Oregon State University Extension Service

Blue Mountains Renewable Resources Newsletter

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Upcoming Events:

GreenWood Pacific Albus Tree Farm and Upper Columbia Mill Tour

Thursday, November 12, from 9:00 a.m. to 3:00 p.m.

Details:
We'll leave from the Ag Service Center, 10507 N. McAlister Road, Island City (across from Bronson's) at 9:00 a.m. A group from Baker County will join us. We'll car pool from LaGrande to Boardman, arriving at the tree farm at 10:30 a.m. From 10:30 to 12:30 we'll tour the mill and tree farm. At 12:30 we'll have lunch and informal discussions with the tree farm management staff. Arrive back in LaGrande by 3:00 p.m.

GreenWood Tree Farm Fund is the new owner and manager of this large poplar plantation we see along I-84 near Boardman. If you have ever wondered what is going on with this unique and interesting operation this is your chance to find out. The tree farm produces trees for non-structural lumber products, fiber for the pulp and paper industry and bio-energy. Recently added to the plantation is a new mill, which we'll have an opportunity to visit as well.

Bring your own lunch and extra clothes in case it is cold.

For more information contact the OSU Extension Union County Office at 541-963-1010.

Oregon State University OSU Extension Service Union County

Wildfire Cost Analysis

The Western Forestry Leadership Coalition is distributing a report titled *The True Cost of Wildfire in the Western United States* (www.wflccenter.org/news_pdf/324_pdf.pdf). Some important conclusions are highlighted in the following excerpts.

> "Fire suppression costs, while often considered synonymous with the full costs of a wildfire, are only a fraction of the true costs associated with a wildfire event. Synthesis of case studies in the report reveals a range of total wildfire costs anywhere from 2 to 30 times reported suppression costs. A full accounting of these costs would provide better understanding of the value of investing in hazardous fuels reduction and other forest management activities before a fire occurs, information that could be included in future budgeting and planning processes at all levels of government to avoid painful trade-offs between fire prevention and sup-

Continued on next page

Best Regards,

Paul Oester

Paul Oester, Extension Forester
Umatilla, Union & Wallowa Counties

pression activities. While no treatment can altogether prevent fire, active management can improve the health and resiliency of the land, reducing fire hazard and associated costs of large fires."

"Investing in active management across the landscape will contribute to a reduction in the broader costs associated with wildfire; such as approach to forest management will also increase public benefits of healthy forest ecosystems. The timeline here is critical. High long-term fire recovery costs underscore the importance of fostering resilient ecosystems before fires occur, as a tool for reducing these extended costs. Accomplishing this will require far-reaching reform and new investments."

Forestry Environmental Program News Vol. 21, No. 6

Productivity and Costs of Forest Fuel Reduction Operations

Several studies have demonstrated that integrated biomass utilization strategies (i.e., harvesting larger trees as well as lower quality biomass) can substantially reduce the net costs of efforts to control forest fuel loads and wildfire hazards. A good example is a recent paper titled "Productivity and cost of an integrated mechanical forest fuel reduction operation in southwest Oregon" (*Forest Products Journal 59: 35-46*) An amended abstract follows.

"Mechanical forest fuel reduction treatments that harvest and extract small, non-merchantable trees are often integrated into commercial thinning operations. Harvesting system feasibility and/or costs from such operations has been sparsely reported in the literature. To broaden the knowledge of mechanical approaches of harvesting and utilizing small trees, this study assessed the productivity and cost from an integrated forest harvesting/mechanical forest fuel reduction operation in southwest Oregon. The study was conducted in a fuel reduction thinning of a 20-acre mixed conifer stand on gentle terrain. A tracked swing-boom feller/buncher, two rubber-tired grapple skidders, a swing-boom grapple processor, an in-woods chipper, and a tub grinder were used to fell, extract and process non-merchantable stems and limbs and tops from felled merchantable trees into fuel (energy-wood) chips. Thinned merchantable trees were also extracted and processed into log lengths.

Results indicate that harvesting and processing non-merchantable trees increased total costs by $1,193.43 per acre. From a biomass harvesting perspective, removing only the non-merchantable portion of the stand would have resulted in a net cost of $968.96 per acre. Thinning merchantable trees added value to the operation, subsidized costs, and decreased the net loss by $872.00 per acre, resulting in a net cost of $96.96 per acre."

Requests for reprints should be sent to Dr. Chad Bolding, Assistant Professor of Forest Operations at Virginia Tech (bolding@vt.edu)

Forestry Environmental Program News Vol. 21, No 6

Uneven-aged management in a mixed-conifer forest in northeast Oregon: A case study

By Stephen A. Fitzgerald and Paul T. Oester

Little is known about the application of uneven-aged management methods, like Individual Tree Selection (ITS), for managing mixed-conifer forests in the Northwest. Many family forest landowners and state and federal managers are interested in ITS because it provides a continuous forest canopy, reduces reforestation costs, is aesthetically pleasing and avoids clearcutting. However, how do you go about implementing ITS and how does the stand, including the regeneration, respond to periodic harvest entries? Does ITS promote a shift in species composition to shade-tolerant species? What kind of board foot production is possible with ITS on mixed conifer sites?

For those of you who may be little rusty on uneven-aged management methods, here is a refresher: Uneven-aged management, using ITS, creates a stand with three or more age classes resulting in a "reverse J-shaped" curve (of trees per acre by diameter class), with progressively fewer larger trees up to some maximum diameter. Harvest entries are frequent and designed to thin both commercial- and precommercial-sized trees to maintain the J-shaped stand condition. Timing of frequent harvests (every 5-20 years) are intended to maintain good tree growth so that small trees eventually replace the larger, harvested trees. Each harvest entry is designed to maintain enough open growing space that regeneration continually establishes and has space to grow, thus uneven-aged stands are managed at levels below full stocking.

In 2005 we implemented an ITS case study in a 50-acre dry mixed-conifer forests on the Oberteuffer Research and Education Forest near Elgin, Ore., which is a satellite research forest of Oregon State University College of Forestry. Bill and Margaret Oberteuffer, who owned the land for 20 years and were proponents of "all-age, all-species management," donated this 113-acre parcel to OSU in 1994. A series of permanent plots were established across the entire property in 1996. Twenty permanent plots are within the 50-acre ITS study, which serve as a basis for measuring growth and development and assessing ITS treatment effects on regeneration and overstory trees. Based on our permanent plot data we estimate that growth across the entire property is approximately 400 board feet per acre per year.

Delivered

LOG MARKET REPORT *$/ 1,000 board feet* *September 15, 2009*

Umatilla/Pendleton								
Douglas-fir /Larch	Ponderosa Pine 6-11"	12-17"	18-24"	25+"	Grand fir /White fir	Lodgepole Pine	Engelmann Spruce	Pulp/Chip Logs
$260	$190	$280	$350	$370	$250	$250	$250	30
La Grande/Elgin/Joseph								
Douglas-fir /Larch	Ponderosa Pine 6-11"	12-17"	18+"	20-24"	Grand fir /White fir	Lodgepole Pine	Engelmann Spruce	Pulp/Chip Logs
$280	—	—	—	—	$200	$200	$200	32
Burns/John Day								
Douglas-fir /Larch	Ponderosa Pine	8-11"	12-17"	18+"	Grand fir /White fir	Lodgepole Pine	Engelmann Spruce	Pulp/Chip Logs
$250		$240	$275	$300+	200	—	—	call

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

The 50-acre stand contains primarily ponderosa pine (59 percent) and Douglas-fir (33 percent), with small amounts of grand fir (4 percent) and western larch (4 percent). Some light thinning had been done by the Oberteuffers previously, and a small salvage harvest of blow-down timber occurred in 1995.

In 2005 the stand was marked for a harvest based on maintaining a Stand Density Index[1] target of 118 allocated across seven, four-inch diameter classes resulting in a "reverse J-shaped" curve (see black bars in Figure 1). We specified a maximum tree diameter of 28 inches. This maximum diameter was chosen based on site productivity, species, aesthetics and economics. For example, ponderosa pine is one of the primary marketable species on the site and it really doesn't pay to grow and sell small trees, so we wanted to grow higher premium, large logs (although the value difference could change in the future).

Figure 1 shows diameter distributions in 1996, 2005 after nine years of growth, and 2006 after the harvest. Approximately 161,220 board feet (80 percent ponderosa pine, 19 percent Douglas-fir, and 1 percent grand fir and western larch) was harvested across the 50-acre stand, or about 3,200 board feet per acre. The average delivered log price was $447/MBF. The operator was restricted to designated skid trails and there was very little damage to trees from the logging operation. Logging costs ran $227/MBF, which included felling, skidding, hauling, slash cleanup and grass seeding of skidtrails. Immediately after the harvest, saplings were precommercially thinned. See photos that show the stand before and after harvesting.

From the graph in Figure 1, you can see that the 2006 harvest came very close to our target stand structure, except in the regeneration size class where we have a large excess of seedlings and saplings. We also have a deficit in the 26-inch class, but that will correct itself over time as excess trees in the 22-inch class grow and move up into the larger diameter class. Although spot precommercial thinning was conducted after the 2006 harvest to reduce the number of seedlings and saplings, they are still far above the target and many of these are small Douglas-fir seedlings. To prevent a species shift to Douglas-fir, future precommercial thinning will require cutting them out to favor ponderosa pine.

What's next? In the fall of 2011 we will conduct the five-year post harvest measure-

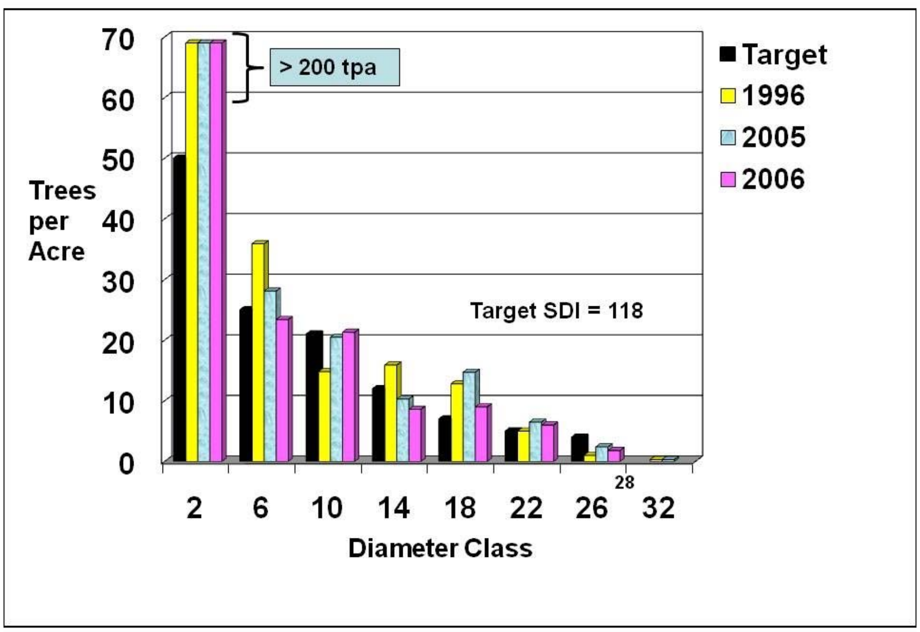


Fig 1 – Obie Tract-Diameter Distribution.
Figure 1. Diameter distribution in 1996, 2005 (before harvest), and 2006 (after harvest) compared to the target or desired stand distribution. There are greater than 200 trees per acre in the two-inch diameter class.

[1] A widely used measure that expresses relative stand density in terms of the relationship of a number of trees to average (mean) stand diameter.

Figure 2b (before).jpg **Figure 2a (after).jpg**

Caption: The photo on the left shows the Oberteuffer uneven-aged stand before harvest in 2005; photo on the right is the stand after harvest in 2006.

Photo courtesy of Stephen A. Fitzgerald

ments. Based on those measurements and an analysis of diameter growth in the larger trees and height growth in the regeneration, we may initiate another light commercial thinning to further reduce overstory competition. In addition, precommercial thinning will be needed to reduce the over-abundant regeneration.

Although this study is not replicated, it will provide a good case study on how a typical northeast Oregon mixed-conifer stand responds to long-term management using ITS. Its value as a case study will increase as the stand matures and additional harvests and measurements are conducted. Tours and educational materials are planned outputs in the future.

Fire in Oregon's Forests
Assessing the Risks, Effects and Treatment Options

"There is no such thing as a forest free of fire," said James Agee, University of Washington professor of forest ecology, in a recent issue of *Conservation Biology in Practice.* Oregon's forests bear witness. Many Oregonians still remember the four massive Tillamook Burns from 1933 through 1951 that burned some 360,000 acres. We are reminded of forest fire danger every summer by the frequent fires in southern and eastern Oregon and by the smoke we see in the air.

Wildfires burning in the summer seem to be a recurring pattern in recent years, with more and more intense fires. In 2000, the Montana fires drove out recreationists by the thousands, hurting communities that depend on tourist dollars, and damaging habitat, watersheds and timber resources. Another concern is smoke and its relationship to clean air and human health.

While forest managers and vigilant firefighters struggle to extinguish these fires, some of our forest practices and fire protection policies have actually exacerbated their danger. For example, our policy of fire suppression and some past harvest practices have altered the forest landscape and have actually increased both fire hazard and fire risk on a monumental scale.

Today, when fires ignite in these high-risk areas, they often become much larger and more devastating than the historic norm.

How has a century of fire prevention and suppression affected Oregon's forestland? How did our fire policies evolve? Was Smokey Bear wrong? How have fish and wildlife been affected by fire or its absence? Are some of our laws in conflict? What does the new National Fire Plan mean for Oregon? What should we do now?

This special report looks at these and other questions related to fire in Oregon's forests—its role in the forest ecosystem, the ways our policies have altered the natural environment and how Oregon citizens can work together with forest professionals and scientists to keep the state's forestland healthy and sustainable.

If you would like a copy of *Oregon Forest Facts & Figures* please contact us at the Union County Extension Office at 541-963-1010.

Safe and Effective use of Chain Saws for Woodland Owners

This publication is a guide to the basic principles and procedures in operating a chain saw. Its intent is to help you improve your basic skills, recognize potential dangers, and know when to seek professional assistance during manual timber felling and bucking operations.

Using a chain saw safely and effectively promotes efficiency in clearing brush, cutting firewood, harvesting, and any other woodland activity requiring the use of a chain saw. However, chain saws are dangerous! The material in EC 1124 will assist you in developing safe, effective, and more efficient use when operating a chain saw. Some of the topics covered in the publication include:

- Tools & Supplies
- Evaluate working conditions
- Assessing tree characteristics when felling and bucking
- Felling & bucking techniques
- Hazardous conditions
- When and where to seek help.....and more

If you would like a copy of *Safe and Effective Use of Chain Saws for Woodland Owners,* contact us at the Union County Extension office at 963-1010 or you can download at: http://extension.oregonstate.edu/catalog/pdf/ec/ec1124.pdf.

Answers to Common Tree Farm Questions

By Mike Barsotti, Past Oregon Tree Farm System Chairman

"What do I need to do to remain in the Tree Farm System?" "How do I know that my tree farm is still in the Tree Farm System? This and other questions that are often commonly heard. The many changes over the past 10 years have made the Tree Farm System a stronger program but it has created some confusion.

This article addresses the four areas that have generated the most questions/confusion. They are: inspections/re-inspections, written management plan, forest management standards and ownership size.

There are a lot of questions on how a landowner joins Tree Farm and what is needed to remain in the program. A landowner joins the Tree Farm System through an inspection from a volunteer professional forester who has taken Tree Farm's Inspector Training course. No application form is needed as the inspector will complete the needed paper work when he or she visited with the landowner, reviews the management plan and inspects the forest.. Tree Farm does have brochures landowners can use to provide contact information and the American Tree Farm System's web site also has a page where landowners can provide their contact information and request an inspection. A note to Oregon Tree Farm with your contact information will do just as well. Their mailing address is P.O. Box 13556, Salem, OR 97309.

Landowners remain certified, in the Tree Farm System, unless a re-inspection determines they no longer meet the standards. Re-inspections are not required on any given time line. Oregon

Tree Farm System's goal is to revisit each ownership, every five years, to update its records and provide members a free professional forester visit.

The management plan, a component of Tree Farm Standards, has been the biggest eligibility issue for Oregon's landowners. It is the most common reason landowners drop out or are not able to join the Tree Farm System. Oregon Tree Farm and Oregon Department of Forestry now share a common management plan standard. A copy of the management plan guidelines and template can be found on ODF's web site.

Tree Farm's forest management standards are built on the internationally recognized Montreal Process Criteria and Indicators, the same set of documents Oregon used in developing its Forestry Program for Oregon. The goal of these standards is sustainable forests and since this goal is similar to Oregon's Forest Practices Act goal of a continual supply for forest products, tree farm management is seldom an issue.

A landowner needs 10-acres of forestland to qualify. There are additional size requirements for landowners with over 10,000 contiguous acres that best be dealt with one-on-one.

If a landowner has additional questions, they can leave a phone message at (509) 362-0242, or email State Chair, K.C. VanNatta at kc@vannatta.com

Oregon Tree Farm System News. Spring 2009. Vol. 10, issue 1

New Estate Planning Tool Available for Forest Landowners

A tax publication "Estate Tax Planning: what Will Become of Your Timberland?" developed by USFS and its collaborators is now available. This is the updated version of one of the most widely used tax publication for private forest owners.

An electronic version is available at http://www.srs.fs.usda.gov/pubs/gtr/gtr_srs112.pdf . This large .pdf-format file contains 200-pages, including tax forms.

For hard copies, contact Linda Wang: national Forest Taxation Specialist USDA Forest Taxation Specialist USDA Forest Service at Tel: (404) 347-3067, Email: lwang@fs.fed.us.

Forests and Carbon

Jay O'Laughlin and Ron Mahoney

Policy Analysis Group (PAG) Issue Brief No. 11. Author Jay O'Laughlin is PAG Director and a member of the Idaho Carbon Sequestration Advisory Committee. Sources for the scientific claims and data for the figures can be found in the PAG Issue Brief document at http://www.cnrhome.uidaho.edu/default.aspx?pid=106665.

Introduction . Forests affect climate and climate affects forests with carbon linking the two. Forests contain three-fourths of the earth's plant biomass, about half of which is carbon. Consequently, forests play a key role in the global carbon cycle by capturing, storing, and cycling carbon.

Forests can be either a carbon "sink" or a source of atmospheric carbon. Trees absorb or "uptake" carbon dioxide (CO2) from the atmosphere during photosynthesis, emitting oxygen while using carbon to build woody stems, branches, roots, and leaves. This carbon is stored in carbon "pools." Trees release CO2 during respiration and after they die through decomposition or when they burn. When carbon uptake in a forest exceeds respiration and other carbon losses, forest carbon pools are increasing and carbon "sequestration" is occurring. Young forests sequester carbon faster than old forests because CO2 uptake greatly exceeds respiration, but old forests store more total carbon than young ones. In very old forests respiration may exceed uptake, and such forests have switched from being sinks to sources of atmospheric carbon.

Carbon sequestration is the capture and storage of atmospheric carbon in other carbon pools, including forest vegetation. From 1990 through 2005, U.S. forests sequestered an annual average of 179 million tons of carbon, enough to offset about 10% of the nation's CO2 emissions. Increased use of wood products and wood energy represent part of the solution to reducing greenhouse gases. When trees are harvested, carbon is extracted from the forest but not necessarily returned directly to the atmosphere. If trees are used to make wood products, a portion of the sequestered carbon is stored in solid form for several or more decades in the wood products carbon pool or even longer in the landfill carbon pool. If wood is used to produce energy, carbon released through combustion offsets or displaces carbon that otherwise would have been released through the burning of fossil fuels.

Positive Impacts of Forest Sector Carbon Sequestration.

- Trees remove carbon from the air and store it as wood.
- Trees and wood products have long lives.
- Wood can generate energy in biomass or co-generation facilities; indeed, most of the energy used to manufacture wood-based products is from woody biomass.
- Wood products can substitute for some concrete and steel building materials (e.g., above-grade walls in residential construction) to avoid and displace emissions associated with these energy-intensive products.
-

Forests can be regenerated, so while much of the carbon from a harvested forest remains sequestered in wood products, growing new trees takes more carbon out of the air.

Forest Carbon Strategies. Forests managed for timber can help meet the world's energy needs and limit atmospheric CO2. Strategies include: (1) increasing on-site carbon density (amount of carbon stored per acre); (2) increasing off-site use of wood to substitute for concrete or steel building materials or wood energy to displace fossil fuel energy use and emissions; and (3) increasing or maintaining the forest area by avoiding deforestation and reducing the ex-

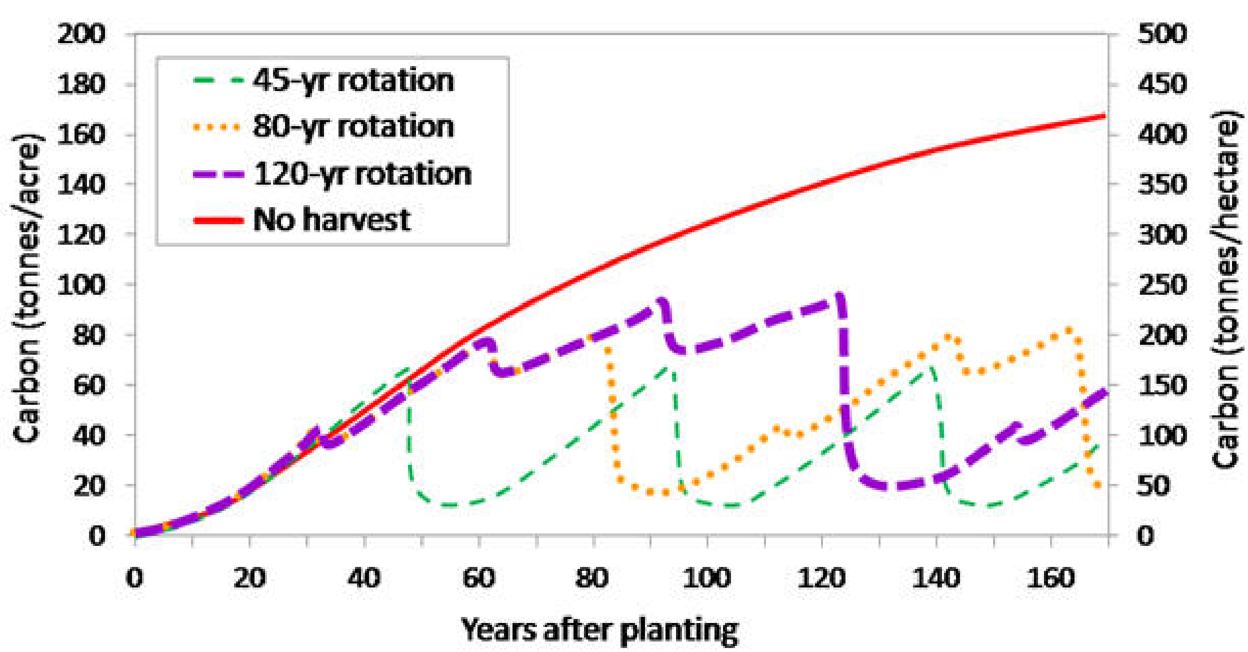


Figure 1. *Carbon storage in the forest pool for 45-, 80-, 120-year rotations or harvest cycles and no harvest option that should be considered a potential maximum for carbon storage in the forest pool.*

tent of wildfires.

Storing more carbon in forests. When carbon becomes a forest management objective several factors and trade-offs need to be considered. Foremost is the trade-off between the rate of carbon uptake and the amount of carbon stored; i.e., the relative contributions of younger and older forests to carbon sequestration. Not harvesting results in more onsite carbon storage than sequential harvest scenarios, regardless of rotation age (**see Figure 1**). However, the fate of harvested carbon should also be accounted for.

Increasing off-site use wood as a substitute for energy-intensive building materials. Forests managed for timber production with a sequence of harvests sequester carbon onsite while trees are growing and move carbon into the off-site pool of wood products and manufacturing residues. The wood products carbon pool more than offsets harvesting and manufacturing emissions, which some groups use to challenge carbon sequestration from timber harvest. Carbon stored in wood products is gradually released as CO2 if the wood eventually decays or burns. Wood products in landfills may store carbon for a long time, sometimes permanently. When wood substitutes for more energy-intensive products, then carbon emissions are reduced. For example, in residential construction an above-grade wall framed with concrete blocks requires 250% more energy than using kiln-dried lumber for the same purpose. Substituting lumber for cement and steel building products generates substantial benefits from energy displacement and avoided emissions. These benefits may continue almost indefinitely into the future. When wood products substitute efficiently for fossil fuel energy-intensive products, such as concrete, a sequence of

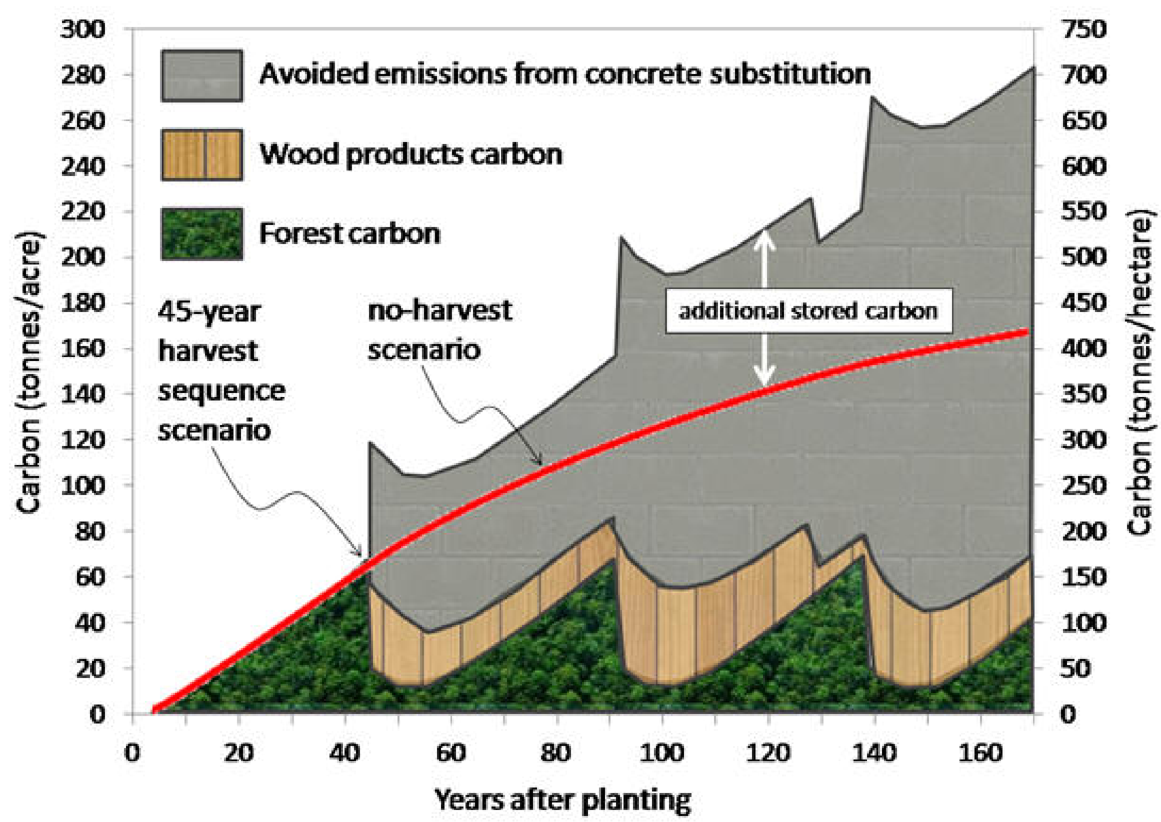


Figure 2. *Carbon storage over time in the no-harvest scenario compared to a sequence of 45-year rotation harvests, illustrating additional carbon storage from making and using wood products that substitute for concrete walls in residential housing construction.*

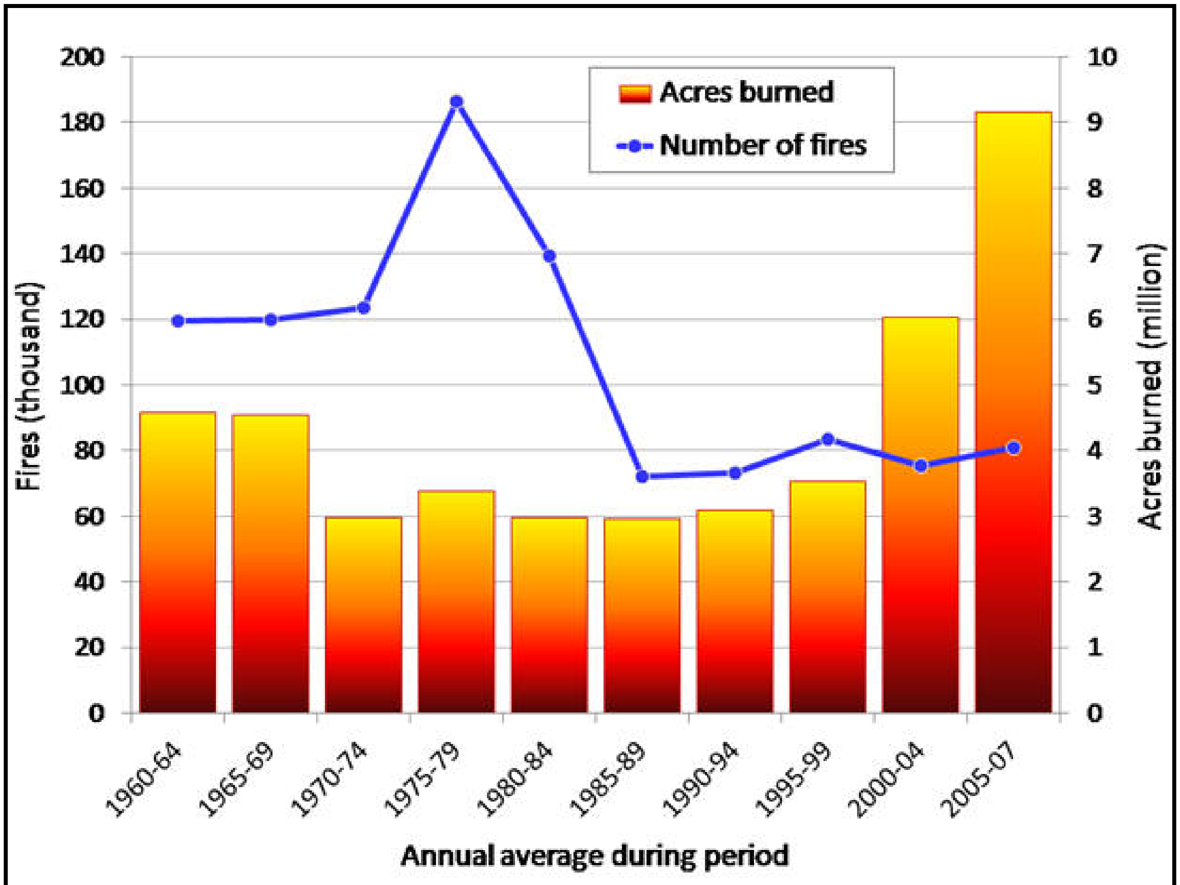


Figure 3. *Wildfires in U.S., acres burned and number of fires, 1960-2007.*

sustainable harvests produces greater net carbon benefits than unused old forests **(Figure 2)**.

Increasing or maintaining forest area by avoiding deforestation and reducing wildfires. Much of the international focus on forest carbon stocks has been on preventing deforestation. Although some forest land is lost to urban development in the U.S., deforestation is low compared to many other countries, so other concerns may be more important. Disturbances such as fire, wind, insects, or timber harvest remove large quantities of carbon from forests. Wildfires emitted an annual average of 65 million tons of carbon in 2002- 2006 as CO2, and another 2 million tons per year as particulates. Fine particulate matter is the major pollutant in smoke, and is linked to many adverse human health effects, including premature death for people with respiratory problems.

Wildfire releases carbon into the atmosphere, whereas timber harvest can transfer a substantial amount of this carbon into the wood products pool. The releases of carbon by historic wild fires were largely offset by re-growth over longer time scales. However, the recent trend is a dramatic increase in wildfire extent and intensity (**Figure 3**). In the U.S. from 1970 to 1999, an annual average of 3 million acres per year burned. In 2000-2004, the annual average doubled to 6 million, and in 2005-2007, increased to 9 million acres per year; meanwhile the number of fires has stayed approximately the same since the mid 1980s. The smoke and carbon emission implications of this trend make wildland fire management urgent.

What to do? Concerns about carbon management have created a new vector of interest directed at forest management. Issues about the potential contribution of forests to carbon sequestration discussed below include when to cut trees and wildland fire management.

Harvest or preservation? Does a forest harvested periodically for wood products sequester more carbon than an old-growth forest? Yes and no. The answer depends on three factors: (1) considering only the growth of trees, not harvesting will always sequester more carbon, regardless of the harvesting rotation age; (2) not harvesting remains the better choice even after adding off-site conversion of harvested timber into long-lived wood products; but (3) harvesting is the better choice if wood products substitute for concrete or steel building materials to avoid emissions by displacing fossil fuel use (**Figure 2**), but only in forests with above-average productivity and only if the product substitution is efficient.

Research also shows that when wood products and fossil fuel-intensive product substitution are considered, the shorter the forest rotation age, the more favorable the carbon balance becomes over time. To sum up, for productive forests the reply is yes, harvested forests do sequester more carbon than preserved old forests, but only with efficient use of wood products that substitute for fossil fuel-intensive products such as concrete or steel, and/or using wood products manufacturing residues to displace fossil fuel energy use. For forests with below-average productivity and/or inefficient use of wood products to displace fossil fuels, the reply is no.

Wildland Fire Management. A century of fire suppression in the interior northwest has created fuel conditions that lead to very large, intense, and destructive wildfires. In Idaho, emissions of CO_2 from wildfires during 2006 were 1.6 times greater than annual fossil fuel-burning emissions from vehicles, industry and other sources in the state. Reducing fuels can reduce wildfire emissions. As a first step in increasing carbon sequestration in the forest sector, the federal government should examine how it can modify management practices on its extensive lands to emphasize carbon sequestration consistent with other management objectives such as habitat protection, erosion control, and timber production. The most promising action is to reduce the risk of stand-replacing wildfires. Others include use of wood products in "green" building certification programs, and in carbon credit offset programs designed to reduce CO_2 emissions.

Conclusion. Although increasing the growth rates or carbon storage of existing forests, the use of wood products, and tree planting provide carbon benefits, larger benefits may come from avoiding deforestation and reducing wildfires. Forest management cannot fully solve the problem of carbon accumulation in the atmosphere, but it can contribute significantly to the solution. Over the course of the next 50 years, reforestation, afforestation (planting previously unforested areas), and reduced deforestation globally could provide a cumulative additional sequestration of 28 billion tons of carbon. This is similar to the effect of doubling the fuel economy of cars. Increased carbon storage, in combination with a host of emission reduction measures, can help reduce, and even end, the ongoing rise of carbon concentration in the atmosphere. Consider, however, that although existing forests annually sequester enough carbon to offset 10% of the nation's annual CO_2 emissions, attempting to attain a similar amount of offset by afforestation would require new forest plantations covering an area the size of the state of Texas. Although there are many ways to improve our planet's carbon balance, some strategies such as wildfire reduction are more effective that others, and most have additional benefits such as reducing demand for oil or improving air quality.

Woodland Notes. Spring/Summer 2009, Vol. 19, No. 2

Developing Forest Inventory Guidelines to meet the Requirements of the Chicago Climate Exchange.

By Stephen E. Fairweather

Mason, Bruce and Girard, Inc. (MB&G), under contract to the Woodlands Carbon Company (Woodlands Carbon), is developing forest inventory guidelines and protocols to satisfy the requirements of the Chicago Climate Exchange (CCX). Woodlands Carbon was established by the Oregon Small Woodlands Association (OSWA) in partnership with the American Forest Foundation (AFF) to aggregate and trade sequestered carbon credits from managed forestlands. Participants in the Woodlands Carbon pool must be forest owners enrolled in a CCX-recognized certification program, such as the American Tree Farm System.

Developing inventory guidelines that meet the requirements of the CCX and are also amenable to small properties is challenging. The guidelines must result in baseline inventory estimates that are not only cost-efficient and verifiable, but precise, because the CCX will actually discount estimates of annual carbon sequestration by the minimum of either 20 percent or two times the statistical error of the baseline inventory estimate, where the statistical error is defined by the 90 percent confidence interval. For example, if the 90 percent confidence interval of the inventory is plus or minus eight percent, the discount would be 16 percent.

The challenge in achieving this kind of precision on small properties is that with typical cruising methods, the number of plots required may be cost-prohibitive. For example, depending on the variability in the forest stands on a property, the sample size required to achieve a statistical error of +/- 10 percent at the 90 percent confidence level may be anywhere from 100 to 200 plots. While Woodlands Carbon may be able to offset the cost of cruising for an interested participant, that number of plots will be difficult to establish on an ownership of, say, 50 acres.

MB&G is preparing guidelines both for the establishment of new inventories and for the qualification of existing inventories. Some of the larger participants in the pool have forest inventories established some time ago, and these have been useful for management planning and valuation purposes. But will they meet the requirements of the CCX? For example, can a confidence interval be developed for the total inventory estimate? If an inventory forester was assigned the task of verifying the current estimate, is there a good chance he or she would agree with it? Has the ownership been delineated by stand, and does every stand have an estimate? Are inventory design and cruising methods well documented? How has the inventory been kept up to date to show changes due to harvesting and growth? Is there sufficient detail in the inventory data to allow the inventory to be grown with the Forest Vegetation Simulator, the only growth model currently approved for use by the CCX?

The inventory guidelines being developed for Woodlands Carbon will be in place by early summer (2009). We expect they will address an array of topics ranging from stand delineation, typing and establishing a stands layer in GIS, to tree observation on a plot. The guidelines will be targeted toward consulting foresters, who we expect will be helping most of the family forest owners with establishing (or improving) their inventory estimate. We expect the guidelines will advocate for the use of stratification as one of the most effective ways to achieve cost-effectiveness and greater precision. If different ownerships within a pool can be stratified similarly, we may be able to leverage inventory estimates developed for one owner and use them, with some adjustments, for other owners. Stratification, or typing stands by categories of species mix, tree size and stocking, may be one of the most effective tools we can bring to the table.

Forest Inventories in the Woodlands Carbon pool will actually be delivered to Forecon, Inc., before they are passed to the CCX. Forecon will determine carbon equivalents in each inventory using their CCX-approved methodology. Woodlands Carbon and MB&G will be responsible for delivering to Forecon updated inventories each year for each landowner in the pool, along with supporting documentation as to inventory establishment and updates.

We believe the consulting forester community will find the inventory guidelines to be flexible enough to accommodate many current practices, yet stringent enough to satisfy the requirements of the CCX.

Western Forester May/June 2009

A look at Oregon forests 100 years ago…and today

Every picture tells a story. Likewise, every map is a snapshot of a landscape's history at a point in time. *What do Western Oregon's Forests Look Like After a Century of Management?* - a new OFRI report—reveals maps that offer surprising comparisons of yesteryear's forests with today's.

A historic 1902 U.S. Geological Survey report and timber volume map of western Oregon was used in comparison with contemporary Landsat data using sophisticated geospatial technology. The result is a richly-illustrated report that gives a glimpse of catastrophic events in the 19th century while offering good comparisons with Oregon's forests during the 1990s.

The images from the old map provided a low-resolution view of Oregon's forest 100 years ago, but they nevertheless clearly dispel the common misperception that forests existing before European-American settlement have been lost or irretrievably damaged. While few patches of older forest exist today, after a century of commercial harvest more of western Oregon is now forested and these forests contain considerable more wood than in the past.

In the mid-1800s, around the time Oregon became a state, massive fires—both from natural and human sources—burned millions of acres. Evident on the old map are huge burned tracts and stands of young trees throughout the Coast Range and Cascade mountains. When the 1902 map was produced, fire fighting was in its infancy. The latest maps created for the study show the effects of fire suppression and replanting of forestland. Ironically, with modern fire suppression, many forestlands are again vulnerable to severe wildfire, insects and disease because of forest overcrowding.

The mapping project report was unveiled at the Oregon Society of American Foresters Conference in Canyonville, April 29 to may 1. Doug MacCleery of the U.S. Forest Service included the maps in his presentation, pointing out that USFS data corroborates the OFRI findings and that Oregon has maintained its forest land base better than other states—in fact, better than most other places in the world.

The report was also the centerpiece of the OFRI display at the conference. OFRI's

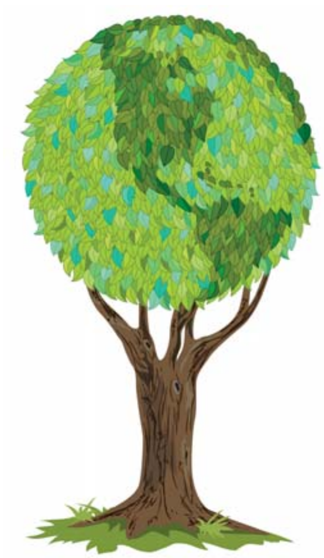
Mike Cloughesy added that , "People were especially struck by the large amount of blue in the map depicting change in volume, showing that most of western Oregon's forests have more volume than 100 years ago."

The mapping report, released on the occasion of the state's sesquicentennial, was produced in cooperation with the USFS, the Oregon Forest Industries Council, forestry consultants and the Oregon Department of Forestry. It is available as a downloadable PDF or hard copy from the OFRI Web site: oregonforests.org/assets/uploads//What_do_western.pdf.

OFRI Outlook, Summer 2009

"Renewable Biomass"

The U.S. Environmental Protection Agency (EPA) has proposed revisions to the National Renewable Fuel Standard program (www.epa.gov/oms/renewablefuels/). EPA's proposed rule was developed in response to requirements of the Energy Independence and Security Act of 2007 (EISA). The requirements of EISA include new definitions and criteria for both renewable fuels and the feedstock's used to produce them.



EPA's proposed rule includes a complex definition of ***renewable biomass*** (RB) constrained by requirements of EISA. In brief, producers of renewable fuels will be required to demonstrate that they are using RB as feedstock. RB includes virtually all biomass produced on ***agricultural lands***. It also includes (a) ***planted trees and slash*** from ***actively managed tree plantations*** that have been in production since December 2007, and (b) ***slash*** and ***precommercial thinning*** produced on ***non-federal forest lands.***

Agricultural lands are defined broadly to include pasture lands as well as crop lands. EPA is requesting comment on whether to include range lands as well.

EPA proposes to define the term ***planted trees*** to include "not only trees that were established by human intervention such as planting saplings and artificial seeding, but also trees established from natural seeding by mature trees left undisturbed for such a purpose." ***Actively managed tree plantations*** include forest stands comprising "one or two" tree species on non-federal lands that have been regenerated intentionally using any method (e.g., planting, seeding, shelterwood harvest, seed tree harvest, etc.).

EPA's proposed definition of RB excludes (a) biomass from federal forest, and (b) ***slash and precommercial thinning*** obtained from "forests or forestlands that are ecological communities with global or State ranking of critically imperiled, imperiled, or rare pursuant to a State Natural Heritage Program, old growth forest, or late successional forest." EPA proposes defining both "old growth" and "late successional" forests as being "characterized" by trees at least 200 years old. EPA is seeking comment on whether/how renewable biomass should include municipal solid waste and biomass obtained from certain areas at risk of wildfire.

EPA recognizes major challenges associated with implementation and compliance with RB requirements in the proposed rule. Among other alternatives, EPA is considering whether They should establish "a chain-of-custody tracking system from feedstock producer to renewable fuel producer through which renewable fuel producers would obtain information regarding the lands where their feedstocks were produced."

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Publications of Interest

Managing Organic Debris for Forest Health. Schnepf, et al 2009. Pacific Northwest Extension Publication, PNW 609. 60 pages. This publication provides an excellent overview of inland northwest forest soils and how to manage organic matter for multiple objectives. You can order from your local OSU Extension Office or visit the OSU Extension online catalog at http://extension.oregonstate.edu/catalog/ and search for PNW 609. Cost is $7.00 per copy.

Twenty-year response of ponderosa pine to treatment with Hexazinone in Northeastern Oregon. Lindsay, et al 2009. Western Journal of Applied Forestry 24(3) 2009. p. 151-156. This is a follow up article to some work conducted 20 years ago on the Hall Ranch outside of Union. Below is an ammended abstract if you would like a copy of the full paper contact the OSU Extension Union County office at 963-1010

Chemical control of competing vegetation with hexazinone is a common and effective silvicultural treatment for ensuring ponderosa pine plantation success on dry sites in the western United States, yet few studies document the effect for more than the first few years after planting. This study, re-evaluated 20 years after planting, followed ponderosa pine growth and survival when hexazinone was applied in broadcast and spot treatments for control of competing vegetation. We continued work from the first 5 years after establishment that identified early differences in ponderosa pine seedling survival and growth with treatment. Examination of 20-year trends indicated that individual tree volume and volume per hectare continued to diverge among treatments. The economic differences among treatments may increase as more surviving, faster-growing trees in the broadcast treatments reach higher-value products sooner. Initial control of competing begetation increased the likelihood of seedling survival and increased tree size after 20 years. Results pertained to ponderosa pine of the Douglas-fir/spiraea and Douglas-fir/common snowberry plant associations in northeastern Oregon, but they should apply to similar sites throughout much of the intermountain west.

Forests, Farms & People: Land Use Changes on non-federal land in Oregon 1974-2005. August 2009. USDA Forest Service and Oregon Dept. of Forestry Publication. 74 p. For copies of the reports contact Gary Lettman of the Oregon Department of Forestry, gary.lettman@state.or.us

EC 1596-E, **Invasive Weeds in Forest Land:**
Knapweeds, http://extension.oregonstate.edu/catalog/pdf/ec/ec1596-e.pdf

EC 1590-E, **Canada Thistle,** http://extension.oregonstate.edu/catalog/pdf/ec/ec1590-e.pdf

EC 1588-E, **Bull Thistle**, http://extension.oregonstate.edu/catalog/pdf/ec/ec1588-e.pdf

EC 1650, **Yellow Starthistle**, http://extension.oregonstate.edu/catalog/pdf/ec/ec1600-e.pdf

Managing Insects and Diseases of Oregon Conifers. Oregon State University Extension Service, EM 8980, June 2009 Hot off the press this publication will help you know more about management of the more important insects and diseases. You can order from your local OSU Extension office or visit the OSU Extension online catalog at http://extension.oregonstate.edu/catalog/ and search for EM 8980. $15.00 per copy

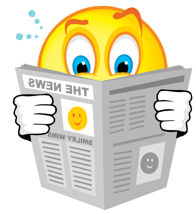
Publications of Interest (cont)

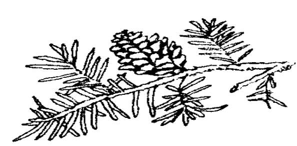
Christmas Tree Nutrient Management Guide: Western Oregon and Washington. Oregon State University Extension Service, EM 8856-E, September 2009. This newly revised publication, although westside oriented provides good nutrient management principles and information for Christmas tree growers regionally. Go to OSU Extension Online catalog http://extension.oregonstate.edu/catalog/ and search for EM 8856-E, it's free

Home Heating Fuels: Should I switch to firewood or wood pellets? OSU Extension Service EC 1628-E. June 2009.

With rising costs for natural gas, fuel oil, and electricity, more people are thinking of burning firewood or wood pellets to heat their homes. How do you know when it is time to switch from one heating source to another? This publication can help you make that decision by comparing the costs of available energy sources.

This is only available online but you can contact your local OSU Extension office to obtain a copy or visit the OSU Extension online catalog at http://extension.oregonstate.edu/catalog/ and search for EC 1628-E.





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