

**Project Title:** Video documentation of fuel treatment practices in Black Hills, Front Range, southwestern ponderosa pine forests

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**Principal Investigators:**

Frederick W. Smith, Ph.D., Colorado State University, 120 Forestry, Fort Collins, CO 80523-1472, Phone: (970) 491-7505, Email: skip@cnr.colostate.edu

**Federal Cooperator:**

Linda Joyce, Ph.D., USDA Forest Service, Rocky Mountain Research Station, 240 West Prospect, Fort Collins CO 80526-2098, Telephone: 970-498-2514, Fax: 970/498-1213, email:ljjoyce@fs.fed.us

**Co-Principal Investigators:**

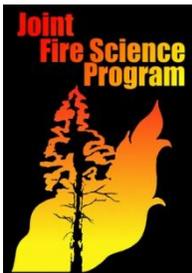
Wayne D. Shepperd, Ph.D., Colorado State University, 1401 Patterson Place, Ft. Collins, CO 80526, Phone: 970-219-0739 Email: [wshep@lamar.colostate.edu](mailto:wshep@lamar.colostate.edu),

Molly E. Hunter, Ph.D., Northern Arizona University, School of Forestry, P.O Box 15018 Flagstaff, AZ, 86011-5018 Phone: 928-523-6650 Email: [molly.hunter@nau.edu](mailto:molly.hunter@nau.edu)

**Professionals:**

Lance Asherin, USDA Forest Service Rocky Mountain Research Station

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## **I. Abstract**

Increasingly the world-wide-web is being used as a reference for resource managers and the public to retrieve information about natural resource management. Current technology allows for a greater diversity of formats for such information. This project acquired a library of video images of various fuels treatment equipment and activities currently utilized in ponderosa pine forests in the Black Hills, Colorado Front Range, and the Southwest to augment the photos and descriptions published in RMRS GTR-198, the summary report for JFSP Project 0-5-S-03, Best management Practices for Fuels treatments in Ponderosa Pine Ecosystems in the Black Hills, Colorado Front Range, and southwestern United States (Hunter et al .2007). This information is posted on the RMRS website:

<http://www.fs.fed.us/rmrs/technology-transfer/tools-and-applications/>. Video images of fuels treatment activities and equipment will provide viewers a greater understanding of how a particular fuels treatment is accomplished and insight about the advantages and limitations of a particular treatment that cannot be presented in a publication format. Such images will also be useful in operations planning and safety training of field personal and helpful in informing stakeholders as to what to expect during a particular fuels treatment activity.

## **II. Background and purposes**

Historically, fire has been important in shaping the vegetation composition, succession, and structure of forests throughout the western United States. Low elevation ponderosa pine forests have been particularly vulnerable to altered fire regimes and much of the wildland-urban interface in the West is found among or adjacent to this forest type. In the past, relatively frequent low-severity surface or mixed-severity fires burned throughout ponderosa pine forests. Fire acted as a natural restorative agent by reducing litter, removing unhealthy trees, snags and wood debris, thinning small trees, and creating diversity in landscapes at a spectrum of scales.

Over the past century and a half, changes in forest structure, understory and overstory conditions, fuel biomass conditions, and fire frequency have created a situation where large, infrequent, and intense fires are now the norm. Fire research has shown that physical setting, fuels, and weather combine to determine fire behavior. Recent research has addressed the role of stand and fuel structure to reduce wildfire behavior, severity, and extent. The need to restore historical disturbance processes is now recognized. The General Technical Report RMRS-GTR 198 “A comprehensive guide to fuels treatment practices for ponderosa pine in the Black Hills, Colorado Front Range and Southwest” was a comprehensive summary of fuels treatment practices in ponderosa pine forests in these areas (Hunter et al. 2007). This report was the final report of Joint Fire Science Program Project 05-S-03.

The objective of the summary report was to present management recommendation for fuels treatment based on a synthesis of existing knowledge acquired from the literature and the expertise of practitioners. This report brings the expertise of fire scientists and managers in the Southwest, Colorado Front Range, and Black Hills of South Dakota together in a collaborative effort to produce a reference that provides science-based decision support for ongoing fuel reduction activities in ponderosa pine

forests of these regions. Documented are specific conditions and practices where management intervention is appropriate to reduce fuels hazards while attempting to restore the forest community to a more natural condition. This report synthesized existing knowledge from the peer-reviewed literature and administrative studies, and acquired local knowledge through a series of interviews and discussions with local fuels treatment practitioners. In it, we describe specific treatments, the circumstances under which they can be applied, and the expected reductions in fuels hazard that can result.

Recommendations are provided that relate to where, how, and how often fuels treatments may be prescribed to achieve desired outcomes which need to also address social, political, economic, and ecological factors to be fully successful. Finally, deficits in the existing knowledge were identified.

While this report has been printed and is widely available in university libraries, through the USDA Forest Service, through TREESEARCH, and is available electronically on the web at [http://www.fs.fed.us/rm/pubs/rmrs\\_gtr198.pdf](http://www.fs.fed.us/rm/pubs/rmrs_gtr198.pdf), it was determined that a wider range of technology transfer opportunities existed if such material could be put into a video format and be made available on the web.

### **III. Study description and location:**

The purpose of this project was to acquire a library of video images of various fuels treatment equipment and activities being utilized in ponderosa pine forests in the Black Hills, Colorado Front Range, and Southwest to augment the photos and descriptions published in RMRS GTR-198, the summary report for JFSP Project 05-S-03, Best Management Practices for Fuels Treatments in Ponderosa Pine Ecosystems in the Black Hills, SD and southwestern United States. The intent was to present key concepts from RMRS GTR-198 in a video-based format that would provide an overview of the fuels treatment process and illustrate prescribed burning and mechanical treatment techniques used in these ponderosa pine forest types.

Resource managers in the Black Hills, South Dakota, various National Forests along the Front Range of Colorado, and forests in northern Arizona were contacted to identify specific projects and practices to document.

The approach was to develop a storyboard for the video and to insert photos and videos as appropriate. Skip Smith and Wayne Shepperd developed the storyboard, working with Molly Hunter. The field videos were taken by Lance Asherin, USDA FS, and the video production was completed by the ELearning Center at Northern Arizona University. Webpage development was completed by Wil Golson, webmaster for USDA FS RMRS.

### **IV. Key findings with one-two paragraph discussion of each:**

A video in this format is an effective way to communicate information on fuels treatments. Many fuels practitioners were very receptive to filming of their planned activities. However, obtaining video footage of prescribed fire operations presented more challenges. The timing of prescribed fires by necessity is

flexible and the seasonal window for burning is often very narrow. Both of these factors made coordination of filming prescribed fires difficult. We therefore had to rely on still images with video production panning and zooming to illustrate prescribed burning techniques.

#### **V. Management implications:**

The General Technical Report RMRs-GTR 198 ‘A comprehensive guide to fuels treatment practices for ponderosa pine in the Black Hills, Colorado Front Range and Southwest’ serves as the supporting document for this project. The conclusions of that report remain the same with the experience of this project. Our experiences have convinced us that while much is known, there is more to be learned. On the one hand, there are physical, biologic, regulatory, and societal limitation on what can be done to reduce the risk of catastrophic wildfire in these systems. On the other, there is innovation, collaboration, and a wealth of experience that can be drawn upon to find solutions to those limitations. What was presented in the GTR was a summary of existing current knowledge. Hopefully, the use of videos such as this project produced will expedite the infusion of current understandings into application. Both the GTR and the videos are useful to a point – today. Management practices will, and should, evolve as we gain new knowledge in the future. Our efforts should therefore be viewed only as a beginning point in that continuum.

#### **VI. Relationship to other recent findings and ongoing work on this topic (one to two pages)**

The Joint Fire Science Program has recently funded the several fire science consortia throughout the U.S. with the purpose of improving the communication of fire science information among scientists and managers. The geographic ranges of two of these consortia (Southwest and southern Rockies) overlap with the area of interest in RMRS-GTR 198 and the accompanying video. The products of this effort along with related activities (JFSP roadshows) provide a unique example for how fire science information can be effectively communicated. This video production serves as a model that could be adopted in some fashion by the developing consortia to effectively convey other technical information to users. We expect that this video will also be very useful to introduce fuel treatments to homeowners and other lay audiences as well as serve as a training tool in introductory fire science classes in universities and agency training centers.

#### **VII. Future work needed (one to two pages)**

As far as we could determine, this video and its associated website represents the only posting on the internet where illustrations of on the ground fuel treatment activities can be found. This production only illustrated techniques applicable to ponderosa pine forests in three ecoregions. Similar video projects to illustrate fuels treatments in other forest types and regions would be very useful and would build on what we accomplished here. Additional work would be valuable to capture video footage of prescribed fire treatments and firing techniques. The challenges of implementing prescribed burns such as weather and air quality considerations resulted in few opportunities to film such treatments in our case. Successfully overcoming these obstacles in future productions would be very beneficial.

#### **VIII. Deliverables crosswalk table:**

The deliverable for this project was a set of videos to be posted on the USFS website and if possible, the JFSP website. A compilation of the videos, photos and descriptions has been created and been placed on the USDA Forest Service Rocky Mountain Research Station website, on the Tools, Applications and Data section which is accessible from the home page of the Rocky Mountain Research Station website. The Tools, Applications and Data section is subdivided by categories and the videos are located in the Resource Management and Use section <http://www.fs.fed.us/rmrs/technology-transfer/tools-and-applications/>. The specific url for the videos is: <http://www.fs.fed.us/rmrs/technology-transfer/ponderosa-fuel-treatment/>. We also expect to distribute the video in a DVD format for use in classroom settings.

#### **IX. Literature Cited**

Hunter, M.E.; Shepperd, W.D.; Lentile, J.E.; Lundquist, J.E.; Andreu, M.G.; Butler, J.L.; Smith, F.W. 2007. A comprehensive guide to fuels treatment practices for ponderosa pine in the Black Hills, Colorado Front Range, and Southwest. Gen. Tech. Rep. RMRS-GTR-198. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 93 p.