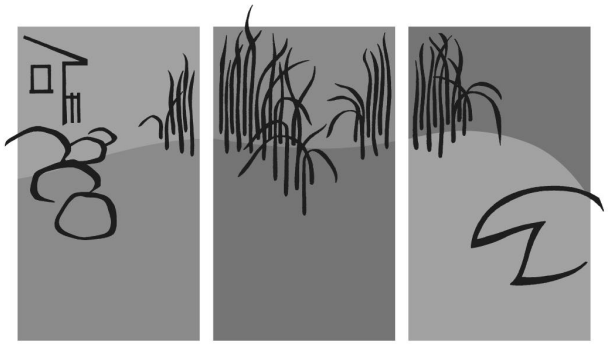


From Shore to Shore

"For Minnesota citizens promoting the health of our rivers and lakes"

Newsletter 46
April 2003

Calendar of Events

April 11 - Cass/Crow Wing Shoreland Volunteer meeting, 1-3pm.
Feature Presentation - "Minnesota Loons" Pam Perry, MN DNR Regional Nongame Specialists, coordinator of the Volunteer Loon Watcher Program. To register, please call the University of Minnesota Extension Service, Cass County at 218-587-8280 or email britt018@umn.edu

Shoreland Volunteer Workshop

April 25 and 26 - Friday 3-8pm and Saturday 9-4pm. Camp Bluewater. Contact Julie Miedtke at 218-327-4177.

May 2 and 3 - Friday 2:30-8pm and Saturday 8:30-3pm. Vacationaire Lodge and Supper Club. Conatct Will Yliniemi at 218-732-3391.

Shoreland Revegetation Workshop

Mentor Community Center - Mentor
Design II - Tuesday, April 8, 8:30am-4pm
Planting - Tuesday, June 3, location TBA
Contact Ray Bisek at 218-935-2226.

Prairie Woods Environmental Learning Center - Spicer
Design I - Saturday, April 5, 8:30am-4pm
Design II - Saturday, May 17, 8:30am-4pm
Planting - Saturday, June 14, location TBA
Conatact Amy Rager at 320-669-4471

Lake Washington County Park - Kasota
Design I - Wednesday, May 14, 8:30am-4pm
Design II - Thursday, June 5, 8:30am-4pm
Planting - Thursday, September 4, location TBA

Crosslake Community Center - Crosslake
Design I - Friday, May 16, 8:30am-4pm
Design II - Thursday, June 19, 8:30am-4pm
Planting - Friday, June 13, Cass Lake
Planting - Friday, June 27, location TBA
Contact Eleanor Burkett at 218-587-8280

Out and About ~ Getting To Know Gerry Leinfelder

Gerry has a residence on Rush Lake in Crow Wing County and has been a Shoreland Volunteer for four years.

Gerrys' key interest is in education of shoreland property owners with workshops and WAPOA communications, public shoreland restoration projects and various islands on Whitefish Chain. He has been participating in University of Minnesota Extension Service classes, is a member of the WAPOA Board , the Rush Lake Association, Crow Lake Long Range planning board, and Crow Lake Planning and Zoning Commission.

What is your most favorite memory or experience with the Shoreland Volunteer Program?
Planting day for our shoreland buffer demonstration site in June.

What have you done that you are most proud of or feel is the most important thing you have done with the program?
Helping organize and sponsor shoreland evaluation classes in the crosslake area and our shoreland buffer demonstration site.

What one person do you most admire in life and why?
Teddy Roosevelt because he was the first to take action to make America aware and preserve our great outdoors.

What is the best book you have ever read?
Undaunted Courage by Stephen Ambrose

What is one thing you would like others to know about you?
I am a caring person

What question would you like to have asked of you?
Question: Who has been the major influence in my life.
Answer: My Parents, father and mother-in-law, church, Boy Scouts, Eagle Scouts, education at North High Minneapolis and University of Minnesota.

What could global warming mean for my lake? Cindy Hagley

In the middle of a typical Minnesota winter, global warming sometimes doesn't sound so bad, but even small changes in temperature or precipitation could cause significant changes in the lakes we love. In a previous *From Shore to Shore* article, we explained that lakes in our part of the world have predictable temperature cycles that impact everything else about the lakes, including the plants, fish, and other aquatic creatures that live there. These days we hear a lot about global warming and its potential impacts on our climate, but we hear very little about how our lakes might be affected. Although scientists are still working to find agreement on predictions about the rate and effects of global warming on our Midwestern environment, there are some observations of changes already occurring that can help us understand potential impacts.

David Schindler, a world-famous limnologist (person who studies lakes and streams), has shown that, over the last 20 years in northwest Ontario, lake temperatures have increased by 2 ^{o}C (nearly 4 ^{o}F) and on average the lakes remain open (ice free) three weeks longer each year. More recently, scientists have reviewed ice cover historical records from across the globe and have confirmed this general conclusion (estimating a 2-week longer ice-free period from 1845 to 1995) for lakes in all northern latitudes.

At the same time that temperatures are expected to continue to increase in the future, precipitation in the Midwest is also expected to increase, with a larger proportion of the precipitation falling in heavy, extreme rain events. Despite higher precipitation, the higher temperatures and longer ice-free season will result in higher rates of evaporation, probably leading to lower lake and stream levels. (Continued on page 4)

Outreach to 548 citizens by Shoreland Volunteers!

Dennis Cords, George Kydd, Joe Chovan, Ray Rau, Janet Matthees, Joan Andersen, Harvey Woods, Bob and Jan Bjork, Janet Donaldson, Jim Deters, Suzanne Chmielewski, and Miles Rychman staffed the booth at the Sportsmen's Show, St. Cloud, February 14-16, 2003.

Information from the Sea Grant program on exotic species was available, including aquatic exotic field guides and watch cards on exotic species like Eurasian watermilfoil and zebra mussels. Attendees were able to touch the zebra mussels and see them attached to surfaces using materials from the Sea Grant's Exotic Aquatics Traveling Trunk.

The volunteers also had a display from the University of Minnesota Extension Service entitled *Turfgrass Management to Protect Water Quality.* Lawn care cards outlining a calendar for maintenance were distributed with fact sheets on phosphorus-free fertilizer.

Miles Rychman at the Sportsmen's Show, February 16th.

A new computer kiosk attracted kids to "Desdemona's Splash", an educational game on watersheds!

Resources on Shoreland Lighting, Light Pollution, & Stars

Sensible Shoreland Lighting: Preserving the beauty of the night. http://clean-water.uwex.edu/pubs/shorelight/shorelight.htm Publication by David S. Liebl, Robert Korth, University of Wisconsin-Extension.

International DarkSky Association

http://www.darksky.org Fact sheets, satellite imagery, links to research, additional light pollution information, and tips for choosing exterior lights.

University of Chicago Yerkes Observatory

http://astro.uchicago.edu/home/web/rhe/Astronomy/lightpollution.html Photographs, presentations, sample ordinances, and additional website links.

New England Light Pollution Advisory Group

http://cfa-www.harvard.edu/cfa/ps/nelpag.html Newsletters, tips, website links.

Minnesota Sustainable Design Guide

http://www.develop.csbr.umn.edu/msdg2/MSDG/overview.html Recommendations for exterior lights.

University of Minnesota: Astronomy

http://www.astro.umn.edu/Outreach/pub_out.html

April 23, Wed., 7 pm presentation, Marshall W. Alworth Planetarium, Duluth. *Lights of Our Atmosphere: Natural vs. Unnatural.*

Night-time Shoreline Lighting

Karen Sherper Rohs

I was first introduced to the concept of light pollution during an astronomy class in college. Although I had sympathy for the astronomers and the difficulty presented to their work as the areas around the observatory became increasingly lit at night, it didn't seem very relevant to me personally. Until I moved home about ten years later. I discovered that the town five miles south of our hobby farm has so much lighting that a haze persists through the night. Some of my most vivid childhood memories include the sky — gazing into it with my brother as we waited for the school bus on early mornings, or whispering about its wonders as we came home late at night. These days the stars are more difficult to see.

Nighttime Satellite Image of the United States. http://www.darksky.org

What is light pollution?

Light pollution is light that goes beyond where it is meant to be going or light being used when it is not needed. Three of the most serious problems in shoreland lighting include glare, light trespass, and sky glow. Sky glow refers to the washing out of the night sky due to exterior lighting shining upward and making cities "glow" at night. Examples include billboard lights that shine upward, street or parking lighting bouncing off of pavement, and commercial or residential lighting open to the sky. Glare is the light going beyond what the fixture is meant to illuminate. This might be caused by poor design or poor installation. On shoreland, it can hamper the vision of boaters, pedestrians, and drivers and actually be a safety concern. Light Trespass is usually caused by glare; it's the illumination of adjacent or nearby property not meant to be lit by the fixture. On the waterfront, water reflects glare from shoreland lights onto distant properties. The reflective nature of water is one of the most challenging aspects of sensible shoreland lighting!

What can be done?

- Provide adequate light for an evening activity, but don't over-light. Choose lights that meet the needs without lighting beyond what is required for the task.
- Choose lights that do not emit light above the horizontal or retrofit existing fixtures with shields to reduce glare.
- Use high-efficiency lamps.
- Avoid dusk to dawn security lights; consider motion detectors.
- Position lights above and in front of signs, keeping the light aimed at the sign surface.
- Learn more about light pollution and recommendations for exterior lighting guidelines designed for local planning authorities.

Why care about light pollution?

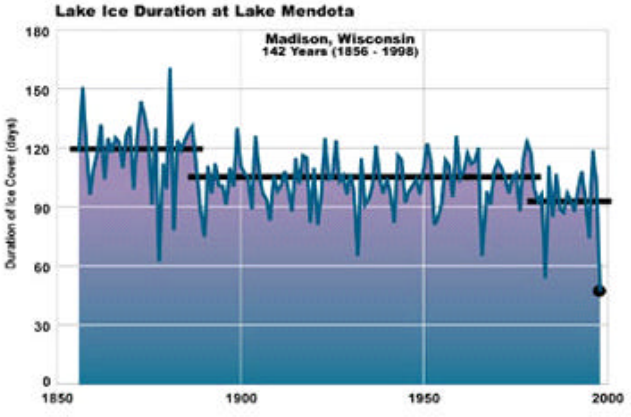
The Institution of Lighting Engineers states: "All living things adjust their behavior according to natural light. Man's invention of artificial light has done much to safeguard and enhance our night-time environment but, if not properly controlled, obtrusive light (commonly referred to as light pollution) can present serious physiological and ecological problems." A quick scientific literature search produced studies indicating connections between artificial nighttime lighting and disruptions in migrations of birds and salmon, disruption of plant development, decreases in moth populations, behavior impact on fireflies, and disruption of turtle and frog reproduction. In addition to reducing the impact of artificial lighting on nocturnal biological activities, eliminating light pollution will reduce energy usage, save money, and reduce distraction to nighttime drivers. Perhaps less tangibly, eliminating glare will once again open up the nighttime sky for gazing by professional astronomers and amateurs alike. David Crawford, Executive Director of the International Dark Sky Association says: "Light pollution is not a matter of life and death. Yet it is important nonetheless, profoundly so. We human beings lose something of ourselves when we can no longer look up and see our place in the universe. It is like never again hearing the laughter of children; we give up part of what we are."

> *"The night sky is the world's largest national park with its stark beauty available to anyone who steps outside and looks up."—Geoff Chester, U.S. Naval Observatory*

Learning About Your Lake: Global warming impacts on lakes

(continued from page 2)

Let's think about other potential changes to lakes. Warm water holds less oxygen than cold water. More frequent and extreme rainfalls is likely to mean more erosion of sediments and nutrients into lakes. These two factors combined could lead to increased algal growth. Lower oxygen levels and warmer temperatures could also make some of our lakes unsuitable for cold water fishes such as the trout that we love to catch. You've probably heard the expression, "one man's poison is another man's pleasure." That phrase applies well to the potential impacts of global warming on biological populations. A change that is harmful to one species is likely to encourage another species to expand its range to fill the void left by the unlucky species. Scientists expect to see a northward shift in the distribution of coldwater fishes and an increase in warmwater fishes in our region.



http://www.usgcrp.gov/usgcrp/Library/nationalassessment/overviewmidwest.htm

It is important to remember that there is much we don't know about how lakes will be impacted by global warming. Lakes are complex environments with intricate relationships among the many species of plants and animals making lakes their home. An example of the complex reactions that can occur is a recent study of a small European bird, the great tit (*Parus major*). This bird is related to our chickadee and relies on a type of short-lived caterpillar to feed its young. As a result of many years of warmer springs, scientists found that the caterpillars were hatching nine days earlier in 1995 than they did in 1973, while the birds were hatching their young at approximately the same time as always. Because the caterpillars live only a few days, the great tits have lost an important food source for their young. In lakes, changes in the timing of temperature stratification, hatching of aquatic organisms such as zooplankton, emergence of aquatic insects, and timing of algal blooms could have impacts on other organisms, including fish and waterfowl. This all might sound somewhat discouraging, but take heart. There are many steps we can take to make a difference. Make sure your shoreline is well vegetated to reduce the sediments and nutrients that enter your lake from heavy rainfalls. Take good care of your septic system to ensure that it is not contributing nutrients or contaminants to the lake. Help reduce the greenhouse gases that lead to global warming by reducing vehicle use and using a more fuel-efficient vehicle. Carpool. Lower your home's thermostat a few degrees. Plant trees that soak up excess carbon dioxide. Purchase green power.


Lake Trout

Minnesota law requires the state's electric utilities to offer customers voluntary options to purchase power generated from renewable sources (contact your electrical power company). Finally, take the time to get involved by learning more about climate change and teaching others about it.

To learn more about global warming causes and effects on Minnesota's environment, take a look at the Minnesota Pollution Control Agency website: http://www.pca.state.mn.us/hot/globalwarming.html

References

National Assessment Synthesis Team, US Global Change Research Program. 2000. Climate change impacts on the United States – The potential consequences of climate variability and change. http://www.usgcrp.gov/usgcrp/Library/nationalassessment/overview.htm

Perkins, S. 2003. Spring forward – Warmer climate accelerates life cycle of plants, animals.

Sea Grant Minnesota

Water Resources Center

University of Minnesota Extension Service