

Burning Big! A Workshop on Large Burn Implementation in the Central Appalachians

Staunton, Virginia February 4-5, 2020

"Our job is to restore fire integrity. Big burns are the frontier of saving diversity."

Cecil Frost, Keynote Address

Setting the Stage

Cecil Frost has spent his career studying historical landscape fire ecology and fire-dependent species. In addition to looking at the rate at which fire returned on a landscape, he studies fire pathways to glimpse how fire moved across pre-settlement country. In this time of highly departed ecosystems, fractured landscapes and the sixth mass extinction, returning good fire at natural and meaningful scales is key for creating healthy forests and a diversity of habitats in the Central Appalachians.

Coming Together

The Burning Big! workshop hosted by the Heart of the Appalachians FLN brought together 86 participants from 24 agencies and organizations to discuss how to scale up restoration by burning larger units. After setting the historical and ecological context, the workshop focused heavily on operations.

To begin, three fire managers—Sam Lindblom (The Nature Conservancy), Dan Martin (USDA Forest Service) and Dave Robinson (National Park Service)—laid out a perspective on how partners in the region have adapted in the last 20 years and evolved into a highly collaborative management team poised to think outside the box and burn bigger. Martin polled the room: "What is a big burn for your agency?" Answers ranged from 100 to 5,000 acres. While even the smallest burn

is important, he noted that larger burns are more economical, create more diversity, have fewer impacts on the landscape (for example from firelines) and can be safer. In answer to the question, "How have we gotten to where we are today?" the final word from all these managers was "partnerships."

Breakouts

In the spirit of harnessing the collective wisdom of so many partners, most of the two-day workshop was conducted in small breakout groups to allow for dialogue and interactive skill-building. Breakout sessions covered a full range of topics, from planning and adaptive management to aerial ignitions and smoke management.

Burn Planning Lessons Learned

"Patience is critical to a successful planning process." Lindsey Curtin, Butch Shaw and Greg Phillips (all USFS) gave an overview of the NEPA process and covered lessons learned in the importance of taking time for planning and strategy. They stressed that communication, transparency, patience and stakeholder engagement are key for successful planning.

Adaptive Management Review of Big Burn Ignition Patterns and Impacts

Jean Lorber (TNC), Nikole Simmons (TNC) and Frank Simmons (USFS) used a SIM table to illustrate the impacts of different firing techniques on fire intensity and vegetation. The SIM table uses many data sources to simulate realistic conditions for different scenarios and associated outcomes in three dimensions. Using several local burn unit examples, participants watched as aerial ignition spread yellow, orange and red over the sand ridges, with the colors indicating degree of fire severity. Lorber then presented actual data showing the desirable open and early forest conditions created by the burn. Participants discussed how lessons can be taken from these past burns and associated monitoring data and applied to achieve burn objectives in the future.

Risk Management

Organizations participating in wildland fire must make deliberate choices to mitigate risk in the ways they operate. Eddie Morris (Nighthawk Consulting; retired USFS) gave an overview of different types of risk and how they can be factored into operational risk management. Focusing on aviation accidents and fatality statistics, he illustrated the positive impacts intentional risk management programs and training have on safety: helicopter accidents in the Forest Service occurred at an average rate of 4.7 per year since 1961, then sharply decreased to 0.3 per year from 2010-2019 with



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The workshop included demonstrations of drone technology (left) and various ignition devices (right).
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the implementation of new risk management guidelines. Risk will always be inherent to wildland fire operations, but practitioners can continue to improve outcomes by incorporating new knowledge into safety standards.

Aerial Ignitions Best Practices and Aerial Firing Boss Role

Aerial ignitions increase the complexity of burn operations significantly, and require more planning and risk reduction measures. Mike Haisten, Eddie Morris, Dan Martin (all USFS) and Sam Lindblom (TNC) led a discussion of critical steps for streamlining successful and safe operations. The was organized into five broad categories—planning, mapping, mindset, implementation and safety.

Unmanned Aerial Ignitions and Other Firing Devices

While drone technology won't be replacing the need for helicopters anytime soon, this new firing device can lower both cost and risk of fire operations. Jim Higgins (Drone Amplified) showcased the company's IGNIS 2.0 technology. Today's model carries 450 one-inch spheres, communicates wirelessly at distances up to 5 km and has myriad sensors and safety features to allow both automated and manual flying. Higgins demonstrated a drone's capabilities with a pre-programmed ignition flight, dropping non-reactive spheres and showing off the impressive camera features.

Smoke Management: Practical Tools for Meeting Objectives and Ensuring Public Safety

Bigger burns mean more potential for smoke concerns, especially as burning extends over multiple days of operations. Melanie Pitrolo (USFS) provided tools and insight for how to mitigate smoke issues and impacts on public health and safety. She emphasized the importance of six fundamental smoke management practices:

1. Evaluate smoke dispersion conditions
2. Monitor effects on air quality
3. Recordkeeping—maintain a burn/smoke journal
4. Communication—ensure public notification
5. Consider emission reduction techniques
6. Share the airshed—coordinate area burning

Fire Weather Forecasting: Good Weather Intelligence Is Key to the Implementation of a Successful Burn Plan

Phil Manuel (NOAA) led a session on fire weather forecasting with an emphasis on how to build a relationship with your local fire weather forecasters to make the most of NOAA's expertise during burn season. Narrow burn windows in the Appalachians make forecast interpretation and best practices for monitoring unit specific weather critical for recognizing

less apparent windows. These "shoulder" days can make a big difference in overall acreage completed in a season, for example by permitting blacklining operations that reduce large burn complexity.

Getting Started on Scaling Up

After the breakout sessions, participants reconvened for a panel discussion featuring Dan Martin (USFS), Dave Robbins (NPS) Nikole Simmons (TNC), Sam Lindblom (TNC), Claiborne Woodall (VA Department of Conservation and Recreation), Samantha Lopez (VA Department of Game and Inland Fisheries) and Sarah Parmelee (VA Department of Forestry). "How do you successfully scale-up a fire program in its infancy?" was one of the crucial questions. The answers included a suggestion to "hitch your program to one that's doing it really well and just show up." Also, "tell your story and build trust with the public." And key to continued success is the need to "create multi-tiered relationships that withstand turnover."

Mike Haisten capped things off with a presentation about his assessment of the common denominator of any successful burn program: plasticity. In biology, plasticity is defined as "the adaptability of an organism to change in its environment," and the same can be said for an organization. Its number one enemy is status quo bias.

"The ecosystems don't care what color paint is on the trees," Haisten said. The Central Appalachian FLN is making strides to burn more acres across more boundary lines to achieve the fire regimes and fire integrity more akin to those that came before both the physical and painted boundaries of today.

For more about the Burning Big! workshop contact:

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Or visit the Central Appalachians FLN on the Conservation Gateway for workshop presentations and handouts.

The Fire Learning Network is part of Promoting Ecosystem Resilience and Fire Adapted Communities Together, a cooperative agreement between The Nature Conservancy, USDA Forest Service and agencies of the Department of the Interior. For more information about PERFACT, contact Marek Smith at marek_smith@tnc.org.

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