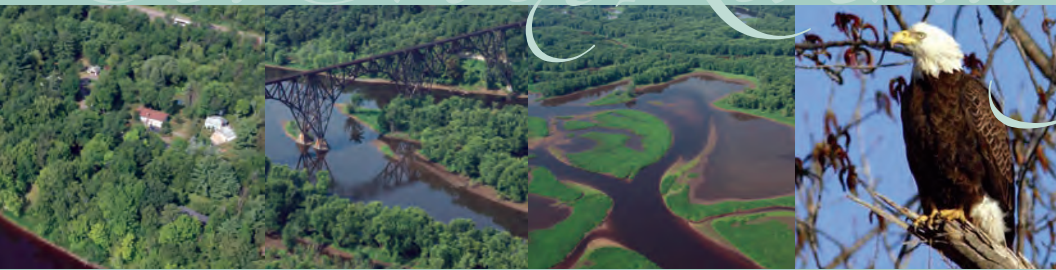


Conserving your *blufflands*



A Management Guide for St. Croix River Property Owners

St. Croix River...



Property Owners and a Healthy River Valley

The St. Croix River is nationally recognized for its beautiful vistas, recreational opportunities, and abundance of native wildlife and natural areas. However, the St Croix River watershed is in a rapidly developing region where 75% of the land is privately owned. Collectively, private landowners have a tremendous impact on the health and beauty of the River, especially when it comes to care of their blufflands. In their natural state, blufflands filter pollutants, minimize erosion, provide wildlife and rare plant habitat, and provide continuous green vistas that are essential to the River's beauty. This guide will help St.Croix River property owners to understand the importance of conservation, and take action to:

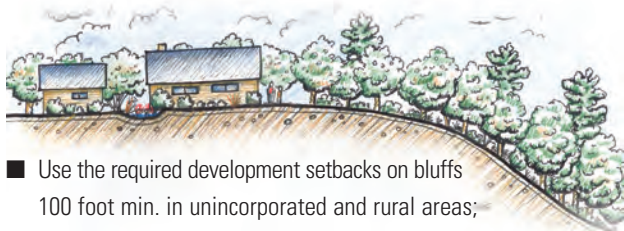
- Maintain scenic beauty
- Manage stormwater
- Remove non-native invasive species
- Maintain healthy forests
- Manage erosion
- Plant native species
- Know your native plant communities

Together, private landowners can keep the river valley healthy and beautiful for current and future generations.

good stewardship



By using native vegetation to screen two buildings, this landowner helps maintain the scenic beauty of the St. Croix River.



- Use the required development setbacks on bluffs
100 foot min. in unincorporated and rural areas;
40 foot min. in cities and urban areas.
- Use native trees and shrubs to screen development from the river.
- Landowners in the St. Croix National Scenic Riverway must obtain a permit for grading, filling, and cutting from their local government.
- Landowners with scenic easements held by the National Park Service may have additional requirements. Contact NPS for specific requirements.

- Minimize impervious (solid paved) surfaces and lawn area
- Don't mow to the bluff edge; let deep-rooted vegetation anchor the top of the bluff slope
- Direct runoff from paved surfaces into vegetated areas instead of down the driveway and into the street.
- Direct runoff away from the bluff edge to prevent erosion.
- Install a rain garden to promote infiltration and provide wildlife habitat.

Lawn and agricultural chemicals washing into the St. Croix River degrade water quality.

Rain gardens are shallow depressions used to capture rainwater that flows from impervious surfaces such as roofs, parking lots and roads. Rain gardens utilize porous soils and native plants to absorb and infiltrate rainwater into the ground.

Conservation Strategies & Techniques

Maintain Scenic Beauty

Manage Stormwater

Minimize Runoff

See: *Healthy Rivers: A Water Course*, MN-DNR (available from www.dnr.state.mn.us/ecological_services/pubs.html as book or CD)

Minimize Fertilizers and Pesticides

Build Rain Gardens

Build Rain Gardens

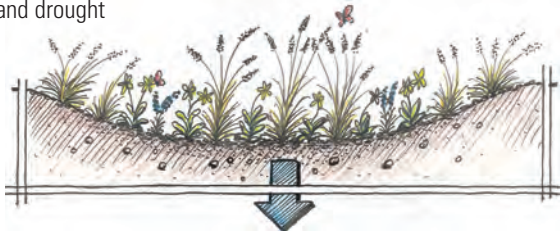
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See: UW Extension Service, 2002. *Rain Gardens: A Household Way to Improve Water Quality in Your Community*. Available at <http://clean-water.uwex.edu/pubs/raingarden/>

See: Shaw, D., R. Schmidt. 2003. *Plants for Stormwater Design*. MinPCA.

Tips on locating and constructing a rain garden:

- Locate it near runoff sources but not over a septic system or under a large tree
- Garden should be in a depression 4-8 inches deep.
- Garden should cover approx. 1/8 to 1/4 of the size of the area drained (for medium textured soils)
- It should drain within 3 days, which prevents mosquito breeding
- Plant it with perennial natives that can tolerate periodic wetness and drought



Remove Non-native Invasive Plants

See: www.dnr.state.mn.us/invasives for identification and control information.

Non-native invasive plants can reduce native plant diversity, reduce tree seedling regeneration, degrade habitat for wildlife and increase erosion. To protect or enhance your bluffslands, find and control invasive plants on your property.

- Learn to identify non-native invasive plants in your area and on your property. Key invasive species in the St. Croix River Valley include buckthorn, Tartarian honeysuckle, black locust, garlic mustard, Japanese barberry, and spotted knapweed.
- Survey your property to locate any invasive species. Periodically resurvey your land to identify any newcomers.
- Learn how to control the invasive species on your property. Early detection and rapid response to invasive species is a key to quick and efficient control. Controlling established populations of invasive species often requires a sustained effort over several years.
- A permit from your local government is required before cutting and removing any woody invasive species if your property is within the St. Croix National Scenic Riverway.
- Don't spread them. Seeds from invasive species can hitch hike on clothes, muddy boots, and tires. Be sure to rinse off any mud from boots and tires, and pull off seeds on your clothes before leaving an infested area.
- Replant with native species once the invasive species are under control (see Plant Native Species section). Native species will help keep out invasive species.



Buckthorn



Garlic Mustard



Buckthorn removal

- Allow the woods to retain a natural diversity of tree species and ages, and a continuous canopy of mature trees. Small seedlings and saplings should be abundant to replace large trees that die or fall over.
- Allow standing dead trees (“snags”) and fallen trees (“deadfalls”) to remain in the woods. They are important sources of food and cover for a wide range of insects, birds, and mammals.
- Avoid cutting gaps in the forest, as they promote populations of forest edge predators, like raccoons and brown-headed cowbirds, that negatively impact populations of other native wildlife.
- Close existing forest gaps by replanting with native trees and shrubs.
- Keep domestic cats inside. Collectively, cats annually kill large numbers of forest songbirds.
- Throw left over fishing bait into the trash, not onto the ground: earthworms are not native to Minnesota and destroy soil organic layers important for many forest wildflower species.

Maintain Healthy Native Forests

General Tips

Removing invasive vegetation, construction and other activities can leave bare soils prone to erosion.

- Stabilize bare slopes receiving stormwater surface runoff with biodegradable wattles (log-shaped bundles of sticks tied with twine or coconut fiber logs).
- Slopes with minimal surface erosion may be stabilized with biodegradable erosion fabric.

Manage Erosion

Stabilize Soil

See: Henderson, C. et. al. *Lakescaping for Wildlife and Water Quality*, MN-DNR. www.dnr.state.mn.us/ecological_services/pubs_plants.html

Plant with seedlings or seeds of native species and mulch.



Natives planted into slits cut in biodegradable erosion fabric secured with wire or cornstarch staples. Seed is sown beneath the fabric.

Slope stabilized with wattles buried in small trenches and held with wooden stakes. Natives planted between wattles and mulched

Plant Native Species

See: Dunevitz, H. and Lane, C. 2004, *Species Lists for Terrestrial and Palustrine Native Plant Communities in east-Central Minnesota* (available at www.greatrivergreening.org).

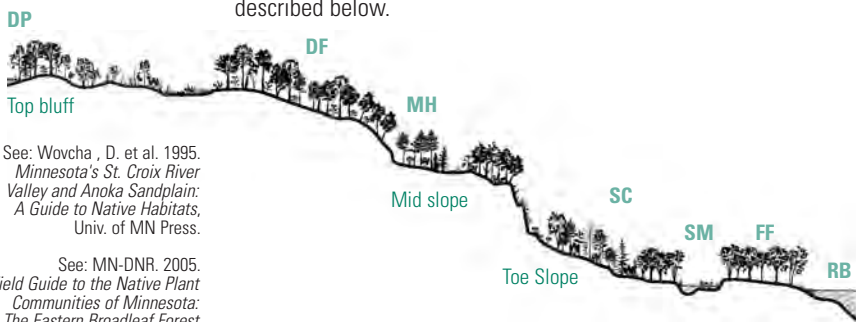
For native plant suppliers, see www.dnr.state.mn.us/gardens/nativeplants/suppliers.html

When landscaping, replanting after invasives removal, and when stabilizing slopes, use native species. This will help to maintain the ecological health of the bluffland ecosystems.

- Develop a species list. Choose species that would naturally be found on your land, taking into account slope, moisture and sunlight requirements (see Know Your Native Plant Community section) that also do well as transplants and are available for purchase. Many area nurseries stock native plants.
- Request nursery catalogs or do an Internet search to see photos of the plants.
- If the soil is exposed, be sure to pick fast growing, fast spreading species or plant in a high density so that there is very little exposed soil left. In forests and woodlands, plant grasses and flowers between tree and shrub plantings to cover all exposed soil.
- Ask for “local ecotype” stock that is well adapted for the river valley. On steep, exposed slopes, even local ecotype plants will need to be watered the first year.

Know Your Native Plant Communities

Different native plant communities occur on the bluff tops, slopes, terraces, toe slopes, and bottomlands of the St. Croix River Valley. Broad categories of these plant communities are illustrated and described below.



See: Wovcha, D. et al. 1995. *Minnesota's St. Croix River Valley and Anoka Sandplain: A Guide to Native Habitats*, Univ. of MN Press.

See: MN-DNR. 2005. *Field Guide to the Native Plant Communities of Minnesota: The Eastern Broadleaf Forest Province*. MN-DNR. (both available at www.dnr.state.mn.us/ecological_services/pubs.html)

Which plant communities occur on your property?

DP. Dry Prairies and Oak Savannas

Open prairies, dominated by prairie grasses and wildflowers, or areas of scattered to clumped bur oaks with prairie openings. Located on excessively-drained, gravelly/sandy soils on steep south facing slopes in small tributary stream valleys or on west-facing slopes within the St. Croix valley.



DF. Dry-Mesic Forests and Woodlands

Forests and woodlands dominated mostly by different combinations of bur oak, red oak, white oak, northern pin oak, white pine, red maple, and basswood. White pines used to be more common but are now mostly concentrated on shallow soils over bedrock. Located primarily on uplands on excessively-drained sandy/gravelly soils and steep south- to west-facing slopes on valley sides.



MH. Mesic Hardwood Forests

Maple-basswood and oak forests dominated mostly by red oak, white oak, sugar maple, basswood, green ash, and bitternut hickory. White pine is present in a few places. Located on moist soils of uplands, terraces, and north to east-facing valley slopes.



SC. Seepage Communities

Swamps dominated mostly by combinations of black ash, yellow birch, red maple, slippery elm, or green ash. Located on wet, saturated soils in zones of groundwater discharge on the sides of the St. Croix valley.



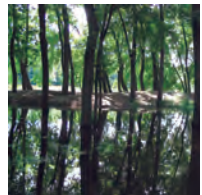
SM. Marshes and Sedge Meadows

Open wetlands with standing or slow-flowing water for most of the growing season (marshes) or interrupted by periodic drawdowns (sedge meadows). Common plants in marshes include cattails, giant bur reed, river bulrush, soft-stem bulrush, and broad-leaved arrowhead. Common plants in sedge meadows include lake sedge, tussock sedge, and bluejoint.



FF. Floodplain Forest

Forests dominated by silver maple, usually with some green ash, black ash, hackberry, cottonwood, American elm, and/or slippery elm. Located on sandy or silty alluvial soils on seasonally flooded terrain along major rivers



RB. River Beaches

Sparsely vegetated communities of annual or firmly-rooted perennial plants such as sand bar willow, riverbank sedge, prairie cordgrass, rice cut-grass, retrorse sedge, creeping lovegrass, blue monkey flower, water pepper, and awned umbrella sedge. Located on beaches of sand, mud, gravel, or cobbles along the St. Croix River, which are usually flooded and scoured in the spring.



Additional Resources

Regulations and Permits:

Local Units of Government



St. Croix River Water Quality:

MN-DNR Central Region Office:

<http://mndnr.gov>, 651-259-5800 or 888-646-6367

MN-Pollution Control Agency:

www.pca.state.mn.us/water/basins/stcroix/index.html
800-657-3864

Local Watershed Districts:

Locate via the MN Assoc. of Watershed Districts:
www.mnwatershed.org

Management of Native Plant Communities, Invasive Species and Erosion:

National Park Service: www.nps.gov/sacn/, 715-483-3284

Washington County Conservation District:

www.mnwc.org, 651-275-1136

Chisago County Soil and Water Conservation District:

www.chisagoswcd.org, 651-674-2333

MN-DNR Central Region Office

<http://mndnr.gov/eco/pubs.html>,
651-259-5800 or 888-646-6367

Great River Greening: www.greatrivergreening.org, 651-665-9500



Great River Greening is a nonprofit organization whose mission is to lead and support community-based restoration of natural areas and open spaces.

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Chart illustration page 6 adapted from MN-DNR

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