

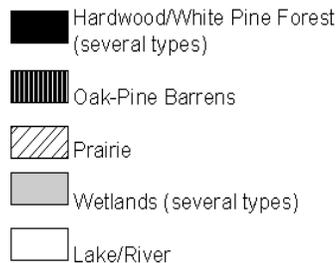


# What Did Brooks Township Look Like 200 Years Ago?

At one time prairies and barrens covered large expanses throughout the Midwest. In Michigan alone 2.35 million acres were classified as prairies and barrens. Newaygo's historic dry sand prairies were large, grass-dominated openings that supported a range of animal and plant life. The prairies were surrounded by barrens, grasslands dotted with trees such as white pine and white oak. Together, these areas ranged in size from 600 - 1,500 acres. Surrounding Newaygo's prairies and barrens were dense forests of white pine and oak, along with other species like beech, sugar maple, and red maple.

Newaygo's landscape changed with the coming of European settlers. Logging and failed farms in the 1800s left forests, prairies and barrens stripped of vegetation. Many of these areas were planted with rows upon rows of red pine in the 1920s and 1930s to prevent soil erosion. Fire, a key element in sustaining healthy prairie openings in the forest, was also suppressed and left remaining prairies defenseless against the invading forests. Today, residential, commercial and industrial development continue to take over natural areas at a growing rate. Without the help of private landowners, sprawl will continue to consume forests, prairies and barrens. As natural areas are lost, the plant and animal species that depend on these places may be lost as well.

**1830s Landcover in Brooks Township**



## ***If you are a prairie, barrens or forest landowner, we encourage you to...***

- 1) Maintain healthy forest areas where they occur on your property.
- 2) Maintain open prairie and barrens areas where they occur on your property.
- 3) Protect these areas from potentially destructive practices such as inappropriate off-road vehicle use, trash dumping, and excessive development.
- 4) Consider converting forest sections on your property to barrens or prairie, especially those areas adjacent to existing prairie or barrens openings.
- 5) Consider removing old scotch pine, red pine or neglected Christmas tree plantations where they occur on your property.
- 6) Remove invasive, alien plants like spotted knapweed and St. Johnswort from your property, either by hand pulling, herbicide application or prescribed burns.
- 7) Contact the Newaygo Conservation District or the USDA Natural Resources Conservation Service to obtain technical assistance for conservation planning on your property.

# Prairie Management for Private Landowners

## What is a Prairie?

**Prairie**—a landscape dominated by grasses and wildflowers rather than trees or shrubs.

**Barrens**—transition between prairies and forests. They have trees and shrubs scattered here and there, but are still primarily dominated by grasses and wildflowers.

## Value of Prairies and Barrens

Prairies and barrens provide vital habitat for a number of plant and animal species, many of which can survive nowhere else. Prairie plants themselves serve a key role in the environment. Not only do their deep roots effectively hold sandy soil in place, but they provide excellent pathways for water to soak into the ground. A prairie plot can effectively absorb up to 6 inches of stormwater, versus traditional turf which can only absorb on average a half an inch. This improved percolation of water makes prairies key locations for groundwater recharge and flood prevention. And due to the nutrient-poor soils on dry-sand prairies, prairie plants are effective at removing nutrients such as phosphorus and nitrates from water.



Prairies also afford people many recreational and education opportunities. Hiking, wildlife watching, wildflower viewing and hunting can all be enjoyed in prairie habitats. Most of all, prairies and barrens add to Newaygo's natural beauty and are a part of Newaygo's natural heritage. Newaygo wouldn't be the same without the prairies and barrens.



## Step 1 - Identify if your property was once a prairie

Prairie restoration isn't always a do-it-yourself activity, but there are a number of things you can do yourself and a number of organizations you can consult to help you in managing your property. First, you should determine if you have a prairie remnant on your property or if your property was originally prairie or barrens. For example, if you have an old field, an area that appears to contain prairie vegetation like prickly-pear cactus or wild lupine, or even a red pine stand, you may have a prairie remnant. Here's how to better determine if your property was historically part of a prairie system.

- 1) Consult a presettlement vegetation map.
- 2) Locate native prairie plant species on your property.

Presettlement vegetation maps illustrate the vegetative cover of the land prior to European settlement. You can view one of these maps at the Newaygo Conservation District in Fremont. However, presettlement vegetation maps do not distinguish areas smaller than 20 acres. So, it's important to survey your property for remnant prairie plant species on your property. The following plants are indicator species of prairies and barrens.

**Grasses:** big bluestem, little bluestem, indiagrass, switchgrass, side-oats grama grass

**Wildflowers:** wild lupine, prickly pear cactus, blazing star, aster, coreopsis, hoary puccoon, prairie smoke, horsemint, butterflyweed

If you're not sure what these plants look like, check out an identification guide from the Environmental Resource Section of the Newaygo Carnegie Library. You may also request assistance from one of the organizations listed on the last page of this worksheet. Pictures of many of these plant species can also be viewed online at [www.michigan.gov/dnr](http://www.michigan.gov/dnr) under the wildlife and habitat section.

## Step 2 - What To Do If You Have A Prairie Remnant?

Assuming that you have a prairie remnant and you want to manage your property to promote prairie and barrens habitat, you have some options to choose from. Depending on the quality of the site, you must decide the best approach for restoring your site. A site that has a number of existing prairie species may only require rehabilitation or enhancement to improve the site. On a highly degraded site where little to no native plants remain, you may be better off to remove all the vegetation and start from scratch. Some sites may only require protection rather than restoration to improve the site.

Depending on the characteristics of your site, one or more of the techniques on the next page may be incorporated into your plan to improve or protect your prairie. Techniques should be chosen that will provide the greatest benefit with the least amount of disturbance to the existing ecosystem. You may be able to implement some of these techniques yourself. Others may require the assistance of a professional. You may even qualify for financial assistance for some rehabilitation projects.

# Summary of Active Restoration and Management Techniques for Prairies and Barrens

## **1. Tree and Shrub Removal**

Trees and shrubs, which were naturally controlled by fire, have become overgrown on many prairie sites. Unwanted shrub species can be controlled by cutting them in late summer and carefully applying a glyphosate herbicide (i.e. Roundup) to the stump. Fire, if incorporated into your management plan, will help control unwanted shrub species in the future. Larger trees can be removed from prairie sites mechanically with a chainsaw. They can also be killed by "girdling" the tree. Use an ax to remove the bark in a two inch wide by two inch deep band two feet above the ground to girdle a tree. You may consider leaving the dead tree in place, as it will provide habitat for many animal species.

Keep in mind that not all prairie sites are treeless. Prairies were historically surrounded by barrens, which may have included up to 50% tree cover from trees like white pine and white oak. You may want to consult a conservation professional to help you determine which trees should remain and which ones should be removed.

## **2. Exotic Weed Removal**



Since the 1800s, plants not native to North America have been brought here either accidentally or on purpose. Many have found their way into native ecosystems, and a few of them have posed big problems for native prairie landscapes. Because they originated elsewhere, plants like spotted knapweed and common St. Johnswort have no natural predators and are able to out compete desirable, native species. Additionally, exotic species generally do not offer the same habitat benefits provided by native plant species.

Methods to control exotic plant species include hand removal, herbicide application, and prescribed burns. Herbicide application and hand removal are effective in concentrated areas or in areas of low to moderate density. If you choose to use an herbicide, use a broad-spectrum herbicide such as Roundup. Read all the directions before use, and keep in mind that the herbicide does not discriminate between the plants you want to kill and the plants you want to keep. If you use the hand removal method, exotic plants are more easily removed early in the growing season before their roots take hold in the soil. The entire root must be removed, or the plant will resprout. Exotic weed removal is a multiyear process, since many weed seeds remain viable in the soil for many years. You may remove one batch one year, and next year a new batch may sprout from seeds left in the soil. Persistence will pay off in the end, though. As exotic species are removed, native species can move in and better compete with the invaders. In areas that are heavily infested with exotic species, but where a decent concentration of native plant species exist, burning is a more effective management tool.

## **3. Prescribed Burning**

This management method is most effective on sites where many native prairie plants exist and there is limited competition from invasive plants. Native prairie plants are adapted to fire. Burning reduces competition from invasive plants and promotes germination, growth and a longer growing season for native plants.

Because of the careful planning needed to conduct a prescribed burn, assistance from a professional is necessary. A burn plan must be written, permits must be obtained, and particular weather conditions must be met before a fire can be lit. See the back page for a list of conservation organizations that may provide assistance when planning and conducting a prescribed burn.



Photo by The Nature Conservancy

## **4. Interseeding**

Interseeding refers to the process of spreading native plant seed into the soil to supplement existing native vegetation. This method may be used on its own or in conjunction with prescribed burning on sites with a low density of prairie species. Seeds should be obtained from a credible, local seed source (see the list on page 7). On smaller sites, seeds can be spread by hand after lightly raking the soil. On larger sites a seed drill may be used to spread the seed.

## **5. Reestablishing a Prairie**

This technique is used when a site is so highly degraded that none of the above techniques will significantly improve the site. This is the most aggressive prairie restoration method, but may be the most effective on highly disturbed sites. This method involves the removal of all existing vegetation followed by the planting of desired species. However, plant removal isn't as easy as getting rid of the plants that are currently growing on the site. You need to keep in mind that the soil is full of weed seeds just waiting to sprout, and for the most part these are seeds of plants that you don't want in your new prairie. To be most successful, you need to deal with the weed seeds in the soil to give your new planting the best chance for success. In reestablishing a new prairie, it's best to work with an experienced resource professional to help you develop a plan. Contact one of the conservation organizations listed on the back page for assistance. Financial assistance may also be available through the Wildlife Habitat Incentives Program.

# Forest Management for Private Landowners

## Benefits of Forests

Forests provide a number of tangible recreational, economic and aesthetic benefits for Newaygo area landowners. Forests generate tourism dollars from activities such as camping, hiking and hunting, and provide a source of wood for lumber and paper industries throughout the country.

Additionally, forests provide a number of ecological services. Forest vegetation holds soil in place and provides shade to cool rivers and streams. They provide habitat for wildlife, including threatened and endangered species. Forest vegetation also removes carbon dioxide from the atmosphere, returning oxygen in its place. Newaygo's landscape would be dramatically different without forests.



## Threats to Newaygo's Forests— Fragmentation

Prior to European settlement, more than 36 million acres in Michigan were forested. In the past 250 years, however, human activity has reduced forests to half of their former size. Some of the remaining high quality forest acreage that remains can be found in Newaygo County, along with the various species that high quality forests support. However, one of the growing threats to forests in rural areas is *fragmentation*.

Fragmentation refers to the process by which large pieces of habitat are reduced in size either by natural events such as wildfires or wind storms, or by human activity such as building roads and developments. Fragmentation creates edges—boundaries between one habitat type and another. Although some species thrive in edges, other species need large pieces of unbroken, unfragmented habitat to survive. As forests and other habitats become more and more fragmented by human activity, many species that need large areas are becoming increasingly scarce.

## Management Techniques for Newaygo Forests

Management techniques for Newaygo's forests can be divided into two categories - protection and timber harvesting. Protection techniques include placing signage around the property to minimize trespassing and abuse, leaving the forest to manage itself, placing a conservation easement or deed restriction on the property to protect from future development, creating little to no disturbances, and practicing low impact recreation only, keeping motorized vehicles or other high impact activities off the property.

Timber harvesting is a more active form of forest management. According to *Managing Michigan's Wildlife*, "the main purpose of timber harvesting is to create conditions that will allow the forest to renew or reproduce itself." The following summarizes common harvesting techniques to accomplish particular management goals.

**Group selection** involves cutting a small patch in a stand up to one half an acre in size. The adjacent trees provide the seed source and shelter for new seedlings. However, unwanted species may have to be periodically removed to specifically select for a desired tree species. This method is the least disruptive to an existing forest stand.

**Shelterwood harvest** involves the removal of 40 - 60% of a stand in an initial cut, and removing the remaining trees 10 - 20 years later. Trees left in the first cut provide shelter for regenerating trees and shade to help young trees compete against sun-loving plants. Again, unwanted species may have to be periodically removed. Once regenerating trees are dominant, the rest of the stand can be harvested. This method applied to stands 2 - 20 acres in size.

**Clearcutting** involves the removal of all trees greater than one inch in diameter all at one time. This is useful in situations where you have a lot of seedling or young trees of the particular species you desire. Clearcutting the other trees allows the desired species to grow without competition from other plants. Areas 2 - 10 acres in size can be clearcut, but maintain at least a 100 foot buffer between clearcuts.

**Seed tree harvest** is a clearcut method that leaves a few mature trees to act as a seed source for regenerating trees. However, this thinning option is rarely used in Michigan forests.

**Thinning and planting** is used when you don't want to change the dominant tree species, but want to introduce another species. The dominant species is thinned and another species is planted in. This is a good option for red pine plantations. If seedlings of a particular species that you want to encourage are present, you can also thin around those seedlings to reduce the competition for food, water, light and other resources.

## ***Additional Tips and Resources***

### **Tips to Keep in Mind when Managing Forests**

1. Avoid "high-grading", which refers to cutting only the most economically valuable trees with no regard for wildlife or habitat needs, and leaving lower-quality, genetically inferior trees. This management approach is harmful, resulting in a forest more susceptible to disease, slower growth, visually less appealing, and lower quality habitat for wildlife.
2. Clearcutting should be avoided in dense forest areas as it can fragment mature forests, harming their ecological value and functions. However, in appropriate areas clearcutting can be used to recreate prairie openings. A conservation professional should be consulted to assist in these management decisions.
3. Selective cutting can be used to manage for particular species, and create openings that allow more sunlight, water and nutrients to be available to preferred seedlings.
4. Remove abandoned scotch pine and Christmas tree plantations. Unless they are properly managed they can be a pest and disease source for other tree species.

### **Prairie and Forest Readings and Resources**

These books are available at the Newaygo Carnegie Library, in the Environmental Resource Section on the lower level of the library. You can also search for additional books and resources online at [www.lakeland.lib.mi.us/catalog.html](http://www.lakeland.lib.mi.us/catalog.html).

- **Field Guide to Eastern Forests of North America**
- **Trees of Michigan and the Upper Great Lakes**
- **Woodland Stewardship - A Practical Guide**
- **Michigan Trees**
- **Michigan Wildflowers**
- **The Wildflowers of the Tallgrass Prairie: The Upper Midwest**
- **Tallgrass Prairie Wildflowers: A Field Guide**
- **Field Guide to the Grasses, Sedges and Rushes of the United States**
- **The Tallgrass Restoration Handbook: For Prairies, Savannas and Woodlands**
- **Restoring the Tallgrass Prairie: An Illustrated Manual for Iowa and the Upper Midwest**
- **Gardening with Prairie Plants - How to Create Beautiful Native Landscapes**
- **Michigan Snakes**
- **Michigan Turtles and Lizards**
- **Michigan Frogs, Toads and Salamanders**
- **Michigan Butterflies and Skippers**
- **Birds of Michigan Field Guide**
- **The Family Butterfly Book - Projects, Activities, and a Field Guide to 40 Favorite North American Species**
- **Managing Michigan's Wildlife: A Landowner's Guide**
- **Managing Northern Forests for Wildlife**
- **Wild About Birds: The DNR Bird Feeding Guide**
- **Woodworking for Wildlife: Homes for Birds and Mammals**
- **Landscaping for Wildlife**
- **Soil Survey of Newaygo County**



# Sources of Michigan Native Plants

## What is a native plant?



According to the Environmental Protection Agency, native plants are “plants that have evolved over thousands of years in a particular region.” In Michigan, the plants that were here prior to European settlement in the early 1800s are those that are considered native.

## Why use native plants?

- They require fewer inputs like pesticides, fertilizers and water.
- They provide valuable habitat for wildlife.
- They increase the biological diversity of natural areas.
- They are part of Newaygo’s natural heritage.
- They require less maintenance than traditional landscapes.
- They reduce air pollution by removing carbon dioxide from the air.

## What to ask for when purchasing native plants?

Ask if the plants are nursery propagated, not just nursery grown. Nursery propagated plants are raised in a nursery from seeds, cuttings or root stocks of legally obtained native plants. Plants termed ‘nursery grown’ may have been collected illegally in the wild. Also ask for plants that are from “native Michigan stock.” These are plants that originated in Michigan, and are more likely to be adapted to climate, soil, disease and pest conditions throughout Michigan.

It’s also handy to know the Latin name of the plant you are interested in purchasing. For example, perhaps you’d like to add some sunflower to your prairie planting. Well, there are many varieties of sunflower, some of which are native to Michigan and some that are not. Presenting a grower with the scientific name—like *Helianthus occidentalis* for western sunflower—will ensure that you are getting a native variety and not something else.

Arrowhead Alpines  
PO Box 857  
Fowlerville, MI 48836  
517-223-3581

Cold Stream Farm  
2030 Free Soil Road  
Free Soil, MI 49411  
616-464-5809

Grass Roots, Inc.  
PO Box 4001  
E. Lansing, MI 48826  
517-337-2405

Grimes Garden  
14650 Center  
Bath, MI 48808  
517-641-4053

Grow Wild Nursery  
PO Box 401  
Byron, MI 48418  
810-266-9453

Huria Nursery  
4687 Grenadier SW  
Wyoming, MI 49509  
616-538-4359

J. F. New and Associates, Inc.  
128 Sunset Drive  
Walterton, IN 46574  
219-586-2412  
[www.jfnewnursery.com](http://www.jfnewnursery.com)

Michigan Wildflower Farm  
11770 Cutler Road  
Portland, MI 48875  
517-647-6010  
[www.michiganwildflowerfarm.com](http://www.michiganwildflowerfarm.com)

Native Plant Nursery  
PO Box 7841  
Ann Arbor, MI 48107  
734-994-9592  
[www.nativeplant.com](http://www.nativeplant.com)

Newaygo Conservation District  
Nursery  
1725 E. 72nd  
Newaygo, MI 49337  
231-652-7493

Oikos Tree Crops  
PO Box 19425  
Kalamazoo, MI 49019-0425  
616-624-6233

Perennial Presence  
1030 Lieback Road  
Chelsea, MI 48118  
313-475-2177

Sand Hill Farm  
11530 10 Mile Road  
Rockford, MI 49341-9039  
616-691-8214

Von Bochove’s Greenhouse  
*Nesta Prairie Perennials*  
1019 Miller Road  
Kalamazoo, MI 49001  
616-343-1669  
1-800-233-5025

Wetlands Nursery  
PO Box 14553  
Saginaw, MI 48601  
517-752-3492  
[www.wetlands-nursery.com](http://www.wetlands-nursery.com)

Wildtype  
900 N. Every Road  
Mason, MI 48854  
517-244-1140  
[www.msu.edu/~wildtype](http://www.msu.edu/~wildtype)

## Other Useful Resources

Wildflower Association of Michigan  
[www.wildflowersmich.org](http://www.wildflowersmich.org)

Michigan Association of Conservation Districts—  
Gateway to Native Plants  
[www.macd.org](http://www.macd.org)

Free 28-page booklet “Backyard Conservation” from the  
USDA Natural Resources Conservation Service;  
call 1-800-LANDCARE to request a copy.

## Land Management Resources for the Newaygo Landowner

<b>Organizations that offer technical and planning assistance</b>	<b>Organizations that offer educational assistance</b>
<p><b>Newaygo Conservation District</b> 940 West Rex Street Fremont, MI 49412 Phone: 231-924-2060</p> <p><b>USDA Natural Resources Conservation Service</b> 940 West Rex Street Fremont, MI 49412 Phone: 231-924-2060</p> <p><b>US Fish and Wildlife Service</b> Partners for Fish and Wildlife Program 2651 Coolidge Road East Lansing, MI 48823 Phone: 517-351-6236 Or, contact Amy Berry at 517-351-2241</p> <p><b>Private Organizations:</b></p> <ul style="list-style-type: none"> <li>• Consulting Foresters (see Foresters in phone book)</li> <li>• Nurseries (see page 7)</li> </ul>	<p><b>Michigan Department of Natural Resources</b> www.michigan.gov/dnr</p> <p style="text-align: center;"><i>Forest Management Division</i></p> <p>8015 Mackinaw Trail Cadillac, MI 49601 Phone: 231-775-9727</p> <p style="text-align: center;"><i>Wildlife Division</i></p> <p>Mason Building—8th Floor PO Box 30444 Lansing, MI 48909-1263 Phone: 517-373-1263</p> <p style="text-align: center;"><i>Fisheries Division</i></p> <p>Mason Building PO Box 39446 Lansing, MI 48909 Phone: 517-373-1280</p>
<p style="text-align: center;"><b>Visit the Natural Newaygo section of Brooks Township's website for internet links to additional organizations or sources of information.</b></p> <p style="text-align: center;"><b>www.brookstownship.org</b></p>	<p><b>Michigan State University Extension</b> 817 S. Stewart Fremont, MI 49412 Phone: 231-924-0500 www.msue.msu.edu/newaygo</p> <p><b>Michigan Department of Natural Resources</b></p> <p><b>Newaygo Conservation District</b></p>
	<p style="text-align: center;"><b>Organizations that assist landowners in permanent land preservation options</b></p> <p><b>Land Conservancy of West Michigan</b> 1345 Monroe Avenue NW; Suite 324 Grand Rapids, MI 49505 Phone: 616-451-9476 Email: lcwm@naturenearby.org www.naturenearby.org</p> <p><b>The Nature Conservancy Michigan Chapter</b> 2840 E. Grand River Ave., #5 E. Lansing, MI 48823 Phone: 517-332-1741 Email: michigan@tnc.org</p>

### Financial Assistance Programs

**Call USDA Service Center in Fremont at 924-2060 for more information on these programs.**

The **Forestry Incentives Program (FIP)** supports good forest management practices on privately owned, non-industrial forest lands. FIP is designed to benefit the environment while meeting future demands for wood products. Eligible practices are tree planting, timber stand improvement, site preparation for natural regeneration, and other related activities. FIP is available in counties designated by a Forest Service survey of eligible private timber acreage.

The **Stewardship Incentive Program (SIP)** provides technical and financial assistance to encourage non-industrial private forest landowners to keep their lands and natural resources productive and healthy. Qualifying land includes rural lands with existing tree cover or land suitable for growing trees which is owned by a private individual, group, association, corporation, Indian tribe, or other legal private entity. Eligible landowners must have an approved Forest Stewardship Plan and own 1,000 or fewer acres of qualifying land. Authorizations may be obtained for exceptions of up to 5,000 acres.

The **Wildlife Habitat Incentives Program (WHIP)** is a voluntary program for people who want to develop and improve wildlife habitat primarily on private land. Through WHIP, the USDA Natural Resources Conservation Service (NRCS) provides both technical assistance and up to 75 percent cost-share assistance to establish and improve fish and wildlife habitat. WHIP agreements between NRCS and the participant generally last from 5 to 10 years from the date the agreement is signed. This includes grass/prairie planting, tree/shrub planting, stream bank erosion control projects and more.

The **Wetlands Reserve Program (WRP)** is a voluntary program offering landowners the opportunity to protect, restore, and enhance wetlands on their property. The USDA Natural Resources Conservation Service provides technical and financial support to help landowners with their wetland restoration efforts. The NRCS's goal is to achieve the greatest wetland functions and values, along with optimum wildlife habitat, on every acre enrolled in the program. This program offers landowners an opportunity to establish long-term conservation and wildlife practices and protection.

Most information in this publication comes from *Managing Michigan's Wildlife: A Landowner's Guide*, developed by the Michigan Department of Natural Resources. Contact the Newaygo Conservation District at 231-924-2420 for related information or to order a copy of the *Landowner's Guide*. This worksheet was developed as part of the Brooks Township Land Use Vision Project, funded in part by a grant from the Fremont Area Community Foundation. For more information on the Land Use Vision Project, contact Brooks Township at 231-652-6763 or visit us on the internet at [www.brookstownship.org](http://www.brookstownship.org).