

focus on
College of Forestry • Fall 2004
FORESTRY



Dean

Hal Salwasser

Development Director

Lisa French

Managing Editor

Caryn Davis

Contributing Writers

Marie Oliver

Alison Moldenke

Sara Zaske

Designers

Sandie Arbogast

Gretchen Bracher

How to Reach Us

College of Forestry
Oregon State University
154 Peavy Hall
Corvallis, OR 97331-5704
(541) 737-4271

FocusOnForestry@oregonstate.edu

www.cof.orst.edu



Cover —

Bill Floyd, graduate student in FE, taking water samples in Calapooia Basin (photo by Rebecca L'Hirondelle). See accompanying story, page 11.

Focus on Forestry is published by the Oregon State University College of Forestry. Our goal is to keep Forestry alumni, friends, faculty, staff, and students informed about the College of Forestry and its many activities and programs.

All or parts of this publication may be reproduced with credit to the OSU College of Forestry. Oregon State University is an Affirmative Action and Equal Opportunity employer and complies with Section 504 of the Rehabilitation Act of 1973. Gift funds provided to the OSU Foundation and the College of Forestry help pay for color reproduction of the Focus on Forestry.

CONTENTS

Dean's Column

College News

- 3 Feature:** *Computing Group Indispensable to Researchers*

Forest Science

- 5 Feature:** *Kermit Cromack Continues Career Post-Retirement*

- 6 Feature:** *Thinning Studies in Progress*

Wood Science & Engineering

- 8 Feature:** *Ocean Notion yields Better Wood Plastic Composites*

- 10 Feature:** *Needles and Rings: Filling the Gaps in Wood Anatomy Research*

Forest Engineering

- 11 Feature:** *Written in the River*

- 13 Feature:** *Timber Harvest PhDs at Work Around the World*

Forest Resources

- 14 Feature:** *A Management Plan for the Klamath Heartlands*

- 16 Feature:** *New Timber Harvest Projections Released*

Student News

- 17 Feature:** *New Recruiting Efforts Underway*

- 18 Feature:** *College Orientation and Annual Ring*

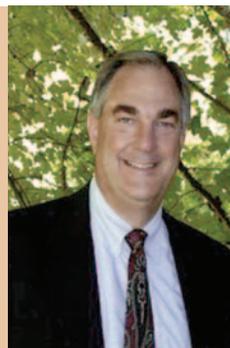
Outreach and Communications

- 20 Feature:** *Facilitating High-Quality Natural Resource Education*

- 21 Feature:** *College Gallery Features OSU Artists*

Foundation News

- 22 Feature:** *Fighting Fire with Knowledge*



Dean's Column

As the leaves begin to turn and the full swing of campus activity returns, I'm once again reminded of how much difference one person can make in the fields of forestry, natural resources, and forest products. As a world-class

college of forestry, we see some of the best and the brightest in these halls daily.

Never has research related to the health of our forests been more important. Kermit Cromack has made significant contributions toward our understanding of Douglas-fir nutrient cycling in his 30-year career here at OSU, and we're pleased that although he is officially retiring, we will continue to benefit from his expertise.

In this issue we look at important research by many faculty members. For example, Doug Maguire is testing the effects of various thinning strategies on our forests, including those infected with Swiss Needle Cast. Barb Gartner is working to fill the gaps in basic wood anatomy research. Darius Adams provides timber supply models that give regional forest landowners valuable planning information for their ownerships. Kaichang Li and John Simonsen are pioneering the development of new compatibilizers for wood plastic composites. And Norman and Debbie Johnson have worked tirelessly—on their own time—to produce a science-based, economically viable management plan for the Klamath Tribes as they pursue reclaiming their land from the federal government in southern Oregon.

All of this dynamic research requires an amazing depth and breadth of computing power, and the Forestry Computing Services group provides invaluable support to the College's research effort. In addition, we are committed to broadening our reach to the profession outside these walls, and the Outreach Education Office plays an integral role in facilitating this strategic aim.

And, of course, to keep the profession alive and well, we must train tomorrow's foresters today. We have recently stepped up our recruiting efforts to find intelligent, energetic high school students who will become tomorrow's forestry professionals.

We eagerly embrace the future,

— Hal Salwasser

Computing Group Indispensable

—by Marie Oliver

Much of the forestry and natural resources research effort in the College would not be possible without the massive computing infrastructure managed by the Forestry Computing Resources (FCR) group.



The following statistics provide just a glimpse into the magnitude of responsibility that weighs on the shoulders of the twelve members of the group: Approximately six terabytes of data—equivalent to 6,000 copies of the entire Encyclopedia Britannica—are stored on the more than 60 servers, and more data is added daily. Research-oriented pages on the College of Forestry web site receive approximately 41 million hits per year, with usage increasing about 60% each year. The Computing Help Desk supports more than 1,100 users, including College faculty, staff, graduate and undergraduate students, and about 170 state and federal partners.

Add in the complexity of interfacing with the university's computing systems and off-campus research groups such as the HJ Andrews Experimental Forest, USDA Forest Service PNW Research Station, Oregon Department of Fish & Wildlife research office, and USGS Forest and Rangeland Ecosystem Science Center, and it's apparent that it takes a staff of highly qualified and specially trained professionals to make it all happen. The current members of the

FCR group are **Mike Altimus, Paul Foshay, Lisa Ganio, Kathy Howell, Mark Klopsch, Hans Luh, Jerry Mohr, Sean SanRomani, Denise Steigerwald, Terralyn Vandetta, Ken West, and Jamie Wick.**

The FCR group was created in 1999 in order to bring together the committed staff of computing professionals from separate departments in the College and maximize their contributions. The Help Desk was established and support operations were streamlined. "We were able to pool talents so we don't have duplication of effort, and our administrators are able to specialize in specific roles," says Kathy Howell, FCR director. For instance, one system administrator, Ken West, takes the lead in dealing with security issues and another, Mark Klopsch, with installation and licensing of network software. In the past, each system administrator would have to perform all those tasks for their department. "It has been a huge benefit for the College to create one group," says Howell.

The FCR group offers a wide range of computing services, which are not confined to the College, but are also used and contributed to by state and federal

Johnson named Interim Vice Provost



Rebecca Johnson, Associate Dean for Academic Affairs and International Programs at the College of Forestry, has been named the Interim Vice Provost for Academic Affairs and International Programs for Oregon State University. The vice provost is involved in all aspects of academic affairs, including strategic planning and budgeting, and is a member of the Provost's Council and President's Cabinet. In addition to academic programs, the vice provost oversees International Programs, Institutional Research, OSU Libraries, the OSU Press, and the Reserve Officers Training Corps. The appointment was effective June 22, 2004, and will continue through June 2005. Edward C. Jensen, Elizabeth P. Ritchie Distinguished Professor (Forest Resources) and Director of Instructional Development has been selected to serve as Interim Associate Dean for Academic Affairs through June 2005. The College is currently involved in an internal search to fill the position of Associate Dean, International Programs.

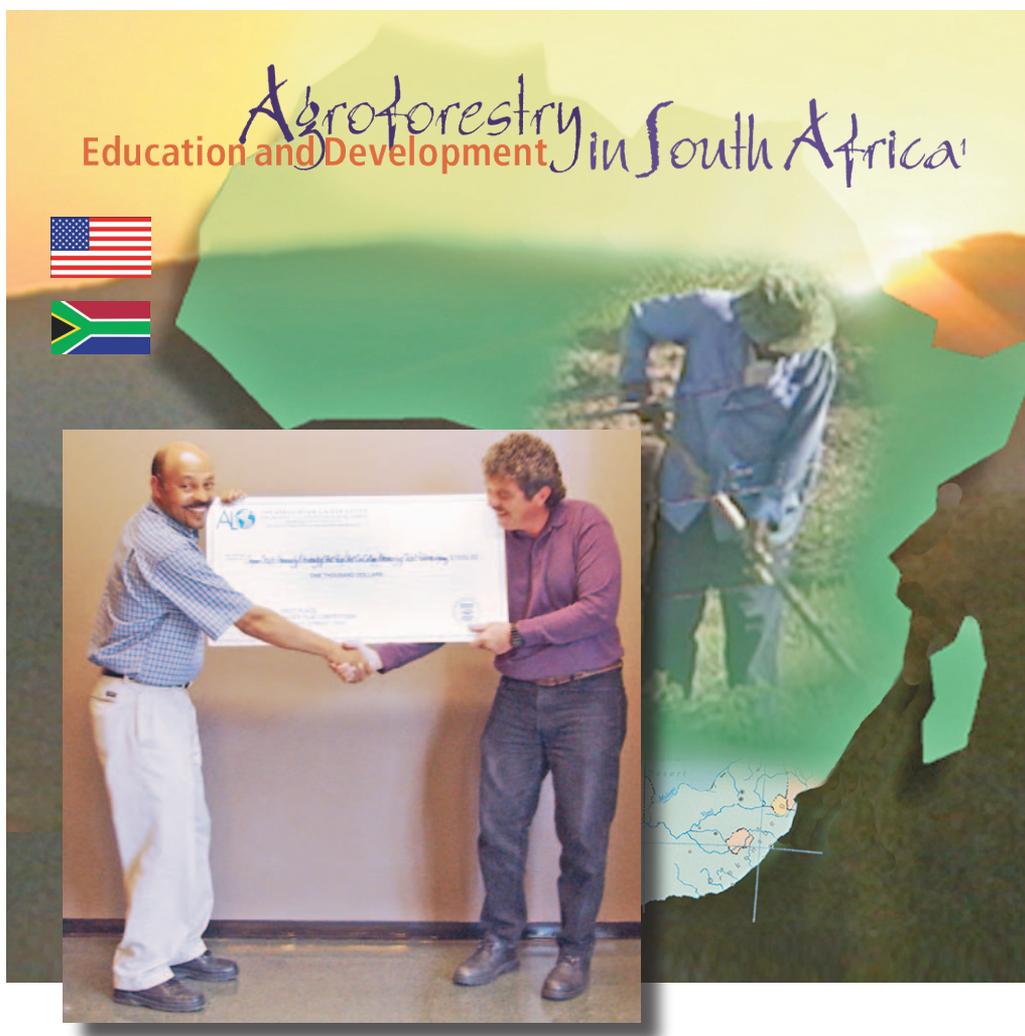
BIG Award for Partnership Team

A video about the USAID Higher Education Partnership project between the OSU, the University of Fort Hare, the Fort Cox College of Agriculture and Forestry, and the University of Natal in Pietermaritzburg, South Africa, won first prize in the video competition at the USAID conference in Washington, DC, this year. The prize included a check in the amount of \$1000. **Jeff Hino** of the Forestry Media Center (FMC) produced the prize-winning video on DVD.

Members of the Partnership Team include **Badege Bishaw** and **Robin Rose** (Forest Science), **John Sessions** (Forest Engineering), **Philip Humphrey** (Wood Science & Engineering), **Jeff Hino** and **Mark Reed** (FMC), and **Marion McNamara** (OSU Office of International Research and Development).

Congratulations on an outstanding production!

Badege Bishaw, Director, International Programs, College of Forestry, and Jeff Hino, Director of the Forestry Media Center, with their very large check.



(continued from page 3)

researchers and accessed by users worldwide. Researchers' computing needs vary widely and may involve special software specific to the project, adding to the complexity of interfacing between systems and optimizing system performance. "It's a huge task," says Terralyn Vandetta, FCR Associate Director.

"A major part of the day-to-day effort is the user support piece—being available to answer people's technical questions and be at their desk to work through problems with them," says Howell. "But there's an equivalent effort behind the scenes that's not as visible to users—keeping the servers running and the network up and stable."

For example, the Long-Term Ecological Research (LTER) project is an ongoing, international research effort with a large web presence. Web pages are dynamic in nature, offering services such as building

topological maps "on the fly" from spatial data; other systems work with GIS or remote sensing data.

"Each night, 120 gigabytes of data changes," says Vandetta. Backing up these huge volumes of data is a major task for the computing group. Backed up systems include Windows platforms, UNIX platforms, database servers, and email servers. The job of managing and monitoring the process and doing "data restores" from high-capacity tapes consumes most of one full-time person's day.

Vandetta says provision has also been made for research groups like the LTER project that want to try out new technologies but are not ready to go live. Dedicated servers provide the opportunity to test stability and functionality without endangering the work of others.

"You certainly don't want to be working with a piece of software that might crash your production server or take the whole network down," she says. "So we provide some development environments for web and database." Some groups have tried out new technology and decided it wasn't for them, and some have been able to go ahead and work on the next step of the project without disrupting the current project's stability.

Overall, the group focuses on providing a depth of services to satisfy the diversity of research needs, while remaining committed to a seamless and reliable experience for users. "It's hard to appreciate all that's happening behind the scenes," says Howell. "A lot of high-end support makes it possible—and a lot of expertise we're fortunate to have."

Kermit Cromack Continues Career Post-Retirement

—by Marie Oliver

Retirement for some College of Forestry professors doesn't necessarily equate to hanging around the house, traveling, or spending more time with hobbies.

Many professors remain actively engaged in their research and the life of the College for many years after retirement, and Professor **Kermit Cromack** in Forest Science plans to be counted among that number.

"It seems I have as much or more work to do post-retirement," he smiles. "Actually, it would be difficult not to work. I love it."

Cromack came to Corvallis in 1972 on a USDA Forest Service presidential internship with the Coniferous Forest Biome while he was a PhD candidate at the University of Georgia. After earning his degree, he joined the College as a research associate in 1974, then worked his way up through the ranks until he earned a full professorship in 1997.

"Kermit has had a most impressive career here in his 30 years at OSU," says **Tom Adams**, Forest Science Department Head. "He has been a great catalyst in many collaborative research projects. The lists of his professional service, continuing education activities, and publications are remarkably long."

Cromack teaches the anchor course in the College's graduate curriculum in forest ecology (FS 546, Advanced Forest Ecosystems Analysis). He has been the major professor for 22 students and has served on the advisory committees of 84 students during his career. His devotion to graduate education is further evidenced by his service as chair of the Department of Forest Science's Fellowship and Awards Committee for the past five years. He received the department's Outstanding Faculty Award in 2002—an honor voted on by students—and in 2003 received the Forest Science Big Fish Service Award. His service to the college includes 12 years as liaison to Kerr (now Valley) Library.

Cromack specializes in forest ecosystem studies in nutrient cycling, decomposition, ectomycorrhizal fungi, N₂ fixation, and other soil biotic functions. His early research deals with a broad spectrum of forest ecosystem studies, with an emphasis on decomposition and nutrient cycling processes. More recently, his emphasis has been on below-

ground ecosystem components, integrating research over a number of disciplines (e.g., soils, biogeochemistry, mycology) to improve understanding of stressed forest ecosystems.

"I have a strong interest in contributing to sustainable forest management, especially forest soil resources, in the context of maintaining forest productivity and biodiversity," he says. He has particularly contributed to the scientific understanding of the basics of nutrient cycling and decomposition in old growth Douglas-fir forests, including the role of coarse woody material, ectomycorrhizae, and soil animals in the ecosystem.

Some of his current research involves attempts to understand the relationship between calcium and nitrogen cycling in Douglas-fir trees. "Just as people need calcium, Douglas-fir trees need it in order to build cell wall structure," he says. "Calcium plays a strengthening role, similar to our need for calcium in building strong bones." Working off a grant from the National Science Foundation (NSF), he is collaborating with **Steve Perakis** and **Tom Bullen**, researchers from the US Geological Survey, and **Jana Compton** from EPA on calcium isotope studies. This team is among the first outside the medical community to receive funding to study stable calcium isotopes in Douglas-fir forest ecosystems.

As part of another NSF study, he is also involved in the Microbial Observatory Program, a cooperative effort involving Cromack, **David Myrold** from Crop and Soil Science, **Joseph Spatafora** from Botany and Plant Pathology, **Peter Bottomley** from Microbiology, and **Bruce Caldwell** from Forest Science. These scientists are using molecular genetics tools to look at key microbial functions in the nitrogen cycle and some of the molecular biochemical functions of ectomycorrhizae.

In addition, Cromack is principle investigator on a Joint Fire Science grant to study prescribed fire as a long-term management tool. The team (**Matt Trappe**, **Jim Trappe**, **Efren Cazares**, OSU and **Mary Rasmussen**,



Crater Lake NP) is studying a ponderosa pine site at Crater Lake National Park to examine the effects of different prescribed burns severities on ectomycorrhizal fungi and soil. In another fire project on the B&B complex, he is involved in a collaborative experiment with **Jane Smith**, US Forest Service, to study post-fire regeneration and long-term ecosystem effects. He is working with **Bernard Bormann**, USFS, and **Bob Zybeck**, FS on the Five Rivers Project in the Alsea basin. He is also advising a student doing water chemistry and soils research for the Hinkle Creek Watershed Project and is still involved with the Swiss Needle Cast Cooperative in researching the role of nutrition in Douglas-fir tolerance to the disease.

Cromack is quick to give credit to others for what he views as mutual success in his areas of research. "Ecosystems research represents integrated research and involves the talents of many people. It's complex and challenging, which makes it interesting. It involves a lot of team research," he says. "I've been very fortunate to have had many outstanding students and very supportive colleagues for what I've done."

Adams puts it another way: "He's a quiet, behind-the-scenes kind of guy who makes projects successful because he's a great collaborator. He's unselfish and great with students—he's concerned about their welfare. He'll be a real loss to the College when he does retire."

Successful Forest Science Graduate Students — Congratulations!

Maggie K. Byrkit, MS

“Predators of Hemlock Woolly Adelgid in Northwestern Oregon”

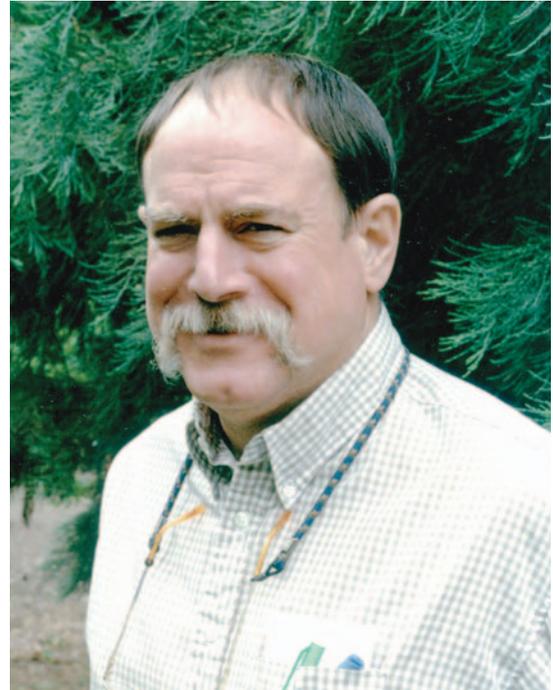
Ben Rice, MS

“Effects of the Biological Control Agent, *Tetranychus lintearius*, on its Host, *Ulex europaeus*”

Thinning Studies in Progress

— by Marie Oliver

What impact does thinning have on Douglas-fir forests? What type of harvesting best protects wildlife and encourages tree regeneration? Does a forest infested with Swiss Needle Cast require alternative solutions?



Douglas Maguire, Associate Professor in Forest Science and Edmund Hayes Professor of Silviculture, uses quantitative silviculture and biometrics to explore answers to these kinds of questions.

Maguire is involved in a USDA Forest Service-funded project called DEMO (Demonstration of Ecosystem Management Options). DEMO scientists study variable retention harvests to determine their impact on forest plants and animals and discover silvicultural options for successfully regenerating Douglas-fir stands. While clear cutting is a proven technique for regenerating Douglas-fir, studies have shown it is not the best solution for retaining biodiversity of a given site. Recommendations on the number of trees to leave on harvested sites came about through expert opinion, but have been “largely untested,” says Maguire. “Historically, we have relatively few data from rigorous experimentation that compare a range of residual stand densities.”

The Northwest Forest Plan calls for retaining a minimum of 15% of the trees after regeneration harvesting, “We now have a formal rigorous experiment set up for testing the recommendations,” says Maguire.

DEMO is composed of six study blocks in which an identical set of six treatments was applied.

Preharvest inventories on the six research areas began in 1994-95 and treatments were applied in 1997-98. Post-treatment inventories were conducted in 1999-2001. The objective includes comparing the effectiveness of patches of untouched trees versus residual trees scattered throughout the unit. Experimental areas include those where no trees were harvested, and areas where 75%, 40%, or 15% of the trees were retained. Scientists are studying the health and growth patterns of the residual trees in addition to understory plants, lichens, fungi, invertebrates, amphibians, small mammals, birds, bats, arboreal mammals, and other taxa within the ecosystem.

Experts believe that various types of thinning in young established (regenerated) stands can be used to enhance future stand structure and species diversity, thereby creating healthier forest conditions. The Oregon Department of Forestry (ODF), for example, recommends structure-based management for Oregon’s public lands, an approach that employs thinning techniques designed to produce diverse forest stand structures across the landscape.

Structure-based management provides for timber production, habitat creation, and biodiversity through the encouragement of five stand types or stages in the

Photos: (page 6, top) Doug Maguire; (right) alternative treatments in the DEMO project; (page 7, left to right) stomates plugged with fruiting bodies of the SNC pathogen; silver-haired bat (USGS); western tanager (Gary Kramer, Fish & Wildlife Service).



development of stands over time that represent a broad range of forest conditions: early regeneration stages, closed single canopy, understory, layered, and older forest structures.

While thinning is generally believed an effective tool for forest ecosystem management, many commercial plantation managers in the Oregon Coast Range are at a decision point with young, intensively managed Douglas-fir stands badly infected with Swiss Needle Cast. Because the disease adversely affects growth, it is unclear whether the trees in these severely diseased stands will ever grow to merchantable size. Anecdotal evidence seemed to indicate that thinning might have a negative impact on forests infected with Swiss Needle Cast, says Maguire, which might point to clearcutting as a solution to quickly regenerating these commercial forests. However, Maguire's research team has done growth impact studies in pre-commercial and commercial forests that so far don't support that evidence. The commercial thinning study that Maguire's team is conducting will help determine whether the silvicultural treatments needed to pursue ODF's structure-based management can

be implemented without exacerbating the disease.

"We still seem to get a positive response to thinning regardless of whether the forest is infected with Swiss Needle Cast," says Maguire.



"The remaining trees tend to accelerate in growth and make use of additional resources made available due to thinning." He points out that exceptions to this response may exist due to the variability of conditions that can be found in Oregon's forests.

Some scientists studying Swiss Needle Cast believe that low tree species diversity in coastal Douglas-fir plantations may be a factor allowing the disease a foothold. Regardless of whether species diversity is a factor, moving toward a mix of species will at least minimize the risk of losing a stand altogether, says Maguire. Most landowners now plant a mix of tree species.

Forest Science Professor Receives International Award



Bev Law accepts award in Geneva, Switzerland. Photo courtesy of the World Meteorological Organization.

Beverly Law, Associate Professor of Forest Science at Oregon State University, received the Norbert Gerbier-Mumm International Award from the World Meteorological Organization (WMO) for a professional publication related to her research on the global carbon cycle. Law traveled to Geneva, Switzerland, in June of 2004 to accept the award, which included a medal and cash honorarium.

An organization within the United Nations, the 187-member WMO provides the authoritative scientific voice on the state and behavior of the Earth's atmosphere, its interaction with the oceans, the climate it produces and the resulting distribution of water resources and climate.

Law was the senior author, with a group of professional colleagues, on a paper titled "Environmental Controls over Carbon Dioxide and Water Vapor Exchange of Terrestrial Vegetation." The paper was recognized as the most outstanding original publication of the year on the influence of meteorology on the physical, natural or human sciences. At OSU, Law is an expert on eco-physiology and ecosystem processes, including carbon and water cycling, influences of climate and disturbances on carbon dioxide and water vapor exchange, and other topics.

She is also chair of the AmeriFlux network of more than 120 research sites in the Americas, ranging from arctic tundra to grasslands and tropical forests, that explore the sensitivity of natural and managed ecosystems to climate and other global changes. This research seeks to improve understanding of the influence of climate and other variables on ecosystem processes, develop remote sensing technologies and modeling capabilities at regional to global scales, map ecosystem productivity, and ultimately provide some of the scientific foundation for policy and mitigation actions related to global climate change.

The College of Forestry proudly congratulates Dr. Law on this prestigious recognition.

President and Vice President Morrell

Congratulations to University Distinguished Professor **Jeff Morrell** for his election as the first American President of IRG—the International Research Group on Wood Protection (formerly Preservation) and his election as Vice President of the American Wood-Preservers' Association!

The Stockholm-based IRG has over 300 members from 51 countries around the world. The independent research group issues more than 100 documents every year and provides a forum for discussion and dissemination of research on the complex problems of wood protection and durability. IRG emphasizes the importance of ongoing improvements in wood preservation technology—not only to help ensure the economical and effective use of this renewable natural resource, but also in recognition of the increasing importance of such technology in conserving the world's forest resources.

The American Wood-Preservers' Association (AWPA) is an international, non-profit, technical society founded in 1904 to provide a common forum for exchange of technical information between industry, research, and users of treated wood. AWPA is responsible for promulgating voluntary wood preservation standards. These standards are developed by its technical committees in an open, consensus-based process that involves individuals from all facets of wood preservation and are recognized worldwide.

Ocean Notion Yields Environmentally Friendly Wood Adhesives

When you've got a sticky problem, put a little mussel behind your research.

About three years ago, Professor **Kaichang Li** (Wood Science & Engineering) was looking for a strong, environmentally friendly alternative to the formaldehyde-based resins—urea-formaldehyde (UF) and phenol-formaldehyde (PF) resins—that have been used to make wood composites since the late 1950s. Formaldehyde causes eye and throat irritations as well as respiratory discomfort, and the World Health Organization recently concluded that formaldehyde is a human carcinogen. Formaldehyde is also listed as a potential cause of “sick building syndrome,” a term used to describe situations in which occupants experience acute health problems due to time spent in a particular building. As environmental and health issues related to formaldehyde continue to surface, pressure is mounting industry-wide to find alternatives to UF and PF resins.

Li's idea to develop formaldehyde-free wood adhesives originated from one of his fishing trips. One day he and a friend went to the beach, intending to catch some crab. When that plan didn't work out, his friend mentioned the possibility of harvesting some mussels instead. Li, a chemist, immediately noticed how firmly the mussels bonded to the rocks and wondered what kind of mechanism they used to create such a strong bond in a wet environment. “I was amazed at how they stuck together so strongly,” he says. “I knew there wasn't any glue that could work in water so well.”

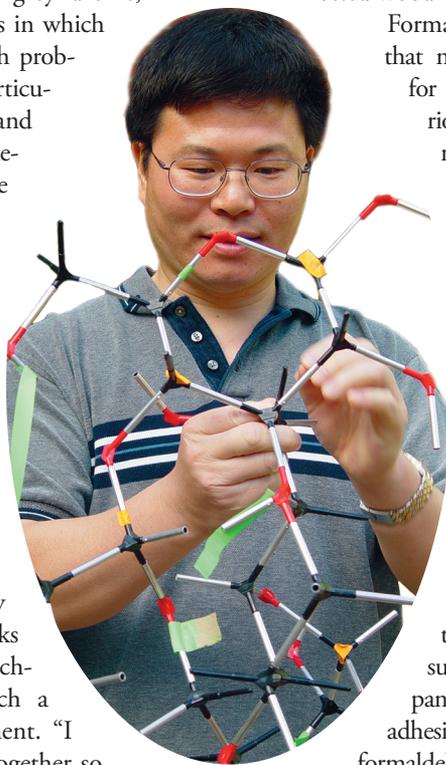
Back in Richardson Hall, he researched mussel chemistry and learned that mussel protein, containing a high concentration of a unique amino acid, is the secret to the mussels' ability to form such a tight bond. His team modified soy protein with a compound containing the same functional group found in the mussels' protein and was able to create a soy-based, strong, water-resistant wood adhesive.

Li has since discovered that condensed tannins (abundant natural products from tree bark) and wood that has been decayed by brown rot fungus both contain the same functional group as the

unique amino acid in mussel protein. By mimicking the adhesion mechanisms of mussel protein, Li has invented methods of converting condensed tannins and decayed wood to strong, water-resistant, environmentally friendly wood adhesives. However, while decayed wood is abundant in our forests, harvesting it from naturally occurring sources can be an expensive and time-consuming process, making commercial production of the adhesive impractical. Li's team is trying now to find ways to produce the rotted wood on a large scale.

Formaldehyde-free wood adhesives that mimic mussel protein are good for replacing the PF resins for exterior wood composites, but they result in dark glue lines that are undesirable for interior wood composites. To replace the UF resins for interior wood composites, Li has developed a formaldehyde-free wood adhesive that uses soy flour and a unique cross-linking agent. The new adhesive's glue lines are light in color and the glue is water-resistant and safe to use. Two companies have recently funded Li's investigation into the use of this new adhesive in the production of interior wood composites such as large, multi-ply plywood panels. In early testing, the new adhesive rivals commercially used urea-formaldehyde resin in terms of cost, ease of handling, and strength and water-resistance properties of the plywood panels.

Li was discussing his research with College of Forestry colleague **John Simonsen** (Wood Science & Engineering). Simonsen is a physical chemist whose research centers on wood-filled plastics or wood-plastic composites (WPC). Making composites is “like mixing oil and water,” Simonsen says “You have to get them to stick together, and they don't easily do that.” To overcome this problem, chemists create synthetic molecules called compatibilizers that are designed to make wood and plastic stick together. A good compatibilizer needs two parts: one part that sticks to the wood and one part that sticks to the plastic.





John Simonsen with WPC sample

Simonsen and Li began working together, using Li's mussel chemicals as the part of the compatibilizer that sticks to wood and combining it with other chemicals. They have since developed inexpensive and effective compatibilizers for WPC. They are looking for an industry partner to commercialize their compatibilizers.

Li and Simonsen's research is timely, as demand for WPC has heated up in the last few years. WPC now comprise one of the fastest growing segments of the wood products industry. "It's still a small part of the market," says Simonsen, "but it's growing rapidly."

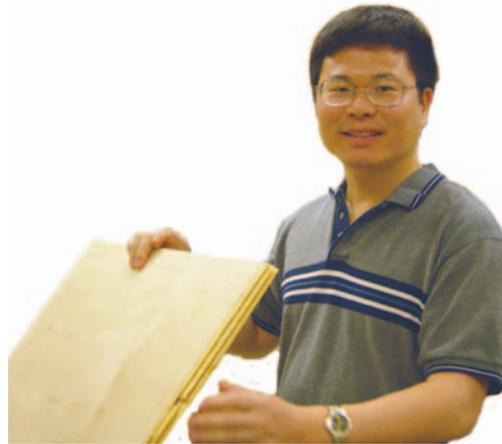
There are two major markets for WPC: decking and the automotive industry. Composites have been used in the automotive industry for more than 20 years and all major manufacturers now use these wood products in vehicle dashboards and elsewhere. Decking made from composites is a newer trend, but one that is rapidly taking market share away from pressure-treated wood. In 2003, WPC decking materials garnered a 15% share of the \$4 billion decking and railing market in the United States. WPC decking is expected to hold as much as 30% of an even larger market by the year 2010.

The recent ban on the use of lumber treated with chromated copper arsenate (CCA) for decks and play structures may be fueling at least some of the additional consumer interest in WPC and other alternatives to traditional decking materials. Another contributing factor may be their origin: WPC can be manufactured from recycled materials—plastics from milk jugs and grocery bags, wood fiber from recycled paper, and waste wood from furniture manufacturing.

"Composites are a very practical way to



improve the stewardship of natural resources, Simonsen says. "If we're going to provide the standard of living people want with the resource base available, we're going to have to do more with less. Using recycled plastic and recycled wood to make new materials and new products is a way to achieve that."



Kaichang Li holding hardwood plywood bonded with new adhesive.



Photo by Bryan Bernart

Successful Wood Science & Engineering Graduate Student — Congratulations!

Xiaozi Cao, MS

"Innovations in China's Furniture Industry"

WSE Welcomes Lech Muszynski

—by Bonnie Johnson



Bonnie Johnson

We welcome **Lech Muszynski**, a new Assistant Professor in the Department of Wood Science & Engineering. Muszynski received a PhD in Forestry and Wood Technology at the Agricultural University of Poznań, Poland. He was an Assistant Professor in the Department of Engineering Mechanics and Thermal Techniques in Poland until 1998, when he joined the University of Maine as an Assistant Scientist in the Advanced Engineered Wood Composites Center and a Faculty Associate in the Department of Forest Management. His area of study is the mechanics of wood and wood composites, and wood/water relations. Lech has received several awards, most recently, the George C. Marra award from the Society of Wood Science and Technology for excellence in writing and science and the SWST Visiting Scientist Award.

Muszynski is impressed by the lab facilities at the College and is enjoying his new office space in Richardson Hall. Lech and his wife, **Danuta**, who is an artist/printmaker, are looking forward to hiking around Oregon and visiting art events. They also share an interest in historical wooden structures.

Needles & Rings: Filling the Gaps in Wood Anatomy Research

It may be somewhat surprising to learn that despite centuries of research, scientists still have much to discover about some basic components of trees.



College of Forestry Professor **Barb Gartner** (Wood Science & Engineering) is working to fill in some of the gaps through her research on wood, leaves, and the flow of sap.

What is it we don't yet know about trees? Most of us have seen cross sections of trees and know what annual growth rings look like. We know that heartwood is the darker wood in the center of the tree that enlarges as the tree gets wider. Sapwood is the outermost section where water is transported from the roots to the rest of the tree. But a lot of people haven't heard about "juvenile" and "mature wood." Juvenile wood is about the inner 10-20 growth rings, from the base to the tip of the tree (think of it as a telephone pole of "different" wood in the center of the tree, says Gartner).

This wood usually has lower wood density, shorter and narrower cells, and cell walls that are built in a weaker way; hence, juvenile wood is generally less desirable than mature wood for most applications. Juvenile wood does not expand as trees grow, so the quantity gets proportionately smaller over time as trees get larger. Thus younger trees have more juvenile wood that older trees do, and newer growth on a tree has more than older parts of the tree. When younger forests are cut, proportionately more juvenile wood ends up in lumber yards.

Gartner's research group is trying to learn why trees produce this type of wood. One possibility is that trees make both juvenile and mature wood for hydraulic reasons. "Juvenile wood is more drought resistant than mature wood," notes Gartner. "It makes sense that juvenile wood is found in seedlings and in the tops of trees."

But what explains the change in anatomy from juvenile wood to mature wood? "Trees need to increase their leaf area more than their sapwood area as they get bigger," she explains. "They need more leaf area because as trees get bigger, they put on proportionally more stem and root length, all of which needs photosynthate to maintain it." To get the water to that larger leaf area, they need to have wood that's more conductive. The small changes in wood anatomy from juvenile to mature wood provide that needed increase in water transport. This conclusion is in stark contrast to the prevailing assumption that trees

make mature wood to give the tree extra mechanical support as it grows larger. Gartner's models suggest that this effect is unimportant compared to the effect on water transport.

Gartner's further research in conifers is focusing on wood, leaf, and sap relationships in branches and roots. It isn't even known whether they make juvenile wood, let alone whether their wood has reacted to the same evolutionary demands as the trunk. She is also studying conifer needles and their attachment and longevity. Scientists do not fully understand how or where needles attach to the wood of evergreen trees. Although evergreens do not shed their foliage each fall the way deciduous trees do, the needles do detach eventually—but when, why, and how? Where they attach within the sapwood will affect physiology in the cross-section of the stem, and may also affect physiology of different cohorts of needles.

Gartner thinks the trigger for detachment may have something to do with tree growth. "It's possible that the leaves fall off because the stem grows so much radially that the needles just get popped off! It's also possible that there's a mechanism for the inner part of the needle's connection (the leaf trace) can grow and reconnect for years, with the needle 'riding' on the outside of the bark. Then perhaps there's a programmed needle lifespan of some sort." Scientists briefly

explored this question in 1887, 1902-3, and most recently, in 1937 but almost all the work was on one species.

Unlike the previous work, which used anatomy alone, Gartner's group is using stain and a simple suction method to examine the connections. They have detected the pathways of water flow through growth rings to one- and two-year-old needles from 14 different evergreen conifer species. They have learned thus far that the leaf trace attachment varies by species, as does needle longevity. They are also researching whether the growth ring through which stain is pulled is related to age of needles or diameter of the stem in Douglas-fir saplings. They hope to learn more about the triggers for disconnection and reconnection of needles.



Barb Gartner with Hera (photo by Elena Gartner)

Written in the River

—by Alison Moldenke

Rising in the forests of the Oregon Cascades, the Calapooia River flows through forested foothills, fields, and small towns of the Willamette Valley to join the Willamette River at Albany.



Along the 70 or so miles of its length, levels of dissolved nitrogen as nitrate, ammonium, and organic nitrogen often increase, particularly during the beginning of the winter rainy season. Although it's one of the smaller tributaries of the Willamette, it is often characterized by high concentrations of nitrate and is therefore a large contributor of nitrate to the Willamette's waters. Nitrates encourage algal growth, which is deleterious to native fish populations and, when consumed in drinking water, can cause problems in oxygen transport that can even be fatal for infants.

Where is all that nitrogen coming from? Professor **Stephen Schoenholtz** (Forest Engineering) and his graduate student, **Bill Floyd**, have set out to pinpoint its sources. "We're trying to integrate the entire watershed, looking at water quality over all land uses in whole landscapes," says Schoenholtz. "We expect to find the land use signature in the river in terms of its nitrogen content."

Their project requires integrating information from many sources in order to map the land uses throughout the watershed. GIS data provide the information on land use and land cover. So that they can relate their land-use findings to nitrogen input basin-wide, they have been measur-



(top) Bill Floyd takes water samples by kayak (photo by Rebecca L'Hirondelle); upper and lower Calapooia Basin (photos by Bill Floyd)

ing dissolved nitrogen (nitrate, ammonium, and organic nitrogen) throughout the water year (October through September) at 90 stations: 33 on the main stem of the

Calapooia and the rest dispersed along its tributaries and throughout smaller sub-basins in its watershed. About one-third of the sampling points are in areas dominated by grass-seed production; the rest are in the Willamette Natural Forest, industrial forest lands, other types of agricultural lands, and urbanized areas. In the spring of 2004, they also installed temperature sensors in the water at 30 points distributed throughout the sub-basin.

Data from the first 10 months have yielded some striking patterns. In January, nitrate levels are 49 times higher in the lower, primarily agricultural, sub-basins than they are in the forested upper sub-basins. By June, the difference is only 5-fold. Differences between agricultural and forested sub-basins for ammonium and organic nitrogen are less striking; in contrast to nitrate, the difference between lower and upper basins for these classes of dissolved nitrogen is relatively greater in June. Schoenholtz and Floyd think the high nitrate levels in January may be related to runoff of fertilizer applied in the fall to poorly drained soils. The riparian buffers that are present apparently can't intercept the nitrate through root uptake or convert the nitrate to gaseous forms fast enough

Successful Forest Engineering Graduate Students — Congratulations!

Elizabeth Coulter, PhD

“Setting Forest Road Maintenance and Upgrade Priorities Based on Environmental Effects and Expert Judgment”

Kevin McGuire, PhD

“Water Residence Time and Runoff Generation in the Western Cascades of Oregon”

Melissa Clark, MF

“The Relationship between Landslide Density and Precipitation Intensity in the Central Oregon Coast Range During the February 1996 Storm”

Terry Luecker, MS

“Aquatic Invertebrate–Habitat Relationships and Stream Channel Cross Section Area Change in Response to Streamside Management Zones in North Central Mississippi

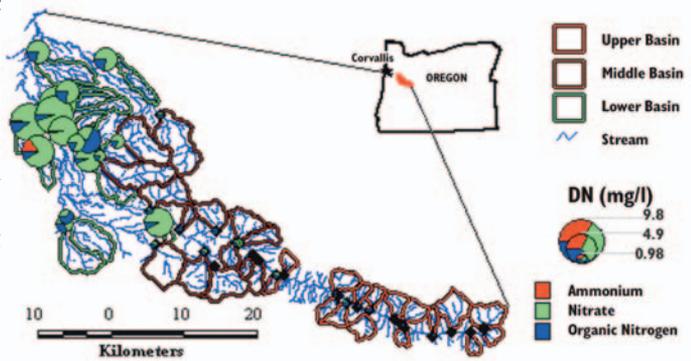
during the rainy season to keep it out of the river.

Challenges abound. All 90 stations must be sampled in a single day at each sample. The weather has to be right, too; sampling can't be done during a storm. Soil characteristics are variable and must be taken into account. Using complex statistics and mapping techniques, they must determine the spatial scale that provides the strongest relationship between land use and cover and dissolved nitrogen. Very few studies have

integrated water quality with land use on the basin level, so innovation is the name of their game.

The Calapooia study is part of an interdisciplinary project on the effectiveness of conservation practices in agricultural landscapes. The USDA ARS coordinates the project with **Jeff Steiner**, **Steve Griffith**, **George Mueller-Warrant** and **Jerry Whittaker** providing integrated land use, water quality, and economic analyses. **Judy Li**, **Guillermo Giannico**, **Mark Mellbye** (OSU Departments of Fisheries & Wildlife and Crop & Soil Science), **Kathryn Boyer** (USDA-NRCS), and **Brenda McComb** (US-EPA) are determining ways to establish conservation practices in riparian areas and how they affect wildlife. Weyerhaeuser Company, Willamette National Forest, and Calapooia Watershed Council are research collaborators.

It is also part of much larger research efforts on forest soils, stream water, and best management practices. Floyd's project is underwritten by the Forest Research Laboratory Fish and Wildlife Habitat in Managed Forests Research Program which supports nine other projects (FY 2005). Schoenholtz's research group also includes Research Assistant **Joanna Warren** and six graduate students. Among them, they are studying a wide range of issues associated with soils, stream water, and the effect of logging and silvicultural practices on those resources.



Dissolved nitrogen concentrations in the Calapooia watershed, January 2004

Adams Addresses Congressional Committee

Paul W. Adams, Professor and Extension Specialist (Forest Engineering), was among seven speakers who testified before the Subcommittee on Forests and Forest Health at a Congressional field hearing held in Sisters, Oregon. The topic was “In the Aftermath of Catastrophic Events: Restoring and Protecting Communities, Water, Wildlife, and Forests.” Representative **Greg Walden**, who chairs the House subcommittee, conducted the meeting. Other speakers were from the Forest Service, the Confederated Tribes of the Warm Springs Reservation, county and city government, and the Sisters Area Chamber of Commerce.

The August 18th hearing occurred the day before the one-year anniversary of the start of the B&B Complex Fire. Adams initially spoke about the effects of major wildfires on soil and water resources. While impacts are variable, such fires can damage soils, affecting the capacity of forest lands to recover. In severely burned areas, soils are widely exposed and most

vegetation is killed. This may result in greater stream runoff, erosion, damaging debris flows, and changes in water quality. After major wildfires, forest managers therefore give considerable attention to practices to protect and restore watershed functions and benefits. An overall guiding principle is that watershed restoration rests primarily on forest restoration, since forest cover promotes favorable conditions for most watershed functions and values.

Although forest vegetation will recover naturally after major wildfires, the nature and timing of natural recovery may not match the local needs for resource benefits. Thus prompt tree planting, with control of competing vegetation where needed, is a proven approach for rapid reforestation in Oregon. Salvage harvesting of dead trees for commercial uses can be considered a socioeconomic restoration practice for local communities impacted by wildfire. However, it can also be a part of ecological restoration in areas where pre-fire forest conditions were so

different from the natural historical forests that harvesting is used to initiate a transition towards more natural forest conditions.

Adams concluded his testimony by discussing five areas of concern about salvage and restoration on federal lands: differences in philosophical beliefs that sometimes overshadow objective scientific evidence; policies that hinder federal managers and compound restoration problems through delays; research and outreach that promote effective technologies; the need for preliminary plans and flexible staff resources for at-risk areas; and the importance of addressing economic and social concerns to achieve sustainable forest management. Adams's complete written testimony can be seen at <http://resourcescommittee.house.gov/archives/108/ffh/index.htm>.

After the meeting, Representative Walden expressed an interest in hearing more specific ideas on how to hasten forest recovery without endangering important environmental values.

Timber Harvest PhDs at Work Around the World

—by Marie Oliver

Forest Engineering graduate program plays a key role in educating the next generation of academic leaders in timber harvesting.

“The global job market for PhDs in timber harvesting is not large,” says **Steve Tesch**, Department Head in Forest Engineering (FE), “but the leadership provided by these individuals is critical to designing forest operations that meet society’s needs from forests in an economically, environmentally, and socially sustainable manner.” The number of harvesting PhDs in industry and agency research programs has declined over the past decade, leaving those in universities around the world to lead teaching, research, and outreach programs. As with many other disciplines, long-term leaders in the field are nearing retirement age and there is a challenge to ensure a new crop of scholars to carry out their work. There is also a demand for educating international students who are able to return home to help build timber harvesting programs at universities in developing countries.

The OSU FE Department is one of the few institutions in the world with a PhD program focused on timber harvesting, and six recent graduates are emerging leaders at several regional and international locations..

OSU is playing a key role in providing PhD graduates in this discipline. Since 1997, the College has graduated six PhD candidates who specialize in Timber Harvesting and they are now working at universities around the world.

Abdullah Akay (‘03) obtained his bachelor’s degree in his home country of Turkey at the University of Istanbul and was sponsored by the Turkish government to come to OSU for his master’s and PhD programs. He is now Assistant Professor in the Forest Engineering Department at Kahramanmaraş Sutcu Imam University in Turkey. Akay’s interests lie in the area of optimal road design, estimating equipment productivity, and transportation planning. As a graduate student, he worked with **John Sessions** to develop a 3-D forest road alignment optimization model that helps create forest roads at the lowest cost while conforming to design specifications, environmental requirements, and driver safety.

Woodam Chung (‘02) did his undergraduate and master’s work in his home country of Korea. He came to OSU to obtain his PhD and is now Assistant Professor Forest Operations at the University of Montana. Chung teaches classes in GIS and forest engineering and his research interests are in transportation planning. He played a major role in the development of a software program designed for optimizing

fixed and variable cost transportation problems that is in use by state and federal agencies, industry, and researchers worldwide.

Han-Sup Han (‘97) came to the United States after receiving a bachelor’s and master’s degrees from Kangwon National University in his home country of Korea. In 1994, he received another master’s at the University of Maine and in 1997 earned a PhD in Timber Harvesting from OSU. He is now Assistant Professor in Timber Harvesting/Forest Engineering at the University of Idaho. Han’s research interests include evaluation and development of timber harvesting systems, maximum value/volume recovery in timber harvesting, fuel reduction, and biomass harvesting and transportation for commercial generation of electricity.

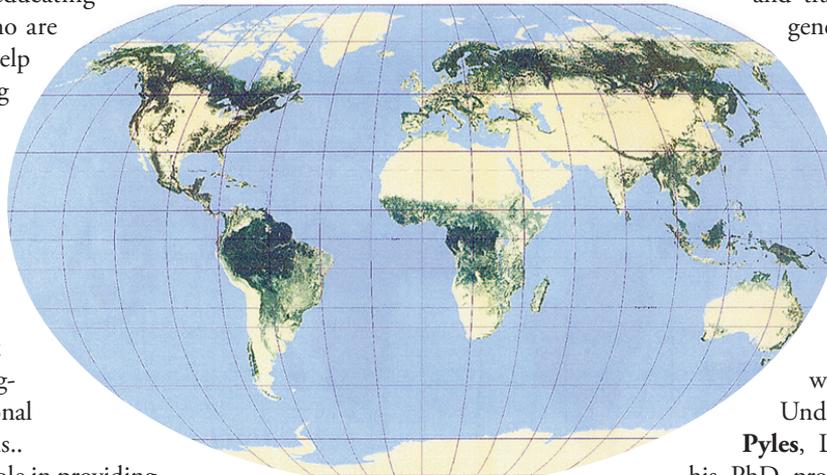
Kevin Lyons (‘01) came to OSU with graduate training and 15 years of field experience—including cruising, engineering, road construction, and logging. His practical experience gave him the insight necessary to tackle mechanical problems with analytical solutions.

Under the guidance of **Marvin Pyles**, Lyons added two minors to his PhD program: Applied Mathematics and Mechanical Engineering. He is now Assistant

Professor in the Department of Forest Resources Management at the University of British Columbia. His research interests involve the study of mechanics of motion and his current project involves guidance for rigging backspars in cable logging.

Peter Matzka (‘03) received all of his higher education at OSU: a bachelor’s in Forest Engineering in 1995, a master’s in Logging Engineering in 1998, and a PhD in Timber Harvesting in 2003. In 2001, Matzka took the position of Assistant Professor of Forest Operations in the Department of Forestry and Watershed Management at Humboldt State University in California. His current research interests include low capital harvesting systems and small wood utilization and fuel reduction.

Dunstan Shemwetta (‘97) obtained his master’s from the University of New Brunswick. After obtaining his PhD in Timber Harvesting at OSU, he accepted a teaching position in the Department of Forest Engineering at Sokoine University of Agriculture in Morogoro, Tanzania. He is now Department Head in Forest Engineering and Deputy Director of the Sokoine University Computer Center. Shemwetta’s interests include timber harvesting and transportation, GIS, and wildlife management.

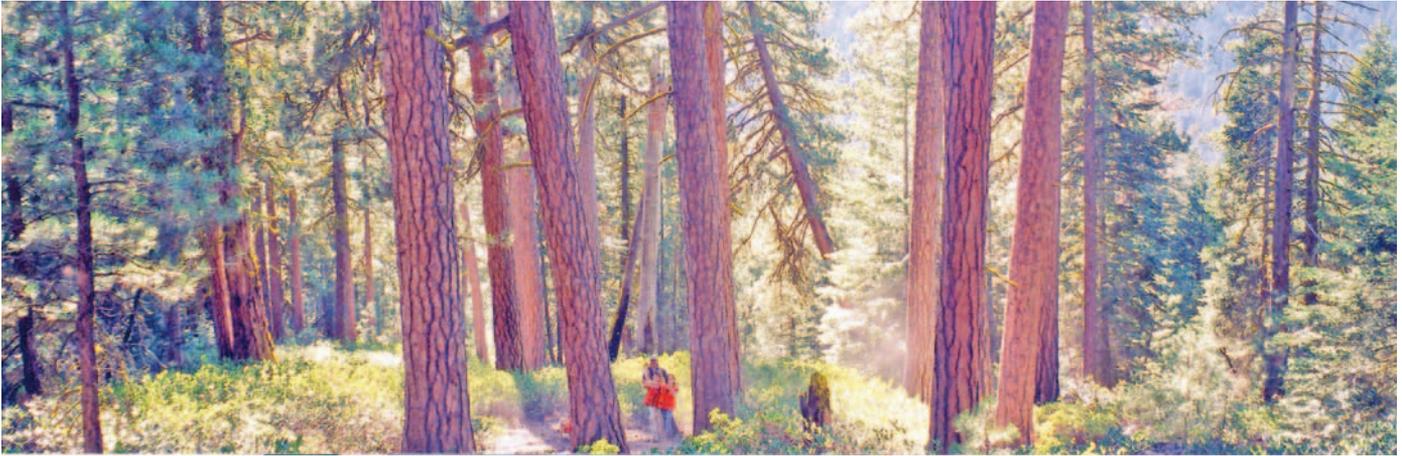


Forests of the world.

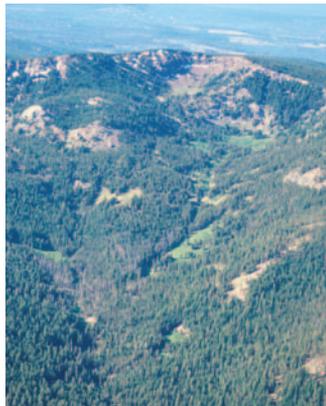
A Management Plan for the Klamath Heartlands

—by Marie Oliver

It has been a long, difficult struggle for the Klamath Tribes to protect and reclaim a portion of their homeland in the majestic ponderosa pine forests of southern Oregon.



One champion of their efforts is **K. Norman Johnson**, Professor in the OSU Forest Resources department. He and **Jerry Franklin**, Professor at the University of Washington, co-authored the proposed management plan that will be used to support the Klamath Tribes' attempt to reclaim this land. **Debra L. Johnson** of the College Forests, OSU, assisted with the plan.



Affairs (BIA). They would own the land again, but the BIA would hold it in trust. A restoration strategy has been in place for a few years and Norm, Jerry, and Debbie have been working with the Tribes—on their own time—to develop a plan to implement that strategy. A draft of the plan was released in December 2003. After allowing comment and review, the plan will be finished this fall.

A Brief History

The Klamath Tribes actually consist of people from the Klamath and Modoc tribes, as well as a small band of Paiutes called the Yahooskin.

Until the Europeans arrived, these tribes lived abundantly on approximately 20 million acres of territory in south central Oregon and northern California for over 14,000 years. By the 1850s, the federal government had forced these powerful and prosperous people onto the Klamath Reservation, which eventually was reduced to approximately 860,000 acres.

In 1954, the Eisenhower administration “terminated” the Klamath Tribes in an attempt to facilitate their assimilation into mainstream American society, taking away their rights as a sovereign nation. In an effort to survive, the Klamaths sold most of their land to the federal government—an action that turned out to be socially and economically devastating to the Tribes. By 1986, tribal status of the people had been restored to them, but their land had not. The Klamath Reservation exists today primarily as parts of the Winema and Fremont National Forests and some small patches of private land. The Klamath Tribes are trying to reclaim 780,000 acres of this land.

The Klamaths are seeking to transfer management of reservation lands from the USDA Forest Service to the Bureau of Indian

Forest Restoration Plans

For centuries, Klamath Reservation lands were primarily forested with old growth ponderosa pine. Fire suppression and logging activities during the 19th and 20th centuries converted much of the land to dense stands of young ponderosa pine and more shade-tolerant species such as white fir, Douglas-fir, and lodgepole pine. Many spectacular large, old ponderosa pines do remain, but according to Johnson, current conditions threaten this remaining old growth. “The buildup of the little understory trees and shrubs has created conditions such that when the fire comes through now it takes everything,” he says. “However, we would propose this strategy even if there was no fire concern, because the dense understory is not part of the historic forest the Klamaths want to restore; it leaves the big trees vulnerable to drought and insects.”

Norm, Jerry, and Debbie wrote the plan to assist the Klamath Tribes' effort to recover the land by proving their capacity for responsible stewardship. “We designed a management plan that provides a credible way to manage the land, given the Tribes' goals, and one that we hope will be broadly acceptable,” he says. The plan aims to convert as much of the forest as possible to structurally complex ponderosa and mixed conifer as quickly as

possible. Management recommendations are consistent with today's science-based approach to maintaining safe, healthy, and productive forests. Restoration activities would include selective harvesting and silvicultural treatments such as prescribed burning.

"There would be a quantum increase in the level of activity in the forest," says Johnson. Many small- and medium-size trees need to be removed, including white fir, which is the most valuable of the species among the newer, smaller stands. "Their presence is threatening to the big, old trees. We do not, however, want a simplified landscape. Rather we want the landscape of big, old trees interspersed with patches of young pines as historically occurred. Also, we want to reinvigorate the shrubs, like bitter brush, that provide food for big game. Stand density and structure, plus wildlife management decisions, will be made on a site-specific basis. Enhancement and protection of the forest, wildlife, water, and soil resources of the reservation will be a priority."

Johnson says that removing the trees will reduce the cost of restoration, but won't totally cover costs. He points out that implementation of the plan offers economic opportunities for employment and wood production should it be put into practice, which would help members of the Klamath Tribes enhance their economic footing and boost the local economy.



Successful Forest Resources Graduate Students — Congratulations!

Shayla Sharp, PhD

"Recreation, Tourism, and In-Migration: A Central Oregon Regional Study"

Jesse Abrams, MS

"Social and Political Dimensions of Forest Health"

Tad Larsen, MS

"Modeling Gray Wolf Habitat in Oregon Using a Geographic Information System"

Photos, left page, top: Saddle Mountain; Yamsay Mountain (Jerry Franklin); right page, clockwise from top left: vigorous bitter brush (deer food) after a burn; ponderosa pine; John Beuter (green cap) and others conduct peer review of management plan; Wright's Meadow; mule deer (Gary Zahm, Fish & Wildlife Service); Sprague River country. Except where indicated, all photos by Norm and Debbie Johnson

A new book about the Klamath's homeland management plan, entitled *Klamath Heartlands: A Guide to the Klamath Reservation Forest Plan*, by Edward C. Wolf, has just been published by OSU Press.

New Timber Harvest Projections Released

By necessity, projections of Pacific Northwest timber harvests have become increasingly complex over the past decade.

Current and anticipated forest management regulations as well as dynamic market activity have created a need for more detailed analyses, says Professor **Darius Adams** (Forest Resources). Adams and his team have responded with flexible, in-depth models that provide valuable forecasting information to industrial and nonindustrial private timber owners. The projections provided in two recently released reports also will aid policy-making agencies. Studies were made possible by the Oregon Department of Forestry in cooperation with the College of Forestry's Forest Research Laboratory.



According to the reports, private industrial timber owners in western Oregon could sustain cuts at 1995-1999 levels and nonindustrial private forest owners could raise harvests to near-historic peak levels, and maintain these levels over the next 50 years, with no reduction in the growing stock inventory. In eastern Oregon, inventories have declined in the past 20 years from harvesting and losses from insects and disease, so harvest potential over the next 50 years on industrial forestland is approximately half the average of the past 40 years. Nonindustrial owners in eastern Oregon could sustain harvest levels at 20% higher than historic averages, with a higher, but short-lived, near-term increase.

The analyses use market-based models in addition to traditional even-flow models to make projections. Market models simulate the interaction of supply and demand

to find the market-balancing harvest quantity and log price. Management techniques consistent with owner objectives are factored in.

Historically, timber supply projections were based almost entirely on the physical characteristics of the forest, says Adams. The highest anticipated volume flow, also called "even flow", was projected over several decades. Today, however, the technology is available to make more detailed analyses possible. Statistical analyses that used to take months can be performed in a few minutes using today's computer technology, making it possible to model an array of factors that were not considered in the past.

"One of the characteristics of the debate about timber harvests over the last several decades is that it has become increasingly specific," says Adams. "The forest resource arena is so dynamic today that twelve months after you start, all of the questions could have changed. We found that the key to being adaptable was to have a lot of detail in the model." Adams' analyses take a variety of variables such as geography, tree species, tree age, management practices, ownership objectives, and market supply/demand into account to provide a much richer data set.

Data for the models are based on periodic surveys conducted by the USDA Forest Service on a grid of approximately 1500-1600 sample plots randomly scattered across the state on private timberlands. The growth and harvest of each tree on each plot is intensively monitored over time and the supply represented in the team's analyses models the future behavior

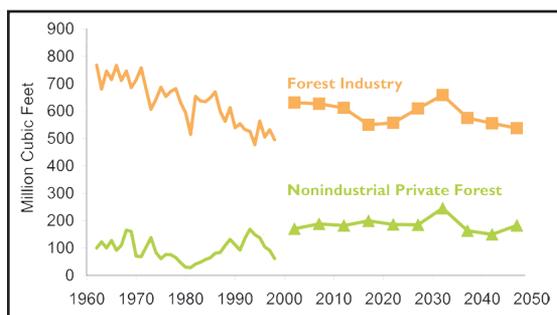


of each of these plots. Each plot consists of a heterogeneous set of resource conditions resulting from the species, age, harvest history, and other pertinent factors.

Adams and his team are currently doing a similar study funded jointly by the USDA Forest Service and the Forest Research Lab on private timberlands in Washington. "When we're done, we will have a model of all private lands in the Pacific Northwest," he says. He says the Pacific Northwest is a highly interdependent unit, with Oregon and Washington interacting in important ways. "Large volumes of logs flow in both directions. You can't really model a market in isolation, because its edges are not perfectly impervious."

Adams is also working on modeling individual milling centers, to provide information about the demand for logs at processing plants across the region.

Although private harvests are mitigated to some extent by harvests on public lands, projections for harvests on public lands are not modeled at this point. Assumptions are made based on current and anticipated federal management practice policies.



Base scenario for western Oregon timber harvest projections.

New Recruiting Efforts Underway

—by Marie Oliver

Enrollment is up at OSU's College of Forestry, in contrast to the national trend.

Nationwide, enrollments at colleges of forestry and natural resources have dropped drastically over the past 20 years. With fewer graduates, the industry is beginning to experience a lack of qualified candidates to fill open positions. Furthermore, employers are expecting to see 40% to 60% of their workforces retire in the next 15 years.

To meet these challenges, and to keep OSU's College of Forestry viable as a regionally, nationally, and internationally renowned program, the College is stepping



David Zabler

up its recruitment efforts.

"A lot of baby boomers are retiring," says **Debbie Bird McCubbin**, Head Advisor and Coordinator of Student Services at the College of Forestry (*above*). "We need to increase enrollment so we can provide enough graduates to fill the jobs that will open up when that happens."

In 2001-2002, the Wood Science and Engineering Department (then Forest Products) hired a recruiter, **George Swanson**, to boost enrollment. Swanson began visiting high school classes to introduce them to the wood science and technology program. The department used some private

donations to offer guaranteed scholarships to incoming freshmen: \$1,500 to high school students with at least a 3.5 GPA and \$3,000 to community college transfer students with at least a 3.0 GPA. Between Fall 2001 and Fall 2003, enrollment in the department doubled.

After seeing such dramatic results from these efforts, last year the College decided to expand the recruiting efforts to cover the undergraduate programs of the entire College. Swanson's area of focus was enlarged and **David Stemper** (*right*) was hired to fill a newly created half-time recruiting position. Stemper's efforts are primarily focused on the Portland metropolitan area. Both recruiters particularly target high school chemistry, physics, and mathematics classes, providing students with an overview of technical careers and the natural resources indus-



try, job opportunities in the field, and OSU's course offerings. "In order to successfully recruit, you have to get out and talk to students," says Swanson (*above*).

Using funds made available through the College's Initiatives Program, Bird McCubbin is overseeing the creation of a

recruiting DVD that will be used for recruiting purposes as well as educating the public about natural resources and forestry. "Our purpose is to get rid of the 'lumberjacks in suspenders' stereotype and provide the depth and breadth of opportunities offered within the field," says Bird McCubbin.



Jeff Hino in the Forestry Media Center is producing the DVD, which will be ready for release in January 2005. Its comprehensive content portrays "a day in the life" of a student, information about international programs, job fair information, facts about OSU's degree programs, and more. It includes links so users can go directly onto the web site. "It's very interactive and informative," says Bird McCubbin.

Another recruiting venue that is beginning to bear fruit is the Inner City Youth Institute (ICYI). About six years ago, OSU partnered with the Forest Service, PNW Research Station, and the Bureau of Land Management to introduce inner city youth to natural resources as a career path. The ICYI became a "pipeline program" to recruit students of color to the college. The program began with the

creation of natural resource clubs in middle schools and high schools in northeast Portland. Every summer, the College hosts a weeklong summer camp for students, with high school and middle school students alternating years.

As curriculum coordinator for the program (0.5 FTE), Stemper works in partnership with teachers in the schools to match club activities with school curriculum and help students meet their Certificates of Initial and Advanced Mastery (CIM and CAM) requirements. The program introduces the students to certain aspects of—and "adventures in"—natural resources they may not get in class.

"It's a fun, advanced curriculum for the students," says Bird McCubbin. "It gets them involved in learning more about natural resources and forestry." The first two students who have come successfully through the program are expected to enroll at OSU in 2005. Several others who are graduating from high school plan to attend community college with an eye toward completing their education at OSU.

Another cooperative recruiting effort that is seeing results is the Latinos in Forestry program. This program was initiated in cooperation with Weyerhaeuser two years ago because of their interest in increasing diversity in hiring and promotion in their mills and forests. The first students to affiliate with this program are expected to transfer from Chemeketa to OSU sometime during the 2004-05 academic year.

College Enrollment on the Rise



Although the numbers are not yet official (4th-week enrollment reports come out in late October), according to **Ed Jensen**, Interim Associate Dean for Academic Affairs at the College of Forestry, “we are optimistic about our undergraduate enrollment this year. Despite graduating a large class last spring, our new student numbers are up for fall. With 113 new incoming students, the College is seeing its largest incoming class since 1997.”

As of the first day of fall classes, the College has enrolled 385 undergrad and 134 graduate students, for a total of 519. This tops last year’s 4th-week total enrollment of 498. Seventy-four graduate students are pursuing a masters degree and 60 are in a doctoral program. Undergraduate enrollment figures by major are as follows: Forest Engineering/Civil Engineering, 29; Forest Engineering, 37; Forest Management, 84; Forest Recreation Resources, 69; Natural Resources, 95; Wood Science & Technology, 39; Outdoor Recreation Leadership & Tourism, 17; and Undecided Forestry, 15. Jensen says, “We are very pleased to welcome both new and returning students to the College and are looking forward to another great year!”



Photo credits: pages 18-19: axe throw, women’s double buck, and birling by David Zahler; limber pole and Rusty Saw Award by Clay Torset. All others by Sandie Arbogast.

College Orientation and ANNUAL RING

Orientation and Annual Ring were held on Friday, September 24, 2004. These events, organized by College of Forestry students and Student Services office, provided a chance for new students to become familiar with the history, traditions, and future outlook of the College.

The day began in Peavy Hall courtyard with a approximately 80 of our 115 new students joining in a continental breakfast and welcome from **Dean Hal Salwasser**. The Dean introduced department heads, advisors, faculty, and staff. After breakfast, students experienced a brief history of the College, through pictures and stories told by **Ed Jensen**, Interim Associate Dean for Academic Affairs. They also learned about international opportunities through James Galloway's personal experiences from his exchange to the University of Stellenbausch in South Africa. During breakout sessions, students learned about their departments and took a brief tour of Peavy and Richardson Halls before boarding busses to McDonald Forest. With current students as their tour guides, students learned about various aspects of the research forest from the perspective of the different majors. After lunch and group introductions at the Club Cabin, the Logging Sports team demonstrated their skills, and new students were invited to join in.

Was anyone daring enough to try the "limber pole" at the Logging Sports Arena? Check out the pictures for the answer!

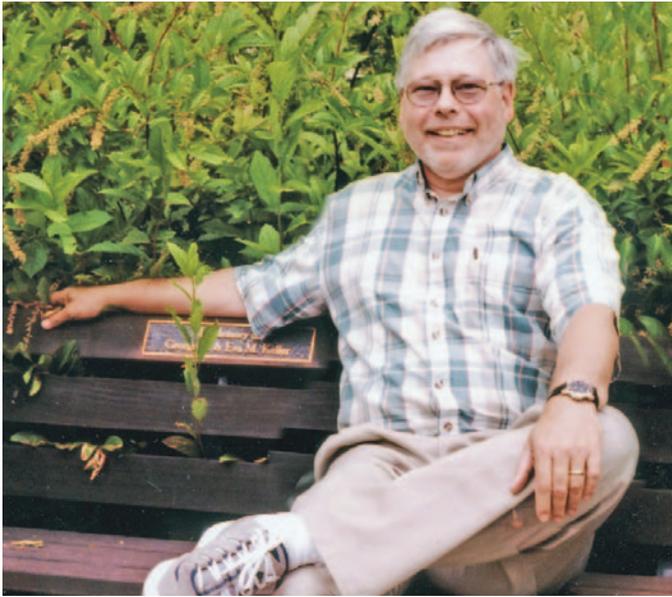


Right: "GO" Kuroda, new transfer student in FRR from Japan, our only International undergraduate for fall 2004. Below: Richard Young, (front row, fourth from right), freshman in FRR and 2004 winner of Rusty Saw award.



Facilitating High-Quality Natural Resource Education

The College of Forestry's Outreach Education Office helps to meet the ongoing educational needs of the forest industry. It also serves to enhance the public's understanding of natural resources.



Left to right: Jim Reeb, Joe Holmberg, and Nathalie Gitt.

Outreach Education is presented in a variety of formats such as short courses, workshops, field tours, institute programs, colloquia, and symposia. Many events are certified by professional societies and some are offered for regular course credit.

Associate Professor and Extension Specialist **Jim Reeb** (Wood Science & Engineering), recently accepted the position of director, part time, for the program. Reeb has a solid background in forest resources and forest products. For many years he was a customer of the Outreach Education Office as co-director of two yearly short courses: Plywood Manufacturing and Lumber Drying.

"I've always been attracted to extension and the whole idea of outreach education," he says. While Reeb is taking the position vacated by **Mike Cloughesy**, Reeb's function in the office is different. As a part-time director, he is responsible for the vision and organizational direction of the office, but leaves the day-to-day management to **Joe Holmberg**, Associate Director for Outreach Education. Reeb's goals are to improve the level of customer service and reorganize the systems infrastructure for more efficient operation. One of his first activities as director was to take the staff on a two-day, off-campus

working retreat in April.

"My goal is to become much more customer oriented," he says. "We're a service organization and we need to do the best we can for our event leaders."

Reeb says events produced by the Outreach Education Office fall into three general categories: designed educational events for forest industry professionals, issue-oriented events where scientists and industry professionals meet to discuss "hot topics" in the natural resources arena, and certificate programs or similar events for other colleges on campus.

The Plywood Manufacturing and Lumber Drying short courses are examples of designed educational events. These types of events allow industry professionals to remain current with skills and technologies in their field and perhaps gain continuing education credit.

Issue-oriented events have a slightly different purpose. They are intended to facilitate conversations about relevant topics of immediate concern among professionals in the industry. For example, as Sudden Oak Death suddenly became a concern in Oregon, the Outreach Education Office helped to quickly plan and publicize a conference for this fall, providing an opportunity for foresters, Christmas tree growers, nursery operators,

and others to receive up-to-date information on the threat posed by the disease.

Another important member of the team is Conference Coordinator, **Nathalie Gitt**. "Nathalie is our marketing and web-development expert. She ensures that the correct audience is given advance notice of education events of interest," Reeb says. The College of Forestry is unique in supporting its faculty and staff through a centralized conference planning office. While the main purpose of the office is to provide support for College of Forestry programs, it is occasionally asked to help with certificate programs for other colleges. For example, Outreach Education organized a successful Business of Pharmacy continuing education workshop series for the Colleges of Pharmacy and Business last spring.

Event planning involves organizing not only the program itself, but handling the marketing (signage, web pages, brochures, and so forth), locating and securing a facility, engaging catering services, and administering other business aspects. In 2003, the office planned and executed a total of 48 regional, national, and international events with over 3,300 attendees. Although the typical event has 10-25 participants, several pull as many as 300 participants. For larger conferences, the office likes to start planning 12-18 months in advance.

To create a large or small conference, an event leader—usually a faculty member—will contact the Outreach Education Office to discuss his or her needs. "We leave the programming up to the event leader, and we handle as much or as little of the rest as they want," says Reeb.

College Gallery Features OSU Artists

Visitors are sometimes surprised to discover that, in addition to classrooms, offices, laboratories, greenhouses, and research forests, the College of Forestry is also home to an art gallery.

The Weyerhaeuser Gallery, located on the first floor of Richardson Hall, honors the Weyerhaeuser Corporation, which provided early and critical support to the construction of the building. Weyerhaeuser's gift was the first from the forest products industry, and it set the stage for many others from industry and individual supporters. Weyerhaeuser Corporation has a long history of supporting teaching, research, and extension at the College of Forestry. The gallery stands as a lasting tribute to Weyerhaeuser's generosity.

Gretchen Bracher, scientific illustrator and graphic designer with the College's Forestry Communications Group for more than 20 years, is the director of the Weyerhaeuser Gallery. Bracher also serves as mentor to the student artists from across campus who arrange the gallery shows each term during the school year. By working with Bracher, students not only have a chance to participate in a unique, cross-campus collaborative project, but gain exposure to career possibilities for artists in science and communications.

"The College of Forestry Weyerhaeuser Gallery offers students more than just a place to show their work," says Bracher, who is also a well-known local artist. "It offers invaluable experience in managing all phases of an art exhibit, from working with other artists, to choosing and hanging pieces for display, to advertising and hosting an opening reception."

The College of Forestry and Weyerhaeuser jointly sponsor new student shows during fall, winter, and spring terms. The shows feature members of Montage, a student organization dedicated to giving art a powerful voice on the Oregon State University campus. Montage's goal is to provide a vehicle for people to express themselves, create opportunities for student artists, and promote the arts.

The next time you visit the College of Forestry, please stop by the Weyerhaeuser Gallery in Richardson Hall. As the welcoming sign says, "We hope you are inspired, amused, amazed and maybe even a little impassioned by the talent and diversity of the art students at Oregon State University."

Weyerhaeuser Gallery Director Gretchen Bracher, aka Greta Ashworth, with two of her paintings. Bracher's artwork, such as the oak leaves (below), also graces the windows, hallways, and classrooms of Richardson Hall.



Dean Salwasser, Gretchen Bracher, and students discuss paintings in the Weyerhaeuser Gallery.

Fighting Fire with Knowledge

—by Sara Zaske

Foundation seeks funds for fellowship focused on urban-wildland interface

Devastating wildfires ripped through Oregon more than a year ago, but Black Butte Ranch homeowner **McLane “Mike” Fisher** does not want his neighbors to forget the fire threat is still growing.

The College of Forestry and the OSU Foundation are working with Fisher to rally residents who live along the urban-wildland interface to support a new Interface Forestry Fellowship at OSU. If fully funded, the fellowship would support a graduate student every year to focus research and outreach on fire-prone regions.

“I hope it will help keep people educated and on their toes about what they can do,” said Fisher. “This last summer was a relatively easy fire season, and people’s guards have already come down a bit. In the long run, we can’t let our guards down.”

Mike Fisher and his wife, **Sue**, have provided the initial seed funding for the fellowship, but are hoping that concerned citizens of Oregon will come together to back the idea.

As fires in 2002 and 2003 demonstrated, interface regions are particularly vulnerable to wildfire. These past wildfires cost more than \$1.5 million, and currently there are more than 240,000 homes built close to Oregon’s natural lands.

In an effort to take forest health and fire safety information directly to impacted residents,

Hal Salwasser, Dean of OSU College of Forestry, and **Stephen Fitzgerald**, Professor at OSU Extension Forestry Program, held an October meeting at Black Butte Ranch.

The OSU scientists are promoting increased property care, bold management plans and more investment in fire science.

“We want to put researchers to work in your neighborhoods and watersheds to get ahead of the danger that waits with every dry, hot summer,” said Salwasser.

Historically, periodic, low-intensity fire is a natural part of the Cascade ecosystem. Contemporary fires, however, are less frequent but more severe. Fitzgerald attributed the current fire danger to multiple factors, including a century of fire suppression policy, failure to thin tree and shrub understories, selective logging of large, fire-resistant trees and a shift in forest composition from predominantly pine to fir. Drought, insect infestations and disease also contribute to an increased threat of wildfire.

The complexity of the problem calls for immediate and long-term solutions with the collaboration of residents, land managers, and the scientific community.

“The worst we can do is nothing,” said Fitzgerald. “The current passive management system will only cause the situation to deteriorate further.”

Homeowners on the interface should prune and thin trees, remove vegetation and woodpiles near homes, and remodel and build with fire-resistant materials. But property care alone is not enough, said Salwasser.



A Bend, Oregon home with in the 2000 Skeleton Fire raging in the background. (Photo by Tom Iraci, USDA Forest Service.)



A home that survived the Skeleton Fire. Photo by Stephen Fitzgerald, OSU.

“We need bold management activities beyond the interface that thin lots of smaller trees, reduce surface and ladder fuels under bigger older trees,” he said. “We need to return forests to conditions where fire is more natural, manageable, less costly and less damaging to both ecosystems and properties.”

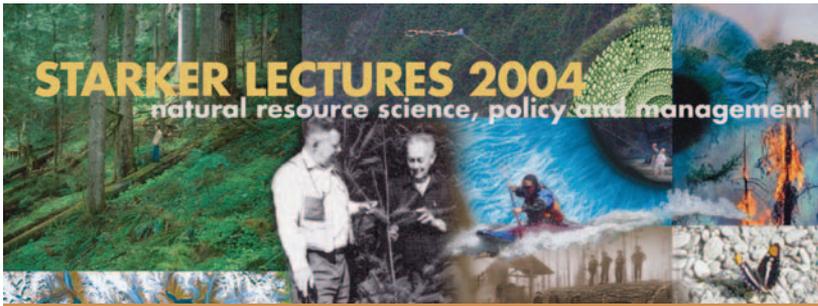
OSU is committed to expanding research, education, and outreach along Oregon’s urban-wildland interface. In addition to the fellowship, the university is currently raising private funds to endow a chair in fire science.

To find out more about these efforts, contact Lisa French, Director of Development for the College of Forestry at the OSU Foundation, 541.737.2900.

Class Notes

We were very pleased to be able to share so many news items from alums in the “Class Notes” section of the summer *Focus on Forestry*. Thank you for your contributions!

We hope to make “Class Notes” a regular part of the summer *Focus* each year. Please look for the postcard in the spring 2005 issue of the *Focus* or send your news by email to FocusOnForestry@oregonstate.edu any time. We will collect your contributions throughout the year and will publish them altogether in the summer 2005 *Focus*.



“Society and Forest Health: Exploring the Links”

October 21
Char Miller

“The Greatest Good:
100 Years of Forestry
in America”

4:00 PM
107 Richardson Hall

November 4
Panel: Victoria
Sturtevant,
Jack Shipley,
Marty Main

“The Role of Fire in
Creating Proactive
Community Involvement
in Forest Management”

4:00 PM
107 Richardson Hall

November 18
Tom Knudson

“Conserving Ours,
Consuming Theirs”

4:00 PM
LaSells Austin
Auditorium

December 2
James Agee

“The Role of Fire in
Forest Restoration”

4:00 PM
LaSells Construction
and Engineering Hall

The Starker Lecture Series can be viewed live in streaming video at <http://oregonstate.edu/media/live/> (RealPlayer plug-in required). The lecture series will also be broadcast on local cable television (Channel 27) as well as on OPAN (Oregon Public Affairs Network) and numerous cable outlets throughout Oregon.

For more information, contact the Forestry Outreach Education Office, Oregon State University, 202 Peavy Hall, Corvallis, OR 97331-5707. Phone: 541-737-2329; fax: 541-737-4966; web: www.cof.orst.edu/starkerlectures/



Zak Hansen ('03) recently joined the College of Forestry's development team at the OSU Foundation as Assistant Director of Development. Hansen holds a BS from the OSU College of Business. He is a Corvallis native and small timberland owner, and has several relatives in the timber and logging industries. He will be working to build strong ties between alumni and the college and hopes to increase the number of scholarships and fellowships gifted to the college. Hansen is looking forward to meeting with many alumni across the country.

Our Sincere Thanks ...

Michael and Jane Newton have generously made an additional gift of timber valued at \$214,300 to benefit the Newton Forest Research Fund. This gift will go toward building an endowment that will support long-term silvicultural research.

Edmund “Ned” Hayes, Jr. has made an additional gift of \$10,000 to support the Hayes Fellowship in the Forest Science department. The Fellowship supports master's or PhD candidates who are working on practical problems associated with forest management.

The **Weyerhaeuser Foundation** continues to support the Weyerhaeuser Graduate Research Fellowship Fund in Forest Science.

The **Gibbet Hill Foundation** continues to be a generous donor to the College of Forestry. The Foundation recently gifted \$90,000 to the Gibbet Hill Graduate Fellowship Fund in the Forest Engineering department. The Foundation also contributes about \$30,000 each year to support the Lee Harris Memorial Laboratory, a key computing facility used by graduate students in the Forest Resources Department.

Considering making a gift? If you are considering making a gift to the College of Forestry, please contact Lisa French, Director of Development, with any questions. Lisa may be reached by phone at 541.737.2900 or email at lisa.french@oregonstate.edu.

Outreach Event Calendar 2004-2005

October 18-21, Klamath Falls, OR

Ponderosa Pine: Management, Issues, and Trends

October 26-27, Binghamton, NY

Northeast Utility Pole Conference

November 16, Eugene, OR

Swiss Needle Cast Conference

November 17, Eugene, OR

Sudden Oak Death and Forestry Workshop

December 6-9, Corvallis, OR

How to Dry Lumber for Quality and Profit

December 9-10, Corvallis, OR

Introduction to GIS Applications in Natural Resources with ArcGIS

February 27-March 2, Corvallis, OR

Forest Products Management Development

April 11-15, Corvallis, OR

Variable Probability Sampling

June 20-24, Corvallis, OR

5th International Conference on Forest Vegetation

To find out more, visit <http://outreach.cof.orst.edu/schdevtdates.php>

**FOCUS ON FORESTRY**

Forestry Communications Group
Oregon State University
256 Peavy Hall
Corvallis, OR 97331-5704

Non-Profit Org.
U.S. Postage
PAID
Corvallis, OR
Permit No. 200