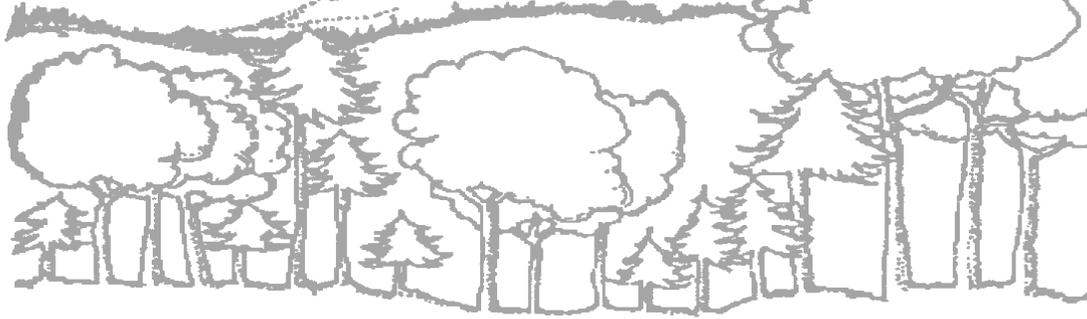


# Tall Timber Topics



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

**Summer 2013**

Extension agents field a lot of calls and emails from the public. In my case, most of these have to do with trees, obviously. The nature of these inquiries is wide ranging, but there are a few recurring themes. In the winter (or when one of the counties decides to enforce its forestry deferral tax policy), most of them have to do with finding tree seedlings to plant. When log prices are good, we get a lot of requests for referrals for loggers. (Are you in that boat? See article on page 6.)

Often, the first indicator we have of forest health trends comes in the pattern of the calls we get. For example, last summer there was an outbreak of alder flea beetles in the Portland metro area. I first saw the flea beetles on one woodland site and thought it was a little unusual, but by the end of the week I had received three or four calls about them, and they kept coming. This summer, tent caterpillars appear to be the “insect du jour” in areas along the Columbia River. You will find an article about tent caterpillars on page 4. We are also seeing (and receiving many calls about) branch and top dieback on young Douglas-firs throughout the region this year. Read about this drought-induced phenomenon on page 3.

Once we have evidence that insects, disease, or abiotic damage is a pattern rather than an isolated incident, we try to disseminate research-based information about it more broadly. This newsletter is one means of doing that, but it is only printed quarterly and we must limit the number of pages due to mailing costs. Want to get your news faster? Much of what you read here (and more) is first published on our Forestry Extension blog, [TreeTopics](#). You can read TreeTopics online (see link at the bottom of this page) or subscribe to receive new articles in your email.

You may have read about the Weyerhaeuser-Longview Timber land deal last week. As a result, by my calculations about 1/3 of Columbia County’s total forestland will change hands with the stroke of a pen this summer! That is what our industrial neighbors are up to, but what about your small woodland neighbors? We are coming up on woodland tour season, with at least one planned in each of Columbia, Washington, and Yamhill Counties this summer. These are great opportunities to see and learn from your neighbors, enjoy some food and kick the dirt. See you there.

A handwritten signature in black ink, appearing to read "Amy Grotta".

**Amy Grotta**

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**Blog:** <http://blogs.oregonstate.edu/treetopics>

## Upcoming Events



### **Washington County Small Woodlands Association Tree Farmer of the Year Tour**

**Saturday, July 13th, 2:00 - 6:00 pm, 49885 NW Cedar Canyon Rd, Banks**

2012 Tree Farmers of the Year, **Sam and Cee Sadtler**, will host both guided and/or self-directed tours of various lengths and ability. Each walking tour lasts approximately ½ hour.

Other activities will include tree height measurement, horseshoes, darts, and neighboring.

Food will be served at 4:30-5:00 PM (pulled pork on buns with salad, water, sodas, snacks and stuff .....feel free to your own beverages). **PLEASE RSVP to 503-324-0223 BY JULY 3 IF YOU PLAN TO EAT.**

**DIRECTIONS/PARKING:** Just past milepost 46 on Hwy 6, turn right on Cedar Canyon Rd. and immediately turn left (still on Cedar Canyon), proceed up the hill approximately ¾ mile. The entrance is the first right turn, thru the red gate and on up the driveway. There will be signs everywhere.

There is very LIMITED PARKING. We have made arrangements with our neighbor to PARK IN THE FIELD adjacent to HWY 6 and Cedar Canyon. We urge people to park there and carpool. If there are many in the vehicle, please drop them off at the residence and return your car to the parking field. There will be shuttles to transport you to the event.

### **Columbia County Small Woodlands/OSU Extension Summer Woodland Tour**

**Saturday, July 27th, 8:30 am - 2:30 pm, Camp Emerald Forest, 26000 Pittsburg Rd, St. Helens**

Tour hosts are Florence Bauder and son Eric who have owned and managed Camp Emerald Forest since the 1960s.

Come at 8:30 for hot coffee and cinnamon rolls. The morning program will include a tour of some of the highlights of the nearly 240 acres of the certified tree farm. We will look at a new culvert and fish ladder, the on-site gravel pit, and some cedar plantations. Sena Sanguinetti of the Clackamas County forestry program will also be on hand to demonstrate uses and methods of installing trail cameras in forestry sites. In the afternoon we will also get to witness a pole felling demonstration (bring your hard hat!). Please wear comfortable shoes for walking.

Lunch (BBQ pulled pork and chicken salad buns, several side dishes, and dessert) is provided to all attendees courtesy of CCSWA. Non-CCSWA members, please consider a cash donation to cover your lunch cost. **RSVP to Debra Booth at 503-644-0106 or globe\_trotters@comcast.net by July 20<sup>th</sup>.** *RSVP is needed for accurate food preparation, please!*

**Directions (look for yellow "Tree Tour" signs en route):** From Hwy 30 in St. Helens, turn onto Pittsburg Rd. and stay on it for approximately 15 miles. From Rainier, follow Fern Hill Rd. south about 8.8 miles. Left on Apiary Rd for 5.6 miles. Left on Shaffer Rd for 4.7 miles. Hard right on to Pittsburg Rd. and follow about a mile. From Vernonia, take Hwy 47 N to Apiary Rd. Go 7.4 miles to a hard right on Shaffer Rd. and then another hard right on Pittsburg Rd for one mile.

### **Miller Woods Twilight Tour & BBQ**

**Tuesday, July 30th, 5:00 pm, 15580 NW Orchard View Rd, McMinnville**

Co-sponsored by Yamhill Small Woodlands Association, Yamhill Soil & Water Conservation District, and OSU Extension Service. Come at 5:00 for a BBQ provided by YSWA. Then, we will go on a walking tour highlighting a current thinning project underway at Miller Woods. We will discuss the objectives of the thinning and how it was carried out. Time permitting we will also look at some other management activities on the site. **RSVP (for food planning): 503-843-2173**

### **Planting Prep - Past and Present**

**Saturday, August 24th, 3:00 pm, 19030 SW Canyon Rd, Sheridan**

Master Woodland Managers Hal, Elin and Sam Hagglund have plenty of examples of successful and not-so-successful site preparation methods on their tree farm. See what has worked, and what mistakes to learn from.

Check for more upcoming programs on these calendars:

<http://extension.oregonstate.edu/columbia/forestry/events>

<http://calendar.oregonstate.edu/extension-forestry/>

<http://knowyourforest.org/events/upcoming>

## Stressed and Dying Conifers: Another Year for “Valley Crud”

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

Revised from TreeTopics, <http://blogs.oregonstate.edu/treetopics>, May 8, 2013

The phone was ringing off the hook this spring at Extension offices around the Willamette Valley with calls from people describing sick and dying Douglas-fir and other conifers. The trees are of a wide range of ages and in many environments and settings, although most calls have been coming from within the valley margin and have to do with young trees.

So far, the answer is generally: “It is drought stress”. Huh, in May? Well it was a dry winter and spring, ... but that is not the issue.

My best explanation is that we had a pretty hard end of summer last year. Remember that? NO rain until mid-October then, Boom, it was winter. By then, many trees had started running out of water, killing tops or branches, and leaving leaders and branches susceptible to attack by various opportunistic pests.

We started seeing a few classic signs of drought stress (tops dying and branches “flaring out”) at the very end of the season last year, but late enough that many did not have time to show up before the weather turned. Injuries had occurred, so it was just a matter of time before they expressed themselves, which is happening now. The recent hot weather seems to have made it more sudden and dramatic.

This happens from time to time. There are two good articles from a few years back by the ODF Forest Health team explaining [Dead tops and Branches](#) (with good pictures), and about [Drought and Mortality](#). They can be found on the ODF website, <http://www.oregon.gov/odf/privateforests/pages/fhpests.aspx>.

It is important to keep in mind that the Willamette Valley can be a challenging climate for trees. Many of our soils in the valley are poorly drained, which is hard on most of our conifers, and other soils are fairly shallow and cannot hold much water. Also our summers are hotter and drier than in the mountains. Heat and drought stress can kill trees

outright, or more often just put the trees under stress, which can then lead to pest problems (as explained in the two publications above). From what I am seeing and hearing, the major cause of the problem now seems to be drought stress. Insect or diseases which able to take advantage of a stressed tree’s condition may sometimes be involved, but they are generally not the cause of the problems.



Finally, weather can be more stressful when trees are overcrowded, so thinning stands to keep trees vigorous with adequate growing space may be helpful in the long term. Right now, we just have to wait it out, and hope we get some serious rain this year, or we will see this problem intensify.

We all better get out there and wash the car.....

## Western Tent Caterpillars Return to Columbia County

By Chip Bubl, Columbia County Extension Service Small Farms & Horticulture Agent

As this is being written, parts of Columbia County are inundated with one of the largest Western tent caterpillar populations in the last 20 years. The Rainier/Apiary/Alston Mayger areas are especially hard hit. These very hungry caterpillars have consumed almost all the leaves from many alder, willow, poplar, and apple family trees and are now looking for other less favorite food. In affected areas, they are dropping by the millions onto lawns, houses, and cars in search of leftover leaves. One caller described her lawn as a wriggling mass of these caterpillars. She was not amused. Some early June wedding had to be moved inside.

Soon the caterpillars will stop eating, spin a cocoon, and in about three weeks, emerge as the adult moths. These moths fly around (watch your evening lights), mate, lay eggs on twigs, and then die. It's a rather short adulthood but that's the way it is with the Western tent caterpillar. The eggs stay glued to twigs until next spring when they hatch and the caterpillars emerge, determined to feed.

For most trees that are defoliated by their feeding, there will be little permanent damage. Deciduous trees have latent buds where each leaf joins the stem. When the caterpillar chomps down the leaf, a signal is sent for the bud to start growing into a new leaf. It has been my experience that a completely defoliated alder forest may not show any signs of the earlier feeding frenzy 5-6 weeks after it stops. There probably is a little tree growth reduction but that wouldn't be perceptible to most people. Trees that are already stressed and weak could die from the heavy feeding. But this is a natural part of the thinning/wedding out process. The caterpillar poop is a food fertilizer for the forest floor and some trees or shrubs suppressed by the tree canopy may grow a little more in heavy tent caterpillar outbreaks, assuming that they weren't also on the menu.

The caterpillar population explosion slows down of its own accord. There are some birds that can

tolerate their hairy exteriors and they do well in these years. A fly likes to lay its eggs into the body of the unsuspecting caterpillars. The population also contains the seeds of its own destruction in the mix of disease causing organisms (bacteria and viruses) that amplify during heavy caterpillar years.

Bottom line is that generally, no intervention is necessary. And it is sort of cool to see nature so over the top. There is another tent caterpillar, the fall webworm, that will show up in about six weeks.



Picture source: Wikipedia

### Reading this on paper?

You can receive this newsletter (in full color and with working links) and other news by subscribing to our email list.

Just send an email to [vicki.krenz@oregonstate.edu](mailto:vicki.krenz@oregonstate.edu) and request to be on the forestry email list.

Please indicate which county you are in. Include a physical address and phone number (so we can remove you from our paper mailing list and keep our email list current).

## Birds of a Feather - the Black-headed Grosbeak

By Sarah Karr, Polk County Master Woodland Manager



The first time I ever saw a Black-headed Grosbeak in our woodlands was about three years ago, in June. I was standing in a clearing, looking down a fairly steep slope. Below me were several Douglas-fir trees, and perched at the top of one of them was a striking, exotic-looking robin-like bird, but it just didn't look quite like a robin. Yes, it had an orange-brown breast and black head, but it also had big blocks of white on its black wings. I had binoculars nearby, and it wasn't long before I was able to see the stout bill that is so characteristic of a grosbeak: brilliant black head, black wings with bright white splotches, and a breast color that is often referred to as "cinnamon." Had I seen the female, with the same bill but much more muted colors, it would have taken me a little longer to figure out who she was; seeing the male first made it much, much easier.



Photo credit: Bill Bouton, Wikimedia Commons

It turns out that our forest is well-suited for a male Black-headed Grosbeak (BhG) scouting out a place to spend the summer and help raise young. The BhG can be found in a wide range of habitats, including some suburban ones, but it prefers a site that is more distant from houses, with edges, broadleaf trees, some taller conifers, plenty of shrubs, and perhaps a stream. Our property has some larger conifers, but also a mix of hardwoods such as maple and madrone, younger conifers, and plenty of deciduous shrubs and berry-producing bushes. We also are bordered on one long side by a clearcut, so there is plenty of "edge" habitat to be found. Furthermore, a forest

that can offer the rich insect life found on deciduous trees and shrubs as well as summer fruits (blackberries, poison oak, elderberries, cherries) and seeds of weeds, trees, and flowers will attract BhGs year after year; males tend to have strong fidelity to sites they have used in the past.

The male BhGs head north to our area during the April-May-June breeding season, arriving here about a week before the females arrive. Once that happens, the birds pair up pretty quickly and stay in this monogamous relationship through the summer season. If you are lucky, you might catch a glimpse of the male's courtship "dance" at the beginning of the season, when the male sings lustily from his perch then flies off for eight to ten seconds, showing his bright wing patches to full advantage. He sings through the whole performance. He then returns to his perch for more singing. It's worth mentioning while most female songbirds do not sing, the female BhG does. It's a softer version of the male's song, and it is often used during nesting season; she might be letting others know that the territory is already claimed. The song of the BhG resembles that of the American Robin, but it's more melodic, less shrill.

Check out the songs of both on a site such as [www.AllAboutBirds.org](http://www.AllAboutBirds.org). Interesting!

In terms of personality, the Black-headed Grosbeak is forthright. Both males and females have been observed getting into very physical fights with other BhGs of the same sex in territorial disputes. The fights can take place in the air, with one bird grappling the other, or on the ground, played out as wrestling matches. The vanquished bird does not always survive. BhGs have also been observed taking on Western Scrub-Jays and Steller's Jays, two predators that often pose problems during nesting season.

So, watch for the showy Black-headed Grosbeak on your property this summer. Because of their ability to do well in a wide range of habitats and with varied food sources, we may all be catching sight of these gorgeous songbirds in our smaller forests for many years to come.

## Scanning the Horizons for a Logger

*By Steve Bowers, OSU Douglas County Extension. Reprinted from Master Woodland Manager Gazette.*

If you've taken one of Forestry Extension's Managing Your Timber Sale workshops, it's possible you were exposed to a section on finding and selecting a logger. Under normal circumstances, finding one isn't nearly as difficult as the selection process. Much like shopping for an insurance agent or a car salesman: there's plenty out there, but finding a good one is another matter. And thus is the case for loggers....usually.

But for those of you who keep track of log values and trends, and here let us say you should constantly monitor the market even if you have no intentions of logging, because if you did, then it's entirely possible you've decided making a few stumps might have an appreciable financial return about now. Just after the first of the year, values began to increase, really took-off in February, held their own in March, and April still looking pretty good, then after that it's anyone's call.

Trouble is, that those of you who have already decided to do some logging have largely absorbed the supply of logging contractors. If you do your own logging, then it's merely a matter of sharpening the saw, firing up the dozer, and away we go. But such is not the case for those of us relying on someone else getting our logs to market. Well, we've spent half of this article telling you what you did wrong. Maybe take the remaining portion and see if we can throw some light on the subject.

OK. If I was looking for a logger, the first thing I'd do is find a trucker. You might ask, isn't this putting the cart ahead of the horse? Absolutely not. If you equate the cart to the logger and the horse to the truck, the mechanism of moving something precedes making it. Start asking around and even if they are busy, ask them what logger they're assisting (if you're planning on harvesting less than 10 loads of logs, it's likely you'll need a self-loader. A larger operation likely comes with a contractor that performs all facets of logging, i.e. cutting, yarding and trucking).

At the same time, talk to your neighbor. If they're currently logging, who's doing the work? And if they did in the past, who was it? And while you're driving over to the neighbors, look around and see if there are any loggers working in the vicinity. And if so, stop and see if they're looking for any future work? There's a chance that even if they are committed to another job, if yours is in closer proximity to the current one, they just might squeeze you in before moving out of the area.

OK, so if you're are going to do some logging, you need a buyer. And all log buyers have contractors who do a majority of their work for those buyer's respective mills. A positive to this strategy is a mill isn't going to keep a cull around doing their work. The downside is the logger's allegiance tends to lay with the mill, not necessarily you, so the word of the day is watch those log lengths and diameters as your trees are being felled and bucked.

Still striking out? We all have to fill out a Notification of Operations to sell our wood. Many of the local ODF offices will keep a list of loggers and even if they don't, the Stewardship foresters know many of the operators in the area merely because they are the enforcement arm of the State. They will have insight as to whether a logger is worth his salt as they see them in daily operations, and the forester typically doesn't have a dog-in-the-fight, so their assessment will be an objective one.

On our last legs? The Association of Oregon Loggers (AOL) headquarters is in Salem and they can be contacted for a list of loggers associated with the organization. These companies will be accredited with the Pro Loggers Program, and if you're selling logs, you'll need a written management plan or an accredited Pro Logger do your work in order to procure a contract with most buyers in the region. It's not a pre-requisite to have a contractor affiliated with the AOL, but it's not a bad idea.

Strong log values correlate to busy mills, buried truckers and booked logging contractors. This is where we tell you to plan ahead to avoid the pitfalls of scurrying around at the last minute looking for operators and truckers. If you'd have known several months ago values would have been this good, then everything would be all lined-up, ready to go. But you didn't know. Nobody knew. So let's deal with it and hopefully, you'll get something out of this article. Best of luck.

## What Grows Well Here? Getting Clues from the Landscape

Revised from *TreeTopics*, <http://blogs.oregonstate.edu/treetopics>, May 24, 2013

Last month, we kicked off our [Master Woodland Manager](#) training in northwest Oregon. Over the next six months the class will explore many aspects of small woodlands management and the trainees will come away with a better understanding of their own lands as well as a foundation from which to assist others.

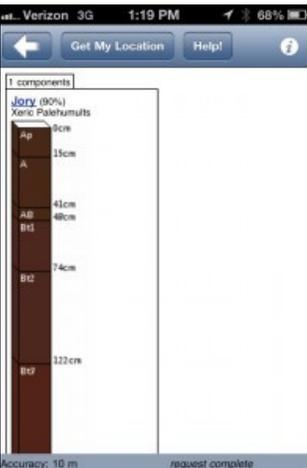
We started out with a field tour where we investigated the environmental factors that influence forest growth on a given site. In particular, we wanted to see how variations in climate, topography and soil shape species composition, forest productivity, and management opportunities.

We went to five different sites, at various elevations and topographic positions from the uplands to the Valley floor. Despite the sites all being within a four-mile radius, we saw striking differences in the vegetation. The uppermost site supported a fast-growing stand of Douglas-fir and red alder. Further along, we came upon a rocky, south-facing site dominated by madrone and some not-as-fast-growing Douglas-fir; but this was just a few hundred yards from another site where the madrone were gone. Calculating the site index revealed that the Douglas-fir here were growing faster.

As we traveled down the watershed, the steep slopes along an upland creek supported alder and western redcedar. But on the flats at our last stop on the Valley floor, the dominant species were Oregon white oak, Oregon ash, and valley ponderosa pine; the Douglas-fir at this last stop looked like they had caught a bad case of the “crud” (see page 3).

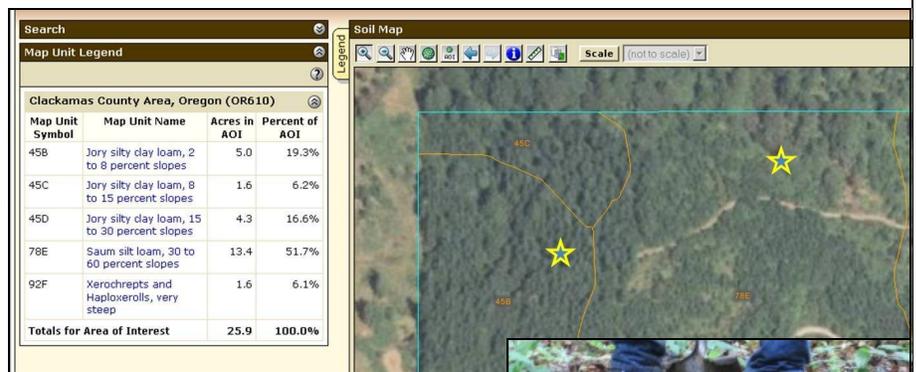
Prior to the field tour, we spent some time learning how to find information about soils. The [Web Soil Survey](#) is a really handy tool for identifying soil types and learning about their properties. Using the Web Soil Survey, we mapped out our field sites and found some possible clues to our site differences. According to our soils map, the madrone were growing on a gravelly Saum soil, whereas the taller firs down the road were on the more productive [Jory](#) soil. A recently formed gully at the latter site gave us the opportunity to see the soil profile which revealed a deep silty clay loam.

Recently I’ve discovered SoilWeb, a mobile app available for both the [iPhone](#) and [Android](#). Using your phone’s GPS capability, SoilWeb accesses the soil data from the Web Soil Survey for the soil right underneath your feet.



That is, assuming A) that you are in a place where you can get a phone signal and B) that the soil maps accurately reflect the soil on your site. As we learned on our field trip, soil types as mapped often contain unmapped pockets of other soils. The SoilWeb app doesn’t give you everything you can find on Web Soil Survey, but you can quickly ascertain the soil texture as well as the expected depth, drainage, and other important features.

The takeaway from our tour was that what’s growing on your forest can be a clue to your site’s underlying environmental influences, and vice-versa. The growing number of applications such as SoilWeb makes it easier to be a site “sleuth”, finding those clues and piecing together the puzzle.



## Connecting Youth to Our Local Forests and Science

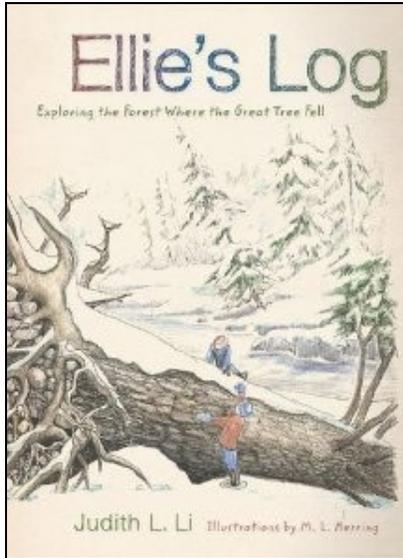
By Jody Einerson, OSU Benton County Extension

Reprinted from *TreeTopics*, <http://blogs.oregonstate.edu/treetopics>, June 20, 2013

Do you struggle with ways to engage your child, grandchild, or a young scientist friend with our local forest lands? I would like to suggest a new book, *Ellie's Log*, to nurture your young scientist, and to help you both explore the mysteries in our collective backyard of Oregon's forests. *Ellie's Log* is part fictional story, part forest ecology lesson, and part field journal all set in a mature Douglas-fir forest in Oregon.

I recently spent a weekend using the book, the associated website, and the teacher's guide at an Educators Workshop at HJ Andrews Experimental Forest in the Cascade Mountains outside of Blue River. We used the book as a basis to study the forest and the forces that shape that forest. The story starts with a winter blow down tree, and here we started compiling species list for the Doug-fir forest to compare with Eastern Oregon grassland.

We kept notes in our field journal just like the characters of the book, and analyzed leaf decomposition, and studied diversity of organisms living on a fallen log from lessons in the teacher's guide. We were encouraged to use scientific questioning, gather data, and write observations as field notes. Through science we made connections with literature, art, math, and even graphed data on the computer. And it was fun! Well, except maybe for the indoor computer part.



One message that really stuck with me from the workshop – if you want the children in your life to explore and write, you need to be modeling it yourself. Why not pick up an inexpensive composition book and carry it with you when you are outdoors. Make notes on the weather, what is in bloom, insect activity, or the wildlife you see. Share your notes with the young people in your life and encourage them to write in their own field journal. Use *Ellie's Log* as a tool to guide you both in exploring a fallen tree in your forestland together. Keeping a field journal allows you to look back over your notes to track long term patterns or changes. Your observations could lead to becoming involved in a bigger citizen science project tracking rainfall or seasonal plant changes! You might even inspire a young person in a career choice.

*Ellie's Log* author is Judith Li, a stream ecologist, retired Associate Professor in the Department of Fisheries and Wildlife at OSU, and a researcher at the HJ Andrews Experimental Forest. The book is beautifully illustrated by OSU Extension's M. L. Herring, including field journal pages by "Ellie" and is written for the upper elementary reader. Published by the Oregon State University Press, the book is supported by additional materials and a teacher's guide at <http://www.ellieslog.org/>.



## Trees and Forests in the News

### [‘Winners and losers’ in Pole Creek Fire](#) (*The Nugget Newspaper*, June 18)

One year after the fire near Sisters, the landscape is starting to recover, but ecologists do not expect natural forest regeneration to happen quickly. Some wildlife are benefitting from the new conditions, while other species have lost habitat. Meanwhile, collaboration between the timber industry, forest managers and environmentalists are resulting in forest restoration projects aimed at preventing future catastrophic fires.



### [Weyerhaeuser pays \\$2.65 billion for Oregon, Washington timberlands](#) (*The Oregonian*, June 17)

Timber giant Weyerhaeuser Co. will acquire Longview Timber and its 645,000 acres of timberland holdings in Oregon and Washington for \$2.65 billion. Longview Fibre, which operates a paper mill in Longview, will be sold to KapStone Paper. The timberland deal, expected to close in July, would be the third largest in North American history.

### [How removing trees can kill you](#) (*PBS News Hour*, June 10)

The emerald ash borer is an invasive insect that is wiping out ash trees in cities throughout the Midwest and North Atlantic. A team of researchers from the U.S. Forest Service has been able to associate the loss of these tree canopies with increased rates of death from cardiovascular and lower respiratory problems in the affected neighborhoods.

### [U.S. Senator Wyden lays out ‘framework’ for boosting O&C lands logging](#) (*The Oregonian*, May 23)

The Oregon senator’s proposal is the latest attempt to alleviate fiscal crisis in timber-dependent counties and calls for a mix of increased logging on some federal lands and permanent protections on others.

## New Extension Publications and Resources

### ***EC 1125, Management Planning for Woodland Owners: Why and How***

Author: Amy Grotta; Revised May 2013, 8 pages

<https://ir.library.oregonstate.edu/xmlui/bitstream/handle/1957/38441/ec1125.pdf>

### ***EC 1609, Tariff Access Tables: A Comprehensive Set***

Authors: Steve Bowers, Jim Reeb, and Bob Parker; Revised April 2013, 26 pages

<http://ir.library.oregonstate.edu/xmlui/bitstream/handle/1957/38320/ec1609.pdf>

### ***EM 9044-S-E, Shearing and Culturing Christmas Trees video (Spanish Version)***

Authors: Chal Landgren and Lynn Ketchum; Reviewed April 2013, 68 minutes

[http://media.oregonstate.edu/media/0\\_48a1apmp](http://media.oregonstate.edu/media/0_48a1apmp)

### ***EM 9058, Measuring Your Trees***

Authors: Steve Bowers, Jim Reeb, and Bob Parker; New April 2013, 26 pages (replaces EC 1190)

<http://ir.library.oregonstate.edu/xmlui/bitstream/handle/1957/38324/em9058.pdf>

### ***EM 9059, Measuring Your Trees Workbook***

Authors: Steve Bowers, Jim Reeb, and Bob Parker; New April 2013

An Excel workbook that is a companion to EM 9058; instructions plus six species worksheets and a printable final report

<https://ir.library.oregonstate.edu/xmlui/bitstream/handle/1957/38322/em9059.xlsx>



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<i><b>In this issue:</b></i>	
Upcoming Events.....	Page 2
Stressed and Dying Conifers.....	Page 3
Western Tent Caterpillars.....	Page 4
Birds of a Feather - The Black-Headed Grosbeak.....	Page 5
Looking for a Logger?.....	Page 6
What Grows Well Here? Clues from the Landscape.....	Page 7
Connecting Youth to Forests and Science.....	Page 8
Trees and Forests in the News.....	Page 9
New Publications.....	Page 9