

Utah Forest News

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DIY Biochar Kiln Workshop Demonstration in Utah

On May 17, 2017, USU Forestry Extension hosted a DIY Backyard Biochar workshop at the Lone Peak Conservation Center in Draper, Utah, that focused on using simple biochar kilns to reduce hazardous fuels and produce biochar in rural and urban settings. The crowd of more than 60 people came from a variety of backgrounds including Master Gardeners, arborists, wildland fuels specialists, city infrastructure managers, forest landowners and forest managers. Topics of interest included the economic benefits of reducing excess woody material. More specifically, the woody residue of forestry and tree trimming operations known as slash. Other interests included the potential for producing biochar for gardening, and urban forestry pursuits.

Biochar is a charcoal product that has promising soil amendment properties and potential applications for restoration. Amending soils with biochar is like adding thousands of tiny

(Continued on page 4)

“The soils beneath slash piles that I may have burned as a firefighter 30 years ago on the Flathead National Forest in Montana still have not recovered, according to research by the USDA Forest Service Rocky Mountain Research Service. By piling and burning in a contained manner, we can protect the soil from this kind of damage and potentially enhance it by applying the biochar after it is produced.”

-Darren McAvoy



Kelpie Wilson, of Wilson Biochar Associates, explains the biochar kiln set-up and process. Photo credit: Dennis Hinkamp.

In This Issue

- Making biochar from invasive Russian-olive trees
- A “Walk in the Woods” wants to hear your story
- Newly published Aspen Field Guide is now available *(and it’s free)*
- UCFC Climbing Championship involves real-life rescue

Russian-olive removed, biochar created, applied to Curlew National Grassland, ID

A team of university and USDA Forest Service employees, biologists, soil scientists, geneticists, hydrologists, botanists, and plant physiologists, are using biochar to enhance and restore critical monarch butterfly and greater sage-grouse habitat on the Curlew National Grassland in Idaho. Currently, riparian areas near the National Grassland are being overwhelmed by the fast-growing, water-hungry Russian-olive. This tree, which was planted widely across the west in the 1940's, was once thought to be a useful shelterbelt, windbreak, and ornamental species. A native of Asia, Russian-olive was introduced to North America in the late 1800's and has spent the last 200 years invading previously diverse riparian areas and capitalizing on opportunities to colonize land following disturbances, such as fire. Dense stands of Russian-olive trees create thorny,

“...Dense stands of Russian-olive trees create thorny, monoculture thickets that prevent native tree and shrub species from becoming established and provide perches for raptors that hunt sage-grouse chicks...”

monoculture thickets that prevent native tree and shrub species from becoming established, and provide perches for raptors hunting for sage-grouse chicks.



Top: Aerial view of Curlew National Grassland, Bottom left, Darren McAvoy, Middle, Josh Holdsambeck, Right, Lauren Nicole Dupéy
Photo Credit: Dennis Hinkamp.

Partners on the Caribou-Targhee National Forest and the Curlew National Grassland are actively removing 10 acres of Russian-olive from valuable riparian areas along Deep Creek, an important water resource on the National Grassland that is managed for multiple, sustained uses. Once removed, the chipped Russian-olive feedstock will be hauled to Salt Lake City and turned into biochar through a process called pyrolysis. Biochar is a solid, charcoal-like material created by burning trees (and other feedstock) at very high temperatures in a low-oxygen environment. When applied to degraded soils, biochar can sequester carbon, alter soil pH, decrease soil density, and increase water nutrient holding capacities. Once processed, Russian-olive biochar resembles crumbly charcoal and will be incorporated back into critical areas on the National Grassland where native species are in short supply.

In 2018, these areas will be planted with native forbs and grasses, and monitored for native plant growth, invasive species, and nectar quality. The soil will also be measured for changes in soil organic matter, carbon, and water holding capacity. The objectives of this project are to increase critical monarch butterfly and greater sage-grouse



Loading the chipper with Russian-olive from the Curlew National Grassland. Photo Credit: Dennis Hinkamp.

habitat, create a value-added product from an invasive tree, and restore soil resilience by adding biochar.

-Megan Dettenmaier, USU Forestry Extension Educator

A Walk in the Woods: Campaign by North American Forest Partnership Engages the Public, and They Want to Hear from You

On May 10, the North American Forest Partnership launched 'Walk in the Woods,' <https://www.walkinthewoodswith.us/> a communications program to engage the public in conversation about forests, the future of forests, and the social, economic, and environmental benefits they create.

NAFP includes more than 110 members who represent all segments of the forest sector and are united by a shared ethic of forest stewardship. They work with members to align and amplify the diverse voices of the forest sector, celebrating their stories and hosting conversations that will help shape the future of forests.

Members of the NAFP is inviting those outside the sector to learn more about their diverse roles as responsible, innovative stewards of North America's many different forests. We will provide straight answers to the public's questions about what we do and why we do it.

In addressing these questions, we'll share rich and fascinating stories about forest ecosystems, forest products, forest communities, forest people, and keeping forests as forests. We will explore the role trees play in maintaining our health, waterways, wildlife habitat, a healthy planet and a healthy economy. We will discuss innovation, partnership, research, responsible management, conservation, and sustainability.

We look forward to telling stories of the opportunities, challenges and choices landowners and society face in deciding the future of the many different forests in North America. We invite you to join us!

*-Beth Scott, Communications and Program Manager
North American Forest Partnership
bscott@forestfoundation.org*

To learn more, check out the [Walk in the Woods website](https://www.walkinthewoodswith.us/), <https://www.walkinthewoodswith.us/> follow them on [Facebook @WalkintheWoods](#) and [Twitter @_walknthewoods](#), and become part of the conversation by sharing your story.

Utah Forest News



From top to bottom: Loading the kiln; early burn; finished biochar.
Photo Credit: Dennis Hinkamp.

(Continued from page 1)

sponges to the soil; it soaks up water and slowly makes it available to plants. More specifically, it has been shown to increase the water holding capacity of sand, slightly increase the capacity of loam, and reduce the water holding capacity of clay soil. In fact, incorporating 10-tons of biochar into the top six inches of soil over an acre of agricultural land can increase water holding capacity by tens of thousands of gallons. Biochar also helps convert ammonium to nitrates that are available to plants in forest soils. For instance, mycorrhizal fungi species distribution and abundance

increases when biochar is added to soils. When considered together, the potential of biochar to improve soil characteristics and quality is wide ranging.

The DIY Biochar Workshop was taught by Kelpie Wilson, of Wilson Biochar Associates (Cave Junction, OR), who brought four flame carbonizer kilns to help us jumpstart backyard biochar production in Utah. Wilson hosts the www.backyardbiochar.net website and this DIY workshop was guided by her simple, down-to-earth approach to biochar production. The Utah Biomass Resources Group (UBRG) has been working with Amaron Energy and other Utah companies to develop and scale-up high tech biochar production (See [UFN](http://ufn.usu.edu) Spring 2017, Fall 2015, Spring 2015 <http://forestry.usu.edu/publications/utah-forest-news>), and to raise awareness about biochar in an effort to create a market for this uncommon approach to restoring soil health and reducing forest fuels. These machines are highly precise and operate using a computer that controls temperatures, burn times, and intensities. This process yields specialized biochar - for a price - these machines generally cost hundreds of thousands of dollars to build. The simple, open top 5'x2' metal kilns that Wilson developed and supplied cost less than \$1,000 each. Dry branches (less than 8" in diameter) are stacked in the box, the pile is lit from the top, and as the material burns down, more wood is added until the kiln is nearly full of black carbon, or biochar. The volume of material leftover is eight times less than the originally woody feedstock. Eliminating the need to chip the wood before burning is one advantage this DIY technique has over the higher tech kilns which require the material to be chipped into a size less than a half inch; a costly step in the process.

The workshop was funded and organized by USU Extension with significant assistance from the Utah Division of Forestry, Fire and State Lands, the Lone Peak Conservation Center, and the Utah Biomass Resources Group. Forestry and wildland fire organizations such as these are typically charged with burning slash to reduce the amount of fuels that can contribute to a wildfire using a technique called pile burning.

Darren McAvoy, Extension Assistant Professor of Forestry gives us some input on this process. As a field forester in the Inland Northwest, I generally spent my cool fall days running from pile to pile in the forest with a propane tank in my backpack and a weed-burner wand in my hand, lighting piles as fast as I could. Contractors and crews spend most of the summer creating these piles, but it only took us a few days to burn them all. Occasionally, the piles we burned were larger than 2,000 square feet. Although we waste a mountain of wood with this approach, piling and burning is clearly the most economical method for managing excess wildland slash. Research has shown, however, that burning

piles can lead to significant soil damage (due to the extreme temperatures of the fires) and costly air pollution. The soils beneath slash piles that I may have burned as a firefighter 30 years ago on the Flathead National Forest in Montana still have not recovered, according to research by the USDA Forest Service Rocky Mountain Research Service. By piling and burning in a contained manner, we can protect the soil from this kind of damage and potentially enhance it by applying the biochar after it is produced.

In contrast, research has shown that the carbon produced in a wildfire can be very beneficial to forest health, and that wildfire is a complex and necessary player for the functional ecology of western forests. It is also clear, however, that public acceptance of wildfire and prescribed fire is very limited. Perhaps by putting those difficult to control flames in a box, we can reduce the amount of wildfire needed on the landscape while still gaining some of the benefits of sequestering carbon in our soils.



-Darren McAvoy, pictured here in 1987 as a hotshot for the Flathead National Forest. McAvoy is currently an Extension Assistant Professor of Forestry at USU.

New Field Guide Aims To Simplify and Streamline Aspen Management for Practitioners

Dr. Paul Rogers, Utah State University aspen expert and Western Aspen Alliance Director, just published an open-access, 104 page comprehensive field guide for professionals interested in managing aspen. This resource was created with support from the Bureau of Land Management, however the management guide can inform any professionals with an interest in promoting aspen ecosystem resilience. You may access the [Guide to Quaking Aspen Ecology and Management](http://western-aspen-alliance.org/files/AspenFieldGuide_050817_final4.pdf), http://western-aspen-alliance.org/files/AspenFieldGuide_050817_final4.pdf

This new field guide, available online and in field manual format, incorporates the latest in aspen science and management. Practitioners interested in recent science advances, new techniques for monitoring and managing

Guide to Quaking Aspen Ecology and Management

with Emphasis on Bureau of Land Management Lands in the Western United States



aspen, strategies for addressing climate change, and those interested in the functional ecology of aspen, will find this guide useful. As we now know, aspen management cannot be successfully conducted in a one-size-fits-all vacuum. At its core, the guide focuses on applying the right science to the right aspen ecosystems. The book is stocked with illustrations and photos of various aspen communities, challenges affecting aspen, and methods for tackling site-specific needs. This guide includes numerous contemporary references, as well as a Key Terms section.

Request your free copy by emailing Tom Adamson, (tadamson@blm.gov) and typing "Aspen Field Guide" in the subject line.



The Field Guide highlights aspen management using functional types. Here two central types - seral (left) and stable (right) - coexist on the same landscape in southwest Wyoming. Photo credit: Paul Rogers.

Utah Community Forestry Council Tree Climbing Championship Results, and a Real-life Rescue

Climber Tristin Jones, an employee at Mowbray's Tree Service, was injured while competing in the Work Climb as part of the 24th Annual Tree Climbing Championship, June 9-10 at Murray Park, Murray City, UT. While performing the tasks for this portion of the skills course, Jones became tangled in his equipment and dislocated his shoulder, requiring fellow colleague and climber Dustin Badger, to perform an aerial rescue. Jones is recovering from his injury and expressed gratitude to Badger for assisting him. The competition included 44 climbers, 60 judges and volunteers, and 24 sponsors.

Conference organizer Lisa Hanussak, was pleased with the turnout and expressed her gratitude to all the climbers, volunteers, and judges that made this day possible. The real-life rescue that occurred during the competition is an example of the dangerous nature of this job, and a testament to the camaraderie and professionalism required to be a professional arborist.



David Thunell competing in the throwline (top) and Hector Sanchez competing in the secured footlock (bottom). Photo Credit: Jeran Farley.

Winners, 2017 UCFC Tree Climbing Championship

Master Challenge

- 1st: Ryan Torcicollo
- 2nd: Jake Bleazard
- 3rd: Mike Tingey
- 4th: Kevan Tolman
- 5th: Johnny Atkin

Aerial Rescue

- 1st: Jake Bleazard
- 2nd: Johnny Atkin
- 3rd: Kevan Tolman
- 4th: Mike Tingey
- 5th: Tom Pugmire

Belayed Speed Climb

- 1st: Ryan Torcicollo
- 2nd: Josh Galster
- 3rd: David Thunell
- 4th: John Dallinga
- 5th: Gary Pratt

Secured Footlock

- 1st: Ryan Torcicollo
- 2nd: Johnny Atkin
- 3rd: John Dallinga
- 4th: Jake Bleazard
- 5th: Kevan Tolman

Throwline

- 1st: Ryan Torcicollo
- 2nd: Kevan Tolman
- 3rd: Jeremy Miller
- 4th: Gary Pratt
- 5th: John Dallinga

Work Climb

- 1st: Jake Bleazard
- 2nd: Mike Tingey
- 3rd: Kevan Tolman
- 4th: Garrett Housley
- 5th: Ryan Torcicollo

Utah Forest News



Clockwise: John Dallinga competing in the work climb, Chris Heiner competing in the work climb, Kevin Tolman competing in the work climb, Sean Graziano competing in the aerial rescue. Photo Credit: Jeran Farley.

UtahStateUniversity
FORESTRY EXTENSION

**Join Us for the 16th Annual Timber Harvest/
Forestry Practices Tour & Biochar Production
Demonstration: Thursday, Sept. 21, 2017**

UTAH STATE UNIVERSITY FORESTRY EXTENSION

On the tour, we will see the result of ongoing aspen and Douglas-fir thinning operations and a demonstration of a low-cost DIY biochar production method (weather dependent). All are welcome to attend.

Details: Meet at 10 am on Thursday, Sept. 21, at the dirt parking area at the intersection of US-6 and the Emma Park Road (which is located 10 miles east of Solider Summit, near mile marker #221).

Lunch will be provided to those that RSVP to Megan Dettenmaier by 9/18/17. megan.dettenmaier@usu.edu or 435-797-8424



Contact Us

Do you have a story idea for the next edition of Utah Forest News? Have feedback about any story in this issue? Get in touch with us.

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Restoring the West | Forest Restoration: What's Working, Conference 2017 | What's Not? October 17-18, 2017

Forests in the western U.S. have been shaped and often degraded by fires, fire management, invasive species, pests, climate change, livestock grazing, and logging. Forest managers have taken various approaches to restore these degraded forests, with varying levels of success. This conference will gather leading forest restoration experts to review and suggest techniques that can sustain and restore Interior Western forests. Speakers will offer real examples from the field that describe their forest restoration successes (or failures). Our goal is to present useful, practical knowledge that will help managers restore forests across the Interior West. The conference will include two days of plenary sessions, a poster session, and an evening social. Poster submissions are encouraged. For more information visit our website at www.restoringthewest.org

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