

Is burning enough? Rethinking woody management and fire for tomorrow: a managers perspective

By Brad Woodson and Gabe Powers
McHenry County Conservation District
7210 Keystone Road
Richmond, IL 60071

2015 submitted to Society for Ecological Restoration newsletter

In northern Illinois and throughout the Midwest, land managers are tasked to preserve and restore the rich floral and faunal diversity historically shaped by fire, ungulate grazing, climatic forces, (drought, temperature, and flooding) and the underlying geology. Excluding geologically unique communities, the highest floral diversity per area often occurred on rich soiled wetland, prairie, and woodland community boundaries. These “borders” were blurred by continual retreats and advances of grassland and woodland, driven by the repetitious, yet varied fire and moisture regimes over time.

These broad level forces dominated the landscape over thousands of years, while at the local level, the frequency and intensity of fire often shaped the extent and structure, specifically woody species presence and dominance, in a natural community. For instance, large intense fires during severe droughts pushed woodland and shrubland communities into retreat from previous positions of advancement. This continual expansion-suppression in fire dependent systems provided much of the natural variation we observe and value today. Yet the applicability of managing these landscape level variable systems which were modified at the climatic extremes presents a challenge for managers when the goal is to maintain these communities in a level of stasis, or *preserved quality*.

Fire science has greatly expanded land managers knowledge and predictive fire-effects abilities. Throughout the region, prescribed fire has become an accepted management practice for agriculture, forestry, wildlife, and natural areas management. Smoke modeling, predictive fire behavior, standardized training, and accurate weather forecasting allows land managers to conduct burning safer and more frequently than any time in the last century. While many fire dependent natural areas have been reintroduced to burning, the current application of fire may be lacking in intensity when compared to its historic counterpart responsible for shaping natural community boundaries, diversity, and structure. Can land managers be expected to apply a landscape level force, through prescribed fire alone, in a fragmented environment to meet our natural area management needs and expectations, or are additional energies necessary to meet management goals?

Contemplating this question requires evaluation of limitations to prescribed fire in today’s environment and landscape. The number of days managers can place fire on the landscape, often referred to as the “burn window,” is limited annually to a few weeks in the spring and fall. According to our records, the number of burn days within the burn window averaged fourteen days in the spring season, and seven days in the fall, over the last five years. The limitations to a program's burn window are determined by assessing the short-term negative impacts to wildlife, endangered plants, and public use, to the benefit of each prescribed burn. Beyond the natural resource considerations of fire impacts, conducting prescribed fire in fragmented landscapes requires burning near roads, houses, schools, airports etc. Smoke management and public safety further restrict the type of burn a manager is able to conduct with regards to frequency, intensity, and duration of fire in these areas.

Further, State, and Local regulations set parameters and limitations on weather conditions which they will allow prescribed burning. In addition to regulatory requirements, many agencies establish additional self-imposed limitations to further reduce liability. A generalized result is, no agency will conduct a prescribed fire during a red flag warning. Many agencies will not burn when weather forecasts call for wind in excess of 20 mph or relative humidity below 20 percent. We are familiar with local fire departments that disallow prescribed fire when winds exceed 15 mph. Each manager in the Midwest operates with unique regulations specific to their location. The cumulative result is prescribed fire is occurring, but not at the intensity or landscape level responsible for shaping the structure of the habitat we are tasked to preserve.

Given the current operational limitations, expecting prescribed fire to have the same woody suppressing capabilities it did centuries ago will lead to disappointment. Based on twenty-five years of observation, the present use of prescribed fire, applied at small scales, with mild fire weather prescriptions, will not be enough to shift natural community dominance or drastically reduce the density of woody species in a typical woodland-shrubland community. Considering these limitations of firing the landscape, managers must continually re-evaluate how prescribed fire will be utilized to manage natural areas.

Many land managers find it difficult to maintain or justify an annual or biennial burn rotation so many default to a three to four year burn rotation for prairie communities. In this scenario, if one prescribed fire is marginal or low in intensity, there will effectively be a six to seven year period where woody species will grow and expand unchecked. This, in combination with an extended period of above average rainfall or soil moisture often results in brush growth that can no longer be managed by mild fire alone.

As we examine our future burn campaign, our agency plans to continue monitoring fire effectiveness by evaluating fire prescriptions within regulatory parameters, adjusting fire return intervals, and strategically applying additional energies (mowing, herbicide, and grazing treatments) on the landscape to leverage the effectiveness of our prescribed burn program. Our goal is to preserve natural quality and to restore natural areas to a point of resiliency. The applicability of this goal with the use of modern prescribed fire alone remains questionable.