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SAF Cheers Wildfire Funding Fix

Congress has agreed on a comprehensive package of legislation designed to fix the wildfire funding issue and implement some meaningful federal forest-management reforms. The agreement, which is part of the omnibus spending bill covering all federal agencies for the rest of fiscal year 2018, passed both the House and Senate and was signed by the president on March 23. **Page 2.**

Comparing Two Inventories

Comparing two inventories is challenging, and many factors need to be considered. The math can get pretty deep pretty fast. So it's not surprising that many foresters use shortcuts and rules of thumb to evaluate inventory results. This article looks at a common shortcut and shows why it can be misleading. **Page 14.**

Women of Wildfire

"Diversity matters," writes Allie Weill. "It's an equity concern: Most people want all those who want to and have the potential to be successful in the field of wildland fire to be able to do so. But I'd argue that a diverse workforce is also necessary for forest management in the 21st century." **Page 16.**

Call for VP, Board Candidates

SAF seeks candidates for vice-president and three positions on the Board of Directors. **Page 18.**

Wildlife/Fisheries Program Accredited

The Society of American Foresters has granted accreditation to the wildlife and fisheries management concentration of study within the wildlife and fisheries science major at the College of Agricultural Sciences and Natural Resources at the University of Tennessee Institute of Agriculture. This is the first and only time, nationwide, that a concentration of a wildlife and fisheries major has been accredited by a professional organization. **Page 19.**

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Range Management: The Intersection of Forests and Rangelands

Mention range or rangeland, and some people will think of "Home on the Range," the old western folk song sometimes called the unofficial anthem of the American West. "Oh give me a home where the buffalo roam/ Where the deer and the antelope play/ Where seldom is heard a discouraging word/ And the skies are not cloudy all day." According to the Library of Congress, soon after Franklin D. Roosevelt was first elected president, he declared "Home on the Range" his favorite song.

Although the buffalo don't roam much anymore, deer and the antelope certainly play across much of the West. But deer and antelope don't define "rangeland." Webster's dictionary gives the term a broad meaning: "an open region over which animals (such as livestock) may roam and feed." The Bureau of Land Management (BLM), which administers 258 million acres of public land, mostly in the 12 Western states, manages rangelands for "the use of wildlife and livestock." Rangeland includes prairie, grasslands, and vast areas covered not only with sagebrush, but also pinyon and juniper woodlands and forests of all kinds, including in the eastern US. Thus,



Rangeland near Jackson, Wyoming. Photo: Scott Bauer, US Natural Resources Conservation Service.

the title of this introduction to the articles on range management in this edition of *The Forestry Source*: "The Intersection of Forests and Rangelands."

As you'll read in the article starting on this page, SAF's Board of Directors recently approved a memorandum of agreement between SAF and the Society of Range Management (SRM); the article features Andrea Watts' interview with SRM pres-

ident Barry Irving. An article beginning on page 6 describes the Utah Watershed Restoration Initiative, which has treated nearly 1.5 million acres of rangeland over 12 years. An article on page 10 addresses the question, "Grazing and Timber: Is There a Happy Medium?" See page 12 for a roundup of range-management research and webinars. It's okay to hum "Home on the Range" as you read. **a**

What Is Rangeland? A Q&A with Barry Irving

SAF and SRM Sign a Memorandum of Agreement

By Andrea Watts

At the SAF Board meeting held on March 18, the Board of Directors approved a memorandum of agreement between SAF and the Society of Range Management (SRM). The purpose of the agreement is to "facilitate greater communication, cross-over, and member benefits between SRM and SAF. The focus is to establish co-member benefits, allowing expansion of both Societies' memberships and reach. This commitment includes sharing relevant scientific content, news, and information between organizations and among members benefiting the scientific professional community."

SRM is an international society. Although most of the mem-

bership is concentrated primarily in the United States, followed by Canada and Mexico, more than 24 countries, including Zimbabwe, Saudi Arabia, New Zealand, and Argentina, are represented within its ranks.

To learn more about range management and how this memorandum of agreement came about, I chatted with Barry Irving, president of SRM. A member since 1983, he has been involved in range management for more than 35 years and is a lecturer and

Q&A ■ Page 4

USFS: Tooke Resigns, Agency Shaken by PBS Report

In the face of an investigation into sexual misconduct accusations against him, Tony Tooke resigned his position as chief of the US Forest Service on March 7. He had served since September 1, 2017, when he succeeded Tom Tidwell (see "Tooke Takes Reins of US Forest Service," *The Forestry Source*, November 2017). The allegations surfaced in January media reports that Tooke, who is married, had engaged in a consensual affair with a subordinate female agency employee more than a decade ago.

Agriculture Secretary Sonny Perdue named Vicki Christiansen, deputy chief of

the Forest Service's State and Private Forestry section, as interim chief.

Tooke's resignation came less than a week after the Public Broadcasting System (PBS) published a March 1 report, "They Reported Sexual Harassment. Then the Retaliation Began" (tinyurl.com/yct9x5ez), which did not mention Tooke, but described the results of a PBS investigation into allegations of gender discrimination and sexual harassment within the Forest Service by numerous employees:

"In interviews with 34 current and former US Forest Service women, spanning 13 states, the women described a

workplace that remains hostile to female employees. They complained of a pattern of gender discrimination, bullying, sexual harassment, and assault by crew members and supervisors. Three women said they were raped after-hours by coworkers or interagency firefighters while working for the Forest Service. Many women alleged retaliation after reporting these incidents."

In an email to all agency employees sent the day he resigned, Tooke said he admired the courage of the women who had come forward.

USFS ■ Page 2

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Society of American Foresters

The mission of the Society of American Foresters is to advance the science, education, technology, and practice of forestry; to enhance the competency of its members; to establish standards of professional excellence; and to use the knowledge, skills, and conservation ethic of the profession to ensure the continued health and use of forest ecosystems and the present and future availability of forest resources to benefit society.

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“Their stories are heartbreaking and reveal that we must do much more to achieve a safe, positive, and respectful work environment for all employees. Please know that Forest Service leadership is committed to investing in the changes and resources needed to improve and become much better,” he wrote. “Though we still have much to do, we have taken steps to improve policies, accountability, reporting systems, and training.”

In his email, Tooke also stated that he

had cooperated with the agency’s investigation into the affair, but that “what is needed right now is for me to step down as Forest Service Chief and make way for a new leader that can ensure future success for all employees and the agency.”

On March 9, SAF issued a statement saying that the Society “wishes to use this opportunity to call on all forest professionals to work together to break down institutional barriers and create safe, respectful, and welcoming work environments.”

“As a community, we must all do bet-

ter,” said John Barnwell, acting SAF CEO. “First and foremost, every professional deserves a safe and respectful workplace. But, if we are going to attract and retain the best talent, we must also strive to create environments where all individuals with a passion for forests are welcomed and empowered. Progress has been made, but real change requires a sustained and coordinated effort from the profession as a whole. SAF is committed to working with the US Forest Service and the broader forestry community to promote professionalism and break down barriers to success.” a

EDITOR’S NOTEBOOK

The Highest Standard of Conduct

By Steve Wilent

The revelations in the March 1 article by the Public Broadcasting System (PBS), “They Reported Sexual Harassment. Then the Retaliation Began” (tinyurl.com/yct9x5ez), might be thought of as a wildfire. The larger firestorm will cool down, as fires always do, but it won’t be declared out anytime soon, and a shift in the winds may lead to new blowups and spot fires. Wildfires in forests often are beneficial when they clear out decadent vegetation, reduce accumulations of fuel, and spur new growth. The fire of gender, racial, and sexual discrimination and harassment will lead to positive change, too, but the process will be painful for every-

one involved.

I hope you read the PBS article and subsequent articles, such as “Forest Service Must Change How It Investigates Sexual Misconduct, Report Says” (tinyurl.com/y8qc642t), which describes a report recently released by the USDA Office of the Inspector General: “The report said that the Forest Service primarily uses internal investigators to perform sexual misconduct investigations, and recommended that the agency use independent contract investigators instead.” Another article to consider: “New Female Forest Service Head Launches Review of Harassment, Sexual Misconduct in the Agency”

(tinyurl.com/y79t23bq), which recounts an all-employee phone conference led by interim Forest Service Chief Vicki Christiansen.

“We’ve had some hard truths look at us,” Christiansen said during the call. “We’ve known about these, but they’re staring right at us, and clearly, we’re not doing enough. Let me state again, we cannot achieve the work of our mission without the safe, respectful, rewarding, resilient work environment that our colleagues and the American people require and deserve. In order to be successful in

EDITOR’S NOTEBOOK ■ Page 20

SAF Cheers Wildfire Funding Fix and Forest Management Reforms

Congress came to an agreement on a comprehensive package designed to fix the wildfire funding issue and implement some meaningful federal forest management reforms. The agreement, which is part of the omnibus spending bill covering all federal agencies for the rest of fiscal year (FY) 2018, passed both the House and Senate and was signed by the President on March 23.

Wildfire Funding

- Creates a new funding mechanism through the disaster cap for wildfire starting in FY 2020 at \$2.25 billion and increases to \$2.95 billion in FY 2027 to account for projected increases in wildfire costs and to prevent borrowing from non-fire programs.
- Freezes the Forest Service budget for suppression activities at the FY 2015 level to stop the shifting of funds away from non-fire programs at the beginning of the budgeting process.
- Adjusts the overall disaster cap level by adding additional funds through FY 2021 to ensure that there is enough funding for all federal agencies accessing the disaster cap.
- Includes an additional \$500 million beyond the 10-year average to help

pay for suppression costs until access to the disaster cap begins in FY 2020.

Railroad Revested Lands and Coos Bay Wagon Road Reconveyed Lands.

Forest Management Reforms

- Adds categorical exclusions from the National Environmental Policy Act to cover up to 3,000 acres for hazardous fuels removals.
- Expands Good Neighbor Authority to allow state foresters to work on neighboring federal lands more often.
- Limits the number of alternatives under consideration in the environmental analysis process.
- Allows stewardship contracts to extend to 20 years, helping industry invest and expand the capacity to create additional markets for wood products.
- Addresses impacts of the Cottonwood decision by giving the Forest Service more flexibility to move forward with projects while sorting out Endangered Species Act issues.
- Increases the use of Wildfire Hazard Severity Mapping for communities to improve risk assessment and community preparedness.
- Strengthens deference to current land use plans for Oregon and California

“This long-awaited and critically-needed package of reforms would not have been possible without the passion and relentless commitment of countless individuals, organizations, current and past administrative leaders, agencies, and congressional members and staff,” said Dave Lewis, President of the Society of American Foresters. “It’s refreshing to see bipartisanship and collaboration finally prevail. These reforms will ultimately benefit all states and all lands, both public and private. Forestry and natural resources professionals across the country are beyond grateful for all those who contributed to this effort, and are excited to move forward and focus on improving the health and productivity of our nation’s forests.”

SAF thanks Senators Crapo, Wyden, Risch, Merkley, Murkowski, and Cantwell, along with Representatives Simpson, Shrader, Westerman, McCollum, and many others who have been working tirelessly for years to address these issues. SAF will continue to work with Congress and our partners to elevate forestry and natural resources professionals and give them the tools they need to research, manage, and care for our nation’s forest resources. a



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- 8:45am-9:45am General Session 2031: A Forestry Technology Odyssey
- 9:45am-10:15am Networking Break
- 10:15am-Noon UAV's in Forestry – A Consultants Perspective
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Improving Efficiency with User-Friendly Forest Inventory Software
Smart Forestry: From LiDAR Point Clouds to Enterprise GIS to Mixed Reality Headsets
Providing Custom Natural Resource Solutions by Leveraging Technical Partnerships
Cloud-based Tools for Managing Forestry Operations
- Noon-1:30pm Lunch
- 1:30pm-5:00pm Hands-on Forest Technology Workshop in the Woods
New Precision Instruments for Field Foresters
Forest Measurement 101 – Tech Tools for Heights, Diameters, Upper Stems, Border Trees, and Laser Mapping
UAV's for Inspection and Mapping in Forestry
Next Generation Hardware and Software for GPS Mapping and Forest Inventory Applications
- 5:00pm-6:00pm Networking Reception

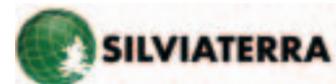
Wednesday, May 9

- 7:00am-8:00am Coffee with Exhibitors
- 8:00am-9:15am General Session
- 9:15am-9:45am Networking Break
- 9:45am-11:30am Working in the ArcGIS Platform
Increase Efficiency and Ensure Chain of Custody Credibility with Load Tracking Software
Modernizing the Forest Inventory Process
Increased Efficiency and Accuracy in Forest Inventory Management Systems
Trimble 4Loads & CFX – A Load Ticketing, Reconciliation, and Reporting Solution for ALL Forestry Stakeholders
- 11:30am-1:00pm Lunch
- 1:00pm-2:45pm Working in the ArcGIS Platform
How to Not Waste Money on Remote Sensing
Tax Time: How Paying Property Taxes This Way can Save Your Industry Thousands
Breaking up with Desktop Forest Management: One Company's Transition to the Cloud
Mapping and Forest Inventory Made Easy
- 2:45pm-3:00pm Networking Break
- 3:00pm-4:00pm Closing Session and Work Group Discussion
- 4:00pm Adjourn

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Q&A

■ From Page 1

land and resource manager at the University of Alberta in the Faculty Agriculture, Life & Environmental Sciences. In 2006, the Range Science Education Council and the Society for Range Management awarded him the Outstanding Undergraduate Teaching Award, and in 2017, he received the W.R. Chapline Land Stewardship Award from SRM.

What follows is our conversation, edited for clarity and length.

Why did you pursue range management?

I was interested in wildlife, so I took the range and wildlife major in forestry at the University of Alberta. I transitioned into range because I graduated during the first oil downturn, and there weren't a lot of jobs in wildlife or anything in resource management. I obtained a position with the University of Alberta at one of our ranches, and I just kept working my way up. The discipline you want to get into is not always the one you wind up staying in.

What type of landscape is considered rangeland?

Different people have different definitions. The classic definition is land that's used for free-ranging herbivores as a source of forage, but it also produces multiple other environmental goods and services, such as carbon storage, wood and fiber, water, recreation, and, increasingly, housing and industrial complexes. Range is defined by its utilitarian side, which in its history has been livestock grazing. That is still a dominant end use, but other uses are gaining importance. It's also defined by an ecological side, which to me means the long-term sustainability of a utilitarian practice.

The definition I tend to favor, which not everyone will agree with, is that [rangeland] is too *something* for cultivated agriculture—it's too dry, it's too wet, it's too hilly, it's too stony, or it's too sandy.

Are there certain landscape features that make an area a range?

I don't define the line of forest and then range and then forest again. I define it as forest that's utilized as a source of forage for free-ranging ungulates, and therefore, I would claim a lot of forested areas as rangeland. There's an overlap of land between forest and rangeland. Rangeland occurs in North America from coast to coast, north to south, and east to west, but typically it's the western half of North America that people view as rangeland area.

How did the agreement between SRM and SAF come about?

That was a two-and-a-half-year process. It started with SAF President Bob Alverts coming to our annual meeting in Sacramento, and he was there for, for lack of a better word, cross-pollination. He invited one of our board of directors to meet with SAF's Board in Washington. At the time of the SAF Board meeting, I was elected as second vice-president, but I hadn't quite assumed the role. Nobody else could go, so my wife, Judy, and I went to Washington, and we were hosted for a day and a half, and I participated in the SAF Board meeting. We floated the concept of a co-

operation of some sort, and both organizations began internal discussions. From there, SRM took the lead on developing an agreement for what we called "co-member benefits." We have members who are interested in interacting in other societies but not necessarily having to be a full member of all the societies that they want to participate in.

We both signed the agreement in Sparks, Nevada, in February 2018.

What do you see as the benefits of this agreement?

The sharing of information. Perhaps we could both garner more member enthusiasm if we have this opportunity. If you're a member of SAF, for example, you can also get access to SRM journals or come to SRM meetings and pay member rates. SRM members can acquire SAF journals at a reasonable cost or attend SAF meetings at member rates. It's really about expanding the reach of information transfer and improving the member benefits for both organizations.

How are forestry and range management similar? What are areas for collaboration?

We're both ecologically thinking groups, but we have to balance ecology with production. We have opportunities to work and help each other just on that. On the ground, we have areas that foresters would claim as forested land and range managers would claim as rangeland. Having these two groups talking to each other rather than being adversaries is important, particularly on the forest-grassland fringe—the so-called transition zone.

Are there differences in how range managers view the landscape compared to foresters?

Between foresters and range managers, I think in some cases it's a difference in the scale of the production culture. Range managers and the disciplines that we represent are smaller in scale than foresters and the industrial clients that they might represent. This isn't going to be 100 percent right, because there will be some places where forestry operators are quite small, and there are places where ranches are quite big. But, for the most part, forestry includes large companies, and people who actually use rangeland are small in comparison.

In terms of range management, what are issues you are seeing in Canada and the United States that your members are dealing with?

There's the age-old declining budgets. A lot of rangeland is public land, and there are continually declining budgets and declining staffs at the national and, in our case, provincial levels for managing rangeland. At the same time, there are increasing demands on rangeland. As our populations expand, resources start to become limited. One of the places we expand into, especially for recreation from the urban standpoint, is rangeland. Increasing demands on rangeland by an increasing population—this is not going to change any time in the future.

At the land-base scale, we have rare and uncommon species that are becoming



Mule Deer in velvet on FT Ranch in Colorado. Photo by Gary Kramer, Natural Resources Conservation Service.

more important. Twenty years ago, foresters didn't manage for the spotted owl or other endangered forest-habitat species, and range managers didn't manage for desert tortoises or sage grouse. As those species become better known to the public, the pressure becomes more intense on management and taking them into account—and rightly so.

We're both ecologically thinking groups, but we have to balance ecology with production.

We have exotic invasions going on all the time, and some places are relatively immune to exotic invasions and some places are relatively susceptible. One of the biggest invasions right now are the Mediterranean annuals, especially cheatgrass, in the Great Basin. That's an example of a pretty big geographic area—it's a huge problem now, and it's going to be a continuing challenge in the future. At the same time, we have the expanding urban and industrial footprint that's coming along with increased population.

There is also the sage grouse, and their habitat loss is probably linked a bit to that exotic invasion by cheatgrass. Sage grouse habitat covers an area of rangeland that goes from southern Nevada and into southern Canada. They're a species of interest and concern, and the poster child for endangered species on rangelands right now.

I also think there's a bit of public and professional complacency as to the value and potential of these lands and what happens if we lose them. It's almost the "endless resource" philosophy that we've had in our Western society for quite a while. At some point, it does become limiting, and then suddenly it's endangered. Our greater public society tends to take rangelands and the professionals and practitioners who manage [them] for granted.

In that respect, do we need more outreach to the public to raise awareness that this is a finite resource?

Absolutely. We have groups of people in

the general public who are telling a story of massive destruction—it's the end of the world unless we stop those foresters harvesting trees and get the livestock off the public land—caused by what SRM and SAF members would consider to be sustainable utilitarian practice. It seems hard to believe, but sometimes the middle-ground message is the hardest message to portray. One of our principle messages from SRM is that moderate levels of use or harvest, supported by solid research, is a sustainable path forward. There is also a lack of recognition of professionalism, by the public and even within our own disciplines. Foresters probably have a stronger recognition of professionalism than we have in our range community.

Do you know why that is?

I think it might be due to the scale issue. When you work in a professional discipline for a living, you have to be able to demonstrate professionalism and meet minimum competency standards, and if you're in a smaller group, you maybe don't value those professional standards quite as much, because you know each other.

What does your Society do to educate the public that you are professionals?

We advocate [on] a local, regional, national, and international stage for the value of professionalism and professional standards. We, like SAF, certify university programs, certify professionals, and hold meetings at the local and international scales to allow and promote professional training.

One of our challenges is all those things are all volunteer. In Alberta, for example, we compete against groups that operate on government funding to pay people to put on meetings and do the logistics—the kinds of things that we expect to accomplish with purely a volunteer workforce.

In terms of range management where forest and range overlap, are there practices that foresters need to be aware of that affect livestock production, or are there issues with livestock that affect forestry?

Absolutely. I'm not so sure how widespread this is, because it's different no matter where you go. For example, in the western United States, you have a problem with trembling aspen; as a vegetation



A new memorandum of agreement between the Society of Range Management and Society of American Foresters will improve the sharing of information between the two disciplines and offer co-member benefits. Pictured are (left) Rick Standiford, a member of SAF's Board of Directors (District 3), and Barry Irving, president of the Society of Range Management. Photograph courtesy of John Barnwell.

community, it is decline because of a small footprint, lack of regenerating fires, and large ungulate populations. In Canada, we don't have a problem with aspen. We have millions and millions of square miles of aspen. But when you put aspen regeneration and cattle on the same land base, you have the opportunity for conflict. In Canada, you're legally obligated to reestablish aspen back on the site. If cattle grazing

isn't manipulated correctly, you can have a real potential for damage to a regenerating aspen stand. The main difficulty between forestry and livestock is probably the regenerating forest stage. Mature forests are almost immune to damage, but at the regeneration stage, forest cut blocks are very susceptible to damage by livestock.

In that respect, what should range man-

agers and foresters be aware of?

It's a combination of research, collaboration, and cooperation. The old analogy is of the orange. Everybody wants the orange, but some only want to eat the orange core and others only want the orange peel for marmalade. We can each claim the orange for ourselves, but together we can each have a piece of the orange, if we cooperate. That is possible for forestry and grazing or range management, but it takes communication and collaboration to make it work.

And all too often people aren't good at communicating or collaborating.

Is that one of the opportunities with this agreement, to start building that collaboration at the local level?

Yes. It's human nature that it's much more difficult to dislike your neighbor when you know that they're your neighbor and they help you out on something else; we can help each other out at the professional level just like neighbors do. I think the more you can have people meet each other and mingle, the more they realize what similar interests they have instead of meeting for the first time across the boardroom table, where they have to come up with management practices they have to implement.

At SAF, we're focusing on attracting the next generation into the profession and organization. How is SRM attracting younger folks to consider range management as a career?

We have tremendous undergraduate stu-

dent programs at our annual meetings. SRM hosts a continuum of activities for students that ranges from our traditional academic contests to employment training workshops. We have 2,000 members, and we'll draw 1,500 people to our annual meeting, and a quarter of those will be students.

We don't have a problem getting young people into our organization; we have a problem keeping them, for a variety of reasons we don't fully understand. To address this, we've encouraged the development of transition groups. Members who are between college and seasoned professionals [who] are very active and doing a great job at generating some of the social interactions and technical skills that keep people coming back to our Society. We need to do more, but our current transition group, Young Professional Conclave, is working well and gaining momentum.

Are you also addressing diversity issues, such as making efforts to recruit students from diverse backgrounds to consider range management?

We established a Diversity Task Force two years ago in response to some criticism we had received about the lack of diverse thinking that we had in our Society, and we just approved a new diversity and inclusion statement. We've always had one, but, to be honest, we hadn't done a very good job of advertising or promoting it, and it was in need

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Partnership Drives Utah Watershed Restoration Initiative

Projects Treat Nearly 100K Acres per Year across the State

By Steve Wilent

You might say that the Utah Watershed Restoration Initiative (WRI) has an ambitious agenda. The multipartner initiative was launched 12 years ago to manage, protect, and restore watersheds across Utah by, among other actions, restoring degraded rangelands and forests, reducing the impact of invasive plant species, curbing the scale and intensity of wildfires, and reversing aspen forest decline. In addition to improving watershed health and biological diversity, WRI also aims to boost water quality and yield and increase opportunities for sustainable uses of the state's natural resources.

To date, WRI and its partners have completed 1,755 projects on nearly 1.5 million acres, using more than \$187 million in state and other funding and more than \$20 million in in-kind contributions.

WRI director Tyler Thompson began working for the Utah Department of Natural Resources (DNR) in 1997, starting as a seasonal employee collecting vegetation trend data for the DNR's Division of Wildlife Resources Range Trend program. He later worked as a research biologist in the development of new grass and forb seed sources. Thompson was the first restoration biologist hired to implement WRI projects in southern Utah. He was named WRI director in January 2017. I recently spoke with him about the WRI's achievements and its goals for the future.

What was the main reason for initiating WRI?

The real driver was that back in the early 2000s, we had quite an issue with the effects of a long-term drought. At the time, we thought we were seeing a large die-off of sagebrush—we found out later that it was just a browning of sagebrush leaves. But there was a real panic in the state, especially within the wildlife community,

that we were losing resources across the state, that we were in trouble. The director of the Division of Wildlife at the time approached his counterparts at the federal agencies, and they reinitialized an older organization called the Utah Partners for Conservation and Development, and they resolved to put active restoration projects on the ground. That resolution spurred the creation of the Watershed Restoration Initiative. Funding from the state came along in about 2006, and that's when things really started to get rolling.

And it continues to be a multiparty effort?

Yes, initially, the key members were the federal and state natural-resources agencies. The initiative has now grown to the point where it's an open partnership—anyone can participate. We have five regional teams, and depending on the region, we see participation from local and county governments, sportsmen's organizations, nonprofit environmental organizations, oil and gas professionals, ranchers, and other landowners.

What were the initiative's first priorities?

In Utah, we have an issue with an overabundance of pinyon pine and juniper trees. A lack of disturbance has led to an over-mature population of these trees, so a lot of the first projects were aimed at pinyon and juniper removal. That work continues.

What are the effects of the spread of pinyon and juniper, or PJ, woodlands?

When pinyon and juniper encroach into sagebrush areas, they start to choke out all of the understory plant species, so we start to lose our shrubs, grasses, and forbs. When the tree canopies eventually close in, there is very little vegetation in

the understory. So we try to push those trees back or create openings using chippers, chaining, or lopping and scattering—whichever method is appropriate for the area. And then we reseed the area with a mixture of both native and non-native grasses and forbs, and sometimes work to reestablish sagebrush as well. The goal is to create a diversity of different species and age classes.

Why do you use non-native species?

Our goal over the years has been to increase the amount of native species that we use, to the point at which we won't use any non-native species, but right now there are issues, such as the cost and availability of native seed. We're putting millions of pounds of seed out there each year, and even with the [native seed-source] development projects going on, we still need to use a few non-native grasses and forbs. The amount of non-native seed that goes out now is much less than when we started 12 years ago.

Chaining, or dragging ship anchor chains across an area to remove vegetation, is controversial. Is it widely used in Utah?

It never really went out of use in Utah, at least not on state and private lands. The federal agencies put it on the shelf for a little while, but through this cooperative effort they have found it to be a useful tool. And they have used it in very limited areas, where chaining is called for. It's primarily the BLM [Bureau of Land Management] that has brought that tool back.

We have used one-way chaining for fire rehab for as long as anyone can remember.

One-way chaining?

After a fire, we'll come in and aerially re-

seed an area, and then use crawler tractors pulling anchor chain over the top to help cover that seed. Two-way green chaining is what's controversial. That's where, in mature stands of pinyon and juniper that are still green, you pull a chain one way, then seed the area and come back again with a second pass of the chain in the opposite direction, to cover the seed. It's a very disruptive, very ugly-looking process, and most of the controversy surrounds how devastating it looks. Our response to that has always been that the churning of the soil is needed so that we get a good response from the seed.

Are the trees that are ripped out eventually piled and burned?

We don't typically do that anymore—we usually leave them in place. That's a conversation we often have with livestock operators, who want us to pile or windrow the debris. But what we have found through research is that leaving the trees on the ground has value for adding organic matter to the soil and creating small-animal habitat, so we usually leave them on-site where they lay. In the wintertime, that helps keep snow from being blown off of the site. From a wildlife and watershed health perspective, it makes a lot more sense to leave the trees in place.

Tell me about the other mechanical treatments you use.

Lop-and-scatter is the method we use the most. There are three phases of PJ encroachment: In phase 1, you have small, immature trees. In phase 2, the trees are a little bit more mature and are starting to push out the understory, and in phase 3, the tree canopy is completely closed and there's very little understory. We found that in phases 1 and 2, where there's still a good understory that will respond if we



Pinyon and juniper trees that have encroached into areas previously dominated by sagebrush are removed by using chippers, chaining (as was the case in the area shown here), or lopping and scattering, allowing sagebrush species to recover. In some cases an area is seeded with a mixture of both native and non-native grasses and forbs. "The goal is to create a diversity of different species and age classes," said Utah Watershed Restoration Initiative director Tyler Thompson.

2018

ISA Annual International Conference & Trade Show

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Convention Center

5–8 August

Sunday, 5 August

*Arboriculture
Celebration and
Welcome Reception*

Monday, 6 August

*Educational Sessions
Trade Show with
Climbers' Corner*

Tuesday, 7 August

*Educational Sessions
Trade Show with
Climbers' Corner*

Wednesday, 8 August

Educational Sessions



Education and Networking for Urban Foresters

Conference Highlights

Sunday Arboriculture Celebration Keynote

5 August, 6:00 pm – 7:30 pm

*Angelou Ezeilo, CEO and Founder,
Greening Youth Foundation*

*Workforce Diversity: Preparing for
the Next Generation of Arborists*

Learn more about the Greening Youth Foundation at:
<https://www.gyfoundation.org/>



Monday Featured Presenter

6 August, 8:30 am – 9:20 am

*Mark Bays, Urban Forestry Coordinator,
Oklahoma Forestry Services*

*The Survivor Tree: Witness to Tragedy,
Symbol of Strength*

Learn more about the Survivor Tree at:
<https://oklahomacitynationalmemorial.org/press-room/press-kit/survivor-tree/>



Tuesday Featured Presenter

7 August, 3:45 pm – 5:00 pm

*Matt Mellis, Aerospace Engineer,
NASA Glenn Research Center*

NASA and the Arborist: An Accidental Collaboration



Pre-Conference Tour

Sunday, 5 August

Tree Tour of Green Lawn Cemetery

Educational Tours:

Wednesday, 8 August

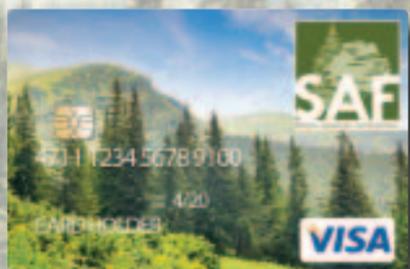
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This Tigercat machine, fitted with a Fecon mulching head, grinds whole pinyon and juniper trees in a sagebrush restoration project. Photo: Tyler Thompson, Utah Watershed Restoration Initiative.

take out individual trees, then we'll use the lop-and-scatter method. Chainsaw crews come in, and the contract specifies that they cut the trees down and then cut them into pieces that are usually smaller than about two feet. And there are height requirements—they lay it down and

spread it out. There's an almost automatic response to these treatments. We get an immediate response by the understory species—they sprout right back up once those moisture-robbing trees are taken out of there.

And the understory species, which return to being the dominant species on a site, are important for a variety of wildlife species. And livestock, too, I presume?

Right, and both wildlife and livestock are targets of the initiative.

Is fire also a tool used to restore watersheds?

Absolutely. We use fire quite a bit in the aspen and conifer types. Aspen is a fire-dependent species, and we have the same issue in Utah as most of the West has—the decline and loss of aspen. So we work with the Forest Service, the BLM, and private landowners to carry out large-scale burns whenever possible. What we found through research with Brigham Young University is that the larger the scale of the fire and the hotter the fire burns, the better the response from aspen. And you also swamp out all of the negative effects from concentrated aspen herbivory, from both wildlife and livestock. We try to burn, and we try to burn big.

What about using prescribed fire in the PJ?

We have had a few successes with fire in the PJ type, but what we found over the years is that, in order to get a successful pinyon and juniper burn, the conditions that we need—the fuel moisture and wind to carry the fire, and the time of the year that you have to set those fires—are pretty dangerous. We've had a few fires get away from us. If we can isolate a large area and reduce the likelihood that it'll get away from us, we'll try to do a PJ burn. But it really makes a lot more sense for us to do mechanical treatments instead.

I read that Utah has 54 noxious weeds, including cheatgrass, which is a problem throughout much of the West. What is WRI's approach to combating invasives?

We fund a few long-term treatments each year—usually spraying projects—to try and push back weeds. The initiative's goal is to try not to get into the mode of just spraying weeds year after year, but

Utah National Forests Launch “Million Acre Challenge”

The supervisors of the five Utah national forests recently pledged to work with state, federal, and non-profit partners to improve one million acres of National Forest System lands in Utah over the next five years using Utah Watershed Restoration Initiative funding. The goal for Utah national forests this year is to treat about 170,000 acres. According to the US Forest Service, proposals for 64 projects have been submitted to WRI, totaling \$11 million in combined funding requests. In 2017, the Fishlake National Forest completed a forest-wide analysis to treat phase 1 juniper stands on about 75,000 acres. The Uinta-Wasatch-Cache has launched a similar environmental analysis that will cover just under 72,000 acres.

“The Million Acre Challenge is not only about improving one million acres, but also setting forth the challenge to think bigger and broader in terms of the landscapes we treat and our ability to effectively and efficiently complete our environmental analysis and decisionmaking,” said David Whittekiend, supervisor of the Uinta-Wasatch-Cache National Forest, in a press release.

In planning and executing these projects, the Forest Service is working with partners, such as the Mule Deer Foundation, the Rocky Mountain Elk Foundation, and the National Wild Turkey Federation.



In areas where it is safe to do so, prescribed fire is used to help restore rangelands in Utah. Photo: Tyler Thompson, Utah Watershed Restoration Initiative.

to work with project managers who are working to eradicate weeds and replace them with natural vegetation.

We do a lot of spraying and cutting in riparian areas, in treatments of both tamarisk and Russian olive, especially in the southern part of our state. And we treat phragmites [large non-native perennial grasses and reeds], which is an issue around our two large lakes, the Great Salt Lake and Utah Lake.

Does the initiative work on sage grouse conservation projects?

I would say that most of the pinyon and juniper projects have a sage grouse element to them. With the lop-and-scatter method, we have found that the birds are moving into those freed-up habitats right away.

What are the WRI priorities for this year?

We have about 200 project proposals for this year. The regional teams have ranked these projects, and now the state-level WRI administrators will try to match funding to them. The five national forests and Utah have issued what they call the Million Acre Challenge, where they've challenged their staffs to work through the WRI to restore a million acres over the next five years [see sidebar]. We'll try our best to fund as many of those projects as we possibly can.

WRI will handle funding for federal projects?

One of the most unique things about the WRI is that it is a state-run program and

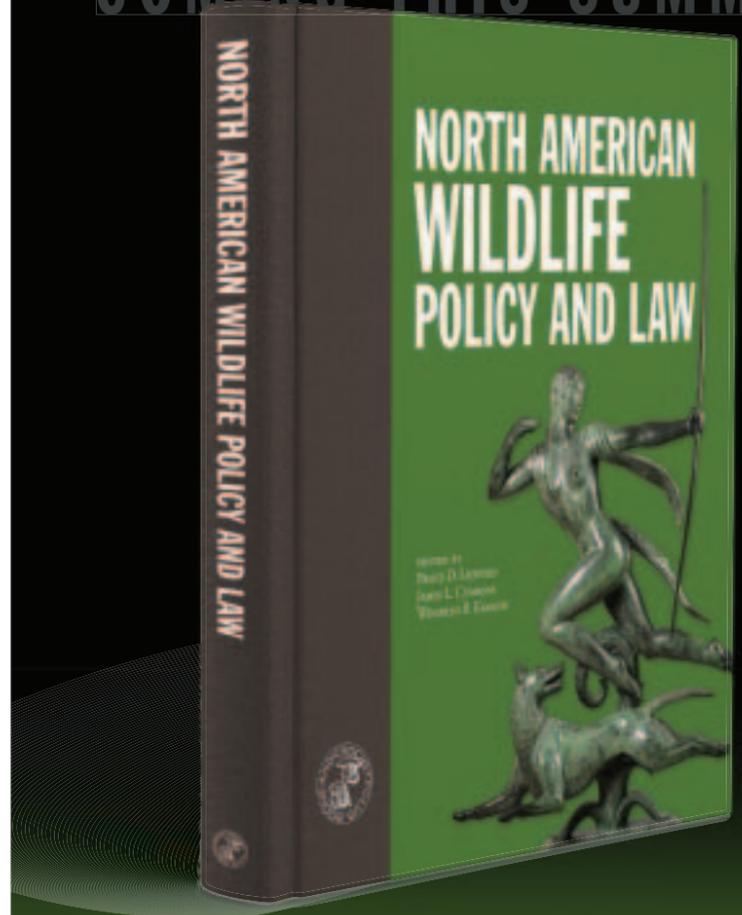
it does have state funding that ties into it, but we work through cooperative agreements and the Good Neighbor Authority to move [other] funding into the state, where we then pool it and distribute it to projects that rank highly in the WRI evaluation process. We also handle most of the contracting and seed purchases for all of these projects, so instead of the feds working on their land, the state working on its land, and private folks working on their land, we'll go out and hire a single contractor with that pooled funding to pay for work across all ownerships. That's more efficient, and it saves us a ton of headaches. It lets us work at a scale that makes sense for the ecology of the area, rather than based on who owns the land.

Are private landowners willing participants in WRI?

Absolutely. There are hundreds of private landowners involved with WRI each year. They are big supporters and big contributors—most support comes in the form of in-kind contributions of time, materials, and equipment. We've been able to use NRCS [US Natural Resources Conservation Service] and Farm Bill funding through either private landowners or permittees on state and federal land. Access to that funding has been an enormous boost.

What are some of key lessons you've learned that you can pass on to folks working in other states?

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Grazing and Timber: Is There a Happy Medium?

By Andrea Watts

In my Q&A with Barry Irving, president of the Society of Range Management, on page 1, Irving mentioned that forests are considered rangeland if they support free-ranging livestock. Managing for both livestock grazing and timber production requires finding a balance between these two land uses—the greater a tree canopy, the less forage production. Conversely, a lower tree cover that maximizes forage production results in decreased timber production and harvest levels. And in certain parts of the country, cattle can damage a stand during its regeneration stage.

For his doctoral dissertation while at South Dakota State University, Kurt Chowanski, who is now a researcher with South Dakota School of Mines and Technology, sought to determine if it's possible to optimize both livestock grazing and timber production while also protecting the landscape. Funding for Chowanski's work came from the US Department of Agriculture's National Institute of Food and Agriculture; The Center for Agroforestry, which is a proponent of silvopasture; USDA Sustainable Agriculture Research and Education; and the South Dakota Space Grant Consortium.

His research site was the Black Hills National Forest, where roughly 85 percent of its 1.25 million acres are utilized for livestock grazing. Ponderosa pine is the predominant tree species, and harvest rotations are 80–125 years. Between 1998 and 2007, 163 thousand acres were harvested, producing 656 million board feet of sawtimber.

"Many people have made the argument that the Black Hills National Forest is the most intensively managed national forest in the country," Chowanski said.

Chowanski set out to answer several questions: Is there an optimal canopy cover for both livestock grazing and timber production? Does livestock grazing have any impacts on the landscape? What are the effects of different grazing intensities? What are the effects of grazing on pine regeneration?

"Sometimes the pine trees can be thought of as weeds, and the intensive pulses of regeneration really necessitate immediate thinning treatments," he said. "Otherwise, the trees will be incredibly dense and limit the long-term timber production."

The dataset he compiled, which spanned 1999–2005, consisted of 44 livestock grazing pastures, some of which hadn't been grazed for 15–30 years, whereas other pastures had been intensively grazed. All of these sites were surveyed for two years to assess their plant species richness. Grazing records maintained by the US Forest Service provided information as to how many cattle were on each pasture and for how long. The canopy cover of the sites was estimated by using satellite imagery, and Chowanski also looked at the past 45 years of timber-harvest history. From these data, he constructed a grazing pressure index that looks at how long an animal unit is on the landscape by how much forage is produced on that the land.

Chowanski was pleased to have a dataset that included replication and spanned 16 years. "Research in range-



Rangeland can be managed for both timber and livestock production, but the challenge is finding a balance between the two uses. This area, northwest of Custer, South Dakota, is within range of ideal canopy cover for maximizing livestock production, according to Kurt Chowanski, who researched livestock grazing and timber production for his doctoral dissertation. Photograph courtesy of Kurt Chowanski.

land is tricky and complicated, because it's hard to find multiple lands that are managed in identical ways," he explained. "A lot of rangeland research has a limited number of grazing pastures that are used and a limited number of treatments. Furthermore, it can take longer than five years before you start seeing the effects of grazing management on the landscape."

From his results, he found that there were no differences in the effects of livestock grazing intensity on natural ponderosa pine regeneration. Nor were there any differences in forage production under different intensities of grazing. Chowanski speculates whether this result would be the same under drought conditions, because the study period had a number of "incredibly moist summers," he said.

One surprising result he found was that a moderate level of grazing—15–20 animal units per megagram of forage produced—resulted in the highest plant species richness, whereas the ungrazed pastures had some of the lowest species richness, even compared to the most heavily grazed pastures.

In regard to canopy cover, he found that a tree basal area of 30–60 square feet per acre produces an optimal range of canopy cover that also maximizes livestock grazing.

Based upon these results, Chowanski said that it's evident that livestock provide somewhat of a benefit to the forest ecosystem. These results reinforce what Forest Service personnel had also observed on the ground. "The people I was working with at the Black Hills National Forest were happy to see that I was finding what they had in their heads, as far as which pastures were the best."

Although the study results demonstrate the value of silvopasture, Chowanski cautions that site conditions should



Heifers on rangeland in Montana. Photo: Tim McCabe, Natural Resources Conservation Service.

be considered when adopting this type of management strategy. "In the Black Hills, we don't need to protect the seedlings, while in other parts of the country, you do need to provide protection so cattle [or other foraging animals such as goats] won't trample them," he said.

There are also economic considerations for whether the silvopasture model is a viable option for some landowners. Although managing for both timber and livestock production does allow landowners to diversify their income streams, there is an upfront cost to incorporate timber or livestock production into their management strategy. "If you're in timber production, it costs a lot to buy the herd and have them on your land," Chowanski added. "Conversely, if you have a herd, you're getting an annual income. If you plant more trees, you'll have to cut back on that annual income to give those seedlings time to establish themselves." a

TinyURL: Short Links

Ever wonder why The Forestry Source often prints so many website addresses that begin with tinyurl.com? In short, TinyURL LLC offers a service that lets you turn long website addresses into short (tiny) ones. Although other companies offer web-address shortening services for a small fee, TinyURL is free. The Forestry Source has made a small donation to TinyURL to help support the service.

Forest Products Industry News

CLTs in Maine

SmartLam, a Montana-based company that makes cross-laminated timbers (CLTs) and other products, recently received a \$3 million grant from the Maine Technology Institute (MTI) to assist the company with its plan to open a new CLT manufacturing facility in Maine. "This expansion will allow the Montana-based company to fuel the adoption of the material on the East Coast while creating employment opportunities for Maine's ambitious workforce," noted the MTI in announcing the grant.

"We are seeing considerable demand for CLT on the East Coast as architects, builders, and developers seek durable, sustainable building materials," said SmartLam president and general manager Casey Malmquist in a press statement. "Our new Maine facility will provide us with the perfect vantage point to supply customers with our premium CLT products while allowing us to lower the environmental impact and costs associated with shipping."

In February, LignaTerra Global LLC, which is based in North Carolina, announced plans to build a 300,000-square-foot CLT manufacturing plant in Millinocket, Maine.

"We made the decision to come to

Maine for several reasons," said Nick Horgensen, CEO and co-founding partner of LignaTerra. "First, the types of trees that are important to the cross-laminated timber production process are plentiful here in Maine. Second, we know that Maine has a dedicated, productive workforce with timber industry experience."

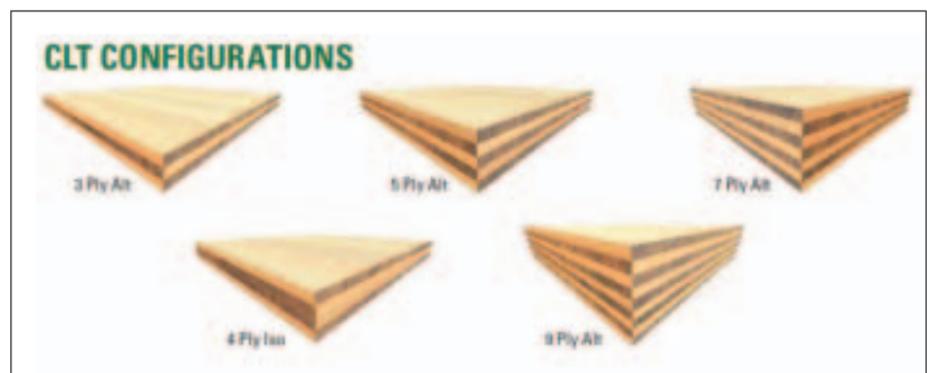
Lumber Production: +2.2% in 2017

US lumber production for 2017 was up 4.2 percent over 2016, at 33.9 billion board feet, according to data from the Western Wood Products Association. Production in the South was up 5.1 percent to 18.3 billion board feet (bbf); production in the West was up 3 percent to 14.1 bbf.

Lumber production in Canada in 2017 was unchanged from 2016 at 28.3 bbf. Production in British Columbia fell 4.5 percent to 13.0 bbf; production east of the Rockies was up 4.1% to 15.4 bbf.

Forecast: Upbeat

According to a recently released study by ForestEdge and Wood Resources International, US softwood lumber demand will grow at an annual rate of 2.3 percent through 2030 and will reach an all-time high by 2030: "A detailed analysis of the future consumption of softwood lum-



SmartLam, a Montana-based company that makes cross-laminated timbers (CLTs) and other products, recently announced that it plans to open a new CLT manufacturing facility in Maine. SmartLam makes CLTs in a range of configurations up to 12.375 inches thick. Image: SmartLam.

ber in each of the five end-use categories (residential housing, repair & remodeling, non-residential construction, material handling and other) reveals that the category "Non-Residential Construction" will grow at the fastest rate and will increase its share of the total softwood lumber usage from just over 11% in 2016 to almost 14% by 2030. Lumber consumed by the residential housing sector, including repair and remodeling, will continue to account for the almost 70% of the end-use market."

GP Expands in Georgia

Georgia-Pacific recently announced that

it will build a new softwood lumber production facility in Warren County, Georgia, on property adjacent to its existing lumber mill. Construction of the \$135 million, 340,000-square foot, technologically advanced plant is scheduled to begin in the summer of 2018, with startup anticipated by spring 2019. After startup of the new plant, Georgia-Pacific anticipates hiring an additional 30 to 40 employees. According to the company, the new mill's capacity will be more than three times the output of the existing mill, which has been operating since the early 1970s. a

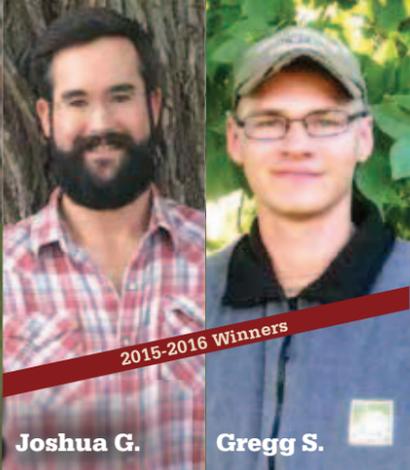
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A roundup of range science and technology resources. Unless otherwise noted, all listed publications are available for free download and webinar recordings are available for viewing.

Range Science Information System

The Range Science Information System (RSIS) is a citation bibliography with more than 1,400 peer-reviewed bibliographic citations of professional journal articles and documents focused on riparian areas, weeds, wildlife, vegetation, soils, and rangeland management. Each RSIS article citation includes research information, such as summary of methods, article summary or main points, vegetation and Natural Resources Conservation Service Major Land Resource Area ecoregions, AGROVOC multilingual agricultural thesaurus-controlled vocabulary words, and the type of article (primary research, synthesis article, or case study). RSIS article citations have a direct link to an online full text of the article; when an online copy is not available, a link to a library resource contact is given. RSIS is a partnership project of Montana State University, University of Idaho, and University of Wyoming. See tinyurl.com/ycxbjajg.

Rangeland Systems

Rangeland Systems: Processes, Management and Challenges, from Springer International Publishing AG, is an open-access e-book that includes 17 chapters, such as “Woody Plant Encroachment: Causes and Consequences,” “Managing the Livestock–Wildlife Interface on Rangelands,” and “Managing Climate Change Risks in Rangeland Systems.” See tinyurl.com/y7gop2b2.

SRM Proceedings

Abstract proceedings of the 71st Society for Range Management (SRM) Annual Meeting, Technical Training and Trade Show, “Empowerment through Applied Science,” held January 28 to February 2, 2018, in Sparks, Nevada. Abstracts from other meetings also available. See rangelands.org/events-abstracts/.

Drought Effects

A publication of the US Forest Service Southern Research Station, *Effects of Drought on Forests and Rangelands in the*

United States: A Comprehensive Science Synthesis (General Technical Report WO-93b, January 2016, tinyurl.com/yared74c). From the abstract: “This assessment provides input to the reauthorized National Integrated Drought Information System (NIDIS) and the National Climate Assessment (NCA), and it establishes the scientific foundation needed to manage for drought resilience and adaptation. Focal areas include drought characterization; drought impacts on forest processes and disturbances such as insect outbreaks and wildfire; and consequences for forest and rangeland values.... A first principal for increasing resilience and adaptation is to avoid management actions that exacerbate the effects of current or future drought. Options to mitigate drought include altering structural or functional components of vegetation, minimizing drought-mediated disturbance such as wildfire or insect outbreaks, and managing for reliable flow of water.”

Planting on the Range

“Assessment of range planting as a conservation practice,” *Rangeland Ecology and Management*, 69(4): 237–247, tinyurl.com/y7myhahd. From the abstract: “Natural Resource Conservation Service Range Planting–Conservation Practice Standards provide guidelines for making decisions about seedbed preparation, planting methods, plant materials selection, seeding rate, seeding depth, timing of seeding, postplanting management, and weed control. Adoption of these standards is expected to contribute to successful improvement of vegetation composition and productivity of grazed plant communities. Also expected are some specific conservation effects, such as improved forage for livestock; improved forage, browse, or cover for wildlife; improved water quality and quantity; reduced wind or water erosion; and increased carbon sequestration.”

Sagebrush Biome Conservation

The Science Framework for Conservation and Restoration of the Sagebrush Biome provides a strategic, multiscale approach for prioritizing areas for management and determining effective management strategies across the sagebrush biome. A geospatial process is used in which sagebrush ecosystem resil-



The Western Governors’ Association’s webinar, “Rangeland Management Strategies and Tools: Promoting Resiliency and Addressing Invasive Species” (tinyurl.com/y9t5526v), examines new developments for increased resilience to the threats posed to Western rangelands by invasive species, drought, wildfire, and other stressors.



Mountain big sagebrush and bluebunch wheatgrass community in west-central Oregon. Photo: Rocky Mountain Research Station/Kirk Davies.

ience to disturbance and resistance to non-native, invasive plant species are linked to information on the habitat requirements of sagebrush-obligate species. The predominant ecosystem and land use and development threats are assessed, and a habitat matrix is utilized to help decisionmakers evaluate risks and determine appropriate management strategies at regional and local scales. The framework provides a new and valuable approach that helps to ensure conservation and restoration actions are implemented where they will have the greatest benefits. Rocky Mountain Research Station, tinyurl.com/y7y2jzw8.

Managing Invasive Brome

Seven chapters from *Exotic Brome-Grasses in Arid and Semiarid Ecosystems of the Western US: Causes, Consequences, and Management Implications* are available from the Rocky Mountain Research Station, including "Introduction: Exotic Annual Bromus in the Western USA"; "Land Uses, Fire, and Invasion: Exotic Annual Bromus and Human Dimensions"; and "Bromus Response to Climate and Projected Changes with Climate Change." See tinyurl.com/y997d7wa.

Rangeland Vegetation Simulator

The Rangeland Vegetation Simulator (RVS) is a suite of software modules that simulate nonforested project areas' vegetation conditions over time. RVS includes calculations for biomass, succession, disturbance, and fuel modeling (see github.com/rlank/RVS). The RVS API is best used in conjunction with the Forest Vegetation Simulator. RVS is described in a Rocky Mountain Research Station publication, "Rangeland Vegetation Simulator: A user-driven system for quantifying production, succession, disturbance and fuels in non-forest environments," at tinyurl.com/y7jmlbta.

Grazing Lands Coalition

The National Grazing Lands Coalition is a nationwide consortium of individuals and organizations working together to maintain and improve the management and health of the nation's grazing lands, mostly private but also public. The Coalition is driven by agricultural producers and conservation, scientific, watershed, erosion control, and other environmental organizations for the benefit of America's grazing lands resource, and seeks to carry out its activities through local, state,

and national partnerships. It was founded on the principles of voluntary action by those who own and manage grazing lands, with a respect for private property rights. Coalition goals emphasize high-quality, voluntary technical assistance, expanded grazing lands research and education, and a more knowledgeable and informed public. See www.grazinglands.org.

Range Webinar Series

In the Texas Range Webinar Series, presented by the Texas A&M AgriLife Extension Service, natural-resource managers learn about a variety of range-related topics. For example, "The Tools in Our Land Management Toolbox," discussed different options for manipulating plants on rangelands, including the benefits and weaknesses of each and when combining treatments may be more effective. Examples of other webinars in the series are "Forage Forecasting: Decision Support for Rangeland Systems," "Drones on Rangelands – The Basics," and "How Livestock Eat: Understanding Grazing Animal Behavior for Improved Livestock and Resource Management." See natural-resourcewebinars.tamu.edu.

Rangeland Strategies Webinar

The Western Governors' Association's webinar, "Rangeland Management Strategies and Tools: Promoting Resiliency and Addressing Invasive Species," examines new developments for increased resilience to the threats posed to Western rangelands by invasive species, drought, wildfire, and other stressors. Panelists discuss techniques that maintain high-quality rangeland plant communities in areas where they persist, and restore them in areas where they have declined. The panel is moderated by Jeremy Maestas, sagebrush ecosystem specialist, USDA–Natural Resource Conservation Service. See tinyurl.com/y9t5526v.

Grazing Management Webinar

In "Working with Producers to Apply Intensive Grazing Management," a webinar presented by the Natural Resources Conservation Service, participants learn strategies for explaining intensive grazing management to help producers make decisions about application. Grazing intensity, rather than a rotational grazing system, is the primary factor determining successful outcomes on vegetation, livestock, and financial return rates. See tinyurl.com/yaqlu9wn.

Grazing Plan Webinar

In "Writing and Monitoring Grazing Plans," a webinar presented by the Natural Resources Conservation Service, participants learn about writing grazing and monitoring plans, as well as economic considerations of forage management. See tinyurl.com/y8djmgw9. a



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How to Avoid a Common Mistake when Comparing Two Inventories

By Henry Rodman and Nan Pond

Comparing two inventories is challenging. Many factors need to be considered when comparing two inventory estimates, and the math can get pretty deep pretty fast. So it's not surprising that many foresters use shortcuts and rules of thumb to evaluate inventory results. In this article, we'll take a closer look at a common shortcut we've seen in the real world and show why it can be misleading.

Consider the common situation in which two cruises, each with a 90 percent confidence level, come back with a different estimate of the average basal area (BA) in a stand. Let's say that the seller's inventory estimates that the basal area is 186 ± 16 square feet per acre; the low end of the confidence interval is 170 and the high end is 202. A potential buyer conducts an independent inventory that estimates BA at 167 ± 15 square feet per acre, with a low of 152 and a high of 183. How should the seller feel about the buyer's inventory?

Here's the flawed rule of thumb that we've seen used: The buyer's average BA ($167 \text{ ft}^2/\text{acre}$) falls outside the 90 percent confidence interval of the seller's BA estimate (170 to $202 \text{ ft}^2/\text{acre}$). Thus, the seller might claim that the buyer's inventory was "bad" and can't be trusted. However, this is not a good way to compare two inventories.

Remember that any timber cruise is just one particular sample of a stand. A different cruise is going to have plots in

different places and will pick up different trees, so there will be some difference. The real question is, how much difference should be expected?

To get a handle on this question, we can simulate cruising a stand many times. For example, we constructed a population of 100,000 potential sample plots, with a mean BA of 175 and a standard deviation of 37.7 square feet per acre. Then we simulated 20 cruises by randomly picking 15 plots for each cruise. Each one of these cruises is an unbiased, representative sample of our stand. The code for this simulation is available at tinyurl.com/ybtoq48h, if you'd like to get into the details.

Figure 1 shows our graph of the 90 percent confidence interval for each simulated cruise. The circle in the middle of each confidence interval is the cruise mean BA.

There are a few things to notice about this graph. First, note that 18 of the 20 confidence intervals contain the population mean BA (the solid gray line at $175 \text{ ft}^2/\text{acre}$), and 10 percent of the cruises don't contain the population mean, which is exactly what we would expect from a 90 percent confidence interval.

Second, not all of the confidence intervals overlap. The seller's original inventory is highlighted in blue at the top of the figure (simulation 1). The light gray shading covers 100 percent of the confidence interval of simulation 1, making it easy to see which cruises have means that

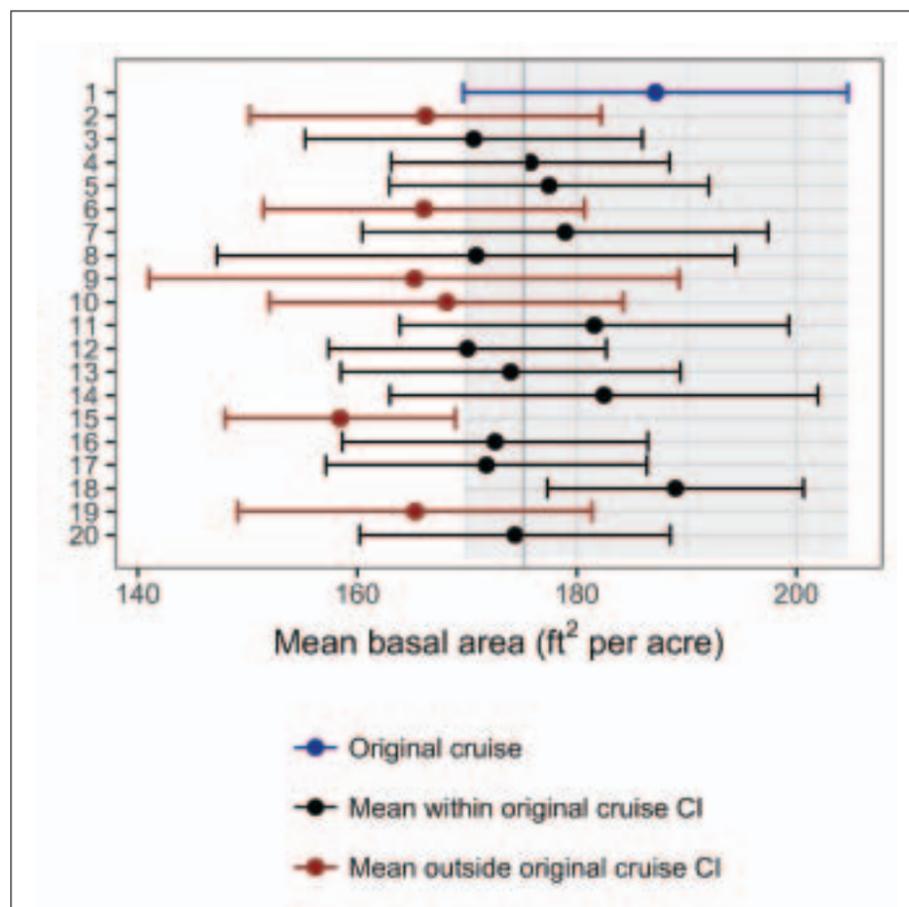


Figure 1: Twenty simulated cruises of the same stand and the confidence interval (CI) for each cruise.

fall outside it (shown in red). Note that 6 of the 20 simulated cruises (including #2, the buyer's inventory) don't have means that fall within the seller's confidence interval. Remember, each one of these simulated cruises is an unbiased, representative sample of our stand. Even though these are all valid cruises, 30 percent of them don't pass the "rule of thumb" test. This is clearly not a robust test.

What did the rule of thumb test get wrong? One key mistake was that it only considered the mean of the buyer's inventory, rather than the full confidence interval. Because we set a 90 percent confidence level for our confidence intervals, this means that if we cruised this stand 20 times, we would expect 18 (90%) of the cruise confidence intervals to include the true population mean. The confidence interval conveys important information about how "good" an inventory is—in general, better inventories will have tighter confidence intervals and poor inventories will have wider ones. Confidence intervals also indicate the underlying variation in a sample. If a stand has patches of especially high or low stocking that are measured, the confidence interval will be wider. It's inadvisable to discard this critical information when comparing two estimates.

A simple comparison of confidence intervals still may not be adequate to determine if an inventory is problematic. Note that simulation 15's confidence interval doesn't intersect with simulation 1's, even though they're both totally valid cruises of the same stand. This highlights an important fact: At any confidence level less than 100 percent, there is a possibility

that the confidence intervals won't overlap. It may be unlikely, but it's going to happen sometimes. An individual stand may pass or fail, and this result won't tell you too much about the quality of the inventories you're comparing.

A more-robust statistical comparison could include a t-test (which asks the question "Are these two samples statistically different?"), or a technique called equivalence testing, which asks the opposite question, "Are these two samples statistically similar?" Comparing cruises in multiple stands to get a more complete picture of a strata or property is also valuable, because it reduces the impact of variability at the stand level.

Our simulated cruises also illustrate the importance of understanding confidence intervals, as well as the limitations of samples and their resulting estimates in providing absolute certainty.

Note that our comparison of simulated cruises is intentionally simplified. In the real world, there are usually other significant differences between inventories, including the sample design, the cruise protocol, the collection date, and so on, that further complicate a fair comparison. We'll explore these issues in more depth in the future.

At one time or another, most foresters find themselves having to decide between two conflicting inventories, whether on a timber sale or when evaluating new inventory methods. We hope this article helps you avoid a common pitfall when comparing inventories. Be careful out there!

Nan Pond is the lead biometrician and Henry Rodman is a biometrician at SilviaTerra (silviaterra.com). a



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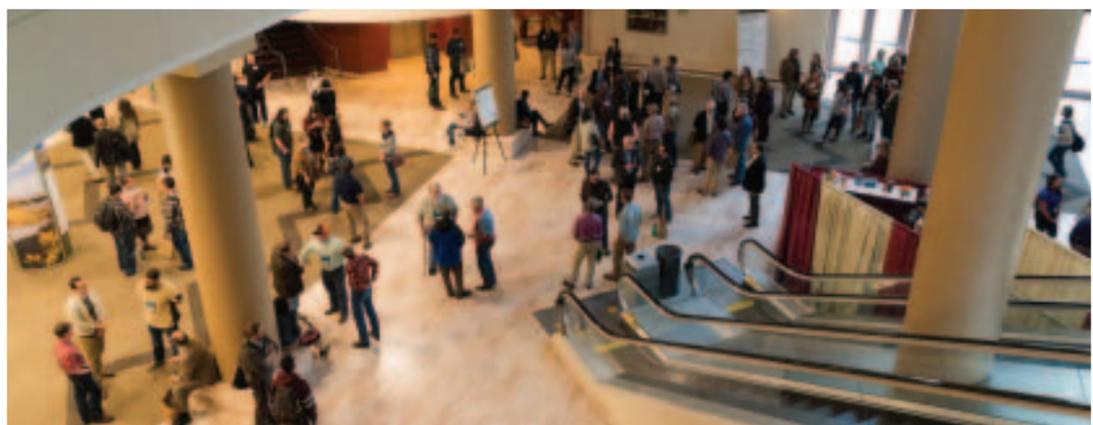
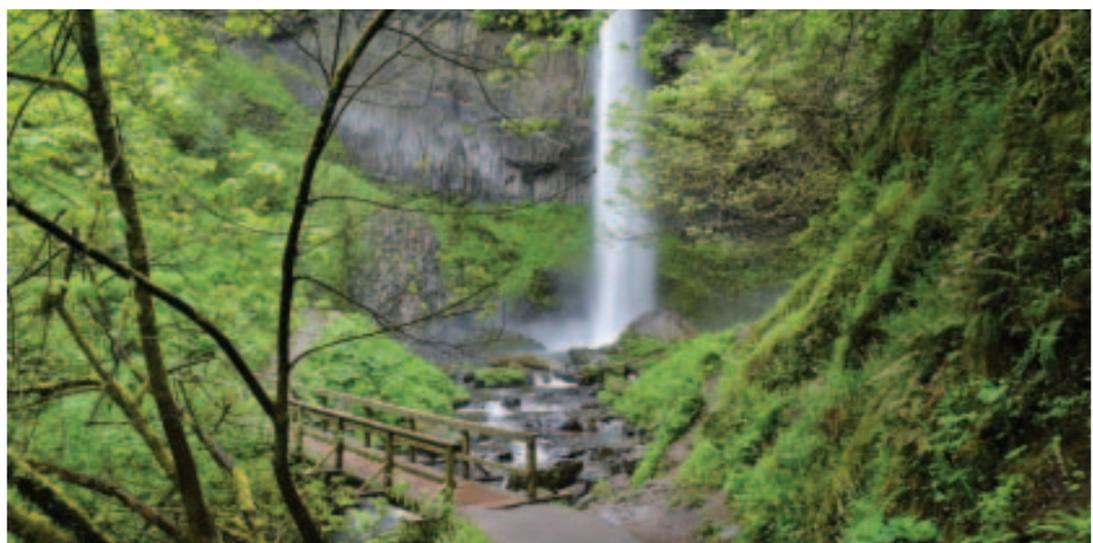
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Women of Wildfire: Revolution, Superheroes, and the Case for Diversity in Fire Management

By Allie Weill

A year ago, I carried a fire-themed poster at the Sacramento Women's March. "California communities for resistance and resilience," it read. I made a fire-themed poster mostly because I am a nerd who loves fire ecology, and my research shapes the way I see the world. But it also reflects a broader truth relevant to the march: The history of fire in the United States reflects the history of this country as a whole. One part of that is the history of women in wildfire and forest management.

A few years ago I was on a plane, reading a paper about fire on my laptop. A man in his 60s or 70s sat in the seat to my right. He noticed what I was reading and asked me about it. If I'm in a good mood, I usually enjoy talking with strangers on planes, especially about my work, so I was happy to talk. It turned out that he had been a longtime employee of the US Forest Service (USFS). I forget what we talked about at first—something general about issues facing fire and forests today, most likely. But then the conversation took an abrupt turn that I didn't anticipate, when my neighbor informed me that the Forest Service had gone downhill ever since they had started hiring more women. "They're totally unqualified," he said. I was stunned that he would just say this to me in such a casual way, given that he knew my field. I tried to come up with a good response on the spot. I knew there were impressive women in forestry and in fire. At my very first field job related to fire, with The Nature Conservancy, I worked with a woman who fought fires when she wasn't monitoring fire effects on plants. She was petite, like me, and a total badass. I also had met female smokejumpers in Missoula during my first year of grad school.

I said something like, "Surely there are many qualified women, and if there are not, maybe that's because they aren't encouraged to build up the necessary skills or to go into the entry-level positions that would make them better leaders in the Forest Service." "Nope," he said, "women just weren't suited to it." At this point, I gave up and put on my headphones, but he was still keen to provide me with his wisdom. I would be a conservative when I was older, he insisted. I told him that most of the older folks I knew were, in fact, liberals, and that I intended to stick with it.

I later learned that this guy's opinion on the decline of the Forest Service was not uncommon. Earlier this year, I read Stephen J. Pyne's history of fire in the United States since the mid-20th century, *Between Two Fires*. The book provided some context for my seatmate's attitude.

During the 1960s and 1970s, Pyne writes, there was a "fire revolution" going on alongside the environmental and civil-rights movements: Ideas about wilderness and the natural role of fire caught on in the West, bringing big changes to how

the men who had fought fire for decades saw their profession, which had previously been entirely about battling the menace and extinguishing every ember. The Forest Service began to incorporate some of the new ideas, ending its suppression-focused "10 a.m. policy" in 1978. At the same time, the agency was losing some of its power in the field, due to the activities of the Bureau of Land Management, National Park Service, and other agencies and organizations. The result was a lot of early retirement by men who felt that the Forest Service was changing too much.

In addition, in 1972, a USFS sociologist, Gene Bernardi, had filed a complaint against the agency. She alleged sex discrimination after being refused a promotion and pay raise, based on the Equal Employment and Opportunity Act of that same year. This became a class action suit on behalf of all women in the US Department of Agriculture. The case was finally settled in 1979 and resulted in a decree that the Forest Service had to hire enough women to match the share of women in the workforce as a whole, up to 43 percent. The combined effect of the settlement and the increase in the number of early retirees was a lot of new people in the agency, many of them women.

Pyne describes the result of this transition in *Between Two Fires*, and while I usually admire his work, his depiction of events did not sit well with me. It's undeniable that significant demographic shifts changed the culture and priorities of the Forest Service, and it's probable that the organization did have to hire those with less experience to meet the terms of the consent decree.

But his portrayal of the Forest Service post-1980 seems to rest entirely on quotes from disgruntled, male agency veterans. Pyne states that the Forest Service was "softer and gentler" and gives the overall impression that everything went downhill, summarized by the following quote from one of the male former employees, "It became a better organization to work for, but not a better organization." Zero quotes from Bernardi herself. Zero quotes from any women involved in the agency in any capacity. Zero quotes from anyone of either gender who felt differently about the shift. He writes about this supposed shift not just as a widespread perception, but as the truth that he himself appears to believe. Perhaps it's not surprising that Pyne appears to agree with the sentiment of those he quotes. After all, he was a firefighter himself in the 1960s and 1970s before becoming a historian.

Where Are We Now?

Granted, most of this went down decades ago. And it was just the Forest Service, though that organization remains a dominant player in the wildfire field as a whole. Where are we now?

There are certainly more women in

the field than there were in the 1970s. But the consent decree that resulted from the Bernardi suit expired more than 10 years ago, the field is still largely male-dominated, and there remain many barriers for women. Actual numbers vary based on job type and employer, but the Forest Service labor force in 2006 was 38.3 percent female, compared to 21.6 percent in 1972. According to the agency, 27 percent of their foresters are women, while 15 percent of all foresters nationally are women. But only about 12 percent of agency employees are women in permanent fire-suppression jobs.

Many women working in wildfire today don't see their experience as particu-

My neighbor informed me that the Forest Service had gone downhill ever since they had started hiring more women. "They're totally unqualified," he said.

larly "soft and gentle." Discrimination and sexual harassment have continued into recent decades. In a 2016 hearing, members of Congress heard testimony from USFS employees, including fire prevention tech Denise Rice, who described incidents of sexual harassment and assault.

In November 2017, the Forest Service acknowledged its systemic problem with harassment, revealing that the agency had "substantiated 83 cases of harassment, including one sexual assault (the accused employee was removed); 34 cases of sexual harassment (employees found responsible were removed/terminated, suspended, or received reprimands depending on the offense); and 51 employees were found to have engaged in other, nonsexual harassment" [see tinyurl.com/y8bypzpv]. Of course, these figures only include cases



Allie Weill at a recent prescribed fire training workshop. Photo courtesy of Allie Weill.

that were reported in the first place and could be substantiated.

Beyond harassment, other barriers arise in a male-dominated field. Many women have shown that they have the strength and skills to succeed in a variety of wildfire jobs, but training and tools designed for men can make this more difficult. For example, uniforms designed for men's bodies may be ill-fitting, which can be unsafe in a wildland firefighting situation.

My intent here is not to demonize the Forest Service or any other organization as a whole: there are many wonderful people who work in the USFS who are doing great things for diversity and for fire management, and I'm lucky to know some of them. Gender discrimination is an issue that most institutions are dealing with.

Nonetheless, there are now a significant number of exciting opportunities for women interested in careers in fire and organizations focused on addressing barriers for women in the field. The Women in Wildfire Bootcamp, founded in 2004, is going strong, and new Women's Prescribed Fire Training Exchanges (WTREX) have taken off in the past few years. More than 4,000 people "like" the Facebook page "Wildfire Women," which serves as an online community for women in fire. These opportunities provide mentorship, a network of women in fire positions, and practical tips, such as the best way to wield a chainsaw if you have a smaller body. Despite the increases in women working in fire, most women still work in places where they are one of a few women or even the

only one, and having access to these networks can be essential to their success.

Opportunities

I heard about many of these opportunities from organizers and participants at the recent Association for Fire Ecology (AFE) Fire Congress in Orlando, Florida. Fire ecology is a funny field: Ecology itself has okay representation of women (41 percent of members of the Ecological Society of America in 2006). But fire ecology attracts a lot of folks who have had some experience in wildfire fighting and management, which is more male-dominated.

Still, AFE is doing all right. At the recent conference, a day-long session, titled “Faces within the Fire: Toward an Inclusive Culture,” was devoted to inclusivity, and one of the “fire circle” roundtable discussions was focused on “Using Human-Centered Design to Solve Inclusion and Diversity Dilemmas in Wildland Fire.” The Fire AFEx plenary session featured 10 speakers, three of whom were women. The departing president of the organization is a woman, and one of the three lifetime achievement award winners was a woman. Obviously, these numbers aren’t at 50 percent, but for a field that has huge overlap with wildland firefighting, which is very male, it’s nice to see women and diversity concerns featured prominently in the program. The numbers will also likely change with time: At the SAFE (Student Association for Fire Ecology)-sponsored prescribed burn following the conference, nine of 11 students participating were women, as were many of The Nature Conservancy par-



One of the first female superheroes, Wildfire—alter ego Carol Vance Martin—first appeared in 1941 in *Smash Comics #25*. Public domain image.

ticipants who joined us.

Diversity matters. It’s an equity concern: Most people want all those who want to and have the potential to be successful in the field of wildland fire to be able to do so. But I’d argue that a diverse workforce is also necessary for forest management in the 21st century. There have been calls to reform forest and fire management for decades. What Stephen Pyne calls the “fire revolution” took place 50 years ago. But there hasn’t been much change on the ground in either fire management or diversity—there’s been little enough

change in management that an article in the *Huffington Post* in January (incidentally, featuring a woman in fire) described a prescribed fire program as “revolutionary” [“Sasha Berleman’s Revolutionary Rx for Fire in California,” January 17].

The Forest Service and many of its peer institutions are still largely fire-suppression organizations dominated by white men. Are they experienced? Sure. And their experience is important, especially for safety on the fire line. But experience can also lead to entrenched patterns, institutional culture, and perverse incentives that are hard to change. If the agency is serious about reforming fire management, it should support diversity in all levels of fire management.

The guy I sat next to on the plane a few years ago felt so confident that his opinions on women in fire and forestry were obvious truths about women’s and men’s abilities. Confident enough to say it to my face. This was the way the world of fire was, and that’s all. We all hold some unquestioned assumptions like this.

Wildfire, a Heroine

I recently came across a superhero that I’d never heard of before, a heroine from the Golden Age of comics. Her name: Wildfire. Alter ego: Carol Vance Martin. She first appeared in 1941 and was one of the first female superheroes, though she’s now mostly lost to history. She survives a forest fire as a child, and can thereafter not only can put fires out, but also can control fire and use it for good. I couldn’t help but

think of her at the SAFE Prescribed burn last month, as more-experienced women in fire planned our approach to the burn, showed me how to use the drip torch, and gleefully encouraged me to set the land on fire—for restoration, I promise!

People love to talk about change in terms of revolution—the fire revolution, the sexual revolution. As if these things can change overnight or in a single decade. But even major events like the end of the 10 a.m. policy and the consent decree from the Bernardi suit are just steps in a slow crawl of a revolution. So let’s keep working for policy change, for representation, for better treatment of the land and the people who live on it. Perhaps we can bring back Wildfire as our mascot: a woman in fire, using fire to do good.

Allie Weill is a PhD candidate in ecology at the University of California, Davis. Her research focuses on the causes and consequences of changing fire regimes in Mediterranean systems for both plants and people, including research related to fire science communication and education.

This essay was originally published on Weill’s blog, *Talk About Fire* (talkaboutfire.com); this edited version appears here with her permission. The original blog post includes numerous links to sources of information. The blog focuses on ecological research, science communication, and science education, especially topics related to wildfire. It attempts to present fire science (and sometimes other areas of ecology) in a larger context and discuss the ways people research, talk about, and interact with fire-prone ecosystems. a

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Allegheny SAF Celebrates 50 Years of SILVAH Research-Management Partnership

By Susan Stout

More than 140 people gathered in Clarion, Pennsylvania, last September for the 2017 SAF Allegheny Section summer training session, which was devoted to celebrating the 50th anniversary of the creation of SILVAH, a partnership between scientists and managers aimed at improving private and public foresters' knowledge of Allegheny hardwood and mixed oak forests. SILVAH, originally short for Silviculture of Allegheny Hardwoods, now also offers guidance for mixed oak forests. It is a systematic approach to inventory, analysis, and silvicultural prescription development, as well as a computer tool for supporting silvicultural decisions in hardwood stands of the upper Appalachian and Mid-Atlantic region. It is used by state foresters in six states and on several national forests, as well as for commercial forests.

SILVAH began when, at an SAF chapter meeting in about 1967, public and private foresters of the High Allegheny Plateau ecoregion asked US Forest Service Research and Development for help addressing a regeneration crisis. David A. Marquis was brought to Warren, Pennsylvania, to head up a program to conduct research into the issue. From the beginning, Marquis recognized the potential power of a research-management partnership, and he went on to build that partnership, as well as organize the training sessions and create the computer software that became SILVAH. As one of the speakers at the 2017 meeting, Marquis detailed this early history to a rapt audience. Steve Horsley, another leader of the original SILVAH team, shared the history of early vegetation-management research, as the SILVAH community led the way in labeling key products for forestry use based on the rigorous research conducted in the region. In other talks, Jim Grace, retired Pennsylvania state forester, lauded the research-management partnership from a manager's point of view, as did Sue Swanson, executive director of the Allegheny Hardwood Utilization Group, who gave the welcoming talk.

Field trips focused on some highlights of research completed under the SILVAH umbrella over the last 50 years. At the National Atmospheric Deposition Program (NADP) weather station on the Kane Experimental Forest, participants heard about impacts of acid deposition on forest health on the Allegheny Plateau. At one time, this region received some of the highest quantities of nitrate and sulfate deposition in the nation. During the height of the acid deposition, the Pennsylvania Bureau of Forestry and SILVAH researchers started a study of sugar maple decline that tested the effects of liming as an antidote to acid deposition. Bob Long described a 35-year study of forest responses to a single application of 10 tons per acre of dolomitic limestone, which showed that sugar maple health and growth benefited from the treatment,

American beech showed no response, and black cherry health and growth decreased on treated plots (see tinyurl.com/ycpah2xl). As this line of science evolved, scientists benefited from observations of which landscape positions and glacial history were correlated with good and bad sugar maple health. They also gained access to archived soil samples collected by the Soil Conservation Service (now the Natural Resource Conservation Service) in 1967. Resampling in 1997 showed dramatic losses of calcium and magnesium in soils to a depth of 150 centimeters (tinyurl.com/ycukjb6l).

Participants also learned that scientists and managers are now wondering whether the reductions in nitrate and sulfate deposition since the 1991 Clean Air Act Amendments may be part of the explanation for changes in the ecology of black cherry. To test this hypothesis, the Allegheny National Forest and SILVAH scientists have begun a study of regeneration responses to nitrogen fertilization. Todd Ristau shared early results from this study testing forest responses to fertilization after shelterwood seed cuts and recent removal cuts. Red maple is benefiting in shelterwood seed cuts, as well as black cherry in stands fertilized after overstory removal.

Participants also visited one site of the Allegheny Hardwood Dominance Probability site, a recent harvest on the Allegheny National Forest. Scott Stoleson linked his extensive research on the importance of early successional habitat to migratory birds in the post-fledging period to several characteristics on the site, and Pat Brose described the Allegheny Hardwood Dominance Probability study, which is following the development of nine stands that were first measured in 2011–2012 as shelterwood stands, experienced removal cuts in 2013, and have been remeasured regularly since. Results so far: Birch saplings are the tallest stems on almost every plot where they were found in the original measurement, yellow poplar and cucumber tree are sometimes successful, whereas red maple and black cherry are only successful when they are very tall and not competing with birch.

At the site of a May 1, 2017, windstorm on the Kane Experimental Forest (KEF), participants heard about the importance of windfall as a natural disturbance and the effects of salvage logging on forest plant diversity. Alex Royo showed results from partnerships with Yale, the Allegheny National Forest, and several other landowners affected by a 2003 windstorm. A study of salvage logging after the storm demonstrated that salvaging creates novel microsites and mitigates competing vegetation, thereby enhancing establishment of important hardwoods and promoting tree species coexistence (tinyurl.com/ycxb7ndl). Royo's results, coupled with an assessment of 27 published post-windthrow salvage studies, suggest



Bob Long, a US Forest Service research pathologist, talks with SILVAH field trip participants about changes in black cherry wood that coincide with cherry scalloped moth outbreaks over many decades. Long retired from the Northern Research Station in February. Photo by Susan Stout.

short-term studies may overestimate the impact of salvaging on regeneration.

About 30 participants extended their week by participating in a Friday afternoon field tour focusing on oak regeneration, led by Patrick Brose. It included visits to several sites on Clear Creek State Forest, home of the Pennsylvania SILVAH:Oak training sessions. The tour included visits to various oak shelterwoods that demonstrate the seedling development principles of SILVAH:Oak, stands regenerated by the shelterwood-burn technique, and a stand

recently treated with a post-harvest fire.

Twenty-four technical talks at the event covered topics ranging from using SILVAH and NED forest ecosystem decision support software (www.nrs.fs.fed.us/tools/ned) to assess wildlife habitat, reported by Helene Cleveland and Scott Thomas, to Todd Ristau's reports on recent studies of fertilization in Allegheny hardwood stands. Will McWilliams talked about the role that SILVAH played in the

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SAF Seeks Candidates for VP, Board of Directors

Vice-President: The Society of American Foresters (SAF) seeks candidates for vice-president. The position includes serving for three years in succession: one year as vice-president, one year as president, and one year as immediate past president.

Board of Directors: Candidates are sought for SAF Districts 3, 6, and 9. Members are elected to a three-year term.

SAF's Board of Directors provides leadership and direction to SAF to ensure the achievement of its mission. The president, vice-president, immediate past president, and 11 elected members (one from each SAF district) serve on the Board. The election takes place in October and terms begin the following January 1.

Deadline: Interested members must submit their candidate packets to Lori Rasor (rasorl@safnet.org) by June 1, 2018. Forms and additional information are available at tinyurl.com/y9bv4osc.

For more information on these positions, contact Dave Walters, National Nominations Committee chair (dave.walters@tn.gov).

Teaching Teachers in Indiana

By Teena Ligman

The 18 teachers who attended the Indiana Natural Resources Teacher Institute last June have had ample time to weave the things they learned into their classroom lessons. The Institute was held at Morgan Monroe State Forest in southern Indiana. For a week, the teachers participated in classes, field trips, and demonstrations on a variety of forest practices. This was the fourth year for the Institute, which is sponsored by the Indiana Department of Natural Resources (DNR), but has several other participating sponsors, including the Indiana Society of American Foresters (ISAF).

Lessons taught included classes on forest resources, the forest-products industry, and forest research being conducted on state forestland. Participants were required to develop lesson plans on what they learned during the week. Several of the teachers said that this was the best professional development they had ever attended.

In addition to learning in classroom settings, attendees use a variety of forestry equipment in the woods. These experiences pay off when, at the end of the week-long session, they receive their own set of equipment, provided by ISAF, to take back to their classrooms. As one teacher pointed out, having the tools to support what they learned is invaluable to their students' classroom.

Lenny Farlee, one of the coordinators for the Institute, said several states do a week-long Forest Camp for teachers, but Indiana is unique in that the state includes a research component involving the Hardwood Ecosystem Experiment (HEE), a study designed to run for 100 years. HEE began in 2006 and compares even- and uneven-aged management to areas of no management. A variety of studies are ongoing in the area. Using the actual research data from the HEE study, several lesson plans have been designed for the teachers to take back with them.

Jack Seifert, Indiana's state forester, always takes time to spend an afternoon with the teachers. The educators expressed to him how appreciative they were of the opportunity to get immersed in forestry. One noted that teachers come out of college thinking that they know everything about natural resources, but through the Institute they find that there is much more to learn.

Several of the teachers said they appreciated learning the importance of forest management. An agriculture teacher said he thought the program would focus on conservation and why trees shouldn't be cut, but once the instructors explained why and how the DNR maintains trees and the forests, it changed his whole perspective.

The agriculture teacher wasn't the only one surprised by the course content. Another



Eighteen teachers attended the Indiana Natural Resource Teacher Institute in June 2017. Photo by Teena Ligman, Indiana SAF.

woman said she came to the Institute fired up and ready to ask the DNR some tough questions. She wanted to know why the DNR was cutting trees. Now, she laughs, she wonders why she ever wasn't okay with all of it. This thread was picked up by a third teacher who said she came in with one perception of the timber industry and would be leaving with another. She also commented that she also would walk away with a new appreciation of the work DNR does to protect Indiana's forests.

A fourth teacher, who said he was working to cultivate a community of students who would take responsibility for a planet we can sustain, added that the Institute gave him more tools to do that. A science teacher added that what he had learned solidified what he thought he already knew: that responsible management of the land is the right thing to do.

Teena Ligman is ISAF's nominations committee chairperson. a

Tennessee Program becomes First SAF-Accredited Wildlife and Fisheries Degree

The Society of American Foresters has granted accreditation to the wildlife and fisheries management concentration of study within the wildlife and fisheries science major at the College of Agricultural Sciences and Natural Resources at the University of Tennessee Institute of Agriculture. This is the first and only time, nationwide, that a concentration of a wildlife and fisheries major has been accredited by a professional organization. Faculty overseeing the program are part of the Department of Forestry, Wildlife, and Fisheries (FWF). The accreditation was granted by SAF under its Natural Resources and Ecosystem Management Standards.

Normally, wildlife and fisheries programs may provide an opportunity for graduates to become Certified Wildlife Biologists by completing a specified number of credit hours within a range of academic subject areas, combined with a minimum amount of professional experience. However, degree programs themselves are not certified, only the graduates of those programs.

Accreditation, on the other hand, involves rigorous evaluation of the entire program based on standards that examine a program's mission, goals, and objectives; organization and administration; students; parent institution support; curriculum; and faculty. A peer-review process is conducted on site by a visiting accreditation team, followed by a review by the SAF Committee on Accreditation. The end result, if successful, is assurance that professional quality standards are attained by the degree program.

"Reaching our goal of accreditation for our Wildlife and Fisheries Management concentration sets us apart from all of the other wildlife programs in the country. Although other universities may follow our lead in the future, we will always be recognized as the first to reach this milestone. I couldn't be more proud of the faculty, students, and staff in our department," said FWF head and professor Keith Belli.

For more information about the FWF curricula, visit fwf.tennessee.edu.—from the University of Tennessee. a

IN MEMORIAM



Thomas Finch

Thomas Lyle Finch, 96, died on March 6, 2018. After graduation from high school, Finch set out for Montana State University, where he received a degree in forestry. He served in the US Army from 1943 to 1946, serving in the Pacific Theater and as part of the occupying forces in Japan after that country's defeat in World War II. After returning from the war, he joined the US Forest Service in 1947 and served in many different locations, including Missoula, St. Maries, Metaline Falls, and Palouse, until he retired in 1972. For more information, see tinyurl.com/yacwvy2v.

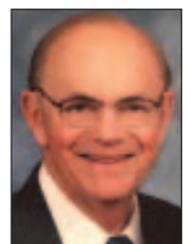
John K. McBride, 90, died on March 11, 2018, at his home in Libby, Montana. He served in the US Army Artillery Infantry and was honorably discharged in 1948 as a corporal. He graduated from the University of Maine in 1952 and received a bachelor's degree in forest management. He later worked for the J. Neils Lumber Co., St. Regis Paper Co., and Champion International. He loved teaching forestry to elementary school students and taking teachers on tours of the woods. For more information, see tinyurl.com/yda85anz.



John K. McBride

Thomas S. Rhyne Jr., 91, former assistant state forester for North Carolina (NC), died on January 11, 2018. He graduated from NC State University School of Forestry following service in the US Marine Corps during World War II. Rhyne worked 40 years with the NC Forest Service, serving in a number of leadership positions. He was instrumental in many innovations during that time, including the development of

the aviation program, establishment of the Educational State Forests program, seedling nursery development, and much more. He received the Governor's Executive Cabinet Award for Excellence in Management and Supervision for his exemplary service. He was personally involved with growing Fraser fir Christmas trees in western NC and helped the Christmas tree industry become fully established and vigorous in NC. Rhyne was active in SAF for 68 years, including serving as chair of the North Carolina Division and other roles. For more information, see tinyurl.com/y9or3byc. a

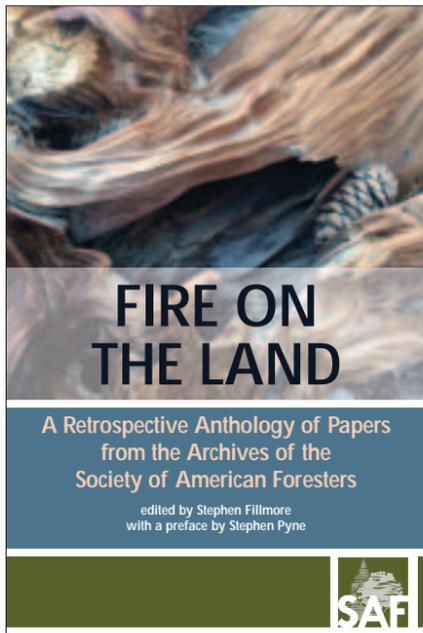


Thomas S. Rhyne Jr.

Fire on the Land

Featuring a preface by Dr. Stephen Pyne

Fire on the Land brings together the best research and thinking on fire ecology, policy, and application to examine fire's place in forest management. A collection of peer-reviewed scientific articles from the SAF archives, this anthology provides a comprehensive examination of how fire has shaped America's forested landscape and the people who care for it. Each new section is led by a science synthesis introduction that bridges the history of these pivotal papers and the current practices and work that lies ahead regarding fire science in forestry.



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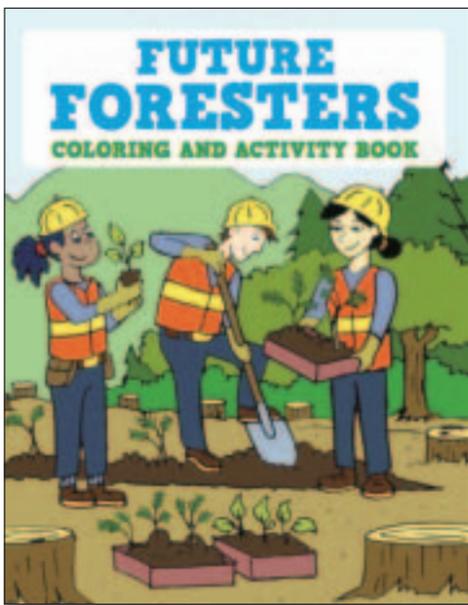
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EDITOR'S NOTEBOOK

■ From Page 2

our work, to care for the land and serve the American people, we must hold ourselves and our agency accountable to the highest standard of conduct. We will not tolerate behavior that makes our colleagues or the people in our communities unsafe in any way, including harassment, bullying, assault, and retaliation."

Christiansen and Acting Associate Chief Lenise Lago outlined a 30-day plan, called "Stand Up For Each Other," that will include "listening sessions" with employees across the country about harassment and retaliation, conducted by senior agency staffers, counselors, and civil rights and communications officers. The agency also aims to create a heat map for "geospatially referencing where harassment complaints are coming from, so we'll be able to identify where there seems to be a problem ... and get resources to that location."

I asked Sharon Friedman, who retired after 33 years with the Forest Service (including Region 5, the Washington Office, and the research and development arm), for her take on the conference call. She is chair of the Rocky Mountaineers, an association of retirees and employees of the Forest Service's Rocky Mountain Region.

"I think that they are right about the fact that it is an ongoing problem and will take an ongoing focus and pressure through time, and I think they are the right people and this is the right time to address it," she said.

In a thoughtful post on her blog, *A New Century of Forest Planning*, Friedman outlines several steps that the agency might take to better tackle the issue. For example, she suggests that the Forest Service ought to look at how other agencies, such as the Bureau of Land Management and the US military, are dealing with discrimination and harassment, to "see what they are doing and how it has worked—or not." See tinyurl.com/ybagunhc.

Other Voices, Other Agencies

In addition to news reports on the complaints and lawsuits about gender discrimination and sexual harassment, some women have weighed in with very personal observations. See, for example, Allie Weill's commentary on page 16 in this edition of *The Forestry Source*: "Women of Wildfire: Revolution, Superheroes, and the Case for Diversity in Fire Management." Also worth reading: "A Firestorm of Misogyny," by Julia Petersen in *Evergreen Magazine* (www.evergreenmagazine.com/firestorm-misogyny/), and an essay by Susan Marsh in *Mountain Journal*, "#MeToo in a Culture of Good Old Boys" (tinyurl.com/yd6rlg6u). Marsh retired from the Forest Service in 2010 after 30 years of service.

If you've been following the news in recent months, you know that the Forest Service isn't the only agency, company, or organization wrestling with discrimination and harassment. The problem is pervasive throughout society. But for the moment, the spotlight is on the Forest Service, and many employees, retirees, and others will be watching closely as the agency implements the "Stand Up For Each Other" initiative and, more important, as it takes concrete actions to address the issues.

In my view, the best of all the reactions to an incident of harassment was a powerful speech last year by US Air Force lieutenant general Jay Silveria, superintendent of the US Air Force Academy's preparatory school in Colorado Springs, Colorado. After racial slurs were written on the dormitory doors of five black students at the school, General Silveria called a meeting of students and staff—more than 5,500 service members of all ranks—and he encouraged them to use their phones to record the address and to share it.

"So, just in case you're unclear on where I stand on this topic, I'm going to leave you with my most important thought today," he said. "If you can't treat someone with dignity and respect, then you need to get out. If you can't treat someone from another gender, whether that's a man or a woman, with dignity and respect, then you need to get out. If you demean someone in any way, then you need to get out. And if you can't treat someone from another race or a different color skin with dignity and respect, then you need to get out."

I encourage you to watch the video of General Silveria's impassioned speech (tinyurl.com/y7rxvn3k). Heat maps and listening sessions are important, but I'd like to see the leaders of the Forest Service and other agencies, companies, and organizations make similar unequivocal statements: This is our institution, and we demand the highest standard of conduct. If you can't meet that standard, or if you can't or won't stand up for your colleagues when they are subjected to discrimination or misconduct, then get out. a

Special Issue: Urban Forestry

The June 2018 edition of *The Forestry Source* will focus on urban and community forestry. Are you involved on a project that would be of interest to readers? Contact editor Steve Wilent at wilents@safnet.org or 503-622-3033 (home office in Oregon).

Put Foresters' Fund Work

Do you need funding for an SAF project that promotes forestry education and enhances public understanding of forest management? Consider applying for a Foresters' Fund grant. The next deadline is June 15 and both regular grants (up to \$1,500) and special grants (up to \$5,000) will be considered.

For more information and to apply, see tinyurl.com/keymgtp.

Q&A

■ From Page 5

of updating. Our Diversity Task Force is now moving on to work on inclusion guidelines for our meetings and the general operation of our Society. On a smaller scale, we set aside scarce budget resources to help students from underrepresented schools come to our annual meeting and start to get involved. The biggest example of that in Canada is our Aboriginal population who, because of limited economic opportunities, are financially challenged to attend our international meeting. We can always do more, but in a limited world we can only do so much. Some of the events held at the Society level are because individual members have really taken this on and have advocated and worked for programming that is affordable, available, and promotes attendance from diverse groups.

I think for some issues we have passed a threshold, and gender is one of them. In our student competitions and in my home school, the University of Alberta, we're probably 70 to 80 percent female graduates now. But we're not at that level everywhere, and it takes time to work through it. Our leadership is not representative of our current membership in terms of gender. We'll get there, because the wave of gender diversity is starting to come through the ranks now. We need to start and maintain other diversity waves, now and in the future.

Because you are having a lot of undergrads going into range-related disciplines, are you encouraged to see future professionals in the pipeline to manage these lands in the future?

Yes, I am. You know there is always talk about how the next generation can't do what we did. I disagree with that statement. This next generation is more knowledgeable than the last generation was, and the future generation will be more knowledgeable than today's. I think our future is in pretty good hands; we of the older generation just have to get out of the way a little bit to let it happen, and let them get after it.

Any last thoughts about range management or opportunities for collaboration?

I'm hopeful this SAF-SRM agreement is going to be the trial balloon for both of our Societies, and I hope we can quickly move on to bringing other sibling Societies into co-member benefit agreements. After all, despite our differences, which are small, we're all in the same game. We're all generally struggling with the same things and maybe we should struggle together. a

SAF seeks candidates for Vice-President and three positions on the Board of Directors. See page 18.

SAF People in the News

To submit information about significant accomplishments by individual SAF members, contact Forestry Source editor Steve Wilent, wilents@safnet.org. Please include high-resolution photos when appropriate.

SAF NEWS ALLEGHENY

■ From Page 18

development of new regeneration protocols and indicators for the Forest Inventory and Analysis program for the entire Northeast, and brought participants up to date on research efforts to develop regeneration standards for other parts of the region. Laura Leites and Scott Miller reported on the ongoing study of the effects of implementing SILVAH guidelines on Bureau of Forestry oak sites. Joanne Rebbeck and Matt Peters described the SILVAH program in Ohio, for which training across multiple agencies is a key part of the Ohio Joint Chiefs' Project to restore oak forests, and for which SILVAH scientists are weaving SILVAH plot-level data with ecological land type associations to facilitate landscape-level planning. Coeli Hoover shared new results based on the SILVAH thinning plots on the Kane Experimental Forest showing how forest management affects carbon sequestration in Allegheny hardwood forests.

Several of the presentations synthesized decades of research, such as those on deer-forest interactions, oak regeneration, vegetation management, and sugar maple decline. In both the opening talk and the final talk of the session, Susan Stout emphasized how important science-management collaboration had been in virtually every line of SILVAH science. Managers have brought real-world problems to the research team, and the community of practice that has developed over the last 50 years is able to pool observations and generate hypotheses together. She cited a week-long field tour focused on sugar maple decline in 1995. Scientists asked managers to identify some of their best and worst sugar maple sites, and from those field visits, testable hypotheses about soil nutrients, glacial history, and defoliation emerged for rigorous experimental tests. Another example was the team of scientists and managers convened by the PA Bureau of Forestry to develop SILVAH guidelines for oak regeneration starting in 2000. The same team identified research gaps, and the Bureau has been able to provide funding for much of the research to fill these gaps. Still another example is the ongoing work examining how the pattern of forage-producing habitats around a silvicultural treatment affects deer impact: Seven different public and private land-management organizations provided 25 different sites for the study, some conducting unplanned shelterwood harvests to accommodate the study. Through the five decades of collaborative work, Stout said, we have advanced science, improved management, and when we needed to, changed policy in our shared pursuit of sustainable management of forest resources.

For more information on SILVAH, visit www.nrs.fs.fed.us/partners/silvah/.

Submitted by Susan Stout, a research project leader at the US Forest Service's Northern Research Station. a

UTAH WRI

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One thing that's helped us is that we have support from leadership at all levels—we have high cover from our governor and our legislature. Also, we focus on projects that start on the ground with the project managers. We've empowered project managers and regional teams to have a lot of input into what they do and where they do it, and which projects are the top priorities.

What indicators of success can you point to?

Generally speaking, a lot of the states around us are seeing large reductions in sage grouse populations, but ours have been holding pretty steady. Mule deer is another big success story. It's been one of the

focus species since the WRI started. A lot of the surrounding states have continued to see declines in mule deer, but our population has increased. One of WRI's biggest selling points—one of our biggest claims to fame—is that we have not seen any new listings of endangered species in Utah since we got started. That's a big one for us. We want to keep species in state management and off of that [federal] endangered species list.

For more information about WRI, visit wri.utah.gov. For information about sage grouse biology, status, and conservation efforts, see the US Fish and Wildlife Service (fws.gov/greatersagegrouse) and BLM (blm.gov/programs/fish-and-wildlife/sage-grouse). a

CALENDAR

■ From Page 22

OHIO

4/3–4/2018, Annual Forest Health Meeting, Jackson
4/19/2018, Tailgating with Trees: Winter Plant Identification #4, Dayton, Ohio
5/24/2018, Tailgating with Trees, Dayton

OKLAHOMA

4/24–25/2018, Western Gulf Forest inSight Conference, Idabel

OREGON

4/2/2018, Oregon Forest Pest Detectors Program- Astoria, Astoria
4/10–12/2018, Professional Timber Cruising with Super ACE, Beaverton
4/18–19/2018, 2018 OSAF Annual Meeting, Bend, Oregon
4/21/2018, 2018 Tree School East, Baker City
4/25/2018, The 2018 Starker Lecture Series Lecture 2, Corvallis
5/23/2018, The 2018 Starker Lecture Series Lecture 3, Corvallis

SOUTH CAROLINA

4/2/2018, Identification of Non-Native Invasive Species and Control Methods, Bamberg
4/12/2018, SC's Forestry Business Climate; Pitfalls and Liabilities, Columbia
5/9/2018, Joint Together for Natural Resource Education, Leesville
5/11/2018, NC ProLogger Mod 18, Bennettsville

SOUTH DAKOTA

4/12–13/2018, DSAF Spring Conference: New Technology in Forestry, Spearfish

TENNESSEE

5/22/2018, 2018 SRS-FIA P2+ Training - Knoxville, Knoxville

TEXAS

4/18–19/2018, Texas SAF Annual Meeting, Diboll
5/2/2018, Understory Plant Identification Workshop, Nacogdoches
5/10/2018, 4th Annual Growing Texas Workshop, San Antonio

VERMONT

4/5/2018, Forest Soils in the Hogback Ecoregion (lecture 1), Bristol
4/7/2018, Forest Soils in the Hogback Ecoregion (field trip 1), Bristol
4/14/2018, Forest Soils in the Hogback Ecoregion (field trip 2), Bristol
4/19/2018, Forest Soils in the Hogback Ecoregion (lecture 2), Bristol, Vermont
4/21/2018, Forest Soils in the Hogback Ecoregion (fieldtrip 3), Bristol
4/30/2018, AMP training - Job closeout and Stream Crossings, Randolph
5/3/2018, Vermont Arbor Day Conference, Montpelier

VIRGINIA

5/1–4/2018, 2018 Virginia Forestry Summit Brilliant Achievements, Bold Horizons, Richmond

WASHINGTON

4/24/2018, 2018 OESF Science Conference, Forks
5/3–4/2018, WA State Annual Meeting, Longview

WISCONSIN

4/5/2018, 2018 Statewide Cooperating Forester Meeting, Rothschild
4/16–20/2018, 2017 Forest Vegetation Simulator Training, Milwaukee
4/19/2018, 14th Annual Sustainable Forestry Conference, Florence
5/5/2018, Tree Biology, Stevens Point, Wisconsin
5/18/2018, Fundamentals of QGIS and Avenza Maps, Stevens Point

Letters to the Editor

Agree? Disagree? The Forestry Source welcomes letters to the editor. Letters longer than 300 words may be considered if space is available. Send letters to Steve Wilent at wilents@safnet.org or 10100 Laureate Way, Bethesda, MD 20814.

CONTINUING EDUCATION CALENDAR

More Events at tinyurl.com/gnd78jh (www.eforester.org)

Continuing education events for **April and May 2018**. SAF Continuing Forestry Education (CFE) credits are available at all events. Visit SAF's Continuing Education Calendar at tinyurl.com/gnd78jh for more information on these events and others that may have been recently added to the list. Note the webinars at the top of the listings.

CFE Providers: To obtain pre-approval of Continuing Forestry Education credits for an event, complete and submit the CFE Provider Application Form on the Certification & Education/Continuing Education page at eforester.org (or tinyurl.com/z2zqc3o). Submittal instructions are included on the form.

CFE Post Approval for Individuals: If an event was not preapproved for CFE credit, SAF will evaluate the meeting on an individual basis. This service is available to members and SAF-certified professionals at no cost; non-members are assessed an annual fee of \$30. To apply, complete and submit the CFE Post Approval Form on the Certification & Education/Continuing Education page at eforester.org (or tinyurl.com/z2zqc3o). Submittal instructions are included on the form.

WEBINARS

4/2–27/2018, Advanced Silviculture for the Lake States (online course)
4/4/2018, The USDA Climate Hubs: FY18 Priorities and Activities
4/10/2018, Fish Health Starts on Land
4/17/2018, The Physiology of Tree Responses to Drought
4/18/2018, Farmbeats: An Emerging Farm Level Communication Technology
4/24–28/2018, Storm-Resilient Urban Forests: The Role of Species Selection & Maintenance Pruning
5/8/2018, Woodland Enterprise Development
5/9/2018, 27 Years of Extension Urban Forestry Outreach
5/15/2018, Update on Silvicultural Practices and the Logging Sector in Minnesota
5/23/2018, Storm-Resilient Urban Forests: Response Resilience, Are You Prepared to Respond?

ALABAMA

4/16–17/2018, Southern Region Consultants Training Meeting, Fairhope

ARIZONA

4/17/2018, Farming with Beneficial Insects for Pest Control, Tucson,

CALIFORNIA

4/24–26/2018, 2018 FIA User Group & Carbon Day Event, Albany

COLORADO

4/19–21/2018, Colorado-Wyoming SAF State Society Meeting, Ignacio

CONNECTICUT

4/5/2018, Yale SAF and Forest Stewards Guild - An Evening Gathering, New Haven

FLORIDA

4/13/2018, Harvesting, trucking Safety and FL Trucking Regulations, Lynne Haven
5/8–11/2018, Bark & Ambrosia Beetle Academy, Gainesville

GEORGIA

4/10/2018, Reed Bingham Forestry Field Day, Adel
5/1/2018, Economics of Timber Production & Marketing Timber, Camilla
5/15/2018, 2018 SRS-FIA P2+ Training - Macon, Macon

INDIANA

4/28/2018, Sycamore Trails RC&D Spring Forestry Workshop, Terre Haute
5/22/2018, Invasive Forest Pests Early Detector Training, Evansville
5/22/2018, Invasive Forest Pests Early Detector Training, Clarksville

5/24/2018, Invasive Forest Pests Early Detector Training, Lawrenceburg

KENTUCKY

4/10–12/2018, Kentucky Forest Industries Association 2018 Annual Meeting, Louisville

LOUISIANA

4/6/2018, Florida Parishes Forestry Forum, Hammond
4/18/2018, WSRI National Annual Meeting, New Orleans
5/8–10/2018, Prescribed Burn Workshop & Certification 2018, Woodworth
4/16–18/2018, FRA National Annual Meeting, New Orleans

MAINE

4/5/2018, Forestry Night 2018, Houlton
4/11/2018, Spring 2018 CFRU Advisory Committee Meeting, Orono
4/25/2018, Wild Land Fire Planning & Suppression Training, Ashland

MINNESOTA

4/2–27/2018, Advanced Silviculture for the Lake States (online course)
4/3–5/2018, EAB Field Workshop - Duluth, Duluth
5/15/2018, Update on Silvicultural Practices and the Logging Sector in Minnesota (webinar)

MISSISSIPPI

4/24/2018, Unmanned Aerial Short Course, Leakesville

MISSOURI

4/13/2018, Missouri Chapter Walnut Council, New Franklin
4/14/2018, Missouri Chapter Walnut Council, Columbia

MONTANA

4/27/2018, 9th Annual Montana Forest Landowner Conference, Helena

NEW HAMPSHIRE

4/3/2018, Log Drives of the Connecticut River Valley, Hillsborough
4/4/2018, Safe and Efficient Trucking, Lancaster
4/5/2018, Garage Safety, Winchester
4/10/2018, Bogs and Fens, Hillsborough
4/10/2018, NH Timber Harvesting Law, Lancaster
4/17/2018, Logger First Aid, Tamworth
4/17/2018, Blackfly Breakfast, Henniker
4/17/2018, Dirt to Trees to Wildlife, Henniker
4/18/2018, Logger First Aid, Lancaster
4/18/2018, Vermont Forest Health Information Meeting, Woodstock
4/19/2018, Logger First Aid, Unity

4/20/2018, Advanced BMPs, Dorchester
4/23/2018, Fundamentals of Forestry, Tamworth
4/24/2018, Logger First Aid, Campton
4/25/2018, NH Timber Harvesting Law, Campton
4/26/2018, Fundamentals of Forestry, Hillsborough
5/1/2018, Logger First Aid, Colebrook
5/2/2018, Logger First Aid, Madison
5/3/2018, Logger First Aid, Concord
5/4/2018, Advanced BMPs, Errol
5/12/2018, Herbicide 101 for Forestry Applications, Claremont
5/14/2018, Advanced BMPs, Antrim
5/15/2018, Northeast Silviculture Institute: Pine-Oak-Hemlock Session (day 1), Portsmouth
5/16/2018, Northeast Silviculture Institute: Pine-Oak-Hemlock Session (day 2), Portsmouth

NEW JERSEY

4/26/2018, Farming with Beneficial Insects for Pest Control, Bordentown

NEW MEXICO

4/10–12/2018, 2018 New Mexico Wildland Urban Fire Summit, Santa Fe
4/19/2018, Farming with Beneficial Insects for Pest Control-NM, Las Lunas

NEW YORK

4/10/2018, Their Land, Their Legacy, Acra
4/12/2018, Management Options for Emerald Ash Borer and Hemlock Woolly Adelgid, Canton
4/19/2018, The Future Viability of Loggers in New York, Binghamton
4/21/2018, Woodswalk, Naples
5/3–4/2018, Timberland Investments for Professionals, New York
5/15/2018, Silvopasturing When Planning For Profit With Livestock, Saranac

NORTH CAROLINA

4/3/2018, Forestry Water Quality Refresher, Sanford
4/3/2018, Loblolly to Longleaf Conversion, Carthage
4/5/2018, Loblolly to Longleaf Conversion, Bolivia
4/5/2018, Foresters Meeting, New London
4/10/2018, NC ProLogger Mod 18, Plymouth
4/12/2018, NC ProLogger Mod 18, New Bern
4/13/2018, NC ProLogger Mod 18, Marion
4/13/2018, NC ProLogger Mod 18, Pittsboro
4/19/2018, NC ProLogger Mod 18, Winston-Salem
4/26/2018, NC ACF Spring Meeting, Dunn
5/1–3/2018, Leadership Training Program: Growing the Next Generation of Leaders, Charlotte
5/17/2018, 2018 SRS-FIA P2+ Training-Asheville, Asheville
5/30–31/2018, NC ProLogger Base Course, Troy

FIA National User Group Meeting: April 24–25

The 2018 National Forest Inventory and Analysis (FIA) User Group Meeting will be held in Berkeley, California on April 24–25, and will be followed by a Carbon Day program on April 26. Participants will learn about current issues affecting the FIA Program, status of various FIA projects, and user applications of FIA data, and will have the opportunity to provide input to FIA program leaders on the needs and priorities of FIA data users.

The meeting will begin on the morning of Tuesday, April 24 with a field trip to Muir Woods, where we will have discussions about forest change detection using remote sensing, forest height estimation with remote sensing and ground techniques, and tree biomass estimation.

On the afternoon of Tuesday, April 24 and all day on Wednesday, April 25, presentations and discussion will focus on topics such as leveraging FIA data with remote sensing, changes to the national Timber Products Output (TPO) program, emerging uses and new applications of FIA data, issues surrounding spatial and temporal intensification of the FIA plot grid, and the value of FIA data to users.

The Carbon Day event on April 26 will focus on tools and methods for estimating forest carbon, the use of estimates in carbon registries and carbon offset protocols, accounting treatment of carbon in harvested wood products, and some of the specific applications of forest carbon measurement for California regulatory efforts.

A more detailed agenda, information about the venue and lodging, and access to registration are available at www.regonline.com/fiausergroup2018. For more information, contact Steve Prislely at (540) 808-8022, sprisley@ncasi.org.

From the SAF Career Center

For the complete listing of these and other ads, visit <http://careercenter.eforester.org>

Assistant Professor –

Outreach/Extension Silviculture
Employer: University of Georgia Warnell School of Forestry & Natural Resources
Location: Tifton, Georgia
Job ID: 40080751
Posted: March 23, 2018

Forester

Employer: Timber Products Co.
Location: Yreka, California
Job ID: 36213414
Posted: March 22, 2018
Min Education: BA/BS/Undergraduate
Min Experience: 3-5 Years

Timber Investment Analyst

Employer: Green Diamond Resource Co.
Location: Seattle, Washington
Job ID: 40012244
Posted: March 19, 2018
Min Education: BA/BS/Undergraduate
Min Experience: 2-3 Years
Required Travel: 10-25%

Senior Forester

Employer: Green Diamond Management Co.
Location: Meridian, Mississippi
Job ID: 40012225
Posted: March 19, 2018
Min Education: BA/BS/Undergraduate
Min Experience: 5-7 Years
Required Travel: 25-50%

Senior Forester

Employer: Green Diamond Management Co.
Location: South Carolina
Job ID: 40012222
Posted: March 19, 2018
Min Education: BA/BS/Undergraduate
Min Experience: 5-7 Years
Required Travel: 25-50%

Director of Southern Silviculture & Regeneration

Employer: Weyerhaeuser
Location: Hot Springs, Arkansas
Job ID: 40011784
Posted: March 19, 2018
Min Education: BA/BS/Undergraduate
Min Experience: Over 10 Years
Required Travel: 25-50%

Wildfire Mitigation Program Specialist

Employer: Colorado State University
Location: Fort Collins, Colorado
Job ID: 39960285
Posted: March 13, 2018
Min Education: BA/BS/Undergraduate
Min Experience: 3-5 Years
Required Travel: 10-25%

Forester

Employer: Hampton Lumber
Location: Chehalis, Washington
Job ID: 39892890
Posted: March 12, 2018
Min Education: Associates Degree
Min Experience: None
Required Travel: 10-25%

Silviculture Forester

Employer: Stimson Lumber Company
Location: Libby, Montana
Job ID: 39840845
Posted: March 9, 2018

Min Education: BA/BS/Undergraduate
Min Experience: 2-3 Years

Assistant Professor- Forest Management and Profitability

Employer: Clemson University
Location: Clemson, South Carolina
Job ID: 39818834
Posted: March 8, 2018

Forestry Crew Lead - Plumas National Forest

Employer: Great Basin Institute
Location: Quincy, California / Nevada
Job ID: 39796954
Posted: March 8, 2018
Job Function: Forest Technician
Job Type: Full-Time
Job Duration: 3-6 Months
Min Education: BA/BS/Undergraduate
Min Experience: 0-1 Year
Required Travel: 25-50%

Assistant Professor- Forest Invasive Species Management

Employer: Clemson University
Location: Clemson, South Carolina
Job ID: 39796377
Posted: March 7, 2018
Job Type: Full-Time

Forestry Instructor

Employer: Umpqua Community College
Location: Roseburg, Oregon
Job ID: 39706969
Posted: March 2, 2018
Job Type: Full-Time
Min Education: Master's Degree

Vice President, Forestry Programs

Employer: National Council for Air & Stream Improvement, Inc.
Location: Cary, North Carolina
Job ID: 39258269
Posted: March 2, 2018
Min Education: Ph.D.
Min Experience: 5-7 Years
Required Travel: 25-50%

Director

Employer: Idaho Department of Lands
Location: Boise, Idaho
Job ID: 39688579
Posted: March 1, 2018
Job Function: Other

Seasonal Forester

Employer: Stimson Lumber Company
Location: Newport, Washington
Job ID: 39655486
Posted: February 27, 2018
Job Type: Full-Time
Job Duration: 6-12 Months
Min Experience: 2-3 Years

Landowner Engagement and Outreach Manager

Employer: Colorado State University
Location: Fort Collins, Colorado
Job ID: 39644613
Posted: February 26, 2018
Min Education: BA/BS/Undergraduate
Min Experience: 1-2 Years

Forester III (District Forester)

Employer: Oklahoma Forestry Services
Location: Wilburton/Tahlequah/Jay, Oklahoma
Job ID: 37747242
Posted: January 11, 2018
Min Experience: 2-3 Years

Operations Forester

Employer: American Forest Management
Location: Farmington, Maine
Job ID: 40080025

Posted: March 23, 2018
Industry: Forestry Consulting

Operations Forester

Employer: American Forest Management
Location: Milford, Maine
Job ID: 40079989
Posted: March 23, 2018
Industry: Forestry Consulting

Instructor: Natural Resources Technology

Employer: Mt. Hood Community College
Location: Gresham, Oregon
Job ID: 40041246
Posted: March 21, 2018
Job Type: Full-Time
Min Education: Master's Degree

District Forester

Employer: Sierra Pacific Industries
Location: Bellingham, Washington
Job ID: 40040700
Posted: March 21, 2018
Min Education: BA/BS/Undergraduate
Min Experience: 3-5 Years

Forest Technician 2

Employer: Alpine Land Information Services
Location: Redding, California
Job ID: 40022022
Posted: March 20, 2018
Job Function: Forest Technician
Job Type: Temporary

Resource Forester

Employer: Missouri Department of Conservation
Location: Piedmont/Van Buren, Missouri
Job ID: 39942419
Posted: March 15, 2018

Forester

Employer: Emporium Hardwoods
Location: Emporium, Pennsylvania
Job ID: 29691352
Posted: March 13, 2018

Forest Health Specialist

Employer: Nebraska Forest Service
Location: Lincoln, Nebraska
Job ID: 39892658
Posted: March 12, 2018
Job Type: Full-Time
Min Education: BA/BS/Undergraduate
Required Travel: 10-25%

The Davey Tree Expert Company

These are a small selection of the employment ads by The Davey Tree Expert Company in the SAF Career Center, careercenter.eforester.org.

Consulting Utility Forester/ Transmission Work Planner

Location: Morgantown, West Virginia
Job ID: 39785065
Posted: March 7, 2018

Foreman/Crew Leader - Utility

Location: Placerville, California
Job ID: 39785057
Posted: March 7, 2018

CEO, Society of American Foresters Employment Announcement

The Society of American Foresters (SAF) is seeking a Chief Executive Officer (CEO). The position is located at the national SAF office at 10100 Laureate Way, Bethesda, Maryland 20814. The salary is commensurate with experience. The CEO is selected by and works for the SAF Board of Directors (Board). SAF is committed to diversity and inclusion in our leadership, membership, programs, and activities; all qualified candidates are welcome and encouraged to apply. Details about the Society are available online at www.eforester.org.

Brief CEO Job Description

- Communicates SAF policies, positions, and priorities to members, partners, and public audiences, including elected officials and agency leaders.
- Ensures SAF's financial integrity by developing and implementing balanced budgets.
- Achieves SAF's mission and goals through efficient and effective program management.
- Manages and works collaboratively with professional staff.
- Develops efforts to recruit members and increase SAF membership and diversity.
- Conducts SAF activities in accordance with the strategic priorities and operating policies established by the Board.
- Cooperates with and offers input to the Board on policies and procedures as principal liaison between the Board, staff, and contractors.
- Develops and implements revenue development plans and actions.

Expertise Required:

- Bachelor of science degree or higher in forestry or a closely allied natural resource area and professional experience in forestry or a closely allied natural resource profession.
- At least three years of successful experience leading and managing an organization or a work unit with the full range of managerial responsibilities (planning, organizing, staffing, directing and controlling/monitoring).
- A passion for forestry with an accomplished record of integrity, the support of leaders inside and outside of the forestry community, and the ability to bring together stakeholders to negotiate and facilitate complex natural resources management issues to advance SAF's positions and mission.
- Management skills in leadership, communication, personnel management, project management, financial management, governance, membership development, and fundraising.

Application Process: Electronically send (1) a letter of application that addresses the job description and required expertise in this announcement; (2) a resume or CV; and (3) a list of at least three references to Jim Thinnies, Chair, SAF CEO Search Committee, at jimthinnies2@gmail.com. Applications received by 5 p.m. Eastern time on May 18, 2018 will receive full consideration.

For more information or to recommend or nominate a candidate: Contact Mr. Thinnies at (303) 204-1173 or jimthinnies2@gmail.com.

Forestry News from around the Nation

Emerald Ash Borer Spreads to Another State

In late February, the US Department of Agriculture confirmed the presence of emerald ash borer (EAB) in Vermont's Orange County. About 5 percent of Vermont's trees are ash. Currently, Maine and Rhode Island are the two remaining states in the northeast United States that do not have confirmed EAB sightings.

Other recent EAB updates since February 2018, as per the Emerald Ash Borer Information Network, include detections in all of Georgia's 96 counties, as well counties in Louisiana, Minnesota, and New Hampshire. The Canadian Food Inspection Agency also expanded its quarantine area to the Maine border because of new infestations found in Quebec and New Hampshire.

SFI Conservation Grants

Improving caribou habitat, managing steelhead trout in British Columbia, and monitoring of state forestry best management programs in the southeastern United States are among the projects awarded funding through the SFI Conservation and Community Partnerships Grant Program. These projects are based in the US and Canada and in total involve collaboration of 45 different organizations.

"Every year, our conservation grants reach more organizations and cover a wider array of conservation issues," said Paul Trianosky, chief conservation officer at SFI (Sustainable Forestry Initiative). "One of our program's great strengths is the active role we take in working with grantees to build partnerships and facilitate meaningful engagement with landowners certified to SFI Standards. These projects promise to build critical understanding of conservation outcomes in managed forests, to benefit conservationists and consumers alike."

The SFI Conservation Impact Project was launched in 2016 and "focuses on developing metrics for climate change mitigation, water quality and biodiversity, to encourage forest health, conservation and sound manage-



Wyoming's Bridger-Teton National Forest now includes the Upper Gros Ventre River Ranch, whose 990 acres include six headwater tributary systems and nearly three miles of the Gros Ventre River. The ranch was previously owned by former US senator Herb Kohl, D-Wis., and donated to the Trust for Public Land three years ago. The US Forest Service purchased the land for \$3 million. Photo by Jay Goodrich, Jaygoodrich.com.

ment." For a summary of the projects, visit <https://tinyurl.com/y7qxf93>.

Bridger-Teton NF Expands

Wyoming's Bridger-Teton National Forest now includes nearly 1,000 acres of formerly private land in the Greater Yellowstone ecosystem. The Upper Gros Ventre River Ranch, previously owned by former US senator Herb Kohl, D-Wis., and donated to the Trust for Public Land

three years ago, was recently purchased by the US Forest Service for \$3 million, with funding provided by the Land and Water Conservation Fund. [a](#)

SAF seeks candidates for Vice-President and three positions on the Board of Directors. See page 18.

The Works of Aldo Leopold

A Collection of His Research and Perspectives



ALDO LEOPOLD
 ON FORESTRY AND CONSERVATION:
 TOWARD A DURABLE SCALE OF VALUES

Edited by Jed Meunier and Curt Meine

SAF's new book *Aldo Leopold on Forestry and Conservation: Toward a Durable Scale of Values* features 46 of Leopold's scientific findings and perspectives. With new introductions for all material, and edited by Jed Meunier and Curt Meine, this book is the perfect edition to every forester's library.

See a special preview and the table of contents at:
<http://bit.ly/2EluoP3>

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