

Oregon State University Extension Service

# Blue Mountains Renewable Resources Newsletter

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## SAVE THE DATE

### Tour of Harlan Scott's Tree Farm, 2014 Union County Tree Farmer of the Year

**When:** 9:30 am to 4:00 pm, Friday, September 11, 2015

**Where:** Meet ¼ mile north of the junction of Yarrington Rd and Thompson Rd. From Elgin, take highway 82 going east towards Wallowa for 6.5 miles, then turn left on Yarrington Rd, stay on Yarrington for 5.5 miles to the turnout on the left just past Thompson Rd.

**Tour highlights:** Harlan has been working diligently for years on this property, which has a wide variety of forest types, forest conditions, and management approaches. He has lots of experience planting native conifers and hardwoods, as well as planting species like Jeffery pine, sequoia, western white pine and others for timber production, wildlife habitat and diversity. We'll see several of these plantings both new and some over 20 years old.

Some of the things we'll see and talk about include site preparation techniques such as slash pile planting, spot herbicide applications, scarification, thinning strategies in young pine plantations and naturally regenerated stands, management strategies in older stands with a mixture of age classes and species, mixed species stands with dwarf mistletoe and root disease, wildlife plantings and habitat enhancement, ponds for wildlife,

pruning, using small trees in pre-commercial thinning areas and more!

**Other Details:** Bring your own lunch and drink. We'll have a van or two at the rendezvous site and some extra water. You'll need a high clearance vehicle if you don't use the van. And, be sure your exhaust system is up to date. We will be travelling through some grassy areas. Also, wear boots and appropriate clothes for the weather, we'll be hiking short distances during part of the tour.

Please pre-register by Wednesday, September 9th by calling the OSU Extension Service Union County Office at 541-963-1010.

This tour is co-sponsored by the OSU Extension Service and the Oregon Department of Forestry.

Watch for a follow-up flier before the tour!



**American Tree Farm System**  
*We grow stewardship from the roots.*

Best Regards,

Paul Oester, Extension Forester  
Umatilla, Union & Wallowa Counties

Oregon State UNIVERSITY **OSU** Extension Service Union County

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## Oregon's Forest Products Industry and Timber Harvest, 2013

*Eric A. Simmons and Todd A. Morgan, University of Montana  
Bureau of Business and Economics Research*

### Report highlights

A total of 188 primary forest products facilities operated in Oregon during 2013 compared to 251 in 2008. These included:

- 88 softwood and hardwood sawmills and 2 cedar sawmills.
- 26 plywood/veneer facilities
- 19 pulp/paper and board plants
- 15 log home and log furniture producers
- 11 roundwood chipping facilities
- 9 post, pole, piling and utility pole plants
- 14 other facilities including biomass, wood pellet, charcoal briquette, artisan wood products, landscape bark/mulch, and animal bedding producers.
- 4 export log concentrating or exporting yards

Oregon's timber harvest was 4.2 billion board feet (BBF) Scribner in 2013, representing a 17.4 percent increase compared to 2008. Almost 90 percent (3.8 BBF Scribner) of the timber harvest came from counties west of the Cascades, about 47 percent from the 13 counties in the north-west region and 43 percent from the 6 counties in the southwest region. Eighty percent of Oregon's 2013 timber harvest came from private lands, 12 percent from Federal lands, nearly 7 percent from Oregon Department of Forestry (ODF) lands and the remaining harvest came from other public sources.

Approximately 84 percent of the timber harvested in Oregon was processed in-state with nearly 16 percent (662 million board feet (MMBF)) exported to countries in the Pacific Rim. Less than one percent (31 MMBF) went to surrounding states, while 238 MMBF crossed state lines into Oregon, making Oregon a net exporter of 455 MMBF in 2013.

Sawmills received 2.6 BBF (70 percent) of the timber processed in Oregon during 2013. Plywood/veneer plants received 713 MMBF. These two sectors combined accounted for nearly 90 percent of Oregon's 2013 timber receipts. Nine percent of the receipts were chipped, primarily for pulp/paper and board products, and the remaining timber was used for other products.

The capacity of Oregon's sawmills to process timber rose slightly from 3.9 BBF Scribner in 2008 to 4.2 BBF in 2013, despite the permanent closure of several facilities since 2008. Capacity utilization decreased from 62 percent in 2008 to 60 percent in 2013.

Oregon sawmills produced an average of 2.11 board feet lumber tally for every board foot Scribner of log input, the highest overrun for any census year. These mills produced 5.2 billion board feet of lumber in 2013 with a sales value of nearly \$2.3 billion compared to 4.7 BBF of lumber with a sales value of \$1.5 billion in 2008.

Sales values in 2013 for primary wood products (including export logs) were \$7.5 billion, a 14 percent increase from \$6.5 billion in 2008 (all sales values comparisons to 2008 are in 2013 dollars).

Sales of pulp/paper and board were still the largest portion of total sales (including mill residuals) at 42 percent, a decline from 51 percent of sales value in 2008. Lumber sales were 32 percent of the total in 2013 compared to 23 percent in 2008.

Sales values from the "other products" sector increased from 3 percent of total sales in 2008 to nearly 5 percent in 2013. This increase was primarily due to increased international log exports.

Oregon's primary facilities produced over 6.5 million bone-dry tons (5.4 million bone-dry units) of residue in 2013, with less than 1 percent unutilized. Pulp/paper and board plants received 60 percent of all mill residuals. Most of the remaining residuals were used as fuel.

Approximately 43,300 workers were employed in Oregon's forest industry during 2013, an 8 percent increase from the 2011 low of 40,138. Total workers earnings have rebounded as well, from \$2.7 billion in 2011 to \$3.2 billion in 2013.

Although timber harvests and sales values are less than pre-recession levels, there is evidence of Oregon's wood products industry recovery from the lows of the Great Recession.



## Understanding GMO's and forestry

*Amy Grotta, OSU Forestry & Natural Resources Extension, Columbia, Washington & Yamhill Counties*

The closest contest of last November's election—the GMO labeling initiative—was finally put to rest after a recount. The measure ultimately failed by a tiny margin, but it did a lot to put GMO's into the public spotlight. Of course, the ballot measure had to do with food labeling, not trees, but it got me thinking that it might be worth looking at how GMOs relate to forestry.

### What is a GMO?

In case you were not following along during election season, let's start with a definition. A GMO is an organism whose genes have been directly altered by humans, in a laboratory, through genetic engineering within individual cells. GMO methods can be used to modify an organism's own DNA or to insert DNA from another organism. The modified cells then are re-generated into whole organisms. Reasons for doing this might be to improve crop productivity, disease resistance, the nutritional yield of food plants, or resistance to herbicides to facilitate weed control. From the technology itself to the ways that GMO might be used in society, it

quickly becomes obvious why GMOs can be very controversial.

### What is not a GMO?

So, on to forestry and trees. Planting season is upon us, and if your seedlings are coming from one of the small woodlands seedling sales, or from a large commercial forest nursery, and you are planting Douglas-fir, then chances are your seedlings are advertised as "genetically improved". Some people mistakenly think that this means that they are GMO trees, but this is not the case. For decades, we have employed traditional breeding techniques in forestry to produce seedlings that perform well. On the most basic level, this means that parent trees with desirable traits, such as drought tolerance, height, growth, frost resistance, etc. are identified. Seeds or cuttings from these trees are collected and grown in a controlled area such as a seed orchard. More seed is collected from these trees, so that the desired traits can be passed on to the next generation. The "genetically improved" seedlings you plant are a product of this process, not of genetic engineering.

*Delivered*

## LOG MARKET REPORT *\$/1,000 board feet*

*June 15, 2014*

<b>Umatilla/Pendleton</b>									
Douglas-fir /Larch	Ponderosa Pine					Grand fir /White fir	Lodgepole Pine	Engelmann Spruce	Pulp/Chip Logs
	6-11"	9-11"	12-15"	16-19"	20+"				
380-400	—	285- 340	325- 400	325- 460	400- 485	380	325-350	325	42-45+/ ton
<b>La Grande/Elgin/Joseph</b>									
Douglas-fir /Larch	Ponderosa Pine					Grand fir /White fir	Lodgepole Pine	Engelmann Spruce	Pulp/Chip Logs
	6-11"	9-11"	12-17"	18+"	20-24"				
310-400	275- 280	275- 340	350- 385	380- 460	485	380	300	380	call
<b>Burns/John Day</b>									
Douglas-fir /Larch	Ponderosa Pine					Grand fir /White fir	Lodgepole Pine	Engelmann Spruce	Pulp/Chip Logs
	8-11"	12-17"	18-23"	24"+					
8-11"+ 305-350	—	245	345	380	420	8-11"+ 265-300	—	—	—

*Source: Oregon Log Market Report, Editor John Lindberg, ph 360-693-6766, fax 360-694-8466, logmkt@comcast.net*

## How might genetic engineering apply to forestry?

The story of the American chestnut tree is a good example. The American chestnut once was a major component of forests in the eastern United States. It was a valuable timber tree and an important food source for both people and animals. But, a fungal disease, the chestnut blight, introduced in the late 19th century virtually wiped it out. Only a few hundred trees survived. (American chestnut, while not native to Oregon, was brought over and planted by pioneers. The blight is not prevalent in Oregon, so chestnuts do well here.) Many people are working to restore the chestnut to its native range. Besides traditional breeding for blight resistance, some researchers are experimenting with genetic engineering. They have inserted a gene from wheat that conveys resistance to blight into American chestnut trees. The researchers are also testing many other genes, mostly derived from blight resistance Chinese chestnut.

### GMO research at Oregon State

At OSU, forestry professor Steve Strauss is recognized as a leader in genetic engineering research. He does a lot of his work on poplars and eucalypts, which have potential for bioenergy feedstocks, pulp and solid wood. But, before GMO plants like these could be utilized commercially, regulatory agencies and the public will subject them to a lot of scrutiny. For example, we need to be sure that there are no unintended consequences, such as unplanned spread of the modified genes to other non-GMO plants in the environment, or on a farm. So, Dr. Strauss and his cooperators do a lot of laboratory and contained field studies on the safety and risks associated with genetically engineered trees, with the focus on methods for preventing their spread until they are more fully understood.

Despite the failure of the GMO labeling initiative last year, we certainly have not seen the end of the debate around this issue. SO, it's worth understanding what genetic engineering is and is not, and what the potential benefits and risks of this technology might be. For those who want to read further, I'll refer you to this website: <http://agbiotech.oregonstate.edu/>.

I think the bottom line (and here I probably ought to invoke some sort of disclaimer about

my personal opinion) is that genetic modification may eventually be a management tool, like herbicides, chainsaws, and other tools in your "toolbox". GMOs are inherently neither good or bad. The more important questions for forest managers and for society are how, when, and for what purposes they are employed.

Of course, there was another big initiative on the ballot last November. And like GMOs, the production of marijuana certainly has its intersections with forest ecology and management,



## Oregon Conservation Partnership

as many people in southern Oregon might tell you. But that's a topic for another day...

Over the past two years the Network of Oregon Watershed Councils (NOWC) and Oregon Association of Conservation Districts (OACD) have built a formal partnership that includes shared office space and staff capacity, as well as jointly sponsored programming. We are increasingly working with the Oregon Conservation Education & Assistance Network (OCEAN) and Coalition of Oregon Land Trusts (COLT). This collaboration has brought efficiencies to the work we do, enabled us to help build key statewide relationships, and garnered more attention for our collective conservation efforts. Our joint work has also lent greater value to the individual identities of each organization.

### To better highlight our collective efforts, we have created a new name for the partnership – The Oregon Conservation Partnership (OrCP).

This new name won't replace individual organization identities or logos, but it will serve as an umbrella to help highlight those places where we work together. We will continue to operate as individual organizations with distinct missions, goals, and identities.

Over the past six months, we've been planning some important events and made some exciting changes we'd like to share with you:

- **Regional Conversations:** We will be spon-

soring six regional meetings throughout the state in July and August. These will build upon last year's summer events, with agendas focused on topics of regional importance and more structured dialog with key agency partners. More details shortly!

**2015 Fall Conference:** *Save the date* - the 2015 Joint Gathering of Councils and Districts will be held November 2-4 at Valley River Inn in Eugene.

•**Additional Staff Capacity:** To help with program development and delivery, the Network and OACD have contracted some additional part-time staff to join the partnership office.

We'd like to welcome Jason Faucera and Sandy Hershfelt to the team.

**New Partnership Office:** The Network and OACD have relocated to a new, dedicated office space in Salem. Please visit us if you're in town: 1130 Liberty Street SE, Suite 3 - Salem, OR 97302.

**Updated Contact Points:** You can still reach the Network at 503-362-1246 and OACD at 503-566-9157, but we also have new direct lines to reach individual staff members:

Ryan Gordon, NOWC Executive Director - 971-701-6699; ryan@oregonwatersheds.org

Jerry Nicolescu, OACD Executive Director - 971-701-6700; jerry.nicolescu@oacd.org

Shannon Schmidt, Operations Coordinator - 971-701-6701; shannon@orcp.org

Jason Faucera, Outreach & Program Coordinator - 971-701-6702; jason@orcp.org

Sandy Hershfelt, Administrative Specialist - 971-701-6703; sandy@orcp.org

Kelley Beamer and Mike Running of COLT can still be reached at 503-719-4732, and their office remains located at 511 SE Morrison Street in Portland.

We'll be announcing the availability of additional online resources in the coming months. We look forward to serving you all, both individually, and jointly as the Oregon Conservation Partnership.



## Survey of Eastern Oregon Residents Finds Continued Pessimism About Conditions of Forests

Joel Hartter, Project Director

Residents of northeast Oregon were surveyed by telephone in an effort to assess individual perceptions of forests and natural resource management. In the fall of 2014, we conducted a telephone survey in seven eastern Oregon in the Blue Mountain region: Baker, Crook, Grant, Umatilla, Union, Wallowa, and Wheeler. Of the 1752 people we surveyed, 202 were considered forest landowners (those that owned 10 or more acres of forest). Questions focused on perceptions of forest management and environmental policies, as well as local land use priorities. The 2014 survey follows a similar 2011 telephone survey carried out in three of these same counties—Baker, Union, and Wallowa.

Results show that residents believe they are generally well informed about forest health and management issues. Seventy-two percent of people surveyed said that know a moderate or a great deal about forests. Most people (65%) believe that forests in their area are less healthy than they were 20 years ago. In Figure 1, we overlay self-assessed understanding of forest management with perception of forest health. We found that the more people say they know about forests, the more pessimistic they are about forest health in the area (the blue line). Notice, fewer people believe forests are healthier in 2011 than in 2014, though more people think they are the same as 20 years ago.

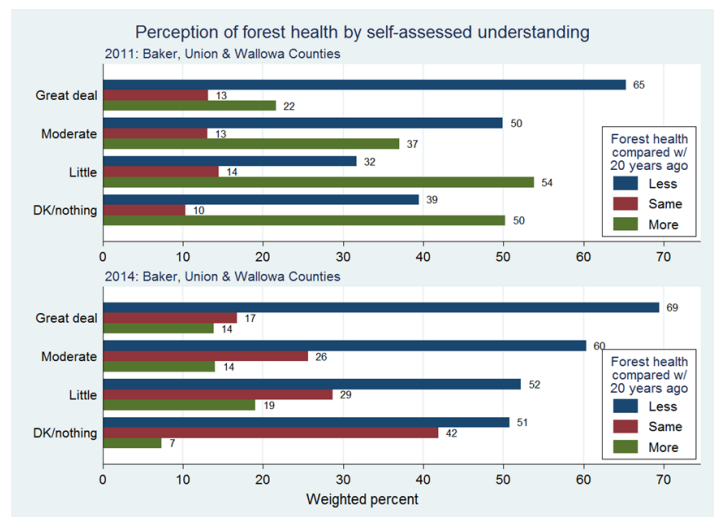


Figure 1.

We also asked people about what they think the management objectives for public lands should be: protection of water quality in streams; prescribed burns when conditions allow to reduce fuel for wild-fires; protection of wilderness areas; areas opened to commercial logging; maintaining road access for forest management, recreation, and fire suppression; and active management with some thinning and/or grazing. Figure 2 shows that the general public believes protecting streams and water quality are the most important. Less than half of the respondents believed that protected wilderness should be high priority on public lands. Interestingly, prescribed burns, active management, and commercial logging were lower priorities than water quality and road access. While it may seem clear to some that prescribed burns and commercial logging are part of active management, it is important to remember that this survey was conducted with the general public. Those are people who live throughout the 7 counties – in towns, on farms and ranches, and many people don't necessarily own forest land and may be less familiar with forests and their management. Although a majority of residents report having a moderate or very good understanding of forest health and management issues, a minority said that commercial logging on public forestlands should be a high priority. This suggests that the general public does not entirely appreciate the link between working landscapes and active ecosystem management activities like commercial thinning.

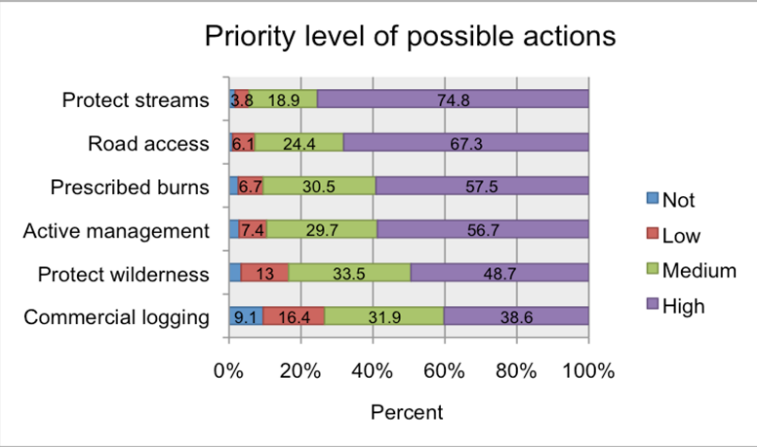


Figure 2.

Through August 2015, CAFOR researchers will be in eastern Oregon conducting fieldwork to learn about land management on family farms, ranches and forests. If you are interested in learning more about this research or would like to take part in the project, please contact the Project Director Joel Hartter by email: [joel.hartter@colorado.edu](mailto:joel.hartter@colorado.edu) or phone 541-908-5334.

The Communities and Forests in Oregon (CAFOR) project is funded by the US Department of Agriculture and is a partnership between the University of Colorado, the University of New Hampshire, the University of Louisville, Oregon State University College of Forestry Extension and Wallowa Resources. The report from the 2014 survey is available free here: <http://scholars.unh.edu/carsey/238/>. Project information and other reports can be found on the CAFOR website: [www.cafor.weebly.com](http://www.cafor.weebly.com).

**Being Prepared**

*Chal Landgren, OSU extension Christmas Tree Specialist*

At a recent Christmas tree gathering, a grower offered some recent and firsthand advice on dealing with theft. On the upside, all the stolen equipment was recovered thanks in part to helpful neighbors, a quick response from the deputies and rather inept thief. One lesson from the experience the farm's owner wanted to share is to make sure you have records and easy access to all the serial numbers for your equipment (chainsaws, tractors, anything with a number). This saves time trying to rummage through old bills of sale, and who knows where they are! And time is of the essence. Many thefts are made in order to quickly sell the stuff to get cash for drugs. Police need the numbers to trace sales. For items without serial numbers, photos and lists of your valuables could help prove they belong to you. Write your name or farm name somewhere. Engrave your name on metal items, permanent ink on other things. Having alert, helpful neighbors is critical as is being a good neighbor in return. In this case, a neighbor noticed a suspicious vehicle and immediately called the farm owner. The chainsaws, bars and other items were all recovered. The thief is in custody for a long list of additional sins.

On another front, be prepared for the inevitable worker accident on your farm. It just happened to me. On our farm, a college-age worker/friend was installing fence posts to keep joy riders from running over my trees (another story) with a manual fence post pounder. One of the hand-holds grazed his scalp. It was not a "bad" cut and we went up to get the first aid kit on the 2nd floor of a shed. 1st bit of advice– avoid taking potentially injured people up, instead bring the first-aid kit down. We got up to the 2nd floor and treated the wound. I turned to put the kit away and my "patient" passed out and fell down the stairs headfirst. So here I am– my patient is too big for me to lift, unconscious and stuck on the stairs about 1/2 way down. Not a happy sce-

ne. After an eternity of 30 seconds he “woke up” and wondered why he was upside down on the stairs. His back and neck were fine but his memory of the “event” was not very clear. He did know where he was, who he was and all the needed phone numbers. So, we headed off first to the Urgent Care and later to the Emergency Room. The CAT Scan showed no problems and he stayed the night in the hospital for observation. He feels fine now. But concussions can be quite serious. We had one while I was working on Ski Patrol last month. A young girl hit her head falling off her inner-tube while sledding. No big deal at first, just a little bump. But within 20 minutes she went from looking fine, to unconscious and barely breathing. She went by Life Flight to a hospital where she spent a few tough days before recovering.

The lessons and messages I learned: 1) Treat your patient/worker while sitting down on (or near) the ground, 2) know how to get in touch with family/friends of each worker, 3) know the best way to local ER/Urgent Care facilities, 4) don’t take potential concussions lightly, they can be quite serious, 5) know about insurance and payments prior to the hospital visit, 6) where possible, know about potential medical “issues” a worker might have that could influence treatment (diabetes, allergies, medicines needed or taken etc.)

In both the cases above “stolen stuff” was discovered and workers recovered, but preparation before “things” happen can make a huge difference in outcomes.

## Fir Engraver in Northeast Oregon

*Forest Health Highlights in Oregon-2104*

Fir engravers can infest all species of true fir (*Abies spp.*) in Oregon, but most commonly affect grand, white, and noble firs in forest settings. In 2014, aerial surveys documented fir engraver damage on over 44,000 acres, representing a three-fold increase from 2013, but remaining below the 10-year average. Increased tree mortality due to fir engraver was primarily observed across the Umatilla and Wallowa-Whitman National Forests in Northeast Oregon, and in more drought-prone areas of central and southwest Oregon. Similar to WPB, outbreaks of fir engraver are closely tied to tree moisture stress related to drought conditions. With moderate-to-severe droughts now occurring across much of the forested areas of southwest and eastern Oregon, fir

engraver damage is expected to increase in the near future, especially where hosts are growing at higher densities or on more drought-prone sites.

## Mountain Pine Beetle Increases in Eastern Oregon

*Forest Health Highlights in Oregon-2104*

In 2014, aerial surveys attributed over 382,000 acres of tree mortality to mountain pine beetle (MPB) (Figure 5). MPB increased by 14% and entered the second consecutive year of increases in both areas affected and estimated number of

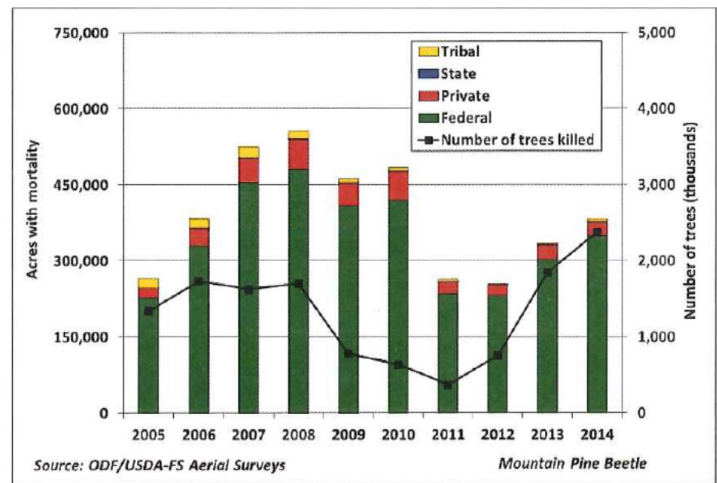


Figure 5. Ten-year trend for total acres affected and estimated number of trees killed annually by mountain pine beetle in Oregon.

trees killed. This appears to be primarily due to high intensity, localized damage in areas with highly susceptible lodgepole and five-needle pines (whitebark, western white, and sugar pines.) Concentrated lodgepole pine mortality was most apparent in Klamath and Lake Counties on the Fremont-Winema National forests and in Baker and Grant Counties at the southern end of the Blue Mountains in the Malheur and Wallowa-Whitman National Forests (Figure 6). Increased mortality of ponderosa pines by MPB, near outbreak areas, was also observed.

Cooperative efforts are continuing in heavily impacted areas to create strategic safety corridors and fuel breaks. This includes the removal of dead and dying trees along roads and in recreation sites as well as reducing fuel loads and increasing access and safety for firefighters.

Thinning ponderosa pine stands can reduce risk of attack. For mature lodgepole stands with mountain pine beetle mortality, salvage logging reduces economic losses. Lodgepole stands should regenerate naturally without fire.

The article below was recently posted on this blog: <http://blogs.oregonstate.edu/orforestscc/>. I am working with Amy Grotta and others in the OSU Forestry Extension and Natural Resources program to provide climate related information. This blog is one of the avenues we're using to deliver information. Although the article's emphasis is more west-side oriented many of the principles also apply to eastern Oregon forests.

## **A forest manager's dilemma**

*By Janean Creighton, Oregon State University, Forestry & Natural Resources Extension*

Climate change is predicted to accelerate through the 21st century, leading to changes in forest species distribution, productivity, and disturbance regimes<sup>1</sup>. These changes may have profound impacts on the public and private benefits from forests; as well as managers' strategies to sustain these benefits into the future. As our understanding about potential climate change impacts on western U.S. forests improves, land managers are developing adaptation strategies to meet these challenges.

How do forest managers perceive climate change impacts, and how is this reflected in their forest management strategies? To get a land manager's perspective, I interviewed Sara Lipow, Forest Geneticist for Roseburg Forest Products.

### **J.C. Tell me about your background.**

S.L. I am the Forest Geneticist for Roseburg Forest Products in charge of tree improvement, and have been since 2008. Before that, I was the geneticist for the state of Oregon, working in ODF's Private Forests Program, where one my key responsibilities was to assist small woodland owners. I established a seed bank to provide small woodland owners with access to genetically improved seedlings, which are now widely available for purchase through private nurseries. I'm also a small woodland owner myself, with 40 acres in Lane County.

### **J.C. From the perspective of a geneticist and a small woodland owner are you noticing significant changes in the resource in terms of climate change?**

S.L. During the past few years, trees have been developing much earlier in the season; especially this year: trees began flowering and breaking bud several weeks earlier than is typical. Tree phenology—the timing of various developmental stages—is linked to climate. Trees are flexible with respect to phenology and climate, but there are also genetically based adaptations. For example, the timing of bud burst will differ for a Douglas-fir tree from Cascadia and Coos Bay, even if they are grown on

the same site and this is genetically controlled; but the timing of both will vary with climatic conditions.

### **J.C. What other changes are you seeing that are linked to climate?**

S.L. I work primarily with Douglas-fir in western Oregon. There's a lot of die back of individual branches and tops of trees that's happening currently, which is drought related and seen primarily on droughty sites. If you drive up and down I-5 right now, you can see browning at the tops of some trees and many dead, individual branches. Trees growing along the highway are often on sites where soil is compacted or conditions are otherwise not ideal for tree growth, which makes the phenomena especially visible along roadsides. It is less prevalent in healthy, appropriately stocked established stands.

### **J.C. Are you seeing this primarily with Douglas-fir?**

S.L. I'm seeing this drought related die-back with a range of species.

### **J.C. Are there areas that you see as being more vulnerable to changes in environmental conditions? Anything you're seeing that's unexpected?**

S.L. Swiss needle cast is a native pathogen that affects Douglas-fir, especially along the coast of Oregon, and results in reduced tree growth and needle loss. There are different ideas about how much Swiss needle cast might be expected to change with climate change. We know the timing of when the pathogen's spores are released – and thus the likelihood it will infect trees – is linked to environmental cues, but we don't have a complete enough picture of this ecological interaction to make good predictions about how disease severity will change under different climate scenarios.

There has been increasing concern about intensified Swiss needle cast in the Coos Bay area, which may be linked to climatic changes. So for landowners with property in the Swiss needle cast zone or on the edge of this zone, there's no clear picture whether they will see more or less of this disease. Then there's fire, of course. Climate impacts will impact fire regimes—something of present concern. Depending on the patterns of climate change, some outcomes could be helpful, while others will be harmful.

### **J.C. How could climate impacts be helpful?**

S.L. Climate models are not yet accurate at the local level. We don't know whether drought-limited sites will get wetter. It is possible that we could see an increase in productivity in some of our for-



ests, IF droughty sites get wetter at the right time of year. We really don't have a handle on that; as the precipitation models at a local scale are uncertain. Warmer temperatures also could mean that trees will break bud earlier, have a longer growing season, and potentially grow faster.

**J.C. In the forests that you are managing, are you prioritizing specific management areas?**

S.L. We are increasingly focused, at a research level, on understanding how different populations of Douglas-fir grow in different environments. Oregon has got a lot of environmental variation linked to geography and as you move from the coast, inland, and into the mountains, the change in environment can be viewed as a surrogate for changes that may occur in climate over time. We are spending a lot of effort understanding the adaptation of trees to their environment so we can make informed decisions on where we plant different sources to ensure that they remain well adapted to current and future climates. In Oregon in the 1970's, there was an idea of extreme local adaptation, and people developed very small seed zones; for a few decades in the Pacific Northwest most landowners planted very localized seed sources. There has been an increased understanding that this was not biologically based, and that Douglas-fir is much more flexible and widely adapted and can be safely moved longer distances. Genetic research linked to climate and the environment provides a better understanding of the adaptability of populations and how they respond to environmental variation.

The forest industry and most public agencies overwhelmingly plant genetically improved stock<sup>1</sup> when they reforest. Such genetically improved seedlings are available for non-industrial landowners; and are a good choice for landowners that want to guard against future climate impacts. This is because the trees in the tree improvement program—those producing the seed used to grow the genetically improved seedlings—have generally been selected for wide adaptability. They have been shown to perform well across a range of sites. So while there are limited options for what people can do with their existing forests, if landowners are planting a new forest, I would encourage the planting of genetically improved seedlings. These seedlings provide high return on investment. Genetically improved seedlings are available for Douglas-fir and coastal western hemlock.

**J.C. What about the drier east side forests?**

S.L. Well, for the mixed-conifer stands the safest

approach from an adaptability standpoint is to put them back into mixed-conifer stands; but of course you have to weigh this from a landowner value perspective. There are different values for different species.

**J.C. So one of the adaptation strategies you see is the planting of genetically improved seedlings. Is that happening all over the region?**

S.L. Yes, in western Oregon and Washington the overwhelming number of Douglas-fir seedlings planted on both public and private lands has been tested by tree improvement programs.

**J.C. So if a group of landowners were to ask you, "What's one thing I can do to prepare for climate impacts" it would be to plant the improved seedlings.**

S.L. Yes. That would be it. The Oregon Department of Forestry puts out an annual publication: "Sources of Native Forest Nursery Seedlings" for small woodland owners. Landowners can look in this publication to find nurseries growing seedlings adapted to their region, including genetically improved ones.

**J.C. In terms of the vulnerabilities to increased pathogens, etc., what's the strategy?**

S.L. Manage for as healthy a stand as possible. Overstocked stands can be more prone to pathogens and drought.

<sup>1</sup>To clarify, generally in eastern Oregon we do not have access to genetically improved seedlings from seed produced in seed orchards but we can buy seedlings grown from seed collected from defined seed zones and elevations, locally adapted.

**<sup>1</sup>References:**

Coops, N.C., and R.H. Waring. 2001. Estimating maximum potential site productivity and site water stress of the eastern Siskiyou using 3-PGS. *Canadian Journal of Forest Research* 31:143-154

Coops, N.C. and R.H. Waring. 2011. Estimating the vulnerability of fifteen tree species under changing climate in Northwest North America. *Ecological Modelling* 222:2119-2129

Mote, P.W., and E.P. Salathé. 2010. Future climate in the Pacific Northwest. *Climatic Change* 102(1-2): 29-50, doi: 10.1007/s10584-010-9848-z.

Waring, R.H., N.C. Coops and S.W. Running. 2011. Predicting satellite-derived patterns of large-scale disturbances in forests of the Pacific Northwest Region in response to recent climatic variation. *Remote Sensing of Environment* 115:3554-3566.

## Publications of Interest:

**Planning Family Forests:** [http://www.amazon.com/Planning-Family-Forests-McEvoy-Thom/dp/0989069907/ref=sr\\_1\\_1?ie=UTF8&qid=1426549094&sr=8-1&keywords=thom+mcevoy+estate+planning](http://www.amazon.com/Planning-Family-Forests-McEvoy-Thom/dp/0989069907/ref=sr_1_1?ie=UTF8&qid=1426549094&sr=8-1&keywords=thom+mcevoy+estate+planning)

**Ecology and Management of Eastern Oregon Forests: (free download, normally \$25 to purchase)**

<http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0CCQQFjAA&url=http%3A%2F%2Ffir.library.oregonstate.edu%2Fxmlui%2Fbitstream%2Fhandle%2F1957%2F23662%2FECOLOGYANDMANAGEMENTOF.pdf%3Fsequence%3D3&ei=IY6DVY7qGIInmsAXxm4OYDA&usg=AFQjCNEh--NX4etQhcUPFZIHEB2ZcHj4qQ&bvm=bv.96042044.d.b2w&cad=rja>

**Woodland Ponds: A Field Guide.** EM 9104. This new publication addresses the permitting, building and maintaining of woodland ponds and is available from the OSU Extension publications website. Cost is \$12.00. <https://catalog.extension.oregonstate.edu/em9104>

**Wildlife in Managed Forests: Early Seral-Associated Songbirds.** This publication is part of a series from the Oregon Forest Resources Institute that aims to synthesize current research findings and make information available to foresters, wildlife managers, woodland owners and other interested parties. For copies (free) contact the Oregon Forest Resources Institute, 317 SW Sixth Ave., Suite 400, Portland, OR 97204. (971-673-2944) or

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**Rules to Live By.** This publication features 11 dedicated Oregonians who work to help balance ecology, economy and society in Oregon's forests. Its purpose is to provide an overview of Oregon's Forest Practices Act and the process involved. For copies (free) contact the Oregon Forest Resources Institute, 317 SW Sixth Ave., Suite 400, Portland, OR 97204. (971-673-2944) or go to: <http://www.knowyourforest.org/>

**Contracts for Woodland Owners.** EC 1192. This publication describes basic principles of contract law as applied to planting; growing; maintaining; harvesting; road construction, maintenance, and repair; and selling logs and timber. Includes definitions of common contract terms and sample contracts. For copies go to: <https://catalog.extension.oregonstate.edu/files/project/pdf/ec1192.pdf>

**The Beaver Restoration Guidebook: Working with Beaver to Restore Streams, Wetlands, and Floodplains:** The goal of this guidebook is to provide an accessible, useful resource for anyone involved in using beaver to restore streams, floodplains, wetlands, and riparian areas. It provides a practical synthesis of the best available science, an overview of management techniques, and case studies from throughout the western US. <http://www.northpacificlcc.org/>



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