at 20˚F. At 10˚F, it takes an hour for salt to melt just 1/8-inch of ice. Calcium chloride or magnesium chloride may be a better but more expensive alternative for low pavement temperatures. Abrasives, such as sand, can also be used as an alternative to salt, especially when extra traction (as opposed to ice melting) is desired.

► Remove snow and slush from pavements before it can turn to ice. Be sure to stockpile plowed snow in areas away from lakes or streams. Melting snow piles can deliver accumulated doses of pollutants (salt, oil, sand, heavy metals) directly to the lake.

► Encourage your local government officials to send their equipment operators to training workshops. Proper training can help improve decision-making on how and when to apply salt and de-icing materials.

**A truck-mounted salt spreader throws down a layer of road salt.**

**Salt stains lead to drain holes that discharge directly to an adjacent waterway.**

► Use more salt on busy, fast-moving roads and intersections, and less on roads with lower traffic volumes and slower speed limits. Pre-wetting the salt can help it stick to the road and speed up the melting process.

► If you use private contractors to keep snow and ice cleared around your business or home, ask that they apply salt sparingly when and where it is most needed.

Regulatory standards and guidelines for sodium and chloride concentrations have been established by the U.S. EPA and Wisconsin DNR. Available water quality data from the 1990s show that Lake Ripley fell well under these contaminant thresholds. Additional testing is needed to determine whether concentrations are remaining at safe levels. ♦

# The Results are In!



Below are findings from this summer's aquatic plant inventory. They are being used to update existing management plans and to re-apply for a mechanical weed-harvesting permit. Like monitoring water quality or fish populations, tracking changes in the aquatic plant community helps us assess overall lake conditions and the effectiveness of management interventions.

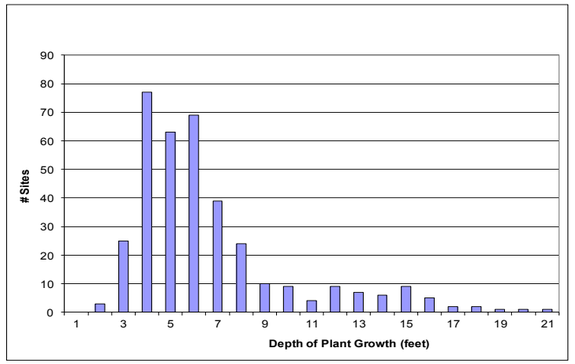
### Facts about Lake Plants

- ► Not every lake plant is a "weed." A species-rich community of native aquatic plants is an indicator of good lake and habitat conditions.
- ► Plants form the foundation of any lake ecosystem. 94% of all lake life is born, raised and fed in the shallows where aquatic plants are found.
- ► Plants provide food, shelter, shade, dissolved oxygen, and nursery areas for fish and other aquatic life.
- ► Plants keep the lake clean by trapping sediment and competing for the same nutrients that produce algae. Their roots also keep the lake bottom from getting stirred up and clouding the water.
- ► Plants prevent erosion by buffering against waves and currents that eat away at the shoreline.
- ► Native plants can impede the spread of invasive lake weeds, like Eurasian watermilfoil.

| | 2006 | 2011 |
|---|---|---|
| Total number of points sampled | 398 | 421 |
| Total number of points with vegetation | 318 | 366 |
| Maximum depth of plants | 17 ft. | 21 ft. |
| Average number of species per vegetated site | 2.05 | 2.60 |
| Average number of *native* species per vegetated site | 2.00 | 2.34 |
| Number of species collected during sampling | 20 | 21 |

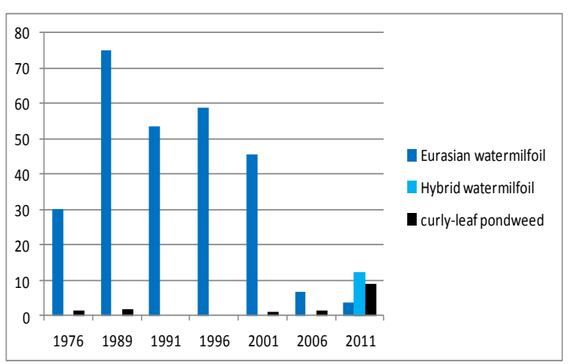
**Depth and Extent of Plant Growth**

Survey findings show that plant growth is becoming more evenly distributed across the lake bottom. It is also extending into deeper water areas, which is likely the result of improved water clarity. Most plants are found within water depths of 3 to 8 feet (see following chart). Since 2006, slightly greater plant diversity was found among the sampling points, which is a positive trend. The highest incidence of native species diversity is currently found in East Bay and along portions of the east shoreline.




**Invasive Weed Trends (1976-2011)**

Frequency of Occurrence (FREQ) equals the number of sampling points in which a given plant was found divided by the number of sampling points within plant-supporting water depths. It offers a good indication of how much of the lake bottom is colonized by a given plant species. The chart below shows FREQ for Lake Ripley's invasive weeds. Since its 1989 peak, the problematic Eurasian watermilfoil has been on a steep decline. A recent uptick in curly-leaf pondweed and a possible native/non-native watermilfoil hybrid bear watching. Both Eurasian watermilfoil and curly-leaf pondweed are targets of mechanical weed harvesting.



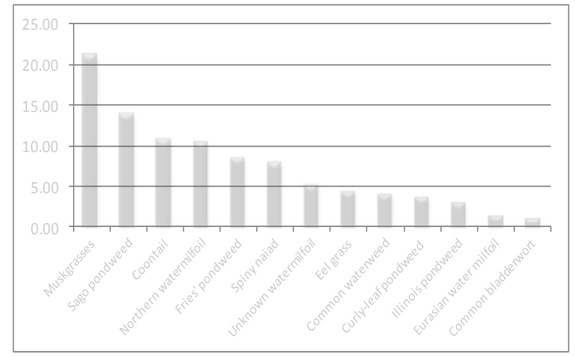

**Relative Abundance of Plant Species**

The Relative Frequency of Occurrence (RFREQ) describes how plants occur throughout the lake in relation to each other. It is calculated by dividing a given plant's Frequency of Occurrence (described above) by the sum total frequency of all species inventoried. Percentages of each species found should add up to 100%. Only those species that had a 1% or greater RFEQ in the 2011 inventory are shown in the chart below. The fact that no single plant

# Results (cont.)



overly dominates (especially of the "invasive weed" variety) points to a healthy plant community. This is an improvement over earlier surveys in which Eurasian watermilfoil dominated.




**Plant Quality**

The Coefficient of Conservatism (C) is a number on a scale from 0 to 10 that provides an estimated probability that a given plant species is likely to occur in a pristine lake. A 10 indicates the plant is almost certain to be found only in an un-degraded natural community. Averaging the C-values for each plant species found yields the mean, with higher values representing more intact plant communities.

Lake Ripley has a mean C-value of 5.76. This compares favorably to a mean C-value of 5.21 for 68 lakes surveyed in our ecoregion (similar geographic area). Ecoregion values ranged from a high of 6.87, to a low of 2.12. Of the 68 comparison lakes, 18 are classified as having physical characteristics most similar to Lake Ripley. The average of those C-values is 5.03, with high and low values of 6.02 and 2.12, respectively.

**Plants as Lake-Health Indicators**

The Floristic Quality Index (FQI) is used to assess a lake's condition by using aquatic plants as health indicators. The FQI is the average Coefficient of Conservatism (described above) multiplied by the square root of the number of plants in the lake. The FQI varies around Wisconsin, but ranges from 3.0 to 44.6, with an average of 20.0 for lakes in our ecoregion. Generally, higher FQI numbers mean better lake quality.

Lake Ripley's FQI is 23.77, an improvement over 2006 and above average for lakes of similar type in our geographic region.


**Management Targets**

- ► Stable or improved *native* plant species diversity
- ► *Non-native* species comprise a small and decreasing fraction of the overall plant community
- ► Preservation of "Critical Habitat Areas" characterized by high-value plant communities

**Management Strategy**

Lake Ripley's weed harvesting is guided by a plant management plan and regulated by Wisconsin DNR permit. Plant inventories help identifiy trends and allow for the fine-tuning of control methods. Prior to enactment, all potential control methods are evaluated in the context of the larger watershed and lake ecosystem.

Management emphasis is on reducing the conditions that favor nuisance weed growth or the destruction of valuable plant beds. Polluted runoff, overdevelopment (especially adjacent to the lakeshore), aquatic invasive species, disturbance of the lake bottom by motor boats, and excessive plant removal are among the factors that can lead to a degraded plant community and reduced lake quality. ♦