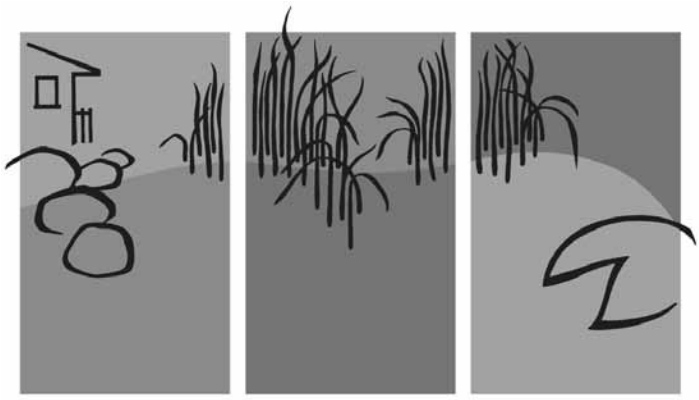

From Shore to Shore

For Minnesota citizens promoting the health of our rivers & lakes

August 2004

#60

Calendar of Events

→ Grant Writing Workshop

August 19, 2004 – Little Falls, MN

A valuable opportunity to hear professional writers and reviewers present techniques for researching funders and creating effective grant proposals. Basic Session, 9 a.m. – 12 p.m. at the Initiative Foundation, Little Falls. Advanced Session, 1 p.m. – 4 p.m. at the Mid-State Education Office, Little Falls. Cost: $40 for each session or $70 for both. Contact Leah Posterick at 1-877-632-9255 or lposterick @ifound.org for more information.

Controlling Deer Damage in Tree Plantings

Submitted by: Mike Demchik, Former Regional Extension Educator, University of Minnesota Extension Service

Deer populations have been high in Minnesota for several years. However, even at fairly low populations, deer can severely damage forestry plantations, newly planted windbreaks, and home landscaping by repeatedly browsing (eating) foliage. This damage is particularly great if preferred browse species are planted or when high-nutrition nursery stock is planted near wild-grown (often lower-nutrition) species. In general, deer will damage apple, basswood, white cedar, white pine, and many tree species often included in wildlife conservation plantings. Such species often eaten by deer include highbush cranberry, mountain ash, crabapple, hazelnut, and others. Additionally, in some parts of the state deer feed upon red/Norway pine, birch, maples and even young spruce tops. Only a few trees are not sought by deer: Russian olive, some honeysuckles, lilac, Scots pine, spruce (in most of the state), and balsam fir. However, when a deer population becomes large, even these are not safe.

So how do you protect trees from deer? While there are several ways to reduce deer damage, it is almost impossible to completely eliminate it. In other states, particularly Pennsylvania and New York (but also a few places in Minnesota), electric fencing keeps deer out of high-value plantings. This fencing is expensive and difficult to maintain, but has been shown to be effective. Typically, the fence uses seven strands of wire strung to 7 feet tall. Slanting the wires outward from bottom to top (20-30 degrees), can improve its effectiveness. For small or skinny plantings (like windbreaks), woven wire fences as low as 4 feet will help, as deer will seldom jump into a small, skinny area.

Tree shelters (called tree tubes by many people) are solid or mesh plastic tubes that protect the trees. These are held in place by a bamboo stake for the mesh tubes or a wooden stake for the solid tubes. The solid tubes are usually quite expensive (usually $3 or more) while the mesh tubes are less expensive (about $1) but flimsy and likely to be damaged. While these work well and the solid tubes provide the added benefit of reducing tree death during droughts (the air inside the tube is warm and moist), they are sometimes used by deer for rubbing antlers and can be damaged by bears. This means they require regular maintenance to be effective. Additionally, the trees inside the tubes can be more easily damaged by early winter freezes and exceptionally warm early springs. Even with these caveats, tree shelters provide good protection against deer browsing.

A homemade alternative is to make individual fences 8 inches in diameter made of 4-6 foot tall turkey wire (1″ X 2″ holes). These work very effectively. The added benefit is that they are reusable and easy to remove (the deer will prune off any branches that grow through the wire). They cost a dollar or less each to make. ■

Color in Lakes

Submitted by: Cindy Hagley, Great Lakes Environmental Quality Educator, Univ. of Minnesota Sea Grant, 218-726-8713, chagley@umn.edu

Empire Bluff at Sleeping Bear Dunes National Lakeshore, MI.
Image credit: Travel Michigan

Are you old enough to remember the old commercial jingle, "From the land of sky blue waters….?" When we think about a beautiful lake scene, we usually picture blue water surrounded by green trees, but how many of us know what determines the color of lake water?

The reasons a lake is a particular color are complex. In fact, lake colors can vary widely, ranging from nearly colorless, to yellowish or reddish or brownish or greenish or bluish! The same lake can even range in colors over different seasons, weather cycles, or types of human activity in the watershed.

So what are some of the factors that determine the color of lake water? Pure water has a pale blue color, caused by selective absorption at the red end of the visible light spectrum, but no "real-live" lake is made up of pure water. The color we perceive when we look at lake water is called *apparent color*. Apparent color is determined by many factors, including how much light is being reflected or absorbed by materials suspended or dissolved in the water, the color of the lake bottom, the depth of the lake, reflections from the sky or surrounding vegetation, and aquatic plant presence or absence. If you collect a sample of lake water in mid-summer and hold it up to the light, you will probably see things floating in it, including algae, dead plant and animal matter, possibly some clay, and maybe even some little animals, or zooplankton. These are all examples of *suspended substances* that can influence apparent color of a lake. For example, a nutrient-rich lake with high algal densities might appear greenish when you look into it.

Apparent color is hard to quantify or compare among lakes because of all the factors that can influence it, so scientists prefer to measure *true color*. To measure *true color*, scientists filter out all the suspended materials. This leaves them with a water sample containing only *dissolved substances*. Dissolved substances include metallic ions from rocks and soils (for example, iron and manganese ions) as well as organic acids from decomposing vegetation. Do you ever brew and drink tea? When you soak tea leaves, the organic acids and tannins from the tea leaves stain the water the lovely reddish-brown color we associate with a great cup of tea. The very same process brings much of the true color to lakes.

After filtering the water, the resulting true color is compared to a standard color scale (in the U.S. we usually use the *platinum-cobalt color scale*). This color scale allows us to compare among lakes or in one lake over time. Platinum-cobalt values of less than 20 indicate clear water, while values from 20 to over 100 indicate a highly colored lake. Lakes that are highly colored have often been "stained" by water flowing in from wetlands or forests.

Why do scientists care about lake color? Again the complete answer is complicated, but probably the most important reason is that the very same dissolved and suspended substances that give lakes their color do so by changing the way light is refracted, reflected, and absorbed. Not only is light essential for the growth of plants, including algae, but light energy and the heat it provides are also critical for plants and animals. Anything that reduces the depth of light penetration has impacts on the biological condition of the lake. Many fish and diving birds, such as loons, rely on water clarity to find their prey. In fact, if other things are equal, a lake with a higher *true color* value will probably have less biological activity than a similar lake with a lower *true color* value.

Next time you find yourself humming a song about Minnesota's sky blue waters, remember – it is not quite that simple!

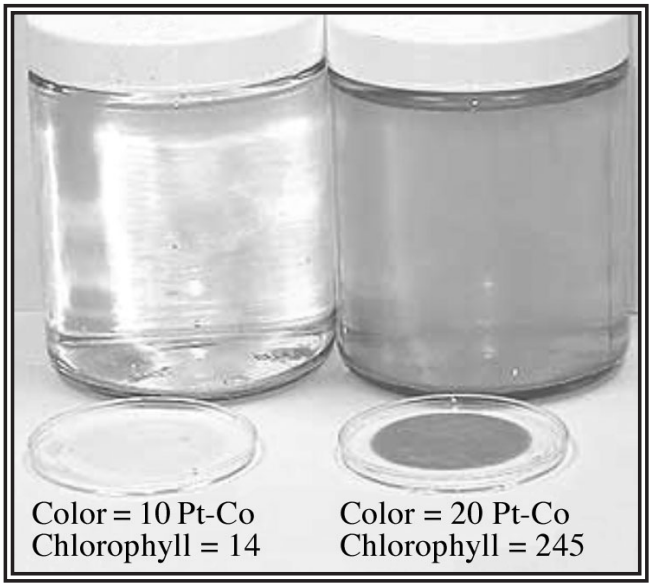

Image credit: Minnesota Pollution Control Agency

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Florida LAKEWATCH. 2004. A Beginner's Guide to Water Management – Color. 1st Edition. http:// lakewatch.ifas.ufl.edu/LWcirc.html.

Minnesota Pollution Control Agency. 1999. Minnesota Lake Water Quality Assessment Data: 2000. http:// www.pca.state.mn.us/water/pubs/lwqar.pdf. ■

Citizen's Guide to Local Land Use Planning

http://www.northstar.sierraclub.org/land

This year the Sierra Club in Minnesota created a website for Twin Cities residents and communities that explains local planning processes for those who want to get involved in local land-use decisions. The site gives visitors (1) a basic understanding of community planning by walking them through planning processes and terms used in "Anytown, U.S.A," and (2) a searchable map where citizens of the seven-county metro area can find out more about planning processes and land use policies in their own county, city or township.

Anytown, USA includes a colorful 2-page "Activist's Guide to Land Use Planning" packed with summary information. The searchable map quickly allows one to see web sites for specified municipal planning departments, planning flow charts, land use maps, and contact information for staff and elected officials.

Minnesota Phosphorus Lawn Fertilizer Law – January 1, 2005

Submitted by: Ron Struss, Regional Extension Educator, University of Minnesota Extension Service, 651-215-1950, rstruss@umn.edu

The Law: After January 1, 2005, phosphorus fertilizer cannot be used on lawns in Minnesota unless one of the following exceptions is met:

Exceptions: Phosphorus fertilizer can be used on lawns in Minnesota when:

- Establishing a new lawn by seed or sod.
- Soil testing shows need for phosphorus fertilization.
- Fertilizer is applied by golf course staff that have taken state approved training.
- Phosphorus fertilizer was purchased before August 1, 2004 and is used outside of the seven county metro area.

Minnesota law also requires spilled and over spread fertilizer, whether containing phophorus or not, to be cleaned up immediately.

For soil testing information, contact the U of MN Soil Test Lab at 612-625-3101 or visit them at the "Yard and Garden" section at www.extension.umn.edu.

Look for the middle number! A string of three numbers on a fertilizer bag show its analysis – the middle number being phosphate (phosphorus) content A "zero in the middle" means phosphorus-free fertilizer.

MINNESOTA WATER
LET'S KEEP IT CLEAN

Maintenance for Shoreland Revegetation

Submitted by: Eleanor Burkett, Regional Extension Educator, Univ. of MN Extension Service, (888) 241-0720, burke044@umn.edu

Twenty seven lake shore owners and one agency professional attended the Maintenance for Shoreland Revegetation workshop held on July 9 in Crow Wing County. The bus tour was led by Regional Extension Educators Eleanor Burkett and Mary Blickenderfer. Participants visited three lakeshore restoration properties, including one in its third year of plant growth, one in its second year of plant growth, and a no-mow shoreland revegetation (a property owner simply stopped mowing a section of shoreline to allow natural revegetation to occur). Two properties had rain gardens and other innovative techniques installed to help stop erosion and runoff problems. At each stop on the tour participants learned the goals for the property, the design plan, and site specific needs and preparation. Discussions included which techniques and plants worked best in each location, what hadn't worked, and what could be done to improve the restoration project. Participants also learned how to identify native and non-native plants. This Maintenance for Shoreland Revegetation workshop was a new venture for the Shoreland Education Program. ■

Shoreland before planting.

Shoreland after plant establishment.

Solution for road erosion problem.

Participants learning plant identification.

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