The Forestry Source

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IN THIS ISSUE

DEPARTMENTS

Assisted Migration: Growing Forests Adapted to the Future

By Andrea Watts

Of the management strategies available to create resilient, productive forests in a changing climate, assisted migration is one strategy that is prompting much discussion in the forestry community. Assisted migration is viewed as a proactive strategy because many tree species do not have the ability to adapt or migrate naturally at the same rate as the climate is expected to change. This mismatch between trees and their environment could result in forests that are less productive and unhealthy.

The concept of assisted migration is straightforward: the deliberate movement of species or populations by humans from one location to another. Yet the context for discussing this strategy must be framed prior to discussion, otherwise you and colleagues may find yourselves talking at cross-purposes:

▶Is assisted migration proposed or practiced on commercial forestland or in an ecological reserve?

▶Is a population being moved 300 feet further uphill, or is a species being moved three states away?

▶Is genetics used to determine which seed source is appropriate for an area 50 years from now? Or should we consider that species also have a natural capacity to adapt to change and also have responded to similar climate change in the past?

There are three recognized forms of assisted migration:

AMAT, www.for.gov.bc.ca/hre/forgen/interior/AMAT.htm

Tagged seedlings for study in the Assisted Migration Adaption Trial, which includes 48 test sites in western Canada and the United States.

▶**Assisted population migration** calls for seed sources (also called "populations") being moved within a species' current range.

▶**Assisted range expansion** has seed sources being moved just outside their current range where current or the near-future climate is ideal for the species.

▶**Assisted species migration** (also known as "exotic translocation") is when a species is planted well outside its current range. This is the scenario that most people think of when assisted migration is mentioned.

"Historically, naturally, species moved. They moved to follow naturally changing climates. In paleoecology, we call that "migration." So it's a very common natural process in response to changing climate, whether it's anthropogenic climate change or not.... In a sense, what we might be thinking to do is mimicking that process, and that's the valid part of as-

*(See **"Migration"** page 3)*

CAMCORE Demonstrates the Role of Industry in Conservation of At-Risk Forest Species

By Joseph M. Smith

"International extension agents"—that's how CAMCORE director Bill Dvorak sometimes refers to the people who work for CAMCORE (the Central America and Mexico Coniferous Resources Cooperative), a nonprofit international tree-breeding organization headquartered at North Carolina State University (NCSU).

Although formally launched in 1980, Dvorak said the organization's origins date back to the 1970s.

"In the late 1970s there were some foresters from the United States—professor Bruce Zobel here at NCSU, and [Carl Gallegos] from International Paper company, and several other folks who went down to Guatemala and saw that many of the pine forests were being destroyed by woodcutters," he said. "Forty percent of all the pine species in the world occur in Mexico and Central America, so it's kind of a center of genetic diversity for the pines and, since Zobel had a lot of experience working with industrial cooperatives, and industrial, private sector members, he said, 'Why can't we form a industrial cooperative to conserve the genetic material of pines from Central America and Mexico in other, more protected, places?'"

This, generally speaking, is what

CAMCORE, NC State University

CAMCORE planting of a pine hybrid trial in the highlands of Kenya. The trial was established the Kenyan Forestry Research Institute near Nairobi. The tree is a *P. patula x P. tecunumanii* hybrid that is more resistant to *Fusarium* diseases than pure *P. patula*.

CAMCORE does today. CAMCORE personnel travel to a threatened forest stand to collect the seed of a particular species. Some of the seeds may be put into long-term storage, while others are planted on members' land in more protected areas in genetic field trials (or progeny tests) and conservation areas (referred to as "*ex situ* conservation banks") in countries around the world with similar climates. Then the CAMCORE staff based at NCSU analyzes the data from the trials and produces annual summaries to help members decide what to grow in what location.

CAMCORE began with only five members—Smurfit Kappa Cartón de Colombia, Aracruz Florestal (Brazil), International Paper Company, Weyerhaeuser Company, and the National Seed Bank in Guatemala. Today, the organization has grown to include 42 active, associate, and honorary members on four continents.

Not surprisingly, as CAMCORE's membership has grown, so has the scope of its work.

"We began with pines, but in the 1990s we went into some tropical broadleaf species, such as *Gmelina,* which occurs in Southeast Asia and places like India,

*(See **"CAMCORE"** page 4)*

The Forestry Source

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EDITOR'S NOTEBOOK:

What's in Membership in SAF?

By Steve Wilent

SAF President Dave Walters recently sent me an essay from the *Journal of Forestry* and asked me what I thought about it. It was from the November 1946 edition. As was the norm back then, that edition has no photo on the cover, just the journal's name, the volume (44), edition number (11), and this text: "A Professional Journal Devoted to all Branches of Forestry." More than 67 years later, that motto still holds true for the *Journal* and all of the other SAF publications. So does the essay, "What's in a Professional Society?" It was an unsigned editorial in that edition, perhaps written by the editor-in-chief at the time, Hardy L. Shirley, or managing editor Henry Clepper.

Reprinting "What's in a Professional Society?" here seems a fitting way to start the new year, as this is a question many SAF members have been and will be asking themselves. Although the style and cadence of the language in the editorial may be old-fashioned (today we certainly would include "she" in addition to "he"), the meaning of the words is every bit as relevant today it was in 1946. Here is the essay in its entirety. Happy New Year, fellow SAF members!

What's in a Professional Society?

All foresters ask themselves once and some many times what good comes to them personally from belonging to the Society of American Foresters. This is a fair question. Society members, numbering over four thousand, evidently believe that the returns from membership justify their expenditures of time and money on the Society's behalf. Some four thousand other foresters, who are eligible but do not belong, evidently do not. Before attempting to answer the first question we might ask what do foresters miss who do not participate in the Society of American Foresters.

Man, like a tree, achieves his greatest stature and usefulness if he lives and works in close association with his fellows. To be helpful this association must involve intellectual contact and exchange. It is most useful if it includes also frequent personal meetings. Professional societies provide for both needs.

The forester who remains aloof from his professional society is likely also to neglect his professional reading. He may ultimately become too self-centered to appraise accurately his own work or that of his fellows. He takes on many attributes of a tree that grows in isolation. He may become a rugged picturesque individual giving the outward impression of sturdiness and great strength of character. For a time he may so dominate forestry in his locality that young men fail to gain a foothold, or if they do, are badly suppressed. He might take pride in his ability to flourish where others fail, and be somewhat contemptuous of those who have been sheltered by others in their youth and whose rough eccentricities have been removed through contact with their fellows. But finally such a forester must ask himself, "Am I like a true pioneer tree that courageously maintains an outpost while preparing the site for more intensive use by those who follow, or am I behaving like a wolf tree that obstructs the more intensive development of forestry in my neighborhood?"

Membership in the Society of American Foresters brings monthly a copy of the Journal of Forestry *through which each member can keep abreast of advances in the several phases of forestry. It would seem that this alone would be sufficient reason for joining the Society. Yet some foresters evidently find reading the Journal a boresome task. Perhaps to them learning from the written page is difficult. They therefore should welcome the opportunity the Society offers to meet with fellow foresters in regional sections, in subject-matter divisions, and in national meetings. It is these meetings that give true heart and soul to a society. Here learning of new advances becomes no longer an unpleasant chore, but an exciting privilege.*

Dogmatic opinions must be supported or disavowed. The wood technologist and silviculturist, range specialist and timber manager, industrial forester and public officer, learn how much they have in common, how little in conflict.

Men may read in the Journal of Forestry *and elsewhere of how fire fighters can be parachuted from planes to fires, but it is difficult to realize the effectiveness of this method if they have not seen the men and supplies come floating down from the sky to land within a few feet of a designated target and minutes later the airborne fire fighters working with full equipment and unimpaired energy on a fire line. Those who have read much about how vegetation can control floods might well be skeptical of the claims reported. Those of us who saw the terrific damage done by mud- and boulder-flows from the Davis Creek watershed and how these and other damaging floods could be stopped by removal of livestock and trenching in the upper reaches of the watershed can no longer question the value of native vegetation in protecting both mountain and valley lands.*

Those who heard the stimulating papers delivered in the Division of Private Forestry can no longer remain skeptical of the ability and desire of many private owners to manage timberlands for permanent profit. Private foresters who have looked askance at public cooperation learned from pointed questions and forthright answers that the U.S. Forest Service and a great timber company could come together on a give and take basis to work out a long-term cooperative cutting plan that can mean permanence at a high level of activity to mills and local communities. The tyro game managers, through papers and that gorgeous film, "Realm of the Wild," got a vivid and unforgettable impression of what habitat and herd management mean to game health and hunter enjoyment.

Is it really possible to make from white fir a shingle superior to the western redcedar shingle? Can alcohol be made as cheaply from sawdust as from molasses? What is the significance of relogging in the Northwest? How fast is private forestry developing in the South? These and other questions of broad import were covered by specialists who can quote data, cite examples, and answer questions. How forest research leads to new fields of human service; how the rapid and gratifying expansion of private forestry brings challenging new problems to silviculturists, forest economists, and wood technologists; and how all the many facets of our expanding profession place new and exacting requirements on our forestry schools — these were placed squarely before a participant in the national meeting.

The alert listener can scarcely avoid becoming acquainted with progress in the several specialties of our field with which few can hope to keep abreast in everyday reading.

Here also we have an opportunity to learn first hand of the painstaking work of the Society, Council, and officers. The multitude of tasks performed by our efficient executive secretary and his busy staff of loyal coworkers are clearly in evidence. Job opportunities are uncovered, individuals are recommended for positions, openings for foresters are made known, fields for future forest activity are discussed — these pay dollar and cents dividends to individual foresters and their employers.

More important than the inspiring papers and the delightful demonstrations that may be presented at an annual meeting of the Society of American Foresters is the opportunity for person-to-person renewal of friendship, exchange of experience, and discussion of professional affairs. Here the youngest forestry school graduate has an opportunity to meet and become acquainted with the officers of our Society and the leading members of our profession. No more stimulating experience can be afforded the forester beginning his career than to talk personally with the men who have made our profession great. He may imagine them to be proud, austere men. He finds them warmhearted, generous, clearheaded individuals whose positions of prominence daily bring to them evidence of how much we all owe to our profession as a whole and how modest are the contributions of the individual, however important a position he may occupy.

The pleasant informal discussions in the hotel lobby at lunch hours, and other leisure moments bring men of varied experience and viewpoints together. In this easy-going professional interchange hastiness tends to give way to tempered judgment, casualness to sharpened perception, faulty reasoning to logical analysis, provincialism to vistas of national and world-wide scope. Dogmatic opinions must be supported or disavowed. The wood technologist and silviculturist, range specialist and timber manager, industrial forester and public officer, learn how much they have in common, how little in conflict. Solidarity within the profession is thereby promoted, good will and mutual trust created. Perplexing problems of public relations, organization, or scientific investigation can be discussed with the oldest heads in the game, enabling each one to return home with new inspiration on how to improve his daily job.

Great as are all these privileges of membership the most valuable of all is the opportunity to participate in the activities of our Society, thereby helping to shape the future of our profession. If there is any one thing that lifts man above other organisms on this globe it is his power to plan and shape his own destiny. This power is granted both to individuals and to organized societies. It is this that gives spiritual stature to man. It is this that assures him that the contributions he makes will benefit mankind for a long time to come. Those whose privilege and duty it is to guide the destiny of American forestry share indeed a great mental stimulus and a gratifying spiritual uplift. Each member is invited and urged likewise to share in this great adventure to the limit of his capacity, energy, and time.

The Roots of Forestry

This essay and many other articles and papers from SAF's periodical journals—the *Journal of Forestry, Forest Science*, and the *Northern, Southern*, and *Western Journals of Applied Forestry*—from their first issues through 1999, are available from The Roots of Forestry, www.eforester.org/publications/roots/index.cfm. These archives are free to SAF members and to others for a small fee. FS

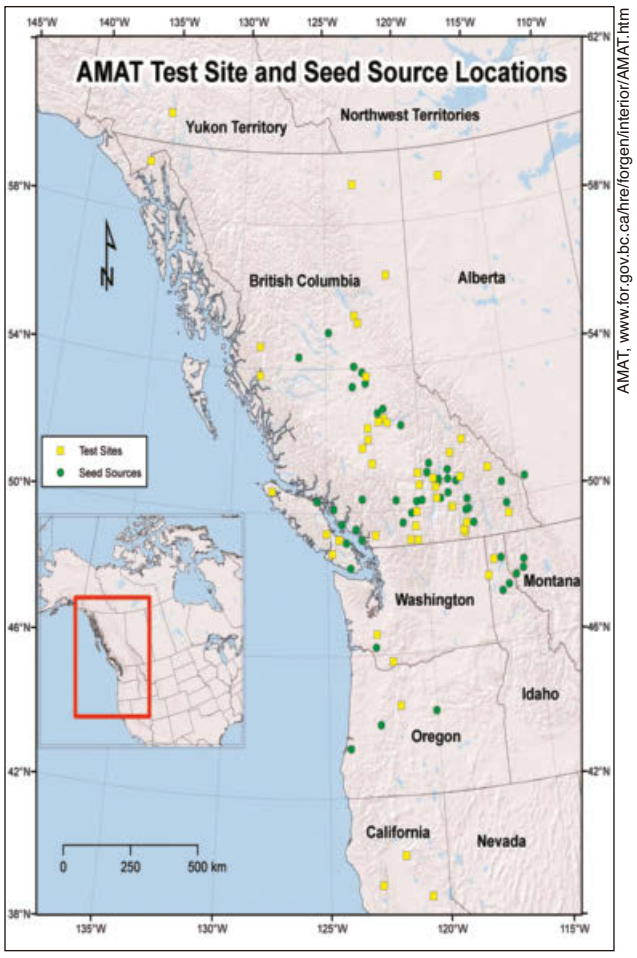
Migration

(continued from page 1)

sisted migration," said Constance Millar, a research paleoecologist with the US Forest Service's Pacific Southwest Research Station.

If species naturally move, why should foresters be concerned with implementing a form of assisted migration? Greg O'Neill, a research scientist with the British Columbia's Ministry of Forests, Lands, and Natural Resource Operations and a registered professional forester with the Association of British Columbia Forest Professionals, sees assisted migration as especially relevant where rotations span nearly a century, such as in many areas of Canada. In these situations, the issue of assisted migration is particularly important: 80 years after a tree is planted, the climate might be 4 degrees C warmer. In coastal locations, where rotation ages typically are 40 years, the climate is expected to change only about 2 degrees C in 40 years, O'Neill said.

In some shape or form, assisted migration has always been practiced in forestry.



AMAT, www.for.gov.bc.ca/hre/forgen/interior/AMAT.htm

Locations of assisted-migration trials established under the Assisted Migration Adaption Trial program, which is being conducted by the British Columbia Ministry of Forests, Lands, and Natural Resource Operations, along with numerous US and Canadian government and private cooperators.

"The decisionmaking in relation to what and where to plant, either at or within the species level, has been a very important topic in forestry for more than half a century," said Glenn Howe, an associate professor at Oregon State University's College of Forestry and an executive committee member on the Taskforce on Adapting Forests to Climate Change. "So what's different now is that we are in a situation where we need to take these accepted forestry practices and modify them in ways to better plan for the future."

In a 1992 paper in *Forest Ecology & Management*, "Genetic Strategies for Reforestation in the Face of Global Climate Change," authors Thomas Ledig and J.H. Kitzmiller show that, in spite of the uncertainty regarding global warming at that time, scientists were considering the implications of what a changing climate could have upon the nation's forests. "They proposed that tree seed for reforestation be selected from slightly lower elevations or areas further south, and that was in 1991. And here we are 22 years later, and we're still struggling to implement their proposal," said O'Neill.

Questions Remain

One of the reasons for this struggle is that research is still needed to fully understand how trees adapt to changes in their environment. We still do not fully understand the genetic adaptations of species or how they will interact in future climate, whether or not they are moved, said Millar. This is where research consortiums such as the ministry's Assisted Migration Adaption Trial (AMAT, www.for.gov.bc.ca/hre/forgen/interior/AMAT.htm) and the Pine Integrated Network: Education, Mitigation, and Adaption (PINEMAP, pinemap.org) bring together researchers and forestland owners to collaborate on answering these questions.

In the AMAT, the ministry is studying 15 Pacific Northwest tree species under the assisted range expansion and assisted-species-migration scenarios. Researchers in this long-term trial have planted 48 seed sources from British Columbia and the Pacific Northwest at 48 test sites scattered from northern California and the southern Yukon. Tree species include Douglas-fir, western redcedar, and interior spruces. Planting began in 2009 and was completed in 2012. Each site will be measured every five years; this year, data was collected on the first plantings.

O'Neil proposed the AMAT in 2006 when he realized that previous provenance trials couldn't fully answer the question of how trees will grow in future climates.

"We didn't push them into climates where they were maladapted, where they were challenged," he said. "Until you really stress the trees in climates to which they are maladapted, you don't get a very good sense of what's an appropriate migration distance or what the impact of climate change will be on these species."

The ministry strongly supports this project, because the BC's forests are already experiencing disturbances, such as wildfires, pests, and disease outbreaks, that appear to be associated with climate change, O'Neill said, adding that they have had excellent collaboration throughout this project with the US Forest Service, several timber companies (including Tembec, West Fraser Timber Co., Weyerhaeuser, and others), and the state of Alaska's Division of Forestry.

Creating resiliency within the 20 million acres of privately owned loblolly pine forests stretching from Texas to Virginia and into Oklahoma and Arkansas is the focus of the five-year PINEMAP project, which is funded by the USDA National Institute of Food and Agriculture. Among its collaborators are university, government, and corporate–governmental research cooperatives, including the University of Florida Cooperative Forest Genetics Research Program, the North Carolina State University Cooperative Tree Improvement Program, the Western Gulf Forest Tree Improvement Program, Weyerhaeuser, Rayonier, and the US Forest Service.

"Our project is the forestry version of commodity agriculture; we are creating research to enable southern pine growers to successfully continue growing pine under changing climate conditions," said Tim Martin, a professor at the University of Florida and the PINEMAP project director. (See "Southern Pine Research Project Aims at Increasing Fertilizer Efficiency, Forest Resilience, and Carbon Sequestration," April 2013 edition of *The Forestry Source*.)

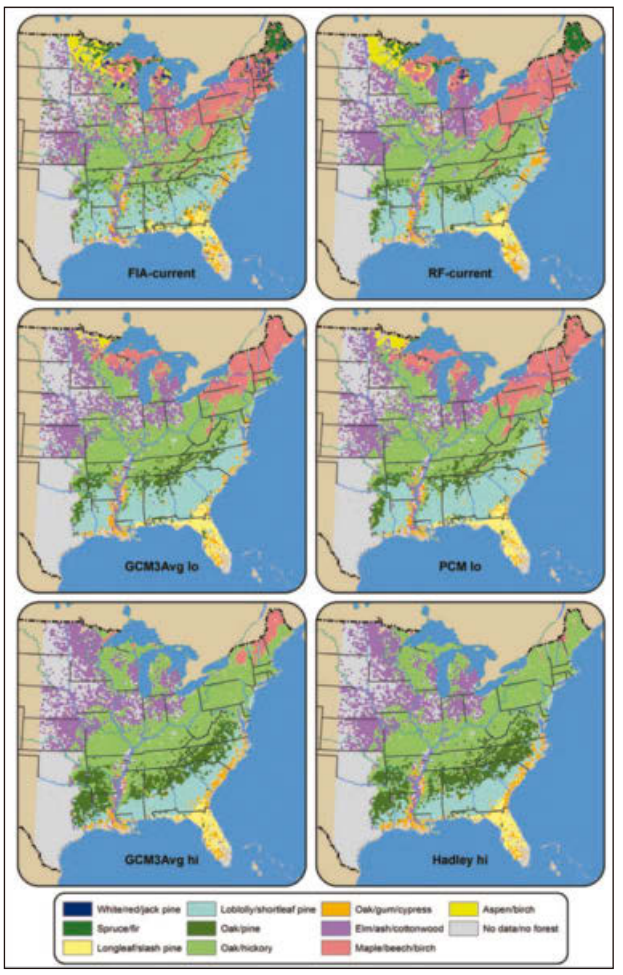
For the migration portion of the project, researchers are analyzing the provenance planting trial data from 55 five- to 10-acre sites through the lens of climate change. While planting trials have some indirect selection for climate, it's pretty subtle, Martin said: "It's really a relative new thing [to consider climate change] when considering where to plant."

Martin recognizes that there are some limitations to using the existing progeny trials, because the trees were planted under what would be considered assisted population migration scenarios, not assisted range expansion. The next step would be to plant outside their range, an option under consideration—one that will require additional funding, he said.

Until you really stress the trees in climates to which they are maladapted, you don't get a very good sense of what's an appropriate migration distance.

Some conservation biologists warn of risks associated with the assisted species migration. However, according to O'Neill, the anticipated movement of seed in Canada is almost imperceptible from what is currently being practiced. Currently, the ministry is permitted by provincial seed use policy to move the seed of most species up 300–400 meters in elevation, and in the future they might want to move it up 500–600 meters in elevation.

In a plantation setting, Millar sees little risk in implementing the assisted-migration scenarios, since there are more control options, and the stands have a short rotation period. It is the long-term risks in forests that are being managed for ecosystem services, such as the US's National Forests, that concern her, because the consequences of the assisted migration scenarios, such as genetic contamination from introduced populations into the native populations, have more opportunity to unfold, and these forests are not a controlled environment.



Maps of current suitable habitat for major forest types and potential future suitable habitat based on four climate models, showing forest types moving northward with climate warming by 2100. From "Effects of Climatic Variability and Change on Forest Ecosystems: A Comprehensive Science Synthesis for the US Forest Sector," US Forest Service, Pacific Northwest Research Station, General Technical Report PNW-GTR-870, December 2012.

Managing Migration

How is an assisted migration scenario implemented?

"Assisted migration is intimately tied with reforestation programs, and that's the primary mechanism by which you practice assisted migration — through ongoing reforestation programs," said Howe.

One of PINEMAP's and AMAT's deliverables are seed deployment tools or an updating of the seed transfer guidelines, so the newly planted stands are already adapted to the anticipated climate of the area.

"[Timber companies] are interested in anything that helps them use their genetics in a smart way," Martin said. O'Neil said he receives the same request: "Most foresters I speak with are saying, 'Yes, we need assisted migration. Let's get on with it. Just tell us [which seed lots] to plant."

With her background in genetics, Millar appreciates the importance of matching populations to climate, as Howe, O'Neil, and other geneticists are striving to do. However, because there are still uncertainties in the future climate models, and it is still unknown how species will react to a changing climate at ecological scales, she recommends planting a diversity of seed sources, such as by including sources from populations found at slightly higher or lower elevations than the area being planted.

"What I find challenging is that we don't know nearly as much as we would like to know, even though we have been studying [assisted migration] for a while," Howe said. "We would like to know more about the relationship between trees and the climate they inhabit. We know quite a bit for a very small number of species, but there's a lot of other species out there that we don't know as much about, and things are different from species to species. Some of those activities or some of the things you might think of being assisted migration or practicing it are also great learning opportunities." FS

CAMCORE

(continued from page 1)

Myanmar, and Thailand, so we expanded in that way," said Dvorak.

That expansion, and the experience that came with it, is what turned CAMCORE into a team of "international extension agents."

"We can go now to a location just about anyplace in the tropics or the subtropics and tell the people what they should be planting based on our experience, down to the level of where they should get the seed and from what populations," Dovrak said.

Yet advice about what to plant is just the beginning. In true extension agent form, CAMCORE puts a lot of emphasis on training, too.

"We are all university employees, and part of [what] we do is train folks," Dvorak said. "Recently, the big membership increase has come from southern and Eastern Africa, which is really exciting, and we are holding the next three improvement short courses in late February 2014 in South Africa, so that training component is really important."

So, too, is applying the knowledge CAMCORE has gained from its efforts around the world to conserve the genetic material of at-risk species here in the United States.

"In 2003, we were approached by the

CAMCORE, NC State University

Andy Whittier of CAMCORE/North Carolina State University climbs a Carolina hemlock for seed cone collection at Looking Glass Mountain on the Pisgah National Forest in North Carolina.

US Forest Service to see if we would help them with some of the local, domestic species in the southern United States, and so we started with hemlock," Dvorak said. "It made CAMCORE an even stronger program because it involved work in the United States."

Since then, CAMCORE's influence has continued to grow. It began working in Indonesia in 2009, Australia in 2010, and last year, the organization got its first member from China. Now the organization works with 50 different forest species and has sampled 11,000 trees in 500 locations. It has more than 2,500 hectares of genetic trials and conservation areas and the largest database on tropical and subtropical pines and non-Australian eucalypts in the world.

For Dvorak, CAMCORE's contributions to forestry at the domestic and international levels in regard to tree breeding, species conservation, and environmental stewardship are significant for several reasons, not the least of which is that they were driven by the private sector.

"Generally the forest industry is looked at as part of the problem, in terms of loss of genetic resources, and we've switched that around, saying they're part of the solution," he said.

Playing a Vital Role in Hemlock Conservation

As already mentioned, CAMCORE's contributions to forestry in the United States began in 2003, when the Forest Service sought the organization's help with its efforts to conserve Carolina and eastern hemlock. (For more on this, see the October 2003 *Source* article, "CAMCORE Researchers Send Carolina Hemlock Overseas for Protection," now on the *Source* Extras page:www.safnet.org/members/archive/source_extras.cfm.)

According to Robert Jetton, research assistant professor with CAMCORE and the Department of Forestry and Environmental Resources at NCSU, initially the idea was to take the model that had been used for tropical pines, apply it to hemlock, and work out the protocols.

So, CAMCORE began collecting seed from Carolina hemlock populations in the South. Then, after Jetton came aboard in 2005, the organization expanded its operations to include eastern hemlock, which has a larger range.

"Because we are headquartered in Raleigh, the first seed collections were in the southern portion of [eastern hemlock's] range. In 2009, we started another phase, doing seed collections in the northern part of its range: the Mid-Atlantic, New England, the Midwest—Michigan, Wisconsin, and those areas," he said. "We are still collecting seed across the range for both species, but most of our effort the last two years has been in the northern portion of the range."

The idea behind gene conservation is identifying the areas with the highest levels of genetic diversity and then intensively sampling those areas, Jetton said.

"We want to do as good a job as we can representing the diversity that's out there," he said. "We are never going to get it all, but we want to try to understand that diversity so we can design our seed collection strategy so that we get as much of it as possible."

To locate those areas of high diversity thoughout eastern hemlock's range, Jetton and his colleagues conducted a range-wide genetic variation study for eastern hemlock in 1,180 trees across 60 populations. They documented their work in "Widespread Inbreeding and Unexpected Geographic Patterns of Genetic Variation in Eastern Hemlock (*Tsuga canadensis*), an Imperiled North American Conifer." (For a link to this study, visit the *Source* Extras page: www.safnet.org/members/archive/source_extras.cfm.)

"What we found was that there is a pocket of very high diversity in southern New England, New York, and Pennsylvania," Jetton said. "Targeting areas like that maximize our chances of getting that diversity. We look at where all those little pockets are and try to hit them."

In addition to zeroing in on areas of high genetic diversity, CAMCORE also looks for populations that might possess unique genes.

"If you look at a range map for eastern hemlock, you will see a lot of little island populations. For example, there are a bunch of them in Indiana," said Jetton. "These tend to be very small populations and very isolated, so they tend to have a low genetic diversity overall compared to everything else, but they have those unique genes that make them important for conservation. They have genes that

CAMCORE, NC State University

Robert Jetton of CAMCORE/NC State University harvests table mountain pine seed cones at Hanging Rock State Park in North Carolina.

don't occur elsewhere in the population."

Still other seed collection considerations include capturing a species's range of adaptability in regard to climate, soil, elevation, and the size of a population.

"Generally, what we are looking for is for a population to be large enough where we can go in and collect seed from 10 mother trees," Jetton said. "We try to keep a distance of about 100 meters between each of those trees, and that somewhat controls for the movement of seed so its mother tree is unlikely to have been the same tree as the next tree we sample from."

When it comes to what constitutes a good mother tree, Jetton looks for prolific cone producers.

"Any tree that has a nice cone crop on it is suitable for us. The natural tendency is to pick the biggest and best trees, but it doesn't have to be a big beautiful tree or old-growth hemlock. It could be a smaller tree as well," he said. "We try to get all the different phenotypes that are out there and for us, if it has seed, and we are certain it is a naturally occurring tree, we are going to collect from it."

Currently, CAMCORE has plantings of Carolina and eastern hemlock on one of its research stations in the mountains of North Carolina (a facility jointly owned by the North Carolina Department of Agriculture and NCSU). There are also plantings in South America funded by the Forest Service.

Generally, the forest industry is looked at as part of the problem, in terms of loss of genetic resources. We've switched that around, saying they're part of the solution."

"As an industry cooperative, we approached some of our members—Bioforest-Araucoa, a Chilean company, and Rigesa, a Brazilian company that is a subsidiary of MeadWestvaco—in areas that have climates suitable for hemlock, and these companies already have nurseries for producing seedlings, and they have land for planting trees, and they just have donated their facilities and time and some land to help us," Jetton said. "They are not getting any commercial benefit out of this. They are giving back to CAMCORE and helping us conserve these ecologically important species."

In addition to collecting seed, germinating, and planting them, CAMCORE also puts seeds into long-term storage at the USDA's National Germplasm Repository in Fort Collins, Colorado. It also stores seed in facilities maintained by the Forest Service in Georgia and Mississippi and at a facility on the NCSU campus.

"The majority of the stuff that we have [on campus] is, eventually, we hope, going to be germinated and grown into seedlings for planting, or we will use them for other research purposes," said Jetton. "Definitely, seed banking is an important component of what we do, even though we know that, long-term, that isn't going to be the best alternative for conservation because the seeds aren't going to last forever, even frozen."

Of course, neither Jetton nor his CAMCORE or Forest Service colleagues are interested in finding out how long those seeds in long-term storage will last. What they are interested in is finding a way to make management of the HWA effective enough so that restoration efforts can begin.

"We are just beginning to talk about restoration, and I actually just wrote a proposal with Bud Mayfield, who is with the Forest Service's Southern Research Station in Asheville, to look at the main strategies for dealing with hemlock woolly adelgid (HWA) a in a large-scale forest setting and how can we integrate the biological control efforts, insecticides, and even some silvicultural management to allow the planting of hemlock," he said. "We need management tools that allow us to keep HWA populations low enough that they do not cause the damage to the trees, because HWA is here to stay. That is where I think the research should be focusing right now: how do hemlock and the adelgid coexist?"

Atlantic White Cedar and Table Mountain Pine Conservation

Since beginning their hemlock gene conservation work, the collaborative relationship between CAMCORE and the Forest Service has grown to include conservation of table mountain pine and Atlantic white cedar—two of 10 most at-risk tree species in the South. (For more how at-risk tree species are identified, see "Forest

CAMCORE continues on page 6

FOREST PRODUCTS MARKETPLACE:

What Biomass Sustainability Verification in the UK Means for US Suppliers

By Suz-Anne Kinney

A new biomass sustainability verification policy in the United Kingdom that is scheduled to go into effect in second quarter of 2014 requires electricity generators in that country to offer proof that the biomass they process originates in sustainably managed forests. The policy, announced by the UK's Department of Energy and Climate Change (DECC), sets out the government's recommendations for the biomass sustainability criteria that must be met by electricity utilities in order to receive renewables obligation certificates (the UK subsidy for renewable energy). The policy states that "biomass electricity will produce more than 70 percent greenhouse gas savings compared to fossil fuel alternatives." The EU is working on its own sustainability requirements, which are expected to be at least as strict as the UK's.

Currently, an estimated 6 million tons of wood pellets per year are shipped to the UK and EU from US Southern forests. This amount is expected to increase to 15 to 20 million tons by 2020.

Why should US suppliers take note of a UK law? One reason can be found in the response a representative for a UK utility gave at a recent meeting of the US Industrial Wood Pellet Association: "We are going to see a great deal of data being required of suppliers. We have canceled contracts because adequate data was not available."

US suppliers can and should play a role in helping their buyers demonstrate compliance with this policy by offering proper documentation of the forest source of the feedstock and the path the material took from the forest to the pellet mill. The simplest method for demonstrating compliance is to prove that raw materials were sourced from a certified forest. However, this is problematic for forests in the US South, which are expected to supply the bulk of UK demand. The Southern Group of State Foresters reported in 2011 that just 38 million of the South's 214 million forested acres—a bit less than 18 percent—are certified by the American Tree Farm System (ATFS), Forest Stewardship Council (FSC), or Sustainable Forestry Initiative (SFI).

Because the vast majority of timberland owners have small timber tracts—less than 50 acres—and because they make harvest decisions based on sawtimber markets in which no price premium for certified wood is offered, few will be inclined to submit to the certification process. In most cases, therefore, alternative documentation will be needed.

Acceptable Evidence

The DECC policy, based on the UK government's Timber Procurement Policy (UK–TPP), establishes sustainable forest management criteria that requires one of two types of evidence to demonstrate at least 70 percent of timber or biomass was legally and sustainably harvested. It is important to note that these standards allow for mass balance — the mixture of feedstocks with different sustainability characteristics —at any step in the supply chain. The two evidence types are:

▶**Category A evidence:** certification through either the FSC or a Programme for the Endorsement of Forest Certification (PEFC). The ATFS, SFI, and Canadian Standards Association certification programs are recognized under PEFC.

▶**Category B evidence:** documentary evidence that includes chain of custody from the forest source to the end user. Examples include forest management plans, applicable legislation, supplier declarations, second-party supplier audits, and third-party verification.

DECC has announced that these standards will be based on, though not exactly the same as, those developed by the Central Point of Expertise on Timber (CPET), a UK bureau that supports the implementation of the UK–TPP. CPET currently accepts three types of Category B evidence. Proof of sustainability can be demonstrated through first- second- or third-party verification.

▶**First-Party Verification:** The forest owner checks and confirms compliance.

Form: The landowner submits a supplier declaration that provides information confirming compliance.

Includes: The definition of sustainability used by the organization or landowner, details about how these requirements are being met, the date and signature of the landowner or senior manager, and any relevant background information, such as policy commitments.

Drax Power Ltd

Three of the six generating units at the Drax Power Station, the UK's largest generating facility, are being converted to burn biomass, much of it in the form of wood pellets produced in the US, in place of coal. Each converted unit will provide enough renewable electricity to meet needs of more than 1 million homes.

Evidence: Anything that provides specific information about the supply chain and control mechanisms in place, such as a signed letter stating the wood came from a legal or sustainable source, confirmation of membership in and organization or subscription to a voluntary code of practice, or ISO 9000 or ISO 14001 certificates (unless they include explicit and demonstrable evidence that the source is managed sustainably). A supplier declaration may contain any or all of these, but no single one of them can comprise the whole of the declaration.

Appropriate for: Because it is not in the interest of these suppliers to admit to forest sustainability and management issues, this level of verification is acceptable only for low-risk situations. Wood sourced in countries with consistent forestry legislation, clear legal use rights for forests, evidence that laws are enforced, and where corruption is not an issue is generally considered low risk. Although UK regulators and legislators in the have a high degree of confidence that US sources of biomass are legal and sustainable, whether or not the US will be held to this standard or a higher one will not be known until the next round of policy statements from DECC and CPET.

▶**Second-Party Verification:** Checks carried out by the biomass purchaser — in this case, either the broker or the pellet facility.

Who: The credibility of the verifier or auditor is key. The further this person is removed from the forest landowner, the better, meaning the pellet mill is a better source of verification than the broker. This person is generally a professional auditor or an employee who has the expertise and technical ability for performing the work.

Methodology: Ranges from a formal audit to an informal conversation. This can entail a look at the entire way the forest is managed, verification of information in a supplier declaration, or a follow-up on particular issues or problems.

Includes: Information on how the verification was performed and by whom, including the way information was collected and confirmed.

Appropriate for: Medium-risk situations. Because suppliers have a stake in the ability of their organizations to make sure their buyers meet sustainability requirements, this is a step up from first-party verification.

▶**Third-Party Verification:** A first- or second-party contracts with an independent, neutral, third party to conduct a formal verification.

Who: The auditing organization must conform to ISO Guide 65. If the government is not satisfied with the evidence provided, it requires verification from an organization that conforms to ISO Guide 65 and ISO 17011, or equivalent.

Methodology: Undertaken annually, the audit might look at the entire way the forest is managed, verify information in a supplier declaration, or follow up on particular issues or problems previously identified.

Includes: Who performed the verification, whether an individual or an organization; the frequency and date of verification; the requirements checked; and the methodology used.

Required for: (1) High-risk situations (i.e., countries with conflicting forest sector laws, a high incidence of illegal practices, political instability, and corruption); and (2) verification of sustainability.

No single policy is likely to resolve the ongoing controversy surrounding the export of wood pellets produced in the US to UK and EU power stations. Nonetheless, the DECC's policy recommendations—developed out of an objective understanding of forest economics and forest science—is a step in the right direction toward supporting new markets for US forests.

Suz-Anne Kinney is Communications Manager at Forest2Market, www.forest2market.com.

LETTERS:

Hofmann Pine Plantations

The December 2013 issue of *The Forestry Source* had a news item, a commentary by Fred Cubbage, and a letter by Wink Sutton, all about the Hofmann Forest. As a long-time supporter of pine plantations, let me add my two cents' worth.

In my opinion, foresters did a fantastic job of increasing the Hofmann's stand productivity (i.e., site index). Due to drainage, *p*-fertilization, tree planting, genetic improvement, prescribed burning, and competition control with herbicides, the plantations are now more productive than natural stands. Prior to 1950, high water tables and frequent wildfires contributed to pond pine growth of about 1 green ton/acre/year. Many loblolly pine stands on this property now produce >6 tons/acre/year. The target rotation age has declined from >45 years to less than 21 years. As a result, 75 percent of the plantations are less than 21-years-old, and the average age is about 13 years. Pine plantations now cover about 68 percent (>53,000 acres) of the Hofmann (tinyurl .com/p5jagw9).

Prior to 1985, the property was leased for about $0.38/acre/yr. When the lease was relinquished, some wondered if Champion International "could not manage Hofmann Forest at a profit, how could the Forestry Foundation, with input from NC State, be expected to do so?" (tinyurl.com/m9coxhx). However, direct management resulted in several changes that increased profits. Now, stumpage receipts from plantations (@ $2,000/acre at harvest) might average $100/acre/year (totaling $5.3 million in 2010). The cost of establishing loblolly pine on histosols is about $340/acre, and the target density is 435–538 seedlings/acre.

Julius (Doc) Hofmann (tinyurl.com/qdlbdjd) often said that if forestry was not profitable, it was not "good forestry." But how do foresters decide if the Hofmann Forest is profitable? Do we ignore the price of adjacent farmland (@ $5,000/acre), assume the land will never be sold, assume plantations will be managed in perpetuity, assume stumpage prices don't change, and then calculate a textbook internal rate of return (i.e., IRR = discount rate that makes the land expectation value [LEV] equal zero)? A few years ago, 23-year-old loblolly plantations in North Carolina had a 7 percent IRR. In contrast, some landowners ignore both land value and previous management costs. This "estate owner's method" divides profit for 2011 ($1.4 million) by costs for 2011 ($3.3 million) to obtain a 42 percent value.

Alternatively, do foresters use Wink Sutton's approach and divide profit by the current value of the land plus standing timber to achieve only a 1.3 percent return? This method (which includes current land value) results in a low "return" when the price of land is high. Indeed, the price of the Hofmann Forest has increased over time (from $2.50/acre [1940] to $253/acre [1983] to $1,898 today). Assuming that 66 percent of the current price equals the stumpage price for standing timber at Hoffman, this could mean the value of clearcut areas is $633/acre. In theory, if the calculated LEV value (using a rational discount rate) is greater than $633/acre, then the current management regime would be the "higher and better use" for the land. My guess is that when a Milwaukee school district sold a 53-acre pine stand in 2002, no one bothered to compare the LEV with the $8,490/acre offer.

David South
Pickens, South Carolina

Alverts Elected SAF Vice-President; Walters Begins Term as President

The results of SAF's national election, held in October, are in: Robert L. Alverts, CF, won the balloting for vice-president with 1,728 votes, to 1,419 for candidate Sharon T. Friedman, CF. Dave Walters, CF, who served as vice-president in 2013, is now president.

Four new members of the SAF Council also were elected: Judson D. Edeburn, CF, District 8; Donald L. Grebner, CF, District 11; Edward W. Shepard, CF, District 2; and Gary J. Vander Wyst, CF, District 5. See page 9 for more information.

The ballot included a constitutional referendum asking members whether SAF should accept the District of Columbia Nonprofit Corporation Act of 2010 as governing our nonprofit corporation. This measure passed be a wide margin: 2,583 members voted yes, while 354 voted no.

The election results of the were certified in November by SAF interim executive vice-president Louise A. Murgia, CF, and the 2013 Tellers Committee, Brent L. Keith (chair) and Daina D. Apple.

Alverts, who is the owner of Science and Management Consulting, which is based in Tigard, Oregon, said he was honored to be elected vice-president.

"I'm flattered to have been asked to run, and I will do my level best as an SAF officer," he said. "Sharon Friedman, who was a very worthy candidate, is a friend of mine; is very well qualified; and is a very capable leader, forester, and scientist, and I encourage her to run again at some point."

Alverts said he looks forward to working with Walters.

"An important part of my job as vice president is to support Dave and help him be successful during the coming year," he said. "Dave and I get along very well, and we work well as a team."

Many SAF members have called or emailed to congratulate Alverts and to offer their help and support, he said. What

Bob Alverts, owner of Science and Management Consulting in Tigard, Oregon, will be SAF's vice-president in 2014.

kind of help does he need?

"I want members to continue to be passionate about this organization," he said. "We are not a dead or dying organization. We are alive, we are vibrant, and we are changing—we've always changed. We need everybody on board to help our Society grow and become the best in the world."

Alverts said he will focus on "growing the pie"—enlarging SAF.

"That takes many forms and dimensions. It means an increase in the number of members, it means adding new revenue from a variety of sources, it means strengthening and adding to our policy portfolio, it means a strong science and technology program and a strong educational program," he said.

Having served on SAF's finance committee, Alverts will continue to have a strong focus on controlling costs and increasing revenue.

"We are paying very close attention to our financial realities in cutting costs wherever we can. We are also looking at increasing revenue wherever we can, in part by growing membership," he said.

In addition to being vice-president, Alverts will be a member of SAF's Strategic Planning Committee in 2014.

A New President

Walters, the policy, planning, and budget unit leader for the Tennessee Division of Forestry, said he is humbled by the honor and responsibility of leading SAF this year.

"Our first priority has to be adding value for our members," Walters said. "I've told Council that we need to synergize with the SAF staff — we've got to work more effectively with them to get stuff done, such as the revamping of SAF's website. The next priority is to broaden our membership, and this year we're on target to accredit our first natural resources management curriculum, and the Certification Review Board is looking at ways to develop a credential for urban foresters. Those are a couple of examples of how we're working to broaden the organization."

Walters said he and the SAF staff will be devoting a great deal of attention to this year's convention, to be held jointly with the Canadian Institute of Forestry and in conjunction with the International Union of Forest Research Organizations (IUFRO) World Congress 2014. The event will be held in Salt Lake City, Utah, October 8–12.

"It's going to be way different than ever before," Walters said. "It's a great opportunity for us to work with people and organizations that may not be all that familiar with SAF, and that should help us broaden our membership and provide our existing membership with a wealth of information about forestry from across the globe."

Walters noted that SAF hired Kelton Chapman last year as assistant manager, convention exhibits and registrar. Chapman helped manage last year's convention in Charleston, South Carolina, and will be instrumental in planning for and managing this year's event.

Another milestone ahead for 2014: SAF expects to close the sale of a portion of its Wild Acres property in Bethesda, Maryland, in May. SAF will retain several acres and the existing headquarters building and other structures. Walters said the revenue from the sale would provide new opportunities and a measure of financial security for SAF.

"That's a big deal," he said. "We have issued a request for proposals and have heard back from at least five companies that have submitted proposals for managing the funds SAF receives from the sale of the property in an endowment. The finance committee expects to choose the appropriate financial manager in March." (For more about the sale of the land around SAF's Bethesda office, see "SAF Sells Portion of Maryland Headquarters Property," *The Forestry Source,* August 2012.)

Still another priority for Walters, Alverts, and Council is hiring a replacement for former SAF executive vice-president Michael Goergen, who resigned in September. Council is considering changing the title of the job to chief executive officer, which more closely describes the responsibilities of that position.

"The selection process is under way, and our goal is to interview the top two or three candidates at the Council meeting in March," Alverts said. "Filling that position is going to be challenging, but it's also exciting because it's crucial to moving this outfit ahead." FS

CAMCORE continued from page 4

Tree Genetic Risk Assessment System: A Tool for Conservation Decision-Making in Changing Times" on the *Source* Extras page at www.safnet.org/members/archive/source_extras.cfm.)

"[Based on] that relationship, I asked if they could help us collect table mountain pine and Atlantic white cedar," said Barb Crane, CF, a regional geneticist for the Forest Service based in Atlanta, Georgia. "The Forest Service funds these projects, and [CAMCORE] goes out and makes collections for us and maps where the seeds come from. The seeds come back to our seed inventory here in the southern region, where they will be used for restoration and a reforestation of the species."

Crane, who manages seven seed orchards in the agency's southern region, said the agency plans to establish seed orchards and conservation banks in protected areas where the trees can be cultured and protected so they'll produce additional seed resources.

"It's all focused on operational reforestation and restoration," she said.

"Table mountain pine needs fire, and of course the Forest Service [doesn't do] as much burning as it used to, so we've lost most of our table mountain pine. We have less than 30,000 acres left in the mountains, and that is a real critical status for table mountain pine," said Crane. "Atlantic white cedar, historically, that has been logged out

CAMCORE, NC State University

This planting of cold-hardy eucalypts in Uruguay was established by CAMCORE member Montes del Plata. CAMCORE is testing several cold-hardy eucalypt species in southern Latin America and South Africa.

because it is very valuable wood, so we determined that was another one that was threatened and endangered."

Yet, unlike CAMCORE's work with hemlock, neither Atlantic white cedar nor table mountain pine will be planted overseas.

"We will plant table mountain pine and Atlantic white cedar in our orchards as well as out on the landscape [because] there is no threat beyond lack of burning or restricting logging," said Crane. "We'll never restore Atlantic white cedar to what used to be. We will try to find areas on our national forests that might be amenable to Atlantic white cedar and reforest them there," she said. "For table mountain pine, there are a lot of areas in the Appalachian Mountains. The caveat there is that it needs prescribed burning, because that's how they survive. The cones only open with fire."

Locating areas where table mountain pine and Atlantic white cedar can be re-established isn't expected to be too difficult, because these species don't face a forest health threat like hemlock, she said. In fact, Crane noted that some national forests have already begun restoration activities for table mountain pine.

"For table mountain pine, the four-year project is done. We've collected in as much of the range as possible, and the genetic analysis is in process. We haven't started some of the seed orchards yet, but some of the forests are already using seed for their restoration purposes," Crane said. "For Atlantic white cedar, we are only in year two of a four-year project. I think they've already collected from 100 mother trees, but we are only halfway through that program. We already have a small Atlantic white cedar orchard near Charleston, South Carolina, so some of the seed that we will garner from last year's collection we will go ahead and start to add it to that orchard."

According to the CAMCORE website, the organization plans to collect seed from a total of 400 mother trees—specimens that Crane described as healthy trees with good form that are dominant in the canopy.

"We choose trees that are a ¼-mile apart from one another, because we don't want any in-breeding going on. We also will collect [seed from] trees across [the species'] entire range to capture enough genetic diversity," she said. "We have talked to some other conservation geneticists who have worked through the formulas for how many trees you need to capture enough genetic diversity, and they feel like 400 trees captures 95 percent of the genetic diversity. We need that [diversity] to be able to establish the orchards and let them open pollinate, so we have well-adapted seed for reforestation."

Crane acknowledges that these efforts are long-term projects—"It's a slow process," she says—but that hasn't stopped her from thinking about the restoration of additional species in the future.

"We've got a lot more species that need to be collected and that we need to work with—it's just a matter of timing and funding. We have tackled the most critical ones right now and, hopefully, my successor will continue on with the project," she said. "I think it's really important to the Forest Service. It's also important to the country. I don't see a lot of other people or agencies doing tree conservation work."

Visit the Source *Extras page for additional papers by researchers involved in these gene conservation efforts.* FS

A Need for Accurate National Prescribed Fire Statistics

A Commentary by Dale Wade

My prescribed fire statistics information differs dramatically from that reported in the July 2013 edition of *The Forestry Source* ("Lessons from Escaped Prescribed Fires: A Review of 2012 Incidents"). I recognize that not everyone compiles statistics by calendar year and that state summaries don't all contain the same information; for example, Florida includes agricultural burns, which average close to 1 million acres per year, whereas neighboring Georgia does not even track them. But even factoring in such differences, the National Interagency Fire Center (NIFC) annual prescribed fire summaries are worse than misleading.

The NIFC website shows Florida granted approval to treat 238,175 acres with prescription fire in 2012, whereas the Florida Division of Forestry website shows the actual number was 1,955,035 acres (of which roughly 777,000 acres were burned for agricultural purposes). The NIFC site shows Georgia treated 40,729 acres in 2012, but according to the Georgia Forestry Commission, the actual figure was 1,332,354 acres. Thus, the combined acreage of just these two states is 166 percent of the 2012 NIFC-listed acreage of 1.97 million acres for all 50 states.

The 2012 NIFC statistics are no anomaly; a look at prescribed fire statistics for the past three years on the NIFC website reveals many substantial under-reporting mistakes and the discrepancy between NIFC acres and those actually treated was even wider in 2010. Florida issued a press release celebrating the fact that a record 2,644,431 acres were treated with prescription fire in the state during 2010. The record made national news, so NIFC staff, as well as folks at the Wildland Fire Lessons Learned Center, should have been aware of that achievement. Yet NIFC reported total acreage treated by prescription fire for all states in 2010 to be 2,318,044. This old-timer wonders what has gone wrong when national fire organizations don't catch an error of that magnitude.

A dataset does, however, exist that allows readers to judge the validity of prescribed fire data posted on the NIFC website. The National Coalition of Prescribed Fire Councils published the results of a 2011 national survey that fire managers from all 50 states completed. It includes a summary of all prescribed and controlled fires (prescribed fires are executed following a written plan, while controlled burns are not) conducted in each state during 2011 (Melvin 2012)[1]. Almost 8 (7.9) million acres were treated for forestry objectives and 12.3 million acres for agricultural purposes, yielding a combined total of 20.2 million acres. In comparison, the NIFC-prescribed fire 2011 summary of acres treated for all 50 states was 2.1 million acres, off by a factor of 10! In my opinion, that is more than misleading.

NIFC 2010 information highlights another internal problem on their website: one can assess historical state summaries on two different pages. On one, the 2010 summary runs from January 1 through November 4, while the other runs for the full calendar year. A person would thus expect numbers on the second page to at least equal those on the first page, but South Carolina went from 81,716 acres through 11/4 to 13,778 acres for the whole year. And the error list goes on: NIFC reported Mississippi prescribe-burned 251,700 acres in 2010 but only 17,500 acres in 2011 and a miniscule 1,900 acres in 2012.

Many knowledgeable fire managers can look at these summaries and spot mistakes in state or regional totals, but that is typically not the case when others access this database; they likely realize the data is not exact, but I'll bet they think it is at least in the ball park. Obviously folks at the Lessons Learned Center involved with the July 2013 *Forestry Source* article did not catch the mistake.

A simple means of reducing the magnitude of these errors is to take a grassroots approach: Every organization I am familiar with requires its smallest unit to report burn statistics to the next level up; these numbers are collated as they move upward until eventually reaching headquarters, where an organizational summary of burn accomplishments is created. These summaries could contain informational footnotes on what is, and what is not, included in a category, as well as other pertinent information. It would require little effort to email this summary along with footnotes to the agency that compiles a state-wide summary. These summaries could be emailed to NIFC each year, where an NIFC employee could take a day or two to repeat the process on the national level and develop informational footnotes based on the information supplied, including follow-up contact with individual states as necessary. The result would be a fairly accurate nationwide summary. In the meantime, as a warning to visitors to the NIFC summary statistic web pages, NIFC should post a disclaimer stating the numbers could be more than an order of magnitude low.


Dale Wade, Bugwood.org

I am not so naive as to think these deficiencies will be addressed because they are mentioned here, but I have been around long enough to also know that it *can* happen if enough individuals think improving the accuracy of posted fire summaries important enough to rattle the necessary cages to correct errors, omissions, and inconsistencies they spot.

To me, the most troubling aspect of these NIFC statistics is not the fact that they are wrong but that NIFC is the "go-to" website for fire information, and the layperson has no idea how misleading these statistics are! I sent a copy of my draft letter to NIFC in August 2013 but as of December 16, 2013, have received no reply.

Evidence surfaced during the 1935 annual SAF meeting that the USDA Forest Service had suppressed results showing the benefits of fire for several decades (Pyne 2010, page 39).[2] I have no reason to suspect this is again the case, but a convincing argument could be made. NIFC needs to take responsibility for its actions and be held accountable for its missteps as should everyone. Then when someone wants to use the statistics, such as a person with the IAWF Lessons Learned Center, he or she would have a much better picture of the validity of the data they were viewing.

Dale Wade is a forestry consultant who lives in Hayesville, North Carolina.

Sources:

1 Melvin MA (2012) 'National prescribed fire use survey report.' Coalition of Prescribed Fire Councils Technical Report 01-12 (Joseph W. Jones Ecological Research Station, Newton, GA)

2 Pyne SJ (2010) 'America's fires: a historical context for policy and practice.' (Island Press, Washington, DC)

INDUSTRY NEWS:

Exports Increase

Lumber and log exports from Alaska, Washington, Oregon, and northern California increased dramatically in the third quarter of 2013, compared to this time last year, according to statistics compiled the US Forest Service's Pacific Northwest Research Station. Lumber exports grew by 50 percent both in value and volume compared to the third quarter of 2012, while log exports increased by nearly 40 percent in value and about 25 percent in volume. The main reason for the increase: demand from China, reports Xiaoping Zhou, a research economist with the station.

Compared to the second quarter of 2013, third-quarter West Coast lumber exports jumped by 21 percent to a total of 279 million board feet. The total value of the lumber exported in the third quarter of 2013 increased by 16 percent to $200 million over the previous quarter. In the third quarter of 2013, China imported 116 million board feet of West Coast lumber, a 45 percent increase from the second quarter of this year. At West Coast ports, 41 percent of outgoing lumber and 64 percent of outgoing logs were destined for China during the third quarter of 2013. For more information, visit tinyurl.com/ma457hj.


China's increasing demand for logs boosted exports from US West Coast ports in the third quarter of 2013, according to the US Forest Service.

Global Sawlog Prices Higher

Sawlog prices in the third quarter of 2013 were higher in most of the world than second-quarter 2013 prices, according to the Wood Resource Quarterly (www.woodprices.com). Exceptions were the western US, Canada, Finland, and Brazil, where prices were slightly lower than in the previous quarter. The reduced prices in North America resulted in a 0.6 percent drop in Wood Resources International's Global Sawlog Price Index to $85.94/m3, the first decline since the second quarter of 2012. WRI estimates that the global trade of logs may slightly surpass 76 million m3 in 2013, six percent higher than in 2012 but slightly lower than in 2011.

Softwood fiber prices were up in most countries worldwide, with exceptions including Sweden, Brazil, and Oceania. The largest price increases were seen in the US South, Germany, France, and Spain. WRI's Softwood Wood Fiber Price Index edged up to $97.94 per oven-dry metric tons (odmt) in the third quarter of 2013, $0.19/odmt higher than in the previous quarter but $2.11/odmt below 3Q 2012 price.

IFCO Buys Hancock Seed Orchard

International Forest Company (IFCO) recently purchased Hancock Natural Resource Group's Evans Seed Orchard Complex, near DeRidder, Louisiana. The 411-acre property produces enough loblolly and slash pine seed to produce more than 30 million seedlings annually. IFCO said it would soon begin the construction of new facilities for growing more than 8 million container seedlings for new and existing customers in the western gulf region, increasing its annual capacity to 68 million container seedlings. IFCO currently produces loblolly, slash, longleaf, shortleaf, and Virginia pine in its Moultrie, Georgia, nursery. The company is a member of the Western Gulf Tree Improvement Cooperative, which is based at Texas A&M University.

SOCIETY AFFAIRS:

Q&A with Kevin O'Hara
Recipient of the Carl Alwin Schenck Award

By Judson Edeburn

During the 2013 Convention in Charleston, South Carolina, Kevin O'Hara received the Carl Alwin Schenck Award, recognizing outstanding achievement in forestry education, which exemplifies the efforts of Schenck himself, the founder of the Biltmore Forestry School. Nominated for the award by his former students, O'Hara is known for facilitating classroom discussions that allow students to learn through interaction and conversation on a personal level. He has been very active in SAF since becoming a member in 1980 and has served on the Montana SAF's Executive Committee, currently serves on editorial boards for several forestry journals, and has been a Berkeley SAF Student Chapter faculty advisor since 1999. He has received numerous awards throughout his career for his teaching at the University of Montana and Berkeley, as well as the Michaux Award from the American Philosophical Society and the Northern California SAF Forestry Achievement Award. O'Hara was a Fulbright Scholar in Austria in 2005 and 2006. He has also taught courses in silviculture in Finland, Sweden, Belize, and Austria and is currently working in Slovenia on a project related to uneven-aged silviculture.

Kevin O'Hara speaks to 2013 SAF National Convention attendees after receiving the Carl Alwin Schenck Award.

O'Hara is a professor of silviculture at the University of California–Berkeley and has taught silviculture for more than 23 years at SAF-accredited institutions. He and his wife, Jan, live in the San Francisco Bay Area and have two grown sons.

What first interested you in the forestry profession?

I grew up liking to grow plants (and still do). Seemed like agriculture or forestry was most logical, and I ended up in forestry. Many of our current students are attracted to forestry because of its conservation values. My attraction was growing trees, which is why I ended up in silviculture. I'm also an avid gardener and in 2012 produced more than 1,000 pounds of fruits and vegetables from my small suburban lot in California.

I recall when you initiated the SAF Student Chapter at Duke. What motivated you to do that?

I can't recall all the details, but Duke obviously didn't have a chapter and didn't seem to send many people to the SAF conventions. We got the student chapter going, and the dean, Benjamin Jayne, provided travel funds for a group of us to attend a convention in Cincinnati, where we staffed a Duke School of Forestry and Environmental Studies booth.

Who are some of your most notable mentors?

I have had a log of great mentors, but Chad Oliver was most significant. He gave me the very sound advice to focus on teaching in my first faculty job at the University of Montana. He also provided me with the understanding of how forests change and develop with and without management interventions. This coincided with the shift in forestry in many places away from the agricultural model to models that recognized the dynamics of forest development and how important this was to silviculture. Other mentors included Fred White, Bruce Larson, and Steve Boyce at Duke, and Bill Bigg and Dale Thornburgh at Humboldt State. At Berkeley, I still view Joe McBride as an excellent mentor for teaching and navigating the administrative hassles at the university. Joe won the Carl Schenck Award in the 1990s.

What does this award mean to you personally and professionally?

I recognize this as a once-in-a-lifetime recognition and a high point in my forestry career. The award ceremony was particularly gratifying because my former mentor, Chad Oliver, was on the stage to give the first keynote of that plenary session. My nomination was also put forward by former students and, as I think all teachers would agree, this is a very special type of recognition.

What would you consider to be your most important accomplishment?

I would say it is my cumulative research accomplishment in the area of uneven-aged silviculture, or what I prefer to call "multiage silviculture." If there is a single message from this body of work, it is that we need to view silviculture as a continuum of silvicultural approaches rather than the pigeon-holes we often use to categorize regeneration methods. For multiaged silvicultural approaches, this means there are a great many options beyond those defined by forestry from central Europe or reverse-J diameter distributions.

What advice would you give to individuals considering a career in forestry ?

It would be to recognize that forestry encompasses many aspects of natural resource management and that careers can really take an infinite number of paths. Being a field forester is an incredibly satisfying position and early career path. However, students should not view the field forester position as the only thing a person with a forestry degree can do.

Judson Edeburn is the Duke Forest Resource Manager at Duke University in Durham, North Carolina.

COMMUNICATIONS:

Mapping Our Way through Communications in Forestry

By Pat Stephens Williams

The term *communications* is one of the lead topics in current professional forestry conversation. Certainly the need for it in action in our work is always evident. Our increasing job responsibilities require us to not only apply all of our technical expertise but also to master skills in facilitating communication with like-minded colleagues; those guided by different mission statements than our own; and with audiences of different beliefs, ages, and demands. As challenging as it may be, the bottom line is that improving our communications abilities will ultimately make our jobs easier on all fronts. Think about an ideal world where we have an informed and educated public who understands the science, economics, and management needs of the breadth of forestry and our role as leaders in forestry practices. They will know who we are, recognize our expertise, and ultimately be more trusting of us to do the jobs we know how to do.

Striving for better communications skills to add to our strong technical abilities has been a peripheral goal of the profession for quite some time. Though we now seem to be giving the area of communications more attention, our awareness of the need is not a new path. Over the past 100 years of forestry education and practice in the United States, we see many places in the SAF National Convention proceedings and the literature where there is discussion of communications expertise as an essential tool for practicing forestry professionals. Every major study on forestry education has indicated the need to include more attention to the skills of written and oral communications.

At the professional level, we have a national communications committee, a foresters' handbook on communications, workshops at every national convention and many state meetings, Changing Roles, Firewise, Project Learning Tree, and countless other attempts (including this column) to improve the availability of training and quality of our communications delivery. In addition, over and over again in talking with and surveying professionals, we hear that communication skills (written, oral, digital) are at the top of the list for employability. Why, then, do we find it so challenging to provide and participate in the necessary opportunities to become as proficient in communication skills as we are in our technical abilities?

Our biggest deterrents are time and inclination. In a profession whose defining knowledge base is constantly growing, it is difficult to find the time to devote to learning how to better communicate and actually spend time putting what we have learned into practice with the public. That's reality. The inclination deterrent is a little more difficult to admit. For many years the SAF Leadership Academy included Myers–Briggs-type testing in the training as a way to help leaders not only be able to identify their own strengths and different styles but also to understand how others may differ from their own. As a part of the exercise, participants were lined up along the wall according to their placement on a scale from *very introverted* to *very extroverted*. An overcrowding issue was always a problem toward the introverted left. Only one or two participants approached or crossed that midline into the extroverted side of the scale. Let's face it, very few of us made the decision to go into forestry because of our love of dealing with people.

So how can we work with the challenges of time and inclination? The answer is there are as many ways as there are foresters. We each have certain strengths in communicating. As we work with those strengths we will become better at choosing the best tools we need for the specific communications job. Are we giving directions to co-workers, performing outreach at Boy Scouts, speaking on the Senate floor to legislators? Each situation calls for a different skill set, and by knowing our own abilities as well as the tool sets, we will be able to apply what we need to do the best job communicating our message in that situation.

One of the easiest tools to remember and broadly apply is MAP –*Medium, Audience, Purpose*. By definition a *map* is a visual representation highlighting relationships between elements of a specific area—such as regions, objects, and artifacts. Applied to communications, it is important to see ourselves as the cartographers of our communications. If we miss including key elements, not only will the consumer of our communication be lost, but so will the intended message. Using MAP provides the same types of relationships between elements as a map. MAP may be used in any order, since sometimes we may have more information in one area than another. However, all three areas always work together and build upon each other.

Medium. The technique, venue, or specific conveyance used for the communication. Think web page, social media, text, email, newsletter, speech, outreach, poster, signage, and report. Will the message be delivered personally, non-personally, outside, inside, one on one, or in a room of 1500 people?

Audience. The people targeted for the communication. Think demographics, landowners, legislators, teachers, and all of the descriptors that could be included in describing for whom the message is intended. That information will help determine the best way to convey the message for optimum impact.

Purpose. The so what and why of the communication – why is it needed, what is it supposed to say, what is it supposed to do, and what is the audience supposed to do with the information they receive? The purpose helps determine what content will be included, what form that content will take, and what medium is best for that message and audience.

Remembering to MAP our communications will go a long way toward successfully planning and executing our communications, no matter the nature of the specific challenge. Whether small groups, large groups, media, Facebook or EIA, the MAP acronym will work to lay out key concepts for communications delivery. Our next column will build on these basics. The journey to better communications skills continues….

This is the first in a series of articles to help us build better communications abilities in our profession. We know there are many readers immersed in the application of communications techniques who are successfully spreading the word of forestry. Please let us know of your successes, challenges, and needs so we may showcase your efforts and better serve your needs. For more information, contact Williams, assistant professor in the Department of Forestry at Stephen F. Austin State University, at stephensp @sfasu.edu. FS

Shepard, Vander Wyst, Edeburn, and Grebner Elected to SAF Council

SAF members elected four new Council representatives in the Society's national election last fall. In District 2, Edward W. Shepard, CF, was elected with 140 votes to 111 cast for Ronald W. Boldenow, CF. In District 5, Gary J. Vander Wyst, CF, received 161 votes, just ahead of Donald E. Howlett, CF, with 154. In District 8, Judson D. Edeburn, CF, received 196 votes to 155 for David B. Powell, CF. Members of District 11 selected Donald L. Grebner, CF, who received 120 votes to 118 for Clay S. Bales, CF.

As of January 1, the new Council members replaced four others whose terms expired on December 31: Robert L. Alverts, CF, District 2; Ernest A. Houghton, District 5; Thomas J. Straka, CF, District 8; and Ian Munn, CF, District 11. Alverts was elected SAF vice-president — see page 6.

According to SAF's Constitution, "The Society shall be governed by a Council comprising the president, vice-president, immediate past-president, and 11 elected members. The Council shall control the funds and properties of the Society, and perform such duties as prescribed by the Constitution." Establishing, revising, or abolishing of bylaws is one key duty.

Before they took office, the four new members attended the Council meeting held December 6 through 8 at SAF's Bethesda, Maryland, headquarters, as observers. The next council meeting will be held in March.

District 2

Ed Shepard is owner of Shepard & Associates, LLC, a consulting firm based in Newberg, Oregon. He also is president of the Public Lands Foundation (www.publiclands.org). Shepard said he left the December meeting impressed by the lively discussion of the Council's agenda.

"It was kind of exciting to listen to the discussions of everything that's going on, as well as a little bit overwhelming at the same time," he said. "It's a transitional time for SAF, as we are pushing forward with the Brand Promise; with hiring Michael Goergen's replacement; and with the upcoming sale of the property, which provides SAF with a lot of opportunities but also a lot of challenges."

As the Council deals with internal issues, it also must consider external forces and trends.

"The big issue in District 2, but also SAF-wide, is that forestry seems to be going through a transition phase," said Shepard. "We need to focus on how we can use the tremendous diversity of skills and backgrounds that SAF can bring to the table to help advance not only the Society of American Foresters but also society with a small 's.' We need to promote a recognition that active forest management is not only necessary but that it's the right way to go. We have to manage the money from the sale of the [Wild Acres] property sustainably, but I think it's going to give us some opportunities to advance the Society and help get that message out there."

For more about the sale of a portion of SAF's Bethesda property, see "SAF Sells Portion of Maryland Headquarters Property," August 2012.

District 5

Gary Vander Wyst, an assistant area forester with the Wisconsin Department of Natural Resources, also said he was impressed by the caliber of the discussions at the December Council meeting.

"You've got people who are open thinkers, aggressive, thorough, professional foresters who really care about the goals of the Society and about forest management."

SAF membership is a key issue that Council will need to address, he said.

"When I came out of college and even while I was in college, the thinking was that if you are going to be a forester, then SAF was the organization of choice," said Vander Wyst. "It was almost a given that when you went for your first interview, somewhere along the line someone would ask whether you were a member of any professional organizations, and you couldn't wait to tell them that you were a member of SAF. Recruiting new members and maintaining the ones we have is probably the number one priority within District 5 and nationwide."

Vander Wyst said he would devote considerable effort to communications with his constituents.

"I'm going to do what I can to maintain good cross-communication from Council to and from the state chapter chairs, so everyone can be well-informed, especially the most important people in this organization—the regular members."

District 8

Judd Edeburn, Duke Forest resource manager at Duke University, said he appreciates SAF's consideration of becoming more inclusive and reaching out to a larger audience of natural resource managers. Council is considering the formal recognition of university natural resource management programs and establishing a credentialing system for natural resource managers similar to the Certified Forester credential, he said.

"The individuals who are managing forestlands today are a much more diverse group than back when most forest managers were US Forest Service and industry foresters — there are lots of other people who are managing forests. How do we include them in a way that more-traditional foresters are comfortable with? It's a big job finding a comfort level for what many of us think is needed for SAF," Edeburn said.

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SAF Comments on Bat Endangered Species Proposal

SAF recently submitted a letter to the US Fish & Wildlife Service that calls for the agency to extend the public comment period for its proposed listing of the northern long-eared bat as endangered under the Endangered Species Act. The letter includes SAF's preliminary comments on the proposed ruling, which could result in "widespread effects on forest management activities."

The northern long-eared (NLE) bat is found across much of the eastern and north-central United States, and all Canadian provinces from the Atlantic Ocean west to the southern Yukon Territory and eastern British Columbia. Extensive mortality of the NLE and 25 other bat species has been related to white-nose syndrome (WNS), a disease named for the white fungus that appears on the muzzle and other body parts of hibernating bats. Since its appearance during the winter of 2006–2007, WNS has spread rapidly in bats across the eastern US and as far west as Oklahoma and in 4 provinces in eastern Canada. According to the Fish & Wildlife Service, WNS has killed more than 5.7 million bats in the two nations. At some hibernation sites, 90 to 100 percent of bats have died.

US Fish & Wildlife Service/Steve Taylor, University of Illinois

A northern long-eared bat with visible symptoms of white-nose syndrome.

In 2010, the Center for Biological Diversity and WildEarth Guardians petitioned the agency to list both the NLE and the eastern small-footed bat as endangered or threatened and that critical habitat be designated under the ESA. In October 2013, the agency announced that the listing of the NLE is warranted, but the listing of the eastern small-footed bat is not warranted. The agency also stated that the critical habitat for the NLE "is not determinable at this time."

The letter, written by SAF policy associate Danielle Watson and members of SAF's Forest Policy Committee, and signed by SAF President Joann Meyer Cox, suggests that the long and complex listing process diverts scarce resources from work specifically designed to combat WNS.

"Because WNS may threaten the survival of more than half of the bat species in North America, conservation policies should focus on actions that can positively impact all bats at risk from the disease. The piecemeal, species-specific approach of the ESA is particularly ill-suited to this case," said Watson. "The implications of a listing could particularly detrimental to forestry — needlessly preventing and restricting important forest management activities that are essential to forest health and rural economies."

The letter informs the agency of SAF's concern that "the widespread effects on forest management activities that could result from this listing and related regulatory activities. FWS proposes to list the NLE bat as endangered throughout its entire 39-state range. With such an expansive range, important forest management activities could be prevented or delayed, causing significant impacts to forest health and rural economies. These concerns are compounded by the lack of science linking forest management activities to the spread of WNS or any other negative effects on NLE bat populations. SAF is unaware of any evidence that specific cover types or forest structure is a limiting factor to survival of the NLE bat, or that restricting forest management activities will aid the species in recovery."

SAF also expressed concern that a listing would have listing will have marginal benefits to the species. "FWS, itself, admits that the significant effects of WNS would still be present even if all habitat-related stressors were eliminated. FWS also states that current regulatory mechanisms are not designed to protect the species against its biggest threat. Accordingly, SAF cautions against promulgating further regulations that cannot and will not address WNS and the ultimate survival of the NLE bat or other at-risk species."

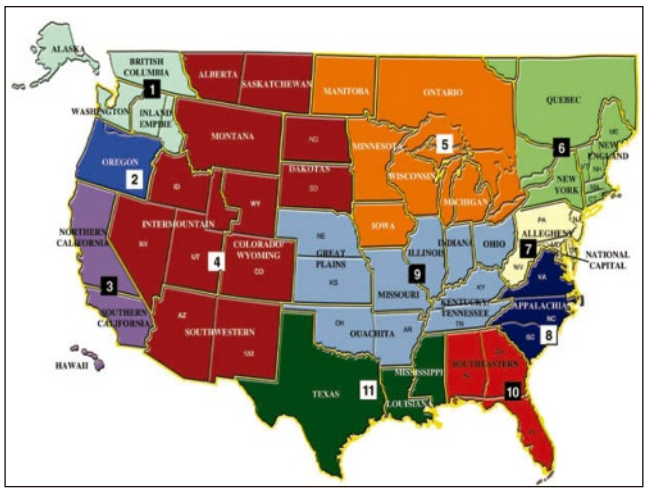
The letter notes that SAF "supports governmental and nongovernmental efforts specifically designed to combat WNS, and believes these already-established plans are in the best position to positively impact all bats at risk from the disease. For example, the National Plan for Assisting States, Federal Agencies, and Tribes in Managing White-Nose Syndrome in Bats details a coordinated approach to communications, research, and recovery. Many of the benefits FWS identifies for ESA listing — including public awareness and recovery planning — are already being served by this and other existing efforts. Because WNS is the greatest threat to all bats in North America, resources should be focused on strengthening efforts related to WNS research and recovery."

A copy of the letter is available at www.safnet.org/fp/policy.cfm. For more information about the disease and efforts to slow or stop its spread, see www.whitenosesyndrome.org. FS

Continued from page 9

A key element of bringing about these changes will be the selection of a new executive vice president.

"We need to select a strategic thinker, a dynamic, personable leader for SAF who can take us through the next steps of the process," said Edeburn. "It would be sort of a home run if we could find a person with those qualities who is also a forester, but many Council members think that finding someone who understands our organization and can lead it in a constructive, dynamic way is the bottom line."



The SAF Council is comprised of one representative from each of SAF's 11 voting districts, plus the Society's president, vice-president, and immediate past-president. Council's mission is to provide leadership and direction to SAF.

Council, he added, will devote much its March meeting to the search for an executive vice president.

District 11

Don Grebner, a professor in Mississippi State University's Department of Forestry, served as Chair of the House of Society Delegates in 2013.

"The Society of American Foresters is facing a lot of changes and things that it needs to deal with, and I am excited to be able to participate in that," he said. "As a Council member, I am very interested in trying to provide the most value possible for each and every member, and in trying to make the Society more relevant and dynamic. I was assigned to the Strategic Planning Subcommittee, so I'm very interested in looking at these issues," he said. "To me, accreditation, credentialing, and SAF's Certified Forester program are really important."

Grebner said he supports the idea of a more diverse SAF.

"I'm supportive of being inclusive," he said, "but I think it's important to find a balance. We are a society of professional foresters, and I think that professionalism needs to be maintained."

As did the other new Council members, Grebner said he will welcome input from SAF members on any topic of interest to the Society.

"Based on my experience as HSD chair, which is a nonvoting Council member, and my other interaction with Council, I can say that Council does respond to the membership. They do listen, SAF listens, and I think that's important for members to understand," said Grebner. "Council members and leaders at the state and local chapter levels are people just like us who are trying to move the organization in a positive direction."

Information about the SAF Council and HSD is on the SAF website at www.eforester.org/about/structure.cfm. FS

Founders' Circle Contributions to Benefit SAF's Efforts at the Local Level

SAF would like to thank the following persons for their generous contributions to the 1900 Founders Circle—a group of people who are committed to helping grow the capacity of SAF and strengthening local SAF units by contributing $1900 to the Foresters' Fund or other SAF activities that express the wishes of the donor.

The campaign was launched at the 2012 National Convention and has raised more than $140,000 so far. Funds generated through the 1900 Founders' Circle will enable SAF to greatly expand the Foresters Fund's support of education, communication, and outreach efforts to enhance the public's understanding of the role of professional foresters in forest resource management, and strengthen SAF state societies, divisions, and chapters as they work to achieving the Society's mission. SAF appreciates the generous gifts of Founders' Circle and Friends of the Founders' Circle members, and is working on additional Founders Circle activities in the coming year.

For information on how you can be a part of this effort, contact Louise Murgia at murgial@safnet.org or (866) 897-8720, ext. 118. Note: Contributions can be made in a single payment or in installments over four years.

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**Friends of the Founders' Circle members are those who support the initiative but have chosen not to give $1,900 at this time.*

2014 SAF/CIF National Convention Call for Presentations

In 2014, SAF will partner with our Canadian counterpart, the Canadian Institute of Forestry/l'Institut forestier du Canada (CIF/IFC), for our national convention. In addition, the convention will be co-located with the International Union of Forest Research Organizations (IUFRO) World Congress, which only takes place once every 5 years.

This is an exceptional convergence, which will bring several thousand forest scientists and managers from over 100 countries together. We are thrilled at the opportunities this will create for our US-based conference to enhance knowledge exchange and networking among professionals who study and manage forest resources around the globe.

The convention theme reflects the need for an introspective look at the forest science–management partnership. We want to take a critical look at the roles of science and management in service to society and in sustaining and enhancing forested ecosystems, locally and globally.

Share Your Expertise

Submissions for individual presentations and panels in the scientific & technical sessions or poster symposium are sought for these tracks:

An Engineering Take on Uncertainty: Lessons for the Forestry Profession

Uncertainty is explicitly incorporated into conceptual frameworks relied on by engineers, for example, risk assessment, safety margins, and extreme event distributions. What can foresters learn and adapt from these frameworks for constructively engaging with, accounting for, and even exploiting uncertainty?

Challenges in Ecosystem Markets

Sustainability, certification, climate change, and ecosystem services are concepts that have seemed to hold promise for monetizing new values for forest owners and managers. This track addresses barriers and opportunities involving emerging markets, lessons from emerging economies, and how science facilitates or obstructs the emergence of new markets such as ecosystem services, bioenergy, and carbon.

Communicating Science

As foresters, we have a desire and an obligation to share information and insights about our work and the natural systems we have chosen to explore, manage, and steward. The ability to communicate directly and vividly, whether we are educators, managers, policymakers, or scientists, is essential to our professional credibility, effectiveness, and continued relevance.

Embracing, and Learning from, Uncertainty

We presume our profession is founded on science, but science is more than conventional hypothesis testing, and confidence intervals. Improve your understanding of uncertainty and how it can be accounted for, represented, communicated, and even embraced toward a more scientifically grounded understanding of the forest and more defensible forestry policy and practice.

Forest Monitoring Science

What we seek to know about forests and how they change, the applicable scale and precision of that knowledge, and our success in interpreting and conveying monitoring information in a scientifically and statistically supportable fashion depend on monitoring system design and execution, honest disclosure concerning the derivation and reliability of measured and modeled values, and anticipating questions not yet asked. Contemporary challenges, success stories, and lessons learned will be shared and explored.

Learning and Success in Partnerships

How do science–management partnerships arise, evolve, and play out, in the context of public policy, career development, fiduciary responsibilities, and personal values about natural systems and their management? This track addresses these questions and explores the human dimensions of the science and management cultures, in the spirit of developing greater mutual respect and appreciation of value across these cultures.

Making and Interpreting Long-Term Forecasts

Are we plumbing the limits of what science can accomplish when it comes to describing the forest, and all its commodities, ecosystem services, and other values that people care about, and predicting how these will change over time? This track explores contemporary approaches to forecasting and strategies for improving our interpretation and communication of forecast information.

Reconciling Professional and Research Ethics

Forest managers follow a professional code of ethics, while forest scientists are bound to their own set of research ethics. Scientists may be guided by the ethics codes of both their employers and the professional societies to which they belong. This track examines the ethical questions that arise when managers and scientists form partnerships. What are the conflicts between the ethical responsibilities of forest managers and scientists, and how can they be reconciled?

Reexamining the Forest Science–Policy Interface

Effectiveness at the science–policy interface has often been characterized as focusing on relevant policy questions, conducting science in an open and collaborative manner, and engaging in the policymaking processes with the scientist in the role of informing, but not advocating. This track reexamines the role of science in forest policy, addresses the role of science in framing policy questions, examines the increasing use of litigation to set policy, and presents approaches and solutions to the challenges of objectivity (dueling science) in informing or advocating for policy positions.

Sustainability from a Forest Ecology and Silviculture Perspective: Supporting Effective Decisions

Attention to forest management at the science–policy interface tends to focus more on social and economic aspects than on the biological and ecological realities. Ecological and silvicultural research scientists play a central role by determining and conveying the sustainable ecological bounds that frame the science–policy interactions. This track presents ecological and silvicultural research that addresses sustainability and informs decisions.

Forest Science and Management

This is an open category accepting abstracts that do not fit readily above.

Key Deadlines

Presentations

Online submissions open: November 1, 2013

Submissions deadline: March 9, 2014

Notification of acceptance: April 2014

Posters

Submissions deadline: September 1, 2014

Notification of acceptance: September 22, 2014

All presenters must register for the convention.

Visit www.safconvention.org and click on Presenters.

www.safconvention.org
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NOTE: ABSTRACTS SUBMITTED FOR THE IUFRO WORLD CONGRESS ARE NOT AUTOMATICALLY SUBMITTED FOR THE SAF/CIF CONVENTION. TO BE CONSIDERED FOR THE CONVENTION, YOU MUST SUBMIT AN ABSTRACT TO THE SAF/CIF ABSTRACT SUBMISSION SITE www.xcdsystem.com/saf

Canadian Institute of Forestry
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SAF NATIONAL CONVENTION

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SCIENCE & TECH

Wake Forest Scientists Use Drones to Make Research "Easier," More "Economical"

By Joseph M. Smith

Max Messinger, a graduate student in the Department of Biology at Wake Forest University, studies tropical forest ecology in what's known as the "Peruvian cloud forest," which grows on the slopes of the Andes Mountains along the western border of the Amazon rainforest. It's an expansive region roughly the size of the continental United States. In addition to being large, it's also a rugged, out-of-the-way place that can present researchers with unique challenges and out-of-the-box thinking to surmount them.

Messinger and his colleagues, it seems, are up to the task.

"One of the biggest problems that I see in forest ecology is that we traditionally have studied the forests from the ground, which doesn't make a great deal of sense when you consider that all of the action happens in the canopy," said Messinger. "The reason that we've studied them from the ground is that there was no good way to observe them from above. In some places people have put cranes, or canopy walkways, or that sort of thing, but where we work it's too rugged to do any of that. Drones kind of presented themselves as the only good option to get up into the canopy."

To explore the use of unmanned aerial vehicles (aka: drones) in their research, Messinger and his colleague Marcus Wright received funding from Wake Forest's Center for Energy, Environment, and Sustainability and from the National Science Foundation to test drones for use in Peru.

According to Messinger, he and his colleagues are using two types of drones—multirotor helicopter-type drones and small, fixed-wing airplanes—and they have several of each.

"They let us fulfill different roles. The multirotor is able to carry quite a bit more weight than the plane and, most importantly, it's able to take off and land vertically, so if we are in a limited area we need to get in and out of, it's great for that," he said. "Then for most of our other things, like large-area mapping and 3-D modeling of the canopy, and that sort of thing, the plane does quite well because it is able to fly about three times longer than the helicopter we have and can cover a lot more ground in that amount of time."

Messinger spoke to me on December 12 from the American Geophysical Union conference in San Francisco, California, where he was presenting research on canopy leaf temperature. To obtain the data on leaf temperature and get photos of the canopy, he used the helicopter-type drone, which was outfitted with a thermal camera.

Will Ferguson/Wake Forest University

Maxwell Messinger, a graduate student in the Department of Biology at Wake Forest University, flies a heliocopter-type unmanned aerial vehicle or drone. Messinger and his colleagues are using such drones to study the forest canopy in Peru's cloud forest.

"Most of what we do is with a standard, visible-light camera, just a fairly high-end one that you could get at Best Buy. But we are also flying a thermal camera, which is fairly unique among people that are flying these," he said. "Right now, those are the only two sensors that were using. The things that we're looking at are mainly atmospheric: temperature, humidity, and maybe a wind speed."

As for the other technology built in to the drones, such as GPS and mechanisms for flight control, that is all "standard stuff," Messinger said.

If Messinger seems nonchalant about the technology in the drones he uses, it's probably because he and his colleagues construct the machines from pre-manufactured parts.

"All of the parts, with very few exceptions, are off-the-shelf, but, at this point, none of [the drones] are off-the-shelf kits. They are kind of assemblages of parts that, through experience, we've identified as the kind of parts that we do and do not want on our aircraft," he said. "We started with a kit that we built, but it all came in one box. We put it together, and it [flew]. From that experience, we were able to learn what we do and do not like about that set-up and tailor systems to exactly what we need."

And what they need is a way to obtain the necessary data in a less-expensive and flexible way, said Messinger.

"Things like leaf temperature and photosynthesis in the canopy, and canopy structure, and to how the forest is able to function, and then we also have, obviously, a lot of animal kind of symbiotic relationships that we want to look at, which are all canopy based and are hard to look at from the ground," he said. "[The drones] give us the opportunity to look at those things in an easier way and, really, most importantly, an economical way to do [it] repeatedly. We can fly these things every day, every couple days, [or] however often it takes to see what we need to see to address our questions." FS

Researchers Use Drone to Evaluate Urban Trees

Researchers at Wake Forest University aren't the only ones using drones in forestry research. At the recent SAF National Convention in Charleston, South Carolina, Stephen F. Austin State University professor David Kulhavy gave a presentation, "Use of AR Drone, iTree, and Shade Tree Hazard Rating for Urban Trees," about his use of drones to evaluate tree health.

"These are pictures taken from the drone, and [they show] why we're very confident in what we're doing," said Kulhavy of the images he showed during his presentation. "This trunk has a great big hole in it—this is a picture taken from the drone. You can look at soil compaction, root zone damage, get some idea of erosion; you can have [these] as a permanent record. Then you're up in the crown of the tree—we're up about 75–80 feet, and you can look at the individual branches up in the crown of the tree very simply."

Kulhavy and a team of researchers recently conducted a study in which a data set of 3,355 trees were hazard rated using the Council of Tree and Landscape Appraisers method for the campus of Stephen F. Austin using an off-the-shelf drone, the AR Drone 2.0.

According to the manufacturer, Parrot Inc. (Parrot.com), the base model of the Parrot AR Drone 2.0 comes with a built-in 720p HD camera and one battery offering 12 minutes of flight time. Kulhavy and his colleagues added a 12-mega pixel GOProHero3+ camera (http://gopro.com/cameras), which retails for $399 and requires a second device (iPhone or iPad) in addition to the one used to control the drone. In addition, Kulhavy said he and his colleagues purchased 5 additional batteries and an extra charger to extend their flight time.

To fly the drone, users must download the AR FreeFlight App (available in the iTunes app store), which runs on the iPhone, iPad, and iPod Touch; requires iOS 6.0 or later; and is optimized for the iPhone 5.

MANAGEMENT TOOLS:

Weyerhaeuser, Nelson Forests Find Efficiencies with Remsoft Tools

By Steve Wilent

Forest products companies are businesses like any other: without profits, they fail. And to make profits they must control costs. Remsoft (www.remsoft.com) offers a suite of tools that helps forest products companies manage "the complex operational planning process by optimizing and balancing the supply and demand of forestry products from harvest to delivery to meet your downstream sales commitments."

To learn what such terms mean in practice, I asked two people to explain: Dave Peoples, a business analyst who helps manage Weyerhaeuser's extensive timberlands in the US South; and Marion Hughes, a resources forester with Nelson Management Ltd., which manages about 76,000 hectares of land in New Zealand owned or licensed by parent company Nelson Forests Ltd.

Here's how Peoples described Remsoft's Woodstock Modeling Platform and Analytics tools:

"Remsoft is a user interface to several linear programming models — pieces of software — that are used in logistics," he said. "Linear programming has been around a long time. It takes all possible solutions and the constraints around them —and that could mean thousands and thousands of combinations of what you could do—and gives you the optimal solution in a user-friendly format. That's well beyond what a human mind can do, and it's certainly beyond what a spreadsheet can do."

The tools include what Peoples calls "solvers" that help with planning and optimization.

"When you have several choices about where to deliver logs, there are some reasons why you would deliver logs from a certain setting to a particular mill instead of the other mills. It all comes down to distance, freight, price, production costs, and so on." Peoples said. "This is done in a kind of 'seat-of-the-pants' way in a lot of cases, but when you have a hundred or more harvest settings, maybe 10 different product types, and 20 or 30 or more customers, it becomes a hard thing to do on the back of an envelope. You tell Remsoft to grab one of the solvers and tell you what is the optimum distribution of these products off of those settings. That's what's going to save you money. That's powerful."

Nelson Management has been using one or more Woodstock tools for about 10 years. It currently is using the tools at four different levels, or what Hughes calls "models": Estate, Budget, Supply Chain, and Weekly Crew Scheduler.

"The Estate model lets us look at 60 years in time," she said, "and we're running the model at an annual level, so each period is a single year. We're using that tool to come up with the value of our estate, to determine what our sustainable harvest level is, and to look at any product changes over time, so we have enough time to make adjustments."

Nelson Management has been using the Budget model for about four years.

"The Budget model covers about five years of harvests at a monthly level," Hughes said. "I grab the first five years worth of stands from the estate model and then bring in all of the customer information — who we supply and what their contracts are. I've got volumes by the products they want and the prices they pay, and I've got cartage [transportation] distances and costs for each of the harvest blocks. This model helps us work out what's optimal for us to do—which wood from which blocks should go to which customer."

Nelson Management supplies 15 domestic mills and exporters at two ports.

The Supply Chain tool looks at the company's operations at the weekly level.

"It's a way that we can see whether what the Budget model is coming up with is realistic and doable, as well as being optimal. The Supply Chain model looks at the weekly level, so it's got customer demand at a weekly level, harvesting and cartage costs, prices, and so on. And I bring in the harvest blocks that we're actually planning on harvesting, so this optimizes the volume that goes from each harvest block to each customer, keeping cartage costs down while increasing our values."

Hughes said the company can to some "fancy learning" with the Supply Chain model.

"If a customer comes to us and says he wants to increase the amount of a certain product, we can put that into the model, and it will tell us whether that will work at the price they want to pay, and if not, then I can tweak the price until it does work. And I can work out what effect that has on the estate, so it doesn't take a product from another customer," she said. "Say we've got a customer that wants to take some very high-quality product, but for us to produce it we'd have to downgrade our other domestic volumes to export [grade]. The model will tell me where's the best place to produce that wood, whether we should do it, what the price is, and what will be the impact on all the other customers."

Such calculations would be very difficult without tools like those from Remsoft, Hughes said. Common sense can tell Nelson Forests whether the distance between a harvest block and a mill or port will make a timber sale pencil out, but Remsoft's tools helps the company see the bigger picture.

"It comes up with nice pathways," she said. "Say, if you send wood from this block to that customer, then that frees up this wood. All together, that's actually a big deal."

According to Hughes, Nelson Forests has realized operational efficiencies and cost savings though the use of Remsoft's tools.

"Before we started using the Budget model, the whole office pretty much used to stop work for a month, just to try and pull together all of the information for next year's budget. But now I just run the Budget model," Hughes said. "[Staff members] give me the costs and other information at the harvest block level, and then I run the Budget model and come up with a budget. It's my time for a couple of weeks versus the whole office for a month. That alone has saved us quite a lot."

According to Hughes, the Supply Chain model also has saved the company money by helping to determine whether or not to harvest certain types of logs based on prices, harvest costs, and so forth.

Has Weyerhaeuser's investment in Remsoft's tools paid off?

"From a logistics standpoint, definitely," Peoples said. "One of our managers said logistics used to be a big deal, but now with fuel prices the way they are, it's a *really* big deal, and it probably will be from here on out. That's the area where we see the quickest return. When you can say you've dropped your haul miles by *X* miles, that's diesel fuel, and that's real money." FS

Marion Hughes, Nelson Management Ltd.

Nelson Management Ltd. uses operational planning tools from Remsoft in managing timber on the 76,000 hectares of land it owns or licenses in New Zealand.

About Management Tools

This article is the first in an occasional series called "Management Tools" that will focus on the technology, techniques, and strategies that today's timber management organizations use to managing large timberland holdings. In most cases, these articles will describe a problem or challenge, and how it was solved using both human ingenuity and technology. If you and your organization are willing to share the story of your success in improving efficiency and productivity, contact *Source* editor Steve Wilent at wilents@safnet.org or 503-622-3033.

GIS for FORESTERS:

Webinars That Boost Your GIS Knowledge and Skills

Need to know more about GIS technology and tools? These recent webinars, or web-based seminars, may help. The webinars are free; some require registration.

Online Mapping Tools for the Natural Resource Professional
Original broadcast: Dec. 4, 2013 (Part 1)
Length: 1 hour (Part 1)
Sponsor: NC State University
Website: goo.gl/9UJubJ

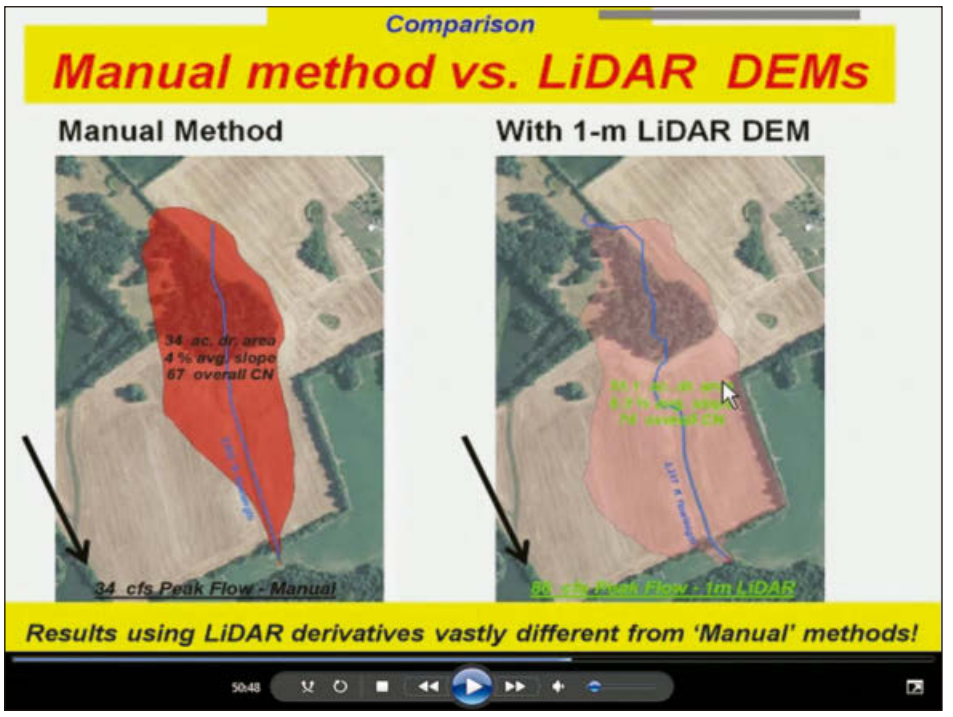
This four-part series is intended to help natural resource professionals become familiar with important sources of online mapping tools and data without the need for a complex GIS program. These tools provide the basic mapping necessary for land management decisions and plan development and can assist in working with landowners. Although no experience in digital mapping is required for this class, even experienced mappers can learn new ways to create and share basic land management maps with stakeholders. Part 1: My Land Plan (December 4); Part 2: Important Spatial Data Sources (December 18); Part 3: Google Earth Part 1, Basics, (January 15, 2014, 12 p.m. Eastern); Part 4: Google Earth Part 2, Intermediate, (January 22, 2014, 12 p.m. Eastern).

GIS in the Field: Using Lidar Makes Sense
Original broadcast: February 27, 2013
Duration: 1 hour, 25 minutes
Sponsor: Natural Resources Conservation Service
Website: goo.gl/Qxgw8c

This webinar is an introduction to using GIS for conservation planning and design and natural resources analysis and applications. It focuses on lidar data and its derivatives and starts with a basic introduction to lidar and continues with examples from three states. The examples illustrate the improvements that lidar-derived data can make in field operations and demonstrate three of the many geographic products that come from lidar.

Making Google Earth Work for Land Management
Original broadcast: Jan. 19, 2011
Length: 1 hour
Sponsor: NC State University
Website: goo.gl/TXPEHf

Google Earth (GE) is an easy-to-use but powerful tool that land managers can use to assist landowners see their land and understand it better. This leads to improved land management decision making and information sharing. This webinar discusses and demonstrates basic GE setup, exploration, navigation, menus, data creation, and production. The outcome is that participants should be able to help landowners use GE in making land management decisions.



A scene from GIS in the Field: Using Lidar Makes Sense, a webinar sponsored by the Natural Resources Conservation Service.

LANDFIRE Total Fuel Change Tool
Original broadcast: March 2012
Sponsor: Southwest Fire Science Consortium
Website: goo.gl/g3OWIB

The LANDFIRE Total Fuel Change Tool (LFTFC) lets users edit LANDFIRE fuels attributes and associated layers directly with an ArcMap toolbar. This webinar provides an overview of LFTFC's capabilities to edit and add rule sets for changing fuel attributes based on existing vegetation type, existing vegetation cover, existing vegetation height, biophysical settings, and disturbance, which are GIS layers that are downloadable from LANDFIRE (www.landfire.gov). Fuel characteristics can be updated for surface and canopy fuels, and interpretive graphs can be created.

Wildland Fire Assessment Tool
Original broadcast: May 2012
Sponsor: Southwest Fire Science Consortium
Website: goo.gl/heJa9w

The Wildland Fire Assessment Tool (WFAT) provides an interface among ArcMap, FlamMap 5, and the First Order Fire Effects Model, combining their strengths into a spatial fire behavior and fire effects analysis tool in GIS. The webinar explains how to use WFAT to locate potential fuel treatment units, develop a prescription for those units, and evaluate the effect of the proposed treatment on potential fire behavior and fire effects. WFAT saves fire managers the time and effort of converting data between multiple formats for use in ArcMap and FlamMap 5 and gives managers the option of using downloadable LANDFIRE layers as their input GIS layers.

Fire Regime Condition Class Mapping Tool
Original broadcast: July 2012
Sponsor: Southwest Fire Science Consortium
Website: http://goo.gl/zw9zpE

The Fire Regime Condition Class Mapping Tool quantifies the departure of vegetation conditions and fire regimes from a set of reference conditions representing the historical range of variation. The tool, which operates from an ArcGIS platform, derives several metrics of departure (e.g., vegetation composition and structure, fire severity, and frequency) by comparing current conditions to reference conditions. Mapping Tool outputs can be used to develop management plans and treatment strategies aimed at restoring vegetation conditions or disturbance regimes.

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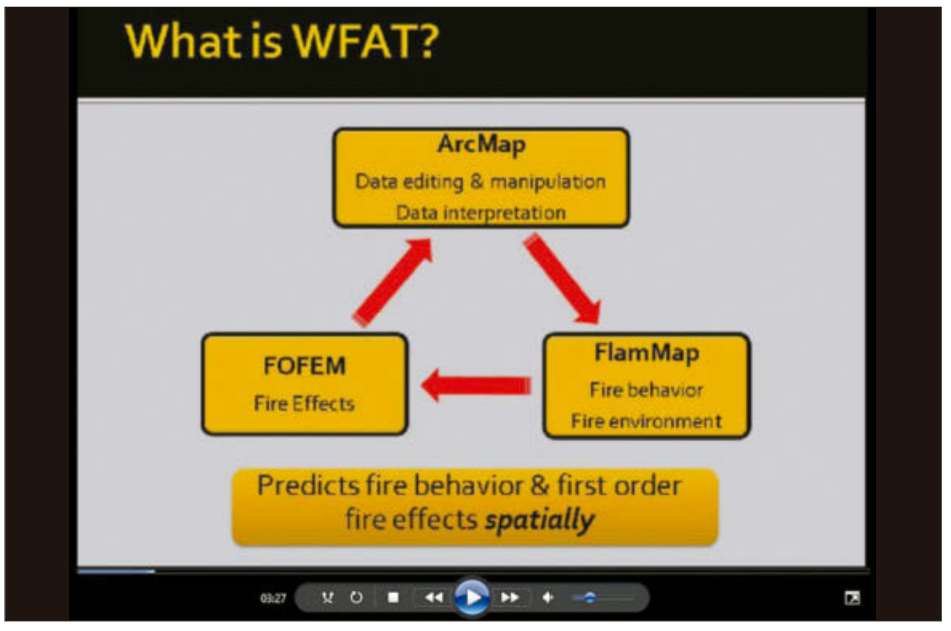


A webinar on the Wildland Fire Assessment Tool examines the spatial fire behavior and fire effects analysis tool.

FIELD TECH

Forest Service Maps Now Available on Smart Phones, Tablets

By Steve Wilent

The US Forest Service recently announced the availability of a new app for mobile phones and tablets that facilitates the downloading of hundreds of agency maps, such as geospatial forest visitor maps and motor vehicle use maps (MVUMs). The former are used by countless visitors to the national forests; the latter are crucial to the agency's travel management plans. These maps will likely be very popular with the general recreating public, but foresters, firefighters, and anyone else who needs a map of a national forest on a mobile phone or tablet may find them useful, too.

"This mobile app makes it easier than ever to plan your visit to a national forest or grassland. By putting important forest information right at your fingertips, it will encourage more Americans to get outside and explore their forests," said Forest Service Chief Tom Tidwell in an agency press release about the maps and the app.

I agree, and I can envision lots of other information that might be provided via mobile devices. Imagine each national forest having an app for visitors that provides live weather, water, and road conditions; campground availability; hazard warnings; and links to area businesses (which might be sponsors of the app). Such apps might also offer a wealth of information about forests, wildlife, fish, local history, project planning and public meetings, and so on.

Soon after I heard about the new map app, I set out to try it, but I encountered some frustrations along the way. Before I explain, I'll say for the record that the app and the maps are, as my 18-year-old son describes them, "awesome"; he says he'll use these digital maps for his hiking and camping adventures on the Mt. Hood National Forest, which more or less surrounds our Oregon home.

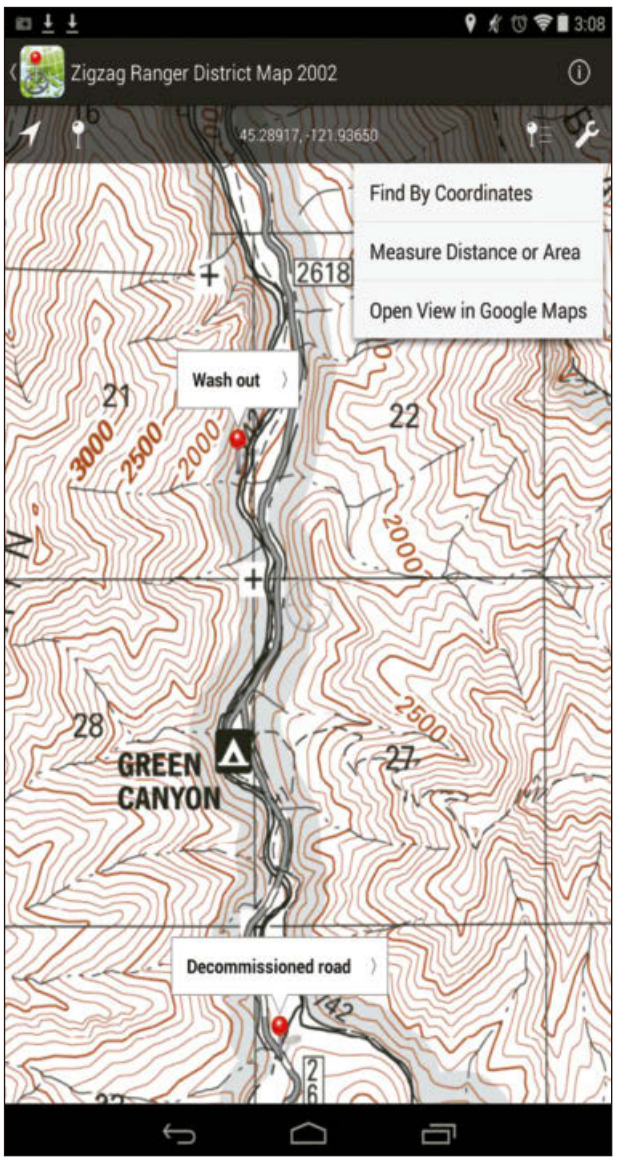
If these maps make visiting national forests more attractive to young people, that's a very good thing. The US Forest Service is to be commended for making them available. In this ever more mobile-technology-oriented world, paper maps are nearly anachronisms (though I still treasure them). With the new app, made by Avenza Systems Inc., you can download a map to your mobile device and then use it whether or not you have a cell or wireless connection. You can mark your location based on your GPS location, add tracks and waypoints, measure distance and area, export features as KML files or import KML files, import geospatial PDFs created in ArcGIS, and so on. The Forest Service maps are available through the Avenza Map Store, as are many maps from the US Geological Survey, National Park Service, and other sources. All are very handy.

So if the new app and the maps are awesome, what's the problem? Well, you can't use the app or the maps if you can't find them. Here's what happened in my case: My wife and I were sitting at the kitchen table one morning in November, having coffee and reading the paper (an old-fashioned printed copy of *The Oregonian*; delivery is to a tablet or laptop via the web three days a week now). My wife says, "Honey, here's an article that says the Forest Service has an app that lets you download maps of national forests. Maybe you could get one of the Mt. Hood. You can get the app on Google Play or iTunes." "That's cool," I replied, saying that I'd try it that very day. (The article, "US Forest Service Makes Maps Available on Smart Phones, Tablets," was basically the same text as a Forest Service press release that I later received. This release appeared in several newspapers and on websites around the United States.)

Assuming I knew all I needed to know, I grabbed my Android phone, started the Google Play app (which provides access to Google's app store), and keyed in "Forest Service maps." Google Play found nothing related to the US Forest Service, at least in the first 50 apps listed. Near the bottom of the list was an app from the Korea Forest Service that might be a maps app, but I don't read Korean.

I tried searching for "US Forest Service." The result: nothing related to the agency in the first 50 apps, except for the "official Android app" of Smokey Bear—which I think it may be a knockoff (and copyright infringement?), since there's no mention of the Forest Service. Searching for "Forest Service" with quotes: nothing from the US Forest Service in the 35 items listed, but there were five apps from the Korea Forest Service and a handful of apps related to various state forests and parks (e.g., a New Jersey Parks & Forests guide).

I asked my son, the mobile-device whiz, to try to find the app with the same information I had. Even he couldn't find it.



A US Forest Service map displayed in Avenza Systems' PDF Maps Mobile App, on a Nexus 7 (Android) tablet. The app lets you add waypoints, measure lines, and areas and allows you to use maps offline.

Turns out that we didn't use the secret code words: Avenza Systems (not exactly a household name) or the name of the app, PDF Maps Mobile App (about as generic as you can get). Type either one of those names in a Google Play search, and the app will be among the top five or 10 results. Some people will think to use these terms to find the app. Many won't.

The Forest Service press release (which came to me via e-mail, because I'm on the agency's list of journalists and editors) contains a link to Avenza (avenza.com/pdf-maps). That's fine, but the link didn't make it into *The Oregonian*'s article. In the Maps and Publications area of the Mt. Hood National Forest's web site, I found a link entitled "New Maps Available for Mobile Devices." That led me to a copy of the press release, but the link to Avenza wasn't active — an unfortunate omission.

Since the link to Avenza's app is critical, it ought to be listed in plain sight on agency web sites. It isn't, in most cases. There's no mention of the app at the online National Forest Store (www.nationalforeststore.com). A November 20 article on the USDA blog (blogs.usda.gov) entitled "Forest, Grasslands Users Now Have Access to Digital Maps" has no link to Avenza, iTunes, or Google Play, but it does have live links to the main agency map page (www.fs.fed.us/maps/forest-maps.shtml), which lists all of the national forests but also has no link to Avenza. I clicked on links to a few of the forests I'd like to visit. I found no mention of the app where you'd expect to find it on the web sites of the Bitterroot, Cherokee, Santa Fe, or Superior National Forests. The main Maps & Publications page on the Fishlake National Forest's web site doesn't mention the app, but the MVUM page does have a link to Avenza. Kudos to the folks at the Fishlake.

Once I registered on the Avenza Map Store via a tablet, I tried looking for maps for the same five National Forests. Score: Bitterroot (seven maps), Cherokee (none), Santa Fe (3 MVUM maps, no visitor maps), Superior (none), Fishlake (none, which is a mystery, given the link to the MVUMs on the forest's web site).

The Avenza Map Store lets you look for maps by Forest Service region. Numerous maps are available for forests in Regions 1 through 6 (though not for all forests, as I found). None are available in Region 8 or 9, except for one map of the Panthertown Trails on the Nantahala National Forest.

I did find one map that I was looking for — well, part of a map. I am a frequent visitor to the Mt. Hood National Forest and have several copies of the paper map of the entire forest. The Avenza store has six maps of portions of the Mt. Hood—one of each of the four ranger districts and two wilderness maps, each selling for $4.99 (the two wilderness maps are actually the front and back of the same paper map). I live a stone's throw from the Zigzag Ranger District, so I bought that map. It looks fine and works well in the Avenza app (see the image on this page). I'm not sure yet that I'll shell out another $15 for maps of the other three districts, since I have my paper map of all four districts, which I can replace, if need be, for only $10. MVUM maps, by the way, are free.

My experience with the Forest Service's app wasn't without some hitches and frustrations. I hate to beat up the agency over this, knowing how stretched thin it is—and stretched thin is an understatement, in my opinion. Certainly the agency will make the app easier to find and make more maps available over time. Until it improves, however, many national forest visitors aren't going to be happy with the mobile-app experience.

For more Field Tech columns, visit the consulting foresters page on the SAF website at www.eforester.org /fp/consulting.cfm. FS

GIS continued from previous page

Smartphone GIS: Capturing Data with Collector for ArcGIS
Original broadcast: May 30, 2013
Duration: 1 hour
Sponsor: Esri
Website: goo.gl/4fjOd8

This webinar shows how Esri's Collector for ArcGIS lets you collect information in the field using an iPhone or Android smartphone. The presenters demonstrate how to create, publish, and share maps with field staff and how incorporate their field edits into your database. Topics include how to use the Collector app on your smartphone to complete field work; create maps and share them with your field staff; and incorporate ArcGIS Online or Portal for ArcGIS into your field workflows.

Field Data Collection with Smartphones, Tablets, and Lasers
Original broadcast: April 12, 2013
Sponsor: GeoSpatial Experts & Laser Technology
Website: http://goo.gl/bgYQGX

By coupling Laser Technology's TruPulse lasers with GeoSpatial Experts' GeoJot+ field data collection system, field teams can collect consistent and accurate data and then visualize the data in ArcGIS and Google Earth (GE) or create photo-based reports. The webinar shows how to capture the location of remote objects and height measurements with a TruPulse mapping laser and wirelessly transmit values to a smartphone or tablet using GeoJot+, then take a geotagged photo of the object and collect additional attribute information. It also discusses how data can be automatically uploaded to the cloud and then down to your office and shows the generation of shapefiles, geodatabases, GE maps, and professional reports, including offset positions. FS

PEOPLE IN THE NEWS:

Travis Keatley has been promoted by Weyerhaeuser Co. to manage its newly acquired Longview Timberlands property. A second-generation Weyerhaeuser forest manager, Keatley has worked with the company while attending high school in the early 1990s. After graduation, he spent the next three summers working in the woods during college. He also interned at Weyerhaeuser's Forest Learning Center, the Toutle Valley visitor facility touting the company's reforestation of the Mount St. Helens blast zone. Keatley attended Washington State University and graduated with a bachelor's degree in forest management. He began his professional career with Weyerhaeuser in 2000 and has worked in Idaho and at the Mount St. Helens Tree Farm. In 2010, he started commuting to Aberdeen from his 60-acre farm in Winlock to work as a forest team leader. Keatley joined SAF in 1997.

The North Dakota Association of Soil Conservation Districts recently honored North Dakota State Forester **Larry Kotchman** with its "2013 Professional Award." The award is given to an individual who has for many years contributed significantly to soil and water conservation accomplishments that have resulted in many benefits to the state. As a member of North Dakota's State Technical Committee, Kotchman has been instrumental in securing several cost share programs and grant funds that have helped the Soil Conservation Districts enable landowners to plant trees and install fabric weed barrier. These include the Stewardship Incentive Program, Forest Land Enhancement Program, Living Snow Fence Task Force, Centennial Trees Program, North Dakota Mitigation Tree Planting Program, and the Forest Restoration Program. Kotchman worked with conservation partners to secure a three percent tree-planting earmark for conservation tree planting within EQIP funding. He was also instrumental in providing $600,000 in additional technical assistance funding to North Dakota's soil conservation districts to enhance tree planting and forestry services. As State Forester, Kotchman is responsible for the administration of the North Dakota Forest Service. His major duties involve directing state and private forestry services through three leadership teams comprised of 30 full-time and approximately 50 seasonal employees. He joined SAF in 1972.

Phillip E. (Eric) Wiseman, associate professor of urban forestry and arboriculture and a Virginia Cooperative Extension specialist in the College of Natural Resources and Environment, has been named coordinator of the Virginia Big Tree Program. The program, which began as a 4-H and Future Farmers of America project in 1970, aims to increase the care and appreciation of trees. Wiseman takes the reins from Professor Emeritus and Extension Specialist Jeffrey Kirwan, who served as coordinator of the Virginia Big Tree Program for the past 10 years. Wiseman, who is known for his work on applied arboriculture practices and urban forest inventory and assessment, is a member of Virginia Tech's arboretum committee, which applied to have the university recognized by the Arbor Day Foundation as a Tree Campus USA for its dedication to campus forestry management and environmental stewardship. A Virginia Tech faculty member since 2005, Wiseman received his bachelor of science and master of science degrees from Virginia Tech and his doctorate from Clemson University. He joined SAF in 2013.

IN MEMORIAM:

Kenneth L. Foster, 63, died June 23. He graduated from Stephen F. Austin State University with a bachelor's degree in forestry. For most of his career, he worked in the woods of southeast Texas and earned a reputation as an excellent steward of that resource. He joined SAF in 1994.

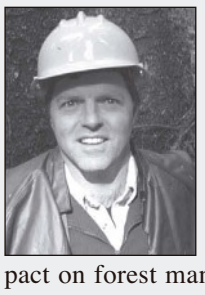
Edwin Kallio died October 18. Kallio served in the US Army, where he was a motor messenger during World War II, delivering top secret and priority messages from army headquarters to units in combat, often behind enemy lines. After his honorable discharge in 1946, he attended the University of Minnesota, where he received a bachelor's degree in forest management. During his career with the USDA Forest Service, he planted thousands of trees that are still standing as a reminder of his work. Later, he moved to Carbondale, Illinois, where he received a master's degree in forestry economics and taught at the university. In 1969, he became the director of the North Central Forest Experiment Station on the University of Minnesota–Duluth campus, where his mission was to use forest resources to improve the economic and social well-being of people in the North Central states. After retiring from the Forest Service, he co-created and coowned Explorations Toy Store. He joined SAF in 1953.

Calvin L. Smith died September 28. Smith served in the US Navy as a midshipman on the USS Quincy, a heavy cruiser based in the Pacific. After honorable discharge he attended the University of Minnesota on the GI bill, graduating with a bachelor's degree in forestry. In 1958, Smith settled in Medford, Oregon,

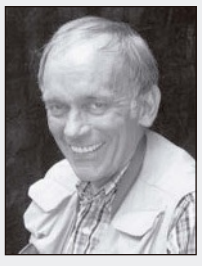
In Memoriam continues on next page

The USDA Forest Service recently honored six silviculturists with the National Silviculture Award at the National Silviculture Workshop held in conjunction with the SAF National Convention in Charleston, South Carolina. The awards were presented to individuals from the Forest Service National Forest System and Research and Development for their outstanding contributions to the practice and science of silviculture. The honorees were

Blaine Cook, is a forest silviculturist on the Black Hills National Forest in Region 2 who has had a 40-year career with the Forest Service. Cook has provided vision, leadership, and coordination among the staffs of the Black Hills National Forest, helping to ensure that the vegetation management program maintains the highest quality planning and performance. He is often the voice the public hears to how the forest is responding to the bark beetle epidemic, and he sets the standard for other silviculturists in the nation for using, participating in, supporting, and suggesting research activities that can be used to inform the management actions of the Black Hills National Forest. He joined SAF in 1985.



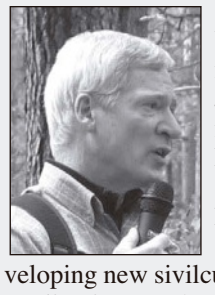
Robert Deal, CF, is research forester and ecosystem services team leader at the Pacific Northwest Research Station. Deal's applied research has had a direct and lasting impact on forest management on the Tongass National Forest (TNF) in Alaska. His work on the composition of regeneration following partial harvest has been widely used in silvicultural analyses in the past decade at the TNF and, as a result, he was honored with the Silviculturist of the Year award from the Alaska Region of the USDA Forest Service. His pioneering work included the development of an ecosystem services framework for forest management at the Deschutes National Forest and the Willamette National Forest. Deal's knowledge and expertise in silviculture is sought out regionally, nationally and internationally, and he has been invited several times to participate in projects on Sitka spruce management in the United Kingdom. He chaired a team that developed the first Forest Service National Ecosystem Services Strategy, and he has been active in the National Silviculture Workshops. As a member of SAF, he has served as chair of the Portland Chapter. He joined the Society in 1984 and was named Fellow in 2009.



Russell Graham is research forester at the Rocky Mountain Research Station (RMRS) and has a 47-year career with the Forest Service. Graham started the Continuing Education in Forest Ecology and Silviculture program in 1974 and accepted a research forester position at the RMRS in 1975. He has made 580 presentations and authored 210 publications. He has received 45 awards, both international and national. He has integrated and synthesized disparate studies and assessments in forest ecology, forest dynamics, soils, wildlife, and wildfire to create innovative silvicultural systems and techniques that enhance disturbance resilience, wildlife habitat, forest products, and long-term soil productivity. His research has provided the scientific foundation to inform land management actions, policies, and/or laws locally, regionally, nationally, and internationally. The breadth of his work encompasses the dry, moist, and cold forests located throughout western North America. He has been active in National Silviculture Workshops, and he has held officer positions at the SAF chapter and state levels. He was co-program chair of the 2012 SAF Convention and in 2010, for his outstanding contribution to silviculture, Graham was awarded the first-ever National Silviculture Lifetime Achievement Award at the 2013 National Silviculture Workshop. He joined SAF in 1972, was named Fellow in 2006, and received SAF's Award in Forest Science in 2011.

Dave Powell, is forest silviculturist on the Umatilla National Forest in Region 6. Powell has produced significant silvicultural accomplishments during his 40-year career. He has been a silvicultural leader throughout the West and has played an active role in shaping and implementing the Forest Service's silvicultural certification process in the Pacific Northwest Region. During his career he has produced more than 60 white papers and publications on subjects including density management, historical range of variation, structural classification, and plant guides. He joined SAF in 1979.

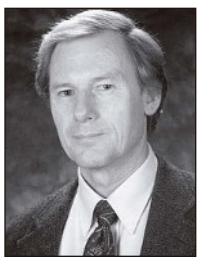
James Thinnes, CF, is regional silviculturist in Region 2 and serves as the Regional Collaborative Forest Landscape Restoration Program coordinator and Regional Knutson-Vandenberg Trust Fund coordinator. He has had a distinguished 34-year career in environmental planning, silviculture, timber management, hydrology, and wildland fire suppression. Thinnes has actively participated in national silviculture work groups and workshops and, from 2011 to 2013, he played a key role in revising the silviculture portion of the *Forest Service Silviculture Manual*. Thinnes is active in forestry professional societies and has served as a SAF state and a chapter chair. He joined SAF in 1980.



Andrew Youngblood, who retired from the agency in July, was research forester at the Pacific Northwest Research Station. He dedicated his 36-year Forest Service career to developing new sivilculture knowledge and applications and made major contributions to the fundamental understanding of vegetation dynamics and the influences of natural disturbances and silvicultural manipulations. His innovative, collaborative work has had substantial regional, national, and international impacts on silvicultural practices. He served as experimental forest coordinator for the Pringle Falls Experimental Forest from 1992 through his retirement. He served as the chair of the National Experimental Forest and Range Working Group, an advisory body reporting to the Deputy Chief for Research and Development. Youngblood has been active in the National Silviculture Workshops and engaged in SAF activities throughout his career. He joined SAF in 1986.

In Memoriam continued from previous page

where he worked as a consulting forester with Industrial Forestry Association. In that capacity he traveled through southern Oregon assisting landowners with the management of their timberlands. In 1970, he purchased Pacific Forest Seeds, which provided quality seed for reforestation worldwide, and operated the company until retirement. He joined SAF in 1952.



Robert F. Powers died November 1. He graduated from Humboldt State College, where he received a bachelor's degree in forestry in 1966. He began his career with the USDA Forest Service at Redding Silviculture Laboratory. In 1981, he received a PhD in forest ecology from the University of California in Berkeley. Powers initiated many long-term field studies during his career that have helped to provide the scientific basis for forest management practices throughout California and the West. He was particularly proud of his efforts to establish the national Long-Term Site Productivity research effort in 1986, which resulted in the establishment of more than 70 sites focused on maintaining and enhancing forest site productivity. He was senior scientist and team leader at the Redding Silviculture Laboratory in 2000. He retired in 2008, following 40 years of research on silvicultural and soil site research with approximately 150 publications. Later, he was awarded an emeritus research forester designation at the Pacific Southwest Research Station. An excellent speaker, Powers presented research at forestry and soils conferences in California, across the United States, and throughout the world. He was one of the co-founders of the California Forest Soils Council in 1981 and was an affiliate professor at Oregon State University and a codirector of the Sierra-Cascade Intensive Forest Management Research Cooperative. He also was visiting scientist at the New Zealand Forest Research Institution in 1989 and at the CSIRO, Australia, in 1988. He has served as an editor for *Forest Ecology and Management* and for the *Soil Science Society of America Journal*. Powers was named Fellow in the Soil Science Society of America in 1994 and was granted the National Silviculture Award by the US Forest Service in 1997; National Land Stewardship Award in 1990; S.A. Wilde Distinguished Lecturer in 2007; Starker Distinguished Lectureship in 2007, and LW Schatz Inaugural Lecturer in 2004. He also was honored as a Distinguished Alumni from Humboldt State University in 2010.

John Sherrod, 75, died May 26, 2013. Sherrod received a bachelor of science degree in forestry from the University of Georgia in 1960 and a master of science degree in forestry from the University of Idaho in 1980. He began his USDA Forest Service career in 1960 with a two-year interruption while serving in the US Army Signal Corp in 1961–1962. As a Forest Service employee, he served in several staff and planning positions in District and Forest Supervisor offices in the Dakotas, Montana, Oregon, Washington (as district ranger on the Colville National Forest) and in Alaska, where he served on both the Chugach and Tongass National Forests. He also worked briefly in 1965 as Tennessee State Forester. He retired from the agency in 2003. Sherrod was a member of the National Eagle Scout Association and received the Scouting Silver Beaver award in 2012. He was also a member of the National Fire Lookout Association, the Forest Service Retirees Association, and the National Museum of Forest Service History. In service to SAF, Sherrod served as secretary-treasurer of the Cook Inlet Chapter in Anchorage in 1983 and was chair of Sitka Chapter in 1992. He attended the SAF Leadership Academy in 1997, was a member of the House of Society Delegates in 1997 and 1998, state chair of the Alaska SAF in 1998, and was a delegate to state and national SAF conventions many times. Sherrod joined SAF in 1960 and was named Fellow in 2001.

Where is the Continuing Education Calendar?

Due to space limitations we couldn't fit the Continuing Education Calendar in this issue of *The Forestry Source.* But don't despair! You can still find out about all the educational opportunities available to you on the event calendar on the SAF website at www.safnet.org/calendar/index.cfm.

CLASSIFIEDS:

FROM THE SAF CAREER CENTER
http://careercenter.eforester.org

Assistant Professor, Forest Health & Silviculture
Mississippi State University

Job Description: To participate in the Department's statewide forestry extension and research program in the specialized areas of silviculture, forest management, and related subjects. Assess the educational needs of various forestry audiences and constituencies; plan, develop, and implement educational programs to meet the needs of targeted audiences; and evaluate program quality and effectiveness to ensure accountability and program improvement. Program methods and techniques will include short courses, workshops, field days, demonstrations, mass media, publications, in-service training, and individual contacts. Audiences and collaborators will include landowners, natural resources professionals, public and private organizations, 4-H and youth organizations, and the general public. Develop an applied research program in a relevant aspect of silviculture or forest health. The successful candidate will be expected to obtain extramural funding to support extension and research programs and teach one graduate level course in the candidate's area of expertise. The candidate will also provide in-service education to agriculture and natural resource field agents.

Job Requirements: This position will be 85% Extension and 15% Teaching. Ph.D. degree with specialization in silviculture, forest management, or related field and at least one degree in forestry, preferably the baccalaureate, from an accredited professional forestry program. Formal education should reflect an emphasis in silviculture and related aspects of forest biology. Education and experience in stand management, forest fire, forest entomology and pathology, forest regeneration, and vegetation management are highly desirable. Emphasis will be placed on demonstrated excellence in program team participation, oral and written communication, and interpersonal skills. All but dissertation (ABD) applicants will also be considered.

To apply:
Contact Person: James Henderson
EmailAddress:
jhenderson@cfr.msstate.edu
Phone: 662-325-0754
http://www.jobs.msstate.edu/

Continuing and Professional Education Program Manager
Oregon State University

The College of Forestry at Oregon State University is seeking a Continuing and Professional Education Program Manager. This is a full time 1.00 FTE, 12-month, fixed term professional faculty position. Reappointment is at the discretion of the Dean.

Continuing and professional education (CPE) for natural resource manager and scientists, and forest industry, is an important function of the College of Forestry at Oregon State University.

The position will help meet the CPE needs of the Pacific Northwest Region. The professional audience for CoF CPE courses includes a broad collection of natural resources fields.

Minimum requirements include a bachelor's and master's degrees with at least one degree in a natural resource-related discipline and at least two years of experience in a natural resource or education-related field, natural resource education program development or marketing and business development. Position is 25% Planning, Needs Assessment, Promotion and Marketing, 50% Facilitating Conference and/or Workshop Design and Deliver, 20% Program Evaluation and Impact Assessment, and 5% Professional Service. Salary is commensurate with education and experience.

Application procedure: To view the posting and apply, go to http://oregonstate.edu/jobs/ and search for posting #0011686 or contact David Zahler, at (541) 737-1486, (David.Zahler@oregonstate.edu).

Oregon State University is located in Corvallis, a vibrant college town of 54,500 in the heart of western Oregon's Willamette Valley. Corvallis consistently ranks among the best and safest cities to live in the U.S., as well as among the most environmentally responsible. OSU is an Affirmative Action/Equal Opportunity Employer.

Job Requirements: Minimum requirements include a bachelor's and master's degrees with at least one degree in a natural resource-related discipline and at least two years of experience in a natural resource or education-related field, natural resource education program development or marketing and business development.

To apply:
Contact Person: David Zahler
Email Address: David.Zahler@oregonstate.edu
Phone: (541) 737-1486
Fax: (541) 737-3008
http://oregonstate.edu/jobs/

Senior Director, Resource Planning & Analysis
GreenWood Resources

GreenWood Resources (GWR), founded in 1998, is a global timberland investment management company specializing in the acquisition, development and management of high-yield, short-rotation, sustainable tree farms. GreenWood Resources, a TIAA-CREF company, combines the benefits of a small, nimble company with the backing and support of a leading financial services organization. GWR's corporate office is located in Portland, Oregon with global operations in North America, South America, Europe and Asia. We are seeking a seasoned professional to join our management team during this exciting and dynamic period of expansion.

The Senior Director, Resource Planning & Analysis, reporting to GWR's Chief Operations Officer, is responsible for leading, managing and actively participating in company-wide resource planning and analysis to support decision making in operations, acquisitions/dispositions and portfolio reporting for forestry under consideration for

Classifieds continue next page

investments and/or management. This includes all tree farm planning and optimization, inventory/growth and yield data collection and management, GIS and land management information systems, and due diligence and analytical support for timberland acquisitions and dispositions. The Senior Director will supervise professional staff located in both GWR's corporate and regional locations.

Job Requirements: The successful candidate will have the following combination of education, skills and experience: Bachelor's degree in forestry management or related field, Post-graduate degree in mensuration, biometrics, forest management planning or forest economics preferred. **Minimum:** fifteen years of related work experience, Demonstrated supervisory and personnel management skills, Willingness to travel up to 20% of time to domestic and international areas as needed, Strong computer and forest management systems skills: Extensive working knowledge of Microsoft Office products, Planning systems experience including forest inventory databases, GIS, optimization software, forest records systems and forest growth and yield models, Experience with the development of long-term management plans, operating plans, and report writing, Strong team orientation and ability to support a cross-functional and cross-cultural staff, Ability to prioritize and manage multiple projects, and to excel in a fast paced, dynamic environment, Bi-lingual in one or more languages of relevance to GWR's operations is a plus.

GreenWood Resources offers a competitive compensation and benefits package and a collaborative and dynamic team working environment.

To apply: please send resume and cover letter.

Contact Person: Mimi Henninger
Email Address: hr@gwrglobal.com
Phone: (971) 533-7055
http://www.greenwoodresources.com

Timberlands Inventory Technician
Green Diamond Resource Company

Position Purpose: To provide quality assistance to the Timberlands Inventory Supervisor in the Forest Inventory Data Collection Program for incorporation into the Forest Resource Information System (FRIS).

Essential Functions: (other duties may be assigned)

Under the guidance of a Registered Professional Forester (RPF) the incumbent will: Cruising timber correctly using variable and fixed plot methods, Establishes and re-measures permanent growth plots, Operates and maintains 2- and 4-wheel drive vehicles and ATVs safely, Operates PCs and field data recorders efficiently, Interpret aerial photographs correctly, Identifies Pacific Northwest trees and shrubs correctly, Keeps legible, accurate records, Assists in other forestry functions (e.g., controlled burning) as needed, Assists in check cruising contractors as needed, Demonstrates high level of awareness and practice of safety, Identifies quickly and accurately all tree species found across the range of Green Diamond's California Operations, Navigates accurately remote country using compass, maps, and aerial photographs, Must be able to maintain a high degree of productivity and accuracy of measurements under difficult field conditions, Check cruising of contractors will require timely follow-up to the initial cruise, and prompt reporting of results, Maintains good working communication these contract cruisers, California Timberland Division personnel, forestry firms and their individual cruisers

Job Requirements: Must be able to perform the essential functions of the job with or without accommodation, Must have a valid California Driver's License/proof of DMV record (required at job interview), Must have ability to work alone without immediate supervision, Must have tolerance to poison oak and insect bites, Must be able to traverse steep and unstable terrain, Must be able to successfully work on a consistent basis in rough rugged terrain in sometimes harsh weather conditions, Effective and professional relationships with co-workers within immediate work group, outside the immediate department, and with key contacts outside the company, Effective and productive communications skills; speaks well, communicates ideas clearly. Writes well, clearly and concisely, Is approachable and open to discussion, Conducts self in a professional manner at all times. Treats others with respect at all times. Does not tolerate discrimination based on race, gender, religion, ethnic background, or national origin, Manages multiple priorities professionally with minimum disruption to others, Organized and proactively manages environment, Responds to unexpected challenges successfully without losing track of daily responsibilities., Prioritizes workload in order of importance, Reliably follows through with job assignments, Learns, applies and retains new methods and information, Creative in solving problems, Exhibits a "can do" attitude with a positive approach to challenges, Views obstacles as opportunities to learn and grow, Must have successfully completed college forestry courses such as dendrology, forest measurements/surveying, and mensuration.

Desired: Have a Degree in Forestry and/or Natural Resources related field, Knowledge of Forest Practice Rules, Experience cruising and using personal computers

Physical Requirements/Work Environment: This position is located in Korbel, CA, Incumbent will spend long hours working in remote areas, often in steep terrain with dense, brushy understory, and/or inclement weather. Special assignments may include cruising in areas distant enough to require temporary lodging closer to the cruise area for the duration of the project. Incumbent will have the opportunity to assist in controlled slash burning. Overtime may be required for some projects; Occasional travel to various locations in proximity to the Korbel office requiring a vehicle and ability to drive; Ability to tour logging operations, attend training and company functions; Ability to perform consistent work on a PC; Must maintain punctual and regular attendance and present appropriate professional appearance at all times.

To apply:
Contact Person: Debbie Miller
Email Address: dmiller@green diamond.com
Phone: (707) 268-3064

Forester/Forest Technician
American Forest Management

American Forest Management, Inc. (AFM) is one of the largest forest consulting and real estate brokerage firms in the United States.

AFM currently manages over 4.7 million acres of privately owned timberland and has sold over $1 billion in real estate in 1,384 transactions since 2005. With 250 employees operating from 44 offices located in 15 states, AFM's team of professionals is focused on meeting client needs by providing a complete range of forestry services. Our small regionally dispersed offices allow us to provide individualized services, and our large overall size allows us to coordinate teams of foresters and technical specialists for large, complex jobs.

We are currently seeking a Forester or Forester Technician for our Crab Orchard, West Virginia office.

Full-time position – minimum 45 hours per week required, paid vacation schedule, health care and disability plan, 9 paid holidays, vehicle provided, some out of town and overnight work required (expenses paid), participation in 401 (k) plan (after reaching 21 years of age and 6 months of employment). The successful candidate will have to relocate to within 15 miles or 30 minutes of the Crab Orchard, WV office.

Responsibilities and Job Requirements:

Timber Sales and Appraisals – All aspects of field work, office work and reporting to landowner/client; Systematic sampling of merchantable and premerchantable timberland using both fixed radius plots and prism sampling methods; Identify, locate and mark property lines; Identify and mark streamside management zones (SMZs); Identification of commercial tree species (winter and summer); Design and implementation of timber harvesting plan for clearcut, select cut and thinning sales; Prepare timber sale maps and review computer-generated digitized maps; Prepare timber sale bid notice and review timber sale contracts; Perform timber harvesting inspections to ensure compliance with contract; Collect timber and land sale data for appraisal purposes.

Organize and audit timber sale settlements; Prepare and negotiate contracts with independent contract loggers; Assist with the hiring of additional independent contract loggers; Perform log scale audits of clients' logs being marketed through contract log yard; Ability to develop new markets and negotiate with existing markets the sale of clients' logs being marketed through log yard; Ability to work effectively with log yard contractor; Timberland Management – All aspects of field work, office work and reporting to landowner/client; Prepare and negotiate contracts with independent contractors for clients' management services; Supervision of contracted services, including certifying completion of work for payment; Meeting with landowner/client to review management activities, answer questions and make proposals regarding their timberland; Assist with client budgets/management plan preparation; Patrol property boundaries and points of access; Check leases for possible violations; Ability to work and communicate with mineral owners and surface owners on clients' properties.

Additional Requirements: Ability to generate new business (meet with potential clients, explain our business, etc.); Ability to efficiently and effectively perform existing work; Proficient with MS Word, Excel, and GIS software; Ability to use GPS and hand held data recorders; Preparation of weekly timesheet showing all time worked by project, bill method and task; Required travel and ability to function as a team member on large projects throughout the US; Ability to communicate with public in area of primary business. (Southern WV); Minimum 5 years of experience

Compensation: This is a salaried position with paychecks issued semi-monthly. Salary level will be based on previous experience and ability to fulfill job requirements.

To apply:
Contact Person: Rosemarie Carrillo
Email Address: r.carrillo@amforem .biz
Phone: (704) 527-6780, ext. 325
Fax: (704) 527-1245

Forest Health Specialist
Wisconsin Department of Natural Resources

The Department of Natural Resources is dedicated to the preservation, protection, effective management, and maintenance of Wisconsin's natural resources. The Division of Forestry is seeking a new Forest Health Specialist to join our team. The anticipated location for this position is Spooner, WI. Office space could be located in Cumberland, Hayward or Ladysmith if preferred.

For more information on the area, you may contact the City of Spooner at 715-635-8769 or log on to the City Information Website at: http://www.cityofspooner.org.

The applicant list created from this recruitment may be used to fill future vacancies for up to the next year.

Job Duties: The Forestry Division Forest Health Specialist implements the statewide Forest Health Protection program across multiple ecological forest habitat types. Specifically, it provides forest entomology and pathology diagnostic, investigatory and survey services as well as integrated pest management recommendations for native and non-native forest pests to public and private forest landowners. The position offers increased awareness and understanding of invasive plant identification and management. It also supports policy development, program management, and training for the statewide Forest Health Protection program for the Division of Forestry. The Forest Health Specialist is a key internal and external consultant for staff, leadership, inter-divisional teams, and partner groups. This position maintains cutting-edge knowledge and expertise by staying abreast of current research and maintaining an effective professional network. This position coordinates the federally regulated cost-share suppression program for non-native invasives within the assigned work area and may assist across work areas when workload demands.

Special Notes: This position is located in the Spooner Forest Health Zone and has work responsibilities in Douglas, Bayfield, Ashland, Burnett, Washburn, Sawyer, Polk, Barron and Rusk counties. This job holder is expected to be available to assist other teams across established boundaries. The Forest Health Specialist travels frequently within the assigned work area with an occasional overnight stay. Travel outside the assigned work area also may be required to complete statewide assignments, to assist with Division priority activities or foster program-wide coordination and/or to attend out-of-state training.

Job Requirements: Job Knowledge, Skills and Abilities: Degree in forest pathology, forest entomology, forest resource management or equivalent natural resources work experience and at least 3 years work experience with primary responsibilities in forest pathology and/or forest entomology; Control practices for forest entomological and pathological issues identification, evaluation and recommendation; Field survey techniques related to forest health, ability to read maps and plat books, and protocol for documentation of survey results; Principles of forest management; Principles of forest ecology, insect behavior and toxicology; Computer-based systems for information management and exchange including database, spreadsheet, word processing, GPS, GIS, PowerPoint and Internet.

To apply:
Contact Person: Jamie O'Donnell
Email Address: jamiee.odonnell@ wisconsin.gov
Phone: (608) 266-9236
http://wisc.jobs/public/job_view.asp?annoid=70295&jobid=69810 &org=370&class=56273&index=true

Fiber Supply Manager
Enviva, LP

Enviva is a leading supplier of sustainable wood biomass fuel in the United States and

Europe. The company's mission is to become the preferred partner and supplier of sustainable biomass fuels to industrial and energy utility customers seeking to improve the environmental profile of their operations through reduced emissions of greenhouse gases and other pollutants. Enviva has been supplying wood chips and wood pellets to customers in the United States and Europe since 2007. Enviva's operating facilities represent more than 750,000 metric tons per year of annual capacity and by 2014, the company will have added one million additional metric tons of capacity in the mid-Atlantic region.

Enviva is seeking a Fiber Supply Manager for our Ahoskie plant in North Carolina. The Manager will be responsible for overseeing the planning and execution of fiber purchases and inventory management for the North Carolina plant. S/he will lead and foster a data-driven approach to develop and manage a sustained low cost/high margin fiber supply strategy that is in alignment with the plant production strategy to maximize the plant's operating margin. They will also manage the day-to-day operations of the woodyard, ensuring compliance with all safety and environmental policies including adherence to Sustainable Forestry Initiatives (SFI).

The Manager will report to the Mid Atlantic Fiber Supply Manager and will work closely with the Plant Manager in North Carolina. They will oversee and manage one Fiber Supply Forester.

Responsibilities: Oversee and manage the continuous supply of high quality raw material for Enviva's plant operations; Identify, develop and maintain supplier relationships and negotiate agreements to meet capacity requirements of the plant; Collaborate with plant manager and operations staff to identify and implement solutions to improve product quality and cost of supply; Oversee and monitor costs, quality and controls in order to achieve budget objectives; Promote and comply with all corporate and environmental policies including SFI and FSC standards; Initiate process improvements, cost reductions and product enhancements initiatives.

Qualifications: BS degree in forestry, natural resources, business or related field; 5-10 years experience in wood procurement preferred; Strong people and communication skills; Must be analytical and data-driven.

Compensation will consist of a competitive salary and benefits.

To apply for this job, please visit http://www.envivabiomass.com/careers/ to submit both a cover letter and resume referencing the Fiber Supply Manager position #2013-1106.

Enviva is an equal opportunity employer.

To apply:

Contact Person: Jennifer Feinleib

Phone: (301)-657-5560

Associate Agent-Forest Stewardship Educator
College of Agriculture & Natural Resources
University of Maryland Extension
Non-Tenure Track Faculty (12-Month Contract)
Position #: 113633

Location: This position will be housed at the Wye Research & Education Center, in Queenstown, Maryland and have statewide responsibility.

Job Responsibilities: Develop and implement UME's Woodland Stewardship Program (60%); Organize, implement and manage the Maryland Woodland Stewards volunteer training program with help from other extension specialists; Develop publications, web resources, and other educational materials on woodland stewardship, invasive species, and other relevant topics.

Coordinate the implementation and development of woodland stewardship programs in cooperation with the UME Natural Resources Specialist at WMREC, as well as other UME educators & specialists; Partner with woodland owners, professionals and other organizations to set up demonstration studies that support educational programs; Work with: MD DNR-Forest Service, Tree Farm, Maryland Forests Association, and other State agencies and organizations to promote woodland stewardship; Provide regular articles and material for the Branching Out Woodland Stewardship Newsletter that is produced four times per year and distributed electronically to about 2,000 landowners and others; Provide input and occasional assistance for maintenance and resources on the Maryland Woodland Stewardship webpage, www.extension.umd.edu/woodland; Seek and obtain grant funding to support and develop programs; Implement a backyard woodland program using the Woods In Your Backyard curriculum that will focus on landowners with small acreages; Develop, implement, and manage the Maryland/Delaware Master Logger program in cooperation with other partners. (40%); Develop & implement training curriculum via classroom and electronic media; Develop publications, web resources, and other educational materials; Maintain accurate databases of master loggers and create a system for continuing educational updates; Advertise training programs, collect registration funds and manage registration materials; Coordinate with the SFI and Master Logger Steering Committees; Provide annual reports of accomplishments to SFI and ML Steering Committee; Seek and obtain grant funding to support and develop programs; Edit Master Logger quarterly newsletter; Maintain website using Drupal content management system; Maintain inventory of course materials, including printing and assembling manuals and other documents, copying course CDs and DVDs.

Qualifications: (Required) B.S. degree in forestry or closely related field; Experience with developing and implementing educational programs for woodland landowners; Excellent communications skills and the ability to write effectively; Strong computer skills required in WORD, EXCEL, spread sheets and PowerPoint; Ability and willingness to work with volunteers is preferred but not required; Must be willing to work some evenings and weekends. (Preferred) M.S. preferred; Qualifications for a Maryland Forest Registration/License is highly preferred (www.dllr.state.md.us/license/for/foraff.shtml).

Salary & Benefits: Base salary will be $37,100 per year, 12 month contract that can be renewed up to 3 years depending on funding availability. The University of Maryland offers an extensive benefits package.

Applications: All candidates must apply online at https://ejobs.umd.edu/ . A complete application packet includes a letter of application, a current resume or Curriculum Vitae, transcripts (copy acceptable for application process), and three references, including name, mailing address, telephone number, and E-mail address. Closing Date: For best consideration, complete application by January 31, 2014 or until a suitable candidate has been identified.

The University of Maryland Extension programs are open to any person and will not discriminate against anyone because of race, age, sex, color, sexual orientation, physical or mental disability, religion, ancestry, national origin, marital status, genetic information, political affiliation, and gender identity or expression.

To apply: https://ejobs.umd.edu/

Forester, Fiber & Supply
MeadWestVaco

MWV has a career opportunity that will put you on the forefront of the best-known brands in the world. At MWV, we create packaging solutions that help shape some of the most recognized brands in the cosmetics and personal care, healthcare and pharmaceuticals, food and beverage, home and garden, media, specialty chemicals, and consumer and office products industries.

We've become a global leader in our industry by making our customers leaders in theirs. And every single one of our 23,000 employees is an essential part of this mission. Let MWV help you write your own success story.

Career Opportunity: The position opening is for a professional forester responsible for procuring pulpwood and biomass in support of the Covington paper mill and biomass boiler, and biomass boilers in southern Virginia. The work region constitutes portions of a ten county region in central Virginia.

Responsibilities of the position include: Safety compliance; Effective written and oral communication with suppliers and MWV employees; Raw material acquisition for the aforementioned facilities through open market and stumpage purchases; Maintaining and building effective supplier and partner relationships; Contract development and supervision; Wood flow management; Wood quality assessment; SFI compliance and certification documentation; Wood accounting; Participation in community and industry outreach opportunities.

Benefits: MWV is a global leader in packaging and packaging solutions (http://www.meadwestvaco.com/index.htm). Our fresh insights, innovative products, global manufacturing, and unparalleled service make us the partner of choice for many of the worlds most admired brands in the healthcare, beauty and personal care, food, beverage, home and garden, and tobacco industries. Our end-market expertise is also the foundation for success in our other businesses Specialty Chemicals (http://www.meadwestvaco.com/SpecialtyChemicals/index.htm) and the Community Development and Land Management Group. (http://www.meadwestvaco.com/CommunityDevelopmentandLandManagement/index.htm)

We touch peoples lives every day, everywhere. We help people keep track of their medications (Dosepak (http://www.meadwestvaco.com/HealthcarePackagingSolutions/AdherencePackaging/MWV021898)® , and Shellpak (http://www.meadwestvaco.com/HealthcarePackagingSolutions/AdherencePackaging/MWV021960)® packaging), take care of their homes and gardens (Mixor (http://www.meadwestvaco.com/HomeandGardenPackaging/TriggerSprayers/MWVS023011)® Trigger Sprayers) and their communities (Evotherm (http://www.meadwestvaco.com/SpecialtyChemicals/AsphaltAdditives/MWV002106)® asphalt). We develop products and solutions that not only grow our customers brands, but also improve our and their customers quality of life.

With about 15,000 employees worldwide, MWV operates in 30 countries and serves customers in more than 100 nations. But no matter where were doing business, we do things the right way with a focus on integrity, sustainability, and positively contributing to the communities in which our employees live and work.

MWV is an Equal Opportunity Employer.

Job Requirements: Qualifications for the position include: B.S. in Forestry or a closely related field; Minimum of at least 5 years experience in wood procurement or a closely related field; Strong communication and public relation skills; Effectively uses personal computer related to Microsoft software; Familiarity with field data recorders, GPS, and mapping software; To apply: http://appclix.postmasterlx.com/track.html?pid=ff80808142c6f6640142c9c0621e0b42&source=socamforesters

Portfolio Analyst
Hancock Natural Resource Group

Hancock Timber Resource Group (HTRG) is a division of Hancock Natural Resource Group (HNRG), founded in 1985 and based in Boston, Massachusetts, USA. HTRG develops and manages globally diversified timberland portfolios for public and corporate pension plans, high net-worth individuals, and foundations and endowments. As of March 2013, assets under management totaled $11.5 billion. These assets are located in the United States, Canada, Australia, New Zealand, and Brazil.

Summary: The Portfolio Analyst is primarily responsible for supporting Portfolio Managers in all aspects of the management of client portfolios. The Portfolio Analyst is responsible for conducting financial analysis of existing and hypothetical client portfolios, properties, and potential acquisitions and dispositions. The majority of the analysis are forward-looking, with the dual goal of improving investment portfolio performance, and ensuring that existing portfolios satisfy the objectives and constraints set forth in the clients' Investment Management Agreements.

Essential Duties and Responsibilities: Prepare materials for client portfolio reviews, and participate, with Portfolio Managers, in presentation of portfolio reviews at client meetings; Write narratives to accompany quarterly financial reports for assigned accounts; Respond to client questions and data requests; Support preparation of investment offering materials and financial model development; Monitor economics of global timber and timberland markets; Maintain Client Account Management group data; update and run reports; Seek to improve analytical processes and reporting capabilities; Develop familiarity with assigned portfolios' timberland investments through field visits; Monitor and review timberland property budgets and long term management plans; Other duties may be assigned.

Job Requirements: Undergraduate/postgraduate degree(s) in forestry, and several years of work experience in forestry and/or investment management; Knowledge of discounted cash flow analysis; forest management, timber prices and timberland values Understanding of securities and the analysis thereof; Working knowledge of accounting, statistics and timberland appraisals; Effective writing and speaking abilities are critical;

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To apply:

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Emerald Ash Borer Jumps West to Colorado

Foresters in both urban and rural settings in the eastern US have been battling the invasive and destructive emerald ash borer (EAB) for more than a decade, and if they haven't seen the insect or its damage, they've kept a vigilant watch for them. Now the EAB is marching—or hitch-hiking—westward. It settled in the Kansas City, Kansas, area in 2012. This year, it was found in green and white ash trees in Boulder, Colorado, a leap of about 600 miles.

The EAB was first found in a handful of ash trees in central Boulder in September. Naturally, this was cause for alarm, and a survey of the city's trees was initiated. In mid-November, another infested tree was found about a mile and a half away, on the campus of the University of Colorado.

"Because it's so hard to find the EAB visually, we have created a one-mile grid over the city and are sampling 10 trees in every one-mile square. We take two or three branches from each of those trees and peel the bark to try to find larva. We think that's the best method for determining the extent of an infestation at an early stage," said Mitch Yergert, director of the Colorado Department of Agriculture's (CDA's) Plant Inspection Division.

The survey will likely be completed by the end of January.

"By then we'll have a pretty good idea if there are other infestations in Boulder," he said.

The CDA has established a quarantine of Boulder County, as well as two landfill sites outside the county. Nonetheless, Yergert said he wouldn't be surprised if the EAB is found in Denver, since the city is only about 30 miles from Boulder.

According to the CDA, there are about 98,000 ash trees in Boulder; both green and white ash have been widely planted in Colorado over past 50 years and are valued as street and landscape trees. The department estimates that there are about two million ash trees in Colorado, most of which are in Denver, with an estimated 1.45 million ash trees. Ash makes up as much as 80 percent of trees in some Denver neighborhoods. Green and white ash are not natives of the state; a small population of native ash exists in the far western portion of the state, west of the crest of the Rocky Mountains.

The EAB has killed tens of millions of ash trees in urban and rural areas in the US since it was introduced more than a decade ago. It was first discovered near Detroit, Michigan, in 2002. EAB, a native of eastern Russia, northern China, Japan, and Korea, is thought to have arrived in North America in wooden packing material or crates. The insect, which cannot travel long distances on its own, may have been introduced to Boulder in firewood imported from a state to the east.

However, the first infestation discovered in Boulder was in a condominium complex with no fireplaces, and there are few fireplaces near the second site, on the university campus.

"We're not sure that we've located 'ground zero' yet, but our speculation is that it probably arrived in firewood or maybe in packing materials, since the first location is not far from an industrial area, where pallets and other materials are brought in from all over the country," said Yergert. "I think we'll find more EAB in Boulder, and it's hard to believe that if it's in Boulder that it's not in the Denver metro area."

Colorado Department of Agriculture

John Kaltenbach, coordinator of the state of Colorado's Cooperative Agricultural Pest Survey program, peels bark from an ash tree found in September in Boulder, Colorado, that was infested with the emerald ash borer.

Some of Colorado's neighbors to the east are concerned that the EAB may spread to their states.

"Boulder had huge, unprecedented flooding in September," Yergert said. "There were many trees down, and a whole lot of wood washed down creeks and rivers. Folks in Nebraska saw the flood surge come down the river, so naturally they were wondering how much ash might be in all that debris."

Ash trees have naturalized along creeks in and around Boulder, he said.

All *Fraxinus* species can host the EAB. According to the USDA Animal and Plant Health Inspection Service, 22 states are known to have EAB infestations, and federal and state quarantines now total more than 365,000 square miles.

To read more about the emerald ash borer and other invasives, visit the invasives page in the professionals area of the SAF website at www.eforester.org/fp/pathology.cfm. FS

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