

# *Current Research* *2008*

**Forest Research Laboratory**



**Oregon State**  
UNIVERSITY



**Oregon Forest Research Laboratory**  
**Hal Salwasser, Director**  
**Stephen D. Hobbs, Associate Director**  
**Roger D. Admiral, Associate Director**  
**Peavy Hall A154**  
**Oregon State University**  
**Corvallis, OR 97331-5704**  
**(541) 737-2222**  
**([www.forestry.oregonstate.edu](http://www.forestry.oregonstate.edu))**

Oregon State University's Forest Research Laboratory is the forestry research arm of the State of Oregon. It was established by the Oregon legislature in 1941. The mission of the Oregon Forest Research Laboratory is to conduct well-coordinated, problem-solving research that enables management and use of Oregon's forests for multiple values and products that meet society's needs, with special attention to social and economic benefits.

The Laboratory's research provides information to improve the forest-related decisions of those who use, own, operate, or are otherwise affected by management of the forests of the Northwest and the products and services these forests provide. The Laboratory's research results are used by many—private landowners, state and federal land-managing agencies, wood processing firms and workers, legislators, environmental agencies and interests, and others. Thus, Laboratory research affects virtually all Oregonians because of the importance of forests to them and to their state's economic health.

This directory is designed to help users of the Laboratory's research identify the

scientists and their current research projects. It is organized by the Laboratory's five research program areas: Forest Regeneration; Forest Ecology, Culture, and Productivity; Protecting Forests and Watersheds; Evaluating Forest Uses and Practices; and Wood Processing and Products Performance. Several special or integrated research programs and facilities are also described at the end of the research listings. Following each scientist's name is a departmental code, and, in some cases, one or more program acronyms, to help you contact the scientist for information about his or her work or opportunities for cooperation.

<b>Code</b>	<b>Department (Web site)</b>	<b>Telephone</b>
FE	Forest Engineering ( <a href="http://www.cof.orst.edu/cof/fe/">www.cof.orst.edu/cof/fe/</a> )	(541) 737-4952
FR	Forest Resources ( <a href="http://www.cof.orst.edu/cof/fr/">www.cof.orst.edu/cof/fr/</a> )	(541) 737-4951
FS	Forest Science ( <a href="http://www.forestry.oregonstate.edu/cof/fs/">www.forestry.oregonstate.edu/cof/fs/</a> )	(541) 737-2244
WSE	Wood Science & Engineering ( <a href="http://woodscience.oregonstate.edu/">woodscience.oregonstate.edu/</a> )	(541) 737-4257

Current Research 2008 is also published on the  
Web:

[www.cof.orst.edu/cof/research/CR2008.pdf](http://www.cof.orst.edu/cof/research/CR2008.pdf)

## **College Forests**

The College of Forestry has access to several major forest properties dedicated to research and education. The College Forests comprise the McDonald, Dunn, Blodgett, Cameron, Marchel, Oberteuffer, Rams Dell, and Spaulding forest properties, totaling about 14,000 acres. Gifts to the College of Forestry, they are managed by the College for enhancement of education and research.

## **H. J. Andrews Experimental Forest**

The 16,000-acre H.J. Andrews Experimental Forest on the Willamette National Forest is administered by the USDA Forest Service. Research is jointly managed by OSU and the Pacific Northwest Research Station under a Long-term Ecological Research Program sponsored by the National Science Foundation.

# Forest Regeneration

**Michael Adams**<sup>†</sup> (FS) WRC  
Amphibian ecology; conservation biology; aquatic ecology

**Stephen Fitzgerald** (FR)  
Post-fire regeneration

**Temesgen Hailemariam** (FR)  
Regeneration imputation models, estimation of regeneration and spatial distributions from aerial information

**Everett Hansen** (FS)  
Integrated forest protection; diseases of seedlings and mature stands; roles of pathogens in forest ecosystems; forest mycology

**Dave Hibbs** (FS) HSC, CFER  
Director, Hardwood Silviculture Cooperative (HSC); Coordinator, Cooperative Forest Ecosystem Research (CFER); hardwood and general silviculture: species choice, seed source, species mixes, density and competition management, growth

**Glenn Howe** (FS) PNWTIRC  
Program leader, PNWTIRC; quantitative, physiological, ecological and molecular genetics of forest trees; gene conservation; tree improvement; seed orchard management

**Keith Jayawickrama** (FS) NWTIC  
Program leader, Northwest Tree Improvement Cooperative; genetic improvement of productivity, wood quality, and product value; breeding and testing strategy; production of genetically improved planting stock

**Doug Maguire** (FS) CIPS, INLAS  
Director, Center for Intensive Planted-forest Silviculture (CIPS); regeneration under variable-retention harvesting; mixed species silviculture; uneven-age silvicultural systems; intensive plantation silviculture; hybrid models for Douglas-fir growth and wood quality

**Mike Newton (FS)**

Vegetation management; competition dynamics; interactions among conifers, associated vegetation, and wildlife damage; ecosystem rehabilitation; high-latitude reforestation; riparian rehabilitation

**Klaus Puettmann (FS)**

Regeneration dynamics, vegetation management, mixed species management, restoration ecology

**Steve Radosevich (FS)**

SF

Program leader, Sustainable Forestry (SF); integration of biological and social sciences for natural resource management; plant community dynamics of forest ecosystems; Douglas-fir/red alder associations; interspecies competition; huckleberry restoration

**Robin Rose (FS)**

NTC, VMRC

Director, Nursery Technology Cooperative (NTC) and Vegetation Management Research Cooperative (VMRC); nursery management and reforestation of conifers and hardwoods, whole-plant physiology; seedling nutrition; agroforestry; international reforestation

**Stephen Schoenholtz<sup>§</sup> (FE)**

Afforestation and reforestation of disturbed sites; restoration ecology and management

**David Shaw (FS)**

SNCC

Forest protection; Swiss needle cast; root diseases in young stands; integrated pest management

**Brad St.Clair\* (FS)**

Genetics of adaptation; gene conservation; tree improvement; quantitative and population genetics; integration of genetics and silviculture

**Steve Strauss (FS)**

TBGRC

Program leader, tree biotechnology; genomics and biosafety technology for transgenic poplars; Douglas-fir molecular breeding; public communication on biotechnology-derived trees and crops

**Steve Tesch (FE)**

Reforestation; site preparation; management of competing vegetation

## **Forest Ecology, Culture, and Productivity**

**Michael Adams<sup>†</sup> (FS)**

Amphibian ecology and conservation; headwater stream and pond conservation

**John Bailey (FR)**

Stand dynamics, structural development and sustainable forest management; old-growth structure and multi-aged management; thinning strategies and intensive density management; long-term site productivity in Douglas-fir plantations; restoration and management of fire-dependent forest ecosystems

**Badege Bishaw (FS)**

Agroforestry, social forestry, and international forestry, especially in Ethiopia and South Africa; sustainable forestry and natural resources

**Bryan Black (FS)**

Forest disturbance history; dendrochronology; linkages between marine and terrestrial ecosystems; applications of dendrochronology to growth increments of aquatic organisms

**Barbara Bond (FS)**

Age-related changes in growth and physiology of trees and forest stands; ecohydrological processes in small watersheds; using cold-air drainage systems within small watersheds to investigate physiological processes within watersheds; impacts of exotic forest plantations on water resources in Patagonia

**Mike Bondi (FS)**

Christmas tree fertilization, long-term productivity, and genetics; uneven-age and even-age management of Douglas-fir; natural and artificial regeneration systems

**Jim Boyle (FR)** LTEP, LTER  
Long-term forest productivity; sustainable forestry

**Bruce Caldwell (FS)** LTER  
Soil enzyme activities, soil organic matter, decomposition, fungal physiology (especially mycorrhizal fungi)

**Efren Cazares (FS)**  
Ecology of mycorrhizal fungi; ectomycorrhizal diversity; mycorrhizal ecology of plant establishment; taxonomy of mycorrhizal fungi; rhizosphere biology

**Warren Cohen\*** (FS) LARSE  
Remote sensing applications in ecology; landscape ecology; regional characterizations of forest disturbance and regeneration

**Jana Compton†** (FS)  
Biogeochemistry; forest soils; nutrient cycling at scales from microbes to watersheds; management and species influences on ecosystem processes; stable isotopes in ecosystem studies

**Kermit Cromack, Jr.** (FS) LTER  
Forest ecosystem studies; nutrient cycling in forests; role of mycorrhizae; influence of ecosystem disturbance on soil carbon and nitrogen resources

**Stephen Fitzgerald (FR)**  
Silviculture systems, old-growth ponderosa pine management; stand development in east-side forests, uneven-aged management in dry-site forests; fuel reduction strategies

**Rick Fletcher (FR)**  
Christmas tree genetics, fertilization, and disease management; agroforestry

**Lisa Ganio (FS)**  
Hierarchical analysis methods for data from multiscaled ecological systems; development of spatial statistics methods for use in stream network systems

**Mathias Goeckede (FS)**  
Top-down modeling approach to estimate regional carbon balance of Oregon and Northern

California; optimization of a model-data fusion scheme utilizing atmospheric transport modeling

**Gordon Grant\*** (FS)

Structure and behavior of mountain streams, including effects on rivers and watersheds of forest land use, dams, floods, and other disturbances

**Matthew Gregory** (FS)

Regional-scale vegetation mapping; 3-D visualization of forest ecosystems; geographic information systems

**Andrew Gray\*** (FS)

LTERR

Forest succession and structural development; ecosystem response to disturbance; natural regeneration of conifers; understory vascular plant communities

**Bob Griffiths** (FS)

LTERR

Effects of disturbances, microclimate, and vegetation on nutrient and carbon cycling and trace gas flux in forest soils; biology and chemistry of mycorrhizal mat communities

**Temesgen Hailemariam** (FR)

Imputation and generation of tree lists, stand structures, and spatial distributions; estimation of tree crown attributes and terrestrial carbon sequestration; methods to relate forest productivity and diversity to aerial information

**Mark Harmon** (FS)

LARSE, LTERR

Log and snag decay processes in forests; nutrient cycling; effects of forestry on carbon stores; ecosystem modeling

**Dave Hibbs** (FS)

HSC, CFERR

Community ecology; hardwood ecology and silviculture; riparian-area ecology; roles of disturbance, including fire; diversity, ecology, and management of mixed-species communities; temperate and tropical forests

**Manuela Huso** (FS)

Statistical models used in studies of wildlife habitat ecology; conservation biology; influence of forest landscape pattern on vertebrates; riparian-area ecology; diversity, ecology, and management of mixed-species communities;

decomposition of coarse woody debris;  
ecosystem modeling; snag phytochemistry; scale  
effects

**James Irvine (FS)**

Ecophysiological controls of net carbon exchange  
of forests; forest-age-related patterns of canopy  
gas exchange and ecosystem respiration

**Loren Kellogg (FE)** CFWUR

Harvesting young stands; mechanized harvest-  
ing; alternative silvicultural systems; fire biomass  
utilization and fire hazard reduction; harvesting  
and silviculture system interactions

**Olga Krankina (FS)** LARSE

Forests and forestry in Russia; remote sensing of  
forest cover; forest disturbance and regeneration;  
decomposition of coarse woody debris; effects of  
forestry on carbon stores; ecosystem modeling

**Barbara Lachenbruch (WSE)** CFWUR

Ecophysiology of woody plants; functional mor-  
phology; stem physiology

**Chal Landgren (FR)**

Christmas tree genetics and disease  
management

**Bev Law (FS)**

Influence of climate, management, and age on  
ecosystem processes contributing to carbon, wa-  
ter, and energy exchange with the atmosphere;  
autotrophic and heterotrophic respiration from  
soils, and response to environment; remote sens-  
ing of vegetation structure; scaling methods for  
regional analysis of net ecosystem productivity

**Daniel Luoma (FS)** LTER

Ecology and taxonomy of mycorrhizal fungi;  
biodiversity of ectomycorrhizae and ectomycor-  
rhizal fungi in natural and managed forests; plant  
community ecology

**Doug Maguire (FS)** CIPS, INLAS

Director, CIPS; responses of ground vegetation  
to stand structure and silvicultural treatments;  
DEMO (Demonstration of Ecosystem  
Management Objectives)

**Kate McCulloh** (WSE)

Whole plant physiology; long-distance transport in plants; hydraulic architecture of plants; water-use efficiency

**Frederick Meinzer\*** (FS)

Tree physiology; forest canopy processes; plant ecophysiology; tropical forest and savanna ecophysiology

**Dave Myrold** (FS)

Nitrogen cycling in forest soils; Frankia and actinorhizal symbiosis; soil microbial communities

**Ron Neilson\*** (FS)

Climate change; biogeography; ecosystem modeling; ecotones; dynamic general vegetation modeling; fire modeling and forecasting

**Mike Newton** (FS)

Vegetation management technology; habitat management; long-term productivity; western hemlock, red alder, and shrub competition; young-stand growth; development of mature stands; bedrock as a tree-growing resource

**Kari Bisbee O'Connell** (FS)

LTERR

Long-term patterns of carbon accumulation; forest succession and structural development; tree regeneration after wildfire; development of old-growth stands

**Janet Ohmann\*** (FS)

Forest landscape ecology; forest community ecology; regional biodiversity characterization and mapping; forest ecosystem management

**Steven Perakis<sup>†</sup>** (FS)

CFER, LTER

Biogeochemistry and ecosystem analysis; forest nutrient cycling and nutrition; plant-soil interactions; watershed studies; stable isotopes

**Don Phillips<sup>‡</sup>** (FS)

Climate change and CO<sub>2</sub> effects; root dynamics; statistical analysis; ecosystem modeling; stable isotope mixing models

**Klaus Puettmann** (FS)

Stand dynamics, thinning and density manage-

ment, impact of forest management on productivity and biodiversity, mixed species management

**Steve Radosevich** (FS) SF

Early-successional plant community dynamics; Douglas-fir/red alder associations; huckleberry restoration; invasive plant species; sustainable forestry

**Bill Ripple** (FR) LP, ERSAL

Remote sensing of forest resources; geographic information systems; landscape ecology; aerial photo interpretation; wildlife ecology; fire ecology; retrospective studies of forest landscapes; aspen ecology; ecological effects of wolf restoration

**Paul Rygiewicz**<sup>‡</sup> (FS)

Physiology of plant-soil biota interactions that mediate carbon and nutrient dynamics; role of natural and anthropogenic stressors on carbon and nutrient dynamics from cellular to ecosystem scales

**Dave Shaw** SNCC

Ecology of forest insects and diseases; dwarf mistletoes in managed and unmanaged stands; interaction of fire, dwarf mistletoe, and wildlife; biodiversity of heartrot fungi and their relationship to cavity-nesting vertebrates

**Stephen Schoenholtz**<sup>§</sup> (FE)

Forest soils and hydrology; biogeochemistry; wetland ecology

**Jane Smith**\* (FS) LTER

Biological and functional diversity of forest fungi; impacts of fire and ecosystem disturbance on soil microbial communities; microbial interactions with native and nonnative invasive plant species

**Phil Sollins** (FS) LTER

Soil organic matter stabilization; biogeochemistry; soil formation processes; plant-soil relations; tropical ecosystems

**Tom Spies**\* (FS) CLAMS

Landscape ecology; ecosystem analysis; plant community ecology

**Fred Swanson\*** (FS)

Landscape ecology; ecosystem management; geomorphology; forest hydrology

**John Tappeiner** (FR)

CFER

Ecology and management of shrubs and hardwoods; stand growth; silvicultural systems; thinning and management of young stands for wood and biodiversity; development and growth of old-growth stands

**Steve Tesch** (FE)

CFWUR

Forest engineering-silviculture interactions; ecology and management of interior mixed-conifer forests

**Christoph Thomas** (FS)

Abiotic control of turbulence in tall plant canopies; temporal and spatial dynamics of the atmospheric boundary layer; quality control and assurance of network-scale NEE measurements; effect of surface disturbances on atmospheric exchange of momentum, energy, and matter

**Jim Trappe** (FS)

Taxonomy and ecology of mycorrhizal fungi, especially truffles

**David Turner** (FS)

Spatially distributed modeling of forest biogeochemistry; application of remote sensing for characterizing canopy leaf area; development of carbon budgets at the stand, landscape, regional, and national scales

**Dick Waring** (FS)

Assessing potential and actual forest production across broad landscapes using remote sensing, GIS, and simplified process model; biodiversity

## **Protecting Forests and Watersheds**

**Paul Adams** (FE)

CFWUR

Effects of timber harvesting and forest roads on erosion, site productivity, and water quality and

quantity; forest watershed management methods, planning, and policies

**Heidi Albers (FR)**

Modeling and analyzing spatial aspects of land trust and government land conservation decisions; economics of protected area management in developing countries; analyzing policies to reduce wildfire risk; forest fragmentation and roads; invasive species

**John Bailey (FR)**

Wildland fire hazard, fuels reduction, and forest health restoration; riparian restoration

**Bob Beschta (FE)**

Riparian functions; water quality; channel morphology; subsurface and hyporheic flow in riparian areas; large woody debris; hillslope hydrology; road drainage systems

**Jana Compton<sup>‡</sup> (FS)**

Land use and vegetation influences on ecosystem and watershed processes; influences on soil nutrient availability

**Kermit Cromack, Jr. (FS)**

Long-term impacts of forest management on soil; influence of ecosystem stress on susceptibility to forest pathogens and pests; effects of fire on forest ecosystems; evaluation of forest soil resources and stream chemistry in forest watershed ecosystems

**Lisa Ganio (FS)**

Hierarchical analysis methods for data from multiscaled ecological systems; development of spatial statistics methods for use in stream network systems

**Bob Griffiths (FS)**

Terrestrial-aquatic interactions; watershed management influences on stream sediment organic matter

**Temesgen Hailemariam (FR)**

Forest biometrics and measurement; change inventory; evaluating windthrow risks and impacts of silvicultural systems; hybrid forest growth-and-

yield-modeling; inventory and monitoring forest resources

**Everett Hansen (FS)**

Integrated forest protection; diseases of seedlings and mature stands; roles of pathogens in forest ecosystems; biology and management of laminated root rot, cedar root disease, and sudden oak death; forest mycology

**Sherri Johnson\* (FS)** LTER

Forest stream interactions; biogeochemistry; effects of disturbances on aquatic ecosystems

**Kate Lajtha (FS)**

Biogeochemistry of small watersheds; soil organic matter dynamics; nitrogen cycling in terrestrial and estuarine ecosystems

**Doug Maguire (FS)** CIPS, INLAS

Effects of Swiss needle cast on growth and crown dynamics

**Jeffrey McDonnell (FE)**

Watershed science; hillslope hydrology; isotope tracing; runoff processes; hydrological modeling

**Mike Newton (FS)**

Evaluating impacts of plant pests; ecological roles of conifers and nonconiferous species; impacts of vegetation management on water quality; herbicide environmental chemistry; animal damage impacts and management; buffer design and function

**Steven Perakis<sup>†</sup> (FS)** LTER

Biogeochemistry and ecosystem analysis; plant-soil interactions; forest nutrient cycling and nutrition; watershed studies; stable isotopes

**Marvin Pyles (FE)** CFWUR

Slope failure mechanisms; road drainage; stream hydraulics and hydrology

**Bill Ripple (FR)** LP, ERSAL

Remote sensing of forest resources; geographic information systems; landscape ecology; aerial photo interpretation; wildlife ecology; fire ecology; retrospective studies of forest landscapes; aspen ecology; ecological effects of wolf restoration

**Darrell Ross (FS)**

Forest entomology; bark beetle ecology and management; bark beetle pheromones; host-tree defense mechanisms; natural enemies; ecology and management of regeneration insects; hemlock woolly adelgid; hazard/risk rating; silvicultural control; integrated forest pest management

**Ron Reuter (FR)**

Restoration ecology; impacts of juniper woodlands management on watershed processes; forest and range soils; landscape ecology

**Paul Rygielwicz<sup>‡</sup> (FS)**

Physiology of plant-soil biota interactions that mediate carbon and nutrient dynamics; role of natural and anthropogenic stressors on carbon and nutrient dynamics from cellular to ecosystem scales

**Stephen Schoenholtz<sup>§</sup> (FE)**

Water quality and forest land use; ecology and management of forested wetlands and riparian areas; stream habitat

**David Shaw (FS)**

SNCC

Director, Swiss Needle Cast Cooperative; forest health and protection; biology and impacts of invasive species; herbivory

**Viviane Simon-Brown (FR)**

Intelligent consumption; environmentally responsible consumer decision making; fair, open, honest public process; sustaining collaborations

**Arne Skaugset (FE)**

CFWUR, WRC

Director, Watersheds Research Cooperative; forest hydrology; watershed management; slope stability; forest roads; cumulative watershed effects

**Phil Sollins (FS)**

LTER

Soil organic matter stabilization; temperate and tropical ecosystems; soils; nutrient cycling; modeling; landscape analysis

**Jack Walstad (FR)**

Wildland fire; integrated forest protection (lessened involvement, because of emeritus status)

**Dick Waring (FS)**

Development and application of stress indices to forested landscapes

**Michael Wing (FE)**

Visibility analysis, geographic information systems (GIS); remote sensing

## **Evaluating Forest Uses and Practices**

**Gail Achterman (FR)**

State and federal forest management and policy; integration of science into public policymaking; collaborative process design and facilitation; administrative and judicial review of federal land management decisions

**Darius Adams (FR)**

Forest economics; modeling and analysis of forest products markets; economics of sequestering carbon in forests; econometrics; forest policy

**Paul Adams (FE)**

CFWUR

Soil compaction and disturbance from forest operations, including mechanized systems; forest practices policies on private and public lands, and related soil and water effects

**Heidi Albers (FR)**

Land and biodiversity conservation economics; ecological-economic models for policy analysis; modeling and analyzing spatial aspects of land trust and government land conservation decisions; decision analysis to promote forest health in the face of risk; economic analysis of forest management policies to address wildfire risk; forest fragmentation and roads; invasive species

**John Bailey (FR)**

Long-term stand development following various silvicultural approaches; influence of silvicultural

practices on stand structure, biodiversity, habitat and sustainability

**Ralph Alig\*** (FR)

Land-use economics; landowner behavior; land cover changes; land conservation economics; economics of sequestering greenhouse gasses through land-use changes

**John Bliss** (FR)

Private forest policy; forest-based rural development; natural resources sociology

**Mike Bondi** (FS)

Using low-power radio technology to communicate forestry messages

**Rick Fletcher** (FR)

SF

Forest certification; sustainable forestry

**Lisa Ganio** (FS)

Influence of study design and statistical scaling issues in large-scale, long-term silviculture studies

**David Hann** (FR)

Modeling dynamics of tree and stand development; creation of management information systems

**Eric Hansen** (WSE)

CFWUR

Forest products marketing; environmental marketing; forest certification; innovation and new product development; business strategies

**Manuela Huso** (FS)

Statistical models used in studies of the influence of silvicultural practices on growth and yield, biodiversity, wildlife habitat, and stream temperature

**Royal Jackson** (FR)

Forest history; cultural resource management; ecotourism

**Norm Johnson** (FR)

CLAMS

Forest planning; harvest scheduling; timber supply; forest policy on public lands

**Barbara Lachenbruch** (WSE)

Effects of silviculture and environment on wood quality; understanding the physiological effects

of such changes; effects of growth rate on wood properties

**Kreg Lindberg (FR)**

Visitor price-responsiveness and economic impact of nature/ecotourism; inter-visitor conflict in natural areas; economic and social impacts of tourism

**Claire Montgomery (FR)**

Natural resource and forest economics; economics of biodiversity; housing markets; forest policy

**Glen Murphy (FE)**

CFWUR

Production analysis; log scanning; value recovery; harvest scheduling and management; facilities planning; supply chain management

**Mark Needham (FR)**

Natural resource based recreation; social psychology of natural resources; human dimensions of wildlife/fisheries; norms and standards for resource and recreation management; carrying capacity and crowding; specialization, risk, trust, conflict; tourism/ecotourism; survey and quantitative methods

**Mike Newton (FS)**

Yields of forests managed in various even- and uneven-aged strategies; influence of silvicultural systems on stream productivity; evaluation of long-term outcomes for silvicultural systems; comparative analyses of reforestation systems

**Klaus Puettmann (FS)**

Influence of silvicultural practices on growth and yield, biodiversity and wildlife habitat

**Marvin Pyles (FE)**

Cable system mechanics

**Randall Rosenberger (FR)**

Valuation of natural resources; meta-analysis; benefits transfer; health benefits of recreation

**David Shaw (FS)**

SNCC

Forest health and protection; using silviculture to solve forest health problems; impacts of silviculture on disease and insect pests

**Stephen Schoenholtz<sup>s</sup>** (FE)

Forest management effects on nutrient cycling, carbon dynamics, soil physical properties, and long-term productivity; criteria and indicators of sustainability; assessment of BMP effectiveness; use of forests for waste applications

**John Sessions** (FE)

CFWUR

Wood transportation; optimal bucking practices; timber harvest scheduling; timber supply; scheduling of silvicultural practices; harvest planning

**Bo Shelby** (FR)

In-stream flows and recreation; river management; monitoring impacts on wilderness; evaluation of new forestry practices

**Bruce Shindler** (FR)

Human dimensions of ecosystem management; public agency-citizen interaction; wildland recreation management issues

**John Tappeiner** (FR)

CFER

Ecology and management of shrubs and hardwoods; stand growth; silvicultural systems

**Jo Tynon** (FR)

Qualitative and quantitative inquiry into natural resource-based recreation and tourism issues; understanding how crime and violence on public recreation lands affect recreationists' decision making and participation patterns

**Kimberly Wallin<sup>s</sup>** (FS)

Forest insect ecology

**Michael Wing** (FE)

Visibility analysis; geographic information systems (GIS); remote sensing

# Wood Processing and Products Performance

**Charles Brunner** (WSE) CFWUR  
Optical scanning; secondary processing

**David Butler** (WSE)  
Operations research, statistics

**Jim Funck**<sup>§</sup> (WSE) CFWUR  
Scanning technology; process control; process modeling; primary and secondary manufacturing; computer-aided manufacturing, plywood

**Rakesh Gupta** (WSE) CFWUR  
Timber engineering and mechanics; structural engineering; mechanical properties and behavior of wood and wood-based composites

**Fred Kamke** (WSE)  
Wood-based composites design, manufacture, and performance; wood-adhesive interactions; heat and mass transfer in wood products; modeling wood-based composite manufacturing process

**Joe Karchesy** (WSE) CFWUR  
Wood chemistry; natural products from the forest

**Barbara Lachenbruch** (WSE) CFWUR  
Relationships between wood anatomy and wood properties

**Scott Leavengood** (WSE)  
Director, Oregon Wood Innovation Center; best practices in quality management for achieving innovation performance; applied research in quality and process control methods in the wood products industry; commercialization of underutilized species

**Robert Leichti**<sup>§</sup> (WSE)  
Mechanics of wood materials, fasteners, durability

**Kaichang Li** (WSE)  
Development of formaldehyde-free wood adhesives from renewable natural resources; interfacial chemistry of wood-plastic composites;

development of new paper additives from renewable natural resources with biological methods

**Tom McLain (WSE)** CFWUR  
Timber engineering; structural mechanical connections

**Mike Milota (WSE)** CFWUR  
Moisture, heat, and stress relationships during wood drying and use; monitoring, control, and reduction of process emissions

**Jeff Morrell (WSE)** CFWUR  
Preservative treatments; biological control; processes of decay; performance of wood-based materials

**Lech Muszynski (WSE)**  
Mechanical performance of solid wood, wood-based, and hybrid wood-plastic composites; empirical data for modeling; integrated experimental methods; multiscale characterization of wood and other biobased particulate composites; advanced imaging techniques

**John Nairn (WSE)** CFWUR  
Analytical and numerical modeling of deformation and fracture of wood and wood composites; fracture mechanics of wood and wood composites; natural-fiber composites; effects of residual stresses; failure of coatings; interfacial adhesion

**Maureen Puettmann (WSE)**  
Life cycle assessment; environmental analysis of wood production; wood preservation; carbon storage in wood products

**John Punches (WSE)** CFWUR  
Product potential of small-diameter timber; the Internet as a forest products marketing and communications tool

**Jim Reeb (WSE)** CFWUR  
Value-added forest products manufacturing; process modeling and operations research

**John Simonsen** (WSE) CFWUR  
Cellulose nanocrystal composites; wood-polymer composites; -wood preservation; environmental fate of wood preservatives

**Jim Wilson** (WSE) CFWUR  
Life cycle assessment; environmental performance of wood products; performance of wood building materials; wood-based composites; nondestructive testing

*Affiliations of courtesy faculty*

\*USDA Forest Service, Pacific Northwest Research Station

†USGS-BRD Forest and Rangeland Ecosystem Science Center

‡Environmental Protection Agency

§Other

# Special and Integrated Research Programs

## **AmeriFlux Research Network**

AmeriFlux is a coordinated network of ~100 long-term research sites in the Americas for quantifying and understanding the role of the terrestrial biosphere in global climate change. The network aims to quantify variation in carbon stocks and carbon dioxide, water vapor and energy exchange with the atmosphere, and understand its causes at relevant temporal and spatial scales. The AmeriFlux Science Chair, research synthesis group, and site intercalibration group are located at Oregon State University; the data management group is at Oak Ridge National Laboratory.

(<http://public.ornl.gov/ameriflux/>)

## **CFER: Cooperative Forest Ecosystem Research**

An integrative research and information-exchange program to address issues of young-stand management, ecology and management of riparian areas, and biodiversity on BLM, ODF, and other forest land of western Oregon. The program is joint among OSU, USGS-BRD, BLM, and Oregon Department of Forestry.

([www.fsl.orst.edu/cfer/](http://www.fsl.orst.edu/cfer/))

## **CFWUR: Center for Wood Utilization Research**

A research center focusing on developing new wood products, enhancing processing and harvesting systems, and other strategies to add value to the western forest resources

([woodscience.oregonstate.edu/USDASpecialgrant.php](http://woodscience.oregonstate.edu/USDASpecialgrant.php))

## **CIPS: Center for Intensive Planted-forest Silviculture**

A research and development center addressing the interactive effects of genetics, silviculture, protection (from insects, disease, and animal damage), competition, nutrition, and soils on the productivity, health, and sustainability of

intensively managed, planted forests  
([www.fsl.orst.edu/cips/](http://www.fsl.orst.edu/cips/))

**CLAMS: Coastal Landscape Analysis and Modeling Study**

Develops tools to understand patterns and dynamics of ecosystems such as the OregonCoast Range and to analyze the ecological, economic, and social consequences of forest policies of landowners in the region  
([www.fsl.orst.edu/clams/](http://www.fsl.orst.edu/clams/))

**ERSAL: Environmental Remote Sensing Applications Laboratory**

Develops and applies remote sensing and Geographic Information Systems (GIS) technology for the study of forest lands and related natural resource problems. Research topics include landscape ecology, remote sensing of plant cover, forest landscape patterns, and wildlife habitat.

([www.cof.orst.edu/cof/fr/ersal.php](http://www.cof.orst.edu/cof/fr/ersal.php))

**FPRL: Forest Photogrammetry Research Laboratory**

A research, development, and technology transfer facility focused on photogrammetry, digital mapping, and image processing. Its primary mission is to introduce and apply modern photogrammetric techniques to natural resource management. The facility offers an analytical plotter, image-processing equipment, and a PC-based mapping system tied to digitizing tablets.

([www.cof.orst.edu/cof/fr//fpri.php](http://www.cof.orst.edu/cof/fr//fpri.php))

**HSC: Hardwood Silviculture Cooperative**

Research and technology transfer program on the ecology, reforestation, and stand management of Northwest hardwood species, especially red alder  
([www.cof.orst.edu/coops/hsc](http://www.cof.orst.edu/coops/hsc))

**INLAS: Interior Northwest Landscape Analysis System**

Enhances existing and develops new analytical tools to project succession and disturbance dynamics across landscapes and changes in

ecological and socioeconomic systems under varying forest policy or management options on all ownerships in eastern Oregon

([www.fs.fed.us/pnw/lagrande/inlas/](http://www.fs.fed.us/pnw/lagrande/inlas/))

**LARSE: Laboratory for Applications of Remote Sensing in Ecology**

Conducts basic remote sensing research, translates remotely sensed data into mapped ecological information, and fills the gap between remote sensing and ecological sciences

([www.fsl.orst.edu/larse/](http://www.fsl.orst.edu/larse/))

**LEMMA: Landscape Ecology, Modeling, Mapping and Analysis**

Conducts research in spatial modeling of forest composition and structure by integrating remotely sensed, environmental, and field plot data to understand controls on regional vegetation patterns and to support landscape planning and analysis.

([www.fsl.orst.edu/lemma](http://www.fsl.orst.edu/lemma))

**LP: Leopold Project**

Continues the work Aldo Leopold started on topics that intersect forestry and wildlife science and ecosystems. Leopold is a prime example of the usefulness of working across disciplines to solve complex natural resource problems. The Leopold Project is our way to put formal emphasis on the multidisciplinary approach to the study, wise use, and conservation of natural resources.

([www.cof.orst.edu/leopold](http://www.cof.orst.edu/leopold))

**LTEP: Long-Term Ecosystem Productivity Program**

A program with the goal of increasing understanding of processes that control the long-term productivity of the land in order to support sustainable ecosystem management

([www.fsl.orst.edu/ltep](http://www.fsl.orst.edu/ltep))

**LTER: Long-term Ecological Research**

A long-term program of research at the H.J. Andrews Experimental Forest, with major funding from the National Science Foundation, the Forest Service, and OSU. LTER is discovering fundamental ecological relationships in managed

and natural forests and incorporating them into forest management strategies.

([www.fsl.orst.edu/lter](http://www.fsl.orst.edu/lter))

**NTC: Nursery Technology Cooperative**

Research program on nursery management and seedling production and performance, emphasizing reforestation planting systems

([ntc.forestry.oregonstate.edu](http://ntc.forestry.oregonstate.edu))

**NWTIC: Northwest Tree Improvement Cooperative**

Oversees and coordinates cooperative tree breeding in coastal forests from California to British Columbia; provides data analysis and data management services for the same; provides expertise in tree breeding and genetic improvement to members

([www.fsl.orst.edu/nwtic](http://www.fsl.orst.edu/nwtic))

**OWIC: Oregon Wood Innovation Center**

Research, technical assistance, training, and technology transfer to improve the competitiveness of Oregon wood products firms through fostering innovation in products, processes, and business systems.

([owic.oregonstate.edu](http://owic.oregonstate.edu))

**PNWTIRC: Pacific Northwest Tree Improvement Research Cooperative**

Genetics and tree improvement research program aimed at increasing the efficiency and effectiveness of operational tree improvement programs

([www.fsl.orst.edu/pnwtirc](http://www.fsl.orst.edu/pnwtirc))

**SF: Sustainable Forests Partnership**

A research and\*\* outreach partnership integrating social and biological aspects of forestry research into strategies for the long-term management of forests for multiple values. Current projects involve a nation-wide assessment of forest biodiversity, web-based virtual tours of sustainable forestry practices, a study of forest fragmentation, and a certificate program in sustaining human and natural systems. Partnership involves four OSU colleges and two other universities.

([www.cof.orst.edu/org/sfp](http://www.cof.orst.edu/org/sfp))

**SNCC: Swiss Needle Cast Cooperative**

Investigates possible causes and remedies for attack of the fungus *Phaeocryptopus gaeumannii* in coastal Oregon Douglas-fir forests

([www.cof.orst.edu/coops/sncc](http://www.cof.orst.edu/coops/sncc))

**TERRA-PNW:**

Along-term program of research throughout Oregon and California on the ecological responses of terrestrial ecosystems to natural and human-induced changes. The research is funded by multiple agencies including NASA, the U.S. Department of Energy, NOAA, and USDA. The understanding of mechanisms controlling ecosystem processes is being incorporated in process models that are applied at the landscape to regional scale using multiple scales of observations.

(<http://wwwdata.forestry.oregonstate.edu/terra/>)

**TBGR: Tree Biosafety and Genomics Research Cooperative**

Studies tree genetics and breeding through gene-transfer-based biotechnology

([www.cof.orst.edu/coops/tbgr](http://www.cof.orst.edu/coops/tbgr))

**UPRC: Utility Pole Research Cooperative**

Seeks to improve the performance of wood in utility systems through improved specification, better inspection techniques, and development of safer remedial treatments for in-service poles

([www.cof.orst.edu/coops/utlpole](http://www.cof.orst.edu/coops/utlpole))

**VMRC: Vegetation Management Research Cooperative**

Research program on vegetation management, focusing on plant competition, vegetation control, and early growth of forest stands

([www.cof.orst.edu/coops/vmrc/home.htm](http://www.cof.orst.edu/coops/vmrc/home.htm))

**WPG: Watershed Processes Group**

An interdisciplinary research group studying linkages among physical and biological processes and human activities, with particular focus on the steep, forested landscapes of the Pacific Northwest

([www.fsl.orst.edu/wpg](http://www.fsl.orst.edu/wpg))

**WRC: Watersheds Research Cooperative**

Facilitates research on the environmental effects of intensive forest management on water quality, fisheries, and aquatic habitat

(<http://watershedsresearch.org/>)

*HSC, NTC, NWTIRC, PNWTIRC, SNCC, TBGRC, UPRC, VMRC, and WRC are research or service cooperatives funded by OSU and member organizations that jointly select and carry out research on high-priority problems.*

*CFER is a cooperative among OSU, USGS-BRD, Bureau of Land Management, and Oregon Department of Forestry.*



***[www.cof.orst.edu](http://www.cof.orst.edu)***