

Aquatic Plant or Problem Weed? (cont.)

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agriculture—allow sediments to move into the water, creating a source of nutrients for plant growth. Leaking septic systems and lawn fertilizers can add even more nutrients.

It's important to consider the benefits of aquatic plants as well as the potential cost to recreational use. Protecting and enhancing native plant populations makes good sense, both for the lake ecosystem and the value of the surrounding property. Directing well-planned management toward nuisance aquatic plant conditions also makes good environmental and financial sense.

Aquatic plants not only provide valuable spawning, nursery and foraging habitat, but they also improve water quality. They absorb phosphorus, nitrogen and other nutrients from the water that could otherwise fuel nuisance algal growth. Some plants can even filter and break down pollutants. Finely divided foli-

age acts as a filter that traps and settles particles from upland runoff. Re-suspension of sediment is also lessened by the interlocking network of plant roots and rhizomes. Finally, stands of emergent plants and flotillas of water lilies control erosion by blunting wave action along the shore.

When plant growth becomes too dense, dramatic daily shifts in dissolved oxygen and pH may occur. In the winter, dense stands of decaying plants can lead to low oxygen conditions under the ice. In general, these nuisance conditions are not observed in healthy, diverse stands of native aquatic plants. More often than not, plants associated with these impacts are exotics like Eurasian water milfoil.

A good aquatic plant management plan addresses all of these issues and helps restore water quality and a healthy balance in the aquatic community. ♦

Source: Through the Looking Glass—A Field Guide to Aquatic Plants

Ripples

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FROM THE HELM

The winter newsletter gives us an opportunity to talk about what we accomplished this past year and what we are planning for the upcoming year. 2007 presented challenges as the first full year without the DNR grant, which had driven our programs since 1993. We faced the challenges straight on, and continue to move forward under the direction of our very capable Lake Manager, Paul Dearlove. Aquatic weed harvesting, shoreline restorations and rain gardens top the list of programs that continue to make a difference for Lake Ripley.



In 2007, we met with several homeowners associations to discuss lake issues and answer questions. We felt those meetings were mutually valuable and hope to continue them in 2008. I also appointed a Lake District Preserve Committee that did a great job of evaluating the Preserve and making recommendations for future improvements. We look forward to implementing many of the Committee's ideas. Record high lake levels, the discovery of a reproducing zebra mussel population, and the director, Ed Grunden) added to the challenges of 2007. The Club helped us with many projects over the years for which we are very grateful, including Earth Day cleanups, lake monitoring and the creation of the Town Hall rain gardens. We are now looking for ways to reconnect with the high school.

As we plan for 2008, we are adapting to these changes and seeking out new opportunities. The litter held on a weekday, allowing bus loads of students to remove tons of garbage from around Lake Ripley. Now we are asking homeowners groups and individual property owners to "adopt" a stretch of shoreline, local park or roadway that could use a good cleaning. With change comes opportunity, so here's to starting the new year with a new level of commitment as individual stewards of Lake Ripley.

John Molinaro, Chair

Turning Water into Ice

Exploring the world above and below the ice

Winter brings many changes to Lake Ripley. The fleets of boats, piers and docking stations that previously populated the lakeshore retreat to off-season storage areas. Flocks of geese embark on their southerly migrations in search of warmer climates and more abundant sources of food. The lush greens and vibrant colors of summer fade to the browns and dusty whites of winter dormancy.

As this scene unfolds and temperatures plummet, we eagerly await that moment of change when water turns to ice. Our thoughts then turn to ice fishing, cross-country skiing, snowmobiling, sledging and ice skating. It is also a time to marvel at the beauty of a frozen lake, to appreciate the power and unusual properties of ice, and to contemplate the changes that occur in the frigid depths below the surface.



Ice-fishing shanties perched atop a frozen lake surface

Water Into Ice (cont.)

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Have you ever wondered why ice floats, or what keeps deeper lakes from freezing solid? Water is unique in that it reaches maximum density at 39°F. It is lighter at both warmer and colder temperatures. On deeper lakes during the summer, water warmed by the sun floats on top of a colder, denser layer of water near the bottom. As fall arrives and the lake begins to cool, this layering effect breaks down during "de-stratification." The lake then becomes much easier to mix, or turn over, during windy days. When the lake temperature falls to 39°F, further cooling causes water to rise to the surface, eventually forming ice at 32°F.

Winter ice cover prevents further wind mixing and serves to insulate the water beneath it. This slows the rate of heat loss and ice formation, keeping deeper lakes from freezing solid. The phenomenon helps explain why turtles and frogs can safely overwinter on the "warm" lake bottom.

Snow, too, has insulating properties. Even on bitterly cold days, a layer of snow on top of the ice can slow the rate of ice formation. Flowing water is another impediment to ice making, so be aware of locations where underwater currents, springs or inflowing streams may have weakened the ice.

Ice Thickness*	Permissible Load
3 inches	Single person on foot
4 inches	Group in single file
7.5 inches	Passenger car (2-ton gross)
8 inches	Light truck (2-1/2-ton gross)
10 inches	Medium truck (3-1/2-ton gross)
12 inches	Heavy truck (8-ton gross)

*Solid, clear lake ice.
-Slush ice has only half the strength of clear blue ice.
-Strength value of river ice is 15 percent less.
-There is no such thing as 100% safe ice!
(Source: *Farmer's Almanac*)

Fish adapt to the cold environment by lowering their metabolisms and becoming less active. Despite this coping mechanism, oxygen depletion can cause fish die-offs under frozen, snow-covered lakes. Ice cover prevents wind from aerating the water, eliminating an important source of oxygen. Add snow on

top of the ice, and suddenly sunlight becomes limiting for plants and algae to oxygenate the water through photosynthesis. A fish kill occurs when the oxygen in the underlying water gets used up by oxygen-consuming fish and bacteria. Winter fish kills are more typical in shallow lakes with far less depth and volume than Lake Ripley.

The impacts of winter and ice are also evident along the shoreline. This is where the lake's expanding ice sheet thrusts forcefully into or over the land surface, leaving behind soil mounds (called ice ridges). Ice push is caused by the expansion and contraction of water during freeze-thaw cycles. The amount of ice push can vary greatly from year to year, depending on such factors as ice thickness, amount of snow cover and temperature variations.



Expanding ice sheet pushes against the lakeshore

Ice has the power to crush granite and move massive boulders. Although ice contracts during significant temperature drops, a warming event actually causes ice to expand. According to UW-Extension (2006 Lake Tides), "if the temperature increases from 14 to 32°F, a lake one mile across can expand laterally about 32 inches, with forces exerted outward as much as 30,000 pounds per square inch."

Even shorelines armored with rock or naturally protected by plant growth are susceptible to ice damage, especially if not gently sloped to allow a pathway for the ice to expand. Mounded shorelines are then subject to undercutting and erosion which leads to direct sedimentation and pollution of the lake. If your shoreline is severely damaged with clear evidence of erosion, contact the Lake District office for repair recommendations and to check on your eligibility for cost sharing. (Also, see page 6 for other shoreline-management ideas.) ♦

A Rain Garden for Every Home

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We Have a Winner!

Congratulations to Mary Jeanne Clark—our lucky rain garden survey respondent whose name was randomly drawn to receive an assortment of "starter" plants donated by Agrecol. The donated plants (\$350 est. value) were offered as an incentive prize for filling out the survey. The grant-funded survey was sent to a cross-section of landowners around Lake Ripley, and was conducted in cooperation with our UW-Madison and UW Extension partners. Input will be used to more effectively market rain gardens throughout the watershed. As their popularity increases, we can expect better runoff control, more visually attractive and wildlife-friendly landscapes, and a cleaner and healthier Lake Ripley.

Creating a rain garden is a great way to break up the monotony of a lawn while enhancing the curb appeal of your home. A rain garden not only adds color, visual interest and beauty to a yard, but soaks up runoff that gets shed from your roof and other hard surfaces. Less runoff means less flooding and erosion, and fewer pollutants washing into Lake Ripley.

A 100- to 300-square-foot rain garden is more than adequate for most home sites. A rain garden is fairly easy and inexpensive to build, and can be designed to blend into your existing landscape. Specific plants can even be used that are known to attract birds, butterflies and other backyard wildlife.



The basic building blocks of a rain garden are: 1) adequate soil drainage; 2) a flat depression positioned near the outlet of a roof downspout; and 3) your choice of deep-rooting grasses, sedges and wildflowers. Specific dimensions and plant selections will depend on individual site characteristics. Considerations include space constraints, amount of runoff, soil type and sun exposure.



Stop by the Oakland Town Hall (pictured above) at N4450 County Highway A to see how a large rain garden looks and functions throughout the year. The Town also offers free compost. The 3,200-square-foot rain garden was planted in 2005.

To learn more about rain gardens, please contact us. Limited cost sharing is available for eligible homeowners. Also, stay tuned for upcoming rain garden tours, "how-to" workshops, plant sales, and other events. ♦



We welcome Paul Heiberger as our new project intern! Paul is a UW-Madison graduate student working on his Master's Degree in Conservation Biology and Sustainable Development. He helped us design a program to increase the number of rain gardens in the Lake Ripley watershed, and will now be involved in its implementation. Paul was also the recent recipient of a \$5,000 Doris Duke Fellowship that will help fund his work here on Lake Ripley.

Aquatic Plant or Problem Weed?

Aquatic plants are an indispensable part of a lake ecosystem. Nevertheless, some waterfront owners and lake users are frustrated by dense beds of aquatic plants and consider them a nuisance.

Defining a nuisance based upon its impacts to human activities is difficult. Each lake user has a different tolerance of plant densities. Anglers correlate lush aquatic vegetation with good fishing. Duck hunters and wildlife watchers also consider aquatic plants beneficial. People who grew up on lakes with moderate densities of plants might not mind swimming through fine stems of pondweed or wading on top of a mat of chara. However, swimming through a dense stand of Eurasian milfoil can create an unpleasant situation for even the most tolerant swimmers.

Boaters consider filamentous algae or floating vegetation a nuisance when it's thick enough to clog propellers. Drifting aquatic plants can cover shore frontages and create unpleasant odors as they decay. This can bring beach use to a halt.

Nuisance aquatic plant conditions are typically an indication of bigger problems. Shallow, nutrient-rich lakes with plenty of cultural disturbance in their watershed are great candidates for heavy plant growth. Activities that remove shoreline vegetation and expose soil—such as construction, logging and

(Continued on Page 8)



1. Cleared, manicured lot lacks shade and privacy; loss of native plants leads to more erosion, runoff...and work for you!
2. Runoff flows over hard surfaces accelerating erosion; contaminants wash into lake, degrading habitat and water quality.
3. Chemical fertilizers and pesticides pose a human health risk, harm aquatic life, and can promote weed/algae growth.
4. Lawn to the water's edge lacks deep roots required to stabilize the bank, and offers little cover for wildlife.
5. Seawall deflects erosion downstream; eliminates "natural filtering" of pollutants and sediment; creates wildlife barrier.
6. Artificial beach requires ongoing sand replacement, reduces water quality, and smothers fish-spawning beds.
7. Old 2-stroke engine dumps 25-40% of un-combusted fuel into water and air.
8. Solid crib dock destroys aquatic habitat, alters currents, and can deflect erosion downstream.
9. Cultivated, "raised-bed" vegetable garden cannot absorb runoff from roof drainage; serves as source of eroded sediment to the lake.
10. Harmful household chemicals and cleaners damage septic system and degrade water quality.

1. Prune trees rather than removing them; plant low maintenance native vegetation to reduce erosion and absorb runoff.
2. Replace solid surfaces with porous materials where possible; redirect runoff into settling areas away from the lake.
3. "Mow it high and let it lie" - leave grass 3 inches high to retain moisture; mulch clippings for fertilizer.
4. Plant a vegetative buffer along the water's edge; incorporate a mix of deep-rooting native trees, shrubs & perennials.
5. "Soften" your shoreline with native trees, shrubs, grasses and aquatic plants; leave fallen trees to serve as cover for fish, frogs and turtles.
6. Create a "dry land" beach above the high-water mark where sand can't wash into the lake.
7. Use a well maintained electric motor, or a 4-stroke engine that meets EPA 2006 guidelines.
8. Build a low-impact dock with limited deck surface; avoid treated wood that can leach chemicals; use public access.
9. Direct roof downspouts to a rain garden that is designed to collect and infiltrate runoff.
10. Use eco-friendly household products.

Source: www.livingbywater.ca

Nine simple ways to stay connected and informed of what's going on around Lake Ripley:



#1 Subscribe to the Lake Ripley E-Bulletin. Receive time-sensitive announcements like emergency slow-no-wake declarations, aquatic invasive species alerts, and reminders about important meetings and volunteer events. To subscribe, send your full name and e-mail address to ripley@charterinternet.com. Please reference "Lake Ripley E-Bulletin" in the subject header of your e-mail. Also, let us know if your address changes, or if you ever wish to unsubscribe.

#2 Attend a Lake District meeting. Board meetings are held monthly and are open to the public. Agendas are published in The Cambridge News, and posted at the Oakland Town Hall, Hering's Lake Ripley Inn, and the Lake Ripley Family Restaurant. You can also find meeting announcements posted on our website.



#3 Watch Cambridge Cable TV 12. Most Lake District Board meetings and public hearings are televised. You can also catch informational video tours of Lake Ripley and the adjoining watershed. Check The Cambridge News for a Cable TV 12 schedule.

#4 Invite us to a homeowner association meeting. We recognize not everyone can make our meetings or has access to the internet and local cable TV. At your request, a Lake District representative can meet with your group for an informal question-and-answer session. We will gladly try to accommodate a weekend or evening meeting schedule to provide information, report on management programs, and respond to any general questions or concerns you might have.



#5 Read the Ripples newsletter. Ripples usually comes out about three times a year, and is sent to all Lake District and watershed property owners. The newsletter is intended to raise awareness of ongoing management initiatives and other issues affecting Lake Ripley. We are currently piloting an expanded, 8-page newsletter format that we hope will keep you better informed of our many activities.

#6 Visit our website. Go to WWW.LAKERIPLEY.ORG to view meeting minutes, management plans, operating budgets, results of public opinion surveys, resource fact sheets, and other Lake District-related information.



#7 Participate in surveys and attend public forums. We often conduct public hearings, listening sessions, focus groups, and surveys to gather feedback. Your input helps us better serve you, and assists us in fine tuning our lake-management programs.

#8 Read flyers and postings at public access points. Kiosks at the boat landings often display maps, rules, public notices, invasive species alerts and other lake-related information.



#9 Contact the Lake District office. We want to hear from you! The office is located in the Oakland Town Hall and open throughout the week. Please pay us a visit or feel free to write, call or e-mail us. Our contact information is found on the front page of this newsletter.

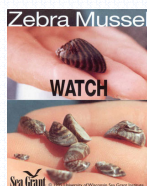
Zebra Mussels Spread to Lake Ripley

Zebra mussels were the focus of renewed attention at the Lake District's Annual Meeting this past August. The small mussels—which can attach themselves in large colonies to any semi-hard surface (including live crayfish and lake weeds!)—are the latest in a long list of invasive species that are spreading into inland waterways.

Following this summer's discovery of a reproducing population, Lake Ripley now joins a growing number of area lakes to be designated as "infested." The first adult zebra mussel was found in Lake Ripley in 2005, shortly after the infestation of neighboring Rock Lake. It is unknown how or when they were first introduced to Ripley. Tiny zebra mussels are easily spread by hitchhiking on boating equipment, or even in bait buckets and bilge water as microscopic larvae. Thoroughly cleaning and drying equipment that gets used on multiple waterways can help slow the spread of zebra mussels and other invasive species.

Lake Ripley is especially vulnerable to foreign invasions due to its proximity to Lake Michigan and connection to the Rock River drainage system. The Great Lakes alone harbor as many as 180 invasive organisms. Once introduced, zebra mussels can be very disruptive as the multiply largely unchecked in the absence of natural predators and diseases. They are voracious filter feeders that can strip the water of zooplankton that young fish rely on as a food source. They can also encrust boat hulls, clog water-intake hoses, and displace more beneficial species.

There are no known treatments for eliminating zebra mussels once an introduction occurs. Some lakes are more affected than others, depending on any number of unique physical, chemical and biological variables. We expect the zebra mussel population will follow a standard "boom-bust" cycle of growth in Lake Ripley. This would be similar to what we experienced with Eurasian water milfoil. The invasive lake weed reached its peak biomass in the late '80s, and has since been reduced to manageable levels by means of weed harvesting and natural factors.



Friends of the Lake District Preserve

We wish to thank the *Lake District Preserve Planning Committee* for its role in establishing management priorities and a long-term vision for our 100-acre Preserve. The Preserve—located at the inlet to Lake Ripley between the Oakland Town Hall and Oakland Conservation Club—serves as a publicly-accessible wildlife sanctuary and natural filtration system for Lake Ripley. Six local property owners volunteered and were appointed by the Board to sit on the advisory committee: Terri Baker, Kent Brown, Pam Dollard, Georgia Gomez-Ibanez, Jim Rank and Jeff Spindler. Recommendations addressed issues of public access, community education and awareness, habitat restoration, water quality protection, partnership opportunities, and management funding.

As the Committee details in its final report, "it seems clear that it is important to protect and enhance the ability of the Preserve to protect the water quality of Lake Ripley. In addition, education of citizens in the watershed is important as each property, whether a small yard or a farm, contributes to the health of our lake." Choosing to lead by example, Committee members petitioned the Board to be recognized as the *Friends of the Lake District Preserve Advisory Group*—"a core group of volunteers that we hope will grow in numbers in the near future." The group has already demonstrated its commitment by assisting the District with brush clearing, harvesting and planting prairie seeds, leading stewardship activities, and distributing information at community events.



Georgia Gomez-Ibanez of the 'Friends' leads a stewardship outing at the Lake District Preserve with Cambridge's 4th Grade Environmental Club.

Derek Hoffman Departs from Board

Derek Hoffman says goodbye after serving six years on the Lake District Board. Derek played an active role on the Board, including participating on a project-evaluation committee for landowner cost sharing, and as a water quality monitor. His easygoing nature and wealth of expertise in stormwater and erosion control issues will be sorely missed. We wish he and his family well, and thank him for all his contributions these last several years. Best of luck to you, Derek!



Tree Sale

The Jefferson County Land and Water Conservation Department is holding their annual tree sale. Tree seedlings come in bundles of 25 for only \$22 plus tax. Available species include oaks (red and white), Fraser fir, red maple, white cedar, spruces (Colorado blue, black hills, Norway and white), American plum and arborvitae. To order, call Deb at 920-674-7110. Orders can be picked up in mid April at the Jefferson County Fairgrounds.



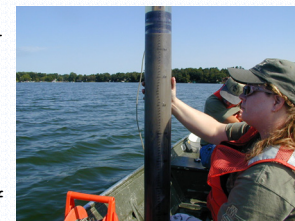
Thank You for Your Feedback!

We are very grateful to everyone who took the time to respond to our property owner opinion survey. The Lake District regularly uses surveys to gauge public opinions regarding lake use, lake health, management awareness/effectiveness, and how limited resources would best be allocated. Survey results are currently being compiled and will be posted to our website shortly. In addition, results will be presented in the next edition of Ripples, and incorporated into existing management plans.

Paleolimnological Study Begins

"Paleolimnology" is the study of the fossil record preserved in lake-bottom sediment, and is used to reconstruct past lake conditions. With the help of a DNR grant, the Lake District is using paleolimnology to help evaluate Lake Ripley's response to recent watershed changes and management efforts. These include ongoing land-use and development impacts, and the implementation of pollution-reduction policies and programs over the last 17 years.

Last summer, the study got kicked off with the extraction of a sediment core from the bottom of Lake Ripley. Findings will be used to help diagnose the current drivers of water quality problems. Along with input from our recent property owner opinion survey, the findings will also be used to guide future management action.



A sediment core is taken from the bottom of Lake Ripley with assistance from DNR researchers.

Mark Your Calendars

January 19, 2008
March 15, 2008
 LRMD Board Meetings
 9:00 a.m. at Oakland Town Hall
(Future dates to be determined.)



February 16, 2008
 Aquatic Invasive Species Symposium
 8:00-5:00 at Milwaukee Hyatt Regency Hotel

April 17-19, 2008
 Wisconsin Lakes Conference
 Green Bay, WI

May 10, 2008
 Lake Ripley Litter Cleanup
 10:30-12:30
 Please call us at (608) 423-4537 to "adopt" a cleanup site and register your group. We will provide the trash bags and coordinate refuse pickup.