Utah Forest News

Utah Forest Landowner Education Program Newsletter

Utah State University COOPERATIVE EXTENSION

Volume 15 Number 2 Spring 2011

Division Recommends Treatments for Cedar Mountain Aspen

Editor's Note: This story is part of an ongoing series sponsored by the Utah Division of Forestry, Fire & State Lands. The Division works in cooperation with USU Forestry Extension to help inform landowners about forestry practices in Utah. Generous contributions of funds from the Division pay for the printing and distribution of this issue of the Utah Forest News.

Aspen stands on Cedar Mountain are experiencing decline, but treatments are available.

Cedar Mountain is a large, aspen-covered plateau directly east of Cedar City and has always been a popular destination for those looking for a cool mountain escape from the summer heat of the valley below. Its stands of quakies and firs shaded early ranching families as they spent their summers on the mountain caring for livestock and making dairy products for sale or consumption. Typically in Utah forests, aspen mixes with fir species but on Cedar Mountain, aspen grows in mostly pure stands with few conifers in sight.

In the early 1990s, Dr. Jim Bowns, a range specialist who has worked with both Southern Utah University and Utah State University began noticing that the aspen stands on Cedar Mountain were in decline. Landowners on Cedar Mountain also noticed that existing stands of aspen were dying without being replaced by new trees. Action was needed.

The Utah Division of Forestry, Fire & State Lands is now offering technical information and financial support for landowners who wish to facilitate aspen regrowth on their property. The Division has received a federal grant to be used for aspen restoration treatments. These funds are available to landowners on Cedar Mountain. In addition to implementation of treatments, the funds can be used to create Forest Stewardship Plans. The Division has

INSIDE THIS ISSUE:

already partnered with several landowners on Cedar Mountain to create plans focusing on management of aspen stands.

Foresters for the Division, including the newly appointed Southwest Area Forester Sarah Sampson, have recommended several treatment options for aspen regeneration. These treatment options include cutting trees, root ripping, prescribed fires, and wildlife and livestock exclusion. Due to the tree's unusual system of regeneration, which involves "suckering" or the development of new shoots on the existing root system, removal of the above-ground part of the tree may be the most effective way to stimulate regeneration. Harvesting and prescribed fire are both cost effective ways to accomplish this. Prescribed fire treatment may not work in pure aspen stands as these stands are generally fire-resistant and usually burn only if conifers are present to carry the fire.

Selective harvesting is one treatment recommended by the Division of Forestry, Fire & State Lands.

For landowners who wish to keep aspen standing on the landscape, soil ripping is a recommended treatment. This involves dragging a tractor-mounted blade through an aspen stand in order to sever the roots and stimulate small-scale regeneration. Setting up fencing to exclude wildlife and livestock from areas of regeneration is also a wise management strategy. Sampson also recommends that landowners carefully manage browsing and grazing by both wildlife and livestock to ensure new saplings survive in sufficient number to replace the stand.

Aspen often require a disturbance event in order to spur the regeneration of new saplings. Some potential causes for the slow decline of aspen populations could include the absence of wildfires on Cedar Mountain, extensive browsing by wildlife such as deer and elk as well as domestic livestock grazing, and other factors, including disease, pest problems, and the advanced age of the aspen stands. Research has also shown that the aspen decline on Cedar Mountain is occurring primarily along the fringes of its growth, along the lowest elevations and more southerly aspects where recent drought conditions may have exacerbated declining aspen health.

For a more complete guide for aspen restoration, check the Utah Forest Restoration Working Group's newly developed guidelines for aspen restoration. This document can be found at http://western-aspen-alliance.org/pdf/AspenRestoration.pdf.

For more information and resources about treatments for aspen, contact Sarah Sampson at 435-586-4408 or sarahsampson@utah.gov

Much of the research mentioned in this article was conducted under the Cedar Mountain Initiative, which is completing three 3-year Cedar Mountain aspen research projects and has approved four more to begin in early July.

by Darren McAvoy and Rose Wiarda

Native American Tree Use Topic of New Fact Sheet

A new fact sheet about Native American uses of Utah's most common native forest trees is available from USU Forestry Extension. In order to foster cultural and historical understanding, this fact sheet describes the many uses Native Americans found for trees, including medicine, food, tools, and ceremonial aids. While Native Americans used many herbaceous and shrubby plants, they also relied on native trees for their day-to-day existence. Most of the trees discussed in this report are evergreen. Because the same tree species also grow in the region surrounding Utah, tribes from outside of Utah in western North America have also been included in this report for a more complete discussion

Lodgepoles used for the home of a Ute chief in the eastern Wasatch Mountains, Utah.

This report covers the following tree species: pinyon, juniper, quaking aspen, Douglas-fir, ponderosa pine, lodgepole pine, and subalpine fir. In general, the needles of evergreens were commonly used by Native Americans for tea, the pitch was chewed like gum, the inner bark was consumed for food or medicine, the wood was used for home and tool construction, and various parts were used for purification or cleansing. At the same time, each species was used somewhat uniquely. For example, Native Americans generally used pinyon pitch medicinally and to make dyes and glues. They used pinyon nuts as a food source, its pollen for ceremonies, and its wood for constructing shelters and for making other useful items. As for quaking aspen, the only broadleaf covered in this report, Native Americans generally used its bark, branches, buds, leaves, and ashes medicinally and the wood for constructing shelters, canoes, traps, and tools.

While this report does generalize Native American uses of each tree species, it also lists the unique uses individual tribes found for the trees. The following tribes are singled out at least once in the report: the Apache, Blackfoot, Carrier, Chehalis, Cheyenne, Cowlitz, Flathead, Haisla, Havasupai, Hopi, Karok, Kawaiisu, Klamath, Kwakwaka'wakw, Navajo, Okanagan-Colville, Paiute, Salish, Shoshone, Shuswap, Swinomish, Thompson, Upper Tanana, Utes, and the Tolowa. The creative ways in which these Native American tribes were able to use these trees are impressive. Salient examples of creative tree uses by individual tribes include the Shoshone's use of juniper bark to make moccasin insulation and rope, the Utes' use of ponderosa pine pitch to glue rawhide to horses' hooves for extra protection, or the Tolowa's (from California and Oregon) use of Douglas-fir and lodgepole pine branches to hide human scent on hunters after rubbing the branches on their bodies. This report is filled with facts about how Native American Tribes used these seven tree species.

If you would like a copy of this fact sheet mailed to you, please contact Darren McAvoy at 435-797-0560 or darren.mcavoy@usu.edu or Michael Kuhns at 435-797-4056 or mike.kuhns@usu.edu.

It can also be viewed online at http://extension.usu.edu/forestry/reading.htm. Click on Utah Forest Facts to access the fact sheet.

by Laurel Anderton, former Extension Associate

Woody Biomass to Energy: Processes and Purposes

The process of converting biomass to energy has gained traction in the public eye as developing technologies become more mainstream and well-understood. Biomass can be defined as any renewable organic matter that has stored energy from the sun. Woody biomass is organic matter that can include waste construction wood, whole or partial trees from urban tree maintenance, or logging slash. Biomass-to-energy experts are working on technologies that include transforming organic hydrocarbons into combustible solids, liquid fuels with potential for use as biodiesels, and gasses which can drive power and heat generation.

Biomass can be defined as any renewable organic matter that has stored solar energy. Developing technologies focus upon applying heat and pressure to biomass to transform it into solid, liquid, and gaseous fuels.

The three primary processes by which biomass is converted to energy are torrefaction, pyrolysis, and gasification. Since woody biomass is basically a form of stored energy, these processes center upon using heat and pressure to break down chemical bonds and capturing the energy that is released.

Torrefaction converts woody biomass to a solid product, which has many of the same properties as conventional coal. In the process of torrefaction, wood is charred at high temperatures in an oxygen-poor environment. This removes moisture and many volatile organic compounds from the wood, leaving a product which is brittle and fairly stable. The end products of torrefaction are usually in the form of pellets or briquettes and are being considered as a clean-burning and renewable match for coal. Burning torrefied wood products produces very little carbon dioxide and no sulfur dioxide. In the future, torrefied wood may be used in conjunction with coal in power and heat generation operations.

Pyrolysis is another method of converting biomass into a usable end product. Pyrolysis, or thermal decomposition in the absence of oxygen, employs moderate temperatures of 400 to 800° C and quick residence times to produce biochar, synthetic gas, or syngas, and bio-oil. Biochar is a solid product of pyrolysis and accounts for about 10 to 15 percent of the biomass feedstock. Biochar can be applied to agricultural soils to boost carbon content and provide a sink for atmospheric carbon dioxide. Syngas, which is comprised of mainly carbon monoxide and hydrogen and accounts for 10 to 15 percent of the feedstock, may be used within the pyrolysis reactor as a heating agent. Bio-oil makes up between 60

and 70 percent of the final yield of pyrolysis. Bio-oil is a dark liquid that is similar to a diesel fuel. It is easily transported and stored and can be burned in most standard boilers and engines. Although the widespread use of bio-oil as a petroleum replacement in vehicles is not on the immediate horizon, its use as a fuel for heat and power generation is promising.

Gasification is the process by which solid biomass is converted to a gas. This is accomplished by heating the biomass at high temperatures in an oxygen-limited environment. The product of gasification is producer gas, which is being developed as a replacement for natural gas. Producer gas may be combusted for heat and power generation or may be converted into useful chemicals. Because producer gas is produced in a highly controlled environment, potential pollutants from solid feedstock can be captured and disposed.

Felled trees transform into woodchips with the greatest of ease at a demonstration during 2009's Southern Utah Biomass Field Day.

Using woody biomass as an energy source is a renewable way to ensure fuel supplies for the future. The Utah Division of Forestry, Fire & State Lands supports the utilization of woody biomass as an energy source. The Division published an assessment in 2006 that listed benefits of woody biomass utilization. Some of these benefits include the development of a local and renewable fuel resource, provision of rural employment and development opportunities, the creation of useful products from forest thinning operations, and the reduction of greenhouse gas emissions associated with disposal of biomass and replacement of fossil fuels.

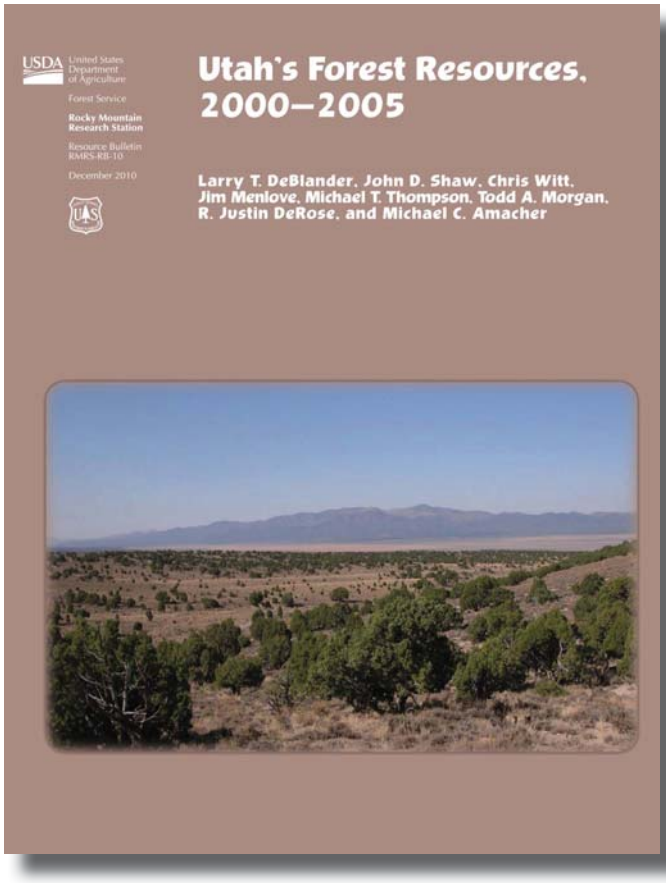
The newly created Utah Biomass Resources Group (UBRG) also supports woody biomass utilization in Utah. The primary goal of the UBRG is to promote and facilitate the development of a biomass industry in Utah. Other goals include establishing markets for renewable energy and biomass products, meeting forest health and management goals and adding to local economies with the creation of biomass utilization jobs. (See *UFN* Winter 2011 edition for an introduction to the UBRG).

by Rose Wiarda, Extension Forestry Intern

For more information about biomass utilization in Utah, check out the UBRG's new website: **http://utahbiomassresources.org**

Report Released about Utah's Forest Resources

The USDA Forest Service's Rocky Mountain Research Station (RMRS) recently completed a report entitled, "Utah's Forest Resources, 2000-2005." The Utah report summarizes the results of the annual Forest Inventory and Analysis (FIA) resource inventories conducted in the state of Utah during the years 2000 to 2005. The report also interprets the results and describes their future significance. The FIA program is carried out in cooperation with both State and Private Forestry and National Forest Systems. Therefore, this publication reports on the resources, current issues, and indicators of forests owned by the federal government, the state government, and private landowners throughout the state of Utah.



The Utah report by the Rocky Mountain Research Station summarizes and interprets the results of annual FIA inventories of Utah's forest resources.

The report shows that forest area and number of live trees have increased since the last inventory, but that the total tree wood volume hasn't changed significantly. The current FIA data indicate that aspen is fairly stable in Utah. Its volume and area have increased, although there are fewer small-diameter trees and more large-diameter trees than in the past. Conifer species with relatively high mortality include Engelmann spruce (highest), subalpine fir, common pinyon, and Douglas-fir. The following species have shown substantial mortality due to beetles: Engelmann spruce (especially), Douglas-fir, subalpine fir, lodgepole pine, and ponderosa pine.

Dead trees make up about 43 percent of the industrial timber harvest in Utah. National Forest land represents approximately 75 percent of Utah's non-reserved, productive forest area, while private land represents about 17 percent of the area. However, privately and tribally owned forest land provided 53 percent of the total volume removed from growing-stock in the state, while National Forests supplied only 43 percent of the total volume.

Between 1992 and 2002, Utah's primary forest products industry experienced changes common in the Interior West, including a reduction in sawmills and an increase in other manufacturers. The sawmill sector is the largest, but decreased from 34 operating mills in 1992 to 23 in 2002. The house logs and log homes producers increased in number from 13 to 14 in the same period and the log furniture and other product producers increased from 4 to 12. The log home sector in Utah is the fourth largest, by sales, in the western U.S., following Montana, Idaho, and Colorado.

To access the full electronic version of the Utah report, check online at http://www.treesearch.fs.fed.us/pubs/36988. If you would like to receive a hard copy of the Utah report, please contact Richard Schneider of the RMRS publications office at rschneider@fs.fed.us or by calling 970-498-1392.

New Area Forester in Cedar City

A new Area Forester has been hired by the Division of Forestry, Fire & State Lands for the Southwest Office, based in Cedar City. Sarah Sampson will be available to assist landowners in the southwest region of the state. She is from Utah and received a degree in Forestry from Utah State University. She has spent the last four years in a similar position working for the Division as a forester for the Wasatch Front area. She is familiar with Cedar City and the surrounding areas because she worked for the Forest Service on the Dixie National Forest as a seasonal while in college and has spent time in the area skiing, climbing, hiking, and mountain biking. She can be reached at 435-586-4408 or sarahsampson@utah.gov.

Sarah Sampson, Southwest Area Forester, staples an MCH blister pack to a Douglas-fir at Sundance.

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.

To get on our list for email delivery of this newsletter go to http://extension.usu.edu/forestry and click on Subscribe or Join Our Mailing Lists. For back issues visit http://extension.usu.edu/forestry and click on Reading Room or Publications.

The Utah State University Forestry Extension website, 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 & State Lands 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.

UtahState University
COOPERATIVE EXTENSION

Forest Landowner Education Program
College of Natural Resources
5230 Old Main Hill
Logan, UT 84322-5230

NONPROFIT ORG
U.S. POSTAGE
PAID
UTAH STATE
UNIVERSITY

This newsletter is partially supported by USDA Forest Service State and Private Forestry.

Utah Forest News

COMING EVENTS

Tenth Annual Timber Harvest Tour, September 14, 2011, Location TBA

Restoring the West Conference 2011: Sustaining Forests, Woodlands, and Communities Through Biomass Use, October 18-19, 2011, Utah State University, Logan, UT

Society of American Foresters National Convention, November 2-6, 2011, Honolulu, HI

Tree ring research recently conducted at USU has indicated that snags like this one near Mt. Naomi could be more than 700 years old. USU geology professor Tammy Rittenour has been working on this project to determine a climate record for the past 1,000 years.