

FUELS TREATMENTS IN PONDEROSA PINE

VISITS TO THE BOISE NATIONAL FOREST AND BOISE BASIN EXP. FOREST



Field Trip Summary 8 | September 2014

Terrie Jain, Research Forester with the USFS Rocky Mountain Research Station, together with foresters, and fire and wildlife managers from the Boise National Forest led a tour of fuels treatments in dry conifer forests around Idaho City, Idaho. Site visits provided a visual of high forest fuel conditions with potential to support severe crown fires and what successful fuel reduction treatments to reduce crown fire potential may look like (Figure 1). At each tour site, however, discussions extended beyond the management and treatment of fuels to include fire history, legacy management, the wildland-urban interface (WUI), forest resiliency, wildlife habitat, and more.

On the Boise National Forest (BNF) and within the Boise Basin Experimental Forest, various fuels treatment methods have been utilized to -

- reduce high fuel loads in the wildland-urban interface (WUI) and elsewhere in the forest to improve firefighting potential and reduce severe fire risk
- produce revenue for future management projects
- provide habitat for a diversity of forest wildlife
- understand the benefits and drawbacks to particular fuel treatments by evaluating each based on site conditions, cost/benefit analyses, feasibility, and desired future condition

MANAGING A FIRE-ADAPTED ECOSYSTEM

The BNF is a dry conifer ecosystem that historically experienced fires every 10 years, but with successful fire exclusion, portions of the forest have gone unburned for 100 years and accumulated uncharacteristic high fuel loads. Of the fires that have burned in the BNF in the last 20 years, many were high severity, resulting in tree mortality and fire effects outside of what occurred historically in low-severity surface fires.

Managing fuel build up in the BNF's fire-adapted ecosystem has posed many challenges -

- The BNF contains a considerable amount of WUI, and fuel treatments in the WUI are especially costly and time consuming because they require slow and careful planning, establishment of public support, and cautious implementation.

- The BNF surrounds the Boise Valley, which easily collects smoke and registers poor air quality, adding yet another factor that needs evaluation and consideration before conducting prescribed fires.
- The BNF is located hundreds of miles from operational sawmills, which are necessary to turn mechanical fuels treatments into revenue for other forest operations.



Figure 1. Treatment site on the Idaho City Ranger District, BNF; site was logged and prescribe burned about 6 years prior. Photo courtesy of the Northern Rockies Fire Science Network (NRFSN).

EXPERIMENTS TO INFORM MANAGEMENT

The Boise Basin Experimental Forest (BBEF) was established in 1933 within the BNF for the purpose of conducting research and studies to inform management of ponderosa pine forests. Terrie Jain and Russell T. Graham manage and lead research on the BBEF.

The BBEF is primarily dry conifer forest with past disturbance regimes and management histories that reflect those of the BNF. Because the BBEF occurs within the National Forest system, all research and treatments must adhere to National Forest plans, regulations, and guidelines. For these reasons, experimental forests are ideal for developing long-term treatments and management approaches that are realistic while working within agency regulations and forest plans.

Management and treatments conducted on the BBEF have focused on retaining old-growth ponderosa pine trees,

reducing the density of young ponderosa pine and Douglas fir in the understory, and creating forest resilience to future fires and insect and disease outbreaks.



Figure 2. Jain describing the depth of litter, duff, and bark slough that builds up around the base of ponderosa pine trees in the absence of frequent surface fires. This basal buildup requires attention, before reintroducing fire. Raking, blowing, and winter burning have been used to remove build up at the base of trees. Photo courtesy of NRFSN.

Years of BBEF management has allowed Jain to test a number of fuel treatment methods and forest management concepts, which in turn, has resulted in a number of lessons learned -

- Forest management and fuels treatments require patience. Forests have developed over hundreds of years and the introduction of rapid, aggressive treatments can produce unwanted mortality in old trees (Figure 2). A single forest treatment cannot produce an open park-like stand of primarily old, large ponderosa pine in a largely fire-excluded environment.
- Clearcutting and patterned silviculture treatments used in the past do a poor job of mimicking the forest structure that develops from natural disturbance processes. New silviculture methods that meld art and science to create non-uniform forest patterns have been taught to timber-marking crews and loggers on the BBEF and utilized in BNF forest plans. This “touchy-feely silviculture”, as described by Jain, is defined and prescribed in the BNF Forest Plan.

- Managing for forest resiliency is necessarily value-driven. A forest managed for fuels reduction so that the next fire burning through will not be so severe that it kills old, large, overstory ponderosa pine trees may require a different management plan and treatment prescription than a forest being managed to support the greatest diversity of vegetation and wildlife.

FUTURE EXPERIMENTAL MANAGEMENT

Hopes are that long-term studies conducted at the BBEF will allow for the identification of threshold conditions on the landscape that will allow forest managers to identify areas that are fire resilient and those that require a prescribed fire or silvicultural treatment to be resilient to the next fire. Threshold identification could inform future treatment prioritization.

ADDITIONAL READING & INFORMATION

- Jain, T.B., Battaglia, M.A., and Graham, R.T. 2014. Northern Rocky Mountain Experimental Forests: settings for science, management, and education alliances. *Journal of Forestry*. 112(5): 534-541.
- Jain, T.B. 2013. Silviculture research: the intersection of science and art across generations. *Western Forester*. September /October: 8-9.
- Jain, T., Battaglia, M.A., Han, H., and others. 2012. A comprehensive guide to fuel management practices for dry mixed conifer forests in the northwestern United States. Gen. Tech. Rep. RMRS-GTR-292. Fort Collins, CO: USDA, FS, Rocky Mountain Research Station. 331 p.
- Jain, T.B. 2012. The role of experimental forests in science and management. *Journal of Forestry*. 110(5): 288.

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The Northern Rockies Fire Science Network (NRFSN) aims to be a go-to resource for managers and scientists involved in fire and fuels management in the Northern Rockies. The NRFSN facilitates knowledge exchange by bringing people together to strengthen collaborations, synthesize science, and enhance science application around critical management issues.



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