How to Use Native Plants for Landscaping and Restoration in Minnesota

Asarum canadensis
wild ginger

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 Services Division, at www.mndnr.gov/eco

Defining native

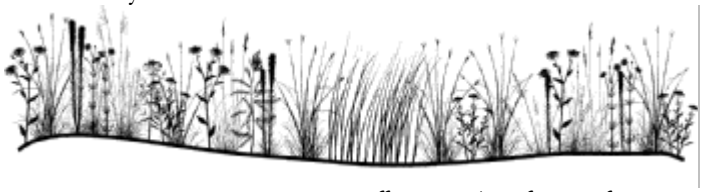
Native plants are plants that are indigenous to a particular region. In Minnesota, plants are considered native if they occurred here at the time of the Public Land Survey (1847-1907), which was conducted prior to and during the early stages of European settlement.

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 plants and animals indigenous to the area. 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 wild plants and animals may have great potential value in medicine and industry.



mesic prairie silhouette – Tom Klein, graphic artist

Bouteloua curtipendula
sideoats grama

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. As a rule of thumb, 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.

Don't use endangered and threatened species

Out of the 2,024 vascular plant species that occur in the state, 123 are legally designated as endangered or threatened in Minnesota (Minnesota Statutes, Section 84.0895). The list can be found on the web at http://files.dnr.state.mn.us/natural_resources/ets/endlist.pdf or obtained by calling the DNR Ecological Services Division at 651-296-2835. 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

Prunus serotina
black cherry

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 invasive exotic species or the removal of natural processes such as fire. Restoration is the process of returning 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, exotic species control, and inter-seeding and inter-planting with native plants.

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 for yard plantings. These plantings are generally too small to mimic native plant communities, but often make attractive and environmentally beneficial yards.

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.

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 from the Minnesota DNR. 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* affecting the use and ongoing management of natural landscaping. 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.

Arisaema triphyllum
jack-in-the-pulpit

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?
   - Soil type. Is soil sandy, clay, loam, or peat? Consult your county soil atlas. 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.* Determine whether your planting will negatively influence wild native plants, or be influenced by nearby weedy exotics. Plan your native planting to harmonize with adjacent areas as much as possible.

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. 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

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 the Restore Your Shore Interactive CD-ROM.

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.

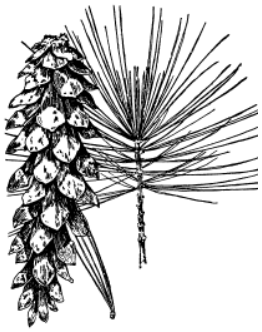
9) *Prepare and plant the site.*
   - Do you have proper planting equipment? For prairie seeds, ask seed producers about a Truax drill for large sites and hand operated seeders for small sites. Broadcasting prairie seeds by hand is often a viable option and may result in more natural planting patterns.
   - 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 before planting natives.

Asclepias tuberosa
butterfly milkweed

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.

10) *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. In early plantings, 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 controlled 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.

References for more learning:



Pinus strobus
white pine

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Polygonatum pubescens
Solomon's seal

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Useful web links for native plantings information

Ecological Services Division, Minnesota DNR
www.dnr.state.mn.us/eco

Restore Your Shore Interactive CD-ROM
http://www.dnr.state.mn.us/restoreyourshore/index.html

Great River Greening
www.greatrivergreening.org

Wild Ones
www.for-wild.org

Minnesota Native Plant Society
http://www.mnnps.org/

Green Landscaping, U.S. Environmental Protection Agency
www.epa.gov/glnpo/greenacres/index.html
www.epa.gov/glnpo/greenacres/toolkit/index.html

Minnesota's Bookstore
http://www.comm.media.state.mn.us/bookstore/bookstore.asp
(651) 297-3000 or (800) 657-3757

Rain Gardens
http://dnr.wi.gov/runoff/rg/

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http://www.dnr.state.mn.us

Corylus cornuta
Beaked hazel