Fire in the Flint Hills

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Leaping Flames
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FIRE IN THE FLINT HILLS

Descriptions of the Flint Hills are always encased in the rich history of fire and its impact, whether by natural occurrence or human will.

The central United States, prone to lightning strikes and convective weather systems, attracted fire whenever the right conditions coalesced. Indigenous Peoples were well acquainted with the power of fire, both natural and human directed. Plains tribes made the connection early on between areas of burned warm-season prairie grasses and herbivores' preference for it.

The three primary ecological drivers necessary for prairie ecosystems — especially the tallgrass prairie — are weather, impacts from grazing and fire. Historically, most of the lower 48 states burned at least once a decade, with parts of Kansas burning at least every six years in the two centuries between 1650 and 1850.

European migration, pushing ever further west, instigated major change with human-powered burning, both intentional and accidental. Fragmentation due to changes in how settlers used the land changed the impact of large-scale fire across the landscape. Even today, the great prairie ecosystem is divided into areas where fire cultures differ in their willingness to use fire in a way that mimics historical conditions.

Due to the lack of impactful fire, fragmentation of the landscape and increasing woody and herbaceous invasive species, the once-vast areas of open native grass vistas are under threat of loss.

Native warm-season grasses in the tallgrass prairie have always responded positively to the natural disturbance of fire. Tallgrass species such as big bluestem (*Andropogon gerardii*) and Indiangrass

(*Sorghastrum nutans*) thrive under flames. These tallgrass species respond quickly to fire applied during the spring-to-summer growing season under warm, moist soil conditions. New growth that results from the removal of either dormant or current growing season vegetation is higher in protein and more digestible due to the lush new growth as opposed to lignin-filled mature plants. Fresh new growth is preferred by bison and cattle, who consistently detect the difference between plants exposed to fire versus those that are not.

Over the past 50 years, researchers have determined and cattle grazers have realized the improved animal performance in cattle (especially yearling cattle) on burned versus unburned native grass: a performance difference of as much as a quarter-pound per day for as many as 75 to 90 days, resulting in more total pounds of beef produced and sold.

Physically intact native Kansas rangeland is under continued threat of fragmentation, making best practice implementation of prescribed grazing and prescribed burning more difficult to apply in a way that resembles historic conditions. Ever-increasing infrastructure must support an ever-growing economy, with vast and sometimes unintended effects on how ecosystems like the tallgrass prairie function. In many ways and in most places, it is nearly impossible to replicate the impacts of these natural drivers on a scale that previously persisted for centuries.

Today, over two million acres of tallgrass prairie are exposed to prescribed burning each year. The timing of those burns is spread out between March and September, as weather conditions allow. Spring is the most common time to see fire on the landscape.

The target — or prescription — of those applied fires ranges from addressing grazing distribution issues and removing excessive dormant forage to woody species invasion, noxious weeds, non-native competitive vegetation (such as tall fescue and Kentucky bluegrass) and improved animal performance. These threats (or prescriptive reasons) vary by location and ranch to ranch, requiring landowners and ranchers to identify their own unique basis and reasoning for applying a prescribed fire.

With a growing population that continues to increase in and downwind from prescription fires, considerations for timing, ignition and climatic conditions that vary from day to day must be carefully weighed. The ultimate goal is to safely apply fire in a manner that considers public safety as well as helping producers effectively utilize the practice. Without fire, the future and sustainability of the tallgrass prairie would undoubtedly be compromised.

Before and After
Larry Schwarm

In the past half-century, the spread of non-native and native woody species across rangelands has increased exponentially in Kansas and the Flint Hills. The once intact tallgrass region appears to be squeezed from all directions. However, there is hope for a positive shift, thanks to the persistent and frequent use of prescribed fire in the Flint Hills. The focus is squarely on protecting the core and pushing outward with the mechanical and chemical removal of woody species combined with prescribed fire application. The goal is to stop the inward progression and reverse the woody species' encroachment.

Landowners and ranchers are the greatest hope for reversing the malediction that threatens the Flint Hills. Their knowledge, work ethic and pride in a globally important ecosystem, matched with community support locally and nationally, will be the hallmark of protecting an imperiled ecosystem.

The challenge of protecting public health and maintaining air quality standards must be balanced by highlighting the increased universal benefits of prescribed fire. This may materialize in frequently burned acres of tallgrass prairie being burned less often, while other areas not typically exposed to prescribed fire may be burned more often. The true result may lie not in the acres upon which fire is applied but in the resultant effect on the ground itself.

In recent years, Kansas has experienced wildfires at a scale that today's Kansans have not witnessed in their lifetimes. This trend will increase as fire-starved plant communities continue to increase in size and scale — while the ability to safely apply prescribed fire decreases. Hence, control of accidental wildfires becomes a necessary public concern.

So, what is our role as a community? We must understand the history of how grasslands developed, their primary ecological drivers and the need for landowners and managers to continue using those drivers to mimic historical applications. The tallgrass prairie depends on our thoughtful participation as stewards of the land to survive.

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Fire Whorl
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