

PRAIRIE RESTORATIONS



Restoring a prairie may occur in two ways: (1) rehabilitating a degraded site, or (2) reestablishing a site by planting a new prairie. Before any management techniques can begin, it is important to determine if the site was historically a prairie and to identify any prairie plants still growing. This chapter will guide you through the step-by-step process needed to restore your prairie.

Landscape Perspective

Before settlement, Michigan grasslands were mainly barrrens, savannas, and wet prairies with a few dry prairies. Dry prairies, in particular, disappeared quickly because they often grew on rich soil and were easy to clear for farming. Researchers have identified at least 39 prairie areas that existed prior to European settlement. They ranged in size from 80 acres to 25 square miles. Estimates of the amount of prairies when Michigan was first settled is about 2.35 million acres, and they were mostly confined to portions of the Lower Peninsula, which were lightly timbered and contained large park-like openings called savannas, barrrens, or prairies.

Prairies were grasslands, which had few if any trees. Barrrens, on the other hand, may have had several trees scattered across each acre of their landscape. Savannas, which served as transition areas between grasslands and forests, had many trees per acre but not more than 50 percent canopy cover. Grassland specialists classify most savannas as either oak savannas or jack pine savannas. The most scenic of these were the oak savannas of southwest Lower Michigan, which extended as far north as Newaygo county. A large area of dry prairie existed along the Detroit River, and the state's largest wet prairie occurred for 16 miles along Saginaw Bay from Quanicassee to nearly Bay Port and was three miles wide at its widest point. Wet and dry prairies occurred in Wayne and Oakland counties. Presently, Detroit Metro-politain Airport is sitting upon a historical wet prairie where remnant prairie plant species still persist.

The Importance of Prairies

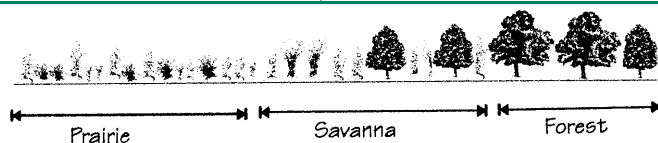
Prairies are an important part of any ecosystem where they occur. They provide key habitat for many



species of wildlife, serving as important breeding, feeding, nesting, and brood-rearing centers. Bobwhite quail, wild turkeys, bluebirds, meadowlarks, bobolinks, and other songbirds eat the abundant insects and seeds that prairies provide. Mice, voles, shrews, and woodchucks, along with many kinds of ground-nesting birds, raise their young there.

Prairie plants encourage infiltration of water into the soil because their root systems are deep. Better percolation increases recharge of ground water. Besides making better use of water, they are very efficient at removing nutrients such as nitrogen, phosphorus, and potassium from the soil. These long-lived plants can tolerate seasonal flooding, drought, and other severe environmental events.

Prairies often become established in areas where flooding, fire, or other disturbance limits competition from trees and shrubs. Wet prairies, for example, may be under water part of the year; dry prairies



Prairie-forest continuum: Boundaries are not clearly established, blending occurs between habitat types.

may grow in sandy soils too dry for trees and shrubs. Fires, whether occurring naturally or lit deliberately by Native Americans, played a dominant role in the ecosystem because they encouraged native grasses and forbs (wildflowers) to grow and discouraged the encroachment of trees and shrubs.

Prairie Identification

One of the first steps to determine whether or not you have a remnant prairie is to check historical maps showing the presettlement vegetation for your county. Your local Conservation District office has these maps, which show the forests, prairies, and wetland types discovered by Michigan's original surveyors. However, the maps are representative only to a scale of 20 acres, and so smaller areas may have been overlooked. For this reason it is also important to look for remnant prairie plants on your site in areas that may have contained grasslands historically.

The best way to identify prairie grasses and wildflowers is to carry a field guide containing color photos or drawings. Major grasses to look for include big bluestem, little bluestem, Indiangrass, and switchgrass. Key wildflowers are rough blazing star, gray-headed coneflower, common evening primrose, butterflyweed, black-eyed Susan, moth mullein, swamp milkweed, cardinal flower, Joe-pye-weed, hoary puccoon, aster, coreopsis, tick clover, bee balm, prickly pear cactus, horse-mint, and round-headed bush clover. You may find these plants



black-eyed
Susan

as scattered clumps across a grassland or opening, or you may discover them as bunches in several smaller areas. Living treasures, these remnant prairies are a snapshot to past native systems, and every attempt should be made to restore them.

For species descriptions, refer to the chapter on **Warm Season Grasses** in this section and to the **Wildflowers** chapter in the Backyard Management section.

Prairies may be stable grassland systems where the invasion of trees and shrubs does not occur. However, more commonly, there is encroachment of oak, pin cherry, spirea, sumac, aspen, autumn olive, june berry, sassafras, and white and jack pine.

Evaluating the Restoration Process

The **Wetland** section covers restoration and management of wet meadows, fens, and wet prairies. This chapter focuses on the restoration of dry prairies, barrens, and savannas. The three key methods of restoring them include the following:

- (1) tree and shrub reduction or removal
- (2) prescribed burning, which may be followed with interseeding of prairie plants
- (3) the new planting of the site

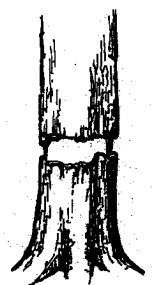
For best results, choose the method that produces the greatest benefit with the least amount of disturbance to the ecosystem. Remember that in most prairie restorations, you are dealing with a sick patient. The way to health is to nurture the patient over time.

The way to do that is to first identify your goal. If you want to restore an oak savanna or barren, for example, then allowing limited tree growth on the site is acceptable. But if the goal is to restore a tallgrass prairie, then trees must be eliminated and kept out. If remnant prairie plants simply do not exist, you may have to start over completely.

Tree and Shrub Removal

Sumac, aspen, black locust, autumn olive, hawthorn, honeysuckle, buckthorn, and raspberry are aggressive species that often take over Michigan's native prairies. If any of these aggressive species exist on your restoration site, remove them by cutting them between July through September and immediately applying a glyphosate herbicide such as Roundup to the stump. Be sure to follow all label directions.

On sites with high densities of oak, hickory, or black walnut, you will need to remove or greatly reduce their numbers. Left unchecked, such species increase to the point where they shade the ground and will not let grasses and wildflowers grow. Use a chainsaw on larger trees or a limblopper on those that are sapling size. Another method to kill them is to cut a two-inch deep band around the trunk at two feet above the ground and another two inches higher. To complete this "girdling" treatment, use an ax or hatchet to remove the bark between the two cuts.



"girdling"

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Prescribed Burning and Interseeding

On sites where many prairie plants currently exist and there is limited competition from trees and shrubs, a prescribed burn is in order. Fire increases prairie plant growth, flowering, and reproduction and lengthens their growing season, while reducing the growing season for weeds. Further, fire helps control invasion by killing woody plants and returning important nutrients to the soil.

A prescribed burn is a planned fire that is burning for a specific purpose. First, create a burn plan, which includes discussion with local authorities, obtaining any required permits, and observing all restrictions and safety procedures. These include carrying out the burn on a day with light wind and relatively low humidity in early spring or late fall when vegetation is dry. For more information, see the chapter on **Prescribed Burning** within this section.

For remnant prairies that have low plant densities or lack a variety of prairie plants, consider interseeding after the prescribed burn.

Interseeding is the process of sowing seed into the existing soil. Hand broadcasting, machine broadcasting, or drilling with a no-till planter are interseeding methods. When broadcasting by hand or machine, prepare a mixture of 50 percent seed and 50 percent perlite, vermiculite, or cracked oats. The material will help carry the light, small seeds and enable you to spread them at recommended rates. Divide the site into sections to ensure that you will have enough seed to cover it uniformly.

Try to match the seed mix to the soil type, using plants that like moist conditions or sites in low-lying areas and plants that prefer dry soils on upland sites. For best results, secure local seeds, collecting from on site or as close to the site as possible. You should always check with landowners for permission. After broadcasting the seed, incorporate it into the soil by shallow (less than 1/2 inch) hand-raking, dragging, disking, or by the pressure of a cultipacker. For sites larger than three acres, a no-till drill is the best way to get the seeds into the ground.

Planting

In highly degraded areas, such as former agriculture fields, where very limited or no prairie plants exist, burning will not be enough to ensure a quality restoration.

Planting a new prairie may be the best management practice. Consider two methods:

- (1) The use of conventional farm tillage to prepare the site by killing or removing all former vegetation before planting.
- (2) the use of chemicals to eliminate all present vegetation, and a no-till drill to incorporate the seed into the soil.

With either method, plant during the period May 1 to June 15. Native grasses and wildflowers need only be planted 1/4 inch to 1/2 inch below the soil. However, it is not uncommon to see seed sitting on top of the surface after planting. For more information, see the chapter on **Grass Planting** in this section.

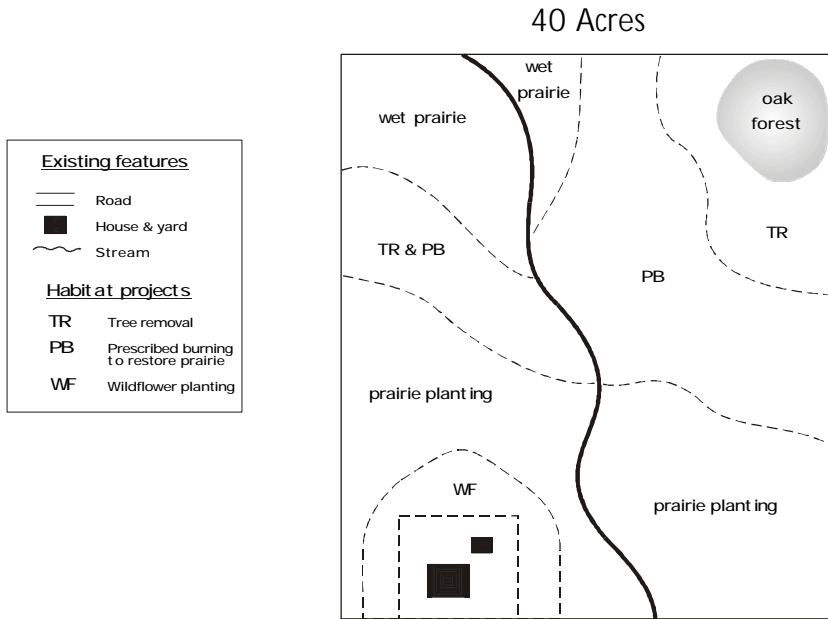
Post-Planting Maintenance

The amount of weed seed present in the planting site is usually the most variable and unpredictable factor in prairie restoration. There is no way to predict with certainty the amount of weed competition that will be present during the first few years of restoration. Landowners can do four things to reduce the weed problem:

- (1) plant as late as possible in spring,
- (2) mow or hand weed to reduce shading
- (3) burn at prescribed times
- (4) spot apply herbicides
- (5) have lots of patience

Give the site at least three full years because the clump-growing native grasses require that long to establish themselves. After the first growing season, it is not uncommon to have only one plant per square yard. The grass may only be six to eight inches tall during its first year of growth and dif-

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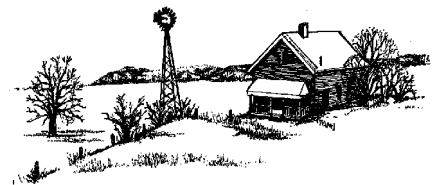


This map is an example that demonstrates the many management options discussed throughout this chapter. The option(s) you choose should depend not only on your goals, but the location, condition, and present use of your land.

difficult to recognize until it grows a seed head in late summer of year two. After the second growing season, each plant may be one to two feet tall and occupy a square foot or so. By the end of the third growing season, you should have an established stand of native grass three feet or taller, depending on the species planted.

In summary, restoring a prairie is exacting, time-consuming labor that requires patience. Once established, however, prairies will need only periodic maintenance. Not only are they a key type of habitat for many birds and small mammals, but they offer pleasing diversity to the landscape. Native prairies with their ever-changing kaleidoscope of wildflower color are

a delight to observe. In winter, the copper color of standing bluestem provides beauty to a stark landscape while affording protective cover for many kinds of wildlife.



FOR ADDITIONAL CHAPTERS CONTACT:

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Private Land Partnerships: This partnership was formed between both private and public organizations in order to address private lands wildlife issues. Individuals share resources, information, and expertise. This landowner's guide has been a combined effort between these groups working towards one goal: Natural Resources Education. We hope this manual provides you with the knowledge and the motivation to make positive changes for our environment.

FOR ADDITIONAL ASSISTANCE: CONTACT YOUR LOCAL CONSERVATION DISTRICT