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# FORESTRY



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**3 Dean's Column  
College News**

**4 Feature:** *Strategic Initiatives Program Update*

**6 Feature:** *Cooperatives Provide Major Benefits to Researchers*

**Forest Resources**

**11 Feature:** *FCI: Forest Crime Investigations*

**12 Feature:** *The "Whitewater Guy"*

**Forest Science**

**14 Feature:** *Forestry Team Studies Amphibian Populations at Multiple Spatial Scales*

**16 Feature:** *Researching Fire Ecology in Riparian Zones*

**Wood Science and Engineering**

**17 Feature:** *Hurricanes Prove the Need for Wood Construction Education*

**19 Feature:** *Thinking Small?*

**Forest Engineering**

**20 Feature:** *FEI Program Goes International*

**22 Feature:** *Hinkle Creek Calibration Phase Complete*

**Student News**

**23 Feature:** *Forestry Students Help Rebuild Fort Clatsop*

**Foundation News**

**24** *The Richardson Impact!*

**26** *Seeing the Forest through the Trees*



Cover photo—The cover photo was taken by **Rakesh Gupta**, who served on the Woodframe Damage Assessment Team, supported by the National Science Foundation. The team toured Gulf Coast areas devastated by Hurricane Katrina to examine the effects of the storm on wood frame houses and light commercial buildings. See story, page 17.

**Alumni Bulletin Board Goes Live!**

Visit the new, online interactive community designed for College of Forestry alumni at <http://www.cof.orst.edu/service/alumni/bb/>

Connect with classmates, share stories, browse the message boards, and find info about upcoming events. You can even visit the "Alumni Only" sections for career networking and discussions on current issues in Forestry. It's easy to get started—just follow the registration link at the top of the page. See *you online!*



We've been at the center of a lot of public scrutiny over the past few months concerning differences in scientific perspectives on post-fire activity and forest restoration. This is a truly complex ecological and policy issue that warrants both short-term studies that take advantage of events as they occur and long-term, well-designed, replicated field studies to increase the data and understanding of the subject and the variability associated with it. Given this complexity and variability, it is natural that scientists will continue to sometimes reach differing conclusions as they pursue various hypotheses regarding how forests recover with or without management intervention. This is the normal course of science: a

continuous process that builds on and expands past research in the search for greater understanding.

Diversity in perspectives and research designs within this College on important issues of public concern ensures that public understanding and policies are more fully informed on possibilities and potential consequences of choices. Our faculty, our research assistants and our graduate students bring a tremendous diversity of experience, knowledge, and enthusiasm to science. These are key components of a robust scientific process. In our College, they have served society well for nearly 100 years. The recent controversy over post-fire regeneration and salvage logging research in southwestern Oregon reminds us to be ever watchful for issues related to academic freedom and responsibility.

This issue of *Focus* provides a timely overview of the broad range of natural resource issues being studied at OSU. The updates on our Research Cooperatives tell you about this important part of our land grant mission. Co-ops have been highly successful partnerships between our scientists, landowners, industry, and public agencies. Each co-op has been created and maintained to apply science and leverage the efforts of involved participants to solve specific, immediate needs within the membership group. The beauty of the co-ops is that their results, findings, and recommendations eventually move to the broader public arena.

The status report on our Strategic Initiatives Program shows the progress that has been made in the past couple of years. These programs were started with "seed money" from our Foundation gift accounts. Each area of investment was selected after a rigorous internal review that considered each project's potential for improving economic, social, and/or environmental conditions in Oregon. Initiatives such as the Watersheds Research Cooperative and the Oregon Wood Innovation Center have caught the imagination and support of many—making positive forward motion. Our scientists remain committed to each concept, and these will be the cornerstones of our funding requests for the next biennial legislative session.

This issue also highlights individual successes! Our annual Dean's Awards recognized some of the outstanding achievements by people in the College. A number of graduate students completed their programs this winter. Our students have provided a strong helping hand in the rebuilding effort for Fort Clatsop. We also recognize the lasting impact of gifts on College education and research; the positive results to faculty and students last far beyond the initial donation.

Finally, I invite you all to Fernhopper 2006. This is the kick-off for a year of celebrating the 100th year of Forestry at OSU. We feel a whole year is appropriate to celebrate and honor the contributions of the College and its alumni to Oregon, and to forestry in the broadest sense.



The College of Forestry has again taken the Top Banana and Pot of Gold awards from Linn Benton Food Share! The Top Banana award is given for the most pounds of food—converted with cash and food added together. We were credited with 46,945 pounds of food. The Pot of Gold goes to the group with the most cash donated.

**Congratulations, everyone!**

If you'd like a easy way to continue to support local Food Pantries during the remainder of the year, **Coupon Clippin' Connie** will still happily accept your Sunday newspaper coupon inserts. During the Food Drive competition, the College contributed 154 items she was able to obtain free of charge using coupons. There are envelopes outside her office (Peavy 119) and in the lounge, RH 223. **Thanks!**

# Strategic Initiatives Program Update

by Marie Oliver

**E**ffective September 2003, the College invested \$600,000 from Richardson Endowment earnings to spearhead six projects under the Strategic Initiatives Program. Each of the four departments, the Cascades Campus, and a project in innovation management received seed money to move ahead on projects that were synchronized with the College's strategic plan.



## Forest Resources: Wildland Fire Science Program

With its Strategic Initiatives Program funding, the Forest Resources Department supported the wildland fire science research projects of two graduate students and provided support for curriculum development in wildland fire.

Under Professor Emeritus **John Tappeiner's** guidance, master's candidate **Brad Eckert** prepared a professional paper that covers the history of fire in the Deschutes National Forest. The paper provides an overview for general readers, in addition to a more detailed examination for forestry professionals.

Eckert also established some field study sites in the Deschutes National Forest that will help students to better understand how fire operates in such ecosystems. "It will provide real-world, on-the-ground experiences for students, as opposed to reading about it in a textbook or listening to a lecture," says **Jack Walstad**, department head.

Master's candidate **Danielle Robbins'** research on the B&B fire in Central Oregon was also supported by Initiatives Program funds. Robbins' work describes how weather and stand conditions affected the evolution of the wildfire over the two- or three-week

period that it developed.

In addition, funds were used to begin the process of revamping the Forest Management degree program to allow for options. Options would consist of 21 credits of coherent course work focused in a particular area. The Wildland Fire Science is intended to be one such option. The plan is in the beginning stages of the curriculum revision process.



## Forest Engineering: Watersheds Research Cooperative

The Forest Engineering Department used Initiatives Program funding as seed money to launch the Watersheds Research Cooperative (WRC). The first project under WRC is the Hinkle Creek Paired Watershed Study, located in Douglas County. The Cooperative's goal is to facilitate the installation of several new paired watershed studies throughout the state, says **Arne Skaugset**, director of WRC and co-principal investigator on the Hinkle Creek project.

The goal of WRC is to support research and outreach on the environmental effects of contemporary forestry practices on aquatic systems, with a current focus on a paired watershed study design. The Cooperative is in conversation with the National Council for Air and Stream Improvement, Plum Creek, the Oregon Department of Forestry, Weyerhaeuser, and others about aligning new watershed research projects under the umbrella of WRC. Also, partnering with scientists in Idaho, California, and Texas, WRC is sponsoring a session at the 2006 annual meeting for the North American Benthological Society in British Columbia on research in headwater watersheds.

"We are exploring opportunities to expand WRC into a multi-state consortium,"

says **Steve Tesch**, Forest Engineering department head. "Long-term, watershed scale studies are very expensive and that typically means no one organization ever has enough data to adequately support broad scale inferences. We can create some valuable synergy if we are able to share data across state boundaries and varying environmental conditions, and develop new tools for comparing results." (See related articles on pages 9 and 22.)



## Forest Science: Planted Forest Initiative

The goal of the Forest Science Department's Planted Forest Initiative (formerly called the Intensive Forest Management Initiative) is to develop innovative systems of integrated silvicultural and operational practices that increase the productivity and value of planted forests in the Pacific Northwest. The initiative aims to improve the competitiveness of the Pacific Northwest in the global wood market.

In the past 30 years, studies have been done on genetics, tree improvement, seedling development, early plantation growth, fertilization, and other aspects of planted Pacific Northwest forests. However, the initiative proposes to fill the unmet need in the comprehensive understanding of how these different components combine to form complete management systems.

"We need to start pulling all these pieces together and come up with the optimal set of treatments for each specific situation," says **Tom Adams**, Forest Science department head.

The Initiatives Program provided some impetus to begin the process. **Andrew Moores, Klaus Puettmann, and Doug Maguire** are conducting a thorough literature search in order to achieve a better understanding about what is currently



known about plantation silviculture and to identify knowledge gaps. They are developing a user-friendly, web-searchable database of relevant literature that will make it easier for forest managers to locate information that is pertinent to their particular needs.

### Wood Science and Engineering: Wood-based Building Durability Research

The Wood Science and Engineering Department originally wanted to study durability issues for wood-based building products with its portion of the Initiatives Project funding. “The single greatest barrier to increased use of wood products is the lack of durability,” says **Tom McLain**, department head. “We prematurely replace over a billion dollars worth of wood products every year that failed because they were used inappropriately.”

Some progress was made on trying to understand the effect of durability issues on performance of wall systems, particularly when mold and fungus were an issue. “Questions arose about what would happen if moisture gets into a building,” says **Jeff Morrell**. “What are the implications for the performance of the building in an earthquake or a wind load—will it perform as designed?” Research teams worked toward quantifying moisture and fungal attack.

Unfortunately, progress on that plan was halted by the loss of key engineering faculty members, requiring a revamping of the approach to the problem. The focus has now shifted toward creating more durable composite materials. “We’re interested in whether we could generate a material that wouldn’t just sit there and get moldy, but would be capable of keeping fungi off for a period of time until it could be dried,” says Morrell.

### Colleges of Business and Forestry: Targeted Education in Innovation Management

Initiatives Program funding made it possible for the College to commence targeted conversations with industry leaders to better understand how Oregon can keep up with the expanding global marketplace. “Our investment in the innovation initiative helped us to begin to better understand what’s going on in the industry with respect to innovation,” says Professor **Eric Hansen** (Wood Science and Engineering), who spent several months interviewing industry professionals.

In addition to strengthening ties with the College of Business, the Initiatives Program made it possible to jumpstart the new Oregon Wood Innovation Center (OWIC), a joint program of the College of Forestry and OSU Extension Service. The OWIC will allow the college to work more closely with private industry, improve the competitiveness of Oregon’s forest sector, help the state preserve jobs, and better adapt to the challenging global environment.

“For Oregon’s industry to survive and prosper, it must focus on innovation,” says **Scott Leavengood**, director of the OWIC. The intention is for OWIC to play a key role in bringing groups together, providing technical and business assistance, conducting targeted research, and ensuring that Oregon wood products are competitive in the world arena. In addition, a broad range of innovation could help some smaller companies survive and play roles in diverse land management programs.



### Cascades Campus: Outdoor Recreation Leadership and Tourism Program

The Outdoor Recreation Leadership and Tourism (ORLT) program, housed on the Cascades Campus, was enhanced through Initiatives funding. Under the administrative leadership of the Forest Resources Department and in partnership with Central Oregon Community College (COCC), the ORLT program is designed to provide the business, communication, and other skills necessary for success in the growing tourism industry. It is the only bachelor’s degree program in commercial recreation offered in Oregon.

“We have offered a recreation degree in the College of Forestry in Corvallis for many years,” says **Kreg Lindberg** (associate professor, Forest Resources), who teaches in the ORLT program and conducts research in tourism. “The new program offers a stronger focus on tourism and the private sector, emphasizing the business side of natural resources.”

The ORLT degree program began in fall term 2003 with 5 students, and currently has approximately 45 students enrolled. “We’re drawing students from Oregon and around the country,” says Lindberg. In addition, Lindberg is pursuing international student exchange opportunities. Initiatives Program funds have also helped Lindberg pursue innovative research in this emerging area of outdoor recreation.

Students take all lower division courses at COCC, then transfer to the Cascades Campus to receive education in advanced business skills, recreation and tourism management and policy, outdoor experiential education, and specialty area theory and practice. Specialty options for the degree include tourism and commercial recreation management, international ecotourism, and outdoor and experiential education.

# Cooperatives Provide Major Benefits to Researchers

by Marie Oliver

The College of Forestry houses nine research and service cooperatives that bring together researchers, industry representatives, and government agencies to foster better communication on targeted research subjects, provide for greater funding opportunities, accelerate research activities, and leverage expertise in a focused area. The College cooperatives and their current research foci are reviewed below.

Seven of the nine cooperatives are housed in the Forest Science Department. “They really are cooperative in every sense of the word,” says **Tom Adams**, Forest Science department head. “The co-ops are one of the main ways we interact with landowners—especially larger industrial landowners—and state and federal agencies in the region on issues related to forest biology. They reflect an effort to try to meet landowners’ needs in terms of improving plantation success and protecting planted forests.”



## Hardwood Silviculture Cooperative

The Hardwood Silviculture Cooperative (HSC) was established in 1988. Located in the Forest Science Department, its mission is to conduct high-priority silvicultural research on hardwood species and mixed hardwood/softwood stands in the Pacific Northwest. Heightened interest in hardwoods has



increased questions about techniques of reproduction, management, harvesting, processing, and marketing. While much progress has been made, questions remain about nursery practices, timing and density of spacing activities, growth, and yield.

The Hardwood Silviculture Cooperative, whose members include representatives from state and federal agencies and the forest industry, is effectively increasing and accelerating the level of hardwood silvicultural research in the region and providing information that will improve the management of hardwood stands. Red alder is the species of primary, but not exclusive, interest.

The HSC’s study design includes 36 installations from Coos Bay, Oregon, to Vancouver Island, British Columbia. These include 4 thinning studies in natural stands, 7 replacement series studies of red alder/Douglas-fir mixtures, and 26 variable density plantations with thinning and pruning treatments. These plantations are now up to 17 years old. Massive amounts of data are being collected, archived, and used in various data analyses.

Current goals include creating a red alder growth-and-yield model and developing taper equations for alder plantations. Significant progress was made on those goals and others in 2005. In addition, the Cooperative co-sponsored the symposium titled “Red alder: A State of

Knowledge” in Seattle in March 2005, which was attended by approximately 180 people. Regional experts discussed topics such as the economic, ecological, and social values of red alder.

## Northwest Tree Improvement Cooperative

The Northwest Tree Improvement Cooperative (NWTIC) oversees cooperative breeding and testing of Douglas-fir and western hemlock by 31 forestry companies and agencies in the coastal region of northern California, Oregon, Washington, and British Columbia. This work is done in first- and second-generation breeding and testing cooperatives, and its products are deployed on ownerships totaling more than five million acres of commercial timberland. Only conventional methods of breeding, testing and selection are used, based on the genetic variation naturally present in wild trees of these two species.

Cooperative tree improvement started in the Pacific Northwest in 1966 through a partnership—called the IFA-Progressive Tree Improvement Program—between the U.S. Forest Service’s Pacific Northwest Forest and Range Experiment Station and the Industrial Forestry Association. The NWTIC was formed in 1985 to continue the services provided by that partnership.



In April 2000, NWTIC moved to the Forest Science Department at OSU.

The Cooperative guides the technical aspects of implementing tree improvement programs, analyzes and interprets genetic test data, stores test data and breeding records, and provides expertise and training in tree breeding. Current emphases include genetic gain predictions for first- and second-generation programs using Best Linear Unbiased Prediction; efficient installation, maintenance, analysis and interpretation of second-generation progeny tests; installation and measurement of genetic gain verification trials for Douglas-fir in southwest Washington and western Oregon; designing third-cycle breeding and testing strategies; and ensuring the levels of genetic gain desired by cooperators in their operational plantations.

### Nursery Technology Cooperative

Because of the importance of the forest nursery industry to reforestation success, the Nursery Technology Cooperative (NTC) was officially established in 1982 and housed in the Forest Science Department. Its membership encompasses nurseries, timber companies, and state and federal agencies, and its objective is to improve the productivity of Pacific Northwest forests through the use of advanced seedling technology to achieve optimal regeneration. With an integrated program of coordinated studies, information sharing, and technical assistance, the Cooperative

focuses attention on all aspects of nursery management and reforestation practices, especially their consequences for seedling field performance.

The Cooperative helps members develop nursery cultural practices that consistently produce the best quality seedlings for specific sites at the lowest possible cost, develop better techniques to define seedling quality, develop regeneration techniques to maximize seedling growth, and promote information sharing among nurseries and other nursery-related groups such as reforestation personnel. In addition, NTC offers a seedling quality testing service and hosts conferences and workshops on various reforestation topics. Project areas addressed by NTC have examined forest seedling nutrition, stock-type performance, integrated pest management practices, seedling morphological quality, root development, physiological responses to silvicultural treatments, and effectiveness of new products, equipment, and techniques used in reforestation.

Currently, NTC is conducting research on fall planting to determine the optimum outplanting environment. The data will help foresters to predict field performance based on date, soil temperature and soil moisture, thereby expanding the available planting window. In addition, NTC currently has projects to examine reforestation following wildfire, herbicide efficacy in the nursery, media amendments for container-grown seedlings, influences on seasonal cold hardiness, and field planting techniques.

### Pacific Northwest Tree Improvement Research Cooperative

The Pacific Northwest Tree Improvement Research Cooperative (PNWTIRC) was formed in 1983 in response to concerns expressed by forest geneticists that research efforts were not adequately keeping pace with the rapid expansion of applied breeding programs. Housed in the Forest Science Department, the cooperative brings together representatives from government and industry to conduct genetics and breeding research on Pacific Northwest tree species. The primary goal is to provide information that will enhance the efficiency of tree improvement efforts.

The Cooperative emphasizes region-wide problems dealing with major coniferous species. It is concerned with tree breeding and mass production of genetically improved materials. The intent is to complement and supplement research by other organizations in the region, avoid duplication of effort, and foster communication among tree improvement workers. Recent PNWTIRC studies include the following:

1) *Douglas-fir genetic markers and pollen contamination*—Measuring pollen contamination and characterizing mating patterns based on seed samples, thus illustrating that



Simple Sequence Report (SSR) markers are powerful tools for characterizing seed lots and improving the design and management of Douglas-fir seed orchards.

2) *Miniaturized seed orchards and early flowering*—Measuring the benefits of miniaturized seed orchards, where trees are planted close together and maintained at shorter heights and managed intensively to speed genetic gains in reforestation programs.

3) *Wood quality and candidate gene markers*—Understanding the genetics of Douglas-fir wood stiffness and strength in order to make recommendations for incorporating wood stiffness and strength into breeding programs, evaluate the relationships between fundamental wood properties versus wood stiffness and strength, and determine whether candidate gene markers can be used to predict wood quality phenotypes. This is a collaborative project with the Stand Management Cooperative at the University of Washington, and the University of California at Davis.

### Swiss Needle Cast Cooperative

The Swiss Needle Cast Cooperative (SNCC) was established in January 1997 and is located in the Forest Science Department. Private, county, state, and federal organizations in the Pacific Northwest comprise the membership of SNCC. Swiss needle cast, a native foliage



disease that affects Douglas-fir, has caused extensive damage, and SNCC is seeking to learn practical methods of disease detection and management to maintain the health and productivity of Douglas-fir plantations.

The SNCC focuses on the biology, detection, and management of Swiss needle cast in Douglas-fir, specifically researching biology and genetics of the disease pathogen, tree physiological dysfunctions, aerial and ground survey technology, disease hazard and risk rating, tree resistance and genetics, growth and yield impacts, and strategies for control. The Cooperative offers training and workshops on research and survey results, provides newsletters and research reports, and serves as a focal point for information on Swiss needle cast.

New research projects supported for 2006 include developing a Swiss needle cast module for ORGANON (an individual tree growth model), supporting a regional fertilization study that will also investigate the hypothesis that nutrient imbalances may affect Swiss needle cast severity, investigating the impacts of Swiss needle cast in the Cascade Mountains of northern Oregon by re-measuring permanent plots installed five years ago, re-measuring Douglas-fir plantation plots that were treated with sulfur in 2002 and 2003, and investigating the below-ground microbial community in Swiss needle cast-impacted stands.

In addition, SNCC continues to support the Oregon Department of Forestry's annual Swiss needle cast aerial survey and long-term plots investigating growth impacts and pre-commercial thinning.

### Tree Biosafety and Genomics Research Cooperative

First established in 1994, this Cooperative is housed in the Forest Science Department for the purpose of conducting genetic engineering research. It was originally called the Tree Genetic Engineering Research Cooperative (TGERC). It became a National Science Foundation Industry/University Research Center in 1999. In 2004, the name was changed to Tree Biosafety and Genomics Research Cooperative (TBGRC) to better reflect the Cooperative's emphasis on biosafety



technologies and its expanded studies of the functional genomics of trees. Membership includes government and industry representatives.

The goal of TBGRC is to conduct research, facilitate technology transfer, and provide education to promote the beneficial uses of genetically engineered trees in plantations. The TBGRC seeks to test and develop select innovations based on progress in molecular biology and agricultural biotechnology that will ultimately have commercial value to wood-growing and horticultural industries.

Research is currently focused on poplars as scientific models for genetic engineering and functional genomic studies. Experiments are aimed at discovering genes with major value for controlling fertility, flowering onset, crown form, wood quality, and stature. Projects are focused on sterility, stability of trait expression, domestication, microarrays, gene discovery, and gene validation. A key theme of TBGRC research is identification and testing genes that can promote both economic and environmental benefits.

### Utility Pole Research Cooperative

For decades, detection and control of decay in utility poles posed a major challenge for utilities. The College of Forestry had long been active in utility pole issues, but the development of fumigants in the 1960s led

to an increasing emphasis on improving the performance of wood poles. In 1980, the Utility Pole Research Cooperative (UPRC) was established in the Forest Products Department (now WSE) to develop new fumigants and assess the effects of air seasoning on pole properties. Over the past two-and-a-half decades, the focus of the Cooperative has changed to address a variety of wood-related issues that improve the performance of wood and help to make utilities more competitive.

Members of UPRC, which include utility companies and chemical companies, have access to information on solutions to a variety of wood issues. In addition, members have input on what problems are addressed and, in many cases, the information developed originates from poles in their systems. They also have the opportunity to exchange information with other wood users and identify similar problems. This component of the cooperative has become increasingly important as deregulation has pitted utilities against one another and limited the potential for exchange.

The UPRC's current objectives include identifying and evaluating methods for controlling internal decay in poles, identifying methods for field treatment of surface damage to treated wood, developing improved specifications for wood poles, evaluating the effectiveness of external groundline treatments, and developing information on performance of new preservatives for wood poles.



### Vegetation Management Research Cooperative

The Vegetation Management Research Cooperative (VMRC) was created in 1993 out of the reorganization of a previous vegetation management cooperative (CRAFTS). The mission of VMRC is to conduct applied reforestation research of young plantations, from seedling establishment through crown closure, with an emphasis on operational vegetation management, and to promote reforestation success, such that survival, wood-crop biomass, and growth are maximized while protecting environmental resources.

The VMRC has made great strides in initiating research and publishing findings since its creation. As of 2005, the VMRC has produced nine peer-reviewed journal articles, five conference proceedings, one PhD dissertation and three master's theses. In addition, VMRC staff regularly present research results at regional and international conferences.

The Cooperative is located in the Forest Science Department and membership is composed of private and state organizations. Current goals include developing vegetation management systems that increase seedling success after planting, while enhancing and/or maintaining forest resources and exceeding regulatory requirements; developing threshold levels for various

competitor species on crop-tree growth; developing and evaluating techniques such as tillage, stock size and quality, planting, and nutrition; and facilitating information exchange and technical transfer among participating organizations and other related groups.

### Watersheds Research Cooperative

The Watersheds Research Cooperative is the newest cooperative in the college. Established in 2003 and administered through the Forest Engineering Department, its overarching goal is to collect, disseminate, and apply information regarding the effects of contemporary intensive forest management practices on water quality, fisheries, and aquatic habitat. A goal is for the knowledge and technology developed by the cooperative to inform the Oregon Forest Practices policy process regarding protection of headwater streams and areas adjacent to fish-bearing streams. The process seeks to provide adequate protection of water and fish without imposing unnecessary forest practice rules that would restrict harvest and management practices.

The WRC currently focuses on Oregon, but future collaboration may include scientists and projects in Washington, Idaho, Montana, northern California, and British Columbia. It plans a new series of long-term paired watershed studies that will evaluate the cumulative environmental effects of contemporary forest management practices on younger managed forests. These studies will be designed to provide credible scientific information plus opportunities to convey science findings through demonstration and public education opportunities. The OSU Colleges of Forestry and Agricultural Sciences, federal and state agencies, and private sector scientists and managers are collaborating to provide scientific and managerial leadership in support of the evolving need to calibrate forest practices with societal goals for water and fisheries.

The Hinkle Creek Paired Watershed Study is the first project of the WRC. (See related stories on pages 4 and 22.)

## Dean's Awards for Outstanding Achievement



Congratulations to the recipients of the 2005 Dean's Awards! The honorees are as follows:

**Jim Kiser**, Service, in recognition for his exceptional devotion and dedication to the success of students. A well respected and sought after mentor, advisor and colleague.

**George Swanson**, Service, in recognition of exceptional efforts in student recruitment and outreach, which have led to increased awareness of and enrollment in the College of Forestry.

**David Zahler**, Service, in recognition for the exceptional enthusiasm and creativity he brings to every collaboration and task. He represents the epitome of service.

**Jeff Wimer**, Advising, Mentoring, and Undergraduate and Graduate Instruction, in recognition of exceptional dedication and skill as an advisor, mentor, teacher, and program leader for the Koller Crew.

**Bruce Shindler**, Research/Scholarship, in recognition of an outstanding record of leadership and innovative research accomplishments.

**Susan Sahnaw**, Extended and Continuing Education, in recognition of outstanding leadership and collaborative efforts as director of the Oregon Forestry Education Program.

**Penny Wright**, Support Staff, in recognition of an outstanding leader who has furthered the mission of the College and provided support above and beyond her job expectations.

**Doug Mainwaring**, Faculty Research Assistant, in recognition of outstanding leadership and administrative skills as interim director of the Swiss Needle Cast Cooperative.

**Badege Bishaw**, International, in recognition of his significant contribution as a key player in international forestry issues. He is an outstanding ambassador for the College of Forestry.



Top row: Jim Kiser (FE); George Swanson (WSE); David Zahler (FMC).  
Middle row: Jeff Wimer (FE); Bruce Shindler (FR); Susan Sahnaw (OFEP).  
Bottom row: Penny Wright (FS); Doug Mainwaring (FS); Badege Bishaw (FS).



## The Telly Awards

The College of Forestry's "Get the Big Picture" recruiting DVD was just awarded a 2006 Silver Telly Award in the recruiting film and video category. The Telly Awards are given every year for the best achievements in local, regional, and cable television commercials and programs, as well as the finest film and video productions. Kudos to **Debbie Bird McCubbin**, **Jeff Hino**, and the whole DVD production team! Watch for the silver statue (made by the same firm that manufactures the Oscar!) on display soon in Student Services.

# FCI: Forest Crime Investigations



## Researchers investigate crime in national forests and recreation areas

With the summer travel season just a short month away, College of Forestry researchers once again remind recreational forest users to have a good time, but use caution while camping, hiking, and biking on our public lands.

“We don’t want people to be terrified of going camping or enjoying the outdoors or to take inappropriate steps, such as carrying weapons,” said **Jo Tynon**, Assistant Professor in Forest Resources and an expert on crime on Forest Service lands. “But they need to realize that the concerns we used to associate with an urban setting are now much more common in the outdoors, and people should act accordingly.

Crime also affects those who help manage forests with impacts such as timber theft, resource damage due to arson or fire carelessness, and research projects being vandalized. “Another significant consideration is for those working in the forest and their personal safety,” notes **Michael Wing** (Assistant Professor, Forest Engineering). Forest worker safety may be threatened by individuals or groups that are involved in illegal activities in the forest, such as

drug production or concealment.

Tynon and Wing, in collaboration with researchers from the USDA Forest Service, are using geographic information systems (GIS) to identify “hot spots” of crime and the types of crimes that may be associated with them. An analysis of national forests in Oregon and Washington, for example, identified some particular



Michael Wing

trouble areas east and west of Seattle; along the Columbia Gorge National Scenic Area; in parts of northeastern Oregon; and in portions of the Oregon coast, especially in the Siuslaw National Forest, which logged 49 felonies. The Oregon Dunes



Jo Tynon

National Recreation Area south of Florence had 2,114 reported crimes in 2003 and 2004. Most were misdemeanors, but the list included nine felonies.

A variety of causes lead to these increasing concerns. Urban populations are growing, more of the crime issues that used to be associated with large cities are spreading, and law enforcement agencies in the national forests and other natural areas are now facing unanticipated challenges. The number of crimes and related incidents in national forests and grasslands doubled in one recent five-year period, while the number of law enforcement officers was the same or lower. About 35% of law enforcement officers in the U.S. Forest Service have been assaulted.

“There are fewer rangers in the woods now than there used to be, while population growth and use of public lands has soared,” Tynon notes. “And we have people who signed on expecting to deal primarily with natural resources law enforcement, like catching



### Successful Forest Resources Graduate Students — Congratulations!

Erin Kelly, MS

“People in the Forests: Interactions between Community and Forest Health in Wallowa County”

Sara Thompson, MS

“Traditional Ecological Knowledge and Tribal-Federal Collaboration: A Look at Three Case Studies in the Western United States”

### Jo Tynon and Michael Wing’s research on forest crime has garnered increasing attention and interest across a range of disciplines, as is evidenced by these forthcoming or recent publications:

Wing, M. G. & J. F. Tynon. (in press). Crime mapping in the national forests. *Journal of Forestry*.

Tynon, J. F. & D. J. Chavez. (2006). Crime in national forests: A call for research. *Journal of Forestry* 104 (2).

Tynon, J. F. & D. J. Chavez. (2006). Adapting a tourism criminal typology: Classifying outdoor recreation crime. *Journal of Travel Research* 44 (298-307).

Chavez, D. J., J. F. Tynon, & N. Knap. (2004). Reducing crime and violence on public lands: Case studies in the USDA Forest Service. *Journal of Park and Recreation Administration* 22 (3): 22-38.

timber thieves, who are dealing with domestic violence, sexual assaults, drug cultivation or methamphetamine production, body dumping, and gang murders.”

On some western forests, individual law enforcement officers patrol an average of 378,000 acres. “Law enforcement officers are doing the best they can in a very difficult situation, while being subjected to verbal threats, abuse and physical attacks,” she says. “Backup might be an hour away, assuming they can even get radios or cell phones to work in some of these remote locations.”

According to Tynon, the general public appears to be only marginally aware of the increasing severity and frequency of crime in outdoor settings. “Right

now, I don’t think there’s all that much effect on tourism and recreation behavior because not that many people know what is going on,” she says. “If anyone does provide cautionary information, it’s usually about the risks of cougars or bears or drowning.” That’s changing, however. The Forest Service and U.S. Bureau of Land Management have now

begun to include information in their brochures about meth labs, and have asked recreation visitors to report suspicious behavior.

One of the problems—and a key point made by Tynon—is that hard data on the magnitude of this issue is difficult to obtain. Law enforcement agreements between the Forest Service and local, county and state police can result in several agencies tracking crime. Geographical isolation, understaffed law enforcement, and multiple jurisdictions can contribute to crime on national forests going unnoticed, under-reported, reported elsewhere, or unavailable. It’s likely this is also a problem in national parks, state parks, and other public recreation lands; however, research on these topics has been a low priority in the past.

According to both Tynon and Wing, more research on crime in national forests is necessary and long overdue. Studies are needed that identify the level of crime, how it is spatially distributed, what special techniques work most effectively for mitigating crime in a recreation setting, and how increasing levels of crime and violence affect recreation behavior. In addition, more information is needed about the impacts of crime on forest resources and productivity, including worker safety.

Wing and Tynon have also submitted research proposals to develop a spatially based model for predicting areas that are likely to host drug production sites. “This is emerging research but we believe it maybe possible to provide guidance on where to focus efforts for detecting drug production sites” says Wing.

“At this point, we almost have more questions than answers,” Tynon says. “Our research has focused on the national forests, but there’s evidence that there are similar problems in national parks. Some political and agency leaders are beginning to get concerned about these issues, and understand that we need to learn more about crime in national parks and national forests.”

Until then, Tynon has one simple piece of advice: “Anything that can happen in the city can happen in the woods,” she said. “If you visit our wonderful parks and forests, we want you to be alert and to be safe.”

*Excerpted in part from an article by David Stauth, OSU News and Communications Service*

## The “Whitewater Guy”

by Marie Oliver



**P**rofessor Bo Shelby

of Forest Resources has long had a reputation as OSU’s “whitewater guy.” That academic reputation had something to do with why he was chosen as one of 50 kayakers nationwide to be paired with a “classic river” in Tyler

Williams’ book *Whitewater Classics*. Another less academic reason is that in 1980 Shelby was the second person to run the Alsek River’s Turnback Canyon in the wilderness of Canada—a now-classic whitewater run previously considered “unpaddleable.”

Although his reputation in whitewater circles may be well-deserved, the depth of his knowledge and experience about rivers is more far-reaching. “Whitewater is a common ingredient in most of the projects I’ve worked on, but not all of them,” he says. With more than 30 years of river research behind him, he has completed studies on approximately 100 rivers in the United States—some more than once. He is often the “institutional memory” on revisited projects, including studies on the Rogue and Deschutes Rivers in Oregon and the Colorado River in the Grand Canyon.

One of Shelby’s primary research interests is managing rivers for recreational use. These studies typically document how much and what type of use occurs, and help managers do a better job of providing high quality river recreation opportunities while protecting ecosystem health. His book on carrying capacity in recreation settings helped develop planning frameworks that guide most river recreation management efforts on western rivers. The book is in its second printing.

Shelby has also conducted numerous navigability studies used to support court cases. “Recreation use is one factor considered in legal navigability determinations,” he says. His work

played important roles during adjudications on the Chetco River in southern Oregon, the John Day River in eastern Oregon, and several rivers in the National Park system in Alaska.

“Water rights” is another area where Shelby’s work has been valuable, particularly for federal agencies such as the BLM, USDA Forest Service, and National Park Service. Conflicts on water rights may arise when a river is designated as “wild and scenic” because irrigation, power generation, or other uses on adjacent lands or connecting tributaries may affect the river’s flow.

“Managing agencies are not entitled to all the water just because the river has a wild and scenic designation,” says Shelby. Instead, the agency must prove how much water is required to maintain the river’s “remarkable values,” such as whitewater, fishing, uniqueness of the ecosystem, and so forth.

Shelby has conducted water rights studies on all of the BLM wild and scenic rivers in Alaska in addition to others nationwide. He recently received recognition from the Forest Service for contributions to an 11-year negotiation between the State of Idaho and the federal government over water rights for rivers administered by the Forest Service in the Snake

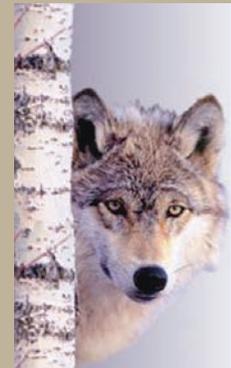
River Basin. The settlement agreement from this effort protects flows for fish, recreation, and other resources on well-known rivers such as the Middle Fork Salmon, Main Salmon, Selway, and Lochsa.

Studies related to relicensing of hydro-generation facilities is Shelby’s final area of river expertise. Hydropower dams are granted long-term (up to 50 years) licenses by the Federal Energy Regulatory Commission. However, new rules require licensees to study the upstream and downstream impacts of their operations on various resources such as fish, wildlife, and plants in addition to aesthetics, cultural resources, and recreation. The law requires that all effects must be given equal consideration.

“Fifty years ago, when the licenses were first issued, it was a different era,” says Shelby. “We were concerned more about putting light in houses than about rivers drying up. Now we have discovered that drying up rivers creates some negative effects. Relicensing provides an opportunity to rebalance the ecosystems where dams operate.” Shelby has worked on relicensing studies from Georgia to Alaska. He received an award from the journal *Hydro-Review* for an article about a whitewater study on Washington’s Chelan River.



Shelby recently completed work on the collaborative publication, *Flows and Recreation: A Guide to Studies for River Professionals*, by Doug Whittaker, Bo Shelby, and John Gangemi. The book was published by the Hydropower Reform Coalition and the National Park Service in October 2005. It provides research methods and decision-making frameworks for assessing recreation flows on dam-controlled rivers.



### Student Sweeps Wildlife Society Awards

**Josh Halofsky**, a Ph.D. student working with Professor **Bill Ripple** (Forest Resources), received two awards from the Oregon Chapter of the Wildlife Society at its annual meeting in February. The awards were for the presentation Halofsky gave on “The Relative Influence of Wolves versus other Factors on Historic Aspen Recruitment in Yellowstone National Park.” The first award he received was the Les Eberhardt Award for the best student paper. He then went on to win the Dimick Award for the best overall paper at the meeting—a clean sweep! A formal judging process is used to determine the most qualified recipient for these awards

Congratulations, Josh, on this remarkable achievement!

**Successful  
Forest Science  
Graduate Students  
— Congratulations!**

**Rozi Mohamed, PhD**

“Expression and Function of *Populus* Homologs to *TERMINAL FLOWER 1* Genes: Roles in Onset of Flowering and Shoot Phenology”

**Andrew Yost, PhD**

“Probabilistic Modeling of Understory Vegetation Species in a Northeastern Oregon Industrial Forest”

**Robert Fahey, MS**

“Patterns in Understory Vegetation Communities across Canopy Gaps in Young Douglas-fir Forests of Western Oregon”

**Thomas William Giesen, MS**

“Four Centuries of Soil Carbon and Nitrogen Change after Severe Fire in a Western Cascades Forest Landscape”

## Forestry Team Studies Amphibian Populations at Multiple Spatial Scales

by Marie Oliver



In recent years, increasing interest has been shown in how forest management practices affect the presence of certain wildlife species. **John Hayes**, professor of wildlife ecology in the Forest Science Department, is especially interested in how birds, bats, small mammals, and amphibian populations respond to different habitat conditions and how these habitat conditions are altered through management activities

and patterns of disturbance. Hayes and **Margo Stoddard**, a master’s student who graduated in 2001, conducted a landmark study called *The Influence of Forest Management on Headwater Stream Amphibians at Multiple Spatial Scales*. Their report was featured on the cover of the June 2005 issue of *Ecological Applications*.

According to the report, most studies of species-habitat relationships have focused on associations of a single species with habitat

characteristics measured at fine or intermediate spatial scales. “There’s a lot of theory about the way species should respond to large spatial patterns, but very little work,” says Hayes. “We don’t really have much understanding about how many species respond to habitat characteristics at large spatial scales, or how patterns at large spatial scales interact with those at smaller spatial scales.”

Stoddard and Hayes’ study was intended to increase this understanding and was funded through the Cooperative Forest Ecosystem Research (CFER) program and the College of Forestry Fish and Wildlife Habitats in Managed Forests program. It is based on data gathered in 1998 and 1999 at randomly chosen sites in the Oregon Coast Range, and focuses on four groups of stream amphibians: Pacific giant salamanders, larval Pacific tailed frogs (tadpoles), adult Pacific tailed frogs, and torrent salamanders. Of the 16 watersheds studied, 5 had relatively high intensity management in the area, 5 were moderately managed, and 6 had low intensity management.



At each site, the research team identified randomly selected 2-meter sections of stream and turned over all the rocks to locate the amphibians living there. A total of 702 points were sampled across the 16 sites. Questions were posed about how the characteristics of the habitat at three different spatial scales influenced the presence and the abundance of these species at the identified points.

For example, at the smallest scale, variables such as the characteristics of the substrate (e.g., large rocks versus sandy bottoms), the elevation of the stream, and the width of the stream were examined. At the intermediate scale, contiguous sample units occurring in areas with similar stream-side conditions were grouped and compared to one another. So, for instance, one side of the stream might have been well forested and the other side recently clear-cut, and the team would compare that to a grouping of units where both sides were heavily forested or both sides were clear cut.

“At this scale, we could ask questions about how the presence

of wooded habitat on one or both sides influence the presence of species in those areas,” says Hayes.

Finally, at the largest scale considered, the team compared the drainages to each other to see how their characteristics might influence the number of amphibians within the drainage.

Results showed that, although there were small differences between species, certain characteristics at all spatial scales influenced the presence and abundance of these amphibians in the landscapes studied. At the smallest scale, it was apparent that the substrate was an important factor. “The substrate type was of key importance for all of them,” says Hayes. “Basically, these species prefer streams with larger substrates in them, such as rocks, that provide hiding places.” This finding is consistent with previous studies that found that high levels of sedimentation detrimentally impacts habitat quality for stream for amphibians.

Probably the most controversial findings occurred at the intermediate and the large spatial

scales. The team found strong relationships between the presence of a band of forested habitat along the streams that was at least 150 feet in width and the presence and abundance of amphibians in the stream. “Where we had a forested band on both sides of the stream of at least 150 feet, we were much more likely to find an abundance of amphibians,” says Hayes.

As a follow-up analysis, the team looked at how smaller forested bands affected the presence of amphibians, and found strong evidence that streams with smaller forested bands have a significantly lower probability of having amphibians than the larger ones. “This suggests that not only having forested area adjacent to the stream is important, but also that there is a direct relationship between the amount of forested habitat along the streams and the suitability of the stream as habitat for these species,” says Hayes. “The mechanisms underlying this aren’t completely clear, but the pattern is strong in the data.”

**Successful Forest Science Graduate Students — Congratulations!**

**Stephanie Hart, MS**

“Riparian Litter Inputs to Streams in the Central Oregon Coast Range”

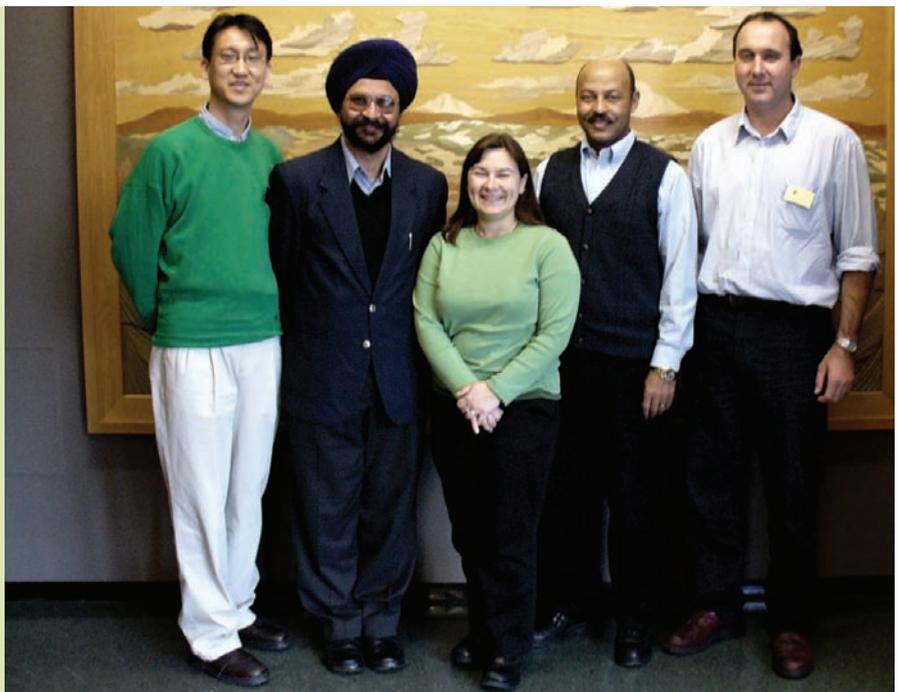
**Kevin Christopher Knutson, MS**

“Climate-growth Relationships of Western Juniper and Ponderosa Pine at the Pine-woodland Ecotone in Southern Oregon”

**Travis Woolley, MS**

“Inter-annual Variability of Net Primary Production across Multiple Spatial Scales in the Western Oregon Cascades: Methods of Estimation and Examination of Spatial Coherence”

Two new International Fellows from the World Forestry Center in Portland and a returning Fellow joined in the monthly international coffee at the College of Forestry this spring. **John Hayes**, Associate Dean for International Programs, has been working closely with the World Forestry Center to strengthen relations and build linkages with international interns. From left: **Kyungtae Park**, new International Fellow from Korea; **Mr. Jasjit Walia**, International Fellow from India; **Angie DiSalvo**, International Fellowship Program Manager at the WFC; Dr. **Badege Bishaw**, director of the COF International Programs; and **John Turland**, new International Fellow from Australia. For more information about College of Forestry International Programs, including news of upcoming seminars and events, please visit <http://www.cof.orst.edu/cof/international/>. For more information about the WFC International Fellowship Program, visit <http://wfi.worldforestry.org/>.



## Researching Fire Ecology in Riparian Zones

by Bryan Bernart



Dave Hibbs photo

Changes in forest structure due to fire suppression are evident in much of the West, where people have been putting out fires in forests for over 100 years. The effects of this are particularly apparent in southern Oregon, an area that used to burn more frequently than it burns today. Forests in southern Oregon once were a mix of scattered soft- and hardwoods. Now, when hardwoods die, they are not replaced, and those forests become dominated by conifers, a process that can cause an area's wildlife community to become less diverse.

"One thing fire suppression has done to small streams," says College of Forestry Professor **David Hibbs** (Forest Science), "is to take a riparian zone that used to be quite open, with scattered trees, and turn it into a closed forest, which is much darker."

This is an intriguing observation because one very basic idea that is often associated with riparian zones is that good fish habitat features shade over streams. The realization that in southern Oregon, there was a lot less shade 150 years ago has led Hibbs to some interesting questions for research: "Was it good fish habitat then, or is it better fish habitat now? Is restoration what we want to do, or do we want to keep it in this changed state?" By contrast, fire suppression has had the opposite effect on riparian forests in the central Coast Range; they are now less dense than in past centuries due to succession from an alder-dominated forest to a shrub-dominated community.

Some of Hibbs' earlier research studies have looked at sources of riparian woody debris. Wood plays a large role in fish habitat by forming "steps" for water to flow over, a process that creates deep pools that are essential for fish reproduction. "Most of the models that predict how much wood is going to fall into streams over time assume that there are a certain amount of trees there, and they get that 'certain amount' by looking at studies of up-slope forests, not riparian forests," says Hibbs. "They assume there is an equal probability that the tree will fall in any direction, which is untrue, because trees along a riverbank generally lean toward the stream." These issues become important in trying to answer other questions, such as how many trees must be left along a stream to create a sufficient buffer strip, and in predicting how much wood will eventually fall or be deposited in the stream.

Much of his work in riparian areas involves surveys determining the tree composition of buffer strips. "Ecologically, I think one of the most fun things we found was how variable riparian areas really are from one location to the next. There's nothing that you'd ever call 'normal,'" Hibbs says, referring to the number of trees and other plant species found on banks.

His main, personal goal in research is simply investigating what kinds of life exist in the ecosystems of forested areas, an ambition that is driven as much by his own curiosity as by anything else. However, the information taken from this experience is highly useful to those involved with the management of natural lands, though, as Hibbs is careful to note, "You and I also play a role in setting goals for what this land should look like. This information could be helpful to the public, as well as policy makers, in helping to understand what ecological conditions might have been like in the past or what they could be like in the future."

At the same time, he also considers it his responsibility to inform those whose task it is to implement these policies on how to better achieve their goals. "Understanding more about what species can grow here and how they will change with time may help land managers better reach the ends that they're trying to achieve," he says.

When asked what excites him about his research, Hibbs answers, simply, "The puzzle. There's nothing as fun as walking into a new place and saying 'How did this get to be like this, and where is it going?'" He pauses, gazing out the window in his Richardson Hall office, then verbally dissects a densely forested hillside rising from the outskirts of Corvallis. "To know that two hundred years ago it was a grass-covered slope with a few oak trees on top ... then ask, why does it look like this, today? Those are all fun kinds of puzzles to think about, at least for me."

*Bryan Bernart is a freshman at OSU. His major is biology and his primary interest is ecology.*

# Hurricanes Prove the Need for Wood Construction Education

By Marie Oliver

More than 90 percent of the structures in the United States—including bridges—are made of wood, says **Rakesh Gupta**, associate professor in the Department of Wood Science and Engineering. However, most civil engineering and structural engineering students graduate from their programs without any training in wood structural design. In addition, builders and contractors usually have no formal training in wood construction. This lack of attention to wood education may have cost thousands of people their homes during the 2005 hurricane season in the Gulf.

When Gupta and other members of the Woodframe Damage Assessment Team supported by the National Science Foundation went to the Gulf after Hurricane Katrina, they discovered that high winds attacked the most vulnerable part of a building and systematically destroyed it from that point.

Gupta says the most common weak links found were (1) a lack of connections at various critical locations in a house such as truss-to-top plate, sheathing nailing, and post-to-top plate (or beam) and foundation; and (2) gable end walls and eaves, where winds were at their greatest force. Much of the responsibility for the damage may lie with construction crews that do not follow building codes. However, Gupta believes that most of this type of damage can be prevented by educating engineers, contractors, construction crews, and building inspectors in the science of wood construction.

“In the last 50 years, engineering curricula have put less and less emphasis on wood and more and more emphasis on steel and concrete,” he says. “Most structural engineers think they don’t need to learn anything about wood because we have been using it for so long and we know everything about it.”

According to Gupta, that simply isn’t true. “Wood actually is the most complex building material there is,” he says. “It is more complex than steel and concrete, and it is harder to understand.”



**Successful Wood Science and Engineering Graduate Students—Congratulations!**

Cameron Carroll, MS

“Wood Materials and Shearwalls of Older Light-Frame Residential Structures”

The USDA ranks the Department of Wood Science and Engineering in the OSU College of Forestry one of the top four such programs in North America. The program uses science, technology, engineering, and business practices to help society meet its needs for wood products and keep U.S. companies competitive in a global marketplace.



*(From top) Rakesh Gupta; examining shear wall after testing in Gene D. Knudson Wood Engineering Lab in Richardson Hall; Woodframe Damage Assessment Team views post-Katrina damage on the Gulf Coast.*



*(Clockwise from top left) Damage from Hurricane Katrina: siding and walls stripped from a home; collapsed commercial building; water damage inside a home. (All photos by Rakesh Gupta)*

As a natural resource, wood is renewable and environmentally friendly. It is also one of the strongest building materials available. But Gupta says that, as an engineer, he gravitated to wood because it is the most complex building material. “I’m still learning new things about wood,” he says. “Even though we have used it for so long, we still don’t know everything about it.”

For example, scientists are still discovering new ways to determine wood’s mechanical properties. Material scientists studying steel and concrete or other manufactured substances can develop equations for their behavior under load; because wood is a biological material, however, its behavior is much harder to describe using equations. Therefore, wood is generally tested in the laboratory to study its behavior under load.

Gupta’s mission is to educate the civil engineers who enroll in his program so they gain the education they need to become proficient in designing wood structures.

“My students are almost all civil engineers,” he says. “They don’t come with a forestry or wood science background, but with a civil engineering background. I tell them that if they become good in designing with wood, they will become a complete structural engineer.”

One of the ways Gupta accomplishes this mission is to have students in one of his courses participate in the National Timber Bridge Design Competition. Participants in the competition design and build a small bridge, which is then tested to see how it performs.

“Time and time again, the project has demonstrated that what may be a beautiful/perfect design on a piece of paper may not always be constructed; and even if it is constructed, it may not perform exactly as predicted by mathematical equations,” says Gupta. Since engineers are usually not involved in the construction phase, this is a unique opportunity for them. “In my opinion, the competition provides students the only opportunity they will ever have in their entire professional lives to design, fabricate, and test a structure for performance,” he says.

Gupta’s students have participated in the competition almost every year since 1998, when the team swept the competition in every category. Since then, the teams have always come away with a monetary award of some kind. The award allows the next year’s team to purchase building supplies for the competition.

## Thinking Small?

### Nanotechnology opens new vistas in forest research

By Marie Oliver

**J**ohn Simonsen, in the Department of Wood Science and Engineering, is thinking pretty small these days, but his research could have a big impact in the wood science industry. He is currently collaborating with on- and off-campus scientists associated with the Oregon Nanoscience and Microtechnologies Institute (ONAMI) to study wood properties at the nanometer scale and create new composite materials.

“For the past 20 years or so there has been a rapid, significant increase in knowledge and technology regarding wood, wood science, and all biological materials,” says Simonsen. “We’ve developed new and better ways to observe them, evaluate them, and measure them. As a result, biological materials are increasingly being studied from a material science point of view.”

The physical, chemical, and biological properties of materials at the nanometer scale are fundamentally different from the properties of individual atoms and molecules or bulk matter. These materials have enormous potential for applications in medicine, manufacturing, information technology, energy, and a host of other areas.

“When you reduce the size of things down to the nanometer scale, you find different properties,” says Simonsen. He is discovering new ways to use plant cellulose by studying its nanocrystals. “The cellulose crystal is one of the strongest, stiffest organic compounds there is, and

with these superior properties it makes sense to develop new materials using them.”

Simonsen’s collaborative research has led to the discovery of products that could have a major impact on human health. Two current projects involve the manufacture of diverse membranes from plant cellulose.

The first type of membrane is a separation device designed for a new, smaller kidney dialysis unit. The membrane is a very thin plastic film that acts as a filter to clean blood of uric acid and other substances while allowing blood cells, larger proteins, enzymes, and so forth to stay with the blood. With current technology, kidney dialysis patients must go to a facility where dialysis is done by a machine that is about the size of a washing machine.

“It takes about two to six hours per session and they can do one to three sessions a week, so it is an enormous impact on their lifestyle,” says Simonsen. “We hope that this new kidney dialysis unit will be reduced in size by a factor of ten, so people can use it at home.” A smaller, portable unit would allow people to dialyze themselves every night.

The other end of the membrane spectrum includes barrier films. One of the areas that Simonsen’s group is working on has potential use for the military. It is a special kind of film designed to prevent chemical warfare agents from penetrating materials. The team is working toward developing a film that will have improved moisture transfer so sweat can get through



(Left) Plastic film called polysulfone with cellulose nanocrystals imbedded in it. Note that you can’t see them, the film is clear. It is also three times as stiff as the film without cellulose



John Simonsen

soldiers’ clothing but chemical warfare agents can’t get in. It may also be useful as a spray for tents so soldiers could have a safe place to take off their gas masks.

“We have had some good results with the cellulose nanocrystals in that area,” says Simonsen. “It looks promising.” A patent application has been filed for the barrier film.

In addition, Simonsen is hoping to collaborate with OHSU scientists on a biomedical project that involves human tissue replacement, a field called tissue engineering. They hope to create materials that could replace tissues such as skin, bone, or heart valves.

He is pleased with the progress that has been made so far in his nanotechnology research and says they are just at the beginning of what he believes is an extremely rich source of new technologies.

“That’s what can happen when you come from forestry but you have a materials science focus,” says Simonsen. “It is the future.”

### White House approves \$8 million for Oregon nano-technology center

On February 6, 2006, U.S. Senators **Ron Wyden** and **Gordon Smith** announced White House approval of a proposed Oregon nanotechnology center. The \$8 million in federal funding will go to the Oregon Nanoscience and Microtechnologies Institute (ONAMI) to oversee the new center. ONAMI is a collaborative effort among the Oregon State University, the University of Oregon, and Portland State University, the Pacific Northwest National Laboratory, the state of Oregon, and the world-leading “Silicon Forest” high technology industry cluster of Oregon and southwest Washington.

Nanotechnology is expected to become a \$2 trillion industry.

**Successful Forest Engineering Graduate Students—Congratulations!**

**Mauricio Acuna, PhD**

“Wood Properties and Use of Sensor Technology to Improve Optimal Bucking and Value Recovery of Douglas-fir”

**Nathan Meehan, MS**

“Response of Two Soil Processes to Logging-Debris Manipulation and Herbicide Application in Western Oregon and Washington”

**Timothy Royer, MS**

“Scaling Hydrologic Impacts from Road Segments to a Small Watershed”

## FEI Program Goes International

By Marie Oliver



*IFEI study tour participants in central Oregon during a lecture break: (left to right) Thys Greef, Chad Davis, Mark Bernardo, and Joe Harding, with Han Sup-Han, Loren Kellogg's former PhD student and now an associate professor at the University of Idaho, and Loren Kellogg. (Photo by Peggy Kellogg)*

From 1973 to 1994, the Forest Engineering Institute (FEI) filled a need for forest engineering education and training for forest engineers working within the USDA Forest Service in the Pacific Northwest. Although it was an extremely successful program that trained more than 2,000 people, a drastic reduction in Pacific Northwest harvest levels led to a decreased need for the program. However, major sustainable harvesting efforts are still in process on private land in Oregon, nationally, and around the world. In response to the need for continuing education and training in this area, the Forest Engineering Department is creating an International Forest Engineering Institute (IFEI) for individuals

without a Forest Engineering degree and appropriate field experience.

“We’re taking the information that we learned from the FEI program and targeting it in some new directions,” says **Loren Kellogg**, director of the IFEI program. “We’re seeing harvesting in places around the world that do not have the same sustainable practices that we do here in Oregon with regard to safety, efficiency, environmental protection, and consideration of social issues. This is an opportunity for us to address our international mission by lending assistance through a major outreach education program.”

Last summer, Kellogg and FE faculty research assistant, **Chad Davis**, hosted a Pacific

Northwest forest harvesting study tour for national and international participants that began in San Francisco and ended in Portland. The tour included technical sessions, field visits to active harvesting operations, and participant presentations at OSU. It also encompassed the Council on Forest Engineering (COFE) conference on soil, water, and timber management, a visit to Humboldt State University and the redwoods, the Hinkle Creek Paired Watershed Study in the Roseburg area, the Bend area of Central Oregon, and the World Forestry Center in Portland.

A similar study tour is planned for August 2006, but will depart from Coeur d’Alene, Idaho, then travel through eastern Washington and Oregon to central Oregon,

over the Cascade Mountains to Corvallis, and conclude in Portland.

The objectives of the forest harvesting study tours include demonstrating the principles of forest harvesting and the application of appropriate planning and forest operations technology for accomplishing a range of sustainable forest management objectives. In addition, the study tours facilitate participant understanding of how timber harvesting technology can be better used in sustainable management applications and generate an international dialogue about current issues, experiences, research and long-term support for education programs on forest harvesting practices for sustainable forest management. Kellogg sees the study tours “as a two-way learning process and opportunities to bring new ideas to Oregon.”

The long-term goal is to take a series of forest engineering outreach education modules on the road internationally along with some distance-delivery education courses. The first such opportunity will

occur in September, when Kellogg, **John Sessions**, and Chad Davis present a two-week workshop on project level planning for cable harvesting systems to the forest industry in Chile. The workshop will focus on harvest planning in mountainous conditions, field layout, operations assessment and monitoring, safety, production, cost, and mitigating environmental impacts. It is designed for forest managers who are working with cable systems, which is an area that is not currently being addressed within the current forest worker training offerings in Chile.

While in Chile, Kellogg also extended contacts with Chile’s universities. “As we move along, we’ll be looking for larger industry and university partnerships,” he says. He is also in conversation with organizations in South Africa, Zimbabwe, Tanzania, Australia, Taiwan, Korea, and eastern Europe.

“We’re slowly building partners in key places around the world to offer forest engineering outreach education and training

courses in countries that will benefit from improved sustainable forest harvesting practices,” he says. “These experiences should also help open up new opportunities for OSU faculty and students, and bring new knowledge back to Oregon.”

In addition to the study tours and cable harvesting module, other IFEI modules in development include Timber Harvesting Systems and Planning for Sustainable Forest Management; Transportation System Planning and Forest Road Management; Forest Soils and Hydrology; Forest Operations Economics, Wood Supply Chain Analysis and Sustainable Management Issues; and Plantation Forestry Operations in Developing Countries. Each module is being designed so that it can either stand alone or be combined for a participant to complete a graduate certificate program. Sessions is also working on revisions and updates on two books:

*Harvesting Operations in the Tropics*, and *Road Operations in the Tropics* that will be used as IFEI module textbooks.

Loren Kellogg at the Forestry Equipment Exhibition and Conference (Expocorma) at Concepcion, Chile. (Photo by Peggy Kellogg)



## Hinkle Creek Calibration Phase Complete

By Marie Oliver



Arne Skaugset



Nick Zegre with 5th graders from Roseburg on a field trip to Hinkle Creek fish traps.

Scientists involved with the 10-year Hinkle Creek Paired Watershed Study and Demonstration Area Project have successfully transitioned out of the calibration phase and into the treatment phase. Beginning this summer, the multidisciplinary teams will begin the first post-treatment data collection.

The Hinkle Creek watershed study is a pilot project of the Watersheds Research Cooperative. It is providing a unique opportunity for scientists to pair two watersheds in a 55-year-old, harvest-regenerated forest to evaluate how well current forest practices protect water quality, aquatic habitat, and fish.

Roseburg Forest Products made 5,000 acres of its prime forestland available for the study, agreeing to defer harvest on half of it for 10 years and alter harvest plans on the other half to meet the study's objectives.

A unique aspect of the Hinkle Creek study is its use of new monitoring technologies. For example, Passive Integrated Transponder (PIT) tags were implanted in fish in the watershed, which has allowed fish biologists to track movement of hundreds of individual fish in both time and space. Other data collected reflects invertebrate counts, stream flow measurements, and water temperatures.



Returning adult steelhead.

At the halfway point in the study, **Arne Skaugset** of the Forest Engineering Department says things are going extremely well. "We've collected everything we wanted to collect," he says. "I can't think of a downside. Everything has worked."

Team members are now organizing the calibration data and beginning to work toward an integrated, multidisciplinary analysis. From the beginning, it was important to recognize the value of spatially explicit data, says Skaugset, so a major undertaking was to create an address system that was used uniformly by scientists from each discipline (stream hydrology, fish biology, invertebrate biology, amphibian research, and streamwater chemistry and soils mapping).

"That may seem like a no-brainer, but you might be surprised how differently the five

disciplines work with their data," he says. "It's really not a small task to get everybody to think in the same address system."

Skaugset is excited about the possibilities for cross-disciplinary analysis. "It's going to give us a chance to do some things that really haven't been done before," he says.

One of the data layers collected by the teams includes stream temperature "degree days." The degree-days parameter provides average daily readings that can be used to study how temperature affects aquatic vertebrates, fish movement, fish growth, and so forth. "We have enough data that we can look at degree days across the watershed and start correlating that with biological parameters."

Once the harvest occurs, the identified biological parameters and the temperature data can be compared between the harvested and non-harvested watersheds. Other parameters such as stream flow will be treated in a similar manner. For example, scientists will study to what extent a higher stream flow changes aquatic habitat and causes changes in fish movement.

"The group has been excited to sit and talk these things through," says Skaugset. "It's fun to have a data set that we have never had before. It's exciting. It's challenging."

# Rebuild Fort Clatsop

By Marie Oliver



*Fort Clatsop replica before and after fire (NPS photos). Scout troop working on logs to be used in the new replica of Fort Clatsop. Photo by Justin McMinds (FM).*

Approximately one-quarter of the volunteers who showed up at Lewis and Clark National Historical Park on December 10, 2005, were OSU College of Forestry students or were there because of their relationship to students.

Volunteers came to the park near Astoria, Oregon, to help de-bark the logs needed to rebuild the replica of Fort Clatsop. The new replica is actually the third Fort Clatsop. The Lewis and Clark party built the first fort in 1805. Over time, the original fort disintegrated and even the site was lost. A replica was built in 1955 from sketches in William Clark's journal. That replica was destroyed by an accidental fire on October 3, 2005. The effort to rebuild the new replica began on the 200th anniversary of the day Lewis and Clark began building the original fort, and it was accomplished within a few months.

"This is an exhibit as opposed to preservation of an historic structure," says **Peter Field**, project manager for the Fort Clatsop rebuild and an OSU alumnus (Construction Engineering Management and Civil Engineering). The build-

ers of the 1955 fort, at least one of whom is an OSU College of Forestry graduate, have been available as consultants on this project. "They hooked us up with Professor **Jeff Morrell** [Wood Science and Engineering] and they've really been a great asset in having built a fort before," says Field.

Although experts are pretty sure Lewis and Clark did not remove the bark on logs used to build the original fort, it was done on the replicas in order to keep beetles from infesting the timber. Volunteers removed the outer and inner bark on close to 200 logs, which was about half of what was needed to rebuild the fort. Each log was approximately 8 to 10 inches in diameter and 20 feet long. The work was all done by hand, using sharpened shovels and scrapers for the outer bark and draw knives for the inner bark.

"The de-barking can be done by machine, but machines tend to leave a pattern on the bark," says Field. "Doing it by hand leaves a much more rustic look, a more authentic pattern. The College of Forestry students had just done some debarking at Peavy Arboretum, so they had some experience,

which was great."

According to **Chip Jenkins**, Superintendent of the Lewis and Clark National Historical Park, more than 625 volunteers have contributed time to the Fort Clatsop rebuilding project. Adds Field, "The immediate outpouring of support from Oregon was awesome—just phenomenal."

Field says the goal of the rebuild was to involve as many people as possible. "The joke was that Extreme Makeover could come in and rebuild it in a week, but that's not what we wanted," he says. "We want someone 50 years from now to remember having worked on this."

Students said they participated for various reasons, but a common theme was their desire to be involved in a historic event. "I volunteered because I am always looking for opportunities to stretch my experiences in the College of Forestry," says student **Beth McNair**. "I also thought it would be historical and memorable."

Another College of Forestry student, **Justin McMinds** (Forest Management), thought volunteering would be a good way to get his Boy Scout troop

**Superintendent Chip Jenkins**, of the Lewis and Clark National Historical Park, encourages everyone to come see the new Fort Clatsop! Along with the rebuilt fort, there are other new elements for visitors to enjoy. These include the new 6.5-mile Fort To Sea Trail from Fort Clatsop to Sunset Beach, the 1.5-mile Netul River Trail from Fort Clatsop along the Lewis and Clark River to Netul Landing, and new exhibits and film in the Fort Clatsop visitor center. For more information, visit <http://www.nps.gov/lewi/>

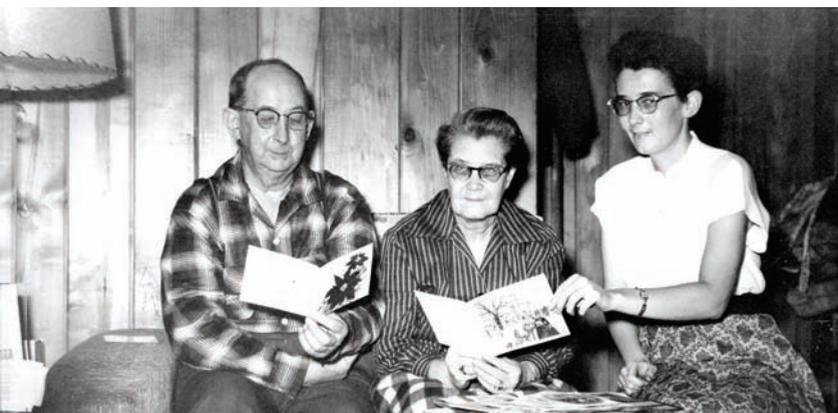
involved with some of the history of Fort Clatsop. "I also thought it would be something that they would like to remember later on in life," he says. McMinds brought his Boy Scout Troop to the fort, along with most of his Venturing crew, Scoutmaster **Dan Mowery**, and his dad **Dan McMinds**, who is an assistant scoutmaster with the troop.

In addition to sending volunteers, the College of Forestry also played several major roles: **Debbie Bird McCubbin** (Student Services) organized the student recruitment effort. Dean **Hal Salwasser** coordinated with timber companies, who were among the largest contributors to the rebuild effort, for the donation of materials. Professor Morrell prepared a technical paper on preferred wood treatments for preserving the logs used to reconstruct the fort. Morrell's work has been critical to the rebuild effort, says Field. Park Superintendent Jenkins adds, "Thanks to the help of your students and faculty in the College of Forestry the project has been completed on time."

## The Richardson Impact!

### Nearly 15 years later, the gift of a family forest is still yielding dramatic results for OSU's College of Forestry

By Sara Zaske



Ward, Vera, and Kaye Richardson

Under the right conditions, a forest can grow more than wood. Sometimes, it can produce bricks, steel, and glass—offices, labs and classrooms. It can fuel new scientific breakthroughs and nurture generations of college graduates. As the Richardson's family land has shown, a forest can even grow an entire college.

The Richardson family's gift in 1992 of a 1,400-acre forest has accomplished these incredible feats for the College of Forestry at Oregon State University. After it was sold, the forest yielded \$23.8 million, making it the largest gift ever received at OSU. The Richardson's gift provided an endowment for the college that helped construct a new building, Richardson Hall, endow three chairs in Forestry, and fund more than a hundred scholarships and fellowships.

"The Richardsons have really had a transforming impact on the College of Forestry," said Dean **Hal Salwasser**. "The Richardson endowment has helped us achieve a level of excellence recognized world-wide, and it will keep helping students and faculty far into the future."

The Richardsons were a family who knew how to get the most out of a forest. **Ward Richardson**, who originally ran a grocery store in Salem, started buying parcels of cutover timber land after the stock market crash of 1929. His original intention was to farm the land, but he soon learned what grew best on his property—Douglas-fir trees. So rather than fight it, he set about learning how to best nurture the trees.

Ward Richardson started a consulting business helping sawmills broker their lumber. In the 1930s, Ward, his wife, **Vera**, and daughter, **Kaye**, moved onto to their timberland near Falls City, Oregon. Ward eventually amassed such a wealth of knowledge that in his later years, with the encouragement of his

friends at OSU's College of Forestry, he wrote the *Tree Farmer's Handbook*, a forest manual intended to help land owners manage their timberlands, including his own daughter, who was starting to take up the family business.

Sadly, Vera Richardson died in 1963, and as her father moved toward retirement, Kaye, who had graduated with a journalism degree from University of Oregon, took over more and more of the operations of the family tree farm and timber brokering business. Before Ward passed away in 1973, the father and daughter pair decided that the family land would be given to OSU after Kaye's lifetime.

#### A new home for Forestry

It is virtually impossible for Forestry students or faculty to overlook the impact of the Richardson gift because it is embodied in the very walls that surround them every day. The Richardsons provided the key support that helped build Richardson Hall, inspiring other private gifts and helping leverage public funding for the new facility.

The 97,000-square-foot building opened in 1999, doubling the laboratory space and providing much needed classroom and office space for the growing college. Connected to Peavy Hall, the new building brought faculty in the four Forestry departments together after being spread among several buildings for many years. This has helped inspire collaboration among the departments and spur new innovations and discoveries.

#### Growing research

In another way of encouraging scientific growth, the Richardson gift established three endowed chairs, which have allowed the college to attract and support world-class faculty.

Kaye shared her father's keen interest in forestry and often shared industry news with her cousin, **J. Priscilla "Perky" Kilbourn**, a professional microbiologist who earned her doctorate at OSU. In 1986, as part of their correspondence, Kaye Richardson sent Perky an article about a 200-year log study conducted by a graduate student researcher at the H.J. Andrews Experimental Forest. Little did Kaye know then that the particular researcher, **Mark Harmon**, would one-day become a leading forest ecologist and the first holder of the Richardson Chair in Forest Science.

"It's been really tremendous," said Harmon of the chair. "It gave me stability, and it actually allowed me to think a little bit more about how I can tell my story."

Harmon has used the chair to write reviews of dead wood management and carbon management that are more accessible to land owners, managers, and average citizens—something Ward Richardson would have appreciated.

Through the chair, Harmon has also been able to further his research and help launch new initiatives at OSU. In addition to the log study, Harmon has started an extensive project that seeks to model carbon cycling through ecosystems over large spaces and long periods of time—research that has implications for managing greenhouse gases. With help from the Richardson chair, he was able to fund some initial models that can be used to secure more grant funding for the project.

In the Forest Engineering Department, hydrologist **Jeff McDonnell** has used the Richardson chair to deepen his studies of Pacific Northwest watersheds and help further national and international projects to learn more about the world's water cycle.

For the next two years, McDonnell is heading up the “Second International Hydrological Decade,” a massive, multi-disciplinary effort among 3,500 members in 65 countries with the goal of predicting water flow and chemistry in the world's rivers and streams. He has also taught short courses at the United Nations International Atomic Energy Agency, showing how scientists can use isotopes to trace hydrological cycles.

“One can take risks and do things with an endowed chair that you can't do in a regular faculty position,” said McDonnell. “It's given me the freedom to pursue a broad research agenda and contribute in areas beyond the mission of college.”

There are even more amazing accomplishments ahead. The third Richardson chair, which was established in the wood science and engineering department, recently attracted world-class material scientist **John Nairn** to OSU. The addition of Nairn is helping to make OSU a nexus for bio-based composite materials.

*Richardson Hall, OSU College of Forestry, 2006*

## The next generation

The Richardson endowment is also fueling the futures of the next generation of innovators. Since the endowment began, more than 100 forestry students have received Richardson scholarships and fellowships.

“Kaye would have loved the scholarships because she was a scholarship student herself at the University of Oregon in journalism,” said her cousin Priscilla Kilbourn. “Sometimes that's the only way kids can make it.”

For wood science senior **Chris Coleman**, the Richardson scholarship had just that kind of impact. “I wouldn't be able to afford to go to college without it,” he said. “I probably would have had to stop and work. The scholarship has helped push me through school and allowed time for me to devote back to the College. I have been president of our Forest Products Society chapter, and I contribute time to numerous special events that the College holds.”

Richardson fellowships are also helping graduate students like **Sara Thompson**, who is preparing to defend her master's thesis in forest resources this spring. “It has allowed me to really focus on my research, which is the reason I am here, without having to worry,” she said. “My experience at Oregon State has been great.”

The Richardsons' gift created many great experiences at the College of Forestry. The bequest of the family forest has yielded a lasting Richardson legacy, an endowment that will provide essential support for faculty and students for many years into the future. Today, the results are apparent in new scientific research and learning in many areas including forest productivity, forest ecology, sustainable forestry, forest health, and the development of new improved wood products.

“Kaye, Ward, and Vera would be pleased with the way the money was used for such a worthwhile purpose,” said Kilbourn.



## Seeing the Forest through the Trees

### H.J. Andrews Experimental Forest tackles tough ecological questions

By Sara Zaske



Horace Justin Andrews

**H**orace Justin Andrews was no stranger to controversy. A well-known authority on Pacific Northwest forests, Andrews held the challenging job as the head forester of Region 6, covering Oregon and Washington in the 1940s—a time when federal forests were entering a period of major timber production.

“Region 6 reminds me of the third baseman’s job on a baseball team,” Andrews once wrote to a colleague. “All the hot ones come his way.”

While times have changed, the Pacific Northwest forests are still a tinderbox for hot issues. An advocate for scientific study of forests, Andrews was praised for his fairness in dealing with conflicting interests surrounding federal forests. It is certainly fitting that the forest that bears his name is known for shedding the light of science on many problems facing today’s forests.

Today, the H.J. Andrews Experimental Forest is one of the world’s foremost centers of forest ecology. It has fostered research

that has revolutionized the way scientists look at forest ecosystems and the way land managers deal with harvests, streams, and natural disturbances. The forest is a collaborative effort among Oregon State University, the USDA Forest Service’s Pacific Northwest Research Station, and the Willamette National Forest. As one of the first sites to join the National Science Foundation’s Long-Term Ecological Research (LTER) program, Andrews Forest promises to deliver major new discoveries for literally, hundreds of years to come.

#### The Andrews Idea

It is not the usual practice to name an entire research forest after a federal forester, but Horace Andrews wasn’t an ordinary Forest Service employee. According to the Bend Bulletin, “No man had a surer grasp or a fuller understanding of the forest problems of the Northwest.”

During his tenure in Region 6, Andrews dealt with the Forest Service’s transition from a stewardship role to one that promoted timber production. While he worked in an era of intense harvesting, Andrews had great foresight when it came to better understanding and conserving forest resources. Concerned about the impacts of logging on water quality, he helped set aside a tract of land in 1948 for the Blue River Experimental Forest, which later became the Andrews Forest.

Andrews’ work attracted attention in the nation’s capital, and he was selected for a national leader-

ship position in the Forest Service in 1951. A great enthusiast of the Pacific Northwest, Andrews accepted the position with some reluctance. “He was not looking forward to move to Washington D.C.,” recalled his daughter, **Virginia Burns**. “But it was an honor, and he had a strong sense of duty. It wasn’t the type of thing you could say ‘no’ to.”

Tragically, Andrews died in a car accident while house hunting in Washington. Upon his death, two governors, several members of Congress, and Supreme Court Justice **William O. Douglas** all wrote his family to express their condolences. In a rare honor, the forest he worked so hard to set aside for scientific study was renamed in his memory.

#### The Big Picture

Like its founder, H.J. Andrews Experimental Forest has become known for taking the long view of Pacific Northwest forests. Much of the research at the Andrews Forest is dedicated to looking at long-term issues, such as forest growth and succession, tree decay, stream ecology, carbon cycling, and the impacts of global climate change.

“The Andrews,” as it is commonly called, is perhaps best known as the place where science first revealed the unique characteristics of old growth forests. Many may know of the Andrews as the place where studies of the spotted owl and its controversial relationship with old growth forest were conducted, but scientists at the Andrews were investigating older forests long before

the term “old growth” became well-known.

In the 1950s and 1960s, older forests were generally considered decadent and over mature since they produced little new wood. The Forest Service had slated most of these forests to be cut and replaced with younger, faster-growing stands that appeared to be more productive. A Forest Service scientist named **Jerry Franklin** decided to study the older stands before they disappeared, and in 1969, convinced the National Science Foundation to provide funding through OSU as part of the International Biological Programme (IBP), an ambitious worldwide project to study the fundamental properties of ecological systems, such as their productivity and cycling of nutrients.

Franklin and College of Forestry Professor **Dick Waring**, Forest Science, led the effort, attracting a cadre of post doctoral researchers and young doctoral students during the 1970s. More than 100 people from 10 departments at OSU worked on the Andrews studies along with colleagues from the Forest Service and other universities. The researchers hailed from all areas of science, bringing expertise in multiple disciplines from botany and mammology to hydrology and biochemistry.

“The group had the reputation for doing large, integrated projects across a number of disciplines and lots of innovative science,” said Professor **Mark Harmon** (Forest Science). “They were doing things like climbing old growth trees (to study



*Andrews family photograph (top left to right) Phil Burns, Chris Burns, Melissa Burns, Pam Wong, Stewart Burns (bottom left to right) Chuck Burns, Terri Burns, Amber Haley, Justin Haley, Raine Haley (child on Justin's lap), Carolyn Haley, Erin Haley, Virginia Burns, Dakota Burns (child on Virginia's lap). Not pictured: Scott and Tim Haley, Rob and Linda Burns*

the canopy), and studying dead trees— things that other people just weren't doing."

Harmon first became involved at the Andrews when he was an OSU doctoral student in biology, working on a massive 200-year study of rotting logs. While far from over, the log study has already revealed that dead logs are a significant source of carbon and nutrients to the soil and to the growth of new trees and other vegetation.

Harmon's study is just one among many at the Andrews that painted a picture of forests that was dramatically different from previous conceptions. The Andrews research revealed that instead of being unproductive, old growth stands actually supported rich diversity in vegetation and wildlife. It also changed how scientists viewed forests by showing that older forests had a structure, composition, and function distinct from younger forests.

And while the research conducted was primarily considered "basic," as opposed to applied research, the implications of many Andrews studies have had a profound impact on forest practices and policy. Today, thanks to Andrews research, federal land managers now leave

trees—living, dead, and dying— behind after a timber harvest, and Andrews stream and riparian zone research has influenced the management of the stream/land interface worldwide.

"There are times when basic research jumps right into application because there is just such a fundamental change in understanding," said Harmon, who was Andrews' lead principal investigator for the past seven years. "Sometimes you discover something that is so different that it shows we've been looking at the system in a fundamentally wrong way."

### Forest succession

The H.J. Andrews Experimental Forest is now in its 57th year of existence, with more than 35 years of intensive ecosystem research. Soon after the IBP funding ended in the late 1970s, the Andrews was chosen to be among the first cohort of the National Science Foundation's LTER program. Many OSU faculty and Forest Service scientists have been conducting research there for decades.

"This kind of work shows a belief in the future," said Professor **Fred Swanson**, (courtesy, Forest Science), a

Forest Service geologist who has worked at the Andrews for 35 years. "The future has the best chance when we undertake experiments that will clearly outlive us. It is a monument to the commitment to the larger process of learning."

Today, more than 100 studies are underway at the Andrews, from climate investigations in the tree tops to studies of carbon deposition below ground. Projects include such long-term, professor-led investigations as a 33-year-old study of cutthroat trout populations and the relatively new "Airshed Project" headed up by Professor **Barbara Bond** (Forest Science), a forest physiologist and the new lead principal investigator at the Andrews.

While many have studied how forests on flat lands respire, producing oxygen and fixing carbon, not much is known how these processes work on sloped terrain. Bond and her colleagues are working to fill that crucial gap in information since many of the world's forests are on mountainous land. Like much of the Andrews work, Bond's study is basic research, designed to uncover new information, but any discoveries may have important implications as many world

governments look to forests to mitigate the effects of global climate change.

Also in keeping with the Andrews tradition, graduate and undergraduate students are heavily involved in the research. For example, OSU master's student, **Charles Frady** (Fisheries Science), has been examining aquatic invertebrate biodiversity in streams located in old growth versus second growth stands. Another study by doctoral student **Alan Tepley** (Forest Science) analyzes how fire regimes vary across terrain at the Andrews and two other western Oregon landscapes.

"Andrews is such a flagship, it draws in students and scientists that are really the best in the world," said Bond. "Whole suites of graduate and undergraduate students have completed independent research projects in the womb of this very interdisciplinary program. It is just an incredible place for learning."

The beauty and productivity of the today's H.J. Andrews Experimental Forest has left a deep impression on Virginia Burns. She believes her father would have loved to see what has become of the land he set aside nearly 60 years ago. "I think he would be thrilled," she said.



Left to right: Loren and Peggy Kellogg, Nancy Lematta and Wes Lematta

## Lematta Recognition Luncheon

December 9, 2005 marked the date for a donor recognition luncheon held in Lake Oswego in honor of **Wes** and **Nancy Lematta**. Wes and Nancy were joined by many members of their family along with close friends and executives from Columbia Helicopters. The College of Forestry representatives included Dean **Hal Salwasser**; **Loren Kellogg**, the first Wes Lematta Professor, along with his wife, **Peggy**; Forest Engineering Department Head, **Steve Tesch**, and his wife, **Maureen**; Professor **John Sessions**; Lematta Fellowship recipient, **Matt Thompson**; and **Lisa French**, Director of Development. We extend our heartfelt thanks to all whose presence made the day extra-special for Wes and Nancy. On behalf of the entire College of Forestry and Oregon State University: Thank you Wes and Nancy!!



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## A gift to support students and an active retirement

When **Dan Graham** went to OSU, it was called Oregon State College and he studied in a department named “logging engineering.” He was also able to go to school for four years and pay all his bills by the time he graduated. But that was 1951, and Graham estimated that his costs totaled about \$5,000 for the entire four years. “A lot has changed over the years,” Graham said.

Today, Oregon State University forest engineering students face an average expense of \$15,000 or more every year, for tuition, books, and living expenses. So when Graham and his wife, **Marilyn**, a 1952 education graduate, looked for ways to enhance their retirement income, they chose a charitable gift annuity with the OSU Foundation—crafting a plan that not only provides them with extra income but also helps fund scholarships for future forest engineering students.

“It helps us, and we felt it was a good opportunity to give back for the benefit of future students,” said Graham. “I had invested in stocks over the years and had quite a few that had appreciated greatly in value, so it seemed to fit quite well for our purposes.”

A charitable gift annuity is a simple contract between donors and the OSU Foundation. In exchange for irrevocably transferring cash or securities valued at \$10,000 or more, the Foundation agrees to pay donors a fixed annual payment. Payout rates range from 5 percent to 11.3 percent, depending on the age of the donor or donors at the time the gift annuity is completed. Other benefits can include an income tax deduction and reduced estate taxes, as well as the increased financial security of regular payments. In the Grahams’ case, they also benefited by using securities that had appreciated to fund the annuity. By donating these assets, they reduced their capital gains taxes. In addition, a portion of the payments are tax free.

Dan Graham said the process was relatively straightforward, and he recommends charitable gift annuities to other alumni and friends of OSU with similar circumstances.

“It takes some time, but it’s not difficult,” he said. “The Foundation staff are very competent and personable. They make it quite easy.”

Now in their late 70s, the Grahams still lead an active lifestyle, and the income from the gift annuity helps the couple take many trips to visit their four children who live in California, New York, Nevada, and Texas.



*Dan Graham with OSU President Ray at the Dean's Appreciation Dinner.*

### Gift Annuity Payment Rates

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*For illustrative purposes only. The minimum gift annuity contract is \$10,000. For more information., please visit [www.osufoundation.org](http://www.osufoundation.org).*

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## College of Forestry Centennial Celebration begins at Fernhopper!

The College of Forestry invites you and your family to join us for the **74th Annual Fernhopper** celebration on **Saturday, May 20, 2006**. Come meet old friends and make new ones as we enjoy the variety of activities scheduled for the day. This year's Fernhopper program begins with refreshments and registration at Richardson Hall at 9:00 am with the unveiling of the Centennial Commemorative Painting at 9:30, afterwards a trip to the woods for demonstrations, hikes, and lunch at the Forestry Club Cabin, student logging sports demonstration and other recreational activities. At 5:00 pm, there will be a reception at the OSU Alumni Center, followed by the Annual Fernhopper Banquet honoring students, faculty, and alumni receiving scholarships, fellowships, or awards from the College of Forestry. **The 2006 Fernhopper marks the beginning of a year of celebrations commemorating the Centennial of the College of Forestry.** Bring your "COF Stories" to share on the Centennial DVD.

For more information about Fernhopper 2006, visit the web-page at <http://www.cof.orst.edu/cof/alumni/fernhopper.php> or contact us at 541-737-2329.

## 2006 Commencement

**2006 Commencement** will be held Sunday, **June 18th** in Reser Stadium. (Rain or Shine!) For the 2005-2006 year, the College of Forestry anticipates graduating a total of 138 students. Forty-five advanced degrees will be awarded: Master of Forestry (5), Master of Science (30), and Doctor of Philosophy (10). Ninety-three Bachelor of Science degrees will be awarded, with one of our students earning a Bachelor of Arts International Degree in addition to the Bachelor of Science. Two College of Forestry students will earn the Honors Bachelor of Science.

The College will host its annual Commencement Brunch at 11 am, in the Peavy Hall Courtyard, prior to the combined Graduate and Undergraduate ceremony in Reser Stadium. The graduation ceremony is scheduled to begin at 2 pm. For information on tickets, times, or reservations, contact College Student Services at 541-737-2004

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