Utah Forest News

Utah Forest Landowner Education Program Newsletter

UtahState University COOPERATIVE EXTENSION

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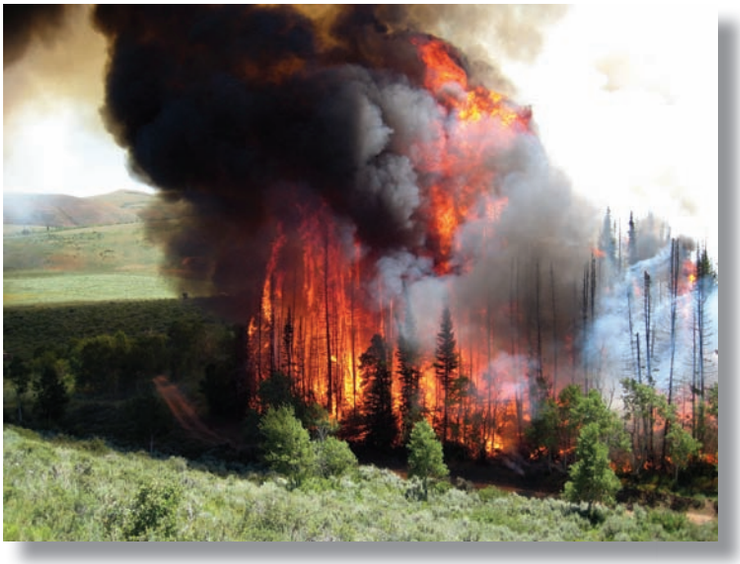
# Otter Creek Restoration Project

When Brad Jessop, Fire Ecologist for the West Desert District of the Bureau of Land Management (BLM), called me in the heat of July to let me know he was going to attempt a series of prescribed burns south of Bear Lake the following day, I thought he was a little bit crazy. As it turned out, Jessop had a good plan in place. The goal was to burn several "islands" of conifers that had overtaken stands of aspen due to a lack of fire on the landscape. These "islands" of trees were surrounded by a sea of still-green sagebrush, which had a high enough moisture content to prevent a fire from spreading. Even though it was the middle of July, Jessop still referred to it as a spring burn, as the conditions that day were pretty spring-like.



*The Otter Creek Restoration Project aims to promote aspen regeneration by removing conifers.*

Jessop assembled 40 or so firefighters and prescribed burn specialists from the West Desert and Green River BLM districts, in addition to crews and personnel from the USDA Forest Service and the Utah Division of Forestry, Fire and State Lands. The BLM crews were used to working on desert fires in juniper woodlands, but burning in aspen and conifer forests was new to them. Accordingly, they planned to start small this year, taking on five different burn units (11 individual stands) with a 40-person crew, several fire engines, and lots of contingency plans.

After an exhaustive briefing by the burn boss, the group wisely started by igniting a test fire in the sagebrush outside of the five-acre patch of trees they intended to burn. With a fire engine standing by, they used drip torches to ignite a representative patch of sagebrush. A drip torch is a canister that contains a

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mix of gasoline and diesel fuel. A wick extends from a tube that comes off the top of the device. When the wick is ignited and the firefighter points it toward the ground, a steady drip of flaming liquid pours from the end, igniting the vegetation beside them as they go. After a few minutes everybody could see that the sagebrush was indeed too green to carry a fire. The sagebrush became in effect their fire-break for the day, allowing them to aggressively burn the designated areas with little worry of losing control of the fire. Of course, before and during the process, people were assigned to monitor the weather, getting updates from meteorologists in Salt Lake City, and taking hourly weather measurements on-site.

*A terra-torch shoots a stream of burning napalm up to 100 feet into the forest, reducing the number of firefighters needed on the ground.*

The reason for the burn was almost entirely ecological: to encourage aspen regeneration. These islands of forest appear to have been dominated by aspen historically, but over the past several decades conifer species such as Douglas-fir, subalpine fir and Engelmann spruce have slowly taken over. Research has shown that aspen forests have much greater biodiversity, forage production, and wildfire resistance than other forest types. Unfortunately, it also appears that aspen forests have been steadily declining in Utah over the past decades (see "Repeat Photography" story in the following pages). Aspen typically responds to being burned or cut by sending up suckers that, if protected from grazing, grow to become mature trees.

Another goal for the day was to test and train folks on using a fun piece of equipment called the terra-torch. This is a truck mounted flame thrower that shoots a stream of burning napalm up to 100 feet into the forest fuels. The terra-torch worked very well throughout the day and reduced the number of firefighters needed on the ground. This likely had a positive outcome on the safety of the day, as anytime you can take a few folks out of harm's way, it is a good thing.

The Otter Creek Restoration project was designed in conjunction with the Uinta-Wasatch-Cache National Forest, School and Institution Trust Lands Administration, private landowners, and Utah's Watershed Restoration Initiative (WRI). The WRI granted $18,000 toward fencing materials to protect new aspen shoots in the burn area from subsequent grazing pressure. In addition to prescribed fire and fencing, mechanical treatments are also part of the plan. Ultimately, it is hoped that an average of 50-100 acres will be treated every season for the next 10 years. Jessop emphasized the monitoring and research components of the project; results from various management applications

will be examined to determine the best practices for larger landscape-level projects in the future.

Jessop completed graduate studies in wildlife and range resources at Brigham Young University. In addition to several years of experience managing range conditions on Dugway Proving Grounds and researching ways to restore sagebrush steppe throughout the Great Basin, he has been attending the Restoring the West Conferences hosted by USU Forestry Extension and others. At these conferences and during their related field trips, Jessop has heard repeatedly from natural resource scientists and managers that more fire is needed to restore aspen to western landscapes. Some researchers have said that we need to burn at least 100,000 acres a year in Utah continually to truly restore aspen in this state. The Otter Creek Aspen Regeneration Project is Jessop's attempt to heed the advice of these managers and scientists.

By the end of the day, Jessop couldn't have been happier with the results. Each of the eleven islands his teams attempted to burn burned well, and no significant errant spot fires had to be extinguished. The West Desert BLM District deserves credit for going through with this project. In spite of aspen burning being new to them, they were motivated to try to do what is right. By starting small and methodically, they are learning what works and what doesn't in a conservative and safety-conscious manner. They can now apply these lessons to other important forest landscapes in Utah.

*by Darren McAvoy*

## Conservation Stewardship Program Open to Private Forest Landowners

The Conservation Stewardship Program (CSP) is a new component of the 2008 Farm Bill that is designed to encourage agricultural and forestry producers to maintain existing conservation activities and adopt additional ones on their properties. The CSP is administered by the Natural Resources Conservation Service (NRCS) and will provide financial and technical assistance to landowners who want to enhance the natural resources on their land. Private forest landowners are encouraged to participate in the program.

The CSP allows for continuous sign-up, and the first cutoff for ranking purposes will be September 30. Interested landowners will need to fill out a self-screening checklist and contact the NRCS in order to get involved. To find an NRCS coordinator near you, go to www.ut.nrcs.usda.gov/contact/.

# USU Researcher Documents Utah's Forest History with Repeat Photographs

USU Researcher Dr. Charles Kay has joined forces with USU Extension to document forest and range conditions across southern Utah through the comparison of historic and recent photographs. His work will be the most detailed repeat-photo study ever to be undertaken for a similar-sized area in North America. To complete a repeat photo set, a researcher collects historic landscape photographs with recognizable landmarks, such as a distant mountainside. It is then necessary to find the exact same location and angle from which the original photo was shot before retaking the photo. Much of the work comes in interpreting the photographs afterwards.

*Dr. Charles Kay*

To date, Kay has completed 1,879 photo sets depicting aspen, conifer, and pinyon-juniper stands, all of which are available on the Extension Web site at http://extension.usu.edu/rra. Each photo pair includes interpretive text. Perhaps the most important part of this research is that it is available not only to scientists, but to land managers and the general public, so that anybody can view them and interpret the changes for themselves.

The work was done primarily by Kay, a wildlife biologist in the Department of Political Science at Utah State University, in cooperation with USU Iron County Extension Director Chad Reid. Kay located historical photos by exhaustively searching the files of land management organizations, historical society archives, church records, university special collections, and private individuals' collections. Many of the photos are from the 1930s and 40s, but some go back to 1872.

The photos tell a fascinating story of vegetation changes on Utah forests and woodlands since European settlement.Aspen were observed to have decreased in 76 percent of the sites, while conifers increased in 92 percent of the sites. Pinyon and juniper also increased in 96 percent of the photo sets. Conifers such as Engelmann spruce, subalpine fir, Douglas-fir and ponderosa pine have invaded down-slope forest communities. The consequences of these changes in Utah's forests and woodlands are significant and have led to declines in biodiversity, water yield and forage production.

The analysis of changes in pinyon and juniper stands yielded some especially interesting results. Early photos depict widely spaced, open stands of pinyon and juniper, suggesting that it was historically rare for these woodland trees to grow so close together that their branches were touching each other. Conditions have definitely changed; the modern photos show closed canopy stands of pinyon and juniper. Dense pinyon-juniper stands are at increased risk for crown fires, evidence of which is nearly non-existent in the earlier photos but is all too common today. (Consider the recent fire that threatened the community of New Harmony last August and September.) Changes in pinyon-juniper density also have implications for the amount of forage available to grazing animals: an open stand of pinyon-juniper typically supports

excellent grass growing potential, while a closed-canopy stand will out-compete grasses.

Kay has also done extensive work on aboriginal peoples and their impacts on natural resources. For example, Kay has found that historically, Native American hunts kept big game populations at low levels, thereby preventing overgrazing and allowing for successful aspen reproduction. When he combines his work about Native American practices with his analysis of vegetation change through repeat photographs, things get really interesting. By comparing historic native population levels and probable aboriginal ignition rates (how many fires were started) with the history and timing of aspen regeneration, Kay has concluded that the elimination of aboriginal burning is a primary reason for the increase in conifers and decrease in aspen that he has documented on our landscapes today. By repeatedly burning vegetation in the early spring and late fall, these aboriginal-set surface fires maintained open, park-like forests. These fires also helped to remove the ladder fuels so common in today's forests, thereby minimizing the potential for large-scale, high-intensity crown fires. Kay argues persuasively that Native Americans' use of fire was an effective management tool in historic Utah forests.

Much of the evidence for his findings is available to anyone with an internet connection. You can review the repeat photographs for yourself at http://extension.usu.edu/rra.

*by Darren McAvoy*

*Figure A. Forest Service photograph, taken in June, 1941.*

*Figure B. Charles Kay photograph, taken on August 2, 2005.*

*These photographs show Cooper Knoll on the Dixie National Forest from the eastern shore of Panguitch Lake. In Figure A, aspen is more evident on Cooper Knoll than in Figure B. Note the few, widely-spaced ponderosa pines, but also note that conifer regeneration has started to appear. Today, ponderosa pine, Douglas fire, white fir, Engelmann spruce, and subalpine fire have overgrown this site, while aspen has declined. The stage is now set for a high-intensity crown fire.*

## White Flame Facility Preparing to Accept Biomass from Utah Forests

Many landowners and managers in Utah are eager to thin their forests in order to enhance forest health and reduce fuels that could lead to a catastrophic fire. Financing these needed restoration projects can be difficult, however, because the harvested trees are not typically large enough to pay for logging and transportation costs. Fortunately, new forest industries are emerging in Utah that can utilize the woody biomass that would otherwise be left or burned on site after a restoration project. These industries may be able to help pay for the costs associated with effective forest management. The White Flame wood pellet facility in Utah County is one local company that is getting ready to accept woody biomass materials from Utah forests.

*The White Flame pellet facility in Lindon, Utah.*

The White Flame facility has been making wood pellets in Lindon for the last 15 years. The demand for these pellets has increased recently as the price of fossil fuels goes up and people everywhere are looking for efficient ways to heat their homes. Until this year, White Flame was producing about 6,000-7,000 tons of wood pellets per year, using sawdust from construction waste to make the pellets. Now, the owners of White Flame have decided to expand to a bigger facility down the road which has the capacity to produce up to 100,000 tons of pellets per year. This expansion means that they will need much more raw material, and the owners are looking to Utah forests and woodlands to provide it.

According to co-owner Wayne Fields, White Flame is interested in receiving woody biomass "from just about anyone." They are currently exploring partnerships with federal and state forest land managers. One important early contact for the White Flame owners has been Bureau of Land Management (BLM) State Forester Aaron Wilkerson, who is working to connect the pellet facility owners with Stewardship Contractors collecting woody biomass from forest restoration projects on BLM land. White Flame has also been working with the Farm Service Agency (FSA) to certify the White Flame facility with the Biomass Crop Assistance Program (BCAP). BCAP provides financial assistance to operators who collect, harvest, store, or transport biomass that will be used for heat, power, biobased products, or biofuels. This means that local operators who recover woody biomass from surrounding forest restoration projects and bring the material to the White Flame facility can receive BCAP funds, lowering costs for the White Flame owners. In order to be certified for BCAP, the White Flame owners will need to agree to maintain accurate scales and records of the biomass they receive. The BCAP participating operators will be required to harvest woody biomass from treatments that meet restoration and land management goals. The woody biomass can be collected from federal, state,

or private land if the operators secure the appropriate permits beforehand.

Accepting woody biomass material from forests instead of relying on construction waste as they did in the past means that the White Flame owners have had to make some adjustments to how the facility operates. The main challenge they face with forest biomass material is the dirt and bark that comes with it – forest biomass is much less "clean" than construction waste. For this reason, they have decided to explore making alternative products with forest biomass during the spring and summer months, such as animal bedding and sawdust for mulch. They are also interested in using the forest biomass to make standard grade wood pellets with a higher ash content. The standard grade pellets will have up to a 3-4 percent ash content, compared to the 0.2-0.3 percent ash content of their premium wood pellets. Fields thinks there might be a market for individuals who are willing to clean out their stove every day instead of once a week, if it means getting a 15-20 percent price discount on their wood pellets. The standard grade pellets will also work well in boilers or stoves designed for pellets with a higher ash content.

*Wayne Fields and Karl Kunz*

The White Flame owners are interested in buying woody biomass from private forest landowners. Fields says any species is fine, "it just has to be dry and clean." The White Flame facility needs woody biomass with a 10-12 percent moisture content, but can work with slightly wetter material by combining it with dry hardwood from Fields' cabinetry business during the pellet-making process. Interested landowners can contact Fields or Karl Kunz for more details.

***Karl Kunz:*** (801) 765-1195 or kdkunz@comcast.net
***Wayne Fields:*** (801) 540-2673 or wsfield45@yahoo.com

For more information about BCAP, go to www.fsa.usda.gov and search for "BCAP."

*by Olivia Salmon*

For more information regarding any of the information presented in this newsletter, please call Darren McAvoy at Utah State University, 435-797-0560, write to him at 5230 Old Main Hill, Logan, UT 84322-5230, or email darren.mcavoy@usu.edu.

The Utah State University Forestry Extension Web site, found at http://extension.usu.edu/forestry, is an excellent source of technical forestry information for woodland owners. Check the "What's New" section periodically for new postings.

State of Utah Division of Forestry, Fire and State Lands (DFF&SL) service foresters for your area can be contacted by calling 801-538-5555.

Ideas and written contributions to this newsletter are encouraged. Send your contributions or comments to the return address above or call 435-797-0560, or email darren.mcavoy@usu.edu.

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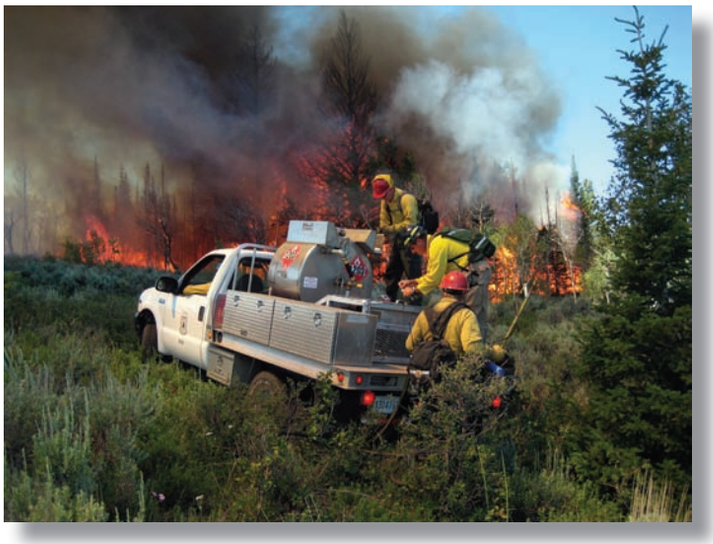
## COMING EVENTS

**Restoring the West Conference. Peaks to Valleys: Innovative Land Management for the Great Basin. October 27 & 28. Logan, UT.** For more information, visit: www.restoringthewest.org.

**Utah Association of Conservation Districts Annual Convention. November 3-6. St. George, UT.** For more information, visit http://www.uacd.org.

**Utah Farm Bureau Convention. November 18-20.** Layton, UT. For more information, visit http://utfb.fb.org.



*Firefighters focus on operating a terra-torch device to ignite a prescribed burn south of Bear Lake last July.*