



From Shore to Shore

For Minnesota citizens promoting the health of our rivers & lakes

January-February 2006

#71

Calendar of Events

→ In-Depth Shoreland Landscaping

February 25, 2006 – Sauk Centre, MN – Part 1

March 11, 2006 – Sauk Centre, MN – Part 2

This two-day series guides participants through a step-by-step design process. Master Gardeners, shoreland property owners, nursery, landscape, and natural resource professionals will walk away with hands-on experience in planning a lake-friendly shoreland project. Sponsored by the Sauk River Watershed District.

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Rain Garden Graces Orono Park in Elk River

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Sherburne County Master Gardeners, Extension and SNRCS staff, a local girl scout troop, and other community volunteers helped create the new rain garden at Orono Park in Elk River last summer. The rain garden, which features 48,000 plants, will serve as a natural infiltration system to catch stormwater and control run-off to Lake Orono, located just to the east. Rain gardens have been shown to slow and reduce the amount of undesirable run-off reaching our lakes and rivers, capturing pollutants such as phosphorus, nitrogen, and organic matter that can affect water quality in lakes and rivers. Plants in a rain garden help by absorbing the extra water and run-off and increasing infiltration. Varieties native to Minnesota that are able to adapt to periodic flooding and saturation were used in this garden. ■



Rush Lake Erosion Research – *Part two of two*

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A long undisturbed shorelines, native plants or natural rock guard against erosion by waves and ice. The research sites on County and DNR islands in Rush Lake are eroding primarily due to historic water level changes as well as increased size and frequency of boat wakes. These factors have made it difficult for native plants to reestablish.

Multiple goals were considered in the design of this portion of the Rush Lake project: provide long-term, no-maintenance stabilization of the slope toe, discourage boater foot traffic on the steep slopes above, and create fish and wildlife habitat.

Toe Stabilization – Where Land Meets Water

Six toe protection methods were tested on Rush Lake:

Live fascine - a 1-foot diameter bundle of willow and red-osier dogwood branches backed with geotextile and held in place with wooden stakes pounded through the bundles.

Cocoa log - a woven jute sock 1 foot in diameter filled with compressed cocoa fibers. The sock is held in place with nylon rope attached to wood stakes or cable attached to duckbill anchors. Live

Rock gabion tubes - 1.25 diameter tube of 4-8 inch diameter rock surrounded by chain link fencing (secured with tiger ties) and backed with geotextile.

Anchored log rafts - bundles of 3 to 5 logs anchored along the shore with a cable attached to duckbill anchors.

Stump revetment - large stumps placed so that they overlap with roots facing the lake.

Rock rip rap - a layer of 8-12 inch diameter rock placed over geotextile.

The table below summarizes the cost, installation time, maintenance time, and effectiveness of each treatment after one year.

| Toe Treatment (20 linear ft.) | Cost | Installation Time | Maintenance Time | Effectiveness |
|--|----------------|----------------------|---------------------|---|
| Live fascine | \$ 9 | 1.5 hrs | 0 hrs | No erosion, plants root and sprout |
| Cocoa log (wood stake) (duckbill anchor) | \$157 \$267 | 0.5 hr 1 hr | 1.5 hrs | No erosion, cabled log replaced live fascine |
| Rock gabion tube | \$ 97 | 2.5 hrs | 0 hrs | No erosion |
| Anchored log rafts | \$206 | 5 hrs | 3 hrs | Minor erosion in gaps between rafts |
| Stump revetment | \$136 | 0 hrs | 0 hrs | Moderate erosion between stumps |
| Rock rip rap | \$1,800 | 0 hrs | 0 hrs | No erosion |

During this initial year, all toe treatments, except for the anchored log rafts and the stump revetments, were effective at stopping erosion. The anchored log rafts were very problematic in that several duckbill anchors did not hold, allowing logs to work loose from the rafts and pose a hazard to boaters. This was corrected by replacing the duckbill anchors with earth anchors, as well as loosely fastening the cables to the logs with fencing staples.

Continued erosion behind the stump revetment was due to waves washing between the widely spaced stumps.

A tighter stump placement may diminish this erosion. In addition, wave action working on the cabled cocoa log cut the log in several pieces. It was replaced with a live fascine.

Our Minnesota winter will continue to test these toe treatments over the next few months. Look for a more detailed report and project updates on www.extension.umn.edu/shoreland beginning in January 2006. ■

Get Habitattitude!

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Do you own an aquarium? How about a water garden? In either case, what do you do with unwanted plants and animals? A new national public education campaign called Habitattitude™ can help provide solutions to this problem.

Many of us have done it - it seems simple and kindhearted enough. We may have disposed of aquarium fish, plants, snails, crayfish, frogs, or turtles by releasing them into local waters, flushing them down the toilet, or maybe allowing them to escape. However, such actions can lead to untended and serious consequences. Once released, non-native plants and animals can displace native species, harm habitats, and negatively impact the recreational and economic value of our lakes and property.

Aquarium fish, even if they are not predators like the notorious northern snakehead that has caused problems in the Potomac River, can carry diseases that can kill native fish. Invasive plants can clog waterways and impede recreation by snagging boat propellers. Recent examples of fish and plant releases in Minnesota waters include piranha, pacu, water hyacinth, water lettuce, Amazonian catfish, koi, goldfish, yellow iris, even a cayman!

Habitattitude encourages aquarists and water gardeners to help avoid such problems by promoting simple actions when faced with an unwanted aquatic plant or fish. These include:

- Contact a retailer for proper handling advice or for possible returns.
- Give or trade with another aquarist, pond owner or water gardener.
- Donate to a local aquarium society, school, or aquatic business.
- Seal aquatic plants in plastic bags and dispose in the trash.

- Contact a veterinarian or pet retailer for humane disposal guidance.
- Know state regulations regarding these alternatives.

Habitattitude was launched in fall 2004 to help prevent the release of unwanted aquarium fish and plants. Minnesota Sea Grant is co-leading the campaign on behalf of the National Oceanic and Atmospheric Administration's Great Lakes Sea Grant Network and in collaboration with the Pet Industry Joint Advisory Council, and the U.S. Fish and Wildlife Service. Habitattitude's logo and 'don't release' message are appearing on fish bags, new aquaria, brochures and other print media, newsletters, and ads in hobbyist magazines across the country. The campaign's Web site, www.habitattitude.net, provides resources to campaign partners and consumers.

Minnesota Sea Grant is leading efforts to evaluate the campaign. Results of a 2004 pre-campaign mail survey conducted in two communities each in Minnesota and Pennsylvania show that over the last three years consumers released unwanted aquarium fish, plants, crayfish, snails or turtles a total of 43 times. Only 20% of consumers were aware of laws or regulations concerning release of aquarium or water garden species. Importantly, most aquarists and water gardeners viewed releases as preventable and an environmental problem. Congruent with these attitudes, over 90% agreed that the Habitattitude campaign's logo and messages were acceptable, easy to understand, attractive, positive, and clear. A follow-up survey is planned for 2006.

Campaign partners will continue to staff booths at trade shows, give presentations at society and club meetings, as well as meet with state, federal, and tribal agencies throughout the Great Lakes and beyond to broaden partnerships. This campaign is supported at the highest levels of government: President Bush's response to the Ocean Commission Report identified Habitattitude as a model partnership between industry, government, and academia. Currently, over 50 entities are partners.

Look for Habitattitude coming to pet stores and nurseries near you. If you are a member of an aquarium or water garden society or club, please consider joining the campaign. To join, visit the Web site above, contact Minnesota Sea Grant, or the University of Minnesota Extension Service. ■



Habitattitude™
PROTECT OUR ENVIRONMENT
DO NOT RELEASE FISH AND AQUATIC PLANTS



www.Habitattitude.net

Shoreland Plant Selection for Non-Botanists - *Aquatic Plants*

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Are you overwhelmed by the long list of native plants to choose from when planning your shoreland revegetation project? In this article, shoreland specialists share their "short list" of native aquatic plant species - plants that have performed the best in restorations statewide. In upcoming newsletters look for the "short lists" of wet transition and upland plant species.

Before attempting an aquatic planting, it's important to gain a historical perspective by inspecting your shoreline, viewing early aerial photos, or consulting with people who grew up on the lake or river to determine if aquatic plants once grew along your shore. If not, there is probably a reason (e.g., high wave energy) and an aquatic planting is not likely to succeed. If aquatic plants were present, determine which species they likely were by identifying aquatic plants growing near your property or reviewing the aquatic plant survey of your lake or river (contact your Minnesota Department of Natural Resources Area Fisheries Office).

Plan to reestablish only emergent aquatic plants, such as bulrush and arrowhead. Floating-leaf and submergent plants (e.g., water lilies and pondweeds) are more difficult to establish, but tend to colonize on their own once the emergent plants are in place. Your initial planting should include those species listed in the table below for your site conditions (firm or soft lake bottom) that also occur naturally in your lake or river. Additional emergent species can be planted once these have become established.

The type of plant product you choose will depend upon wave energy along your shore and availability. You can purchase larger containerized plants (1 gallon containers) for shores receiving moderate wave energy and pre-vegetated plant mats for shores with low wave energy (i.e., on smaller lakes or in protected bays). Or you can use in-lake transplants for shores receiving low to moderate wave energy. Determine the quantity of plants you will need based upon 3 feet staggered spacing of plants in 1-3 rows along the shore. No more than one third of the plant should be underwater when planted. Installation of a temporary wave break is recommended for most sites to protect your aquatic planting until it can become securely rooted. Consult with a shoreland specialist to determine the appropriate plant product and wave break for your site.

Finally, obtain a no-fee permit from the Minnesota Department of Natural Resources (MN DNR) before planting by sending in your completed "Application to Transplant/ Collect Aquatic Plants" (<http://www.dnr.state.mn.us/shorelandmgmt/apg/permits.html>) at least 6-8 weeks prior to planting.

*Shoreland specialists who contributed to the "short list":
 Bill Bartodziej - Ramsey Washington Metro Watershed District
 Lindy Ekola and Leilani Peterson - MN DNR
 Mary Blickenderfer - U of MN Extension

References:
 Borman, S. et al. Through the Looking Glass.
 Diekelmann, J. and R. Schuster. Natural Landscaping.
 Nichols, S. Distribution and Habitat Descriptions of Wisconsin Lake Plants.
 Voss, E. Michigan Flora.

Short List of Emergent Aquatic Plant Species*

| Type of lake bottom | Plant name – Common Scientific, (and synonyms) | Comments |
|---|--|--|
| Firm sandy | Hard-stem bulrush <i>Schoenoplectus acutus</i> (<i>Scirpus acutus</i>) | 3-12 ft. tall; it will naturally spread to deeper water (5+ ft. deep) |
| | Lake sedge <i>Carex lacustris</i> | 1.5-4 ft. tall; usually grows in soft sediments, but is also a strong colonizer in sandy soils |
| | River bulrush <i>Scirpus fluviatilis</i> | 6 ft. tall; an aggressive colonizer for erosion control |
| Soft silt and clay with organics, "mucky" | Soft-stem bulrush <i>Schoenoplectus tabernaemontani</i> (<i>Scirpus validus</i>) | 3-9 ft. tall; it will naturally spread to deeper water |
| | Giant bur-reed <i>Sparganium eurycarpum</i> | 1.5-4.5 ft. tall; a strong colonizer; showy white flowers |
| | Common arrowhead <i>Sagittaria latifolia</i> | 0.5-4 ft. tall; showy white flowers |

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