

# From Shore to Shore

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## Catching Up with Aquatic Science

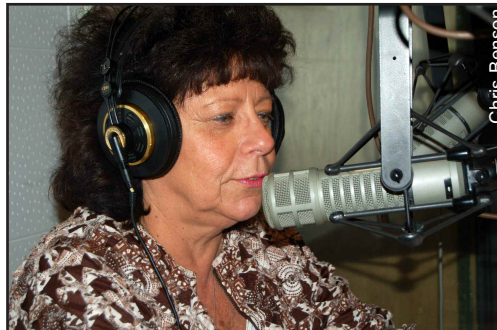
By Sharon Moen, U of M Sea Grant Program, 218-726-6195, [smoen@umn.edu](mailto:smoen@umn.edu)

Five minutes. If you have five minutes, you can catch up with aquatic science. Since October the Minnesota Sea Grant Program has engineered weekly radio broadcasts highlighting freshwater research in Minnesota. Episodes about stormwater management, ancient climates, aquatic invasive species, fish farming and other topics enlighten listeners on Catching Up with Aquatic Science each Wednesday morning at 7:45 on KUMD (103.3), a co-producer of the series. You might hear the program on affiliate stations throughout Minnesota. Segments are also available over the Internet, iTunes, and through RSS-feeds and podcasts.

The audio programs are varied and informative. During one, Dr. Jim Cotner, a professor at the University of Minnesota Twin Cities jokes with host Judy Zomerfelt about lakes and their winter "love handles". He explains that lakes in the Upper Midwest take on extraneous organic matter in winter in a fashion akin to the way some humans pack on a few extra pounds. Once the growing season is in full swing, Cotner said aquatic microbes tend to use up the extra matter.

In another, Dr. Liz Minor, an associate professor with the University of Minnesota Duluth, discusses how she uses "the bomb spike" to set a timeframe for her research on Lake Superior's carbon cycle. Nuclear bomb testing in the 1950s cast a blanket of radiocarbon that Minor uses in part to determine how much old carbon and how much newer carbon fuels reproduction and growth in the least productive of the Great Lakes.

Dr. Al Mensinger, an associate professor with the University of Minnesota Duluth, wrestled his computer to the studio microphone during one episode to share the booming croak emitted by oyster toadfish.



"I had no idea how much noise certain fish can make," said Zomerfelt. "I don't think many people know that fish make sounds." Zomerfelt enjoys laying aside her usual executive secretary duties at Sea Grant to help people much like herself relate to disciplines such as Mensinger's (neurophysiology).

"Aside from talking to scientists about their work in an understandable way, my favorite part of the show is the word of the day," said Zomerfelt. One of the words Zomerfelt had the most fun with was piscivorous. "It was a tough one to pronounce," she said, "but, it's also one I can use." Piscivorous means fish-eating.

Interested listeners can access Catching Up with Aquatic Science in multiple ways:

- Tune into KUMD (103.3) on Wednesdays at 7:45 a.m.
- Go to [www.seagrants.umn.edu/radio/catchingup/](http://www.seagrants.umn.edu/radio/catchingup/) and listen to the audio files or subscribe to the podcast.
- Request a free CD from Minnesota Sea Grant ([seagr@d.umn.edu](mailto:seagr@d.umn.edu); 218-726-8106).
- Encourage your favorite (or most local) public radio station to air the series. ■



## To the Source – Moving Minnesota's Water Governance Upstream

A new report is available. *To the Source – Moving Minnesota's Water Governance Upstream* is a report of the Citizens League Water Policy Study Committee (November 2009).

The 36-page publication is available online at [www.citizensleague.org/publications/reports/](http://www.citizensleague.org/publications/reports/) or contact the Citizens League at 651-293-0575 for more information.

## Inside...

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- 3 Storming the Neighborhood
- 4 Northland NEMO Launches a New Educational Tool for Watershed, River, and Lake Audiences

## Septic System Owner's Guide Available

This owner's guide and folder will help you:

1. understand the basic principles of how a septic system works;
2. learn how to operate the system efficiently and effectively;
3. know how to maintain the system to prevent costly repairs and water contamination;
4. resolve simple problems with the system; and
5. provide a place to keep information and records about your septic system.

### Risks to the Environment

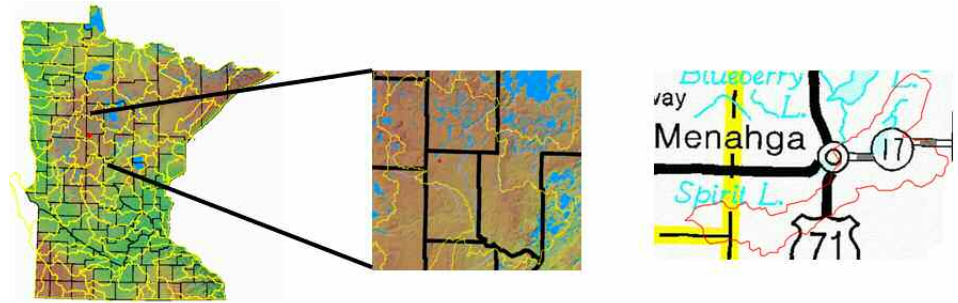
A septic system that fails to fully treat sewage may allow excess nutrients (phosphorus and nitrogen) to reach nearby lakes and streams, promoting algae and plant growth. Algal blooms and abundant weeds may make lakes unpleasant for swimming, boating, and other water-based activities. This plant growth can also affect water quality for fish and wildlife habitat. As plants die and settle to the bottom, they are broken down by bacteria that use up oxygen that fish need to survive.

Many synthetic cleaning products, pharmaceuticals, and other chemicals used in the house can be toxic to humans, pets, and wildlife. If allowed to enter a septic system, these products may reach groundwater, nearby surface water, or the ground surface.

To purchase a copy of the Guide from The Extension Store, visit <http://shop.extension.umn.edu/PublicationDetail.aspx?ID=941> or call 800-876-8636. For more information, contact the University of Minnesota's Onsite Sewage Treatment Program at [septic.umn.edu](http://septic.umn.edu) or 800-322-8642.

## Phosphorus and Water Quality: Looking at Sources and Solutions in One Sub-Watershed

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Minnesota's Major Watersheds

Crow Wing River Watershed

Stocking Creek Sub-Watershed

We hear a lot in the media about declining water quality, but how often does the message really hit home to a lake or river we know and love? And when it does, what can we do about it? Citizens often feel helpless, at the mercy of others to 'fix' the problem. How can local citizens get involved? The residents of Stocking Lake, in northern Wadena County, have been actively monitoring their water quality for many years, and although quality is still very good, it has begun to decline in recent years. The lake association leaders indicated that residents felt that failing septic systems and runoff from farm fields were the cause, but there was no data to prove or disprove their suspicions.

Stocking Lake is in the Stocking Creek sub-watershed, which flows into the Shell River, to the Crow Wing River, then the Mississippi River. To address the declining water quality issue and the understanding of phosphorus sources and solutions, a new program by the University of Minnesota Extension's Shoreland Education Team, is being given a test drive in the Stocking Creek Sub-watershed.

The program, called Nutrient Pathways to Stocking Lake: Investigating Phosphorus Sources from Septic Systems, Shorelands, and Agricultural Fields from a Sub-watershed Perspective, is set to work with residents of the sub-watershed, local government officials, and environmental agency staff to determine the sources of phosphorus and to find ways to decrease the amount of it entering Stocking Lake and the tributaries leading

to it. As the title indicates, three main categories of phosphorus sources will be evaluated: septic systems, shoreland properties, and agricultural lands.

Many of the septic systems have already been assessed, using a grant from the Initiative Foundation; systems that were found to be below standard will be upgraded (many already have been!). In the spring, soil samples will be collected and analyzed, and water samples will be collected in the tributaries above Stocking Lake as well as in the lake itself and analyzed for phosphorus. Water clarity will be monitored as well. The properties surrounding Stocking Lake will also be surveyed to determine the condition of the shoreline, the amount of impervious surface, and amount of vegetation—all of which affect the amount of phosphorus getting into the lake.

Another important component of the project is to survey residents to get their views on the issues of water quality, phosphorus, and land uses within the Stocking Creek sub-watershed. If the survey results indicate that education is needed, an outreach plan will be developed and implemented. Once this project is completed, it will be evaluated to determine if it will be useful and appropriate to address nutrient-related water quality issues in other sub-watersheds in Minnesota.

For people who make decisions that impact Minnesota's lakes and rivers, see the Minnesota Shoreland Management resource guide at [www.shorelandmanagement.org](http://www.shorelandmanagement.org). ■

## Storming the Neighborhood

Jesse Schomberg, Minnesota Sea Grant College Program, 218-726-6182, jschombe@d.umn.edu

Lakeside: a quiet and friendly residential neighborhood in Duluth. But, come a rainstorm, a dirty secret emerges. As the storm clouds burst open, the rain falls on rooftops, driveways, and lawns, then rushes into the street, and rapidly drains into the storm sewer. An immense volume of water rushes down these pipes and exits into an ignominious little ditch, several blocks away. It is here that the serious damage begins. As the water level rises and rushes faster downstream, the muddy banks start to give way, and bit by bit, the ditch enlarges, distributing its previous mass of clay and silt into the water to be carried into the trout stream just below, and on into Lake Superior.

This was the situation that the City of Duluth and researchers from the University of Minnesota's Natural Resources Research Institute (NRRI) found a couple years ago, while looking for a suitable neighborhood to demonstrate residential stormwater reduction techniques. With grant funding from the Minnesota Pollution Control Agency and the US Environmental Protection Agency, the perfect neighborhood was found along three neighboring streets. Two of these neighborhoods would be used for experimental control, and the third is where the stormwater practices would be installed. The question we hoped to answer?

*Can we install simple residential-scaled stormwater controls in a neighborhood, and significantly reduce runoff?*

As we met with the residents and explained the importance of reducing stormwater, we heard something else. The water was causing problems for them as well. Some residents had perennially muddy and wet yards, some had torrents, enough to "float a canoe", running through their yard during rain events. Many had water coming into their basements or garages during wet periods. One person had so much ice building up during the winter that it covered his driveway, sidewalk, deck, and garage floor with a foot or more of ice, also causing a small glacier to form on the road in front of his house. This added another component: helping residents deal with their water-related issues.

House by house, we discussed each person's problems and interests, and what we could provide to reduce runoff. Almost



*Minnesota Conservation Corp crew members put the finishing touches on a swale to help divert runoff away from the resident's driveway and road. Deep roots from the native wildflower seed mix will help infiltrate more water.*

every resident accepted some of the 300+ trees and shrubs, with cages to protect them from deer and rabbit browse. These are long-term investments, but important for restoring a more natural hydrology in this northwoods community. Most residents were also interested in rain barrels, and 20 of these were installed, including a 100 gallon system at the top of the hill. For some of the worst water problems, a series of swales was dug to infiltrate and redirect the water away from roads and driveways to an existing ditch, with new check dams to slow the runoff. Finally, five raingardens were positioned to capture roof and yard runoff. These "crown jewels" were all built with slightly different techniques, to assess how each would function in our region.

2010 will be the evaluation year, with continual measurements of runoff from all three streets, but through this fall's rains, the systems were doing their job: capturing runoff, slowing the flow, infiltrating water, and moving it out of the resident's way. One result we're fairly sure of, though, is that we've helped at least one neighborhood realize that managing stormwater can be a win-win proposition for them and their neighboring stream.

For more information, visit [www.lakesuperiorstreams.org](http://www.lakesuperiorstreams.org) ■

## Voices for the Lakes Essay Contest

*"Write what should not be forgotten" –Isabelle Allende*

Minnesota is the "Land of 10,000 Lakes." It is also the "Land of 10,000 Lake Stories." Memories of a sunny day's swim in the cool water, a big "catch" pulled from a little hole in the ice, and a relaxing sunset amplified by the evening call of a nearby loon or a far off wolf are in the hearts of most Minnesotans. In today's fast-paced world, the lakes are a calming reminder of what makes Minnesota special.

To preserve our lakes for future generations, we must celebrate our state's deep-abiding connection with water, and creatively articulate the connection that links our past with our future.

In light of the 10-year anniversary of the successful Voices for the Land essay contest, 1000 Friends of Minnesota is giving you the opportunity to be a "voice for the lakes." There are few things more powerful and action-inspiring than citizens speaking from their hearts and sharing their passion for special places. Voices for the Lakes calls for individuals to depict their connection with Minnesota's greatest natural resource—its lakes. Share your lake story and be the voice our lakes need.

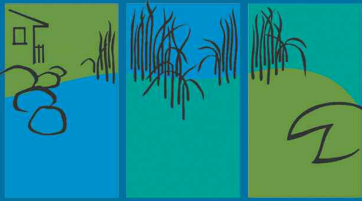
Submissions may be made from November 1, 2009 until February 1, 2010. Winners will be announced on May 3, 2010.

Winners will be recognized with their work published on the 1000 Friends of Minnesota website ([www.1000fom.org](http://www.1000fom.org)), and in other publications currently being pursued. Also, they will be given the opportunity to participate in readings throughout the state.

For details, please go to the 1000 Friends of Minnesota website at [www.1000fom.org/growing/lakes/voicescontest](http://www.1000fom.org/growing/lakes/voicescontest)

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*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)

To subscribe or unsubscribe, please contact Barb Anderson at [bj@umn.edu](mailto:bj@umn.edu) or 218-998-5787.

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EXTENSION

# Northland NEMO Launches a New Educational Tool: The Watershed Game

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Northland NEMO (Non-Point Education for Municipal Officials) has launched a new tool for educators to use with watershed, river, and lake audiences.

### About the Game

The Watershed Game helps individuals understand the connection between land use and water quality. Participants learn how a variety of land uses impact water and natural resources, increase their knowledge of best management practices (BMPs), and learn how their choices can prevent impacts. Participants apply plans, practices, and policies that help them achieve a water quality goal for a stream, lake, or river. The Watershed Game is available in three unique versions. The **STREAM** version addresses an entire watershed and the land uses common to it in Minnesota. The **RIVER** version addresses the land uses associated with large river systems and urban areas. The **LAKE** version is the newest addition to the Watershed Game focusing on the land uses revolving around a typical Minnesota lake.

### Intended Audience

The Watershed Game has been designed to work with elected and appointed officials, community leaders, watershed organizations, lake associations, and other adult audiences who have a role in developing plans, applying practices, or adopting policies integral to water resource management.

### Trained Watershed Game Facilitators

The Watershed Game provides a unique tool to simulate land use management. It requires the facilitation by a trained individual. The Northland NEMO program has a number of trained facilitators that may be available to assist in your use of the tool. A list of trained facilitators can be found on



John Bilotta

the website ([www.northlandnemo.org](http://www.northlandnemo.org), click on What We Do and go to Watershed Game). Future trainings for facilitators may be available.

### Using or Getting the Watershed Game

The Watershed Game is available for loan to trained facilitators at no cost; however we require a simple use report so we can track where and how the tool has been used. It is also available for purchase (\$200/version) to organizations with trained facilitators.

### About Northland NEMO

Northland NEMO is a collaborative effort of organizations in Minnesota and Wisconsin with educational programs that teach local leaders about the connections between land use and natural resource quality. Northland NEMO is a member of the National NEMO Network.

### Acknowledgement

The Watershed Game was developed through Northland NEMO, a Minnesota-Wisconsin educational partnership. When using this tool, acknowledgment should be given to Northland NEMO and the various partners who authored the development. To learn more, visit [www.northlandnemo.org](http://www.northlandnemo.org).

