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A Quality Relationship between Nurseries and Foresters is Imperative to Successful Reforestation

BY DIANE L. HAASE

A solid, positive relationship between field foresters and nursery managers/growers is a critical component of reforestation success. Much time, energy, and money is invested in this relationship and its importance cannot be overstated. In order to achieve target stocking and growth rates in their plantations, reforestation foresters depend on high-quality nursery stock that is matched to their specific site conditions and is available during their outplanting window. On the other hand, nurseries depend on field foresters to provide quality seed (in most cases) and morphological and physiological specifications so they can define growing regimes to meet their customers' needs and thereby sustain their operations. Neither can achieve their goals without the other, so it is absolutely essential that they cultivate strong professional relationships and have an excellent understanding of each other's needs, limitations, challenges, protocols, and schedules.

I contacted several foresters and nursery managers/growers and asked for input for this article. When asked what the most effective way to work together is, the response I received from everyone was "communication!" At the same time, when asked what the biggest problem encountered when working together is, the response was also "communication!" Most foresters and nursery managers/growers are more comfortable working with trees than with people. However, developing close working relationships with timely, consistent, and effective communication is clearly of utmost importance and cannot be neglected. No one likes surprises. Frequent, substantive communication through phone calls, emails, and on-site visits helps to address both routine and unanticipated issues. Nurseries need to inform their customers immediately if they suspect a problem with the crop due to poor germination, weather damage, or other factors affecting the quality or quantity of seedlings to be delivered. Likewise, foresters need to notify nurseries in advance about desired seedling attributes, required delivery dates, and other seedling needs. This proactive approach can head off problems before they escalate. Some nurseries prefer to have the manager be the voice of the operation, but it is benefi-

(CONTINUED ON PAGE 2)

PHOTO COURTESY OF DIANE L. HAASE

Understanding how trees grow in both the nursery and the field and staying abreast of current seedling technology is essential for effective working relationships between nursery managers/growers and reforestation foresters. In this photo, participants at the annual meeting of the Western Forest and Conservation Nursery Association tour the Washington DNR Webster nursery to learn about recent strategies and challenges in seedling production.

A Quality Relationship between Nurseries and Foresters

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cial if the forester can also have direct communication with the grower who is the one actually growing the trees.

Several details need to be communicated on a regular basis, both written and verbal. A clear understanding of the target seedling for each species and stock type is needed. Target minimums and maximums (e.g., height, stem diameter, root:shoot balance, stem form, root architecture, vigor), quantities, prices, notifications, schedules, and other details are usually specified in a growing contract. The contract should focus on the size and quality of the final product rather than on how that will be achieved; nursery personnel prefer to be told what to grow rather than how to grow it. Logistics, especially for sowing and lifting, must be communicated clearly. As the time draws near, specific dates can be settled upon to dodge surprises and delays. Lifting and planting season can be frenzied for both foresters and nurseries, both of whom must coordinate labor, storage, and transportation while also contending with weather-related issues. Finally, there needs to be feedback to the nursery on their crop performance in the field so they can work toward correcting any issues stemming from nursery culturing.

PHOTO COURTESY OF DIANE L. HAASE

Communication between the nursery and the grower during grading and pruning is the final opportunity to influence the quality of seedlings being packed for outplanting.

When issues do arise, working through them in a timely, professional manner is essential. One forester commented that, "not overreacting to issues as they develop and focusing on a desired outcome with both parties moving forward in a positive, can-do approach is critical." Identifying problems early, brainstorming solutions, and referring to the contract can be instrumental in resolving issues. It's important to recognize that every nursery can have a year when production is unavoidably compromised due to weather or pests. In the event that seedling quality or quantity is below target, discussions about lowering the grading criteria may occur. Caution must be exercised, however, when accepting/selling substandard seedlings. Lower quality stock can lead to poor field performance—a disadvantage for the forester if growth or stocking are inadequate and a potential detriment to the nursery by harming their reputation and future sales. Depending on the situation, it may be better to locate additional seedlings elsewhere or to delay planting for a year rather than plant stock that will perform poorly.

In addition to communication, it's important for foresters and growers to have a good understanding about their respective activities with the seedlings. Foresters need to be familiar with nursery cultural practices and the various issues that growers face during production. Similarly, nurseries need to understand outplanting site conditions and how they influence field performance. This requires some commitment and study, but a little knowledge about how seedlings grow in response to both nursery culturing and site conditions can go a long way in helping to troubleshoot issues and guide deci-

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Next Issue: Disturbance Events

sions. Learning from each other, attending technical conferences and meetings, asking a lot of questions, and running small trials are all important for continued learning about seedling development under varying circumstances (see sidebar for a list of useful resources).

One of the most effective ways to communicate and to learn from one another is through regular on-site nursery and field visits. Foresters need to visit the nursery 3-4 times during the growing season to observe their seedlings, ask questions, and discuss any issues. Crop development, projected pack out inventory, soil/growing medium, irrigation uniformity, passion and transparency from nursery staff, and overall appearance of the nursery are some aspects that foresters look for when visiting the nursery. It's especially important for foresters to be present when their seedlings are being packed. This is the best (and last) opportunity to influence seedling quality by communicating with the grower and graders about what goes in the box/bag. One nursery manager commented that, "a forester who shows up in the packing shed knows what they are getting before they open the bag." Similarly, there is no substitute for nursery managers/growers to visit field sites and view seedling field performance with their own eyes. Visits during the summer after outplanting, when seedlings are actively growing, are a good time to observe first-season growth and survival and to learn more about the forester's site conditions as well as their planting and handling practices. Some foresters plant small field plots containing a full complement of stock types and species from each nursery provider for a given planting year. These plots are valuable to the forester for monitoring and comparison purposes and are also ideal spots to bring nursery managers/growers to see the relative performance of their stock in the field. These visits ultimately contribute toward continued professional relationships between the forester and nursery manager/grower and facilitate discussions for future crop improvements.

In this issue of *Western Forester*, Bryan Nelson gives an overview of his reforestation planning process and emphasizes the importance of timing, communication, and logistical coordination with the nursery for sowing, transplanting, lifting, packing, and storage. As forest and nursery situations change over time, foresters and nursery managers must adjust their practices accordingly. Under these circumstances, clear communication, flexibility, experimentation, and cooperation are even more important. The other two articles in this issue describe two such situations. Jerry Weiland summarizes the challenges that bareroot nurseries face as a result of the methyl bromide phase out and regulation of other soil fumigants. As pest management strategies change in the nursery, foresters need to be aware of how this may affect seedling quality and pricing. Another topic that is gaining greater attention is the anticipated effect of climate change on seed zones, nursery production, and outplanting practices. In their article, Mary Williams and Kas Dumroese describe recent research and potential strategies to plan for changing environments. This will take a great deal of collaboration between nurseries and foresters but may be vital for future forests. ◆

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Additional Resources

Reforestation, Nurseries, and Genetics Resources (RNGR)
http://RNGR.net

The USDA Forest Service's RNGR Program provides expert support to forest and conservation nursery and field personnel throughout the country. A group of technical specialists (referred to as the "RiNGeR Team") provides technical assistance, conducts research projects (to address seedling and field issues), publishes periodicals, handbooks, and scientific articles, and hosts annual conferences and workshops. The National Seed Laboratory and a Tribal Nursery Emphasis are also integral components of RNGR's mission. The RNGR website is a popular and comprehensive resource for both nursery managers/growers and reforestation personnel. The site contains over 9,000 searchable articles available for free download as well as a national directory of nurseries, a calendar of events, links to other relevant sites, and more. Some particularly useful publications on the site include:

- *Tree Planters' Notes;*
- *The Container Tree Nursery Manual* (Volume 7 focuses on seedling processing, handling, and outplanting);
- *Woody Plant Seed Manual;*
- Proceedings from dozens of conferences focused on nursery practices, reforestation, tree improvement, pest management, and more; and
- Bibliography of Climate Change/Assisted Migration literature.

Center for Forest Nursery and Seedling Research
http://seedlings.uidaho.com/

This program at the University of Idaho focuses on nursery management, reforestation, native plant regeneration, and more.

OSU College of Forestry Research Cooperatives
www.forestry.oregonstate.edu/research/research-cooperatives

Currently, there are 11 cooperatives at OSU addressing a wide variety of forestry topics.

Western Forestry and Conservation Association (WFCA)
www.westernforestry.org

WFCA promotes forest stewardship in western North America through high-quality professional continuing education for natural resource managers. These events range from workshops and field trips to conferences on the science and practice of forest management.

Strategies for Reforestation on Lone Rock Timberlands

BY BRYAN NELSON

Planning for reforestation can be as simple as ordering seedlings after harvest and hoping someone has surplus. Or, it can be as complicated as sowing specific seed lots for every individual harvest unit two years prior to harvest and preparing the ground for planting. Many variables must be taken into account to maximize the success of reforestation efforts and investment dollars.

At Lone Rock Timber, we plant in excess of one million seedlings a year on the westside of the Oregon Cascades. Without planning, I could not find enough seedlings on the open market to cover our needs. Even if I could find seedlings, they would be more expensive and most likely somebody else's rejects.

PHOTO COURTESY OF BEVIN WIGMORE, ARBUTUS GROVE NURSERY

Bryan Nelson (right) assesses third-year growth in the field with Arbutus Nursery Grove nursery manager Nathaniel Stoffelsma.

Planning starts several years in advance

We choose to plan as thoroughly as possible given the information available. The process starts at least two years prior to harvesting a unit. A harvest schedule and inventory allows me to decide which planting year makes the most sense for each unit. For example, a unit scheduled to be harvested in May 2014 may have enough time over the summer to allow for resprouting of vegetation. We can then plan for effective site prep in September in order to plant in January 2015. On the other hand, a unit planned for harvest in August 2014 may not have enough time for vegetation to resprout and therefore will need to be held over, site prepped in September 2015, and planted in 2016. This scheduling is only as good as the log market allows. Some units will be delayed in poor markets and others will be added during good markets. I usually have 80% of my planting plan set two years in advance.

Seedling specifics

After I have decided which units to plant in what year, I decide on genetics, stock type, growing nursery, and, in some cases, species. Lone Rock Timber has been involved in tree improvement since the 1980s and has received improved seed from cooperative seed orchards since 1997. We are now involved in 2nd and 3rd generation testing programs.

Lone Rock's land base covers 5 seed zones with at least two elevation bands in each. Therefore, I need to decide which seed mixes and species fit the harvest units best based on testing and/or previous plantings. Germination tests, seed weight measurements, and purity tests need to be done on these lots prior to sowing to allow time for the nursery to calculate the amount of seed needed for each lot. I then decide how big of a seedling I want to plant on each site. This will determine which stock type to grow and at what densities. Most of what we have grown is bare root: 1+1s and plug+1s. I also have the option of growing a one-year (container) stock type to supplement my plan in case more units are added than planned for.

Root size and architecture is important in getting seedlings planted proper-

ly. Root to shoot ratio is important for survival and stress resistance, especially on harsher sites. Root collar diameter and lower lateral branching—rather than height—are better indicators of expected out-plant vigor, browse resistance, and growth. Transplant densities and season of transplanting are crucial prescriptions for achieving these specifications early enough to allow the grower time to shut the crop down in preparation for fall and winter cold hardiness.

The choice of a growing nursery depends on past experience with the grower, price, and soil type. Some nurseries are more experienced with growing 1+1s and others are better suited for fall transplanting plug+1s. Working with a variety of nurseries allows flexibility during packing and provides a margin of safety. These trees are living organisms and anything can and has gone wrong during the growing process. Every nursery has experienced "bad years."

Site prep decisions

After the sowing is done and the nurseries have the seed they need, my focus turns to keeping up to date with harvest administration and planning for site preparation. Soil types, harvest season, and slash loading are taken into consideration when making a decision to in-unit pile, subsoil compacted areas, and/or prescribe burn. Prescriptions for aerial site preparation or hack and squirt are made based on the vegetation present or expected. Riparian zones and sensitive areas need to be identified and protected either by spray buffers or hand spraying.

Throughout the next couple of years I will update my plan as harvest schedules change and monitor the progress of the crop.

Nursery relationships

Communication with the growers is a key function in understanding and having confidence in the process of growing seedlings. It starts with visiting the nursery throughout the year and conveying what the characteristics of my "target" seedling are. I am not a grower, so the last thing I want to do is tell a nursery grower how to grow their crop. They are generally not foresters and rarely get a chance to see the seedlings a year or two after they are outplanted, so they value any observations I make while in the field.

I visit the container nurseries that grow my starter plugs prior to transplanting and discuss any issues that might have come up during the growing season. I also get a chance to see any out plant plugs they might be growing. I will try to get to the bare root nurseries in the spring and/or summer during or shortly after transplanting to observe the trees going into the ground. We discuss root growth, stock size, and any crop culturing regime they plan on doing. Visiting the nurseries in the late fall prior to planting is valuable for assessing how the crop is doing going into dormancy and what to expect for size and root structure.

Lifting and timing

Just prior to the planting season, the nurseries will provide an inventory that gives me an expected pack-out

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and morphology of the crop. With this information I put together a schedule for getting the trees lifted, delivered, and planted. The details of this schedule are usually scrapped the week after I make it due to either weather or logistics, but it gives me, the planting contractors, and the nurseries a framework from which to work through the season. Since my storage capacity is limited I strive to time my lifting and planting as close together as possible. I do not want to have any delays in planting due to insufficient trees, so the details of this plan have to be worked out daily during the season.

It is generally accepted in the PNW that the best time for planting is winter and early spring. However, fall planting is an option in some areas and has the potential to provide the trees with some fall root growth setting them up to grow earlier in the spring.

Winter and spring planting is most reliable for success due to a number of factors that include dormancy, cold hardiness, and stress resistance. Dormancy is defined as the number of days until bud break and is initiated by a combination of moisture stress and day length. Naturally, this begins in September. Release from dormancy occurs as seedlings are exposed to cold temperatures and experience rest. After rest is complete, the seedling breaks bud. Dormancy is important when discussing storability. Cold hardiness and stress resistance are different than dormancy. They are defined as the the ability of a seedling to cope with lifting, packing, handling, storage at cold temperatures, and planting. This generally occurs after about 400 hours of temperatures below 6°C (42°F) called "chilling hours." As chilling hours approach 400 (this can vary from year to year and nursery to nursery) and the day length approaches the shortest day (Dec. 20), I can plan to ask for trees to be lifted. Flexibility and communication are important here. As soon as the trees are lifted, we try to get to the nursery during packing, which gives us an opportunity to fine tune the grading. Grading is the process of selecting the trees that meet caliper and height specifications as well as root volume, root structure, and stem form. This also gives us an opportunity to take measurements and provide the nursery with confidence that they are providing the product we want. I don't like getting surprised when opening a bag of trees in the field. In my experience, most nursery managers are open to and like getting feedback during this visit.

PHOTO COURTESY OF DIANE L. HAASE

Coordinating lifting and storage schedules between the nursery and the field is an important aspect of successful reforestation. This photo shows cooler storage of bareroot (bags) and container seedlings (boxes).

Storage considerations

At some point in this process, seedlings need to be stored. Since dormancy (bud break) is dependent on achieving rest (about 2,000 chilling hours), the earlier the trees are lifted in the year, the longer they can be stored. Cooler storage and freezer storage are used for different purposes. Cooler storage temperatures range from 0°C (32°F) and +2°C (35.6°F). This is used when storing trees less than two months. These temperatures slow respiration and utilization of carbohydrate reserves of the trees but do not stop the release of dormancy. Seedlings will actually break bud in cooler storage. Freezer storage temperatures are around -2°C (28°F). This is used when trees need to be stored up to six months. These temperatures actually stop the release of dormancy. Because of my close scheduling of lifting and planting, I have some storage flexibility when planting delays occur. Freezer storage is seldom used unless we know in advance that planting will not occur before May. Most container nurseries desire to have all their stock packed by early January and therefore freezer storage may need to be considered if planting these seedlings later in the season.

Accessing the results

After planting and spring weed control is completed, planting units are evaluated during their first year. Tree survival and vigor are noted and this information is relayed back to the nursery. Quite often the nursery managers and/or growers will come out into the field to discuss performance and future expectations. Observation, documentation, experimentation, and communication are key factors in managing the many variables encountered when planning and executing a reforestation program. ◆

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2014 SAF/CIF National Convention Call for Presentations

In 2014, SAF will partner with our Canadian counterpart, the Canadian Institute of Forestry/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 and has not been hosted in the United States since 1971.

This is an exceptional convergence, which will bring several thousand forest scientists and managers from over 100 countries together in Salt Lake City, Utah during the first full week in October. We are thrilled at the opportunities this will bring 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

Abstract submissions for individual presentations and panels in the scientific & technical concurrent sessions or poster symposium will be accepted for the following tracks:

- Forest Monitoring Science
- Embracing, and Learning from, Uncertainty
- An Engineering Take on Uncertainty: Lessons for the Forestry Profession
- Sustainability from a Forest Ecology and Silviculture Perspective: Supporting Effective Decisions at the Science–Policy Interface
- Reexamining the Forest Science–Policy Interface
- Challenges in Emerging Markets
- Reconciling Professional and Research Ethics in Forest Science– Management Partnerships
- Making and Interpreting Long-Term Forecasts
- Learning and Success in Partnerships
- Communicating Science

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.safconvention.org • (866) 897-8720

Key Deadlines

Online submissions open: November 1, 2013

Presentation submissions deadline: March 9, 2014

Notification of acceptance: April 2014

Poster submissions deadline: September 1, 2014

Notification of acceptance: September 22, 2014

All presenters must register for the convention. For more information, and complete track descriptions, go to www.safconvention.org and click on Presenters.

SAF NATIONAL CONVENTION

Salt Lake City, Utah
October 8-11, 2014

Methyl Bromide Phase Out Could Affect Future Reforestation Efforts

BY JERRY WEILAND

Methyl bromide has long been an integral component in producing healthy bareroot tree seedlings in US forest nurseries. A chemical fumigant, it is used to disinfest soil in forest nursery fields from soil-borne pathogens, insect pests, and weeds. Methyl bromide is usually mixed with chloropicrin, another chemical fumigant, and applied by injecting the mixture directly into the soil with a shank fumigator. The soil surface is then sealed with plastic film to help retain the fumigant's pesticidal activity for a longer period of time and minimize emissions.

Most nursery transplant beds are fumigated every third year, following two years of cropping and one year of bare fallow (plant-free). Seed beds, however, are fumigated annually because young, recently germinated seedlings are more susceptible to damage by insects and pathogens than older seedlings. Without fumigation, seedling yield and quality may suffer, and in a worst-case scenario, significant numbers of seedlings may be killed by soil-borne pathogens.

PHOTO COURTESY OF JERRY WEILAND

Fumigation remains important in forest nurseries for controlling plant pathogens, insects, and weeds.

In 1992, methyl bromide came under scrutiny when it was listed in the Montreal Protocol as a controlled substance by the United Nations Environment Program (UNEP) because of its ability to deplete the ozone layer in the Earth's atmosphere. The Montreal Protocol is an international treaty designed to regulate the production and use of chemicals that affect the ozone layer. The following year, in 1993, the Environmental Protection Agency (EPA) halted production of methyl bromide at 1991 baseline levels under the Clean Air Act, with the fumigant to be completely phased out of use by 2005. However, methyl bromide is still used by many forest nurseries in the western US under the quarantine and preshipment (QPS) exemption, which allows the industry to continue to use the fumigant to prevent the introduction, establishment, and spread of quarantine pests, including plant diseases. As a consequence, the phase out of methyl bromide from forest nurseries has been relatively slow. In 1981, approximately 90% of western forest nurseries used methyl bromide for bareroot seedling production. As of 2013, about 70% continue to use the fumigant.

Currently, five registered fumigants are listed by the EPA for use in forest nurseries: chloropicrin; dazomet (Basamid®); metam sodium (Vapam®, Busan); 1,3-dichloropropene (1,3-D); and dimethyl disulfide (DMDS). Of

these, chloropicrin, dazomet, and metam sodium are the most widely tested and most likely to be used once methyl bromide is no longer available.

Chloropicrin is effective alone for soil-borne pathogens, but is ineffective for broad spectrum weed control. Therefore, it will most likely continue to be used in combination with other fumigants such as 1,3-D or metam sodium for supplemental pest control. Both dazomet and metam sodium require activation with water and must be applied when soil temperatures are above 50°F to be effective. This latter requirement means that both fumigants will be most effective when used for summer or fall fumigation while soils are warm. If used in the spring while soil temperatures are cool, these fumigants can remain in the soil for extended amounts of time and cause seedling phytotoxicity. With few studies on 1,3-D and DMDS, it is not known how disease and pest control by these two fumigants will hold over time. Most studies with 1,3-D have been conducted in the southeast United States where environmental conditions are very different from those in the west. Although effective, DMDS is not considered a viable alternative because of its strong odor that can last for more than a month following application.

Industry challenges

One of the biggest challenges facing the forest nursery industry is adapting to constantly-changing regulations regarding soil fumigant use. Over the past several years, the EPA has released a series of rules that regulate, and increasingly limit, how fumigants are applied. One of the most controversial rules is the new buffer zone requirements that require a certain distance between the fumigated field and any potential bystanders. Because of suburban encroachment, many forest nurseries now share at least one border with a residential neighborhood, which can significantly reduce the nursery's ability to fumigate for pest control.

Another challenge is the lack of alternative fumigants available for spring fumigation. About 70% of the fumigation is conducted in late summer or fall so fields are ready for planting the following spring. However, if the amount of land fumigated in summer is not enough to produce the quantity of seedlings ordered by customers over the winter, additional fields must be fumigated in the spring to meet production demands. Previously, methyl bromide fit the need because it could be applied early in the season and was sufficiently volatile to quickly disperse from the soil before seedlings were planted. In contrast, alternatives such as metam sodium cannot be applied until the soils are much warmer, and by then it may be too late in the season to plant seedlings to reach a sufficient size for spring sales the following year. These fumigants also volatilize more slowly

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PHOTO COURTESY OF JERRY WEILAND

Suburban housing developments often encroach on the borders of forest nurseries, which can place significant restrictions on the grower's ability to apply fumigants.

from cool, moist soils than methyl bromide, which increases the risk that newly planted seedlings will be damaged by residual fumigant in the soil. Additional research is needed to determine which fumigants can be applied in spring and disperse quickly so seedling phytotoxicity will not occur.

One final challenge is pathogen identification and monitoring. Pathogens previously controlled by methyl bromide may not be as effectively controlled by other fumigants, so some pathogens may become more problematic and new diseases may emerge. We simply won't know the long-term effectiveness of methyl bromide alternatives until they have been used consistently in forest nurseries for several years. In addition, disease, weed, and insect control may be inconsistent until growers gain more experience and optimized strategies are developed for the alternative fumigants.

What does this mean for reforestation?

In the short run, it may become increasingly expensive to obtain bareroot forest tree seedlings of the size and quality that foresters have come to expect. Some forest nurseries have closed due to the historic decline in timber harvests since the 1980s (resulting in fewer acres needing reforestation) and because of the recent economic recession. Shortages may become more common, particularly following unexpected catastrophic events where large numbers of seedlings are needed quickly for reforestation. Seedling quality may also suffer if the new fumigants cannot adequately control seedling diseases and pests.

PHOTO COURTESY OF JERRY WEILAND

Two-year-old Douglas-fir seedlings are produced at a forest nursery in Oregon.

In the long run, fumigation will probably become increasingly difficult due to increased regulation, which may force more nurseries out of business, particularly those close to residential neighborhoods. Some nurseries may choose to focus more on container-grown seedlings to avoid the challenges and costs associated with field fumigation. However, fewer seedlings can be produced per unit area in containers than bareroot, and the additional infrastructure, heating, labor, and supply costs generally make containerized seedlings more expensive.

Regardless of its utility, methyl bromide will eventually be removed from the arsenal that forest nurseries have to control soil-borne pathogens, insects, and weeds. Although short-term studies indicate that several alternative fumigants are nearly as effective as methyl bromide, the track record for many alternative fumigants is short, and it remains to be seen if they will perform as dependably as methyl bromide over time. Disease and pest control will likely be inconsistent until strategies with alternative fumigants are refined and optimized. This, coupled with nursery closures, increasing fumigation costs, and a slow but steady movement toward containerized-seedling production may drive seedling prices up.

Nevertheless, the forest nursery industry remains strongly committed to producing healthy seedlings at a good value for its consumers. The industry, in collaboration with government agencies and local universities, has multiple ongoing research projects to identify and refine best management practices for alternative fumigants before methyl bromide is removed completely from the market. This will help ease the transition away from methyl bromide and ensure that healthy seedlings are available for the nation's reforestation needs. ◆

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Role of Climate Change in Reforestation and Nursery Practices

BY MARY I. WILLIAMS AND
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Ecosystems have been adjusting to changes in climate over time, but projections are that future global climate will change at rates faster than that previously experienced in geologic time. It is not necessarily the amount of change, but rather this rate of change that is most threatening to plant species—the climate appears to be changing faster than plants can adapt or migrate. Long-lived species, such as trees, will lag behind short-lived species in their ability to adapt and track suitable climate conditions. Although growing season length will continue to lengthen under climate change and may cause an increase in forest productivity, it will be offset by increased evaporation, transpiration, soil drying, and phenological imbalances. Expected impacts on forests are similar to what we have already observed, such as landscape-scale tree mortality due to mountain pine beetle outbreaks in the Rocky Mountains and prolonged drought and high temperatures in the southwestern US and Canadian boreal forests. Impacts will intensify during the latter half of this century with forest systems continuing to experience shifts in phenology and distribution, making plants poorly adapted to their local climates.

The divergence in rates between climate change and tree adaptation will have important consequences for reforestation and nursery practices. Plant materials outplanted today must be able to meet and face the climatic challenges during this century. Unfortunately, most state and commercial nurseries in the US have not yet explored how changes in climate will impact their operations. This article highlights some adaptation strategies to help reforestation and nursery practices, such as moving populations to new locations, modifying seed transfer guidelines, and targeting diversity in plant materials.

PHOTO COURTESY OF R. KASTEN DUMROESE

Producing high-quality seedlings for reforestation will remain a priority, especially to meet the challenges of a changing climate.

On the move

Foresters may need to move tree populations to new locations to maintain adaptation. Assisted migration, also referred to as managed relocation and assisted colonization, is the movement of species and populations to facilitate natural range expansion in direct management response to climate change. In forestry, assisted migration can be a viable option for some tree species and populations that are at risk of decline or extirpation under climate change. Assisted migration does not mean moving plants far distances, but rather helping genotypes, seed sources, and tree populations move with suitable climatic conditions to avoid maladaptation, which will probably entail moving seeds across current seed-zone boundaries or beyond transfer guidelines.

Preliminary research on most commercial tree species demonstrates that

(CONTINUED ON NEXT PAGE)

target distances would be short, occurring within current ranges of those species. Researchers are also working to better understand how to use assisted migration. One project is the Assisted Migration Adaptation Trial that consists of several long-term experiments being conducted by the British Columbia Ministry of Forests, the US Forest Service, timber companies, and other partners that test assisted migration, climate change, and tree performance in the Pacific Northwest. In British Columbia, western larch may now be moved to suitable climatic locations just outside its current range. Foresters in the southern US have been moving seed sources of southern pines one seed zone north to take advantage of changes in climate and assisted migration is being used to save Florida torreya, a rare southeastern US evergreen conifer, from extinction.

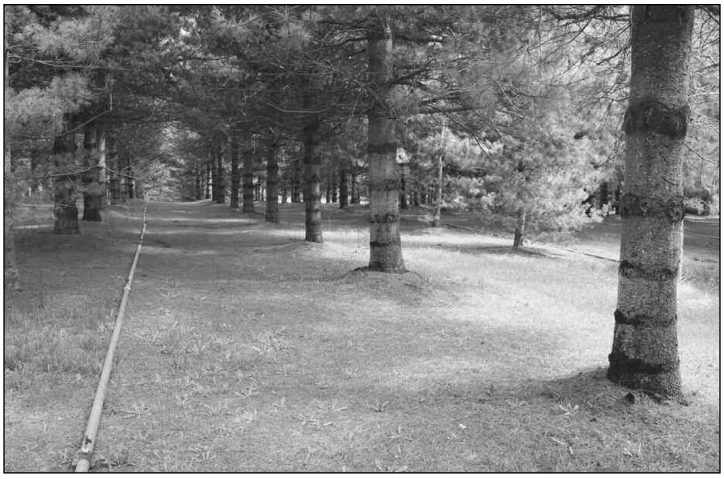


PHOTO COURTESY OF R. KASTEN DUMROESE

Provenance tests that led to development of seed orchards may be a valuable resource in identifying and transferring plant materials suitable for new climates.

Flex the guidelines

Foresters and nursery managers will need to reconsider the selection, production, and outplanting of native trees in a dynamic context. That is, they will need to re-evaluate the practice of restricting tree movement to environments similar to the tree's source, a long-held practice in forest management. Seed transfer guidelines are needed for short- and long-term planning efforts and will require adjustments as new climate change information comes to light because using current, static seed transfer guidelines and zones will likely result in trees facing unfavorable growing conditions by the end of this century. In Canada, a few provinces have already modified policies in conjunction with climate change. Alberta has extended current seed transfer guidelines northward by 2° latitude and upslope by 656 ft (200 m) and new guidelines for some species were revised upslope by 656 ft (200 m) in British Columbia.

Changing guidelines will require collaboration and discussion of how predicted conditions (warmer temperatures and variable precipitation patterns) will affect forests. Nurseries can work with foresters to explore genotypes that may be resilient to temperature and moisture extremes. Information such as where the plant comes from, where it is planted geographically, and how it performs (growth, survival, reproduction, and so on) can guide forestry practices to increase the proportion of species that survive and grow well under varied climatic conditions. Consulting online tools, such as the Seedlot Selection Tool (http://sst.forestry.oregonstate.edu/)—a mapping tool that matches seedlots with outplanting sites based on current or future climates for tree species such as Douglas-fir and ponderosa pine—can help foresters make decisions about future seed transfers. Projected seed zones have been developed for a variety of trees, such as quaking aspen; lodgepole pine, longleaf pine, and whitebark pine; western larch; and flowering dogwood. Where we lack provenance data, we can employ logic-based approaches to select optimal seed sources for current and future climates and rely on seed zones that are warmer than the target outplanting site. Seed zones and guidelines can be shifted to an amount equivalent to what we think will buffer climate change, for example, procuring plant materials from a site 1° C warmer than the outplanting site. Fortunately, many state and commercial nurseries in the eastern half of the US already carry tree species and seed sources collected from sites further south (often beyond state borders) than the anticipated outplanting sites, suggesting that

For More Information

- Assisted Migration Adaptation Trial (AMAT): www.for.gov.bc.ca/hre/forgen/interior/AMAT.htm#Overview
- Assisted Migration/Climate Change Literature Database: www.rngr.net/publications/assisted-migration
- Center for Forest Provenance Data: http://cenforgen.forestry.oregonstate.edu/index.php
- Climate Change Resource Center: www.fs.fed.us/ccrc/
- Preparing for climate change: Forestry and assisted migration: www.treesearch.fs.fed.us/pubs/44260

plant materials being outplanted now may be adapted to warmer conditions.

Buffer uncertainty with diversity

Conserving and maximizing genetic diversity in plant materials will provide species and populations with the adaptive and evolutionary ammunition to offset changes in climate. Genetic diversity can be conserved by protecting natural reserves in heterogeneous landscapes and collecting seeds from many populations across their geographic range for long-term storage (for example, seed banks). Guidelines that focus on increasing the genetic diversity within the deployment population provide some long-term insurance that would counter against uncertainty in climate predictions and species' reactions to climate change.

High levels of diversity may swamp the few individuals in a collection that are adapted to either the current or future climate; therefore, the level of diversity should match the level of climate uncertainty. In situations with high uncertainty, planting a mixture of seed sources and monitoring their adaptive response might be best. Disturbed areas can be used as outplanting sites to evaluate genotypes, seed source diversity, and age classes. Allowing for physiological or morphological variation in nursery stock might serve to facilitate natural selection to future climates, more so than planting stock that has uniformity in traits. Tree improvement programs can also provide opportunities to breed and select for traits such as drought tolerance.

Connecting roles

Even though an adaptation strategy, such as assisted migration, may force us to weigh options—allowing extinction and maladaptation against introducing species and populations into areas in which they are not native—a no-action approach in forestry is not sustainable. Collaboration among researchers, foresters, and nurseries and assessment of risks can help curtail significant social, economic, and ecological losses associated with impacts from a rapidly changing climate. The forestry profession, with its experience of crafting seed transfer guidelines, developing seed orchards, and maintaining vibrant forest landscapes is uniquely suited to be leaders in this endeavor. Each party plays an instrumental role, but all must be willing and open to new approaches whether it is encouraging landowners to plant for future climates or informing nurseries and clients about documenting seed source information and outplanting performance. Nurseries should see themselves in partnerships with land managers, foresters, and restorationists and work with stakeholders to provide appropriate plant materials. Given their long history of selecting and growing trees, foresters and nursery practitioners are well-equipped to test and implement different strategies. ◆

PHOTO COURTESY OF US DEPARTMENT OF AGRICULTURE, FOREST SERVICE

Foresters have been growing and moving native plant materials for more than a century, and thus are uniquely qualified to be leaders in discussions about assisted migration as an adaptive strategy for climate change.

Mary I. Williams is a postdoc research assistant with Michigan Technological University, Houghton, MI. She can be reached at miwillia@mtu.edu. R. Kasten Dumroese is a research plant physiologist with the Grassland, Shrubland, and Desert Ecosystems Program for the US Forest Service Rocky Mountain Research Station in Moscow, ID. He can be reached at kdumroese@fs.fed.us.

SAF Council December Update

BY JOHNNY HODGES, JOHN WALKOWIAK, AND BOB ALVERTS

SAF President Joann Cox led her final SAF Council meeting on December 7-8 at the national headquarters in Bethesda, MD. Joann will be replaced by incoming president Dave Walters for 2014; Dave works for the Tennessee Division of Forestry. Bob Alverts, outgoing District 2 Council representative, was elected SAF vice president. Bob is being replaced on Council by Ed Shepard, CF, who manages Shepard & Associates in Newberg, Ore.

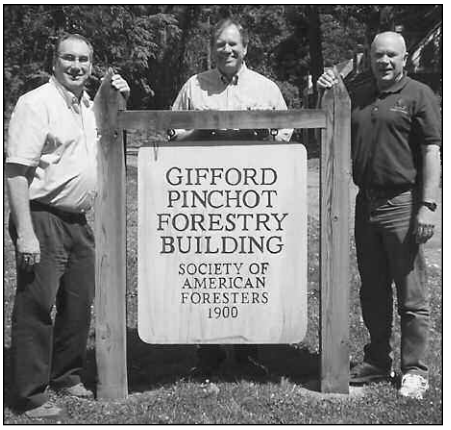
The Finance Committee and national office staff presented a proposed balanced budget for 2014. This was the first balanced budget to be presented in five years and was made possible because SAF was one of the beneficiaries of a trust leaving us $250,000. In addition, cuts in Council travel and eliminating the face-to-face October 2014 Council meeting at the convention helped reach the balanced budget, which was approved by Council.

A small committee, including John Walkowiak and Johnny Hodges, has been studying the concept of Regionalization of some SAF functions. The goal is to provide increased member services by providing a link between the state societies and the national office. The committee gave an update on possible options to utilize National Office staff, regional staff and/or supporting existing regional-state society business managers. This group will provide recommendations at the next Council meeting in March.

The final report of the Task Group studying SAF Committees was presented to Council. They found substantial issues with three committees: Cultural Diversity, Communications, and Leadership Development. They recommended either re-chartering or disbanding the Cultural Diversity and Communications Committees. Incoming president Dave Walters asked Council's Strategic Planning Committee to review the report and bring a recommendation to Council at the March meeting.

Two Canadian universities, the University of New Brunswick and the University of British Columbia, requested SAF accreditation of their forestry programs. SAF's director of Science and Education sought Council permission to pursue. The Council approved the recommendation and as a courtesy the National Office will contact the Canadian Institute of Forestry.

The SAF membership approved the referendum allowing SAF to be governed under the District of Columbia Nonprofit Corporation Act of 2010. The new Articles of Incorporation and SAF Bylaws are currently under review by legal counsel. They will be reviewed/approved by Council at the March meeting. An article explaining the changes will be included in *The Forestry Source* in the summer and then membership will vote to approve the new Articles/Bylaws in October 2014.



Left to right: 2013 Council representatives John Walkowiak, Johnny Hodges, and Bob Alverts.

The Membership and Credentialing Task Force presented Council with their preliminary report and recommended reducing membership categories from seven to three. The current membership categories of Professional, Conditional Professional, Associate, Technician, Student, Honorary, and International Members would be reduced to either Members or Student Members. The category of Fellows would remain unchanged. These changes will be incorporated into the new Bylaws.

The Communications Committee was tasked with studying SAF internal communications and presented their preliminary report. Their chair, Jim Culbert, discussed some of their tentative recommendations by phone. No action was taken by Council pending the final report.

The Certification Review Board submitted revised wording to allow forest technicians to become Certified Foresters without obtaining a BS degree. Those people with Associate level degrees will now be able to take the CF exam with the following: 18 credit hours in forestry-related coursework plus 8 years of forestry experience. Council approved the recommendation.

The Search Committee gave an update on the process to find a new CEO to replace Michael Goergen. The company, Signature Search, has been hired to assist in the process. The current plan is to have the group of candidates narrowed to the final two or

three so they may be interviewed by Council at the next Council meeting on March 21-23. If all goes well, a job offer could be made shortly thereafter.

SAF's position statement on Urban and Community Forestry was updated by the Policy Committee and approved by Council. Major changes were related to fire risk, WUI, and fire response. A draft position statement on Wildland Fire Management was given to Council for review. Comments were due back by January 7.

The North American Envirothon bills itself as North America's largest high school environmental education competition. Council discussed whether SAF should take a more active role in this continuing project. Council members Greg Hoss, Judd Edeburn, and Gary Vander Wyst will study the issue further and make a recommendation.

SAF governance continues to be a topic of discussion by Council. There have been several studies in the past, but no changes have been implemented in recent history. Some people question whether we should reduce the size of Council or re-structure in some other ways. There are a wide range of opinions on this topic and the Strategic Planning Committee was asked to provide recommendations at the December 2014 meeting. We are interested in what our members think about this issue. Please contact your district representative and share your thoughts.

The 2014 Salt Lake City Convention (October 8-11) will be co-located with International Union of Forest Research Organizations (IUFRO) World Congress—the first in North America since 1971. SAF will not only manage the joint SAF/Canadian Institute of Forestry (CIF) convention but will also handle IUFRO registration, food, exhibits, and joint plenary sessions thanks to a USFS contract. SAF members will register for the SAF convention separately and at lower costs than IUFRO and will be able to attend Thursday-Saturday events of either group. There will not be any SAF field trips, but members can sign up for a number of IUFRO field trips and pay the fee. If the estimated 1,200 SAF members attend, SAF should receive $240,000 in revenue. If you are planning to attend the Salt Lake City convention, you are advised to seek lodging arrangements early (go to www.safconvention.org). ◆

This Council report is a joint effort between District 4 Council Representative Johnny Hodges (970-218-3394; jah.16@live.com); SAF District 1 Council Representative John Walkowiak (253-320-5064; jewalkowiak@harbornet.com); and District 2 SAF Council Representative Bob Alverts (503-639-0405; balverts@teleport.com).

SAF Council Reflections

BY BOB ALVERTS, SAF DISTRICT 2 COUNCIL REPRESENTATIVE, 2011-2013

My time on the SAF Council went by too quickly and includes the richest and most rewarding experiences I have had as a member of the Society of American Foresters. Following the excellent work of my Council predecessors Rick Barnes, Darrel Kenops, and Clark Seely, I strived to maintain the excellent tradition of service to the members of Oregon SAF. It has been my honor to have represented you on the SAF Council for the past three years with a group of really talented and dedicated colleagues.

We worked hard on a number of issues to help SAF improve and grow. From the new accreditation curriculum underway on Natural Resource and Ecosystem Management, to work on key policy issues, to the tiered dues structure, to helping SAF move from "good to great" and our new brand promise language, and to passing the first balanced budget in five years for 2014, it has been a joy to serve on the SAF Council as District 2 Representative.

As I begin a new role of service to SAF as incoming vice-president, I pledge my continued work to enhance the capacity of SAF in representing the breadth of forestry. I look forward to assisting President Dave Walters accomplish his priorities in the coming year, and will need your help and advice as we move ahead.

Looking ahead for SAF District 2, I am confident that our newly elected Council representative, Ed Shepard, will do an outstanding job. He is an excellent leader who knows western natural resource management issues very well. Together, we will do our best to bring more attention to real solutions needed to change the broken and failed policies that plague the federal forest and rangelands in the western United States.

Ed's role on Council will be to serve on the Finance Committee, continuing the tradition of District 2 Council representatives on that key Council committee. Our other Council candidate, Ron Boldenow, 2013 state chair, will be serving on a national committee in the year ahead. Ron did an outstanding job as OSAF chair and deserves our appreciation.

Thanks again for the opportunity to serve the best group of foresters and state society anyone could be associated with! ◆

Bob Alverts can be reached at 503-639-0405 or balverts@teleport.com.

Come Visit the Umpqua Valley

BY JAMES MAHAFFY

Forests in Southern Oregon are in a constant state of change due to management, environment, and regulations. The Umpqua Chapter of the Oregon Society of American Foresters invites you to attend the 2014 annual meeting and conference in Canyonville. This year's theme is *Defining the future of Northwest forestry*. We have assembled leading Pacific Northwest forestry experts to provide presentations and field trips that are both practical and cutting edge.

This year's convention begins with a welcome from a leader of the Cow Creek Band of the Umpqua Tribe of Indians followed by the keynote address from John Gordon, Pinchot Professor of Forestry and Environmental Studies Emeritus at Yale University. From there we will delve into the future of *Economics of the Forest Sector* with speakers such as Allyn Ford, CEO of Roseburg Forest Products, and Thomas Maness, dean of OSU's College of Forestry. The evening will conclude with poster presentations by students, visits with vendors, and an icebreaker.

Thursday morning begins with the alumni breakfast followed by a session focusing on *Riparian Forest Management-Implications and Opportunities* with a wrap-up from Dan Newton, chief forester at Weyerhaeuser Western Timberlands. Our next topic focuses on the future of *Silviculture* for wood production and habitat development, with Diane Haase, Western Nursery specialist for the USDA Forest Service, opening the session. The final leg of the convention will look at the path forward for *The Federal Forests in Oregon*. This session features a panel discussion featuring Tom Tuchman (invited), forestry advisor to Governor John Kitzhaber; Bob Ragon, executive director of Douglas Timber Operators; and Douglas County Commissioner Doug Robertson, president of the Association of O&C Counties, with Hal Salwasser, former dean of the College of Forestry, Oregon State University, bringing it all together in a final wrap up. In the evening we will recognize our peers at the OSAF Awards Banquet.

The final day begins with the Pep-Up Breakfast and OSAF Business meeting before launching attendees on four diverse field trip options including:

• *Application of Franklin and Johnson Forestry Concepts in the Roseburg BLM Secretarial Pilot Project*—Visit a moist forest variable retention regeneration harvest and learn about the "ecological forestry" principles promulgated by Jerry Franklin and Norm Johnson.

• *Restoration Forestry and Fire in the Upper South Umpqua*—Tour a recently completed commercial thinning of the Tiller Ranger District demonstrating techniques for restoring native forest diversity.

• *Restoration and Recovery of the Douglas Complex Fire*—Traverse the checkerboard landscape of private and BLM lands after 48,000 acres burned in 2013.

• *Manufacturing Facilities*—Spend the day visiting several mills within Douglas County.

This year's annual meeting is a great opportunity to learn, reconnect, enjoy the Umpqua, and see Southwest Oregon forestry at work. We hope to see you there. ◆

James Mahaffy is Publicity chair of the OSAF annual meeting. He can be reached at jmahaffy@blm.gov or 541-464-3231.

Additional Contacts

For general questions, contact General Chair Mark Buckbee at 541-580-2227 or buckbeefamily@msn.com.

Businesses and individuals interested in being meeting sponsors should contact Jake Gibbs at 541-673-0141 or jgibbbs@lrtco.com.

Those interested in being vendors or presenting posters should contact Dave Russel at 541-643-0245 or drussel@charter.net.

Download the flyer at www.forestry.org/oregon/2014annualmeeting.

Education and Research Theme of WSSAF Annual Meeting

The 2014 annual meeting of the Washington State SAF (WSSAF) is planned for May 7, 8, and 9 at the University of Washington's Pack Forest near Eatonville. Participants will get the opportunity to pick and choose among concurrent indoor sessions and field trips held on Pack Forest.

The WSSAF executive committee will meet on Wednesday, May 7, followed by a casual dinner for all registrants in the Cookhouse at Pack Forest.

Thursday, May 8, begins in logging-camp fashion with a hearty breakfast and the opportunity to make your own lunch for the day. A conference welcome will be followed by a forest demonstration or Scott Hall presentation. After lunch, two tours and/or indoor presentations will run concurrently, ending the day with a banquet in the outdoor Pavilion.

Friday begins with a logger's breakfast, make-your-lunch, and WSSAF annual business meeting. Morning and afternoon tours or indoor presentations are being developed including a study of endophyte and red alder mycorrhizae, forest regulations and forest management, fertilization, salmon habitat restoration, Native American history and culture of the area, silvicultural demonstrations, and a tour of "the Giants" (800-year old forest remnants).

Registration will be available soon with an option to lodge at Pack Forest. The WSSAF annual meeting theme is *Education and Research*, but restricts the amount of time sitting in a chair! ◆

Thank You Northwest Office Supporters

The SAF Northwest Office would like to thank the following SAF units, organizations, companies, and individuals for their generous in-kind and financial contributions in 2013.

Founded in 1965 and located at the World Forestry Center in Portland, Ore., the SAF Northwest Office provides a variety of services (including this publication) to members of SAF units of the Oregon, Washington State, Inland Empire, and Alaska Societies. Among its goals are to strengthen and support SAF state societies and chapters so they can be effective and efficient as they work to achieve the Society's mission.

We greatly appreciate your continued support and look forward to another successful year with you.

Ann Forest Burns
Capitol Chapter, OSAF
George Chesley
Fran Cafferata Coe
Bob Devlin
Stephen Fitzgerald
John Goodwan
Grays Harbor Student Chapter, WSSAF
Hancock Forest Management
Inland Empire SAF
Marys Peak Chapter, OSAF
Robert Mezger
Norm Michaels
North Puget Sound Chapter, WSSAF
Oregon Chapter, The Wildlife Society
Oregon Forest Resources Institute
Oregon SAF
Tom Parke
Portland Chapter, OSAF
James Rombach
Robert Sanders
SAF National Office
Al Tocchini
John Walkowiak
Washington State SAF
Julie Woodward

Election Results are in

The ballots have been tallied and results are in for national and state elections.

In Oregon SAF, Dick Powell, a forester with Starker Forests in Corvallis, moves into the chair position for the year. Matt Krunglevich, fire protection planner, Oregon Department of Forestry, Southwest Oregon District, was elected chair-elect for 2014; he will slide into the chair position in 2015. Tristan Huff, Oregon State University Extension forester for Coos and Curry Counties, was elected delegate-at-large. Members also approved four position statements: Using Pesticides on Forest Land (94% of voting members supported the statement); Salvage Harvesting on Public Lands (97% support); Clearcutting (93% support); and Active Management to Achieve and Maintain Healthy Forests (99%). The ballot return rate was 32%.

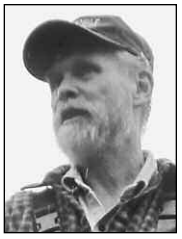

Dick Powell


Matt Krunglevich


Tristan Huff

In Washington State SAF, Joe Murray, an inventory and silvicultural forester for Merrill and Ring in Port Angeles, steps into the chair position. Dick Hopkins, partner, Hopkins Forestry (forest management consulting), was elected chair-elect and will serve as chair in 2015. Position statements on Working Forests (94% member support of statement) and Professional Forestry Education in the State of Washington (96%) were both approved. The ballot return rate was 31%.


Joe Murray


Dick Hopkins

Alaska SAF has two-year terms for their leadership. Charlie Sink, director, Enterprise and Trust, Chugachmiut, in Anchorage, is in his second year as chair for 2014, and Brian Kleinhenz, a silviculture and quantitative forester for Sealaska Corporation, continues to serve as chair-elect this year.


Brian Kleinhenz

In the Inland Empire SAF, Tera King, a project manager for Northwest Management, Inc. was elected chair for 2014. Phil Aune, retired from the USDA Forest Service, was elected chair-elect. Their ballot return rate was 23%.


Tera King


Phil Aune

On the SAF national level, Bob Alverts from Oregon SAF (and 2011-2013 District 2 Council representative), was elected vice president; Dave Walters serves as president and Joann Cox moves into the immediate past president slot. Four Council members were also elected including Ed Shepard from District 2 serving Oregon SAF; Gary J. Vander Wyst (District 5); Judson D. Edeburn (District 8); and Donald L. Grebner (District 11). John Walkowiak from District 1 (Washington State, Inland Empire, and Alaska) continues to serve on Council and enters his third year. ◆


Ed Shepard

Did You Know?

SAF members can save up to 55% off prescriptions with the SAF Prescription Discount Card?

Learn more here:
http://myfreerxcard.com/foresters/

SAF members can save money by renting cars and trucks through Enterprise?

Make your reservation here:
www.enterprise.com/car_rental/home.do
Corporate Number: 16LC135
Company ID: SOC

SAF members can save money on travel services like: Travelocity, Orbitz, Southwest, JetBlue, Hotwire, and more?

Make your travel plans at:
www.saf.achievelinks.com

Calendar of Events

How to Use SkylineXL and LogCost/HaulCost Spreadsheets, Feb. 4-5 in Grand Mound, WA, and Feb. 11-12 in Redding, CA. Contact: WFCA.

13th Annual Foresters' Forum, Feb. 5-7, Coeur d'Alene Resort, Coeur d'Alene, ID. Contact: 208-667-4641, kylie_dupont@rileyandassociates.biz, www.consultingforesters.com/foresterforum.

Professional Timber Cruising with SuperACE, Feb. 6-7, Beaverton, OR. Contact: Diane Sandefur, dsandefur@atterbury.com, www.atterbury.com/professional_timber_cruising.html.

Inland Empire/Montana SAF Leadership Academy, Feb. 7-8, Lubrecht Experimental Forest, Greenough, MT. Contact: Paula Short, 406-542-4235, paulashort@mt.gov.

Accelerating Forest Restoration, Feb. 19-20, Riverside Hotel, Boise, ID. Contact: info@idahoforestpartners.org, www.idahoforestpartners.org/workshopdesc2014.html.

The Practice of Consulting Forestry, Feb. 20-21, Hilton Eugene and Conference Center, Eugene, OR. Contact: ACF, 703-548-0990, membership@acf-foresters.org, www.acf-foresters.org.

Logging, Construction, Trucking and Heavy Equipment Expo, Feb. 20-22, Eugene, OR. Contact: Oregon Logging Conference, 541-686-9191, www.oregonloggingconference.com

Unit Planning and Layout, Feb. 24-27, Corvallis, OR. Contact: FEI.

American Tree Farm System Inspector Training, Feb. 27 in Wenatchee, WA, Mar. 12 in Cle Elum, WA, and Mar. 26 in Okanogan, WA. Contact: Andy Perleberg, 509-667-6658, andyp@wsu.edu, http://ext.nrs.wsu.edu/newsevents/continueducation.htm.

17th Annual Loggers Workshop, Mar. 18, Colville, WA. Contact: Emily Burt, 509-775-5235, emburt@wsu.edu, http://ext.nrs.wsu.edu/newsevents/continueducation.htm.

Tree School Clackamas, Mar. 22, Portland, OR. Contact: Sally Yackley, 503-655-8631, sally.yackley@oregonstate.edu.

ArcGIS 10: An Introduction to Environmental Applications, Mar. 25-27, Olympia, WA. Contact: Christa Lilly, 425-270-3274 x103, clilly@nwetc.org, https://nwetc.org/catalogtest.

Variable Probability Sampling Workshop, Mar. 31-Apr. 4, Richardson Hall, Oregon State University, Corvallis, OR. Contact: OSU Conference Services, 541-737-9300, conferences@oregonstate.edu, http://oregonstate.edu/conferences/event/variableprobability2014/.

Intermountain Logging Conference, Apr. 3-5, Spokane Valley, WA. Contact: Julie Schwanz, julie@intermountainlogging.org, http://intermountainlogging.org/.

The Basics of Growth Modeling using FVS, sponsored by Oregon Chapter, ACF, April 11, Salem, OR. Contact: Greg Stone, 541-267-2872, gregstone@stuntzner.com.

2014 Alaska Wood Energy Conference, Apr. 15-17, Westmark Hotel and Conference Center, Fairbanks, AK. Contact: Meg Burgett, 907-746-9472, asburgett@alaska.edu.

Logger Education to Advance Professionalism (LEAP), Apr. 15-17 in Coeur d'Alene, ID, and Apr. 29-May 1 in Moscow, ID. Contact: Randy Brooks, 208-885-6356, rbrooks@uidaho.edu, www.uidaho.edu/extension/forestry/content/leap.

Northwest Wood-Based Biofuels and Co-Products Conference, Apr. 28-30, Seattle, WA. Contact: Vikram Yadama, vyadama@wsu.edu, http://nararenewables.org/blog/?p=280.

Oregon SAF annual meeting, Apr. 30-May 2, Seven Feathers Casino Resort, Canyonville, OR. Contact: Mark Buckbee, 541-580-2227, buckbeefamily@msn.com, www.forestry.org.

Washington State SAF annual meeting, May 7-9, Pack Forest, Eatonville, WA. Contact: Paula Hopkins, 253-951-1457, 4estmgr@gmail.com.

Alaska SAF annual meeting, May 14-16, Juneau. Contact: Brian Kleinhenz, 907-957-6755, brian.kleinhenz@sealaska.com.

The Basics of Forestland and Timber Appraisal, June 9-13, Oregon State University, Corvallis, OR. Contact: WFCA

National Tree Farmer Convention, July 17-19, Pittsburgh, Pennsylvania. Contact: 202-765-3660, info@treefarmsystem.org, www.treefarmsystem.org/tree-farmer-convention.

Forest Products Forum 4, Sept. 16, World Forestry Center, Portland, OR. Contact: Greg Lewis, 978-496-6335, glewis@getfea.com, http://wwotf.worldforestry.org/wwotf10/.

Who Will Own the Forest?10, Sept. 16-18, World Forestry Center, Portland, OR. Contact: Sara Wu, 503-488-2130, swu@worldforestry.org, http://wwotf.worldforestry.org/wwotf10/.

SAF National Convention, Oct. 8-11, Salt Lake City, Utah. Contact: SAF, 301-897-8720, www.xcdsystem.com/saf/site14/.

Forestry/Songbird Symposium, Nov. 18, Linn County Expo Center, Albany, OR. Contact: Fran Cafferata Coe, 503-680-7939, fran@cafferataconsulting.com.

Contact Information

FEI: Forest Engineering, Inc., 620 SW 4th Street, Corvallis, OR 97333, 541-754-7558, office@forestengineer.com, www.forestengineer.com.

WFCA: Western Forestry and Conservation Association, 4033 SW Canyon Rd., Portland, OR 97221, 503-226-4562, richard@westernforestry.org, www.westernforestry.org.

Send calendar items to the editor at rasor@safnwo.org.

Oregon's Top Tree Farmers Honored

Douglas County landowners Rick and Audrey Barnes were honored as Oregon's 2013 "Outstanding Tree Farmer of the Year" at the Oregon Tree Farm System's annual awards luncheon held at the World Forestry Center in Portland on November 25.

The Barneses have owned and managed 1,262 acres 30 miles south of Roseburg for 13 years. Of this area, they have 704 forested acres and 558 acres in a mined-over area. During this time, they have:

- restored 91 acres of mining spoils with appropriate tree species;
- reduced forest fuels to prevent wildfires;
- worked to control a host of invasive species; and
- conducted numerous educational activities for local K-12 schools and West Coast colleges and universities.

"I can think of no other tree farmers with more enthusiasm and commitment to both their property and their community than Rick and Audrey Barnes," said Gary Groth, director, Douglas County Land Department.

The couple is active in many forestry organizations. Rick, a Society of American Foresters' Certified Forester and former District 2 SAF Council representative, was appointed by the Oregon Board of Forestry to the Committee for Family Forestlands and has served on the committee for four years. He is also a board member of the Douglas Forest Protective Association, a private non-profit association that protects 1.6 million acres in southern Oregon from wildland fires.

Rick is president of Barnes and Associates, Inc., a forestry and natural resources consulting firm in Roseburg. His wife, Audrey, is the treasurer of the Douglas County Chapter of the Oregon Small Woodlands Association, an organization that promotes responsible resource management through a variety of workshops and other outdoor education efforts. See the accompanying case study article on the Barneses on the next page.

The following landowners were also recognized at the event as county tree farmers of the year:

- Benton County: Paul Lorenz, Lorenz Family Trust
- Clackamas County: Matt and Beth Twist, Hillside Farm
- Douglas County: Rick and Audrey Barnes, Nickel Mountain, LLC
- Jackson County: Michael and Barbara Meredith;
- Linn County: Rod and Ann Bardell; and
- Washington County: Sam Sadtler, Sadtler's Family Farm.

The Oregon Tree Farm System, an affiliate of the American Tree Farm System, is a Forest Certification organization that annually recognizes private forest landowners for their forest conservation actions. ◆

A Nickel's Worth of Forestry Education

When Rick and Audrey Barnes purchased 1,262 acres on Nickel Mountain in southwest Oregon, they had no idea of the educational opportunities it would provide. Rick and Audrey purchased the property for the timber asset; however, the property is home of the largest nickel mine in North America.

Although all mining leases have been canceled, there is tremendous interest in the geology and history of the mountain. The local community has a curiosity about the area that provided economic prosperity for so many years and those who worked at the mine. Several universities have requested geology class tours or expressed interest in various research projects. The Barneses openly welcome the opportunity to share their mountain for educational purposes as well as recreation and enjoyment for their family and friends. However, there is one caveat when requesting a tour of Nickel Mountain…you must be prepared for a forestry lesson first.

A forestry tour illustrates how management strategies are designed to address the mixed geology and soil types as they define the diverse vegetation found throughout the property. A walk through various areas of the property clearly demonstrates the diversity of vegetation. In a portion of the property, nearly pure stands of pine are present that closely resemble the pine forests found in eastern Oregon. A short distance away you enter natural stands of Port-Orford cedar, a tree typically limited to the southern Oregon and northern California coast. On the north side of the mountain you will find predominately Douglas-fir forests that are typical of western Oregon. Still other scattered areas have mixed conifer stands with the presence of six conifer species as well as a multitude of hardwood species. A wide range of management prescriptions is absolutely essential due to the diverse conditions present on Nickel Mountain.

The tour also illustrates how changes in mining laws and regulations have improved over time. The top of the mountain is the location of the un-reclaimed mine site that was mined prior to 1974. A few scattered pine and cedar can be found, but this area is essentially non-forested. Other productive uses for this portion of the property are being explored. The area known as the Lower Ore Body was mined after 1974 and new mining laws required reclamation at the conclusion of mining activity. A reclamation plan was designed prior to the initiation of mining activity. The top soil was carefully set aside. When mining was complete, the area was reconstructed, the top soil redistributed, and other measures were taken to complete the reclamation process. Today the Lower Ore Body is a prime example of mined-over property successfully reclaimed to a beautiful hillside with four strategically placed ponds directing the water flow from a natural spring through a thriving stand of pine interplanted with smaller portions of Douglas-fir and incense cedar.

For decades, the mountain was managed only for mining purposes and the forests were essentially ignored. Due to the lack of management, the forests the Barneses inherited with the purchase of the property were suffering from almost as many forest heath issues as there were species of trees. Port Orford cedar root rot, western gall rust, dwarf mistletoe, and overstocked stands are just a few of the challenges faced.

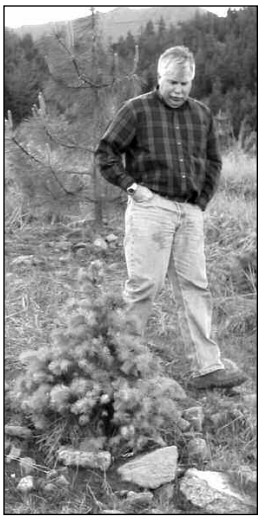


PHOTO COURTESY OF AUDREY BARNES

Rick Barnes looks at the new growth on trees planted in December of 1999 in the Lower Ore Body.

The Barneses enjoy spending most of their free time working and playing on Nickel Mountain. There is more work than they will ever be able to accomplish, but the results of their labor thus far have been tremendously rewarding. Their greatest pleasures are sharing with others their love for the mountain and the opportunity to educate a wide variety of people of the many lessons learned. While you are visiting, it is quite possible you may find an interesting rock or two also! ◆

This article was reprinted with permission from the Fall 2004 issue of Northwest Woodlands.

PHOTOS COURTESY OF AUDREY BARNES

The photo on the left shows the Lower Ore Body during the process of reconstruction and reclamation and is how the property looked when the Barneses purchased it. The photo on the right was taken in the same Lower Ore Body area in 2004.

Policy Scoreboard

Editor's Note: To keep SAF members informed of state society policy activities, Policy Scoreboard is a regular feature in the Western Forester. *The intent is to provide a brief explanation of the policy activity—you are encouraged to follow up with the listed contact person for detailed information.*

OSAF Members Endorse Updated Position Statements. The SAF Fall 2013 online ballot for Oregon chapter members included individual ballots to support or oppose four updated position statements on "Clearcutting," "Active Management to Achieve and Maintain Healthy Forests," "Salvage Harvesting on Public Lands," and "Using Pesticides on Forest Lands." The OSAF Executive Committee adopted these positions earlier but OSAF takes the extra step of a member vote to help raise awareness among members and to clearly assess their support for OSAF positions.

The ballot results showed very high (93-99%) support for the four position statements (32% ballot return rate). The online ballot system does not allow for comments by voters, so the reasons for the few negative votes are unclear. Interestingly, when hard copy ballots were used several years ago and comments were included, some voters said they opposed a position because it did not go far enough in establishing a strong position. All members are encouraged to review OSAF's position statements (www.forestry.org/oregon/policy/position/) and use them to articulate a professional perspective when discussing forest resource issues with people outside the profession. Contact: Paul Adams, OSAF Policy chair, 541-737-2946; paul.adams@oregonstate.edu.

Oregon Federal Forest Bills. Oregon's Congressional delegation has been active in developing bills to deal with federal forest lands in Oregon, and as of this writing two are moving forward in the policy process. In July 2013, Sen. Wyden introduced his Eastside Federal Forest Management bill (S. 1301), and in December it was passed by the Senate Energy and Natural Resources Committee and thus moves on to the full Senate. In September, OSAF Chair Ron Boldenow sent a letter to Sen. Wyden that raised concerns that its restrictive provisions more likely would impede the bill's goals of improving timber supply and local economies. For example, its riparian and diameter- and age-based cutting limits could become locks with very sticky keys. Other concerns were raised about how the bill directs the use of scientific and technical input and concepts, including limited consideration of the site-specific nature of forest conditions and the importance of local management and operations experience.

In September 2013, a bill (HR 1526) that includes Rep. DeFazio's amendments that deal with O&C lands passed the full House, although its future is uncertain given a threat of a veto by the President and the likelihood of a Senate bill that could have major differences. The latter is reflected in a draft O&C bill that was released in December by Sen. Wyden (www.wyden.senate.gov/priorities/oc-act-of-2013). The scope and complexities of the House and Senate bills are substantial, but OSAF is planning to respond with a comment letter to the Oregon delegation sometime in early 2014, with a focus on forestry issues and related science and practice by professionals. The text and current status of bills introduced in Congress can be found via http://thomas.loc.gov and further information typically is available at the websites of the bills' primary sponsors. Contact: Paul Adams, OSAF Policy chair, 541-737-2946; paul.adams@oregonstate.edu.

Cohesive Fire Strategy. When Congress passed the FLAME Act in 2009, it called for two things: 1) an emergency fire suppression fund to prevent "fire borrowing." Congress, however, abhors having money sitting around unspent, so the fund was used up for other purposes and fire borrowing continues to plague the federal fire management agencies; 2) a Cohesive Wildfire Strategy by December 2010. The three goals of the strategy are to restore and maintain landscape resiliency, create fire-adapted communities, and improve suppression response. Now three years past due, the Cohesive Strategy is nearing completion. A month-by-month 2013 progress report is available at www.forestsandrangelands.gov. Contact: Jay O'Laughlin, Inland Empire SAF, 208-885-5776, jayo@uidaho.edu.

NAFSR Fire Policy Position Paper. In December 2013, the National Association of Forest Service

Retirees issued a position paper on wildfire policy, identifying a list of action items. The authors know a great deal about wildfire and aren't afraid to say what needs to be done to improve fire policy. This report deserves wide circulation and serious discussion in policy circles. Curiously, the Cohesive Strategy was not mentioned. I asked why, and was informed that: a) very few people, including the rank and file within the agencies, know very much about it, and b) although the three goals of the strategy are right on and it is a great approach to coordination and distributing responsibilities and decision making, especially at the local level, it's pretty clear that without new money (and that was the original premise of the strategy), or a better way to distribute current funding, it will be difficult to realize significant changes especially at the national level. The position paper can be accessed from NAFSR's homepage at www.fsx.org/index_copy.htm. Contact: Jay O'Laughlin, Inland Empire SAF, 208-885-5776, jayo@uidaho.edu.

WSSAF Policy Committee in Review. WSSAF Policy Committee activities for 2013 involved development of position statements and outreach distribution of those statements to policy makers and other non-SAF organizations. WSSAF completed two updated positions statements, solicited lead authors for four of five 2014 expiring statements, began attending Forest Practices Board and Board of Natural Resources meetings, provided testimony to the Climate Legislative Executive Committee, and distributed our No Net Loss of Working Forests position statement to numerous government officials and natural resource groups.

Under the lead authorship of Dick Hopkins, WSSAF adopted a position statement on Professional Forestry Education that was concurrently adopted by the Inland Empire SAF. It passed with a 96% support vote by the WSSAF members.

Under the lead authorship of Ellie Lathrop and Harry Bell, the No Net Loss of Working Forests was also concurrently adopted by the Inland Empire SAF. It passed with a 94% support vote by the WSSAF members.

Five position statements need to be updated in 2014. Our goal is to bring each in alignment with the No Net Loss of Working Forest position statement. Following are the volunteer lead authors for each: National Forests, Jocko Burks; State Trust Forests, Peter Heide; Olympic National Forest, Bob Dick; Carbon Sequestration, Tom Hanson and Harry Bell; and Wildland/Urban Wildfire Threat, TBA.

In an effort to increase WSSAF involvement in policy issues, members have been attending Forest Practices Board and Board of Natural Resources meetings. Peter Heide, with Jocko Burks as backup, has been attending and providing comments to the Board of Natural Resources meetings. Mark Teply has been attending Forest Practices Board Meetings. Both report directly to the WSSAF Executive Committee. Our goal is to keep the executive committee current on contemporary issues thereby allowing informed input to these boards.

WSSAF members provided testimony to Governor Insley's Climate Legislative Executive Workgroup. The CLEW's mission is to characterize how Washington State will meet its carbon emission goals.

Early in 2013, Tom Hanson, Ellie Lathrop, and Harry Bell met with Tom DeLuca, director of the University of Washington School of Environmental and Forestry Science (SEFS), and B. Bruce Bare, dean emeritus. The planned agenda was to discuss forestry education at the UW and the mission of the Institute of Forestry. Other topics discussed were revitalizing the student SAF chapter, better dialog between WSSAF and SEFS, and expected forestry employment demand.

Contact: Harry Bell, WSSAF Policy Committee chair, harry@greencrow.com. ◆

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THE LASER TECHNOLOGY SURVIVAL GUIDE TO FIELD WORK

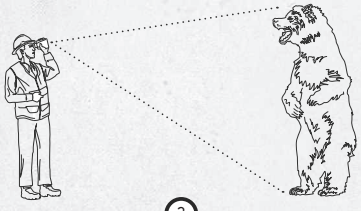
SURVIVING A GRIZZLY BEAR ENCOUNTER

1

Use your TruPulse laser, in distance mode, to see how far away the bear is.

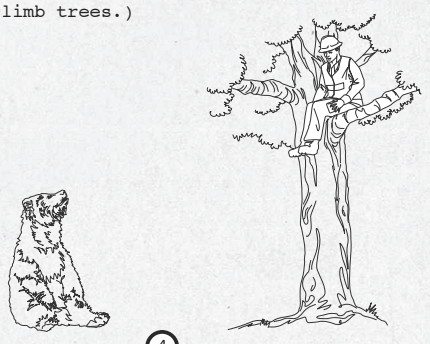
2

From that data, decide if you should run, or if you need to climb a tree. (NOTE: Make sure it's a grizzly. Other bears climb trees.)



3

If you chose to climb, measure the bear's height using your TruPulse's height routine.



4

Climb a tall enough tree and hang out until the bear gets bored and leaves. (NOTE: To pass the time, measure the height of other surrounding trees.)

SOME DAYS IN THE FIELD ARE MORE EXCITING THAN OTHERS. Whether you're out cruising timber or flagging sale boundaries, you're bound to encounter the unexpected. Not to worry though. The power and versatility of LTI lasers let you adapt to ever-changing conditions and situations while still having confidence in the data you log. To explore our complete line of forestry products, visit www.lasertech.com/stories/atterbury . While you're there, share your craziest day in the field, and be registered to win LTI equipment.