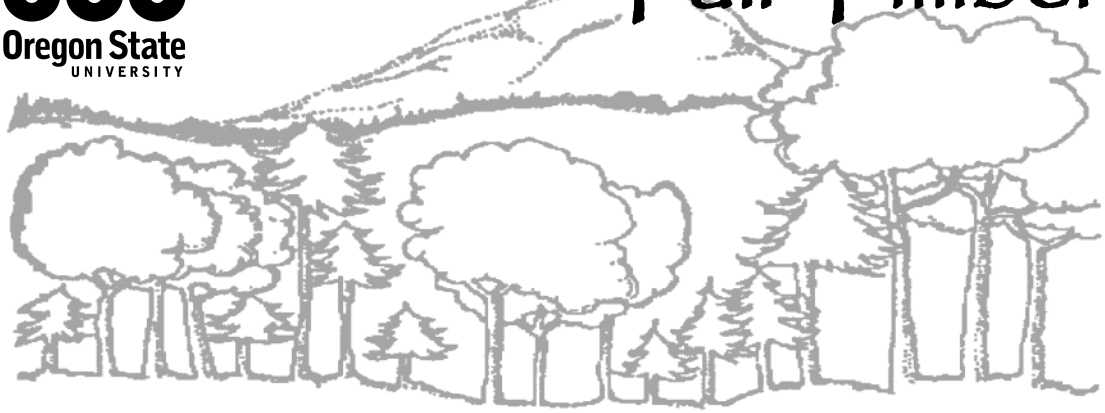
Tall Timber Topics



A newsletter for those interested in Forestry, Woodland Management and Christmas Trees in Northwest Oregon

Summer 2015

Drought has settled in across the Pacific Northwest, including northwest Oregon. Checking the data from the rain gauge at our office reveals that our April-May-June rainfall totaled 4.3 inches, just a little more than half of our average total (7.95 inches) for that time of year. Oregon's average temperature for the month of June in 2015 was the warmest on record, breaking the previous June record by three degrees.

Our gardens and our trees are not too happy about this. For our conifers, adequate rainfall in the spring and early summer is important as this when the trees do most of their growing, and use the most water. Conifers needles are long-lived so they are built to withstand our dry summers. During dry periods, they stay on the tree, but they reduce their photosynthetic activity in order to conserve water. Photosynthesis fuels growth, so growth reductions can occur if soil moisture is depleted too early in the year. Prolonged drought or late season stress can lead to flare-outs, where whole branches or tree tops die. We saw lots of this on the landscape this spring (see article inside, page 3).

Deciduous broadleaf trees respond to drought a little differently. Their leaves are built to be "one-and-done". Instead of reducing photosynthesis when it gets really hot and dry, these deciduous trees just send their leaves packing. The hilly roadsides along my commute to work are covered in mixed hardwood forests. Last summer, the hillsides seemed to turn brown early as the bigleaf maples gave it up for the year. This year, I've noticed that some of these same maple trees have much smaller leaves than usual. This may be a delayed effect of last year's hot dry summer.

Unfortunately, predictions are for an El Niño winter, meaning that this drought will likely persist. We can't change the weather, but we can try to reduce the amount of stress our trees experience through our management decisions. Reducing competing vegetation before and after reforestation and thinning dense stands are two ways to do this. These are recommended practices under any circumstances, but are even more important as we continue to experience dry years. Whether a short-term cycle or an indication of long-term climate change, the bottom line is that you can be proactive to maintain your forest investment. Look inside for an article about one professional forester's perspective on climate change and forest management.

Finally, we've come to the busiest time of year for woodland tours. There are numerous opportunities for you to get out and see what other woodland owners are doing this summer. Make it a point to get out to one of the programs listed on page 2.

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Upcoming Events

Mechanized Thinning Demonstration and BBQ at Miller Woods
Friday, July 10th, 4:30 - 7:30 pm, Miller Woods, 15580 NW Orchard View Rd, McMinnville
Come view an active thinning operation and see Ponsse harvesting and forwarding equipment in action. BBQ following the tour. Hamburgers and hotdogs provided. Attendees are encouraged to bring a side dish. Sponsored by Yamhill Soil and Water Conservation District. RSVP to Mary King, yamhillswcd@frontier.com or 503-472-6403

Yamhill County Small Woodlands Association Summer Picnic and Tour
Wednesday, July 22nd, 5:00 pm social/6:00 BBQ/7:00 tour, 19220 NE Williamson Rd, Newberg
Terry and Ellen Lane host this year's summer picnic. Hamburgers, chips and soda provided by YSWA; bring a side dish if you like. Following the picnic Terry will lead a walking tour of their woodland. Highlights include a giant Douglas-fir tree, a culvert replacement project, and a firewood splitter and wrapper. RSVP to hal.elin@gmail.com or 503-843-2173. Call (503) 538-3256 for directions.

Columbia County Small Woodlands Association/OSU Extension Summer Woodland Tour
Saturday, July 25th, 8:30 am - 2:30 pm, Just-A-Mere Farm (Jct Skeans Rd and Fern Hill Rd), Rainier
The Skeans family (three-time Columbia County tree farmers of the year) hosts this year's tour. Coffee at 8:30, tree farm tour at 9:00, and BBQ picnic lunch provided. Afternoon presentation by Oregon Department of Forestry about fire season safety. Wear comfortable sturdy shoes. Required RSVP to Vicki Krenz at 503-397-3462 or vicki.krenz@oregonstate.edu by July 17th (Family is welcome; please include number of visitors in your RSVP).

Twilight Tour - Vince and Kathy Cooney Family Apiary Tree Farm
Wednesday, August 12th, 6:00 - 8:00 pm, 69301 Apiary Rd, Rainier
See and discuss interesting plantings of commercial trees grown in Oregon, including Douglas-fir, Western redcedar, Willamette Valley ponderosa pine, incense-cedar, and Port-Orford-cedar. There will be an easy 1.5 mile walk (shelter provided for those who do not wish to walk). Coffee, water, and snacks provided. No RSVP needed.

Washington County Small Woodlands Association – Howdy Neighbor Tour
Saturday, August 15th, 8:30 am (lunch provided), The Ridge Tree Farm, North Plains
This fun and informative event is hosted by John and Cathy Dummer, Washington County Tree Farmers of the Year. There will be learning stations on: The Ridge Tree Farm history and management plan, forest inventory systems and management planning, diseases, wildlife, and silviculture options and markets. Plus, live music and a fir cone driving range! RSVP required by Aug. 7th: oswaevents@gmail.com or 503-588-1813. Location: Pumpkin Ridge Rd, 3 miles past the end of the pavement (look for signs and parking helpers)

Rural Living Field Day
Saturday, August 22nd, 8:30 am - 2 pm, Howell Territorial Park, Sauvie Island
Rural Living Field Day is a fun event sponsored by West Multnomah, Tualatin and Columbia Soil & Water Conservation Districts and the Oregon Small Woodland Association. Topics include wildlife, forests, pollinators, invasive weeds, streamside areas, orchards, crops and health soil, horse health and manure composting. $15/ person or $20/two includes lunch. Register at www.wmswcd.org or contact carolyn@wmswcd.org.

Forestry in Scandinavia - 2016 Tour (May 27-June 14, 2016)
The Oregon Woodland Cooperative has organized a forestry tour to Scandinavia especially for family forestland owners, forestry professionals and forest products producers. Guided by experienced foresters, this educational tour will focus on private forestry in Sweden and Norway and the role of woodland owner cooperatives. Full details at http://www.oregonwoodlandcooperative.com/scandinavia-forestry-tour. Reservation deadline: Oct. 1

Many Douglas-fir with dead tops and branches in the Willamette Valley this year

By Brad Withrow-Robinson, OSU Forestry & Natural Resources Extension (Benton, Linn, and Polk Counties)

Adapted from TreeTopics, http://blogs.oregonstate.edu/treetopics, May 5, 2015

Young Douglas-fir trees with dying branches or tops turning brown, then red have become a common sight all around the Willamette Valley this spring. What is going on?

This "flare out" of branches and tops are classic drought symptoms in Douglas-fir, which we are linking to last year's weather when we had a particularly long, dry and very hot period late in the summer. Late season drought injuries to the stem and leader do not always show up when they occur, but often express themselves the following spring as trees start to grow. We have these drought damage events from time to time here in the valley, most recently in 2013 and again before that around 2000. Older trees typically have milder symptoms, but the many older, flat-topped Douglas-fir trees you see are a reflection of past droughts and non-fatal damage.

It is important to keep in mind that the Willamette Valley can be a challenging environment for trees. Summers are significantly hotter and drier in the Valley than in the mountains, and we have many poorly drained or shallow soils that are not well-suited to many kinds of trees. So, we tend to see most drought stress damage on more marginal sites, where wet or shallow soils limit tree root growth, water availability, or both. It is also often more common in younger trees (20 years and younger) whose root system may be having trouble keeping up with rapid expansion of their crowns.

Heat and drought can kill trees outright, or often just put the trees under stress. Stress can then lead to problems with secondary pests (including insects such as the twig weevil and diseases such as stem cankers) which take advantage of a stressed tree's weakened condition. Right now we are mostly seeing the effects of drought in Douglas-fir, but can probably expect to see problems emerge among some other conifers as the year progresses, especially if we stay as dry as we are now. Let's hope for some more rain!

For more information: Here are two good articles from the ODF Forest Health team. They are a few years old but very relevant, explaining Dead Tops and Branches (with good pictures) and about Drought and Mortality.

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https://facebook.com/osufnr

"Log" on for news and timely tips.

Mapping your forest with Google Earth and a GPS phone app

By Amy Grotta, OSU Forestry & Natural Resources Extension (Columbia, Washington & Yamhill Counties)

Adapted from TreeTopics, http://blogs.oregonstate.edu/treetopics, June 9, 2015

One of the first orders of business on the Matteson Demonstration Forest is getting to know the lay of the land. 180 acres is a lot to get to know! As is the case with any new woodland owner, we need a map to help orient ourselves while on the property, and to keep track of where different roads and trails lead.

Eventually, the OSU College Forests staff will create a GIS map of the Matteson Forest with various spatial layers – property boundaries, roads, forest types, culverts, and so forth. In the meantime, I've been using Google Earth to create my own map, adding information as I continue to explore the tract. While in the woods, I've been using a GPS app on my smartphone to keep track of where I am and to record points and paths. In this article I'll describe how I've been using these two applications, which I think would be useful to most woodland owners who don't have GIS at their fingertips.

Some woodland owners are familiar with Google Earth. For those that aren't, Tristan Huff (OSU Extension Forester on the south coast) has developed a useful tutorial (http://extension.oregonstate.edu/coos/ge) for landowners. I recommend the Pro version of Google Earth, which is now available for free (a recent change). In addition to all the standard features of Google Earth, the Pro version shows tax lot boundaries and allows you to calculate the area of a polygon that you draw. This enabled me to draw the Matteson property boundaries on my map with reasonable accuracy, by tracing the taxlot lines.

On a recent visit to the Matteson Forest my goal was to start mapping roads and trails on the property. Major roads stood out on the aerial photo, but walking the tract we've come across numerous secondary roads, trails and a small pond that are obscured by the canopy when looking at the aerial image.

A GPS receiver can be used to map them. GPS receivers vary widely in their accuracy, especially under tree canopy; the most accurate systems are quite costly. Even a consumer-grade GPS receiver, which might be accurate to around 50 ft under tree canopy, can cost several hundred dollars. But, if you are one of the two-thirds of American adults that has a smartphone, you already have a GPS receiver built in. Why not use it?

Doing some research I came across Motion X-GPS, an iPhone app available for the bargain price of $0.99. Motion X-GPS uses your phone's GPS receiver to track your location. This works in places where you don't get a phone signal. You can record tracks and points as you move about.

Motion X-GPS has good tutorials on their website, so I won't go into much detail here on how to use the app in the field. Below are two screenshots from my phone, showing a waypoint and a track that I recorded.

After I was done for the day, the next step was to get these features from my phone into Google Earth. In Motion X-GPS you can share locations, tracks and waypoints to an email address. I simply emailed the tracks to myself. Opening up the email attachment automatically opens the feature in Google Earth. From there I could save it to my map of the property.

In summary, I give Google Earth Pro and Motion X-GPS two thumbs up. To conserve my phone's battery charge while in the field, I turned off the cellular receiver (there's little to no cell signal on the Matteson Forest anyhow). Using the GPS app for 90 minutes consumed about 40% of my battery. Unfortunately, Motion X-GPS is not available for Android devices, but there are other GPS tracking apps that function similarly and are Android compatible.

Adding forest features to a map using Motion X-GPS iPhone app

A Forest Manager's Dilemma

By Janean Creighton, OSU Extension Specialist, Human Dimensions & Natural Resources

Climate change is predicted to accelerate through the 21st century, leading to changes in forest species distribution, productivity, and disturbance regimes. 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.

A Swiss needle cast infected tree. *Photo credit: SNC Co-op*

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. 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. *(next page)*

A Forest Manager's Dilemma, continued...

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 forests, 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.

Douglas-fir seedling from an Oregon nursery. *Photo Credit: Oregon Department of Forestry*

The forest industry and most public agencies overwhelmingly plant genetically improved stock 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.

Seed: Where forestry and Christmas trees intersect

By Chal Landgren, Christmas Tree Specialist, OSU Forestry & Natural Resources Extension

It all starts from seed. We typically think of seedlings, but the nursery gets the seed from somewhere to start the process. While Christmas tree growers and forest managers may have different traits they desire in trees, both need seed. So, in this brief space I wanted to look back and consider some of the steps and research needed to reliably provide tree growers with the needed seed. Let's consider Douglas-fir. Both Christmas tree growers and woodland owners plant many thousands yearly. And it is a great story of both wild collections and seed orchard production.

The swollen area is where the graft was made on this tree. This union is likely to break.

It takes two years for Douglas-fir to produce a cone. And cones in the wild are produced in infrequent intervals. The factors that combine to create those bumper cone crops in nature are still rather mysterious. Lucky for us, Douglas-fir seed can be stored in freezers for years. Through some combination of weather and temperature and who knows what; good seed crops seem to come along every 5-7 years. In those in-between years there may be cones, but the squirrels and seed insects seem to consume most of the available seed. Seed collectors have long noted that stressed trees tend to produce cones. Trees in seed orchards may be stressed purposefully in order to more reliably produce cones. Girdling and hormone injections are frequently used to induce cones.

In those good seed years in the wild, cone pickers and seed companies head for the hills and collect squirrel caches, climb tress or shoot out branches to fill gunny sacks of cones. That still happens, but is much reduced. Seed orchards are now filling more of the seed needs for nurseries, especially for commercial forest sites. But is has taken many years of research and testing to get Douglas-fir into production orchards.

One of the unique problems found with Douglas-fir, is that it frequently will not accept scion wood for grafting. The graft may live for a few years but frequently it dies. So, a major research effort begun to determine why and what could be done. After many years of experimentation a " universal root stock" was developed that showed less graft rejection. This was painstaking work and essentially involved testing hundreds Douglas-fir families to find sources that had a lower percentage of graft rejection. The photo on the left shows what graft rejection looks like 15 years after grafting. Essentially, the rootstock and the scion wood grow at different rates and with time the cambium will "disconnect".

So, Douglas-fir seed orchards begin with planting a universal rootstock. The grafted scion wood likely has also been part of a long-term research effort. Woodland owners prefer rapid height and volume growth. Christmas tree growers like many upright branches, good color and moderate growth. All these traits have some degree of heritability. It's that level of heritability that makes tree improvement and seed orchards a good investment.

All of this takes a long perspective. The time from grafting to the first seed crop can easily be 10-15 years. The testing of families and trees to include in a genetics program can span careers. Yet foresters and Christmas tree produces have stayed the course. Today most of the Douglas-fir planted in industrial forestry sites comes from seed orchards. For Christmas trees it's a small percentage, but increasing.

Douglas-fir pollen will start releasing in the first part of April and the cones will start emerging. Cones will be ready to harvest around September. So, the next time you see "improved" seedlings from a seed orchard in a nursery catalogue, be aware of the many innovations that were needed to make that line in a catalogue become a reality.

Universal Douglas-fir rootstock waiting for grafting

Put Down Those Pruning Shears

By Brad Withrow-Robinson, OSU Forestry & Natural Resources Extension (Benton, Linn, and Polk Counties)

Adapted from TreeTopics, http://blogs.oregonstate.edu/treetopics, July 8, 2015

I recently got a call from a fellow whose Douglas-fir trees were covered with globs of pinkish pitch. It looked kind of like candle wax drippings on a Chianti bottle in some Italian restaurant, except it was on the trunks of his trees. As we talked I discovered that it was not an old stand, and the landowner had been out during the nice weather last summer and pruned his trees up six or eight feet to make it easier to get around and to reduce the risk of fire down near the County road. The pitch blobs were at the pruning scars.

Pitch moth evidence on off-site ponderosa pine (left) and an ornamental pine (right).

The culprit here is the Sequoia pitch moth *(Synanthedon sequoia)*, a common clear-winged moth that attacks many conifer species. Although commonly seen in town in people's shore pine and other ornamental pine species, it is not generally a problem on Douglas-fir, or native Valley ponderosa pine except when the tree is wounded. A common and very attractive wound is easily created by pruning live branches during the summer months (April thru September) when the bark is soft and the adult moth is active. Although unlikely to kill your trees it is unsightly and generally avoidable.

Prevention is the best cure. So this summer, put down those pruning shears. Save that job for the winter months.

Have an image of pitch moth on Douglas-fir you would like to share? Email brad.w-r@oregonstate.edu.

New Publications and Resources

EM 9104 Woodland Ponds: A Field Guide, By Steve Bowers
Ponds are an excellent way to raise the value of a woodland property. They are a water source for livestock and game animals; create opportunities for fishing, boating, and swimming; provide fire protection; create wildlife habitat; and contribute to the overall aesthetics and value of a piece of land. This new field guide walks you through the necessary steps to design and build a successful woodland pond. The introduction outlines the necessary permits and a project timeline, followed by a series of sections describing how to work with contractors, decide on a location, design a layout, build necessary infrastructure, prepare for construction, and maintain the final product. There is also a useful chapter on stocking fish, planting native plants, and encouraging wildlife around a new pond. And like any good guide, there is a handy list of landowner assistance organizations and other helpful resources.
This guide can be purchased through the OSU Extension catalog: https://catalog.extension.oregonstate.edu/em9104

Interactive fire season map now online from ODF: As we head into fire season, Oregon Department of Forestry has developed a new and useful online resource: an interactive map that shows current fire season restrictions. The map can be found here: http://www.oregon.gov/odf/pages/fire/precautionlevelMap.aspx. Click on your location within the state, and a popup box will appear showing the current fire precaution level, with links to more information about restricted activities. Fire season restrictions change often as weather and fuel conditions change. As you work on your forest this summer please be mindful and stay abreast of current regulations for your area.

Guidance for Conserving Oregon's Native Turtles (Including Best Management Practices), By Oregon Department of Fish and Wildlife: http://www.dfw.state.or.us/wildlife/living_with/docs/ODFW_Turtle_BMPs_March_2015.pdf

News Articles of Interest

SPOTLIGHT ARTICLE

What Does the Future Hold for Oregon's Family-owned Forests? By Robert McClure and Ben Dejarnette, *Investigate West*, http://www.invw.org/article/oregon-family-forests-1539
The above article in *Investigate West* explores some important current issues for small woodland owners in Oregon. There is an interview with a Washington County Master Woodland Manager, Cary Renzema, regarding the loss of small privately-owned forest to developers because of, "death, disease, and divorce." In addition, the article discusses the current controversy over increasing stream buffers on private lands, and the implications this new legislation has for small woodland owners.

OTHER ARTICLES

Douglas-fir trees the hardest hit in tree die-back, By Glenn Ahrens and Mary Stewart, *Statesman Journal*, http://www.statesmanjournal.com/story/life/2015/06/04/douglas-fir-trees-hardest-hit-tree-die-back/28410489/

Can Carbon Markets Help Oregon's Small Forests? By Robert McClure, *Investigate West*, http://www.invw.org/article/can-carbon-markets-help-o-1541

The Future is Now for Three Small Forests, *Investigate West*, http://www.invw.org/article/the-future-is-now-for-thr-1540

Family Foresters Nervously Eye Possible New Logging Rules, By Liam Moriarty, *Investigate West*, http://www.invw.org/article/family-foresters-nervous-1542

New Wood Industry in Oregon, Washington gets boost from U.S. Commerce Department, By Molly Harbarger, *The Oregonian*, http://www.oregonlive.com/business/index.ssf/2015/07/new_wood_industry_in_oregon_wa.html

NEW OSU Extension Small Job Contractor List Available for Columbia, Washington, and Yamhill Counties

This updated list of contractors (consulting foresters, loggers, planters, road builders, and other forestry professionals) is now available online at:

http://extension.oregonstate.edu/columbia/sites/default/files/small_job_contractor_list_july_7_2015.pdf

If you would like to add your business to this list, please contact brandy.saffell@oregonstate.edu.

In this issue:

Upcoming Events……Page 2
Dead Douglas-fir Tops……Page 3
Mapping with Google Earth and a GPS phone app……Page 4
Climate and Forest Management……Page 5-6
Christmas Trees: Seed……Page 7
Pitch Moth……Page 8
New Publications……Page 8
News Articles……Page 9

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