

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.

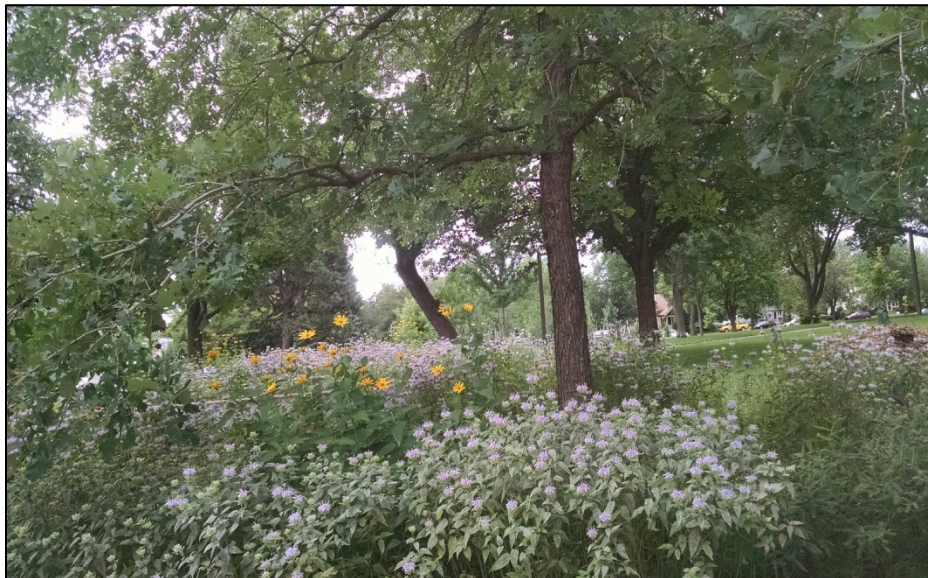
Don't use endangered and threatened species

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

References for more learning:

Attracting Native Pollinators: The Xerxes Society Guide, Protecting North America's Bees and Butterflies. 2011. The Xerxes Society. Storey Publishing, LLC.

The Benefits of Prescribed Burning on Private Land. 1994. Booklet produced by the Minnesota DNR Section of Wildlife.

Collecting, Processing & Germinating Seeds of Wildland Plants. 1986. J. Young and C. Young. Timber Press. ISBN 0881920576

Field Guides to the Native Plant Communities of Minnesota. Minnesota Department of Natural Resources. Available from Minnesota's Bookstore.



A Garden of Wildflowers: 101 Native Species and How to Grow Them. 1986. H. W. Art. Garden Way Publishing. ISBN 0882664050

Gardening with Native Wildflowers. 1991. S. Jones Jr. and L. Foote. Timber Press. ISBN 0881921750

Gardening with Prairie Plants. 2001. Sally Wasowski. University of Minnesota Press. ISBN 0816630879

Going Native: A Prairie Restoration Handbook for Minnesota Landowners. 2000. Minnesota DNR, Scientific and Natural Areas Program. Available from DNR Information Center, (651) 296-6157 or (888) 646-6367.

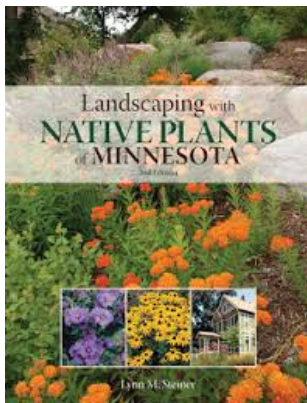
Growing and Propagating Wild Flowers. 1985. H. R. Phillips. University of North Carolina Press. ISBN 6807841315

Growing Woodland Plants. 1972. C. Birdseye and E. Birdseye. Dover Press. ISBN 0486206610

A Guide to Minnesota's Scientific and Natural Areas. Second Edition 1999. Minnesota Department of Natural Resources, Section of Ecological Services, Scientific and Natural Areas Program. Available from Minnesota's Bookstore.

Lakescaping for Wildlife and Water Quality. 1999. Carrol L. Henderson, Carolyn J. Dindorf, and Fred J. Rozumalski. ISBN 0964745127. Available from Minnesota's Bookstore.

A Landowner's Guide to Prairie Management in Minnesota. 2002. W.D. Svedarsky, et al. Northwest Research and Outreach Center, University of Minnesota, Crookston, MN.



Landscaping with Native Plants of Minnesota. 2011. L. Steiner. Voyageur Press.

Landscaping with Wildflowers: An Environmental Approach to Gardening. 1992. J. Wilson. Houghton Mifflin Company. ISBN 039566926X

Minnesota Invasive Non-Native Terrestrial Plants; An Identification Guide for Resource Managers. 2002. Minnesota DNR, Trails and Waterways. Available from Minnesota's Bookstore.

Minnesota's Natural Heritage: An Ecological Perspective. 1995. John R. Tester. University of Minnesota Press. Available from Minnesota's Bookstore.

Minnesota's St. Croix River Valley and Anoka Sandplain, A Guide to Native Habitats. 1995. Daniel S. Wovcha, Barbara C. Delaney and Gerda E. Nordquist, Minnesota Department of Natural Resources. University of Minnesota Press. ISBN 0816624836

The National Wildflower Research Center's Wildflower Handbook: A Resource for Native Plant Landscapes. 2nd ed., 1992. Voyageur Press. ISBN 0896582019

Native Plants for Northern Gardens. 1991. L. Synder. Anderson Horticultural Library, University of Minnesota Landscape Arboretum. (651) 443-2460

Native Trees, Shrubs and Vines for Urban and Rural America. 1988. Gary L. Hightshoe. Van Nostrand Reinhold. ISBN 0422232748

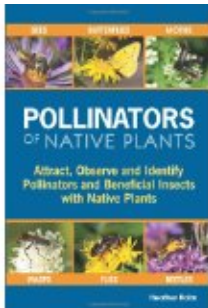
Natural Landscaping: Designing with Native Plant Communities. 2002. John Diekelmann, M.S.L.A. and Robert Schuster, M.A. McGraw-Hill Book Company. ISBN 007016813-X

Native Orchids of Minnesota. 2012. W.R. Smith. University of Minnesota Press. Available from Minnesota's Bookstore. ISBN 9780816678235

Native Vegetation in Restored and Created Wetlands, Its Establishment and Management in Minnesota and the Upper Midwest. 2000. Daniel B. Shaw. Minnesota Board of Water and Soil Resources. Available from Minnesota's Bookstore.

Noah's Garden: Restoring the Ecology of Our Own Back Yards. 1993. S. Stein, Houghton Mifflin ISBN 0395709407

Plant Species Composition of Wisconsin Prairies: An Aid to Selecting Species for Plantings and Restorations. 1995. R. A. Henderson. Technical Bulletin No. 188, Wisconsin Department of Natural Resources, P.O. Box 7921, Madison, WI, 53707.



Pollinators of Native Plants: Attract, Observe and Identify Pollinators and Beneficial Insects with Native Plants. 2014. H.N. Holm. Pollination Press LLC.

The Prairie Garden: 70 Native Plants you can Grow in Town or Country. 1980. R. J. Smith. University of Wisconsin Press. ISBN 0299083047

Prairie Propagation Handbook. 1972. Wehr Nature Center, Whitnall Park, 5879 South 92nd Street, Hales Corners, Wisconsin 53130 (414) 425-8550 (part of Milwaukee County Dept. of Parks, Recreation and Culture)

The Prairie World. 1969. D Costello. Thomas Y. Crowell Co. ISBN 0816609381

Rain Gardens, A How-to Manual for Homeowners. 2003. University of Wisconsin Extension, Cooperative Extension Publications, 1-877-947-7827 for a hard copy. Available on the web at: <http://clean-water.uwex.edu/pubs/raingarden/rgmanual.pdf>

Restore your Shore Interactive CD-ROM. 2002. Minnesota Department of Natural Resources. Available from Minnesota's Bookstore.

Restoring the Tallgrass Prairie: An Illustrated Manual for Iowa and the Upper Midwest. 1994. S. Shirley. University of Iowa Press. ISBN 0877454698

A Sand County Almanac, with Essays on Conservation from Round River. Aldo Leopold. Oxford University Press, Inc. ISBN 0345253361

Tallgrass Prairie. 1993. J. Madson. Falcon Press MT. ISBN 1560442239

The Tallgrass Restoration Handbook for Prairies, Savannas and Woodlands. 1997. Edited by Stephen Packard and Cornelia F. Mutel. Island Press. ISBN 1559633204

Taylor's Guide to Natural Gardening. 1993. R. Holmes editor. Houghton Mifflin Company. ISBN 0395607299

Trees and Shrubs of Minnesota. W.R. Smith. University of Minnesota Press. 2008. Available from Minnesota's Bookstore. ISBN 9780816640652

Wetland Planting Guide for the Northeastern U.S.: Plants for Wetland Creation, Restoration, and Enhancement. 1993. G. Thunhorst. Environmental Concern Press. ISBN 1883226023

Wetland Plants and Plant Communities of Minnesota & Wisconsin, Second Edition. 1997. Steve D. Eggers and Donald M. Reed. U.S. Army Corps of Engineers, St. Paul District. Order by calling 651-290-5680 or through www.mvp.usace.army.mil/docs/bookorderform.txt

Wildflower Gardening: Step by Step to Growing Success. 1991. Y. Rees. Crowood Press Ltd. ISBN 1852235241



© 2015, State of Minnesota, Department of Natural Resources

This brochure was developed by the following inter-disciplinary group of DNR employees: Angela Anderson, Alaina Berger, Janet Boe, Hannah Dunevitz, Ann Pierce and updated in 2015 by Hannah Dunevitz Texler and Becky Marty. Portions were modified from earlier native plantings fact sheets written by Kathy Bolin. Web sites updated February 19, 2015.

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.

Equal opportunity to participate in and benefit from programs of the Minnesota Department of Natural Resources is available to all individuals regardless of race, color, creed, religion, national origin, sex, marital status, public assistance status, age, sexual orientation, disability, or activity on behalf of a local human-rights commission. Discrimination inquiries should be sent to Minnesota DNR, 500 Lafayette Road, St. Paul, MN 55155-4049 or to the Equal Opportunity Office, Department of the Interior, Washington, D.C. 20240 <http://www.dnr.state.mn.us>