

How to Use Native Plants for Landscaping and Restoration in Minnesota

This brochure provides a summary of important concepts about using native plants for landscaping and restoration in Minnesota. For more information about native plant communities, native plant species, and Minnesota ecology, access the web site for the DNR's Ecological and Water Resources Division (www.dnr.state.mn.us/eco).

Defining native

Native plants are plants that occur naturally in a particular region. In Minnesota, plants are considered native if they occurred here at the time of the Public Land Survey (1847-1907), which was conducted prior to and during the early stages of European settlement.



Restored prairie in Oronoco Prairie Scientific and Natural Area. Inset: monarch butterfly on rough blazing star

Why native vegetation is important

Native plants are adapted to the local climate and soil conditions where they naturally occur. Native plants work well for many landscaping and wildlife habitat plantings, because once established, they seldom need watering, mulching, protection from frost or continuous mowing. Native plants provide nectar, pollen, and seeds that serve as food for native butterflies, birds and other animals. In contrast, many common horticultural plants do not produce nectar and often require insect pest control to survive. Many native grasses and wildflowers protect soil with their deep and spreading root systems, helping to prevent erosion. Areas with diverse perennial native plantings have less water runoff than ground covers composed of one non-native species such as

bluegrass or purple crown vetch. In developed areas, one way to help water infiltrate into the ground rather than run off into storm sewers is to create depressions filled with native plants called rain gardens.

In nature, plants occur in native plant communities, which include all the native plants in an area together with their environment. Some examples of the many communities that occur in Minnesota include dry prairies, wet prairies, oak forests, pine forests, and marshes.

Native plant communities are vital components of ecosystems. In order to be healthy and sustainable, an ecosystem needs to be filled with a wide array of native plants and animals. In addition to providing food and shelter to birds and animals, a healthy ecosystem provides many services to society. For instance, a healthy forest ecosystem can prevent soil erosion, reduce flooding, detoxify chemicals in air and water, improve the local climate, and store carbon that would otherwise contribute to global climate change. Also, the genetic material in many wild plants has been shown to have great value in medicine and industry.

Local origin seeds and plants

The most successful native planting projects use seeds and plants of local genetic origin. *Why is this important?* Each population of a plant species has adapted over time to the local landscape and climate. This generally results in variations in genetic makeup from one population to another. For example, the genetic makeup of a grove of bur oak trees in Missouri may reflect adaptations to a warmer and drier climate than a similar population of bur oak trees in Minnesota. *How do we decide how to define local?* There is no magic number. Some research indicates that it is important to look at how each plant species naturally spreads its seeds. For example, for species with seeds that are dispersed by wind, plant and seed sources from a relatively wide geographic range may be acceptable. For species with seeds dispersed by animals, sources for the plants and seeds should originate from a closer geographic area. **To help maintain the integrity of the local gene pool and ensure your plants will be able to flower and set seed, buy plants or seeds from nurseries with seed sources that originated as close as possible to the area where you want to plant them.**



Spring Peeper Meadow, a restored wetland including sedge meadow and marsh at the Minnesota Landscape Arboretum. Inset: bumblebee on marsh hedge nettle.

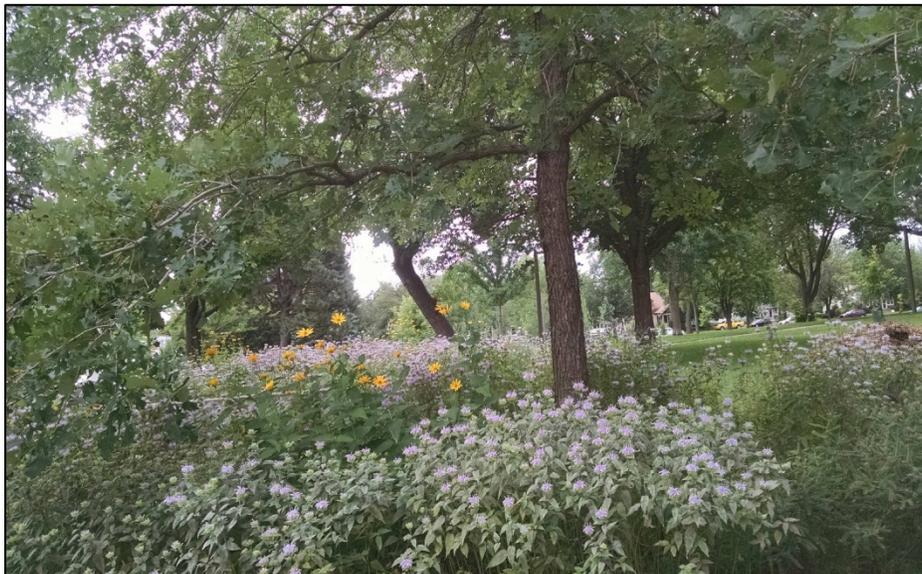
Don't use endangered and threatened species

Out of the 2,024 vascular plant species that occur in the state, 179 are legally designated as endangered or threatened in Minnesota (Minnesota Statutes, Section 84.0895). The list can be found on the web

(http://files.dnr.state.mn.us/natural_resources/ets/endlist.pdf) or obtained by calling the DNR Ecological and Water Resources Division at 651-259-5100. It is illegal to take, import, transport, or sell any portion of an endangered or threatened species without a special permit from the Minnesota DNR. There are many reasons not to plant these species. One is that many of these plant species have been reduced to a small number of fragile populations that could be damaged by the introduction of genes from plants from a different geographic area. Another is that since many rare plants have very specific habitat requirements, it is likely that planting or transplanting will not be successful.

Distinguishing between native plant communities, restoration, re-creation and yard plantings

Native plant communities occur naturally. Throughout the state, many native plant communities have been destroyed or degraded, so it is important as a first step to protect and manage those that remain. Some have simply degraded over time through human-caused disturbances such as the introduction of non-native invasive species or the removal of natural processes such as fire. Restoration is the process of attempting to return those degraded native plant communities to their original structure, function and species composition. Restoration can be thought of as nursing biodiversity back to health through such activities as prescribed burning, non-native invasive species control, and inter-seeding and inter-planting with native plants.



Native oak savanna garden at Horton Park, a City of St. Paul Park

Attempting to re-create native plant communities in disturbed landscapes such as former croplands is a process of starting from scratch to try to re-construct what may have been there at one time. There are many things we don't know about how ecosystems work in nature, so it is important to understand that these re-created areas are not identical to natural areas. Finally, many people use native plants to create attractive and environmentally beneficial yard plantings.

Basic instructions for restoration and native landscaping projects

- 1) *It takes time for native plants to get established.* It's important to know from the outset that it may take a few years for native plantings to look attractive. Prairie plants need a few years to establish strong roots. Trees and shrubs need time to get established and mature before they will flower and bear fruits. In time, plants will spread and propagate, creating patterns that work well in each space.



A hardwood forest planting in the Lake Rebecca Park Reserve in Greenfield, MN, including a variety of native trees and shrubs

- 2) *Gain an understanding of the native plant communities in your area.* Those plant communities occur there because they are adapted to the specific climate, landscape, and soil conditions. You can obtain information about the vegetation in your part of Minnesota at the time of the Public Land Survey (http://files.dnr.state.mn.us/eco/mcbs/natural_vegetation_of_mn.pdf). By visiting existing natural areas in your community or region, you can see for yourself what the native vegetation is like.

- 3) *Understand local government regulations.* Some will affect how natural landscaping can be used and what kinds of ongoing management can take place. Regulations may affect the location of natural landscaping on the site and the types of plants used. You may need to know local weed ordinances and fire regulations before proceeding.
- 4) *Get to know your site.* Many factors determine what kinds of site preparation will be needed and which species should be used, such as:
 - Existing plants. You may already have native plants that are desirable for that site, such as prairie plants in a pasture, or native trees. Be sure you are not removing desirable native plants that are already well adapted to a site.
 - Sun exposure. How much sun is there, and how long is the site exposed to sunlight? For hilly sites, the aspect, or direction the hill faces, will affect how much sunlight is available and how warm and dry the site gets.
 - Soil type. Is soil sandy, clay, loam, or peat? Consult your county soil atlas. Two helpful websites for learning your soil type are: http://www.dnr.state.mn.us/lands_minerals/webmaps/geomap.html <http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>
To learn soil acidity (ph) and organic content, get a soil test from a local University of Minnesota Extension Office or Soil and Water Conservation District. Also note that in urban areas, there may be fill on the site.
 - Drainage and soil moisture. Does the soil hold moisture? Is it dry, mesic (rain soaks in with low run-off), or wet?
- 5) *Look at neighboring natural vegetation.* Plan your native planting to harmonize with adjacent areas as much as possible. Determine whether your planting will negatively influence wild native plants, or be influenced by nearby weedy invasive species.
- 6) *Consider your budget.* The cost of using native plants for landscaping is often lower than the cost of using non-native plants when factored over a period of time. While some native plants cost more than non-native plants, the long-term cost is often less with native plantings because of the reduced maintenance costs. A native planting is a long-term investment; it can be built in phases. It is important to plan according to how much money and time you have now and in the future.
 - Money may be needed for site preparation, plant materials, and maintenance.
 - Budget your time and resources. You can choose to do site preparation yourself or hire a contractor. You may be able to gather seed, or may need to buy seed or plants.
 - Consider these options based on available money:
 - a) Plant the entire site with many different species

- b) Plant the entire site with a few species, and add more diversity as budget allows
- c) Plant many species on a part of the site, then use your own resulting seeds and seedlings to expand the planted area



Cindy Lueth, MN DNR
Collecting seed from prairie phlox in Glacial Lakes State Park to use in a prairie restoration project

- 7) *Create a wish list of species for your site.* Visit natural areas to learn how local native species grow in a plant community setting, and consult planting and identification guides. Diverse plantings that resemble the native plant community in your area are likely to have the most success and confer the most benefits. To help you choose species, some producers provide guides or species lists which include each plant's site requirements, bloom color and bloom time. For east-central Minnesota, look for native plant community species lists at www.greatrivergreening.org. A good resource for shoreland restoration is www.dnr.state.mn.us/restoreyourshore/index.html. You can also consult the *Field Guides to the Native Plant Communities of Minnesota* (see References for more learning section) for species lists for native plant communities throughout the state.
- 8) *Shop for native plant materials.* Look for sources selling seeds and plants produced from seeds of local origin.
 - For seeds, the highest success usually comes from using cleaned local origin seed with a high percentage of pure live seed (PLS).
 - Make sure plants are not dug from the wild. This depletes the resource and many species do not thrive after transplanting.



Broadcasting seeds for a prairie restoration at Wild River State Park

9) *Prepare and plant the site.*

- Do you have proper planting equipment? For prairie seeds, ask seed producers about a Truax drill for large sites and hand operated seeders for small sites. Broadcasting prairie seeds by hand is often a viable option and results in more natural planting patterns.
- Is existing vegetation relatively weed free? If so, consider interseeding (no till) or plugging plants into existing vegetation in places such as thin lawns, or sparsely vegetated old fields. This can result in fewer new weeds.
- Are there noxious weeds or problem species that will compete with native species? Seek competent advice on control techniques and eliminate these plants before planting natives. Some alternatives include careful use of herbicides, hand pulling, using weed wrenches, cultivation or mowing. The booklet [Minnesota Invasive Non-native Terrestrial Plants; An Identification Guide for Resource Managers](#) is a good resource, or go to www.dnr.state.mn.us/invasives/index.html

Manage your site. "Low maintenance" does not mean "no maintenance." The first few growing seasons especially require maintenance. Develop a plan that takes these factors into account:

- Plan for weed control. There are a variety of weed control methods. Find the one that best suits your situation. When using plugs, mulch can help choke weeds and support seedlings. In prairie/savanna plantings, plan to mow before weeds reach 6-12 inches.
- When possible, for those plant communities naturally maintained by fire such as prairies, savannas, and many pine forests, conduct safe prescribed burns when there is enough fuel to achieve a thorough burn. If burning is not possible, plan to mow and remove clippings.

- For trees and forest plantings, weed control and protection from wildlife is often necessary for small seedlings.



**Front yard native woodland garden.
Inset: common trout lily, a spring-flowering plant easy to grow in shade gardens.**

Useful web links

Ecological and Water Resources Division, Minnesota DNR

www.dnr.state.mn.us/eco

Green Landscaping, U.S. Environmental Protection Agency

www.epa.gov/glnpo/greenacres/index.html

www.epa.gov/glnpo/greenacres/toolkit/index.html

Great River Greening

www.greatrivergreening.org

Minnesota Board of Water and Soil Resources, Native Vegetation/Seed Mixes

http://www.bwsr.state.mn.us/native_vegetation/index.html

Minnesota Native Plant Society

<http://www.mnnps.org/>

Minnesota's Bookstore

<http://www.comm.media.state.mn.us/bookstore/bookstore.asp>

Minnesota's Pollinators:

<http://www.dnr.state.mn.us/pollinators/index.html>

Rain Gardens

dnr.wi.gov/topic/stormwater/raingarden

Restore Your Shore interactive website

<http://www.dnr.state.mn.us/restoreyourshore/index.html>

University of Minnesota Extension – Native Plants for Sustainable Landscapes

<http://www.extension.umn.edu/garden/yard-garden/landscaping/native-plants-for-sustainable-landscapes/>

Wild Ones

www.wildones.org

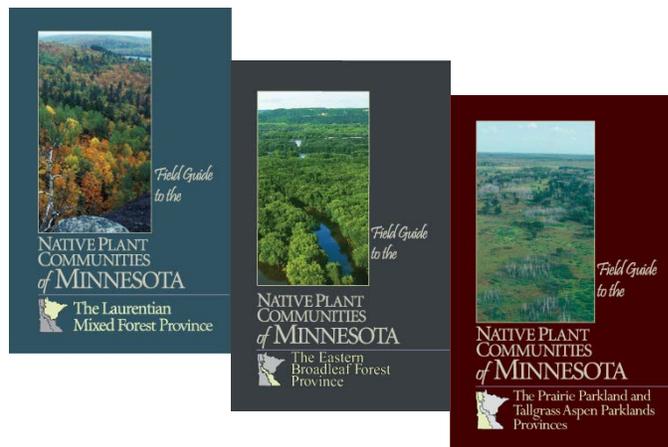
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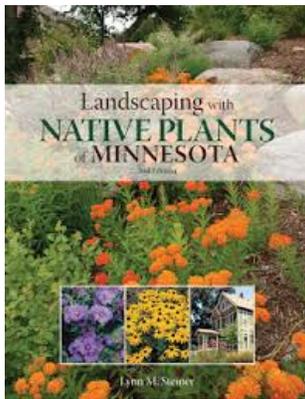
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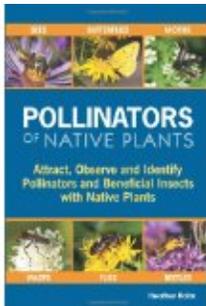
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For more information contact: DNR Information Center, 500 Lafayette Road, St. Paul, MN 55155 – 4040. (651) 296-6157 (Metro Area), 1-888-646-6367. TTY (651) 296-5484 (Metro Area), 1-800-657-3929.

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