Wildland Fire Use as a Prescribed Fire Primer

Dana Cohen

There are several goals for prescribed fire programs, from intensive fuel reduction inside the wildland/urban interface for reducing the risk of severe fire near homes, to restoring the natural role of fire to the landscape out where a century of fire suppression has left an unintentional—yet indelible—impact.

With such a variety of goals, however, we tend to apply fire at the same times of year with the same tools, and often with the sole objective of reducing wildland fuels to very low levels. For units where the goal is not a "natural" setting but rather a defensible space, this type of fire is often exactly what's needed. But where the goal is restoration of process and ecosystem health, we need to ask: Are these prescribed fires *truly* replicating "natural" fire?

As wildland fire use (WFU) becomes more common outside of wilderness areas and moves onto a greater variety of Federal, State, and private lands, we have the opportunity to observe more fire use events. Thus, we have the ability—if we're paying attention—to better calibrate our prescribed fire prescriptions for restoration purposes and add an important set of tools to our arsenal.

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The Nature of Fire

When we talk about the role of fire in ecosystems, the term "mosaic" is often used. As managers move toward larger treatment units, more of a mosaic is inevitable—regardless of ignition source, timing, or length of the burn.

The mosaic achieved in a WFU fire, however, is rarely replicated in a prescribed burn. There are many reasons for this, all of which can be gleaned from observing "natural" fires.

After nearly a decade of observing lightning-caused, unsuppressed fires in Yellowstone National Park, Don Despain, research ecologist at the Department of the Interior, U.S. Geological Survey, Northern Rocky Mountain Science Center, made the following key observations (Despain 1985):

- Large fires do not result from every ignition;
- Fires can persist for long periods of time; and
- Fires are not active through most of their duration—large acreage increases are only sporadic.

Perhaps the greatest missing link in our attempts to "restore" natural fire to the landscape is our typical human impatience—grounded in political realities. Would the public tolerate the smoke of a long-term planned ignition event? Will we have resources to manage this fire in another week? In another month?

Applying Fire in a Restorative Mode

And yet the reality is that fires allowed to move with little or no management intervention create a much greater mosaic as they progress. Fires *are* patient—they smolder, creep, or merely persist through heavy fuels as fuel conditions, weather, and topography allow for a period of fire growth.

If we, as managers, could be so patient in our application of fire, we would be taking great strides toward truly applying fire in a restorative mode.

Research ecologist Despain further noted that less than 20 percent of the lightning starts in old-growth stands in Yellowstone National Park grew to greater than 5 acres (2 ha). It is also a fact that in landscapes so far from their "natural" compositions, minimally managed fires alone will not restore ecosystems (Miller 2004). There is no one answer, no one magic bullet.

There is always the opportunity for us to learn and to grow, the opportunity to add more tools to

our arsenal. The three adjacent case studies are excellent examples of this (see sidebar). As we continue to shift from a suppression paradigm to one of integrated landscape management, WFU fires offer an undeniable opportunity to add to our management toolbox.

Does it really matter who starts the fire?

Ultimately it doesn't. But the timing and type of fire do matter. Taking the lessons learned from WFUs and integrating them into our prescribed fire management practices are the next step in the evolution of fire management.

Acknowledgments

Kim Soper, Mike Crawley, Diane Cote, Bob Dellinger, Rhonda Watson, Mark Taylor, Leon Konz, Susan Ross, Beth Buchanan, Garner Harris, Mark Rogers, Mike Frary, Mark Rosenthal, the fire management staff of the Northwest Colorado Fire Management Unit, Deb Yoder, Tod Johnson, Cyndi Sidles, Nate Benson, Tim Sexton, Henry Bastian, Jake Schoppe, Brian Steinhardt, and Mike Welch.

The Next Step in Our Evolution of Fire Management: Three Case Studies

Right Fork Wildland Fire Use Fire/Texas Mountain Prescribed Fire

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On August 21, 2003, a lightning strike started a wildland fire use (WFU) fire in the Texas Mountain prescribed burn unit near Rangely, CO. The Texas Mountain prescribed burn had been planned 10 years earlier. The burn had been attempted several times prior to this lightning ignition. That coming October, a prescribed burn was slated for yet another try.

The goals of this planned prescribed burn were to:

- Reduce heavy fuel remnants from "chainings," a method for felling large numbers of piñyon and juniper trees using a large anchor chain pulled between two tractors, in the 1960s and 1970s;
- Reduce the piñyon pine and juniper encroachment into the area; and
- Create a better mosaic of age classes and species diversity within the shrub/forb community.

When the fire was first reported, the Zone Fire Management Officer and others recognized the location and proceeded to manage the fire for resource benefit. After several days of observing the fire's behavior, it was clear that the conditions were optimal for conducting the prescribed burn. Resources were gathered; fire restrictions were reexamined. On September 1, the prescribed burn was successfully initiated while the WFU continued within its boundaries until it was completely absorbed into the prescribed fire burn.

Six Mile Wildland Fire Use Fire

Manti-LaSal National Forest

In the late 1990s, a project was developed on the Manti-LaSal National Forest in eastern Utah to promote aspen regeneration through the reintroduction of fire. In 2000, fire was applied to a portion of the target unit. Plans were in place to treat additional acreage following the 2004 fire season. Managers had been constrained in their prescribed burn attempts for several reasons, including inability to meet prescription and staff turnover.

The Six Mile WFU Fire started in July 2004 near this original prescribed fire unit. The fire was called out in November. Ultimately, this WFU accounted for 5,027 acres (2,034 ha) burned, with the majority of fire growth occurring in September. Portions of the 2000 prescribed fire treatment were reburned.

Managers and the forest fire ecologist were impressed with the WFU's fire behavior, even during the monsoonal weather patterns of midsummer and occasional rainfall that the unit received. The fire burned in a mosaic, consuming heavy fuels and creating numerous gaps in the fir that had encroached into aspen habitat.

Because it was previously thought that fire during this time of year wouldn't achieve management objectives, burning at this time was not originally considered. However, as the fire effects—during both the fire's slow growth as well as its runs—continued to be monitored,

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Varied Consumption—The Six Mile Wildland Fire Use Fire on the Manti-LaSal National Forest burned through the monsoonal weather patterns of midsummer in a mosaic pattern, successfully consuming heavy fuels and creating numerous gaps in the fir that had encroached into aspen habitat. Photo: Dana Cohen, USDA Forest Service, North Kaibab Ranger District, Kaibab National Forest, Fredonia, AZ, 2004.

managers gained valuable information for future aspen restoration projects.

Great Smoky Mountains National Park Fire Use Program

The prevailing paradigm for fire-dependent communities in the southern Appalachians is that they are largely a result of anthropogenic, or human, influences (Buckner 1998). Fire histories, such as Mark Harmon's studies in the park would seem to confirm this (Harmon 1981). They attribute the majority of known fire starts and burned acreages to anthropogenic causes rather than to lightning.

Since the implementation of a WFU policy with the park's 1996 fire management plan, however, managers have been exposed to a number of lightning-caused fires that are beginning to tell a vastly different story.

From 1942 to 1997, of the 115 recorded suppressed lightning fires, the largest acreage burned in the park from a single fire was the 1988 163-acre (66-ha) Redman Fire. Only 21 fires (18 percent) during this time period grew to more than 10 acres (4 ha). In fact, the Redman Fire was the only suppressed fire that grew to more than 100 acres (40 ha) within the park.

Since 1998, 14 lightning started fires have been recorded in the park. The majority of these were not suppressed. Four grew to more than 100 acres (40 ha). Of these, the Chilly Springs Fire is the largest, currently at 900 acres (360 hectares). None of these large WFU fires experienced any management intervention, such as burnout operations, which might skew the data.

Recent experience suggests that lightning has played a greater role in the landscape than previously understood. It has also helped park fire staff approach their prescribed burns differently. Main ignition often occurs along ridgelines, and fire is allowed to back down toward blackened control lines or moist drainages.