From Shore to Shore

A publication of the University of Minnesota Shoreland Education Team

May - June 2010 Issue #97 www.shorelandmanagement.org

Water Friendly Home Lawn Care

By Bob Mugaas, University of Minnesota Extension, 651-480-7706, mugaa001@umn.edu

Maintained lawn grasses can be an important asset to our overall landscape design as well as providing some water friendly benefits. The dense fibrous network of roots below ground helps hold the soil in place and prevent it from eroding into our lakes and rivers. Likewise, the dense network of shoots above ground is very effective at trapping dust as well as preventing dust from being stirred up, lifted off the ground and carried off during windy conditions. During the growing season, this same dense, network of shoots helps to slow down any runoff and allows more time for water to infiltrate the soil, again virtually preventing soil erosion from occurring.

However, the practices we use to care for our lakeshore lawns and landscapes may have a negative impact on the nearby water area when not carried out properly. Below is a 'top-twelve' list of things one can do to maintain a healthy lawn while still being water friendly.

1. Improve lawn density by reseeding or resodding thin areas.
2. In partially shaded areas, use lawn grasses known as fine fescues as they are better adapted than Kentucky bluegrass.
3. Fine fescue lawn grasses are also good for sunny areas where lower lawn care inputs are desired.
4. Use lawn fertilizers that contain no phosphorus unless a need is identified by a soil test or you are putting in a new lawn.
5. Use lawn fertilizers that have at least a portion of the nitrogen in a slow release form. These will be noted on the container label as 'water insoluble nitrogen' or sometimes 'slow release nitrogen.'
6. Sweep up any granular fertilizer that gets on to paved surfaces such as sidewalks, driveways or streets. Place back into original container for reuse another time.
7. Never apply fertilizer to frozen ground or just before heavy rainfall is anticipated.

A healthy, dense lawn can help protect water quality when managed correctly.

8. Where severe soil compaction exists, aerate the lawn with a core-type lawn aerator to improve water infiltration and increase depth of rooting potential.
9. Increase mowing heights to encourage deeper grass rooting and lessen the need for additional lawn care inputs as the plants are able to retrieve more from the soil.
10. Always keep grass clippings on the lawn. Leaving clippings on the lawn doesn't increase thatch and provides the equivalent of at least one fertilizer application annually.
11. Pick up pet wastes so that nutrients and other contaminants are not washed into the lake or river. This practice will also help minimize injury to turfgrass plants.
12. If you have lake property, use buffer strips of unmowed vegetation at the shoreline to help further slow any runoff from the adjacent lawn and landscape areas. This area can also help trap nutrients and other pollutants potentially carried in runoff water.

For more information on sustainable lawn care practices, check out the University of Minnesota Extension's Sustainable Landscape Information Series – Lawn Maintenance Chapter at www.sustland.umn.edu/maint/maint.htm. ■

For the most current listing of Shoreland Education workshops, visit www.extension.umn.edu/shoreland.

Shoreland Restoration
Date: May 27
Location: Crosslake Community Center, $10 fee
Contact: www.crosslake.com or 218-692-4027

Native Plants/Deer Resistant Plants
Date: June 24
Location: Crosslake Community Center, $10 fee
Contact: www.crosslake.com or 218-692-4027

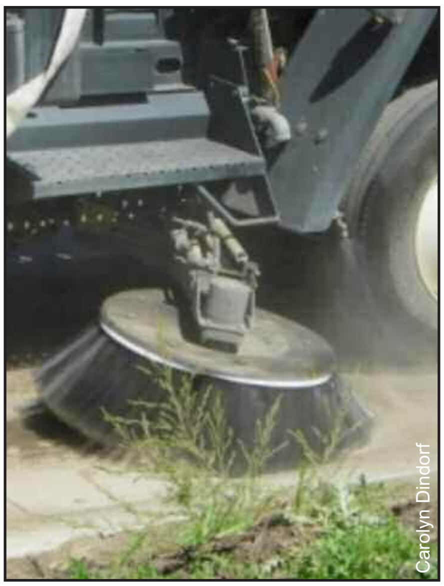
Rain Garden workshop and implementation
Date: July 14-15
Location: Duluth
Contact: Jessie Schomberg, jschombe@umn.edu

Inside...

Sweep Streets to Protect our Waters

By Carolyn Dindorf, Fortin Consulting, Inc., 763-478-3606, carolyn@fortinconsulting.com

Has your city been out sweeping the streets yet? Spring rains carry a load of pollutants to surface waters. Without sweeping, everything that has accumulated on the streets ends up in area waters. This includes road salt, sands, silts and clays, oils and greases and heavy metals from vehicles, nutrients, vegetative debris, trash and more. The result is deltas of sediment in lakes, increased turbidity, nutrient enrichment and potential toxicity.



Street dirt accumulation on residential streets ranges from about 2 to 4 lbs. per curb foot per year1. Street dirt has a phosphorus content of a little more than 1%, most of it associated with the silts and clays (“fines”)[1]. If no sweeping occurs, residential streets could contribute 250 – 450 lbs. of phosphorus per mile each year. That’s a lot of phosphorus that potentially could be prevented from reaching area surface waters.

Sweeping removes the sediment, attached pollutants, and trash and prevents it from reaching local wetlands, lakes and streams. The effectiveness of the program for water quality protection depends on the type of sweeper used and the frequency of sweeping.

The majority of Minnesota street sweeping programs provide for sweeping streets and commercial areas only about twice per year. This compares to most of the U.S. and Canada which sweep 3–26 times per year. Street sweeping is often done more for aesthetic reasons than for water quality protection. The mechanical broom sweepers, which many communities rely on, accomplish the job for aesthetic clean-up. These sweepers are good for removing the larger items such as trash, vehicle parts, vegetation and miscellaneous road debris. However, most of the pollutants are associated with the fine silts and clays. Vacuum sweepers or regenerative-air sweepers, especially the new technology equipment sweepers, are needed to effectively remove the fine particles. Use of these sweepers can increase suspended sediment removal from about 30–70%.[2,3]

Even in the winter, Minnesota experiences winter rains and snow melts and with it, runoff into surface waters. Winter sweeping can help prevent the road salt and sediment from reaching local waters. However, only the newer technology/equipment can operate in freezing conditions.

The following sweeping frequencies are recommended for water quality protection[2-4]:

Arterials: 9 - 16 times per year
Commercial: 9 - 16 times per year
Light Industrial: 6 - 9 times per year
Heavy Industrial: 9 - 16 times per year
Residential: 4 - 9 times per year
Central Business District:
Biweekly - 2 times per week

References:

[1] Breault, R.F., Smith, K.P., and Sorenson, J.R., 2005, Residential street-dirt accumulation rates and chemical composition, and removal efficiencies by mechanical- and vacuum-type sweepers, New Bedford, Massachusetts, 2003–04: U.S. Geological Survey Scientific Investigations Report 2005-5184, 27 p. http://pubs.usgs.gov/sir/2005/5184/.

[2] Local Road Research Board, 2008. Resource for Implementing a Street Sweeping Best Practice. Report Number MN/RC – 2008RIC06, February 2008 (www.lrrb.org/PDF/2008RIC06.pdf).

[3] Schilling, J.G. 2005. Street Sweeping – Report No. 1, State of the Practice. Prepared for Ramsey-Washington Metro Watershed District (www.rwmwd.org). North St. Paul, Minnesota. June 2005.

[4] Schilling, J.G. 2005. Street Sweeping – Report No. 3, Policy Development & Future Implementation. Options for Water Quality Improvement. Prepared for Ramsey-Washington Metro Watershed District (www.rwmwd.org). North St. Paul, Minnesota. June 2005. ■

You can help.

1. **Talk to your City Council.** Tell them about the importance of street sweeping to protect the local lakes. Share the research and recommendations with them (see references below).

2. **Pick up a broom.** If your community does not have a frequent sweeping program, get out there with a shop broom and shovel. If everyone swept the street in front of their home, consider the amount of pollutants that could be prevented from entering our waters.

VHSV found in Lake Superior Basin -What does it mean for Minnesota

By Jeff Gunderson, University of Minnesota Sea Grant Program, 218-726-8715. jgunder1@umn.edu

Viral hemorrhagic septicemia virus (VHSV) was recently documented in Lake Superior by two separate discoveries. Cornell University researchers found VHSV in fish collected from three locations in Lake Superior including the Duluth-Superior Harbor. The fish were collected in spring 2009 and analyzed later in the year. VHSV was also detected by a Michigan State University researcher, in ciscoes (formerly lake herring) that were collected from the Apostle Islands area of Lake Superior in December 2009. Now that the virus is on our doorstep, many anglers are wondering how damaging VHSV might be to Minnesota's fisheries and how likely it is to spread throughout our inland waters.

The virus can spread when infected fish (dead or alive), fish parts, or water with sufficient virus concentrations are moved. The virus enters fish through their gills, wounds, or if they eat infected fish. Moving water that carries VHSV in live wells and bait containers is a risk, but experts say a small one. The risk is extremely low if water is drained. This virus cannot survive the body heat of warm-blooded animals, so it is not a threat to humans and cannot spread long distances through bird feces.

VHSV fares best in cold water. Fish mortalities are highest at temperatures ranging from 37 º–54º F. This disease gained notoriety because of its destructive impacts on aquaculture. Protecting the U.S. aquaculture industry is a motivating force behind the USDA Animal Plant Health Inspection Service's response to the disease outbreak in the Great Lakes.

Except possibly in Prince William and Puget Sounds where other factors likely played a role, VHSV does not seem to have negatively affected wild fish populations elsewhere.

Sensational stories about several large mortality events in the Great Lakes traced to VHSV warrant discussion. The largest die-offs occurred in populations of freshwater drum, round gobies, gizzard shad, and muskies. Researchers with Ontario's Ministry of Natural Resources examined the impact of the first large die-off of freshwater drum in Lake Ontario in 2005. Their conclusion was: no population decline after the outbreak.

Chris J. Benson

The 2006 die-off of muskies in Lake St. Clair created great concern. Muskies are especially susceptible to the virus and it is understandably distressing to see large muskies dead and dying. Michigan's Department of Natural Resources reports indicate that this was a relatively small component of the population.

VHSV has infected approximately 30 species of Great Lakes fish. Many of the fish species only carry the disease; they haven't died from it. Since the virus can mutate and become more virile in the future, it would be foolhardy to dismiss its lethal potential. We should do what is needed to prevent its spread.

It is not inevitable (as some contend), that the virus will spread through Minnesota's inland waters.

Regulations barring the transport of bait, fish, and water from potentially VHSV-infested waters are in place and will help prevent an inland leap for VHSV. It is illegal to import baitfish into Minnesota, and baitfish production in Minnesota is currently operating under expanded regulations to help ensure bait is VHSV-free. Similarly, regulations help ensure that any fish stocked in Minnesota are VHSV-free.

VHSV can enter Minnesota water via connected waterways. Though infected fish have been found in Lake Superior's basin, its watershed comprises less than 7% of Minnesota, and barriers on most streams and rivers contain upstream fish movement to much less than that.

Fish carrying the virus could eventually move up the Mississippi River into Minnesota when the virus infects that system. But if they take the route of the zebra mussel before them, they will have to swim through 17 locks and dams first, so progress will likely be slow (unlike zebra mussels which hitched a ride on barges). While the Mississippi River watershed comprises a large portion of the state, even if fish infected with VHSV move upriver into Minnesota, barriers will keep most of our lakes, rivers, and streams safe.

It takes movement of live or dead fish, fish parts, or infected water overland or over fish barriers to spread VHSV. The state is well positioned to prevent this from happening.

Likely routes that VHSV will take into Minnesota waters include illegal movement of baitfish, or illegal stocking activities. Ongoing educational programs are helping to reduce these risks.

For more information about a VHS surveillance study being done through the University of Minnesota's Veterinary Diagnostic Laboratory, visit www.vdl.umn.edu/ourservices/vhs. ■

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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

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Sea Grant Minnesota

University of Minnesota EXTENSION

Why Wetlands Matter to Your Lake

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Minnesotans enjoy the many lakes throughout the state and when their waters are dirty or polluted, we want to know why. Pinpointing a specific cause for water quality degradation is difficult in many instances because there are so many factors that can influence it. In addition, many of these influencing factors are not readily apparent. The influence of wetlands on water quality is often one of those subtle factors. Only by taking a broad view of the watershed as a whole can we understand the significance that wetlands have in influencing the water quality of many of the lakes.

Wetlands have often been described as the "earth's kidneys" because they filter pollutants from water that flows through on its way to receiving lakes. As water flows through a wetland, it slows down and many of the suspended solids become trapped by vegetation and settle out. Other pollutants are taken up by plants or become inactive via chemical processes that occur in the wetlands. In addition, wetlands typically receive and store a large volume of water that runs off from upland areas thereby reducing larger water fluctuations in downstream lakes.

In a situation where a large wetland abuts a lake as in Photo A, the benefit of that wetland intercepting runoff from adjacent upland is recognizable. In contrast, Photo B shows a situation where there is no wetland adjacent to the lake, but instead several small wetlands in the upper watershed. In this situation, the contribution of these small, isolated wetlands is less apparent. Although these wetlands may not appear to provide significant water quality benefits when assessed individually, they may be very important to overall lake water quality when their cumulative effects are considered.

Photo A.

When these small wetlands are filled or drained, flows become larger causing greater pollutant loads to reach the lake. Even if buffering wetlands are still adjacent to the lake, increased runoff volumes and pollutant loads may overwhelm the ability of the buffering wetland to protect the lake or stream. Critical wetland filtering functions such as particle settling, nutrient uptake and other chemical transformations cannot occur if there are more frequent and larger flushes of sediment and pollutant-laden water.

While many consider the filling and draining of small incremental amounts of wetlands to be inconsequential to lake water quality, the cumulative effects of these small losses can be significant. More and more we are looking at natural systems in a comprehensive way to better understand and deal with many small changes that have large effects. ■

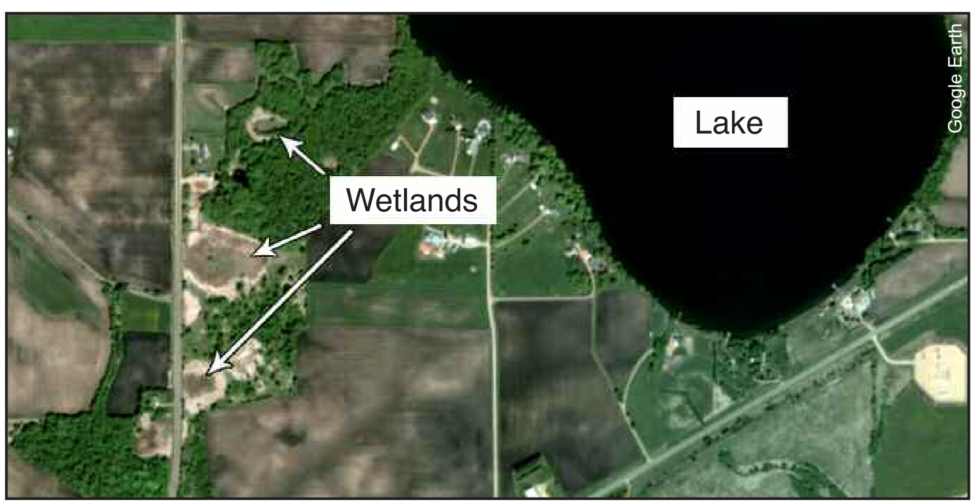

Photo B.