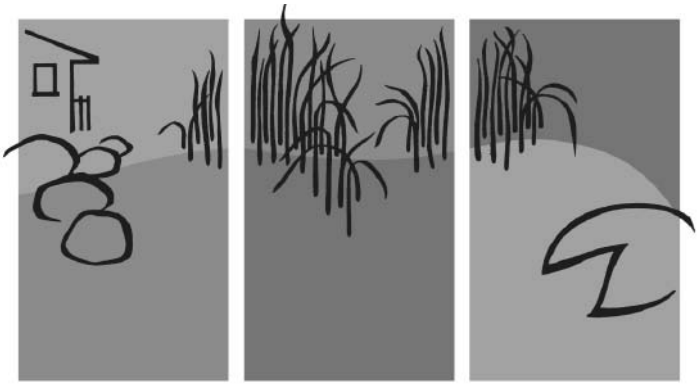

From Shore to Shore

For Minnesota citizens promoting the health of our rivers & lakes

March 2005

#65

Calendar of Events

→ Shoreland Erosion Control Workshop

April 15, 2005 – 8:30-4:30, Nisswa, MN
Contact Eleanor Burkett: 218-828-2326
burke044@umn.edu

→ Shoreland Volunteer Workshops

March 12, 2005 – 8:30-12:30 Maple Lake, MN
Contact Dale Gustafson: 763-544-4215
dalegus@earthlink.net

May 7, 2005 – 8:30-4:30 Perham, MN
Contact Will Yliniemi: 218-732-3391
ylini003@umn.edu

→ Shoreland Revegetation Workshops

April 1, 2005 – 8:30-4:30 Longville, MN
Contact James Ballenthin: 218-682-2405
jebatty@uslink.net

April 9, 2005 – 8:30-4:30 Prior Lake, MN
Contact Shannon Lotthammer: 952-447-4166
slotthammer@plslwd.org

June 10, 2005 – 8:30-4:30 Detroit Lakes, MI
Contact Will Yliniemi: 218-732-3391
ylini003@umn.edu

→ Shoreland Planting Workshops

May 21, 2005 – 8:30-4:30 Prior Lake, MN
Contact Shannon Lotthammer: 952-447-4166
slotthammer@plslwd.org

June 4, 2005 – 8:30-4:30 Outing, MN
Contact David Snesrud: 218-792-5824
snesrud@usfamily.net

New for 2005! – Shoreland Erosion Control Workshop

What is the most common pollutant in Minnesota's surface water? Is it phosphorus, perhaps? Guess again. The answer is *sediment*! This pollutant costs us $16 million annually, not to mention loss of personal shoreland property through erosion, its effects on recreation, and the damage to fisheries and wildlife habitat.

You may love your lake, but what are you doing to protect it against this pollutant? The University of Minnesota Extension is offering a new workshop this season: *Shoreland Erosion Control for Property Owners*. As the name suggests, participants will learn how to prevent and control erosion on their property and assist others in doing the same within their watershed. Participants will first consider the features of an undisturbed shoreland that minimize erosion. Next, they will learn to recognize common erosion features of a developed shoreline and several strategies to correct these erosion problems. Finally, workshop participants will discuss strategies that are appropriate for specific sites. Strategies may include installing deep-rooted native plants, using simple bioengineering techniques (see erosion control brochure at http://www.shorelandmanagement.org/downloads/erosion_control.pdf), installing rock armor, or a combination of these. Included are detailed instructions for do-it-yourselfers (permitting, material sources, installation methods, and maintenance), as well as information on how to select a contractor, questions to ask about the project design, and how to oversee an erosion control project so that it is done correctly - the first time!

This summer, do something good for your lake. And enjoy it! Join us in Nisswa on April 15, 2005. More information on this workshop and how to register can be found at: www.extension.umn.edu/water/shore/.■

Can These Two Islands be Saved?

Eleanor Burkett, University of Minnesota Extension Service, Brainerd Regional Center, (218) 828-2326, burke044@umn.edu

Rush Lake, located in Crow Wing County, had a problem. Rush Lake Association member Gerry Leinfelder recalls that it was six or seven years ago when Rod Nelson, then president of the Rush Lake Association, first considered the need to do something about serious erosion occurring on two of Rush Lake's islands: County Island and the DNR Island. The islands were both losing considerable shoreline because their steep banks were slumping into Rush Lake. Not only was the effect unsightly, but the sedimentation from the erosion was creating a potential impact on fish spawning areas.

Several different methods of bank stabilization were attempted, such as anchoring logs to protect the "toe" of the bank at the water line from wave action and installing erosion control blankets. Tree seedlings and bare root stock were planted and the bank was seeded in the more upland areas. Some of the logs worked well and have continued to do their job, but the seeding and plant materials had varying success. Also, there was a lot more undercutting that needed to be addressed on both of the islands.

In 2002, Gerry Leinfelder, a Whitefish Area Property Owners Association (WAPOA) member, took the initiative to write a Shoreland Habitat Grant through the Minnesota Department of Natural Resources. The proposal was accepted and the project was awarded $45,840 plus a required match of $24,000. In an effort to make the best use of the grant funds, the Crow Wing County Soil and Water Conservation District, Crow Wing County Parks, Department of Natural Resources, University of Minnesota Extension Service, and the Minnesota Joint Powers Board assisted in creating a site plan. The techniques included in the plan attempt to resolve each islands' problems and demonstrate several methods and techniques used to control erosion and restore shoreland.

In fall of 2004, a pilot site was implemented to test initial methods and techniques and determine how long it will take to restore a larger site and how many people will be needed. WAPOA is calling for additional volunteer assistance on this interesting and ambitious project. If you want to learn more, contact project team members, Gerry Leinfelder, WAPOA (llodge@uslink.net); Scott Lucas, SWCD (scott.lucas@mn.usda.gov); or Eleanor Burkett, UM Extension Service (burke044@umn.edu). Updates will be posted periodically to this and other newsletters to keep our readers informed of progress. ■

County Island before erosion control

Erosion control in place

Bacteria in Surface Water

Barb Liukkonen, Water Resources Education Coordinator, University of Minnesota Extension Service and Minnesota Sea Grant, (612) 625-9256, liukk001@umn.edu

When beaches are closed because they're unsafe, bacteria make the news. Bacteria have also been implicated across Minnesota as the cause of impairment in many lakes and rivers. Natural resource professionals and people like you are increasingly concerned about bacteria and are interested in how to assess whether your lake or stream has a problem.

To help volunteers interested in monitoring bacteria, we secured a grant from the Cooperative State Research, Education and Extension System (CSREES) water quality program to investigate the accuracy and reliability of inexpensive test kits. While there are many *E. coli* bacteria test kits available on the market, there has been no independent, comparative study to determine if, or how well, they actually work. In 2004, volunteers in Indiana and Iowa collected samples, analyzed for *E. coli* bacteria using six different test methods, and sent samples to certified analytical labs to verify their results. Based on extensive statistical analysis, our regional team identified two methods that ranked high in user-friendliness and highest in accuracy and reliability.

During 2005 and 2006, volunteers in MN (and WI, MI, OH) will participate in our research project by using those two methods and sending samples to a certified lab. They'll be monitoring one stream on a weekly basis from May-September, after participating in a training workshop to learn how to collect and analyze samples. If you are interested in being part of the project, and would be willing to make the commitment, please contact me. ■

Why are we concerned about *E. coli* bacteria?

Bacteria – single-celled organisms found in all environments on earth – perform many critical ecological functions. Most bacteria are not pathogens, or, in other words, they don't cause disease. However, bacteria are commonly used as indicators that pathogens may be present from a source such as human or animal (livestock, pets, wildlife) waste.

Fecal coliform bacteria are found in the intestines and feces of warm-blooded animals. *Escherichia coli* (*E. coli*) is a type of coliform bacteria, of which a subset may cause disease. Because it is easy and inexpensive to analyze for coliform bacteria, they are often used as indicators that other harmful bacteria may be present. When fecal coliform or *E. coli* bacteria are present in water, it is an indicator that waste or wastewater is reaching your lake or stream.

To help reduce bacterial loading to your favorite lake or stream, follow these practices:

- make sure your septic system is properly designed, installed, and maintained
- pick up after your pet
- don't encourage waterfowl to congregate by feeding them
- fence livestock away from the water

Volunteer collecting a sample

Volunteer processing a sample

It's Not Always Easy Being a Fish – What Causes Late Winter Fish Kills?

Cindy Hagley, Great Lakes Environmental Quality Educator, Minnesota Sea Grant, (218) 726-8106, chagley@umn.edu

This year is the first in many where some parts of the state have had lots of snow. This is great for snowmobilers and skiers, but it can be tough on fish in shallow lakes. The long, snowy winters that cause many of us to head for Florida can be the death knell for "lake-locked" fish. Winter fish kills in shallow lakes are natural events, although, as with most things involving lakes, how we manage our shoreland can make the problem worse.

Understanding why this sometimes happens requires us to learn something about how lakes function. Fish, of course, need oxygen to survive, but many of us have never considered how oxygen makes its way into lakes. In summertime, there are several ways lakes become oxygenated. Wave action "stirs" it in, and long hours of sunlight allow algae and aquatic plants to generate plentiful quantities through photosynthesis. Highly oxygenated streams flowing into lakes are also a source.

Notice that a couple of things are required for oxygen to be generated in lakes: sunlight so plants can grow, and water in contact with the atmosphere. In winter, both of these routes can be shut down. Aquatic plants can continue growing until light levels are reduced to about 1 percent of levels at the surface. This doesn't sound like a lot of light, but in years when heavy snows cover lake surfaces for long periods, light levels can drop to the point that algae and aquatic plants not only can't produce oxygen, but large quantities die and decompose.

Lake with snow

Not only does the bacteria-driven decomposition process consume large quantities of oxygen, but shallow lakes often have plants growing throughout the lake, meaning lots of oxygen consumption when plants die. This can cause oxygen to drop to lethal levels, resulting in die-offs of fish already stressed by winter conditions. Deeper lakes usually have much less vegetation relative to lake volume, so winter oxygen levels tend to remain more stable.

In years when snow cover is light, like in the picture below, sunlight continues to penetrate into the lake, allowing plants to keep on growing and generating oxygen. Of course, these favorable growth conditions also tend to result in lake managers getting lots of calls from shoreland property owners because "the plants are taking over."

Lake without snow

So what is the connection between how we manage our shoreland property and fish kills? The more algae and aquatic plants living in a lake when it freezes, the higher the likelihood that a fish kill may occur. In addition to sunlight, algae and aquatic plants need nutrients, so anything we do that adds nutrients can increase the likelihood of a fish kill. Sediment entering a lake from an eroding shoreline or construction project carries nutrients, as does runoff from fertilized lawns or leaky septic systems. Sediment also carries organic matter which, when decomposed by bacteria, further depletes oxygen. There are many simple steps you can take to prevent excess nutrients and sediments from entering your lake. Probably the simplest and most effective is to retain or restore natural vegetation along your shoreline. For more ideas of ways to keep your lake healthy, take a look at *Protecting our Waters: Shoreland Best Management Practices*, available at http://www.shorelandmanagement.org/depth/bmp.pdf. ■

Water Resources Center
Sea Grant Minnesota
University of Minnesota Extension Service

Shore to Shore is made possible by Minnesota Sea Grant, in cooperation with the University of Minnesota Water Resources Center.