The Forestry Source

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Growing better all the time

IN THIS ISSUE

DEPARTMENTS

Allegheny Plateau Partnership Works to Conserve Hemlocks

By Joseph M. Smith

This past August, Kirk Johnson, executive director of Friends of Allegheny Wilderness, made an unwelcome discovery on the northwestern shore of the Allegheny Reservoir: a hemlock tree infested with hemlock woolly adelgid (HWA).

"This is a day I've been waiting for with trepidation," he told the *Times Observer,* of Warren, Pennsylvania, which ran a front-page article about the pest's arrival after the USDA Forest Service confirmed it.

Andrea Hille, forest silviculturist on the Allegheny National Forest, knew this day was coming, too. So, she decided to pursue funding to help start a collaborative hemlock conservation effort.

"Kirk Johnson and Susan Stout have been talking about this for close to a decade. I just happened to be successful in receiving some funding from the State and Private branch of the Forest Service and used that funding to initiate this partnership with The Nature Conservancy (TNC) to have a landscape-scale approach to hemlock conservation," she said. "When we began this, we did not have HWA anywhere in northwestern Pennsylvania, so we kind of viewed it as an opportunity to be proactive and, hopefully, have some sort of strategy in place before the adelgid arrived."

Today, that partnership—now known as the High Allegheny Collaborative Hemlock Conservation Partnership—is a collaborative effort made up of stakeholders from state agencies (in both New York and Pennsylvania), environmental organizations, county conservation districts, universities, tribal nations, businesses, and elected officials.

High Allegheny Collaborative Hemlock Conservation Partnership members Andrea Hille (left), Kirk Johnson (middle), and Dale Luthringer converse in a stand of old-growth hemlock in the Hearts Content National Scenic Area on the Allegheny National Forest.

For Hille, the Forest Service's role is to bring people to the table and facilitate communication to address what she referred to as a "common problem" for all landowners.

Susan Stout agreed.

"We know that the insect isn't paying any attention to ownership boundaries, and that's been one of the challenges with all of these invasives," she said. "They are following their ecology and, historically, broken up ownerships have been a barrier to effective conservation."

To that end, the partnership's goals are straightforward—establishing collaborative partnerships to enhance working across ownership boundaries, acting quickly after new infestations are discovered, and prioritizing conservation areas to make more efficient use of limited resources.

To enhance that participation and accomplish that prioritization, the Forest Service

*(See **"Partnership"** page 3)*

Women and Their Woods Program Educates and Motivates Woodland Owners

By Steve Wilent

Most of the 11.2 million family forestland owners in the United States—who collectively own more than 282 million acres—are male, but the proportion of female owners is increasing. According to the most recent USDA Forest Service National Woodland Owner Survey, 24 percent of owners were women in 2011, up from 19 percent in 2006—just five years. Why the change? Several reasons. Women tend to outlive spouses. Some have inherited forestland from their parents. Others have purchased woodlands for their own reasons.

Allyson Muth, Penn State Natural Resources Extension

Women and Their Woods workshop attendees get classroom instruction and hands-on experience in using chain saws, driving ATVs, and planting trees.

The Women and Their Woods (WATW) program is an effort to reach out to women forestland owners in the mid-Atlantic region. Each autumn since 2011, women forestland owners from the region have attended four-day educational retreats at Camp Susque, near Trout Run, Pennsylvania. Two-day follow-up field workshops are held in the spring. The program is sponsored by the Delaware Highlands Conservancy and Penn State University Natural Resources Extension, with funding from the Pennsylvania Department of Conservation and Natural Resources and the Forest Service at Grey Towers.

"Many women are outliving their spouses and, therefore, are becoming the sole land managers and decisionmakers for millions of acres of forestland in our country," said Amanda Subjin, steward-

*(See "**Program**" page 4)*

Forest Guild Offers Forest Biomass Harvest and Retention Guidelines

By Steve Wilent

The harvesting and use of forest biomass is nothing if not controversial. The Dogwood Alliance and the Natural Resources Defense Council recently launched an "Our Forests Aren't Fuel" campaign against the use of woody biomass to produce electricity. Although Sierra Club policy states that "We believe that biomass projects can be sustainable," it also states, "We oppose projects which rely upon ecologically destructive clear-cutting, in-wood chipping where excessive amounts of biomass are removed from the land, and conversions to non-native species which undermine native biodiversity."

However, with the increasing global demand for biomass fuels, especially in Europe, as a substitute for fossil fuels, biomass harvesting in the United States is very likely to increase. According to the 2005 "Billion Ton Report" from the US Department of Energy and the follow-up

*(See **"Guidelines"** page 5)*

The Forestry Source

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Editor's Notebook *By Steve Wilent*

Hotshots Fund-raiser, the Shutdown, & Stewardship Contracting

I have a few things to write about this month (or blather on about, as some no doubt would say). The shutdown of many US government agencies and services is one topic. But first, something of more import: The fund-raiser for the Granite Mountain Hotshots, which I mentioned in my September Editor's Notebook. As you'll recall, 19 of the 20-person crew died in the Yarnell Fire in Arizona on June 30. The fund-raising effort, held in Prescott, Arizona, was organized by local members of three organizations: the National Wild Turkey Federation (NWTF), the Mule Deer Foundation, and the Arizona Elk Society, along with other volunteers.

"We are still working to finalize the numbers. As of last week, it is looking like our net for the families of the fallen firefighters will be in the neighborhood of $280,000," wrote Fred Deneke, president of the Yavapai Yelpers Chapter of the NWTF, in a note to contributors. "We plan to have a symbolic presentation of a check to the Prescott Fallen Firefighters Fund the evening of October 16 followed shortly thereafter by the real check to the fund in support of the families."

Raising that amount of money in such a short period of time was "nothing short of a miracle," Deneke added. "The steering committee for the event was just blown away by your generosity and caring."

To all SAF members and everyone else who contributed to the fund-raiser, I echo Deneke: Thank you.

Federal Furlough Follies

"Due to a lapse in funding, the US Federal Government has shut down." So says the usa.gov website, to which I was directed by a sign posted on the door at the Mt. Hood National Forest's Zigzag Ranger District office, a few miles from my home in Oregon. I stopped by the office to see if it really was closed. It was, as you can see in the photo on this page. As of this writing on October 14, it still is. Like most other federal workers, most agency employees have been furloughed without pay.

Everyone has an opinion on the federal shutdown. Some folks I've talked with are largely unaffected, so far, but lament the failure of members of Congress to do better than this. For others, the shutdown is more than political theater, especially those who do (or did) business with the federal agencies.

USDA Forest Service communications director Leo Kay, quoted in an October 5 article in *The Missoulian*, of Missoula, Montana: "Due to the federal funding lapse, early next week the U.S. Forest Service must notify 450 timber purchasers across the country that timber sales and stewardship contracts will be suspended." Add to that the contractors, mill workers, and others who are directly affected by the shutdown.

According to a message posted at www.fs.fed.us, "all federally owned recreation sites are closed." In some cases, this applies to campgrounds operated by concessionaires. Deer hunters and many others are unhappy, I reckon.

The closure of all national parks has been the subject of much news coverage, as have the reopening of some parks after states provided funding to operate them. The State of South Dakota agreed to pay the National Park Service $152,000 to open the park for 10 days, from October 14 through October 23. I wonder if the state will be allowed to keep the revenue from park visitors. It might make quite a bit more than $152,000 from the $11-per-car parking fees alone.

Stewardship Contracting Reauthorization

Once the federal government is back in business, the work performed by stewardship contractors will resume. If Congress isn't too exhausted by its efforts to negotiate its way out of the shutdown, it will have some hard work to do on a number of important forestry and natural resources issues, such as the Farm Bill and wildland fire suppression funding. Reauthorization of the US Forest Service's stewardship contracting authority, which expired on September 30, ought to be a priority.

In late September, the House of Representatives included a provision for a short-term extension of the stewardship contracting authority in its version of a continuing resolution to keep the government operating, but the House and Senate failed to agree on language for a continuing resolution, triggering the shutdown. A short-term extension might be included in another continuing resolution proposal, if the House and Senate can come to terms on one to end the shutdown. A short-term extension would be better than nothing, but SAF has advocated for a permanent authorization. John Barnwell, SAF's policy director, told me that there is little opposition to this on Capitol Hill.

"Reauthorization is clearly a priority for the administration and appears to have bipartisan support in Congress," Barnwell said. "Reauthorization is also included in the House and Senate versions of the Farm Bill, and SAF has sent letters of support for stewardship contracting reauthorization to key members of Congress."

Reauthorization would seem to be a no-brainer. But then, Congress has a less than stellar record on no-brainers. FS

Partnership
(continued from page 1)

and TNC organized a pair of workshops. The first, which took place on February 14, 2013, served as a forum for educating collaborators about the ecological value of hemlock, the biology and impact of the hemlock woolly adelgid, treatment options, and TNC's proposed strategy for hemlock conservation.

The second, which took place on August 8, brought stakeholders together to look at maps of hemlock-rich areas across the Allegheny Plateau and go through valuation exercises to prioritize and rank them.

The collaborators' personal knowledge of hemlock stands on the plateau was instrumental to the process, said Sarah Johnson, conservation GIS analyst with TNC.

"What I was really leaning on was the participants' field knowledge," she said. "There were a lot of resource managers and people who use the woods on a very frequent basis in that part of the state, and what I wanted them to do was look at these maps and tell me where they know there are great native populations of brook trout sheltered by hemlock, or the places where the hemlock is really aesthetically pleasing and a lot of people go there to hike."

When the prioritizing was over, the areas at the top of the list were those known for their old-growth hemlock stands—Cook Forest State Park, Tionesta Scenic and Research Natural Areas, Hearts Content National Scenic Area, and Allegheny State Park.

"These four areas of old-growth are our most highly prioritized areas in the entire [Allegheny Plateau]," said Johnson. "The whole area around Cook Forest State Park, as well, regardless of ownership—[its] very high-quality streams, recreation, good contiguous hemlock in the bottoms, and core biodiversity areas—this whole area fell out as being very important."

Just about Everywhere

Unfortunately, the hemlock woolly adelgid has little regard for the hemlocks in and around the Cook Forest State Park, or anywhere else. An import from Asia, the pest landed on US shores in 1924 and spent the next several decades establishing itself in the East's hemlock forests. According to the Forest Service, the HWA can now be found from northeastern Georgia to southeastern Maine and as far west as eastern Kentucky and Tennessee.

In Pennsylvania, the earliest record of the bug dates back to 1967. Since then, it has moved from east to west and, so far, little seems to be slowing its spread.

"It's just about everywhere in the state," said Donald Eggen, chief of the Forest Pest Management Division at the Pennsylvania Department of Conservation and Natural Resources (DCNR). "We've probably got about 10 counties left out of 67. The only counties not infested are in the very northwest and very southwest part of the state" (see map on this page).

According to Hille, there are three known infestations on the Allegheny National Forest (ANF).

"Two of them are considered to be relatively small. Unfortunately, they're dispersed across the forest. One is on the northern edge, on the New York state line (at Webbs Ferry Boat Launch), one is along the southern edge of the forest along the Clarion River near Cook Forest State Park, and one was just found along the western portion of the forest (below the Kinzua Dam), along the Allegheny River," she said. "I don't know what the extent of it is, but there were two spots that were roughly two miles apart, so I suspect it's probably a pretty good–sized infestation."

On its own, the HWA travels at an estimated rate of 15.6 kilometers per year south of Pennsylvania and 8.13 (or less) in the northern section of its range. However, experts agree that birds probably aid in moving the pest around.

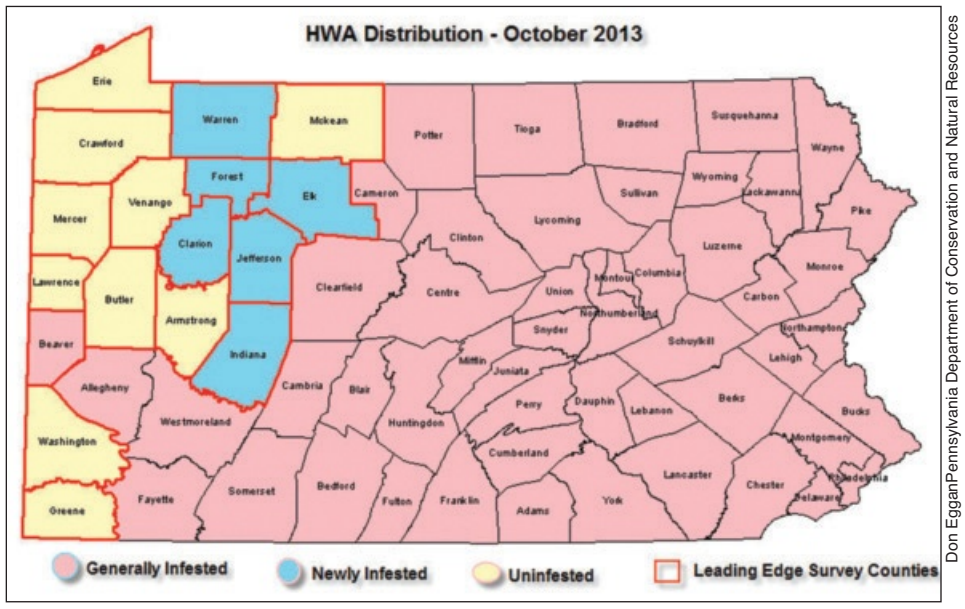
The continued march of the HWA is bad news not only for the eastern hemlock (*Tsuga Canadensis*)—Pennsylvania's "state tree"—it's also a threat to the myriad life forms that depend on the ecological services the tree provides. According to the Forest Service's Southern Research Station, hemlock forests provide critical habitat for birds and other animals and their shade helps maintain the cool water temperatures required by trout and other aquatic organisms in mountain streams.

Forest Service data also indicate that hemlock once made up about 20 percent of the trees found on the Allegheny Plateau (circa 1800–1815). Today, the species makes up about 6–7 percent, and as the HWA moves its way through the region, that percentage is likely to drop even lower.

Not Admitting Defeat

Yet, despite the severity of the threat posed by the HWA, partnership members are optimistic that they'll be able to save at least some of the hemlock component in the areas they've identified as priorities.

"There are probably a lot of places where it hasn't been detected, but we're way early on and we're able to capitalize on the experience of other regions that didn't have that head start," said Stout. "So, we're trying to be both really smart in terms of prioritizing treatment areas without regard to ownership and incorporating information from other areas that have been through this already."



Don EggenPennsylvania Department of Conservation and Natural Resources

This map shows Pennsylvania's infested, uninfested, and newly infested counties as of October 2013.

The primary method of protecting infested hemlocks in the priority areas is through the use of the insecticides, primarily Imidacloprid and Dinotefuran (aka: Safari).

"If HWA hit all areas of the park [Cook Forest State Park] at once, [the Forest Cathedral area] is our highest priority. Our second priority stand—the stand that it's in right now—is along the Seneca Trail. We have 11 old-growth forest areas, and nine of those are probably dominated by eastern hemlock," said Dale J. Luthringer, environmental education specialist with the Pennsylvania DCNR stationed at Cook Forest State Park. "We've got certain areas blocked off, and we're pretty confident we can take care of the smaller areas and jump ahead and pretreat some of these significant trees that are large by dimension, age, or height class."

According to Eggen, which insecticide is used depends on site condition, the condition of the tree, and the level of infestation. Both can be applied in three ways: soil injection at the base of the tree, soil drench, and a bole spray.

"Imidacloprid in some of those really big trees can take anywhere up to a year or more to get up into the tree, so it's a little slower moving, but it also lasts longer. Once you treat with [it], the trees are protected for five, six, seven years," he said. "Safari is principally an annual. [It's] good to knock back a heavy infestation because it's quick acting, so if we have a tree that's heavily infested or a really large tree (greater than 24 inches in diameter) that's infested, we like to hit it with Safari. You can also double treat it—you knock back the population [with Safari] and then the Imidacloprid can then go up."

Both of these insecticides have limits on how much can be applied per acre, so Eggen and his colleagues have to plan their treatments carefully.

"When we have an area that we're working on, we kind of divide it into thirds. We try to knock back the heavy infestations with the Safari, and over a three-year period try to get as many of the trees that need protecting protected," he said.

In addition to chemicals, the Pennsylvania DCNR has been using biocontrol organisms—predatory beetles—to slow the HWA's spread since 1999.

"The one that we're using principally right now is the *Laricobius nigrinus* (LN) from the Pacific Northwest. The good news about that insect is that all the life stages of that beetle feed on all the life stages of HWA. That [beetle] is established in the state, and we're going to continue to do that," Eggen said. "The problem is we're north of the Mason-Dixon Line, and we get cold winters. They establish pretty well in very sunny areas, such as in the rural urban interface, where you might have a hedgerow of hemlock where it's bright and sunny. If we get really cold winters, the populations of the HWA get knocked back, and since this beetle has to feed on HWA, if you get rid of HWA you get rid of the beetle."

As a result, Eggen plans to enlist a more cold-hardy strain of the LN beetle from Idaho in the near future. Until then, the agency will continue working to establish populations of the Pacific Northwest strain of LN beetles.

"In some of these areas, what you do is release multiple years in a row in a good location, and they eventually become established. Sometimes it takes upwards of six to seven years to get a good population going, and that's what we've noticed in PA. That's what they've noticed in Maryland and other locations," he said. "In certain areas down south, the beetles have become very abundant, and they actually do help control HWA. I think that as you get climate change and things start to warm up, HWA will do better, but so will our predators."

Beyond insecticides and biocontrols, the partnership is also researching silvicultural options.

According to Ned Karger, CF, land manager with The Collins Companies, the ANF, the Pennsylvania Game Commission, and his company are experimenting with silvicultural guidelines for hemlock stands developed by Forest Service Research Silviculturist Mary Ann Fajvan.

"Andrea [Hille] used them on some Forest Service property, state gamelands have put a prescription on their property, and so I was talking to my team and they identified a couple stands here that were predominantly hemlock, and we thought maybe we could try the same thing," he said.

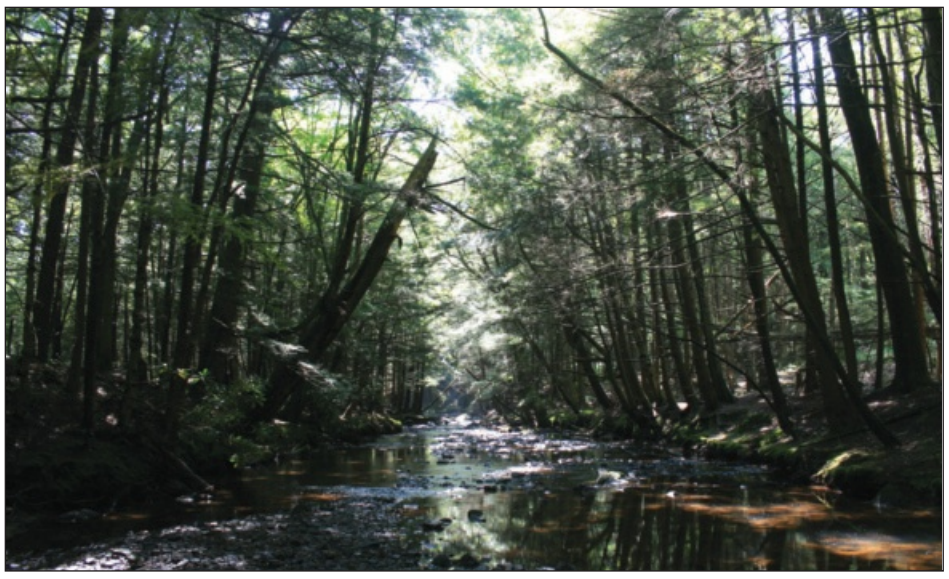
The silvicultural prescription used on the ANF was designed to reduce stress and enhance vigor in advance of the HWA, Hille said.

"The stands on the ANF that we selected for treatment were overstocked, so the objective was to reduce some of the stress of that overstocking in advance of the adelgid far enough that the trees will recover from the stress of the harvest operation and, hopefully, have more improved vigor and could withstand an adelgid infestation longer," she said.

Still, it's a bit of a catch-22, said Hille.

"The adelgid feeds on the new

(*"**Partnership**" continues on page 7)*



Hemlock shade helps maintain the cool water temperatures required by trout and other aquatic organisms.

Program

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ship coordinator for the Delaware Highlands Conservancy.

In many meetings that include both men and women forestland owners, Subjin has seen that men often dominate the discussions.

"Typically, as attendees introduce themselves at county-centric woodland owner association meetings, the husbands and wives are sitting next to each other, and the husband says who he is and how much forestland he owns. And then it's the wife's turn to introduce herself, and she usually says, 'I'm with him.' But when you separate the men and women into groups [by gender], you can't stop the women from talking about forests and forestry and what their goals are," said Subjin. "It's a different dynamic that we try to encourage. It's not that we don't want to encourage the education of men—not by any means. But when we get women together, they form a network that they feel comfortable with. I think the women show their enthusiasm a lot more when they're with other women. It's pretty exciting when you get a room full of women who never stop talking about forestry. They're very passionate about it, about what they want to do on their land."

The retreats and workshops include classes on stewardship and silviculture, forest plant and tree identification, hydrology, forest wildlife, forest measurement, estate and financial planning, and other topics.

"You learn things like how to measure board feet," said Kenna Levendosky, a

Allyson Muth, Penn State Natural Resources Extension

A walk in the woods during a break between classes at a Women and Their Woods retreat in Pennsylvania in September.

WATW attendee who owns about 220 acres in New York near the Delaware River. "And if you have had no experience in measuring board feet—I certainly didn't—then it's something that makes you feel pretty good about the program and what you've experienced."

Levendosky also gained the knowledge and confidence to change the management of her property, which her family has owned since 1944. Over the years, it had been logged three times.

"A forester told us that if it was logged one more time, it would be the last time. So our attitude was that we just had to leave it alone and let it grow, and that is reflected in our forest management plan," Levendosky said. "But from what I learned at Women and Their Woods, there are many proactive things we can do. Since I started attending the retreats and workshops, we have planted maybe 80 walnut trees. We planted some poplar—we're pretty far north here in New York State, but a few of them have grown pretty well. We're working with American chestnut—we've planted a few of those. We have some steep, old logging trails, and we're putting some berms on those to try and lessen erosion. So, all in all, it's changed from a hands-off approach to a more proactive approach because of these meetings."

SAF member Allyson Muth, a forest stewardship program associate at Penn State Natural Resources Extension who helps lead the retreats, said one attendee wrote in an e-mail that she was "embarking on a new, beautiful, and heretofore unexpected relationship with my forest. Thank you for opening this new world for me. I feel a strong responsibility to care for [my woodlands] in a purposeful way."

"I learn a lot about how people relate to their land," Muth said. "In forestry school, there was a lot of emphasis placed on dollar value. I've always felt that that's the wrong way to catch people's interest. The retreats are an opportunity to hear and experience the intangible reasons that people own land. Women are really good at expressing those reasons. For many of the women who go through the program, they've either said that it has confirmed the way that they felt or that it has opened up new ways of thinking about their woodlands. And they are very excited to share that knowledge. As a forester, I'm very glad that this seems to be resonating with the women who attend the retreats."

At a workshop held this spring, a Cornell University extension forester provided training in using chainsaws and driving an ATV with a log arch, and helped attendees plant trees and shrubs on the property. WATW presentations also focus on helping women interest their families in managing their woodlands.

"We want to be encouraging the next generation of landowners and the next and the next, not just train the current generation," Muth said.

"We even teach women how to talk to foresters," said Nancy Baker, a Pennsylvania woodland owner with a master's degree in forest ecology from the University of Georgia. Baker helps teach at the retreats and at workshops on her property. "They have to understand the lingo, they have to know what questions to ask. We give them a handout on how to choose a professional forester, so that they know to ask about education, experience, references, and things like that."

"We have a wide diversity of women who come to these retreats, but I have yet to see one who wasn't totally excited," said Levendosky. "Sometimes, at first, their attitude is that they don't know anything about their woods and to be a little bit intimidated by the people who have expertise in these areas. But they all come away with a lot of information—they *deluge* you with information!—and with the knowledge that they *can* do something in their woods."

For more information about WATW, visit www.delawarehighlands.org/watw. See also "Women Owning Woodlands: Understanding Women's Roles in Forest Ownership and Management," by Lauren E. Redmore and Joanne F. Tynon, Journal of Forestry, *July/August 2011.* FS

Guidelines
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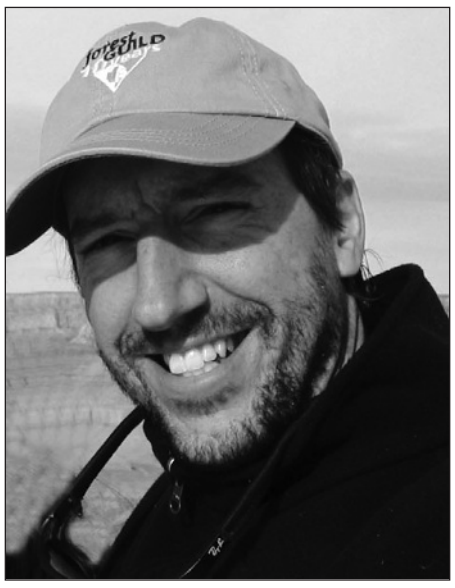
2011 "Billion Ton Update," there is a great deal of biomass to be had. The latter report estimated that about 97 million dry tons per year of material from logging residues and thinning operations would be available from US forests if prices reached $60 per dry ton.

In response to present and anticipated future biomass harvests, states such as Missouri, Pennsylvania, and Wisconsin have developed biomass harvesting guidelines. In 2011, the Forest Guild released Forest Biomass Retention and Harvesting Guidelines for the Northeast, followed in 2012 by guidelines for the Southeast and in 2013 for the Pacific Northwest (www.forestguild.org/biomass.html). The guild's goal was "to address questions of forest sustainability in a time of increasing interest in harvesting forest biomass for energy security, climate mitigation, and economic reasons." Its guidelines are "intended to augment and enhance existing Best Management Practices (BMPs) or new state-based biomass guidelines that may, in some cases, leave managers and policy makers looking for more detailed recommendations."

I recently spoke with Michael DeBonis, the Forest Guild's president and executive director, about the guidelines. DeBonis has worked for the guild for about eight years, first as its Southwest Region director and for the past four years in his current position. He previously worked for the Maine Forest Service and was a licensed forester in that state. The guild has about 1,000 members, primarily consulting foresters, some of which are also members of SAF, the Association of Consulting Foresters, or both. DeBonis stayed on in the Southwest, making his home in Santa Fe, New Mexico. What follows is a portion of our conversation.



Michael DeBonis, president and executive director, the Forest Guild

How and why did the guild decide to develop these guidelines?

It was driven from the ground up. It was driven by practicing foresters, and I think it started in the Northeast, where six or seven years ago foresters were seeing new markets, emerging markets for biomass—thermal energy, proposed electricity generation, the emerging pellet markets. They saw these new markets as an opportunity to support good forestry work, but they also started to have questions. If I'm going to have an opportunity to remove more wood from the forest, what impact is that going to have? In particular, what impact is that going to have on wildlife habitat, soil nutrients, and so on? Foresters started to ask, how much wood do I need to leave? How many snags? How many tons per acre of coarse woody debris?

The guidance was inconsistent. State best management practices are fairly comprehensive across the country, and are mainly focused on water quality, but there were some holes related to biomass. So we did a review of the existing science and the existing biomass harvesting guidelines in the United States as well as internationally. We realized that there are gaps to be filled in, that there was potentially a need to pull together some guidelines for specific forest types about how much material should be left in the woods for wildlife habitat, for soil nutrients.

So that was the start of the process. As we moved ahead, we realize that the science was a bit inconsistent. For some forest types there was a good body of science, and for others it was lacking. Our approach was to involve practitioners who were actually engaged in forest management to fill in the gaps, to provide recommendations for how much you should leave in the woods. The guild's guidelines take the approach of using the best science where it's available, but also incorporating local knowledge.

Will you revise the guidelines as new knowledge becomes available?

Certainly. The guidelines are not static documents. The science is evolving, local knowledge is evolving, and I think any approach to developing guidelines needs to be fluid to account for that.

You want any sort of guidelines to be based in good science, but the challenge we face is what to do with the science that isn't consistent or is incomplete. And they also have to be based in reality. For example, if the science indicated that you need to have, say, 10 snags per acre in a particular forest type, but the local foresters and natural resource professionals say that no one leaves 10 snags per acre, that the markets don't dictate that, that that's not the way forestry is practiced in that region. In that case, you need to try to find a balance point. How many snags could you leave? What's reasonable? What's operable for those sites and the type of forestry practiced there?

I don't know if we could ever have done this project without input from the practitioners. I think we would've come up with something that would've been of some use, but may have been totally detached from what's happening on the ground.

And they are guidelines—targets and goals—not hard and fast rules.

As a forester, I would like to know what the recommended retention targets are, and then I'll work with the landowner to determine what we can do on a particular site, based on his or her particular objectives, the history of the site, and so on. Even with a set of guidelines, you still need a forester, a professional involved in the process, to help the landowner make informed decisions. The guidelines are a tool that can be used, but there's still that give and take based on management objectives. For a landowner, having a professional forester to help you through that is critical.

What sort of feedback about the guidelines have you received from foresters?

Overall, the feedback has been positive. There has been a bit of a learning curve, but I think the general concept of having information about dead wood and what purposes it serves, and having some guidelines geared toward specific forest types, has been well received by foresters in the field and by the forestry community. Part of the learning curve is estimating the tons per acre on a site. In some cases, the targets differ from what may traditionally happen on a harvest, so questions come up, such as, is this going to increase the cost of harvesting? Is it going to change the way that operations are done? In some cases, there will be a change, and in others there won't be.

We just had a field tour in the Southeast where folks went out and used a prism-sweep method to estimate tons per acre on a site, and what they found was that the three-tons-per-acre target was pretty easy to achieve, that it was pretty close to what was traditionally left in the types of harvests that they were looking at. So in some cases, applying the guidelines may not mean any additional work compared to what traditionally happens, but the idea of looking at those targets gives you a guidepost for whether you're in the target zone or not, and then you can decide whether you need to change your management or not.

How have landowners reacted to the guidelines?

It's been interesting. Some landowners have been keen on the guidelines, especially if they're concerned about wildlife habitat, water quality, soil nutrients, and that sort of thing. Other landowners we've interacted with initially look at it as, does this mean I'm going to be able to harvest less? Am I going to lose the market opportunities because I have to leave more wood in the woods? And I think that's a natural response. These people look at it as a restriction that could have an impact on revenue.

But, generally, there is an openness on the part of landowners to the guidelines. We pitch them as voluntary guidelines for landowners and foresters to use. Had they been developed with a regulatory framework in mind or something that was mandated, I think the response would've been very different.

Have you identified any key areas for research that will be important in revising the guidelines in the future?

One area is the expansion of information and data for specific forest types. There are some forest types where there wasn't as much information on coarse woody debris retention or snag retention as there could have been. Also there is a need for some research on the requirements for downed woody debris by certain wildlife species. Some of the research we've looked at has indicated that it's not just the amount of material, but it's also the type, size, arrangement, and even the species of woody material that some wildlife species prefer. Some wildlife species prefer more snags than downed wood, for example.

We also need to look at how these guidelines are applied on the ground and learn from that experience. Is three tons per acre in southern pine enough? Should there be more? The only way we can answer that is by actually applying the guidelines and then doing further research to see if we are maintaining our soil nutrient targets and meeting our

*("**Guidelines**" continues on page 7)*

Commentary

"Let Them Watch Owls"

By W.V. (Mac) McConnell

Folks at the Washington Office of the USDA Forest Service would do well to ponder the fate of Marie Antoinette—she of "Let them eat cake" fame. When county commissioners cry out, "Our workers have no jobs and our children have no schools!" what response do we hear?

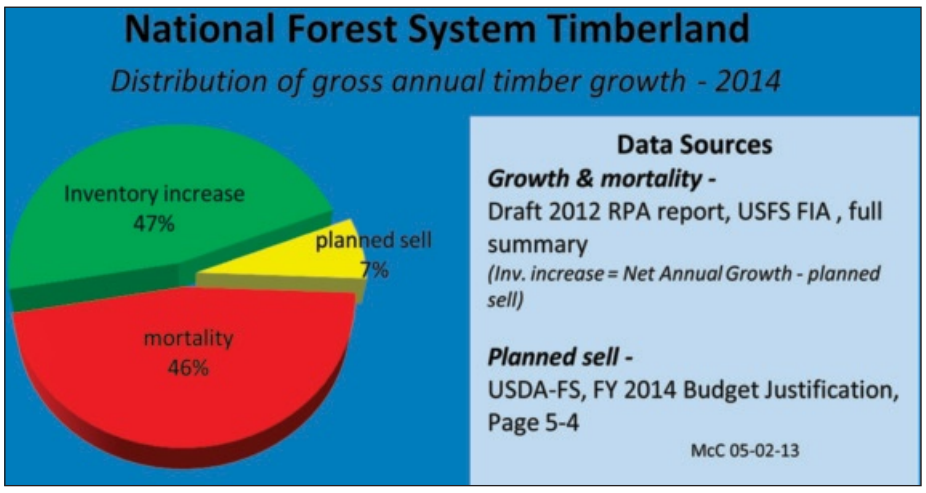
Today the Forest Service is primarily concerned (obsessed?) with ecosystem management and restoration, growing big old trees (late seral habitat), preserving (not husbanding) selected resources, enhancing scenic values, and providing amenities, wilderness experiences, and "spiritual renewal," along with a host of other admirable nonessentials. In doing so, it has lost sight of the basic human need for jobs, security, and family and community stability. This apparent nonconcern with people and the commodities essential to their well-being is reflected in the Fiscal Year (FY) 2014 Forest Service budget, which proposes to reduce the timber sales program by 15 percent from FY 2013. The graphic on this page shows the expected result.

The basic intent of HR 1526 is to increase commodity production from federal lands and thereby better serve the local communities directly affected by these lands.

Proposed legislation in Congress, the Restoring Healthy Forests for Healthy Communities Act (HR 1526), is an attempt to remedy this situation. Stripped of its complexities, the basic intent of HR 1526 is to increase commodity production from federal lands and thereby better serve the local communities directly affected by these lands. This would create a totally new (to the Feds) management system based on the premise of using lands best suited to commodity production for producing commodities (maximizing revenues). It is the approach used—very successfully—on the 2.1 million acres of forested state trust lands in Washington State, the Common School Fund lands in Oregon, and other state trust lands in the West.

One of several key features of HR 1526 is the establishment of locally managed community forest demonstration areas on selected national forest lands—no less than 200,000 acres within a state. These lands would be managed by an advisory committee appointed by the governor of the state, according to "the laws and regulations applicable to management of State or privately-owned forest lands in the State in which the community forest demonstration area is located." Federal laws such as the Endangered Species Act and Clean Water Act would apply only to the extent that they apply to state or private forest lands.

Revenues from the sale of timber or other products from community forest demonstration areas would go primarily to counties or local government units, with some also going to the US Treasury and some being reserved to pay for forest-management activities.



Although the act was approved handily by the House, in its present form it has little hope of passage in the Senate, and, should it somehow pass, faces a near certain veto by the president. Simplifying this overly complex bill by removing highly controversial provisions relating to mandatory harvests from proposed forest reserve revenue areas on national forest lands and to timber harvests on Oregon & California Railroad lands in Oregon would increase its chances for survival. These issues could be better addressed in separate legislation.

While HR 1526 bodes no good for the future of the Forest Service as it now functions, it does hold promise for solving many problems for the people who use and live near our national forests. The development and final form and fate of the act will be of intense interest to foresters, concerned states, local governments, national forest users, and dependent citizens, and to all those interested in the future of public land management.

W.V. (Mac) McConnell is a retired land management planner/forester with 67 years experience, including 30 with the USDA Forest Service, in the southeastern United States. He lives in Tallahassee, Florida.

INDUSTRY NEWS

Jeans Made of Pine?

Researchers at Finland's VTT Technical Research Centre, Aalto University, and Tampere University of Technology envision a day when thread, yarn, and fabrics made from wood fibers replace those made from cotton, polyester, and other materials. Tests by a team led by Aalto University professor Olli Ilkkala show that the self-assembly of cellulose fibrils in wood permits the fibrils to be spun into strong yarn. VTT has developed an industrial process that produces such yarn from cellulose fibers without the spinning process.

According to VTT, about five to six million tons of fiber could be manufactured from Finland's current logging residue (25 to 30 million cubic meters/year). This could replace more than 20 percent of globally produced cotton, at the same time reducing carbon dioxide emissions by 120 to 150 million tons and releasing enough farm land to grow food for 18 to 25 million people.

Cotton textiles account for about 40 percent of the world's textile markets. Oil-based polyester for most of the remainder, while cellulose-based fibers make up 6 percent of the market. Although cotton is durable and comfortable to wear, cotton production is highly water-intensive, and artificial fertilizers and chemical pesticides are often needed to ensure a good crop. The surface area of world's cotton-growing regions is roughly to the size of Finland.

Mississippi Mill to Expand

Maple Land and Timber will spend $1.95 million to expand its American Land and Timber sawmill near Baldwyn, Miss., according to the Mississippi Development Authority (MDA) the state's economic development agency. The company produces hardwood and pine lumber for domestic and overseas markets, as well as pallet materials and crossties. The expansion will allow the company to begin producing additional lumber for export. The MDA provided tax incentives to the company in support of the project.

Sierra Pacific to Rebuild Mill

Sierra Pacific Industries plans to close its decades-old large-log sawmill in Quincy, California, and build a new, more-efficient mill on the site by late next year. A small-log mill, planer, and cogeneration plant will continue operations during the construction. The new mill will produce a wider array of lumber products, including lumber up to 12 inches wide and pencil stock from incense cedar. The new mill will use some of the larger cedar and Douglas-fir harvested in that area of northern California is currently shipped to other mills for processing, according to Mark Pawlicki, the company's director of corporate affairs and sustainability. The mill complex will continue to obtain logs from nearby national forests as well as private lands.

Sierra Pacific Industries owns and manages nearly 1.9 million acres of timberland in California and Washington, and is the second largest lumber producer in the United States.

More Mill News

Fruit Growers Supply Company, a California agricultural supply cooperative with timberland holdings in California, Oregon, and Washington, plans to build and operate a small-log mill in Yreka, California, according to the California Forestry Association. The mill will process logs as small as four inches in diameter into lumber for use in the manufacture of pallets and other products. It will employ between 30 and 40 people.


Pekka Rötkönen

Cellulose fiber yarn made directly from pine fibers at VTT Technical Research Centre.

The White Mountain Apache Tribe with reopen a defunct lumber processing facility in Whiteriver, Arizona, according to the Forest Business Network. The sawmill, once one of the tribe's biggest employers, closed in 2010. US Bank, in partnership with CEI Capital Management and Rural Development Partners, has provided more than $13.4 million of New Markets Tax Credit equity for the project. The mill will employ an estimated 185 people.

Omak Wood Products LLC will restore and operate a shuttered plywood mill owned by the Colville Tribal Federal Corporation in Omak, Washington. The mill will initially produce veneer; plywood production will begin by mid-2014. The company has hired 87 workers; the mill may eventually employ as many as 200. The facility will process logs primarily from the Colville Confederated Tribes' 800,000 acres of timberland; some logs may be purchased from the State of Washington and other private sources. According to the company, "the domestic veneer and plywood markets are currently vibrant and will remain so for the foreseeable future." Omak Wood Products LLC is a subsidiary of Wood Resources LLC, which operates a plywood plant in Shelton, Washington.

SAF Leader Lab

By Tom Davidson

Leadership and the Ecosystems of Small Towns

What every proactive leader must do to build and maintain strong connections

Small towns can teach us a great deal about leadership—not through their budgets, by-laws, or bookkeeping, but their ecosystems.

For example, after a promotion in 1983, I was preparing to move from one small town to another, so I took a trip to my new hometown of West Point, Virginia, to find an apartment. Fortunately, I had already learned something about getting the inside story on such things, so I skipped the classifieds and went directly to the US Post Office.

After introducing myself to the postmaster and asking if he knew of any apartments for rent, he asked me a very important question: "*Who are you?"* Having already given my name, I knew that he was asking for a deeper understanding of my connection to the community.

After sharing my story, it turned out that my new boss was the postmaster's neighbor. He knew the other foresters in town. He liked the fact that I'd be working for the largest employer there. And we both loved dogs!

With his "connections" questions satisfied, he pointed me to his sister, who worked at the florist shop two blocks down the street and who "just might" have an apartment for rent. On the way to the florist (and just one block away) a man stepped out of a storefront into my path and asked, "Are you the forester looking for an apartment?"

Now, *that's* a small town!

My lesson: People need to know you to help you.

Building Your Small-Town Ecosystem

Like small towns, every organization is an ecosystem, with many intricate and significant connections.

Just as foresters are stewards of *ecosystems*, leaders are stewards of *connections*. When these connections break down, people experience miscues, miscommunication, internal competition, and suboptimal results. When connections are strengthened, leaders get free-flowing communication, willing teamwork, and exceptional results.

Taking a cue from small towns, there are five categories of things you can do to build connections among people. The following acronym for what you can do spells "Main St." for a reason.

"M" is for Mingle. Leave the e-mails and texts behind more often in favor of proactively building *personal* connections. Mingle with people informally, so that you get to know each other as people, not just fellow employees. Here's where you will find opportunities to mingle and interact more often:

▶*Wherever there is food*. Mingle with people in the office kitchen, agency lunchroom, or wherever people gather to eat and drink. This is why churches have so many potluck dinners!

▶*Wherever people stop and talk*. Mingle with people at the water fountain, employee lounge, scale house, or breakroom—wherever they naturally stop and talk.

▶*Wherever there are tailgates*. Pickup trucks are magnets for conversation. Look for open tailgates in the parking lot, at meetings, or after fieldwork or fires.

"A" is for Affiliate. The citizens of small towns affiliate with one another by joining civic clubs, umpiring sports leagues, and serving on committees. You can do the same thing in the workplace by:

▶*Affiliating with their hobbies and interests*. Find out where your hobbies and interests intersect and share information and resources.

▶*Affiliating with their charitable and community work*. Find ways to support the causes and organizations that are important to your people.

▶*Affiliating with what they want to see made better in the workplace*. Discover what interests them about improving the workplace, and join or champion those causes.

"I" is for Invite. People who live in small towns invite one another over, and leaders need to *initiate* these kinds of connections as well. In doing so, people meet each other's families and converse with one another in different ways. You can do this at work by:

▶*Inviting your peers from similar work teams* to see what you and your staff are up to, sharing both successes and challenges where you could use their help.

▶*Inviting your peers over from different functions* who are less familiar with your shop, helping them learn *what* you do and *how* you do it.

▶*Inviting over associates from many functions* for an open house at which people meet and learn from one another, as well as from you and your people.

"N" is for Network. People network in small towns in a most positive way, learning what other people need, and then connecting them with others who can help. You can network in the workplace for similar reasons by:

▶*Finding out what other people need* and connecting them with others with similar challenges, or those who can share their experiences.

▶*Finding out what other people want to learn* and then connecting them with people who can show them the ropes.

▶*Finding out the sources of expertise* and letting others know where to find them. Slowly, others will begin to see you as the *go-to* guy or gal.

"St." is for Site See. You can wait to be invited over to other people's teams and departments, but people in small towns get out to see for themselves. Go sightseeing in your team or organization by:

▶*Asking for a tour* or visit to another team like yours to learn something new about their best practices.

▶*Asking for an orientation* to an entirely different department or functional area from yours and taking some of your team along to see how the other team's work is connected to others outside of your work unit.

▶*Taking your team* to an entirely different organization to see how they work together, communicate, or serve the public, so everyone can look at old problems through fresh eyes.

Without connections like these, your team might be colleagues but not friends, tolerant but not understanding, and talking but not communicating. Take your cue from small town ecosystems and build the kinds of connections that every leader needs for successful teamwork at work.

How are you building connections in your ecosystem? Share your stories and join the conversation on the SAF LinkedIn Group (www.linkedin.com).

Tom Davidson is a forester and leadership consultant, as well as author of The Eight Greatest Mistakes New Managers Make. *Sign up for his newsletter, Leaderslips & Tips, and subscribe to his blog, SpotFires, at www.LeadershipNature.com. Email suggestions, comments, and questions to Tom@LeadershipNature.com.*

*("**Partnership**" continued from page 3)*

growth of hemlock, so if you have an area with healthy, rapidly growing trees, it could actually make it more attractive. That's really where the uncertainty comes into this," she said.

Silvicultural uncertainty aside, collaborators are hopeful that whatever they learn about responding to HWA infestations will be of use to others down the road.

"It's sexy to say, 'We're going to save the hemlocks,' but the options for treatments are so limited, I think we know that prioritized areas are all you can do and, sometimes, prioritized individual trees is all you can do," said Karger. "Thinking ahead, we're looking at some monitoring and some studies to say how can we make stands more resilient, what's happening as these changes are going to take place. Looking 15 to 20 years out into the future, that might be really valuable for Michigan and Wisconsin and Ontario and places like that."

What Would Success Look Like?

Given this kind of long-range thinking, not to mention the long-term challenges posed by the HWA, how will the partnership know its efforts have succeeded?

"To me, success would be that we have identified hemlock conservation areas for various resource values across the plateau and sustained them long enough for the research to catch up," said Hille. "We cannot save every hemlock, we realize that, so we're trying to be strategic in where do we spend our time and energy and money in trying to sustain a good representation geographically, and I think genetically, across the plateau."

The TNC's Sarah Johnson agreed and added that she'd like to see the development of a cooperative forest pest management area sometime in the future.

"I would like to get as many private landowners as possible signed on to this cooperative management area, and to become aware of the situation, aware of their options, and basically educated about what they have to lose with the impacts of hemlock woolly adelgid."

That awareness has already started to spread. When asked what he hopes to get out of his involvement in the partnership, landowner and McKean County commissioner Cliff Lane said knowledge and the ability to share it.

"The first thing is better knowledge. The second thing is the ability to communicate to other people that knowledge in such a way that it is easy to understand why it's important to be aware of the HWA."

Having citizens engaged and participating in the effort is boon to her agency, said Hille.

"We held a training down at the state park for volunteers and for ourselves on identifying populations of the HWA, and there are a number of areas on the national forest that they have basically adopted for monitoring and conducting surveys for us. Having citizens out looking is a huge help."

Among those providing that help are Johnson, who first discovered the HWA in Warren County, and the members of the Friends of the Allegheny Wilderness. Johnson found a second infestation on September 8.

"So far, we've been active in getting out and looking at hemlock sites throughout the ANF just to survey for the HWA, so I think we've been able to contribute that way—with boots on the ground," he said. "We have a lot of people who are passionate about wild areas of the forest. They've been out and about, and they know where the hemlocks are." FS

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*("**Guidelines**" continued from page 5)*

wildlife habitat goals.

It will be interesting to see if there are better techniques for estimating the tons per acre, to see if there are different operational techniques that we can use, things that we can do in the woods to better achieve our downed wood targets, but actually create some efficiencies on the economic side. I think there are some interesting research opportunities there.

And we'll learn from the practitioners, too, because there may be folks out there who have already figured these things out.

And now for the $64,000 question: Can biomass harvesting be sustainable?

The word "sustainability" gets thrown around a lot. I think it's important to drill down into what that means. The guidelines alone are not the equivalent of sustainable forestry. They are tool, a piece of the process. We also have to look at the type of management that's practiced and how the wood is utilized. But it's important for us to have these tools in place to help us make good decisions. There are lots of cases where harvesting biomass makes sense. With some harvests it can support a landowner's ability to meet management objectives, if done correctly. Having the guidelines as tools to help us do that is very important. FS

Climate Change and Its Impact on Forests in Bosnia and Herzegovina

Bosnia and Herzegovina (B&H), a small country on the Balkan Peninsula in southeastern Europe, is located at the intersection of roads from east to west and from north and south: between Europe, Asia, and Africa. It covers an area of approximately 17,000 square miles. More than 53 percent of the land is covered by forests—among the highest forest coverage in Europe. Methods and techniques of forest management mainly rely on traditional German forestry practices.

Over the centuries, the forests in Bosnia and Herzegovina have been heavily exploited. However, thanks to favorable conditions, these forests have partially succeeded in regenerating naturally, with marked diversity. This renewal is, unfortunately, not countrywide. In the southern part of the country, which 600 years ago was oak forests, renewal has failed.

Most of the forestland in B&H (more than 80 percent) is owned by the state. The government gives rights to public companies (Public Forest Enterprises, or PFEs) to manage the forests, including silvicultural work and selling timber, which provide salaries, taxes, and other benefits; some of the profits must be reinvested in forests and their enhancement. PFEs hold Forest Stewardship Council (FSC) certification.

Branislav Cvjetkovic, a forester from Bosnia and Herzegovina, is a Fellow at the World Forest Institute.

According to B&H law, clearcutting is forbidden. Depending on the type of forests, the following cuts can be applied: thinning, selective cut (recommended for Norway spruce, European silver fir, European beech forests, and mixtures of these types), and shelter cuts (recommended for oaks and pine forests). One of the main goals for most forest types is natural regeneration by seed. Although PFEs must by law cut less than the annual volume increment, they nevertheless can make a profit. The common name for these kinds of forests is High Valuable Natural Forests with Natural Renew. Also, there are degraded forests and coppice forests mostly owned by the stakeholders—private landowners. Stakeholders have small properties, usually only one acre to 10 acres, and mostly they are not interested in improving the condition of their forests. They typically sell wood to sawmills or they use timber as firewood, but in any case they also must conform to the general principle: to cut less than the annual volume increment. Although these facts suggest the possibility of sustainable forest management, the state of the forests in Bosnia and Herzegovina is not good. This is primarily due to climate change issues, which over the last 20 years have decreased the total area of valuable forests.

According to investigations by the Intergovernmental Panel on Climate Change, the temperature in B&H is "projected to increase from 0.7 to 1.6°C per 1°C of global increase during the period 2031–2060. It is expected that the average rise in temperature is between 1° and 2°C along the coast, and between 2° and 3°C inland. The largest temperature increases would occur in summer, and in inland areas. The increase in the number of summer days, defined as the number of days when Tmax exceeds 25°C, is from two to six weeks, or about one additional month of summer days on average. Finally, the increase in the number of hot days in the Balkans, defined as the number of days with Tmax> 30°C, ranges from two weeks along the coast to five–six weeks inland. Precipitation will decrease, and climate will be noticeably drier in southern Europe. The two warmest and driest months will be June and August, when already small amounts of rainfall could be halved. On average, the Mediterranean region is expected to feature more dry days. Increasing variability in the weather has been noted in all seasons, with rapid changes of short periods (five to 10 days) of extremely cold or warm weather—heat and cold waves—and periods with extremely high levels of rainfall, as well as droughts. It is expected that the duration of dry periods, the incidence of torrential flooding and the intensity of land erosion will increase over the next century" (IPCC 2007).

Due to climate change, there is the emergence of forest decline. It happens to the oaks and pines forests mostly, but also in all the other forests. Human assistance is necessary, in the form of afforestation and reforestation.

Tracking climate change in forestry today requires active forest monitoring using inventory plots as well as different progeny tests of forest trees and seed orchards. These tests are necessary to be carried out in order to designate seed zones. Unfortunately, in B&H there are a small number of such tests. Seeds have been collected from the natural seed stands that are not classified in seed zones by geographical and altitudinal distribution. This is one of the basic requirements for the production of forest tree seedlings that can be used in adapting to climate change.

Lack of seed zone designation is in contradiction with European Union directives 1999/105/EC concerning the quality and origin of forest reproductive material (Official Journal of the European Communities, 2000).

To resolve the problem, it is necessary to carry out emergency measures of designation of seed zones. The job entails investment in resources to collect seed samples, production of seedlings, and establishing progeny tests, and also tests in genetic laboratories. For some tree species, the majority of this work has already been accomplished; however, there still remains a lot of work to do in monitoring the progeny tests along with genetic laboratory tests to define which seeds, in accordance with the current condition of the forests and the upcoming climate change, are best to use in the specific zones. It is hoped and expected that the B&H forestry decisionmakers will have a hearing and approve funding for important projects concerning the production of the improved seeds and seedlings resistant to future challenges of climate change.

Courtesy of Branislav Cvjetkovic

An afforestation project near Mt. Manjaca in northern Bosnia and Herzegovina. Most previous attempts to afforest this area have failed; this photo shows the latest planting. The rock base is limestone and the soils are shallow.

The collaboration of the entire forestry sector—PFEs, the B&H government, private owners, forestry schools, NGOs, citizens associations, and others—is necessary for working on the problem of climate change through forest inventory, education, experiments, and making recommendations for further use of forest reproductive material to achieve maximum revenue.

Branislav Cvjetkovic, a Fellow at the World Forest Institute (wfi.worldforestry.org), is a senior assistant in the Faculty of Forestry at the University of Banja Luka, Bosnia and Herzegovina. He received his master's degree in forestry seed science at Belgrade University, Serbia. As a researcher, he is involved in several national projects in Bosnia and Herzegovina, including establishing seed orchards, investigations on dormancy breaking, seed germination of different tree species, etc. Also, he is involved in the European Cooperation in Science and Technology (COST) action FP1202 to strengthen conservation: a key issue for adaptation of marginal/peripheral populations of forest trees to climate change in Europe. At the World Forest Institute, he is investigating the transfer of forest genetic recourses in light of climate change. E-mail: bcvjetkovic@worldforestry.org

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Students: Tom Roland, Student Rep on SAF's Council, Wants to Hear from You

In his first few months as student representative on the Council of the Society of American Foresters, Tom Roland's biggest challenge has been communicating with other students and student chapters across the country. His message: Call. E-mail. Or both. Students, your SAF representative wants to hear from you.

"I always appreciate hearing from any student who has a question or concern about anything they want to talk about regarding SAF. I need to know what the real issues are on a local, regional, and nationwide basis," said Roland, who was selected at the 2012 SAF National Convention as the Student Representative to Council (SRC).

I'd like to see the mentoring program get revamped a little bit, so that we can have a stronger connection between professionals in the Society and student members.

The SRC serves as the chair of the Student Executive Committee (SEC) and as liaison for the SEC as a nonvoting member of the SAF Council, attending all Council meetings. As part of his SRC duties, Roland will be leading three annual student events at the 2013 National Convention: the Student Icebreaker, the Student Executive Committee meeting, and the National Student Congress.

The SEC is comprised of the 11 District Student Representatives. Student representatives are nominated by faculty advisers or other SAF members; District Council Representatives select the District Student Representatives for their district. SEC members serve a one-year term ending on May 1. The Student Executive Committee meets annually at the National Convention and holds two or three conference calls each year.

Born and raised in Fort Collins, Colorado, Roland's family had a small tree farm. That turned out to have a big impact on his career choice. As a high school senior, Roland said knew he was destined to be a forester. He chose to attend Northern Arizona University (NAU), where he is now a senior, and from which he expects to graduate in May with a bachelor's degree in forestry. For the past five summers, he has worked as a seasonal employee of the USDA Forest Service in Colorado and Alaska. He is an active member of the student SAF chapter at NAU's School of Forestry, and he served as the District 4 SEC representative during his junior year.

Roland attended his first Council meeting in June, in Leesburg, Virginia, and said he was looking forward to attending the Council meeting at the SAF National Convention.

"I was very impressed with the level of experience that the Council has. I was very pleased to see that SAF is in such good hands," Roland said. "Council members are very welcoming to the idea of having a student representative. I was able to talk with them about some of my concerns for students, such as the jobs situation and forestry program accreditation, and they were very receptive to what I had to say. It was good to see that we have such forward-looking individuals leading SAF. And I learned more than I thought I would. It was quite fascinating to see the inner workings of SAF."

As he prepared for the Council meeting in Charleston, Roland said he looked forward to another opportunity to interact in person with the Council.

"I focus most of my attention on what SAF should be doing to help students become more successful as they move into their professional careers," Roland said. "I'd like to look into returning on-the-spot [Forest Service] hiring to the SAF convention. I've received a lot of e-mails from students who expressed displeasure with the fact that there wouldn't be on-the-spot hiring at the convention this year. I also want to look into increasing student membership. Student membership has been fairly steady, if not increasing, over the last few years, but students are the ones who will replenish the Society, so we need to make SAF more appealing to students."

Strengthening SAF's efforts to mentor forestry students is one key way to attract and retain student members, he said.

"I'd like to see the mentoring program get revamped a little bit, so that we can have a stronger connection between professionals in the Society and student members. I think it would be really beneficial to have more students receive guidance from experienced foresters. Forestry is such a diverse profession—there are so many places that a college graduate can end up. Having a little bit of guidance to get where they want to be would be tremendously helpful," said Roland.

Student representative to the SAF Council Tom Roland

"In a lot of the areas where we have student chapters, there aren't necessarily huge communities of professionals close by," he added. "I think it's important to have local mentorships, so you can meet with a forester face-to-face on a regular basis, shadow them on their jobs, and see first-hand what you're getting into. It's really important to have that one-on-one, hands-on experience."

Roland said he has attempted to contact all 10 of the other SEC members, but as yet has heard from only three of them. He also is interested in hearing from any students who would like to discuss issues they may be concerned with.

"Students are going to be the professionals who drive this organization over the next 10 years and beyond," Roland said. "I would really like to see the passionate students step forward and help make this Society something that will better serve students and professionals in the future." FS

Tell Us about SocietyAffairs

If your state society, division or chapter has been involved in any noteworthy activities, *The Forestry Source* want to know! Send us the details at source @safnet.org.

A WUI Fire and Ember Exposure Scale

A proposed scale will weigh the risk of ignition and facilitate the development of improved building codes

By Alexander Maranghides and Ruddy Mell

The destruction of homes and businesses from wildland/urban interface (WUI) fires has been steadily escalating, as have the fire suppression costs associated with them. Since 2000, more than 3,000 homes per year have been lost to WUI fires in the United States. This compares to about 900 homes in the 1990s and 400 homes in the 1970s.

Capt Darin Overstreet, Colorado Army National Guard

The WUI fire problem affects both existing communities and new construction. In the United States, the problem is most acute in the western and southern states; however, WUI fires have also recently destroyed homes in the mid-Atlantic states and the Pacific Northwest.

One of the fundamental issues driving the destruction of homes in the WUI is the very limited research concerning the relationship between building codes and standards, and potential fire and ember exposure. The limited ember exposure information currently available does not address the full range of possibilities for home ignition and offers little context for the design of ignition-resistant landscapes and buildings.

Although fire agencies have been aware of how fire starts and spreads in the WUI for some time now, there's no current way to determine just how different building constructions respond to different realistic ember exposures. The resulting gap in information between fire/ember exposure and structure ignition has created a lack of tested and implementable hazard mitigation solutions.

Solution: A WUI Scale

To close that informational gap, the fire service and the general public need a WUI fire and ember exposure scale (or a WUI scale) that can consistently predict the expected severity of WUI fires by calculating the expected ember and fire exposure at specific locations during an event. This could be achieved through a combination of post-fire studies, laboratory and field experiments, and computer modeling.

The technical foundation of the WUI scale has been developed jointly by National Institute of Standards and Technology and the USDA Forest Service. Once the scale is established, the information obtained from it can help form the foundation for building codes aimed at providing a level of structure ignition protection commensurate with the expected fire and/or ember exposure.

The concept is based on determining the amount of expected fire and ember exposure throughout a single, existing WUI community. The proposed WUI scale can be used to explicitly identify WUI areas that have a fire problem, as opposed to areas that meet housing density or wildland vegetation requirements. The scale can therefore also be used to determine boundaries where specific land-use and/or building construction regulations would apply. Lastly, the exposure scale can be used for both new and existing WUI communities.

The Approach

In the WUI scale approach, each fire and ember exposure threat is categorized into one of four levels. The intensity of the threat increases from category 1 to 4, and it decreases as the distance from the fire increases. So a community in or near the WUI may include one or more areas or zones at a given exposure level. Any one location in the community will have both a fire and an ember exposure rating. As an example, a location could have no fire exposure, yet have an intermediate ember exposure. Note that, during an actual WUI fire, both ember and fire exposure levels need to be measured to capture the total threat to a structure. Additionally, both need to be accounted for when protecting a structure from ignition.

This two-component (fire and ember) exposure scale is necessary because these two threats have different origins, each with a different "reach." To put it simply, the heat generated by a fire decreases as you move farther away from the flame front, and it is mainly affected by the fuels in the immediate vicinity of the fire. Embers, on the other hand, can travel hundreds of meters or more. Embers that have traveled some distance may pose a threat to a particular structure, even if the fire creating the embers isn't exposing the structure to the fire's heat.

Fire and ember exposure can be traced to four primary sources: fire in 1) wildland fuels, 2) ornamental vegetation, 3) structures (including homes and auxiliary buildings, such as sheds and garages), and 4) vehicles. The WUI scale is designed to consider all of these sources, as well as topography and local weather. These combined parameters are referred to as FTLW—fuels, topography, and local weather (wind speed, wind direction, temperature, and relative humidity). In the current proposed scale, an exposure rating isn't related to the ignition response of a particular structural element or landscaping attribute.

The primary objective of developing a WUI scale is to reduce the ignition risk of structures in a WUI. This will be accomplished by juxtaposing a structure's ignition resistance to its anticipated exposure level. During a WUI fire, a given structure can be exposed to fire and/or embers, but it can also be hardened for embers, fire, or both. Also, a closed metal-frame window could break under direct flame exposure, and combustible insulation may ignite from embers that have traveled inside the attic and away from exterior attic vents.

Fire departments will be able to use the WUI scale to identify high hazard zones and effectively plan their response strategies well before a specific community.

Once ember generation information and structure ignition information becomes available, the WUI scale will provide fire departments with a tool to assess the impact of a wildland fire on an existing community. Once the initial impact is determined, the scale may be further used to predict the WUI fire spread across the community. Fire departments will be able to use the WUI scale to identify high hazard zones and effectively plan their response strategies well before a fire reaches a specific community. GIS may be used to visualize fire and ember exposures in the wildlands and through a community. Lastly, the scale may be used not only to educate homeowners and homeowner associations (HOAs), but also to prioritize retrofit solutions.

A Framework for Safety

To prevent further catastrophe and property loss to WUI fires, fire agencies need a reliable resource that they can use to determine the fire risk of certain structures or subdivisions within the WUI. The WUI scale and zone concept offers a framework for evaluating the fire and ember exposure of proposed and existing WUI communities. Although there's a lot of work to be done before the proposed scale can be fully implemented, once it is implemented, it will provide a data-driven, cost-effective way to reduce losses from future WUI fires—and that will increase both civilian and firefighter safety.

Capt Darin Overstreet, Colorado Army National Guard

A Colorado Army National Guard Black Hawk helicopter flies over a burned house on the Black Forest Fire near Colorado Springs, Colo., on June 12, 2013. The fire destroyed more than 500 structures and burned 14,280 acres. Firefighters defended many homes, as shown in the photo at left

Alexander Maranghides works for the National Institute of Standards and Technology. He is responsible for developing a WUI data-collection methodology, collecting field data from case studies, identifying structure construction vulnerabilities, and identifying implementable hazard reduction technologies. Maranghides splits his time between NIST and the USDA Forest Service. Ruddy Mell works for the US Forest Service and is the main developer of the Wildland-Urban Interface Fire Dynamics Simulator (WFDS), a three-dimensional, physics-based model for predicting fire behavior of the WUI.

This article originally appeared in FireRescue Magazine*, July 2013, Volume 31 Issue 7, and is reprinted here with the permission of PennWell Corp.* FS

WUI Exposure Scale Technical Assumptions

The following assumptions were used in the development of the WUI scale:

▶The fire and ember exposure conditions at a given location can originate from fire both in wildland fuels and in fuels within the WUI community.

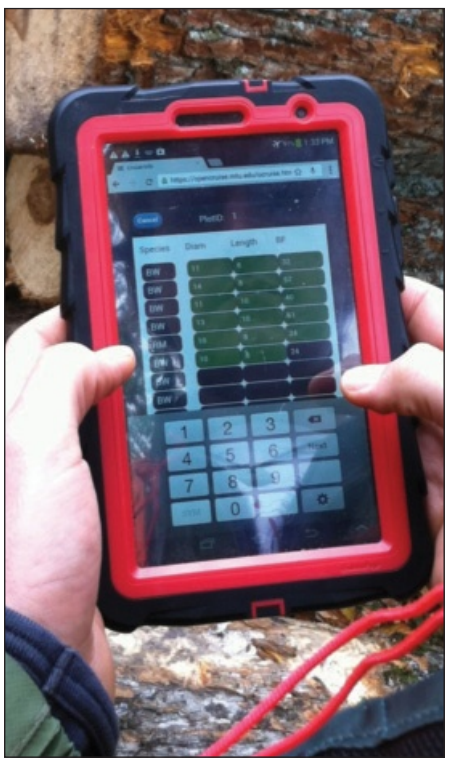
▶The fire/ember exposure that each area or zone experiences is the result of both externally and internally generated exposures. In other words, structures within a zone will experience a significant ember assault from their proximity to wildland fuels and from any burning fuels within the zone itself.

▶During a WUI fire, both the fire exposure and ember assault at a given location will change with time. The fire and ember scales are intended to capture both the peak intensity and maximum duration of the exposure/assault.

OpenCruise: A Free Inventory App for Mobile Phones, Tablets

By Steve Wilent

Over the last couple of years, several readers have responded to my reviews of rugged handheld field computers by saying that they couldn't or wouldn't shell out $1,500, $3,000, or more for such a device. Isn't there a forest-inventory app, some asked, that I can use on the cell phone or tablet that I already have? There are, I replied, and pointed them to my reviews of the two products I knew about: Forest Metrix (September 2013) and Plot Hound (September 2011). Now there is a third: OpenCruise.



Jim Rivard

Forestry students at Michigan Technological University recently used OpenCruise on an Android tablet to collect inventory data for a class project.

OpenCruise is a web-based service that acts like a traditional app: Instead of downloading an app from Google Play, the Apple App Store, or other source and installing it on your device, you use a phone's or tablet's Internet browser to access the OpenCruise website. From that point on, OpenCruise resides on your phone or tablet and behaves like an app.

Jim Rivard, a forestry instructor at Michigan Technological University's School of Forest Resources and Environmental Science since 2005 and a consulting forester since 1998, built OpenCruise for his students.

"My primary motivation was to create a tool for the students here at the university," said Rivard. "For instance, this year we have 46 students in the capstone project class, working in pairs, and part of their project is to collect inventory data. I wanted to give them the option of collecting data on their iPhone or Android phone or whatever they already had, instead of using handheld computers."

Rivard is a busy man. In addition to teaching several classes and consulting for a few long-time clients, he's a PhD candidate at MTU, focusing on using new technologies for forest inventory. Part of that work has involved creating OpenCruise, mostly in his spare time.

OpenCruise is available to others in addition to MTU students. Rivard had heard from fellow consulting foresters who expressed an interest in having a cell phone–based inventory app, so he made OpenCruise available to anyone, anywhere, at no charge.

Try it for yourself: https://opencruise.mtu.edu/

"It's geared toward small consulting shops that may not want to spend hundreds or thousands of dollars for rugged handheld devices," said Rivard. "Having worked as a private consultant for a lot of years, I could never justify the cost of one of those handhelds. I occasionally did inventory work, but that wasn't the focus of what I did."

Because it is a web-based app, OpenCruise will run on most Android and Apple iOS phones and tablets, rugged or otherwise, as well as on any desktop computer. Most browsers will work, including Firefox, Safari, and the standard browser that comes on Android phones. Google's Chrome browser is supported, but is available only on Android 4.0 and up. The app's help page has more information on browser support. See also https://github.com/jcrivard/opencruise.

I used OpenCruise without a hitch on my two-year-old Samsung Droid Charge phone (with Android 2.3.6), in both the default Android browser and in Firefox, and on two desktop PCs, one with Windows 8 and another with Windows XP, both with Firefox.

Inventory, Inventory, Inventory

OpenCruise is designed to collect forest inventory data, nothing more. It comes configured for the needs of Rivard's students (see Figure 1). However, the three fields on the standard data-entry form can be configured to suit your inventory (although you can't add additional fields). I reconfigured the form so I could collect DBH, height, and cull percentage (Figure 2), and changed the species list to reflect the timber in my area of Oregon. In the optional multiproduct mode, you can record a product type or grade for each log in a tree; you can configure the list of products and grades as you see fit.

A key capability of OpenCruise is that it can be used with or without an Internet connection. Once you've opened the app in a browser, the app software is stored on your device and is available for use offline.

"What makes this possible is the local storage feature of HTML 5 [HyperText Markup Language version 5], which lets you run a web-based application offline—such as when you are out of network range, in airplane mode, or whatever," Rivard said. "A typical phone will have no problem storing the software and the data collected. I stress-tested it by pumping in data from 8,000 plots with 10 trees each, and that took up 8 megabytes of storage—a fraction of the gigabytes of storage on most phones. And that was using OpenCruise in multiproduct mode, which added 12 fields to each tree record."

When you've finished collecting data, tapping the Download button gives you two options: Email and Save File. By tapping on the Email button when I was in range of my office wireless network, I was able to send data to myself as comma-separated values (.CSV) files—with one initial hitch: in using my private Gmail (Google e-mail) address, Gmail initially blocked the e-mails as a security precaution, because it "knew" my location was in Oregon and the e-mail was sent via the MTU server in Michigan. After I used a browser to access my Gmail account settings and authorize the "suspicious" e-mail, it was delivered to my inbox within seconds.

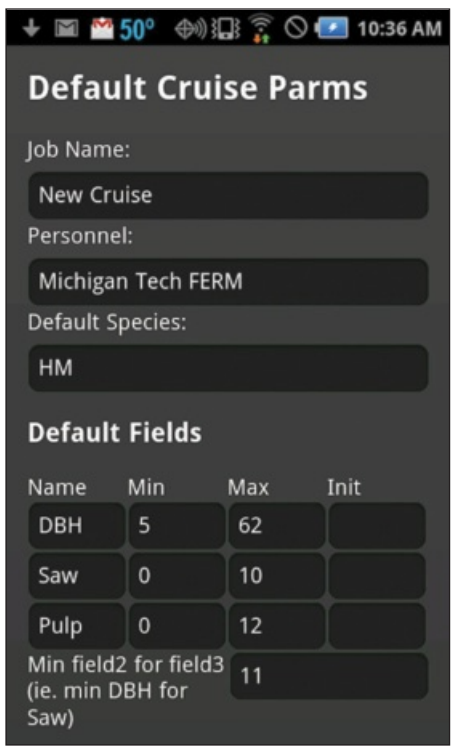


Figure 1. The default OpenCruise configuration. During data entry, entries outside Min and Max values are marked in red.

Figure 2. One possible configuration of OpenCruise. Tapping on a Saw button opens a form for entering product type and grade information for each segment of the tree.

OpenCruise's Save File option works quickly and easily; the .CSV files from my test projects were saved on my phone's SD card. If you're out of wireless or cell range, you'll have to use this option; later, once you're in range, you can transfer the stored files using your phone's file manager. (I suggest starting with the Save File option, so you store a copy of your hard-won inventory data on your phone, and then using the Email option to send a copy of it to yourself or a coworker. The file on your phone will serve as a backup copy, should it be needed.)

Although using OpenCruise via the MTU website will be the best option for most foresters, OpenCruise can be downloaded and then installed and run on another server—the OpenCruise website includes instructions for doing so. With OpenCruise installed on your company's server, the Gmail security hitch I described wouldn't be a problem, because Gmail or another smart e-mail system would recognize that server as yours. Another reason to run the app from your own server is that you can be sure it will be available for as long as you need it. Rivard cautions that the MTU server may not be available indefinitely.

Because OpenCruise is "open source" software, meaning that the app's computer code is available to the public, it might even be modified to suit a consultant's needs.

"I wanted to put the software out there so that consultants could download it and perhaps hire a programmer to customize it for their needs—which is not necessarily going to be cheap, but not all that expensive, either. Or they can just download it and host it as-is on their own website," Rivard said.

Rivard said he would make improvements or add features to OpenCruise, time permitting, based on the feedback he gets from consultants as well as students. Contact him at jcrivard@mtu.edu—he welcomes your input.

If your inventory needs are relatively simple, OpenCruise is a viable option for collecting data. It runs on most consumer-grade cell phones and tablets, and if these devices aren't tough enough for you, even with an OtterBox (www.otterbox.com) or Gumdrop (www.gumdropcases.com) case, the app will run on rugged Android handhelds such as Trimble's Juno T41 (reviewed in June 2013). Not the least of its advantages is the unbeatable price: $0.

Three cheers for Rivard, who has put a great deal of his own time and effort into developing OpenCruise, and kudos to MTU's School of Forest Resources and Environmental Science for giving its blessing and providing a bit of space on a server. I'd nominate Rivard for a forestry technology innovation award, if there was such a thing. Yes, his primary purpose was to create a useful tool for his students, but making the app and the source code available for free is a commendable service to foresters and forestry.

I have to think that there are other forestry apps out there, just waiting to be discovered. Let me know if you've built one or used one. Wilents@safnet.org. FS

Looking for More Field Tech?

If you'd like to see past installments of the *Source*'s Field Tech column, go to the professionals area of the SAF website at www.eforester.org/fp/index.cfmand check out the "consulting" and "GIS" pages.

5 Ways to Use Lidar More Efficiently

By Clayton Crawford and Raghav Vemula

The use of lidar has exploded in recent years, and for good reason. The technology can produce higher-quality results than traditional photogrammetric techniques for lower cost. This is accomplished, to a large degree, by the automated collection of measurements that are sampled very densely. The progress in laser scanning hardware has been astounding. A major side effect of switching to lidar-based technology has been the challenges associated with increasing data volume and the expansion of software processing capabilities needed. Fortunately, ArcGIS offers many tools for managing lidar point clouds and deriving useful products from them to aid scientific research and decisionmaking. Here are five tips that enable ArcGIS to take best advantage of these data.

A digital surface model (DSM) near Plant City, Florida, made from first-return airborne lidar, which includes the building roofs and treetops. Hydro-flattening of the water features is accomplished through the addition of breaklines that are incorporated into the surface model.

1. Use the LAS Format. Having lidar data in LAS format may be obvious to the initiated, but not to those new to using lidar data. LAS, short for LASer, is the industry standard lidar format. The specification is maintained and published by the American Society of Photogrammetry and Remote Sensing (ASPRS). It was intended primarily for airborne applications, but is also commonly used for terrestrial and mobile lidar. It is binary, efficient, and widely supported, and is the format ArcGIS works best with. (See the Additional Resources section at the end of this article for information on currently supported versions.) Note that ArcGIS works with LAS-format lidar of all kinds: airborne, terrestrial, and mobile. The latter two are most useful when viewed in 3D, whereas airborne is useful in both 2D and 3D and can be processed with numerous surface analysis tools.

2. Make Sure the LAS Files Are "Baked" for Use in GIS. There are many flavors of LAS. Some are better than others for use in GIS. LAS was originally intended as an exchange format for laser hardware vendors. A lot goes on between initial data collection of a raw LAS file and its delivery to a client as a ready-to-use file. A few critical items in LAS processing are projection, tiling, and classification.

All the LAS files for a project should be placed into a projected coordinate system (PCS). The PCS should be the dominant one needed by most of the intended users of the data, so on-the-fly projection is not required when it is used. On-the-fly projection is expensive in terms of performance and should be avoided. Note: It's not uncommon for LAS files to have been projected, but to be missing the projection metadata that are supposed to be included in their header records. Files without projection metadata are noncompliant with the specification and should be rejected or repaired. ArcGIS allows use of .prj files that can remedy this situation easily if going back to the data vendor is not an option.

Tiling should be performed on the LAS files. This avoids having relatively few swath-based files with overlapping extents that can be gigabytes in size. It's better to have many smaller files that don't overlap. Huge files are hard to manage, period. Smaller files are better. Also, LAS has no inherent spatial indexing, so retrieving points for subareas requires scanning the entire file to locate them. Scanning a three gigabyte file for every spatial query is not workable. Files of 200 MB or less are more appropriate. (Note that spatial indexing support for LAS will be added to ArcGIS 10.2 through the addition of ancillary files. This will allow more efficient use of larger files and access to files on a network, though the non-GIS related practical constraints of huge files remain.)

Classified lidar is more useful. The majority of GIS applications related to lidar have at least some need for bare earth elevation models, which require properly classified data. Classification is nontrivial and usually performed by the data provider.

Some users believe that last returns (i.e., the last strike of a laser pulse) are sufficient to isolate the ground. This is incorrect. Last returns can occur on rooftops and in tree canopies. At a minimum, airborne lidar should be classified into ground versus nonground. Often, model key (thinned ground), water, noise, and overlap points are also categorized. There are other possible classes such as buildings and vegetation height. The greater the degree of classification (generally), the more useful the data. However, this can become prohibitively expensive because more classification means more processing and more human intervention. For a comprehensive list of guidelines, see the National Geospatial Program Lidar Base Specification 1.0, listed under the Additional Resources section (pubs.usgs.gov/tm/11b4/).

3. Consider Your Options. ArcGIS provides several complimentary options for accessing lidar. There are three primary data access mechanisms: the LAS dataset, the terrain dataset, and the mosaic dataset. Knowing about these data types will let you determine which type to use.

The LAS dataset, introduced in ArcGIS 10.1, provides a simple way to access LAS files directly without importing or converting to some other format, so you can start working with lidar data immediately. Using a simple toggle on a toolbar seamlessly switches between points and surfaces in both 2D and 3D viewing environments. Points can be symbolized using standard LAS attributes such as class code and return number. Points can be queried and used as a backdrop for measurements. Point class codes can be edited to fix misclassified points (which always manage to sneak through and get discovered when you are using the data). Surface analysis, with support for breakline constraints, and point metrics can be performed via geoprocessing tools.

The terrain dataset is a geodatabase-based solution for airborne lidar. Terrains can efficiently store and retrieve lidar surfaces from a database based on area of interest and level of detail queries. If only the lidar point geometry is needed—without the other attributes—bringing points into a terrain and shelving the LAS files can save a lot of storage space.

Along with other GIS data layers, terrain datasets can be stored in a geodatabase and benefit from support for multiuser access and versioned editing. Because they are spatially indexed and pyramided into multiple levels of detail, they are also efficient and network-friendly.

The mosaic dataset is used to catalog, analyze, display, and serve massive image collections. In ArcGIS 10.1, this type of dataset was enhanced to support LAS files, LAS datasets, and terrain datasets as imagery. The mosaic dataset performs on-demand rasterization, presents a map-like view of the lidar, and can be used as input to analytic functions as well as be the basis for sharing via elevation services. Essentially, the benefits offered by mosaic datasets for imagery have been extended to include lidar.

4. Stage Data Appropriately. Lidar data are notoriously large. Careful planning is required to avoid bringing a network to its knees or making users wait too long for data to display. To determine the best overall approach, identify workflows by asking questions such as, How big is the dataset? and Will the entire lidar collection be processed in order, or will it be subject to ad hoc queries?

For example, consider a large statewide lidar program. Ultimately, it may provide the public with ad hoc access to the data, but initially, all holdings will go through a standard process of review, cleanup, and derivative creation. Consequently, it could make sense to house all data on a large central server and bring pieces of it (in ordered sequence) to a local machine for review and processing. Moderate-size solid-state drives are now affordable, so the local machine, where many reads and writes will take place during processing, can work off a fast solid-state drive. Once the work is done, the processed data can be moved back to the server. Data move off and back onto the server once, but this allows for local processing of the data, which is very fast. Depending on workflows, there are many options. The moral of this story is that with lidar I/O tends to be very expensive, so minimize it to keep that cost down.

5. Pick the Right Points for the Job. The expression "lidar paints the surface with measurements" is another way of saying that the data are super dense. This density can be beneficial for capturing the detail of a rough or complex topography or creating a decent bare-earth model for an area covered by forest. However, for open ground that's gently sloped, the data are invariably oversampled.

Fortunately, point filtering can help. The filtering process includes just the points needed while excluding the others. The LAS specification has support for a point type called model key, which is a subset of ground points. This thinned set will create a surface within a given vertical accuracy of the full resolution point set. Using just model key points to construct a ground surface may reduce the point count significantly. An 80 percent reduction rate is not uncommon. This benefit comes with just a small hit in vertical accuracy. Often, the accuracy is still sufficient for many engineering applications. The presence of these points requires the data to have been explicitly processed to flag or code them. Fortunately, it's common practice.

People often make the mistake of including all lidar re-

*"**GIS**" continues on next page*

Education Calendar

Carolina Canopy: Greenville
November 1
www.ncufc.org
Pitt County Cooperative Extension Office
Greenville, NC
Category 1-CF Hours: 2.0
Contact: Leslie Moorman
Email: ncufc1@gmail.com
Phone: (919) 614-6388

Working Safer/Smarter in the Woods
November 1
Okeefenokee Technical College
Waycross, GA
Category 2 Hours: 4.0
Contact: Tommy Peagler
Email: tpeagler@okefenokeetech.edu
Phone: (912) 284-2569

Certified Prescribed Fire Manager Course
November 2
South Carolina Forestry Commission Headquarters
Columbia, SC
Category 1-CF Hours: 6.0
Contact: Leslie Woodham
Email: lwoodham@forestry.state.sc.us
Phone: (803) 896-8800

Society of Municiapal Arborisrts 49th Annual International Conference & Trade Show
November 4–5
www.urban-forestry.com/
Westin Hotel & Convention Center
Pittsburgh, PA
Contact: Pamela Louks
Email: plouks@myway.com
Phone: (317) 431-3141

NC State Forestry Seminar Series
November 4
NCSU
Raleigh, NC
Category 1-CF Hours: 1.0
Contact: Kevin Potter
Email: kpotter@ncsu.edu

Intro to ArcGIS
November 5–6
www.landmarkspatialsolutions.com
Fort Valley State University
Fort Valley, GA
Category 1-CF Hours: 11.5
Contact: Darian Yawn
Email: dyawn@lmssmail.com
Phone: (866) 395-5440 Ext: 2

Pesticide Category/CORE Review & Update Class
November 5
www.landscape.org
Wayne County Community College
Belleville, MI
Category 1-CF Hours: 6.0
Contact: Karla Trosen
Email: karla@landscape.org
Phone: (248) 646-4992

Timber Tax Income: A Practical Approach to Federal Tax Accounting
November 5–6
Sandhills Research & Education Center
Columbia, SC
Category 1-CF Hours: 7.5
Contact: Susan Guynn
Email: sguynn@clemson.edu
Phone: (864) 656-0606

Community Wildlife Protection Planning
November 6
www.clemson.edu/fnrce
Category 1-CF Hours: 1.5
Contact: Susan Guynn
Email: sguynn@clemson.edu
Phone: (864) 656-0606

SFWS Seminar Series
Several dates and topics
Auburn School of Forestry and Wildlife Sciences
Auburn, AL
Category 1-CF Hours: 1.0
Contact: Brian Via
Email: bkv0003@auburn.edu
Phone: (334) 844-1088

Training and Keeping Employees
November 8
Okeefenokee Technical College
Waycross, GA
Category 2 Hours: 4.0
Contact: Tommy Peagler
Email: tpeagler@okefenokeetech.edu
Phone: (912) 284-2569

Red Oak Forest Management
November 8
Gray, ME
Category 1-CF Hours: 6.0
Contact: Kevin Doran
Email: kevin.doran@maine.gov
Phone: (207) 287-4988

Bioenergy Webinar Series - Agroforestry as an Approach to Produce Biomass for Energy
November 11
www.extension.umn.edu
Category 1-CF Hours: 1.0
Contact: Diomy Zamora
Email: zamor015@umn.edu
Phone: (612) 626-9272

Assessing Wildfire Hazards in the Home Ignition Zone Training
November 12–13
www.nfpa.org
Salt Lake City, UT
Category 1-CF Hours: 14.0
Contact: Linda Coyle
Email: lcoyle@nfpa.org
Phone: (617) 984-7486

GIS & GPS Mapping & Forestry Mapping Techniques
November 12
www.lasertech.com/Professional-Measurement.aspx
Harrisburg, PA
Category 1-CF Hours: 3.0
Contact: Brian Ferry
Email: bferry@lasertech.com
Phone: (215) 880-2442

Intro to GPS
November 12
www.landmarkspatialsolutions.com
East Mississippi Community College
Mayhew, MS
Category 1-CF Hours: 7.5
Contact: Johnny Thompson
Email: jthompson@lmssmail.com
Phone: (866) 395-5440, ext. 2

Intro to TCruise
November 13
www.landmarkspatialsolutions.com
East Mississippi Community College
Mayhew, MS
Category 1-CF Hours: 7.5
Contact: Johnny Thompson
Email: jthompson@lmssmail.com
Phone: (866) 395-5440, ext. 2

Master Logger Annual Update 2013
November 13
Florida Forest Service Office
Gainesville, FL
Category 1-CF Hours: 1.0
Category 2 Hours: 1.5
Contact: Phil Gornicki
Email: phil@forestfla.org
Phone: (850) 222-5646

Bridging the Gap
November 13
Community Center, Hwy 15
White Plains, GA
Category 2 Hours: 2.0
Contact: Brenda Moody
Email: bmoody@athenstech.edu
Phone: (706) 369-5876

Hidden Illegal Operations in Forestry
November 13
Community Center, Hwy 15
White Plains, GA
Category 1-CF Hours: 2.0
Contact: Brenda Moody
Email: bmoody@athenstech.edu
Phone: (706) 369-5876

NC Wood exports Conference
November 13–15
New Bern, NC
Category 1-CF Hours: 4.5
Contact: Kelley McCarter
Email: kelley.mccarter@ncsu.edu
Phone: (415) 634-4650, ext. 1

Basic Prism Sampling
November 14
www.warnell.uga.edu
Forestry & Natural Resources
Athens, GA
Category 1-CF Hours: 4.0
Contact: Krista Merry
Email: kmerry@warnell.uga.edu
Phone: (706) 542-4298

SAF Meetings

War Eagle SAF Chapter meeting
November 12
SFWS Building, Auburn, AL
Category 1-CF Hours: 2.0
Contact: Joe Robeson
Email: joe.robeson@mwv.com
Phone: (334) 703-8528

Blue Ridge Chapter Field Trip/Meeting
November 12
Willis, VA
Category 1-CF Hours: 1.0
Contact: Roger Timbrook
Email: roger.timbrook@mwv.com
Phone: (540) 969-2590

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turn points when constructing a digital surface model (DSM). This kind of elevation model, which includes tree tops and building roofs, is also called a highest hit surface. Modern lidar is capable of processing multiple returns from individual laser pulses. In vegetation, returns greater than one represent either intercanopy points or ground beneath the vegetation. Including these points is unnecessary and wasteful when making a DSM. Include them and the results will tend to look correct, but these unnecessary points can skew the results and will add to the cost of processing. All ArcGIS tools offer a way to filter returns. Use the first return, which will be the highest.

Additional Resources. ArcGIS 10.1 supports versions 1.0–1.3 of LAS, plus subversions of 1.4 that are 1.3 compliant. See the ASPRS LAS 1.4 Specification at asprs.org. The US Geological Survey's National Geospatial Program Lidar Base Specification 1.0 (the official published version of the v13 draft) is available at pubs.usgs.gov/tm/11b4/. For specific information on using lidar with ArcGIS, see ArcGIS 10.1 Help under the LAS format topic and visit the ArcGIS 3D Resource Center (resources.arcgis.com/en/communities/3d/).

Clayton Crawford is an Esri lidar and 3D analysis product lead. Raghav Vemula is an Esri lidar and 3D analysis product engineer.

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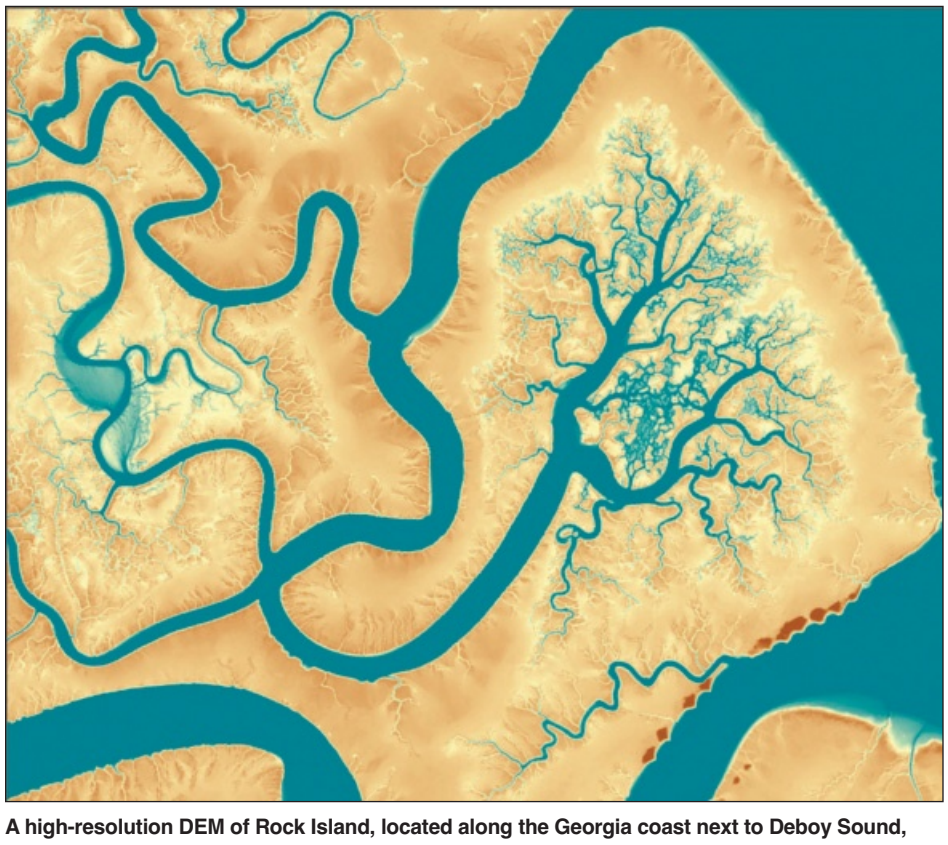


A high-resolution DEM of Rock Island, located along the Georgia coast next to Deboy Sound, created in ArcGIS from airborne lidar and collected as part of the 2010 Coastal Georgia Elevation Project. Source lidar made available by the NOAA Coastal Services Center.

In Memoriam

Little Hodge Harmon, 75, died August 13. Harmon graduated from Clemson University with a bachelor's degree in forestry and agriculture in 1961. He had a 39-year career with the South Carolina Forestry Commission and retired in 2000. During his career as a professional forester, he shared his passion for tree farming and operated a family tree farm and wildlife sanctuary. After retirement, he was a consultant to South Carolina landowners. He served the South Carolina Farm Bureau on the Commodities Board as well as the Forestry Advisory Committee for many years. He was elected as district commissioner for the Newberry Soil and Water Commission, where he served several terms, and he also served on the Central Midlands Council of Government from 2001 to 2013. Harmon was a charter member of the South Carolina Forestry Association, past officer of the Newberry County Forestry Association, and a member of the Clemson Forestry Alumni Association, from which he received the honor of Outstanding Forestry Alumni. He joined SAF in 1962 and was named Fellow in 2005.

Bobby Joe Larkey, 82, died August 31. Larkey graduated from North Carolina State University in 1955 with a degree in forestry. He worked for the USDA Forest Service in the following states, North Carolina, Arkansas, Kentucky, and Tennessee for 34 years. He joined SAF in 1955.

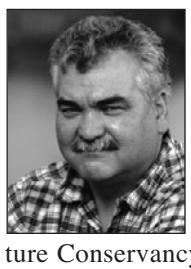
Peter H. Miller, CF, 54, died September 24. He earned a master's degree in business administration from Frostburg State University, a bachelor's degree in forestry from the SUNY College of Environmental Science and Forestry–Syracuse, NY. Miller was the administration supervisor for the NewPage Corporation Luke Mill Wood Department, a certified master logger, past president of the Maryland Forest Association, and past chair of the Maryland-Delaware Master Logger Steering Committee and the SFI Implementation Committee. In 1995, he was awarded the Outstanding Service to Forestry Award by both the Maryland-Delaware Division and the Allegheny Society of American Foresters. He joined SAF in 1982 and was named fellow in 2007.

Robert "Bob" C. Webster Jr., CF, died September 30. Webster attended the University of Maryland–College Park and graduated with a bachelor's degree in forest management from the State University of New York, College of Environmental Science and Forestry–Syracuse in 1975. He also acquired an associate's degree in forestry from Allegany Community College in 1973. His education was interrupted by his service in the military. He was a veteran of the United States Air Force, serving from 1967 to 1971. He rose to the rank of staff sergeant at Westover Air Force Base in Massachusetts, where he worked in support of the Eighth Air Force during the Vietnam Conflict. Webster began his career with the Maryland Forest Service in November 1975. His first position was as a project forester for Kent and Queen Anne's Counties on Maryland's Eastern Shore. In 1981, he was promoted to Department of Natural Resources headquarters in Annapolis, where he held the position of chief of administration for forests, parks, and wildlife for approximately six years. In 1988, Webster was asked to assume the duties of regional forester for western Maryland, the post he held for 25 years. He was responsible for supervising the forestry operations (state forests and private land management) in Frederick, Washington, Allegany, and Garrett Counties. Under his direction, foresters and forest rangers managed land for wildlife habitat, watershed protection, recreation, aesthetics, wood fiber production, and fire suppression. He was appointed by the governor to serve on the commission for the registry of professional foresters. He was a member of the Maryland Forests Association and one of his proudest accomplishments was receiving the Outstanding Service to Forestry Award in 2003 from the Allegheny Society of American Foresters. He joined SAF in 1975.

People In the News

Steve Koehn, state forester of Maryland and member of the SFI board of directors, received the award for Outstanding Forestry Regulation from the National Woodland Owners Association. Koehn received the award in recognition of the Maryland Forestry Protection Act of 2013, which committed the state to no net loss of forestland, offers new incentives to landowners to plant trees, and also codified the state's commitment to sustainable forestry through the certification of their state lands to the SFI and FSC standard. Koehn joined SAF in 1983.

Paul A. Trianosky has joined the Sustainable Forestry Initiative® (SFI) as its senior director of conservation partnerships. According to SFI, Trianosky brings nearly 30 years of diverse leadership experience in forest conservation, nonprofit management, and forest certification to the organization. In 2013, he was recognized as a "conservation hero" by The Nature Conservancy of West Virginia, and he has served as a gubernatorial appointee to the Tennessee Forestry Commission since 2004. He most recently worked at the American Forest Foundation (AFF), where he served as director of southern forest conservation. Prior to joining AFF, Trianosky spent 18 years in various positions with The Nature Conservancy. He was a co-founder and first chair of the Partnership for Southern Forestland Conservation, a partnership to leverage the work of dozens of public, private, and nonprofit organizations to achieve conservation of 20 million acres of working forest by 2020. He has also worked as a county forester with the Virginia Department of Forestry and as a natural community ecologist with the West Virginia Natural Heritage Program. Trianosky joined SAF in 1984.



CLASSIFIEDS

FROM HTTP://CAREERCENTER.EFORESTER.ORG

Job ID: 15224573
Position: Tree Farm Manager
Company: Olympic Resource Management
Industry: Forest Management
Job Function: Other
Location(s): Chehalis, Washington
Posted: October 10, 2013
Job Type: Full-time
Job Duration: Indefinite
Min Education: BA/BS/Undergraduate
Min Experience: 5–7 Years
Required Travel: 10–25%
Fax: (360) 697-1156

Job ID: 15217331
Position: Van Eck Scholar
Company: Purdue University
Industry: Regeneration
Job Function: Other
Job Type: Part-time
Job Duration: 1–2 Years
Location(s): West Lafayette, Indiana
Posted: October 10, 2013
Min Education: BA/BS/Undergraduate
Min Experience: None
Required Travel: 10–25%
Salary: $18,000–20,500/year
Contact: Mike Saunders
Email: msaunder@purdue.edu
Phone: 765-430-1440
To apply: http://www.htirc.org/

Job ID: 15205054
Position: Timber Production Forester
Location(s): Forks, Washington
Posted: October 9, 2013
Company: Rayonier
Job Function: Forester
To apply: http://ch.tbe.taleo.net/CH08/ats/careers/requisition.jsp?org=RAYONIER&cws=1&rid=690

Job ID: 15197013
Position: Harvest Forester
Company: Hancock Forest Management
Industry: Forest Management
Job Function: Forester
Location(s): Mansfield, Louisiana
Posted: October 8, 2013
Job Type: Full-time
Job Duration: Indefinite
Min Education: BA/BS/Undergraduate
Min Experience: 1–2 Years
Required Travel: 0–10%
Contact: S. Jean Squire
Email: Jobs@hnrg.com
Fax: 617-210-8509
To apply: www.johnhancock.com/careers

Job ID: 15196315
Position: Assistant Professor Ecological Economics and Sustainability
Company: Department of Forestry and Natural Resources, Purdue University
Location(s): West Lafayette, Indiana
Posted: October 8, 2013
Industry: Forestry/Natural Resources Academia
Job Function: Faculty in Forestry/Natural Resources
Job Type: Full-time
Application Process: Submit: 1) letter of application; 2) formal one-page statements of research and extension interests; 3) curriculum vitae; 4) three letters of references; and 5) one writing sample. Questions may be directed to the Search Committee Chair, Dr. W.L. Mills, via telephone (765-494-3575) or email (wmills@purdue.edu). Application packets should be emailed (preferred) to Marlene Mann (mmann@purdue.edu) or addressed to Ecological Economics and Sustainability Search Committee, Purdue University, Department of Forestry and Natural Resources, 715 West State Street, West Lafayette, Indiana 47907-2061. A background check will be required for employment in this position. Purdue University is an equal opportunity/equal access/affirmative action employer fully committed to achieving a diverse workforce.

Job ID: 15189074
Position: Staff Forester
Company: South Dakota Department of Agriculture
Industry: Forestry
Job Function: Urban Forester
Entry Level: Yes
Job Type: Full-time
Location(s): Pierre, South Dakota
Posted: October 7, 2013
Job Duration: Indefinite
Min Education: BA/BS/Undergraduate
Min Experience: 0–1 Year
Required Travel: 25–50%
Salary: $18.06/hour
Contact: South Dakota Bureau of Human Resources
Phone: (605) 773-3148
Fax: (605) 773-4344
To apply: https://scssdltmweb.agilera.net/ltm/CandidateSelfService/lm?_ln=JobSearchResults&_r=1&bto=JobPosting&dataarea=ltm&name=PostingDisplay&service=form&webappname=CandidateSelfService&HROrganization=1&JobRequisition=1696&JobPosting=1

Job ID: 15189032
Position: Procurement Forester
Company: Weyerhaeuser
Industry: Forestry
Job Function: Procurement Forester
Job Type: Full-time
Job Duration: Indefinite
Location(s): De Queen, Arkansas
Posted: October 7, 2013
Min Education: BA/BS/Undergraduate
Min Experience: 2–3 Years
Required Travel: 10–25%
Salary: $53,400–66,900/year

Job ID: 15189004
Position: Service Forester
Company: South Dakota Department of Agriculture
Industry: Forestry
Job Function: Urban Forester
Entry Level: Yes
Job Type: Full-time
Location(s): Rapid City, South Dakota
Posted: October 7, 2013
Job Duration: Indefinite
Min Education: BA/BS/Undergraduate
Min Experience: 0–1 Year
Required Travel: 25–50%
Salary: $14.76/hour
Contact: South Dakota Bureau of Human Resources
Phone: (605) 773-3148
Fax: (605) 773-4344
To apply: https://scssdltmweb.agilera.net/ltm/CandidateSelfService/lm?_ln=JobSearchResults&_r=0&bto=JobPosting&dataarea=ltm&name=PostingDisplay&service=form&webappname=CandidateSelfService&HROrganization=1&JobRequisition=2119&JobPosting=1

Job ID: 15132615
Position: Forest Engineer
Company: Lone Rock Timber Management
Location(s): Roseburg, Oregon
Posted: October 2, 2013
Job Type: Full-time
Job Duration: Indefinite
Min Education: BA/BS/Undergraduate
Required Travel: 0–10%
Contact: Andrea Kellom
Email: akellom@lrtco.com
Phone: (541) 673-0141, ext. 300

Job ID: 15132085
Position: Director
Company: Auburn University
Industry: Forestry/Natural Resources Academia
Location(s): Auburn, Alabama
Posted: October 2, 2013
Job Type: Full-time
Job Duration: Indefinite
Min Education: Master's Degree
Min Experience: 5–7 Years
Required Travel: 10–25%

Job ID: 15114115
Position: Log Yard Scaler
Company: Gutchess Lumber Co. Inc.
Industry: Forestry
Location(s): Canaan, New York
Posted: October 2, 2013
Job Type: Full-time
Job Duration: Indefinite
Required Travel: 0–10%
Salary - Type: Hourly Wage
Contact: Dave Dence
Email: drdence@gutchess.com
Phone: (802) 379-4272

Job ID: 15113616
Position: Watershed Educator
Company: Watershed Agricultural Council
Industry: Forestry
Job Type: Full-time
Location(s): Yorktown Heights, New York
Posted: September 30, 2013
Job Duration: Indefinite
Required Travel: 10–25%
Salary: $40,000–55,000/year
Contact: Amy Hawk
Email: amyhawk@nycwatershed.org
Phone: (607) 865-7790, ext. 102
Fax: (607) 865-4932

Job ID: 15110540
Position: Procurement Forester
Company: WST Products, LLC
Industry: Forestry
Job Function: Forester
Entry Level: Yes
Location(s): Keysville, Virginia
Posted: September 29, 2013
Job Type: Full-time
Min Education: Associate's Degree
Min Experience: 0–1 Year
Salary: $31,200/year
Contact: Jeff Haertel
Email: vatoyota@aol.com
Phone: (434) 390-6482
Fax: (434) 736-2200

Job ID: 14303211
Position: Inventory Analyst
Company: Rayonier
Location(s): Fernandina Beach, Florida
Posted: July 31, 2013
Job Function: Forest Inventory
Job Type: Full-time
To apply: http://ch.tbe.taleo.net/CH08/ats/careers/requisition.jsp?org=RAYONIER&cws=1&rid=693

Job ID: 13601275
Position: Forest System Analyst
Location(s): Fernandina Beach, Florida
Posted: May 29, 2013
Company: Rayonier
To apply: http://ch.tbe.taleo.net/CH08/ats/careers/requisition.jsp?org=RAYONIER&cws=1&rid=631

To see the latest classifieds visit the Career Center on the SAF website at http://careercenter.eforester.org/.

California Working Forest Plans to Cover up to 15,000 Acres

California's Forest Practices Act and rules are widely seen as the most restrictive—and expensive to comply with—in the nation. For many owners of private timberlands, paying thousands or tens of thousands of dollars to develop a Timber Harvest Plan (THP) is difficult or impossible. To help reduce planning costs for individuals and families, the state in 1989 allowed private landowners with fewer than 2,500 acres to use Non-Industrial Timber Management Plans (NTMPs) instead of THPs. With a NTMP, landowners prepare a single long-term management plan, under which they must use only uneven-aged management and provide for long-term sustained yield. They must notify the state of any timber harvests, but do not need to file additional harvest plan documents. To date, 763 NTMPs have been approved by the California Department of Forestry and Fire Protection (Cal Fire), covering a total of about 315,000 acres.

On September 9, the California legislature approved a bill authorizing Working Forest Management Plans (WFMP), which are similar to NTMPs, but cover ownerships up to 15,000 acres. The bill passed with only one no vote—the Senate approved the bill 35 to 1, the Assembly 76 to 0. On October 8, Gov. Jerry Brown signed the bill into law.

In comparison to NTMPs, WFMPs allow more time for public review of plans before they are approved and require landowners to conduct more-rigorous inventory and reporting to verify uneven-aged management and sustained yield, interagency reviews to ensure compliance every five years, and more-rigorous plan amendment and timber operations notice protocols.

WFMPs also include a "no net loss" provision for late-successional stands of 10 acres or larger.

Once approved, both NTMPs and WFMPs are valid indefinitely and may be transferred to a new owner upon the sale of the property. A NTMP or WFMP holder may terminate the plan at any time; likewise, the state may revoke a plan for noncompliance.

"Hopefully, the Working Forest Management Plans will provide some certainty and stability for landowners, not to mention an incentive to keep their lands as working forests instead of looking at alternative uses of their land," said Bill Keye, government affairs specialist for the California Licensed Foresters Association, which was a strong proponent of WFMPs. The bill also garnered support from the Forest Landowners of California, among other groups.

Not all landowners will want or be able to apply for a WFMP.

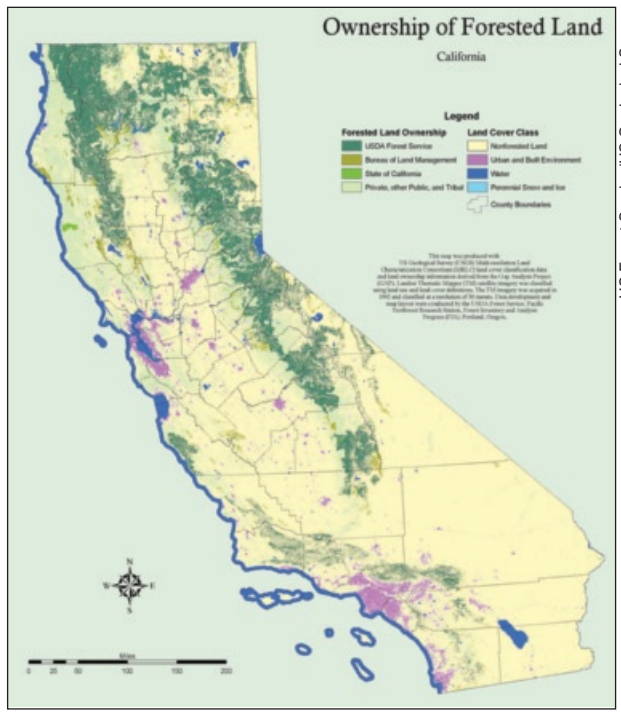
"This is a large undertaking for landowners," said Keye, an SAF member. "They'll have to do a very comprehensive and costly plan at the beginning of the process, one that's certainly going to be more expensive than a THP. However, once they have gone through the process and gotten approval, they'll go through a much-simplified ministerial process when they want to harvest their timber. They'll also have a valuable document that can be passed along if they sell the land, as long as the new owner agrees to abide by the plan."

Keye said that support for the legislation from moderate environmental groups was crucial.

"We had a lot of interaction with the environmental community about what their concerns were, and that's ultimately what led to the passage of the law," he said. "We had opposition from some environmental groups, but we had significant support from some groups such as The Nature Conservancy, Pacific Forest Trust, the Trust For Public Land, and others. Those groups stepped up and supported the bill, and that made a huge difference."

On September 20, Pablo Garza, The Nature Conservancy's associate director, state policy and external affairs, sent a letter of support for the bill to Assembly member Wesley Chesbro, author of the bill.

"This proposal will make sustainable forest management more economically feasible while maintaining environmental protection standards to keep our valuable forest ecosystems intact," wrote Garza. "The WFMP requires landowners to practice 'uneven-aged management' (instead of clearcutting), develop an erosion control plan, and requires 'no net loss' of old-growth forest stands."



US Forest Service/US Geological Survey

About 9 million (light green) of the 33 million acres of forest in California are owned by individuals and families.

The Center for Biological Diversity, one of several groups that submitted testimony in opposition to the bill, expressed concern that the advent of WFMPs "dramatically increases both the environmental impacts associated with logging operations and the problems related to the lack of oversight associated with a lifetime permit."

Keye said the WFMPs would be a viable option for many landowners.

"We currently have about 315,000 acres under NTMPs," he said. "With WFMPs, we could easily double or triple that in the coming 10 or 20 years. FS

The Forestry Source

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