



# From Shore to Shore

A publication of the University of Minnesota  
Shoreland Education Team

March - April 2011

Issue # 102

[www.shorelandmanagement.org](http://www.shorelandmanagement.org)

## Plant for Change

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Many know the benefits of maintaining native plants in the water and in adjacent wetland and upland areas. Many are also aware of our changing climate and the resulting pattern of high intensity rain events alternating with longer periods of drought that are predicted by climate research models. But none of us knew how such a changing climate might affect the valuable plant populations that ring our shorelines... until now.

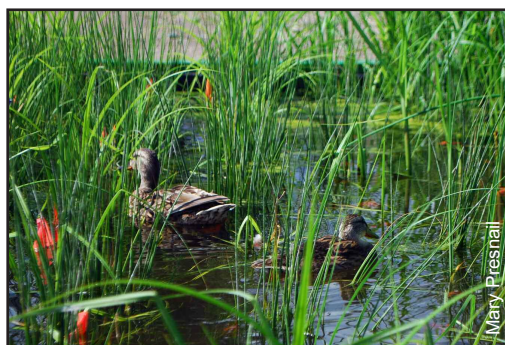
At the University of Minnesota St. Anthony Falls Laboratory researchers tested the responses of eight wetland and aquatic plant species (all native to Minnesota and commonly used for shoreland restoration) under four different water regimes, resulting from historic high, low and normal precipitation and a precipitation pattern predicted by climate change models. Preliminary results indicate that plants growing in the climate change precipitation regime produced more total plants (by sprouting from the mother plant) of high vigor (measured by above-ground dry weight) than those growing in the three basins with water regimes based on historic precipitation records. Compared to the cli-



Mary Presnail

mate change regime, plants growing in "normal" conditions produced slightly fewer plants of greater vigor. These preliminary results suggest that shoreland vegetation, in general, will survive and likely thrive under predicted changing climate conditions.

While this is good news, it is also important to know *which* plants are likely to thrive, particularly for people restoring native plants to Minnesota shorelines. Of the aquatic plants tested, giant bur-reed and river bulrush were the most vigorous with plants sprouting from rhizomes (underground stems extending outward from the mother plant) reaching well into the wetland area. Softstem bulrush and lake sedge also fared well. Of the wetland plants tested, bottlebrush sedge and common reed were the most vigorous, followed by the prairie cordgrass and fox sedge. These preliminary results suggest that plants with vigorous rhizomes may adjust better to a changing climate than non-rhizomatous plants due to their greater ability to "move" according to changing water levels.



Mary Presnail

*Basin of aquatic and wetland plants used in climate change research at the University of Minnesota St. Anthony Falls Laboratory.*

To view a short video about this research project, go to [www.youtube.com/watch?v=rt0pyjr7XTU](http://www.youtube.com/watch?v=rt0pyjr7XTU). ■



For the most current listing of Shoreland Education workshops, visit [www.extension.umn.edu/shoreland](http://www.extension.umn.edu/shoreland).

### MECA's Annual Erosion Control and Stormwater Management Conference and Trade Show

Date: March 3 & 4

Location: Crowns Plaza Minneapolis West, Plymouth, MN

Web site: [www.mnerosion.org](http://www.mnerosion.org)

### Garden Expo 2011

Date: April 2; 8:30 a.m. - 3:30 p.m.

Location: Central Lakes College, 501 W. College Dr., Brainerd, MN

Note: A partial listing is available online at: [www.extension.umn.edu/workshops/workshops.aspx?action=detail&start=1&catName=&mr=true&search=categories&sortby=city&eventID=0&offeringID=487](http://www.extension.umn.edu/workshops/workshops.aspx?action=detail&start=1&catName=&mr=true&search=categories&sortby=city&eventID=0&offeringID=487). If you don't see anything listed for your area, you can find your county's contact information here: [www.extension.umn.edu/gardeninfo/components/questions\\_yglines.html](http://www.extension.umn.edu/gardeninfo/components/questions_yglines.html)

### 2011 Lakes and Rivers Conference

Date: April 28 - 29, 2011

Location: River's Edge Convention Center in St. Cloud (formerly the St. Cloud Civic Center)

Web site: [www.minnesotawaters.org/content/conference](http://www.minnesotawaters.org/content/conference)

## Inside...

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③ Our Shoreline Buffer

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## “Antibacterial” Soaps and Your Lake or Stream: Too Much of a Good Thing

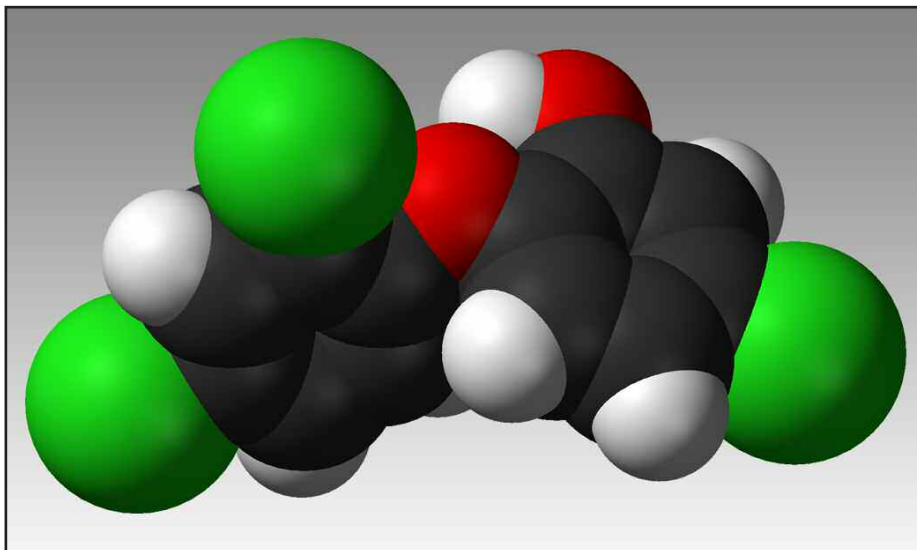
Cynthia Hagley, Minnesota Sea Grant, 218-726-8713, chagley@umn.edu

It is cold and flu season in Minnesota, so bring out the antibacterial or antimicrobial soaps, right? Not so fast! Recent research is telling us that these very same antimicrobial soaps harm more than just the disease-causing microorganisms that we worry about picking up from our friends, family, and co-workers. They also harm the natural environment and can affect human and wildlife health.

As if that wasn't enough, health experts tell us that antimicrobial soaps are no more effective than plain old soap and water in most cases. It is certainly important to wash your hands after coughing or sneezing, but colds and influenzas are viruses, so antibacterial soaps have no impact on them. Triclosan-based soaps were originally developed for pre-surgical use, but increased use in households has become too much of a good thing. Roughly 75% of the triclosan we use ends up being washed down sinks and showers and into wastewater treatment facilities or septic tanks. Because treatment plants are not designed to eliminate organic compounds – like pharmaceuticals, detergents or personal care products – triclosan can remain intact and enter rivers and lakes with the treated wastewater.

Antimicrobial compounds that are washed down the drain and make it into the environment can interfere with the algae and bacteria needed for healthy ecosystem function. When released into waterways from wastewater treatment plants, triclosan continues to do what it was designed to do – kill bacteria – and starts doing what it was not designed to do – interfere with photosynthesis in algae. Published studies have documented that triclosan can reduce photosynthesis in a beneficial type of algae known as diatoms that form the base of food webs in our lakes and streams. Through photosynthesis, diatoms produce oxygen and food that other aquatic organisms rely upon.

Results of an increasing number of



Space-filling model of the triclosan molecule.

studies testing the effects of triclosan on naturally occurring microbial communities suggest that triclosan may change the numbers and types of bacteria and diatoms in natural systems. These changes could lead to harmful alterations in the balance of our lake and stream ecosystems.



Marie Tysdal

There are other concerns as well. After release into water bodies, triclosan breaks down in sunlight to release dioxins, which are powerfully toxic compounds known to cause reproductive and developmental damage to wildlife and humans. Given all these concerns, it might be a good idea to study the labels carefully next time you purchase household products like soap that will be flushed down the drain. Consider going back to the old-fashioned approach – a good scrubbing with plain old soap and water.

This article was modified from: Edwards, T. *Antimicrobials Murderous in Nature*. *Environmental Health News*: Nov 20, 2010. [www.environmentalhealthnews.org/ehs/new-science/triclosan-in-wastewater-kills-bacteria-reduces-algal-photosynthesis/](http://www.environmentalhealthnews.org/ehs/new-science/triclosan-in-wastewater-kills-bacteria-reduces-algal-photosynthesis/). Synopsis of original article: Ricarta, M., H. Guasch, M. Alberch, D. Barceló, C. Bonnineau, A. Geiszinger, M. la Farré, J. Ferrer, F. Ricciardi, A.M. Romani, S. Morin, L. Proia, L. Sala, D. Sureda, and S. Sabater. 2010. **Triclosan persistence through wastewater treatment plants and its potential toxic effects on river biofilms**. *Aquatic Toxicology*. <http://dx.doi.org/10.1016/j.aquatox.2010.08.010>. ■

## Our Shoreline Buffer

Diana Dodge, Shady Hollow Resort, [vacation@shadyhollowresort.com](mailto:vacation@shadyhollowresort.com)

As an owner of Shady Hollow Resort, on Hardy Lake (Cass County), I am constantly looking for ways to improve our landscape and make life easier. Planting a shoreline buffer seemed like it would contribute to the continued health of our precious lake. We started our lakeshore restoration project in 2003. With grant money, we picked out plants that are native to our area of Minnesota from a list provided by the Department of Natural Resources. This took some time, but it was fun and educational. We were especially excited to see how our restoration project would turn out. Thankfully, the University of Minnesota Extension, Shoreland Education Program, selected our project as a demonstration site so volunteers helped us do the planting. Planting day was the weekend before a busy 4th of July.

After our initial planting, we encountered some struggles because rain was very scarce during the rest of the summer. We watered the new plants for the first couple of weeks, but we didn't water after that unless we transplanted plants and no rain fell. The resulting shoreland garden is low maintenance and beautiful in all four seasons. We maintain a portion of the garden with paths and clumps of like plants with markers so our resort guests can wander through, enjoy and learn. Other areas are more "wildly natural" with a mixture of different plants. One area helps to protect a cabin, by preventing erosion that would ruin its foundation. We installed two rain gardens to collect water runoff from our paved driveway and boat launch. Controlling runoff is always going to be a challenge because of our terrain. It is fun to watch the first plants pop up in the spring, my favorite is prairie smoke, and the summer is beautiful with butterfly weed, monarda, prairie onion, roses and so many other species; fall asters and dogwoods are stunning and in winter their seeds feed the birds.

Our garden is a wonderful place to sit, watch and hear wildlife. The monarda



attracts honey bees (honey bee populations in North America are experiencing "colony collapse disorder" so we are glad to be a part of their prolificacy). The kids love to watch turtles lay eggs and the frogs are so loud it feels like we need earplugs. Birds are diverse and plentiful, including hummingbirds and some birds that we have never seen before.



We have a garden of abundance as the native plants are well established and full. We give plants away to guests who show an interest and we have donated some for a fundraiser for Relay for Life. We also have moved plants to other areas of the resort to create different

gardens. We have been able to experiment with cutting back and moving plants to areas on the edge of their tolerance limits. We have done this with reasonable success; getting something to grow in extreme environments, such as under the pine trees without altering the soil, and on a hill with sand and all-day sun, has been challenging.

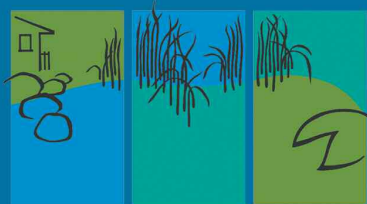
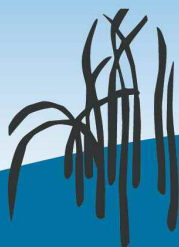
Whenever I hear someone say they can't keep the geese off their lakeshore, my thoughts are "shoreline buffer restoration project." If you want to do something else besides mow the lawn all summer, I say, "shoreline buffer restoration project." If you have erosion problems or a steep hill with water running into the lake creating a shoreline that is unusable... "shoreline buffer restoration project."

We would like to make an open invitation: come visit our site. We would love to answer any questions you have and share our excitement for our shoreline buffer restoration project.

Please visit our Web site at [www.shadyhollowresort.com](http://www.shadyhollowresort.com) or contact us by email: [vacation@shadyhollowresort.com](mailto:vacation@shadyhollowresort.com). ■

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## From Shore to Shore

[www.shorelandmanagement.org](http://www.shorelandmanagement.org)

*A publication of the Shoreland Education Team, dedicated to educating Minnesota citizens about shoreland management to improve water quality, habitat, and aesthetics of our lakes and rivers.*

From Shore to Shore is available in hard copy and electronic formats. Archived issues are available online at [www.shorelandmanagement.org](http://www.shorelandmanagement.org)

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EXTENSION

## Infiltration on a Small Scale

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In 2008 I sold my country home, a place that seemed to need endless care situated on acres covered by forest, a large garden, and too much lawn. Needing a somewhere to live, I purchased a house narrowly within the city limits. It was on a small, wedge-shaped lot but three red pines bordered the property on either side. The grounds were a nearly blank slate, much to this gardener's and native plant enthusiast's delight. I liked the property because it bordered a small wetland and a farm.

After the basics were installed, such as a fence for my dog, some fruit trees and a vegetable garden, it was time to think about reducing runoff. From the front yard, stormwater and snowmelt runs into a storm drain leading to the Mississippi River. The front yard occupies the pointed end of this "slice of pie" plot of land. With only narrow areas to work, I removed the sod and added a 9 x 65-foot shallow depression on one side of the driveway. Underground utility lines prevented any deep excavation.

The process of making this shallow depression involved several steps. After Gopher One Call marked the utility lines in the area, I used a sod cutter adjusted to two inches to remove the sod and make a depression. The utility lines needed to be remarked (the original marks were removed with the sod), before I could plant bare-rooted plants carefully between the lines and lay down an inch of shredded wood mulch. I purchased plants from the local Soil and Water Conservation District and a native nursery grower. I planted five red twig dogwood and six Hansa rose shrubs. I also planted a Dolgo crabtree as a pollinator for an apple tree I planted in the back yard. I plan to accent my gardens with native little bluestem grass clumps, which will also tie the various gardens together.

On the other side of the driveway I added a rain garden planted with a variety of native flowering plants. This area catches some of the water from the driveway and the water from one of the house's downspouts. Even before it was planted, it was helping rain soak into the soil. Near the street, in a triangle of soil delineated by sidewalk and driveway pavement, I planted drought-resistant sedum (a non-native) and a clump of little bluestem grass. I did-



Beth Hippert

n't want to worry about keeping this area watered between rains so I chose drought-tolerant plants. This little area (only about 3-feet long on each of its sides) fills and overflows quickly during a rainstorm, mostly because of runoff from the neighbor's driveway. Maybe I'll make it a little deeper this spring, although I know I won't be able to catch all of the runoff.

Excess water in my backyard runs into the wetland. I'm not too worried about most of the runoff, but did I mention my dog? I know that his daily deposits would contribute excessive nutrients if they were not picked up all year long. I added a native plant buffer area to help absorb excess nutrients from my pet and a downspout. This is my more "wild" looking native plant area. I learned from a soil test through the University of Minnesota that my soil was low in lime. I added lime at the recommended rate and the small area of lawn filled in nicely. I noticed my lawn was green and lush, and withstood a summer drought better than a neighboring lawn that gets a commercial fertilizer treatment three times each summer.

In telling this story I want to emphasize two things. First, having native plants in a home landscape can be beautiful and simple. Second, it doesn't take huge amounts of space to make gardens that reduce at least some of the stormwater runoff. Carefully selecting plants and spending time designing gardens will impress your neighbors, adhere to city ordinances, and improve the water quality of local waterways. ■