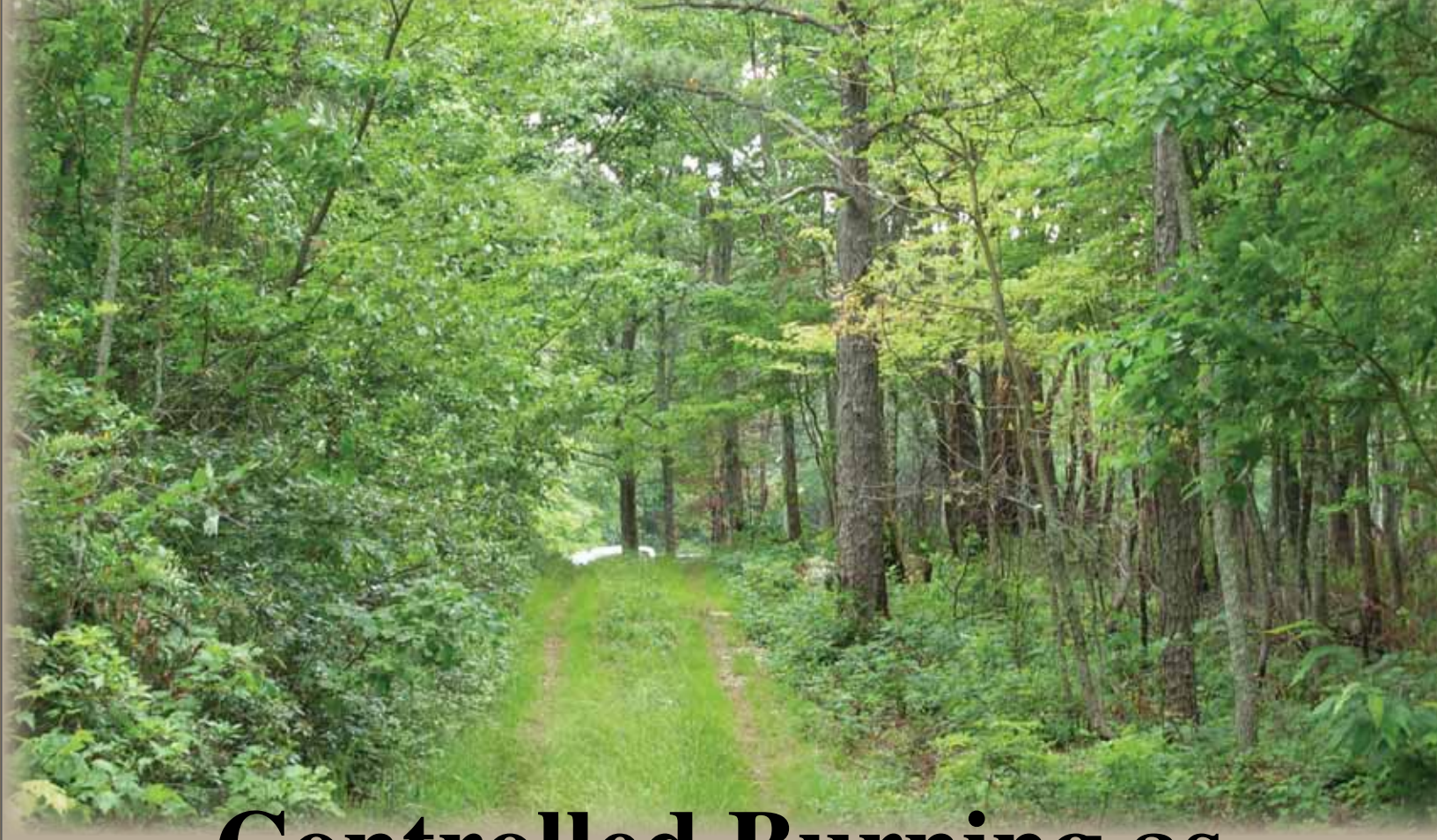

Controlled Burning as a Habitat Management Tool in Kentucky

by Jeffery Sole

Fire History In Kentucky

Many people are surprised to learn fire played an integral role in the development of nearly every type of ecosystem historically found in Kentucky. Kentucky's native forests, woodlands, savannas, grasslands, and even our wetlands developed with fire routinely being a part of their development and evolution. Most of these fires resulted from fire being purposely set by Native Americans. Some fires also likely occurred through lightning strikes during storm events, although this occurrence would have been rare. Fire is an important process in maintaining habitats for many kinds of plants and animals. Throughout history plants and animals have relied on periodic fires for their reproduction, growth, and survival. The development of towns, roads, and farmlands, combined with effective fire suppression, has stopped fire from moving across the land as it once did. Controlled Burning (a.k.a. Prescribed Fire) is a way to return fire to the landscape in a controlled manner so it may continue its vital ecological role. Controlled burning also reduces heavy buildup of dead wood and other debris, thereby decreasing the threat of catastrophic wildfire.

Over the past 100 years fire suppression has been the norm, leading to considerable changes in the vegetation living in our forest and grassland systems. An "altered fire regime" has been identified as one of the key ecological threats to many of our native habitats across the Kentucky landscape. In general, the density of trees has increased, leading to closed-canopy forests with little understory vegetation and a shift in tree species composition—away from oak-hickory toward maple-beech dominance.

Consequently many natural resource managers across the state are working to restore fire into Kentucky's forests and open lands in a manner to more closely mimic natural fire regimes through the use of controlled burns. Using fire as a management tool can greatly enhance the plant and wildlife species diversity of an area, restoring many habitat types which have become very rare in our landscape.

The image above is of unburned (left) and burned woods (right). Notice how "thick" the unburned woods on the left are compared to the burned woods on the right where much more sunlight reaches the forest floor and increases the presence of herbaceous plants such as wildflowers and forbs.

Photo courtesy: Chris Minor

Safety and Proper Planning Paramount

Fire is a necessary part of functioning ecosystems. Throughout much of the 19th and 20th centuries, however, fire was considered a purely destructive force and was excluded from the landscape. With fire exclusion eliminating several important plant and animal communities of our upland habitats and with the close proximity of homes to the forest edges, fire practitioners recognize the important distinction between good fires and bad fires—with safety as the primary factor.

Bad Fire

Unplanned, uncontrolled wildfires (often the result of arson) can create unpredictable fire behavior, including high intensity and fast-moving flames that put people and property at risk. Each year, an estimated 700 homes and structures in Kentucky are threatened by wildfire, and approximately 30 are lost. Wildfire also often results in significant smoke impacts on communities and roads, posing a public health and safety hazard.

Good Fire

Controlled, or "prescribed," burns are planned events and implemented in a manner to minimize hazards to people and property. Careful analyses of weather conditions and fuel availability allow the burners to choose the most appropriate and safest burning technique, which reduces fire intensity and smoke impacts while restoring important habitats. Areas that have been treated with controlled fire are also less susceptible to out-of-control wildfires.

Typical Uses of Controlled Burning for Habitat Management

Grasslands, Prairies, and Glades

Mixed grasses and herbaceous plants dominate, with trees mostly occurring along streams or as the area transitions to savanna and woodland. Controlled fire can be applied to this habitat type approximately every 1 to 3 years to maintain and improve plant species diversity. Dormant season burns can be used to promote the grasses, and growing season burns control woody invasion and increase diversity of wildflowers.

Mixed Oak or Oak–Pine Savanna

These forests are dominated by oaks and shortleaf pine; the trees are widely scattered with large gaps between their crowns. Canopy coverage in this habitat type is generally 25 percent or less. Substantial light reaches the forest floor, allowing grasses and other fire-adapted plants to create lush ground cover.

Mixed Oak or Oak–Pine Woodland

These forests are dominated by oaks and shortleaf pine. The trees grow less densely, so their crowns are not touching. Crown closure will be between 25 and 60 percent in this habitat type. The open canopy allows light to reach the forest floor, where some fire-adapted grasses, sedges, and wildflowers flourish after fire removes the leaf litter.

Oak–Hardwood/Oak–Pine Forest

These are the most common forests in Kentucky. This forest occupies south-facing slopes, ridge tops, and the upper portions of most other aspects. These forests are dominated by oaks, hickories, and shortleaf pine. The trees grow somewhat densely, with at least 60 percent of their crowns touching, creating a mostly closed canopy. Fires moving through these forests remove leaf litter to allow a profusion of wildflowers, grasses, and sedges to occur while controlling the invasion of these sites with more shade-tolerant and fire-intolerant species such as maples, beech, and hemlock.

Mesic Forest

These forests are generally on our northerly facing slopes and along streams, dominated by maples, beech, basswood, hemlock and other moist site loving trees. The canopy is generally closed. Fire does not play a major role in shaping these areas of the landscape. Generally when fire reaches these areas moisture and inadequate fuels take over and the fire sputters out.

Conducting a Controlled Burn on Your Lands

Safety is of primary concern when re-introducing fire to our natural ecosystems. Doing this work in a safe manner requires trained personnel, adequate equipment, and a lot of planning and forethought. If you are interested in utilizing controlled burning as a management tool you should work with professionally trained fire practitioners to plan and implement your burns in a safe and efficient manner to achieve your goals. Technical guidance and assistance for you may be available from the Kentucky Department of Fish and Wildlife Resources, U.S. Forest Service (if your land is adjacent or within the national forest boundaries), The Nature Conservancy (in selected high-priority project areas where TNC works) or from a growing number of consultants. OR, become a trained fire practitioner yourself. The Kentucky Prescribed Fire Council will be providing controlled burning workshops for landowners in the near future.

Drip torches are used in controlled burns. They are used to start controlled burns as well as set backfires. A backfire is used to consume fuel in front of the fire or to control the direction of the fire.

Photo courtesy: E.J. Bunzendahl

Photo courtesy: Chris Minor

Timing Controlled Burns for Targeted Ecological Results

When working with your professional technical advisor, you will need to set your goals based upon what the his-

toric natural forest or grassland community would have been for your property and what you want your woods and open lands to look like in the future. Then a plan based upon the current conditions of your property will be developed to reach those goals. In some instances timber stand improvement practices such as thinning and harvest may be incorporated to reach your habitat restoration goals. In addition, depending upon your restoration goals, the fire prescription will also take into consideration the seasonal timing, desired fire intensity, fire return frequency, and appropriate weather conditions to achieve the desired fire effects.

By working with a trained fire practitioner a Prescribed Burn Plan will be prepared which will take into account all of the safety precautions which should be considered for your burn. This plan would address acceptable weather conditions (temperatures, wind speeds, wind directions, humidity levels), natural and man-made fire breaks, smoke management, fuels to be burned, equipment needs, personnel needs, contacts and permissions needed, and contingency plans.

References

Information pulled from brochures, unpublished reports and team working session notes from the Kentucky Prescribed Fire Council, the Cumberland Fire Learning Network plans, Land Between the Lakes Fire Learning Network plan.

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From the Woods...

Kentucky Woodlands Magazine recently interviewed Bert Pearson, Oldham County woodland owner, to learn his experiences with fire. He worked with the Kentucky Department of Fish and Wildlife Resources (KDFWR) ***to implement controlled (or prescribed) fire on his property.***

KWM: How has prescribed fire helped you with your property?

Bert: In both the case of woodland and open field burns, burning is a great tool for returning the nutrients held in the dead organic material (brush, grass, woody material) back into the soil. These controlled or prescribed burns also eliminate the clutter of dead material, which impairs movement of small animals and birds and reduces the chance for large unplanned fires in the future.

KWM: How did you learn about prescribed fire?

Bert: When I purchased my property I reached out for support from the private lands biologist with the Kentucky Department of Fish and Wildlife Resources as well as my service forester from the Division of Forestry. Chris Grasch is the private lands biologist I work with and before I accomplished my first burn he provided me with a "burn plan", which provided an overall plan for the burn, including weather conditions, restrictions and equipment required for a safe burn.

KWM: Tell us a little about your prescribed fire experience?

Bert: My personal burn experience has been in preparation for native grasses and wildflower plantings. The first attempt was less than ½ acre and I quickly learned the advantages of back burning or setting fires on the downwind side of the area to be burned and letting the fire burn slowly into the wind. Fire can move quickly across a field and having multiple fire breaks is advantageous. I was astonished at how the vegetation returned to a burned area quickly as well as the lushness of the vegetation.

KWM: What advice do you have for other woodland owners considering using prescribed fire?

Bert: First, I would recommend contacting your private lands biologist, whom you can find on the KDFWR web site, to provide a burn plan. I would do some reading to become familiar with prescribed fire. For weather information, visit the UK College of Agriculture weather web site at http://wwwagwx.ca.uky.edu. Notify the local authorities of your burn plans. Lastly, I found out you can't have too many friends available when you are burning, to help oversee the project.