

Prescribed Burning: A Critical Habitat Restoration Tool



Prescribed burning has been an important management tool at CERA for over 25 years. The first controlled “prairie” burn was conducted in the spring of 1980. Since then, burning has been accomplished successfully and safely in prairie, savanna, and forest habitats with the aid of additional equipment, staff with years of experience, student and community volunteers, and of course, favorable weather.

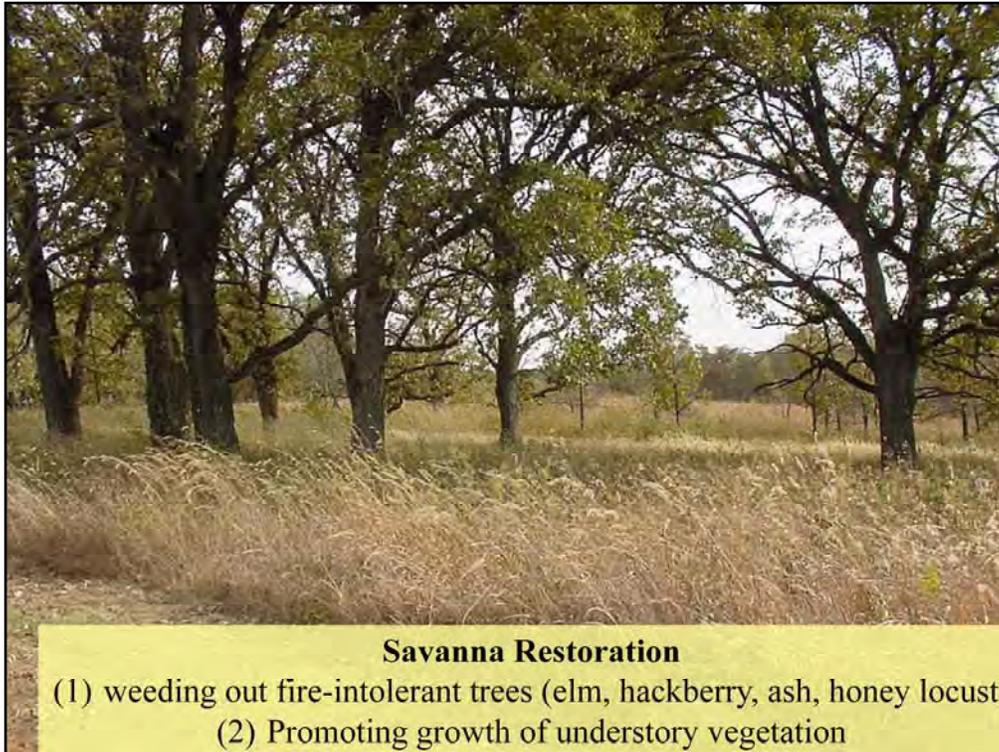
- Why and where do we burn at CERA?
- What is done to prepare for a burn?
- What equipment is used?
- How do we decide when to burn?
- How is a burn conducted?
- How can you help?

Here are a few of the questions I'd like to answer for you today:



Why do we burn at CERA? Prescribed burning is a critical **management tool** at CERA for several reasons.

- (1) Fire facilitates the **establishment of prairies** that are reconstructed from cultivated land. It does so by removing competition from weeds. Many exotic plant species commence growth very early in the spring. By burning prairie reconstructions when these plants are just starting to emerge, they are forced to use additional root reserves to produce new shoots. If burned at the same time, year after year, eventually the reserves will be depleted and the plants will die.



- (2) Second, it plays an important role in **restoring bur oak savanna** by creating the structure and composition of species believed to occur in this transitional habitat between tallgrass prairie and forest.

In most savanna restorations, fire follows chainsaw work to clear trees that would not otherwise establish in locations regularly swept by fire. Remnant savannas, like those at CERA, are identified by the presence of what are called “open-grown oaks”.

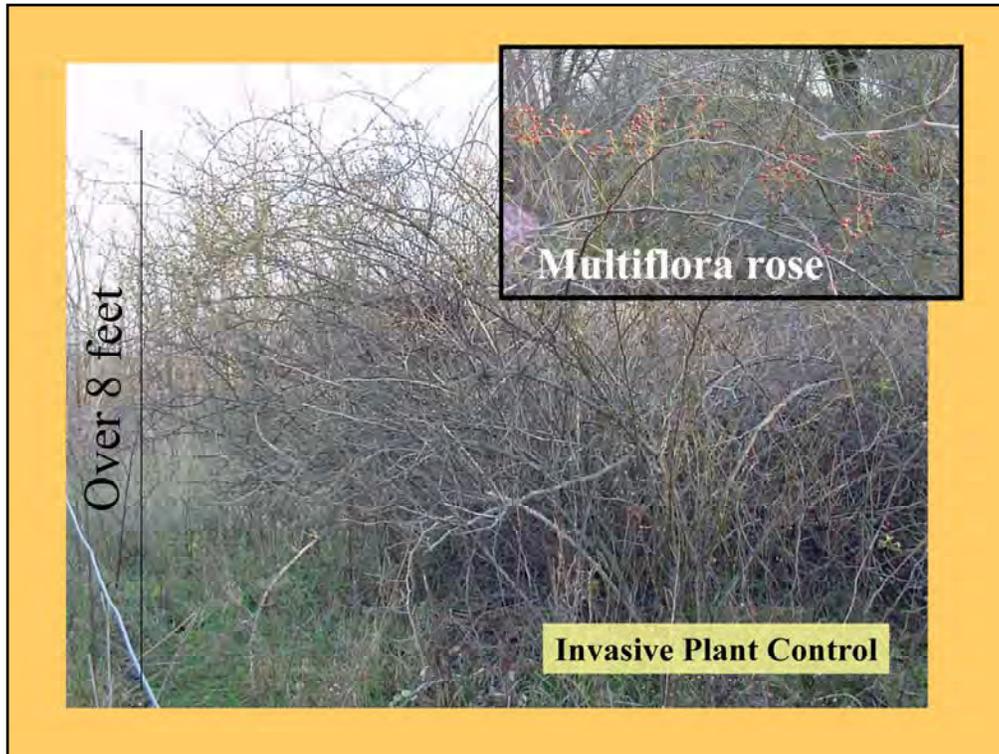
Open-grown oaks have lower limbs that dip towards the ground or stretch straight out from the tree. Their shape indicates they established when there was plenty of light to reach and support the growth of the lower limbs. In woodlands, where the tree density is much greater, the lower limbs are eventually “self-pruned” from the tree, giving an overall “slimmer” and columnar appearance. Without periodic fire, other trees may establish beneath oaks and, having a faster growth rate, grow up into and above the oak canopy, out-competing them. Many herbaceous species disappear from the ground layer because they can’t survive in the decreased light environment.

Fire-intolerant woody species that are eliminated from savannas due to fire include elm, hackberry, ash, honey locust, and black cherry. These species are only intolerant as seedlings and saplings, however. They are capable of re-sprouting from adventitious buds protected beneath the bark after fire or cutting. However, frequent fire will deplete their root reserves and eventually cause mortality.



Forest Health

- (1) weeding out fire-intolerant trees and invasive shrubs
- (2) Promoting growth of understory vegetation

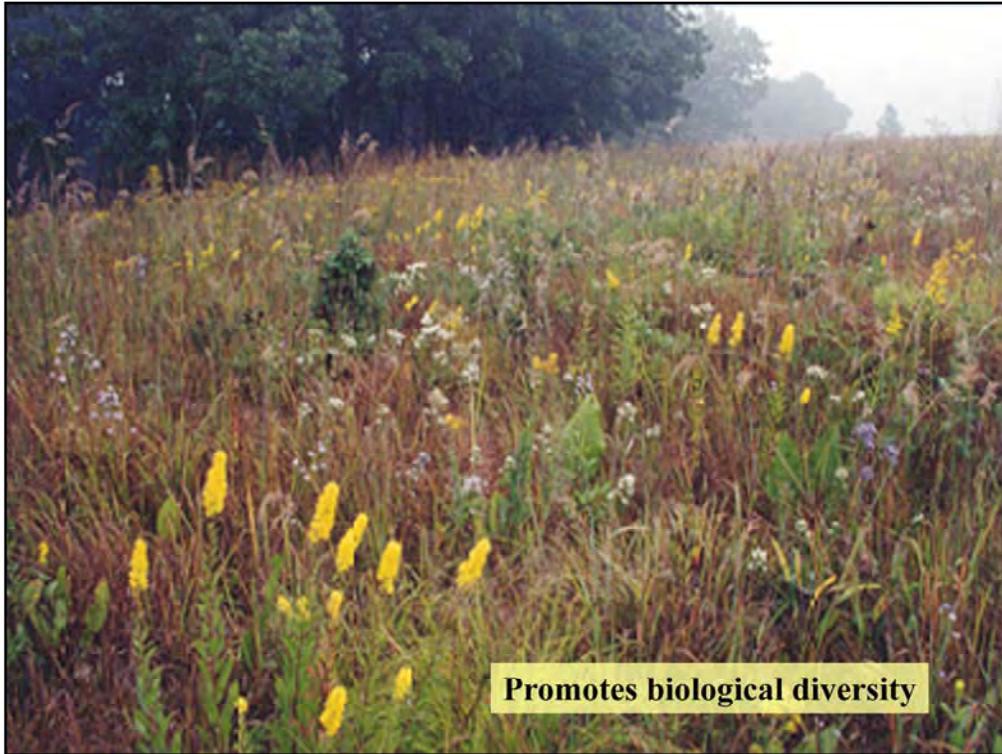


- (4) Fire also **reduces the cover of invasive species** like multiflora rose and **aggressive native plants** like black raspberry and blackberry.

Multiflora rose is an especially invasive species and threat at CERA. It spreads quickly, forming impenetrable thickets that exclude native plant species. It invades areas that have been subjected to land disturbance, and impedes succession. Many of the areas at CERA that were previously pasture are overgrown with multiflora rose. We are using a combination of fire and herbicides to control it.



In the summer of 2008 we began field research at CERA to test the effectiveness of goats in controlling the invasive shrubs multiflora rose (shown here) and honeysuckles, and the impact of the goats on native herbaceous, shrub, sapling, and canopy species. The field study will continue through the summer of 2010. We expect that the goats will significantly reduce the cover of both non-native and native shrubs, thereby allowing more light to the ground and stimulating grass and forb growth. The increased groundlayer growth will provide fuel to carry fire through the experimental site, allowing us to use fire to further manage and restore the area in subsequent years.



(5) And finally, fire generally promotes native species diversity, not only plant diversity, but an amazing diversity of other organisms as well.



Prescribed burning is not only an important management and restoration tool, but is also an excellent **educational tool**. We have locations for students, faculty, and the general public, to observe prairie reconstructions burned at different intervals (annually, biannually, intermittently, or not at all for several years) and some burned during different seasons (spring, summer, fall). These are important areas to study all sorts of effects of fire.

Why do we prescribe fire at CERA?

- Reconstruct and maintain prairie
- Restore structure and composition of savanna and forest habitats
- Eliminate fire-intolerant native and invasive trees and shrubs from prairie, savanna, and forest habitats
- Control exotic/invasive species
- Restore a historical process that maintained the Iowa landscape for several thousand years
- Educate visitors and YOU about the effects of fire

Where, specifically, is
prescribed fire used at CERA?

Prairie Reconstructions & Remnants



Where is prescribed burning used at CERA?

CERA's prairie reconstructions are located along ridgelines that are oriented N-S or NW to SE, the lighter areas on the map.

Burning was especially important during the first few years of establishment of these reconstructions. Fire stimulated the growth of the native grasses and suppressed the growth of many weeds. Burns were conducted in late March and April.

The area south of the pond that is outlined in orange is a prairie remnant.

The other two areas outlined in orange are prairie, savanna, and woodland remnants. We also have remnant white oak/hickory forest along the west side of the North Skunk River.

Experimental fire plots



Two areas along the south fork in the entrance road have been transformed into sets of experimental prairie plots.

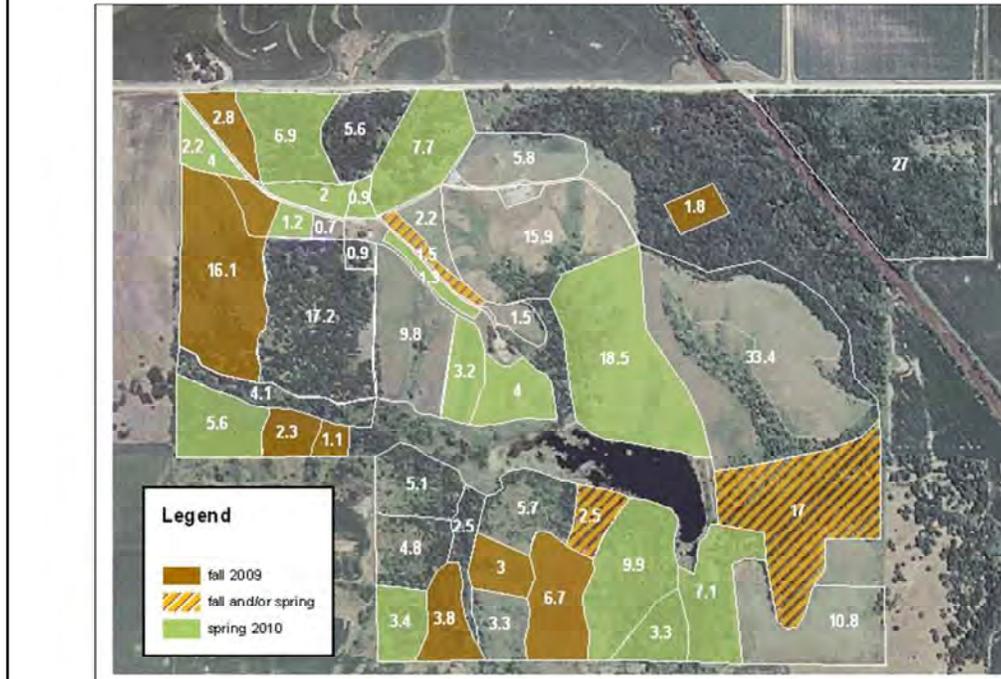
The experiment on the south side contains 10 plots burned each spring (since 1997), alternating with 10 plots that haven't been burned in the last 11 years. A second treatment has been added to some of the plots, that of mowing in early summer. So the plots represent a 2-way factorial treatment design.



What is done to prepare for a burn?

- (1) Determine which areas are going to be burned and when

Prescribed Burn Plan
2009-2010



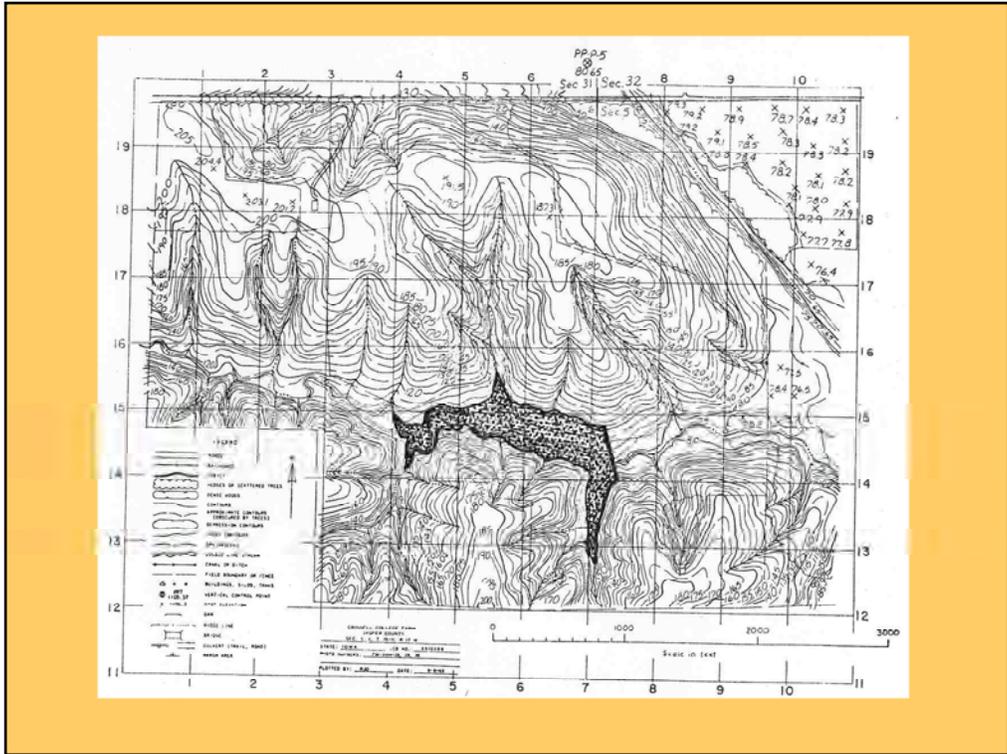
Management units correlate with topography—pieces that make logistical sense for fire management, but also reflect past, present and future management and restoration goals.

Preparation for a burn

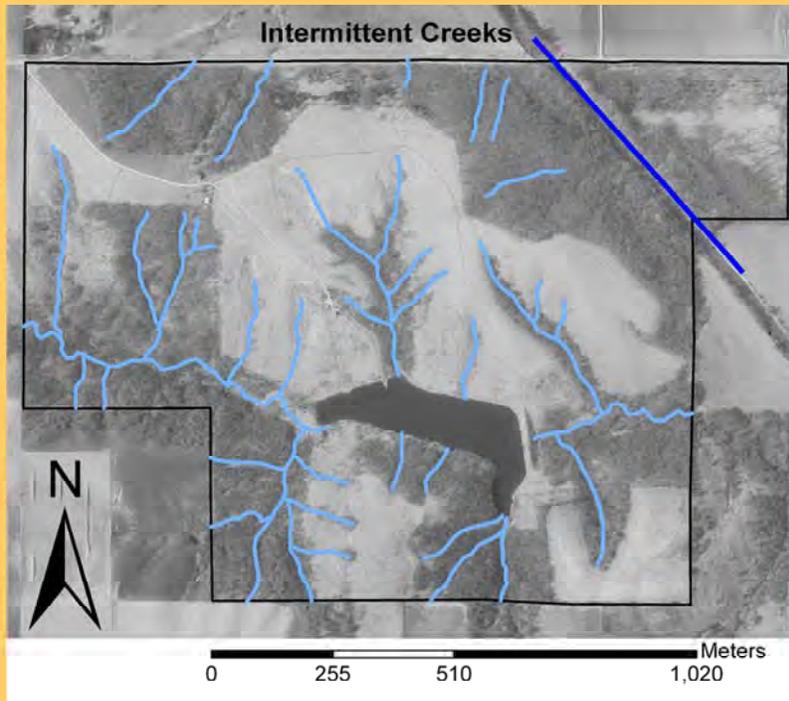
(2) Establishing firebreaks

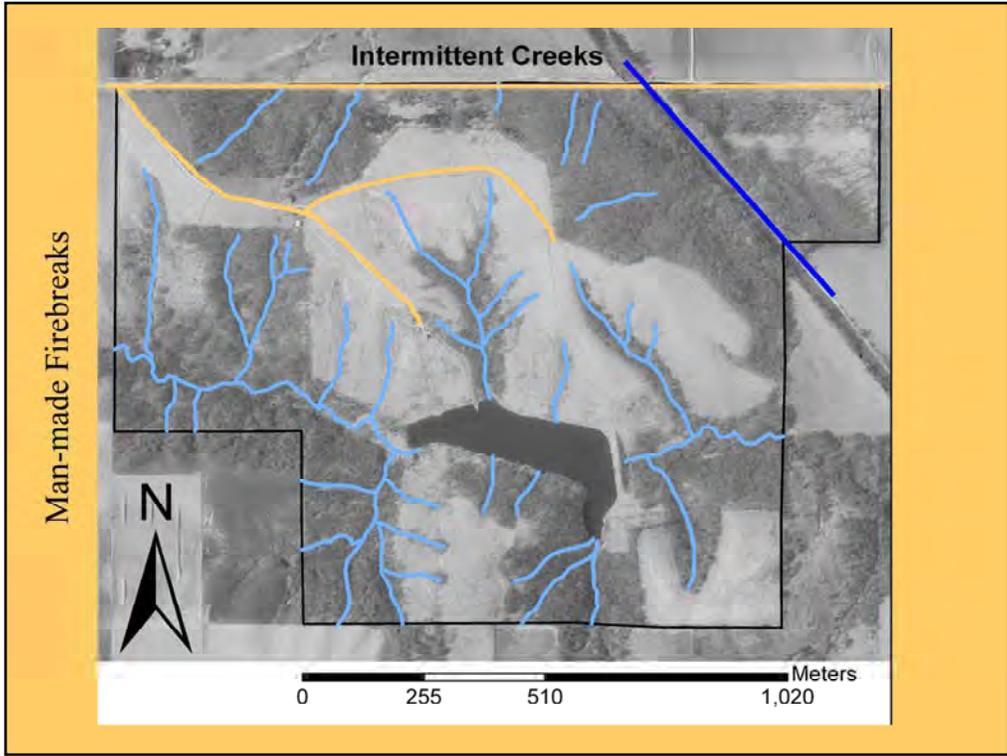
Now, what is done to prepare for a burn?

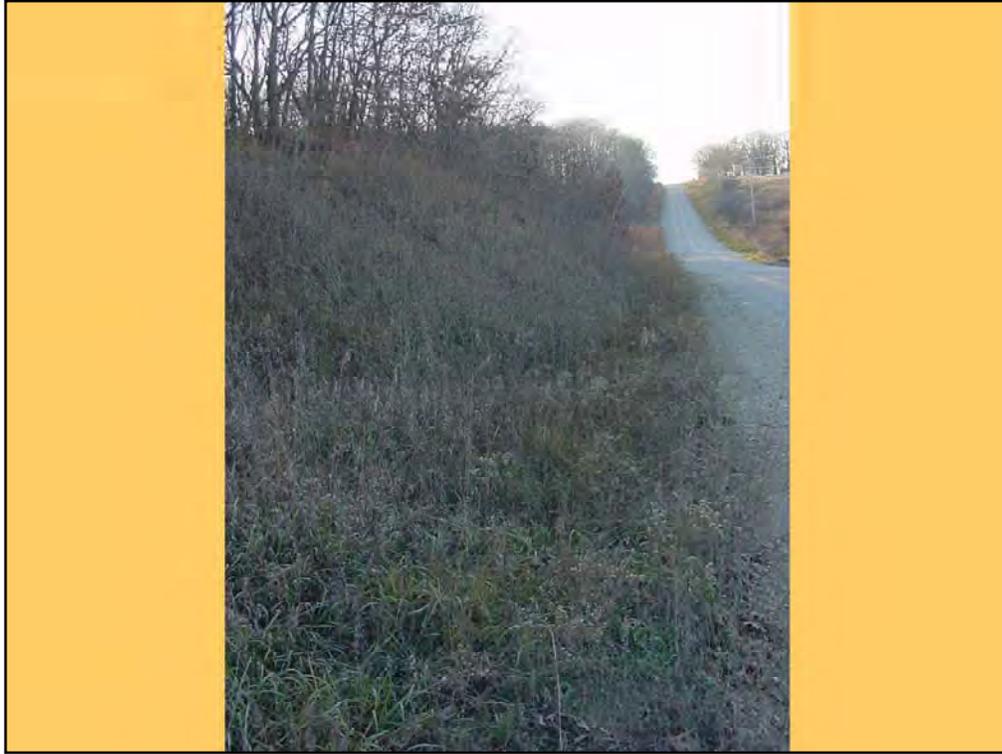
Preparation for a prescribed burn involves establishing firebreaks, checking for dead timber (when burning in savannas and woodlands), and developing a burn prescription.



Natural Firebreaks: Creeks and Topography







The county gravel road along the north edge is a very effective break because of the smooth brome in the ditch, which burns poorly if at all, and also the woody cover on moist, north-facing slopes. Fire will only creep through this area on a dry year at best.

