

VIRGINIA TECH



DEPARTMENT OF FORESTRY



Annual Report 2005

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ANNUAL REPORT 2005

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***Other departments within the College are the Department of Fisheries and Wildlife Sciences, the Department of Geography, and the Department of Wood Science and Forest Products. Reports are available upon request.**

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INTRODUCTION

This annual report highlights accomplishments in teaching, research, and outreach in the Department of Forestry for calendar year 2005. This past year has been a time of challenge and opportunity, but through the myriad changes, the department remains one of the leading programs of its type and is poised to achieve even higher levels of excellence in the future.

There were numerous personnel changes in 2005. Dr. Eric Wiseman began as Assistant Professor of Urban Forestry in May, 2005, and Dr. Amy Brunner joined the faculty as Associate Professor of Molecular Genetics in October, 2005. Liz Etherington, who had worked with Dr. Brunner at Oregon State University, made the move across country to continue conducting research as a Research Associate in Dr. Brunner's lab at Virginia Tech. In addition two Postdoctoral Associates, Dr. Takeshi Fujino and Dr. Chieh-Ting Wang, were hired in early 2006 to work in forest genetics and biotechnology with Drs. Brunner and Ulrika Egertsdotter. Colleen Carlson joined the Forest Nutrition Cooperative as Research Associate working with Professor Tom Fox, and Aurora Moldovanyi assumed a Research Associate position with Professor Steve Lawson in the recreation field. Two new Postdoctoral Associates—Dr. Christine Blinn and Dr. Jason Henning—started positions in the Forest Biometrics area. In addition Jennifer Gagnon was hired as the Coordinator of the Forest Landowner Education Program and Michelle Prysby as the Coordinator of the newly-launched Master Naturalist Program. All six of the Extension District Agent positions in Forestry/Natural Resources are now filled (Northern – Adam Downing, Southwest – Bill Worrell, Northwest – Matt Yancey, Central – Jason Fisher, Northeast – Karen Cox, Southeast – Neil Clark). Kyle Peer is the new Superintendent at the Reynolds Homestead Forest Resources Research Center in Patrick County. At the end of 2005, Jack Bird retired after 27 years as technician at the Reynolds Homestead; he was replaced in February, 2006, by Clay Sawyers. In 2005 Dr. Joseph Roggenbuck announced his intention to retire in 2006, and a search for a position in Natural Resources Education and Communication was initiated.

The campus in Blacksburg continues to grow and change. Construction neared completion on the new Agriculture/Natural Resources building. This contemporary plant science research facility will contain laboratory space for research in soils, physiology, genetics, and biotechnology.

Our off-campus operations continue to expand. Course offerings and enrollment at the Northern Virginia Center are growing rapidly. The Department of Forestry is also engaged in the university's Southside Initiative. Part of the Southside Initiative involves a partnership between the Department of Forestry, the Department of Horticulture, and the Virginia Bioinformatics Institute aimed at developing a center for propagating high-valued woody plants. The centerpiece of the Southside Initiative is the Institute for Advanced Learning and Research (IALR) in Danville. The Institute's new 94,000-square-foot building contains a tissue culture/plant propagation laboratory shared by Horticulture and Forestry. Four scientists and three technicians have been hired as full-time researchers in the IALR laboratory.

The department's educational programs continue to thrive. There were 429 undergraduates in the College of Natural Resources for Fall Semester 2005. Approximately 32% of those students who had decided upon a career path were in options associated with the Department of Forestry. There were 48 graduate students (42 full-time and 6 part-time) in our department Fall Semester 2005. We continue to have more qualified applicants to our graduate program every year than we have faculty, funds, and space to accommodate them.

Employment opportunities remain favorable for our graduates. Surveys taken each fall of individuals who graduated during the preceding academic year have consistently shown that the majority of our graduates are employed in professional positions or enrolled in graduate programs. In total, graduate students in the Department of Forestry and undergraduates in forestry majors completed requirements for 4 Ph.D. degrees, 11 master's degrees, and 37 bachelor's degrees for the academic year ending May, 2005.

Several reviews were completed in 2005. The Reynolds Homestead was visited as part of a comprehensive review of all Agricultural Research and Extension Centers (ARECs) within the Virginia Agricultural Experiment Station; the visiting team report was highly complimentary of the research being

conducted at the Homestead and its relevance to the forestry community. Undergraduate curricula under the Forestry Major of the Department of Forestry received reaccreditation through 2015 (maximum possible) from the Society of American Foresters. A review of all research and extension programs in the College of Natural Resources was conducted by the USDA Cooperative State Research, Education and Extension Service (CSREES) in September, 2005. Finally, the College of Natural Resources, and all of the departments therein, completed a regularly scheduled internal audit in 2005.

In 2001 a strategic plan for the Department of Forestry was finalized and distributed to various stakeholder groups. The university is currently updating its strategic plan; when that process is completed (sometime in 2006), the Department of Forestry will initiate an update to its current plan. Strategic plans provide useful blueprints as we continue in the new century, but successful implementation will require concerted effort and solid support from students, faculty, and administrators at Virginia Tech, as well as our alumni, friends, and clientele groups throughout the forestry community.

All things considered, 2005 was a highly successful year for the Department of Forestry; we look forward to the challenges and opportunities ahead.

A handwritten signature in black ink, reading "Harold E. Burkhart". The signature is written in a cursive, flowing style.

Harold E. Burkhart
Department Head
March, 2006

PERSONNEL

Faculty

Amacher, Gregory S., Associate Professor (Adjunct Faculty, Department of Economics)

Ph.D., University of Michigan

Special Interests: Natural resource and environmental policy; public economics; econometrics; international forest development

Amateis, Ralph L., Senior Research Associate

M.S., University of Florida

Special Interests: Statistical techniques applied to forestry problems; growth and yield modelling

Aust, W. Michael, Professor

Ph.D., North Carolina State University

Special Interests: Impacts of forestry operations on soil and hydrology; ecology and management of forested wetlands and riparian areas; development and implementation of forestry best management practices

Baker, Shawn A., Extension Associate (resigned January, 2005)

M.S., Virginia Polytechnic Institute and State University

Special Interests: Sustainable forest management; non-industrial private forest landowner education; timberland security

Barrett, Scott M., Extension Associate

M.S., Virginia Polytechnic Institute and State University

Special Interests: Logger training and education

Blinn, Christine E. Postdoctoral Associate.

Ph.D., Virginia Polytechnic Institute and State University

Special Interests: Remote sensing; geographic information systems; statistical applications for natural resource inventory and management

Brunner, Amy M., Associate Professor

Ph.D., Oregon State University

Special Interests: Genomics of tree development, ecophysiology, and adaptation; molecular genetics of tree maturation, flowering, and crown architecture; epigenetic mechanisms and small RNAs in trees; long-distance signaling in trees; tree biotechnology

Burger, James A., Professor

Ph.D., University of Florida

Special Interests: Forest soil and site productivity; forest tree nutrition; pine plantation silviculture; restoration ecology; agroforestry

Burkhart, Harold E., University Distinguished Professor and Head, Department of Forestry

Ph.D., University of Georgia

Special Interests: Development of growth and yield prediction techniques; application of statistical methods to forest measurement problems

Carlson, Colleen A., Research Associate

M.S., University of the Witwatersrand, South Africa

Special Interests: Silvicultural systems; methods of data analysis in forestry research

Chojnacky, David C., USDA Forest Service Research Enterprise Unit and Adjunct Faculty
Ph.D., Colorado State University
Special Interests: Forest inventory with emphasis on mensuration; model-based estimators and sampling techniques for applications to carbon sequestration; forest health; wildlife habitat; dryland forests

Copenheaver, Carolyn A., Assistant Professor
Ph.D., Pennsylvania State University
Special Interests: Dendrochronology; land-use history; vegetation distribution; stand dynamics

Dan, Yinghui, Research Assistant Professor, Institute for Sustainable and Renewable Resources, Institute for Advanced Learning and Research, and Adjunct Faculty
Ph.D., Michigan State University
Special Interests: Discovery and development of the cutting edge technologies for plant genetic engineering and tissue culture; functional genomics

Day, Susan D., Research Assistant Professor
Ph.D., Virginia Polytechnic Institute and State University
Special Interests: Urban forestry, including urban runoff mitigation, soil compaction and construction damage, and deep planting

Downing, Adam K., Extension Agent, Agriculture and Natural Resources
M.S., Pennsylvania State University
Special Interests: Non-industrial private forest landowner issues; sustainable timber harvesting; interface forestry; urban forestry; wildlife management; land conservation

Egertsdotter, Ulrika, Associate Professor
Ph.D., Swedish University of Agricultural Sciences
Special Interests: Applications of biotechnology to forestry practices; molecular biology of developmental processes; clonal propagation, particularly somatic embryogenesis; Christmas tree propagation; molecular regulation of the wood formation process

Eisenbies, Mark H., Postdoctoral Associate
Ph.D., Virginia Polytechnic Institute and State University
Special Interests: Soil-site responses to harvesting disturbance and site preparation; forest watershed land use and flooding

Etherington, Elizabeth R., Research Associate
B.A., Oregon State University
Special Interests: Genomics research

Flinn, Barry, Director, Institute for Sustainable and Renewable Resources, Institute for Advanced Learning and Research, and Adjunct Faculty
Ph.D., University of British Columbia
Special Interests: Use of genomics to identify genes associated with quality traits and characteristics for forestry and agricultural species

Fox, Thomas R., Associate Professor
Ph.D., University of Florida
Special Interests: Forest fertilization and tree nutrition; forest soils; silviculture of southern pine plantations and Appalachian hardwoods; silvicultural practices to restore productivity and health of forest ecosystems; sustainability of managed forests

Fuller, Leslie G., Senior Research Associate, College of Natural Resources
M.S., Michigan Technological University
Special Interests: Integration of computer applications into instruction; artificial intelligence; geographic information systems; multimedia applications

Gagnon, Jennifer L., Extension Associate and Coordinator, Virginia Forest Landowner Education Program
M.S., University of Florida
Special Interests: Landowner education; shortleaf and longleaf pine silviculture; uneven-aged management

Goerlich, Daniel L., District Program Leader
M.S., State University of New York-College of Environmental Science and Forestry
Special Interests: Silviculture; landowner, logger, natural resource professional, and youth education

Harris, J. Roger, Associate Professor, Department of Horticulture, and Adjunct Faculty
Ph.D., Cornell University
Special Interests: Tree establishment issues; landscape contracting; urban forestry

Henning, Jason G., Postdoctoral Associate
Ph.D., Virginia Polytechnic Institute and State University
Special Interests: Emerging technologies and technology transfer for developing ecological assessments of forests; statistical methods for evaluating and testing forest models; hybrid growth and yield/process models

Hull, R. Bruce, Professor
Ph.D., Virginia Polytechnic Institute and State University
Special Interests: Public ecology and sustainability; human dimensions of natural resource management; negotiation of acceptable environmental quality; forest fragmentation and urbanization; recreation

Johnsen, Kurt D., Project Leader, USDA Forest Service, and Adjunct Faculty
Ph.D., University of Georgia
Special Interests: Quantifying and modeling carbon sequestration of natural and managed forests

Johnson, James E., Professor and Associate Dean - Outreach, College of Natural Resources
Ph.D., Virginia Polytechnic Institute and State University
Special Interests: Hardwood and pine silviculture; forest soils; impacts of forest management activities on site productivity; extension forestry

Jones, Robert H., Professor, Department of Biology; courtesy appointment in the Department of Forestry
Ph.D., State University of New York
Special Interests: Hardwood regeneration; forest ecology

Kelly, J. Michael, Professor and Dean, College of Natural Resources
Ph.D., University of Tennessee
Special Interests: Forest soils

Keyser, Patrick D., Regional Wildlife Biologist, MeadWestvaco Corporation, and Adjunct Faculty
Ph.D., Clemson University

Kirwan, Jeffrey L., Associate Professor and Extension Specialist
Ph.D., University of Virginia
Special Interests: 4-H and youth education; urban and community forestry; forest and wildlife ecology

Lakel, William A., III, Research Associate/Instructor
M.S., Virginia Polytechnic Institute and State University
Special Interests: Minimizing impacts of industrial forestry operations on soil/site and water quality in forested watersheds through proper use of best management practices, harvesting technology, and road construction and maintenance

Lawson, Steven R., Assistant Professor
Ph.D., University of Vermont
Special Interests: Management of visitor use in parks and protected areas; normative recreation research; computer simulation modeling of recreation behavior; human dimensions of natural resource management

Li, Zhiwu, Research Assistant Professor, Institute for Sustainable and Renewable Resources, Institute for Advanced Learning and Research, and Adjunct Faculty
Ph.D., University of Idaho
Special Interests: High-throughput transformation processes for different kinds of plants; mechanisms of transgene silencing; global gene expression profiling and candidate gene identification and characterization

Loftis, David L., Project Leader, USDA Forest Service, and Adjunct Faculty
Ph.D., North Carolina State University

Marion, Jeffrey L., Unit Leader/Scientist, Cooperative Park Studies Unit, USGS Patuxent Wildlife Research Center, and Adjunct Faculty
Ph.D., University of Minnesota
Special Interests: Recreation resources management; recreation ecology; park and wilderness management; ecotourism management

McGee, John, Research Assistant Professor and Geospatial Extension Specialist
Ph.D., University of Massachusetts-Amherst
Special Interests: Natural resource management; geospatial applications; technology transfer

Merry, Frank D., Research Scientist in International Forestry and Adjunct Faculty
Ph.D., University of Florida
Special Interests: Forest economics

Miller, Patrick A., Professor and Head, Department of Landscape Architecture; courtesy appointment in the Department of Forestry
Ph.D., University of Michigan
Special Interests: Landscape aesthetics

Moldovanyi, Aurora, Research Associate
M.S., West Virginia University
Special Interests: Recreation, parks, and tourism resources

Mortimer, Michael J., Assistant Professor
Ph.D., University of Montana; J.D., Pennsylvania State University
Special Interests: Federal and state forestry regulation; public land management; property rights; public administration; sustainable forestry

Nelson, Ross F., Physical Scientist, NASA/Goodard Space Flight Center, and Adjunct Faculty
Ph.D., Virginia Polytechnic Institute and State University
Special Interests: Use of airborne laser data to characterize the forest canopy and to estimate forest biomass, volume, and carbon; use of AVHRR and Landsat digital data to monitor tropical and subtropical forest conversion

Oderwald, Richard G., Professor and Associate Dean for Undergraduate Programs
Ph.D., University of Georgia
Special Interests: Sampling for forest resource populations; statistical distributions in forest populations

Peer, Kyle R., Research Associate and Superintendent, Reynolds Homestead Forest Resources
Research Center
M.S., University of Maine, Orono
Special Interests: Vegetative propagation; clonal forestry; nursery and greenhouse production;
tree breeding

Prisley, Stephen P., Associate Professor
Ph.D., Virginia Polytechnic Institute and State University
Special Interests: Quantitative and spatial analysis of natural resources for management
planning, including spatial harvest scheduling, inventory projection, and forest carbon modeling

Radtke, Philip J., Assistant Professor
Ph.D., University of Minnesota
Special Interests: Assessment and modeling of forest resources; evaluating models used in
forestry and ecology; acquisition, management, and analysis of data

Reynolds, Marion R., Jr., Professor; joint appointment with Department of Statistics
Ph.D., Stanford University
Special Interests: Statistical quality control; validation of simulation models; applications of
statistics to natural resource problems

Robertson, David P., Visiting Assistant Professor
Ph.D., Virginia Polytechnic Institute and State University
Special Interests: Public ecology; urban ecology; civic environmentalism; sustainable community
development; history and philosophy of science; human dimensions of natural resource
management; environmental design and planning

Roggenbuck, Joseph W., Professor
Ph.D., Utah State University
Special Interests: Natural resource recreation behavior; recreation management, particularly
wilderness and backcountry recreation; planning and evaluation of park interpretation

Salom, Scott M., Associate Professor, Department of Entomology; courtesy appointment in the
Department of Forestry
Ph.D., University of British Columbia
Special Interests: Biology, behavior, chemical ecology, and integrated pest management of
forest insects

Sampson, David A., Research Scientist
Ph.D., Colorado State University
Special Interests: Ecophysiology; public awareness of environmental issues; environmental
education

Scrivani, John A., Research Forester, Virginia Department of Forestry, and Adjunct Faculty
Ph.D., Oregon State University
Special Interests: Forest management

Seiler, John R., The Honorable and Mrs. Shelton H. Short, Jr., Professor of Forestry
Ph.D., Virginia Polytechnic Institute and State University
Special Interests: Forest tree physiology; physiological applications in silviculture; multimedia,
computer innovations for teaching forestry

Shaffer, Robert M., Charles Nettleton Professor of Forestry and Extension Specialist
Ph.D., University of Missouri
Special Interests: Forestry operations; timber harvesting; wood procurement; industrial forestry

Sullivan, Jay, Professor
Ph.D., University of California, Berkeley
Special Interests: Forest resource economics and management; regional economics; forest landowner behavior and incentives

Visser, J. M. (Rien), Associate Professor
Ph.D., University of Bodenkulture, Vienna, Austria
Special Interests: Forest engineering; cable logging; harvesting systems analyses; performance monitoring; forest best management practices; steep terrain harvesting; watershed management and flood risk analyses; bio-energy development

Vose, James M., Project Leader, USDA Forest Service, and Adjunct Faculty
Ph.D., North Carolina State University
Special Interests: Forest ecology

Wiseman, P. Eric, Assistant Professor
Ph.D., Clemson University
Special Interests: Landscape tree establishment and maintenance; woody plant stress physiology; urban soils; arborist training and certification

Wynne, Randolph H., Associate Professor
Ph.D., University of Wisconsin-Madison
Special Interests: Application of remote sensing to forestry; natural resource management; environmental monitoring; long-term ecological research; earth system science

Zedaker, Shepard M., Professor
Ph.D., Oregon State University
Special Interests: Regeneration silviculture; chemical silviculture; vegetation management; quantitative ecology and stand dynamics

Emeriti

Adams, Robert E.
Ph.D., State University of New York-Syracuse
Special Interests: Physiological applications in silviculture; international forestry

Buhyoff, Gregory J., Julian N. Cheatham Professor of Forestry
Ph.D., University of Michigan
Special Interests: Visual assessment and visual impact modeling; computer applications; philosophy and history of science; human dimensions of natural resource management

Hall, Otis F.
Ph.D., University of Minnesota
Special Interests: Forest management; economic impact of forests; hardwood quality production; policy; computer use in forestry

Haney, Harry L., Jr., Garland Gray Professor of Forestry and Extension Specialist
Ph.D., Yale University
Special Interests: Forestry investment analysis; management of non-industrial private timberland; timber income and estate taxation; consulting forestry business; local regulation and conservation easements

Hosner, John F.
Ph.D., State University of New York-Syracuse
Special Interests: Silviculture; ecology

Klemperer, W. David, Professor
Ph.D., Oregon State University
Special Interests: Forest investment analysis and taxation; optimizing timber management regimes; risk analysis

McElfresh, William A.
M.S., University of Michigan
Special Interests: 4-H and youth conservation; natural resource and historical interpretation; environmental education; outdoor recreation

McElwee, Robert L.
Ph.D., North Carolina State University
Special Interests: Forest management; industrial forestry; tree improvement

Smith, David Wm.
Ph.D., Iowa State University
Special Interests: Silviculture of Appalachian hardwoods; impacts of silviculture on soil nutrients, site quality, and floral diversity; nutrient cycling in forest ecosystems

Walbridge, Thomas A., Jr.
Ph.D., University of Michigan
Special Interests: Economic analysis and evaluation of mechanized forestry operations

Wisdom, Harold W.
Ph.D., State University of New York-Syracuse
Special Interests: International trade and investment; international forest policy

Visiting Scholars and Lecturers During 2005

Allen, H. Lee – Carl Schenck Professor of Forestry, North Carolina State University, Raleigh, NC
Anderson, Bill – Forestry Division Manager, Gilbert Lumber Company, Duffield, VA
Arnold, Greg – Research Manager, TRANSIT New Zealand, Wellington, New Zealand
Austin, Dennis – Harvesting Supervisor, Georgia-Pacific Corporation, Brookneal, VA
Braaten, Adam – Arborist, Bartlett Tree Experts, Roanoke, VA
Carroll, John – Deputy State Forester, Virginia Department of Forestry, Charlottesville, VA
Cayen, Tim – Director of Business Development, Hancock Timber Resource Group, Boston, MA
Choi, Jungkee – Associate Professor, Kangwon National University, Chuncheon, Korea
Crawford, Jess – Forester, Forest Resources Management, King William, VA
Deahl, Peter – Arborist, The Pruning School, Sterling, VA
Donnelly, Dennis – Forester/Analyst (retired), USDA Forest Service FMSC, Ft. Collins, CO
Duff, Ann – Northern Region Systems Manager, Smurfit-Stone Container Corporation, West Point, VA
Eckley, Michael – Forester, Virginia Department of Forestry, Orange, VA
Eshelman, Pete – Director of Operations, Wilderness Adventure at Eagle Landing, New Castle, VA
Evans, Rebecca – District Conservation Technician, Mountain Castles Soil and Water Conservation District, Roanoke, VA
Feggeler, Steve – Utility Forester, Appalachian Power, Christiansburg, VA
Filep, Erik – Technician, Virginia Department of Forestry, Louisa, VA
Frederickson, Todd – Professor, Ferrum College, Ferrum, VA
Fuller, Brad – Procurement Manager, J. M. Huber Corporation, Crystal Hill, VA
Garrison, Carl – State Forester, Virginia Department of Forestry, Charlottesville, VA
Girardi, Peter – Urban Forester, City of Richmond, Virginia
Hager, Jeremy – Arborist, Bartlett Tree Experts, Dumfries, VA
Hancock, John – Local District Supervisor, MeadWestvaco, Covington, VA
Henry, Daniel – Urban Forester for the City of Roanoke, VA
Hinchee, Maud – Scientist, ArborGen, Summerville, SC
Hoskins, Wayne – Co-Owner/Forester, Gator Wood, Inc., Wilson, NC
Kodryski, Bob – Scientist, ArborGen, Summerville, SC
Koskela, Erkki – Professor, University of Helsinki, Finland

Looney, Ted – Environmental Manager, Weyerhaeuser, Magnolia, MS
Martinez, Teresa – Regional Coordinator, Appalachian Trail Conservancy, Blacksburg, VA
Martini, Ghalia – Fulbright Scholar and Faculty of Forestry, Aleppo University, Aleppo, Syria
Mendell, Brooks – Assistant Professor, Center for Forest Business, University of Georgia, Athens, GA
Milhous, Ed – Urban Forester, Trees Please, Haymarket, VA
Nowacki, Greg – Regional Ecologist–Eastern Region, USDA Forest Service, Milwaukee, WI
Ollikainen, Markku – Professor, University of Helsinki, Finland
Potter, Christopher – Senior Research Scientist, NASA Ames Research Center, Moffett Field, CA
Pulice, Michael – Architectural Historian, Virginia Department of Historic Resources, Roanoke, VA
Reams, Greg – National Program Manager, Forest Inventory & Analysis, USDA Forest Service, Washington, DC
Reisinger, Tom – President, Reisinger and Associates, Blacksburg, VA
Rhotmen, Will – Scientist, ArborGen, Summerville, SC
Rolston, Holmes, III – University Distinguished Professor of Philosophy, Colorado State University, Fort Collins, CO
Rutledge, Jason – Horse Logger, Healing Harvest Forest Foundation, Copper Hill, VA
Sayed-Issa, Majdeddin – Faculty of Agricultural Economics, Aleppo University, Aleppo, Syria
Schwoppe, Kurt – Vice President, Leica Geosystems, Atlanta, GA
Shallenberger, Scott – Procurement Forester, MeadWestvaco, Rocky Mount, VA
Shelley, Bill – Chief Engineer-Defense Solutions, Leica Geosystems, Atlanta, GA
Skelton, Bradley – Chief Technology Officer, Leica Geosystems, Atlanta, GA
Springer, Rob – Arborist, Bartlett Tree Experts, Charlottesville, VA
Wachi, Tatsuya – Associate Professor, WACO University, Tokyo, Japan

Technical Personnel

Baldassaro, Paige M., M.S., Virginia Polytechnic Institute and State University
Geospatial Extension Program

Bird, Jackson R. (retired December, 2005)
Reynolds Homestead Forest Resources Research Center/Forest Biology

Jackson, Meral L., M.S., Virginia Polytechnic Institute and State University
Forest Biology

Mitchem, David O., B.S., Virginia Polytechnic Institute and State University
Forest Biology

Peterson, John A., M.S., Virginia Polytechnic Institute and State University
Forest Biology

Roberts, E. Talcott, Jr., B.S., Virginia Polytechnic Institute and State University
Industrial Forestry Operations

Weber, Lon A., B.S., Colorado State University
College of Natural Resources

Clerical Personnel

Eanes, Laura
Hollandsworth, Kathryn
Linkous, Connie
Sherman, Tracey
Snow, Suzanne

Department of Forestry Advisory Board

Forest Resources Management Committee – 2005

Bush, C. E., III - Bush & Cooney, LLC, Charlotte, NC
Carroll, John – Virginia Department of Forestry, Charlottesville, VA
Crowe, Linda L. - The Nature Conservancy, Charlottesville, VA
Duff, Ann - Smurfit-Stone Container Corporation, West Point, VA
Harrison, John - Harrison Timber Products, Appomattox, VA
Jones, Alan - Bartlett Tree Experts, Charlottesville, VA
Keefer, Brent - Hancock Timber Resource Group, Charlotte, NC
Kennedy, Kit C. – Lewes, DE
Kitchen, Ollie W. - MeadWestvaco, Covington, VA
Kuykendall, Jim – Glatfelter Pulp Wood Company, Spotsylvania, VA
Scheerer, Greg - MeadWestvaco, Appomattox, VA
Teel, Jaime - Smurfit-Stone Container Corporation, Florence, SC
Tinsley, Marvin Q. - Greif, Amherst, VA
Turner, C. Harrell – Branchville, VA

Natural Resource Recreation Committee - 2005

Brown, David - America Outdoors, Knoxville, TN
Campbell, Heather - Federal Energy Regulatory Commission, Washington, DC
Carlstrom, Brian – Prince William Forest Park, Triangle, VA
Davy, John - Virginia Department of Conservation and Recreation, Richmond, VA
Kittrell, Bill - The Nature Conservancy, Charlottesville, VA
Kutruff, Julie - Northern Virginia Regional Park Authority, Fairfax Station, VA
Middaugh, Geoff - USDI Bureau of Land Management, Washington, DC
Schiffer, Cindy - USDA Forest Service, Blacksburg, VA
Stubbs, Christopher - USDI National Park Service, Oneida, TN

Ex-Officio Members

Damon, William - USDA Forest Service, Roanoke, VA
Garrison, Carl, III - Virginia Department of Forestry, Charlottesville, VA
Howe, Paul - Virginia Forestry Association, Richmond, VA
Roussopoulos, Peter - USDA Forest Service, Asheville, NC
Short, Shelton H., III - Clarksville, VA

TEACHING

The College of Natural Resources (CNR) is firmly committed to excellence in teaching. Our stated educational goals are: (1) to educate high-quality professionals who can function effectively in entry-level positions and assume positions of ever-increasing responsibility throughout their careers; (2) to provide graduate programs that combine (a) a high-quality faculty, (b) a student body selected from the best undergraduate degree recipients in this country and abroad, and (c) courses offering the most advanced knowledge in order to produce outstanding researchers, educators, and practitioners; (3) to provide students not enrolled in the college's majors with an understanding of renewable natural resources so they can assume leadership roles and foster a rational conservation ethic within the general public; (4) to effectively disseminate knowledge and to provide a new program of public service to the college's constituencies which will enhance the benefits, goods, and services obtained from natural resources of the state and surrounding region.

Obviously, teaching is an extremely important part of the mission of the Department of Forestry, and students—defined in the broadest sense—are a principal constituent. All members of the faculty participate in the teaching program, which includes formal undergraduate and graduate on-campus instruction and a variety of extension courses including continuing education for professionals. Evaluations of these educational efforts continue to be outstanding. The overall evaluation for all formal courses taught by full-time departmental faculty in Fall Semester 2005 was 3.7 out of a possible 4.0.

The Department of Forestry now has two majors: Forestry and Natural Resource Conservation. Within the Forestry major, there are four options: forest resource management, industrial forestry operations, environmental resource management, and urban forestry. The Natural Resource Conservation major has three options: natural resource recreation, natural resources education (K-6), and natural resources science (6-12).

An important component of the forestry teaching program for undergraduates is the month-long field camp which students attend in late spring of the junior year. At camp various skills and techniques which have been learned in classroom and laboratory sessions are given intensive application in the field. Also during this time students have an opportunity to interact on a one-on-one basis with faculty members and to develop the leadership and teamwork skills which will enhance their career success as professional foresters.

The department continues to emphasize the importance of written and oral communication at all levels. The college has an established Writing Improvement Program to which students are introduced in their freshman year. Students are required to write a major paper in at least one forestry course each semester. These papers are reviewed carefully for writing skills and communications effectiveness; rewriting is required where needed.

Another area of commitment in the teaching program is the integration of computer use throughout the curriculum. Located in Cheatham Hall, the college's microcomputer laboratory consists of 25 Windows 2000 workstations connected via a Windows NT local area network, a high-speed HP Laserjet printer, ten digitizing tablets, and a Boxlight multi-scan video projection system. A research laboratory (Center for Environmental Applications of Remote Sensing), equipped with 25 networked Windows XP workstations; an NT server; small- and large-format digitizers; a high-speed laser printer; color laser printer; large-format plotter; and a complete suite of GIS, image processing, and associated software, was established in 1998. Computer skills and use are required in more than half of the undergraduate forestry courses and in virtually all of the department's graduate courses.

Undergraduate enrollment in the College of Natural Resources totaled 429 in Fall Semester 2005. Approximately 32% of the "decided" CNR undergraduates were enrolled in Department of Forestry options. Enrollment at the graduate level in the department was 42 full-time and 6 part-time students in Fall Semester 2005.

**Formal Courses Taught in 2005
Spring Semester**

Course Number	Course Name	Instructor(s)	Enrollment
NR 2974	Independent Study: Forest Biology Concepts	R. G. Oderwald	1
FOR 2324	Dendrology Laboratory	J. R. Seiler	35
FOR 2554	Nature and American Values	R. B. Hull	58
FOR 2974	Independent Study: Burn Pest Survey	S. M. Zedaker	1
FOR 2984	Special Study: Wildland Fire Ecology and Management	S. M. Zedaker	16
FOR 3216	Forest Measurements	P. J. Radtke	24
FOR 3224	Forest Measurements Field Laboratory (Spring Camp)	P. J. Radtke	20
FOR 3324	Silviculture Principles and Applications	T. R. Fox	24
FOR 3334	Silviculture Field Laboratory (Spring Camp)	S. M. Zedaker and others	20
FOR 3344	Forestry Field Studies	R. M. Shaffer	20
FOR 3434	Forest Management Field Laboratory (Spring Camp)	W. M. Aust, G. S. Amacher, J. Sullivan	20
FOR 3524	Environmental Interpretation	J. W. Roggenbuck	14
FOR 3534	Outdoor Recreation Field Studies	J. W. Roggenbuck	11
FOR 3544	Outdoor Recreation Management	S. R. Lawson	33
FOR 3724	Forest Boundaries and Roads	W. M. Aust, W. A. Lakel	13
FOR 3734	Timber Procurement	R. M. Shaffer	19
FOR 4114	Information Technology for Natural Resource Management	S. P. Prisley	25
FOR 4364	Advanced Silviculture and Forest Vegetation Management	S. M. Zedaker, T. R. Fox	10
FOR 4374	Forested Wetlands	W. M. Aust	13
FOR 4434	Forest Resource Policy	M. J. Mortimer	39
FOR 4444	Integrated Forest Management Practicum	B. Sullivan and others	39
FOR 4454	Urban Forest Management and Policy	S. D. Day	6
FOR 4714	Harvesting Systems Evaluation	R. Visser	13
FOR 4974	Independent Study: Service Learning in Natural Resources	J. L. Kirwan, L. Sharp	9
FOR 4974	Independent Study: ArcGIS in Recreation Planning	S. P. Prisley	1
FOR 4974	Independent Study: Terrestrial Carbon Sequestration	S. P. Prisley	1
FOR 4974	Independent Study: GIS Applications in Forest Management	S. P. Prisley	1
FOR 5004	Graduate Seminar	T. R. Fox	1
FOR/GEOG 5104	Seminar on Remote Sensing and GIS	R. H. Wynne, J. B. Campbell	9
FOR 5254	Remote Sensing of Natural Resources	R. H. Wynne	5
FOR 5354	Advanced Forest Soils	J. A. Burger	7
FOR 5374	Advanced Forest Ecology	C. A. Copenheaver	6
FOR 5974	Independent Study: Research Methods in Wildland	S. R. Lawson	2

Course Number	Course Name	Instructor(s)	Enrollment
	Recreation		
FOR 5974	Independent Study: Advanced Harvesting Systems	R. Visser	1
PSCI 5984	Special Study: Public Ecology	D. P. Robertson	7

**Formal Courses Taught in 2005
Summer Sessions**

Course Number	Course Name	Instructor(s)	Enrollment
FOR 5384	Forest Biology and Ecology for Educators (virtual campus)	W. M. Aust, J. R. Seiler	19
FOR 5984	Special Study: GPS/GIS Meth Teaching MBE (virtual campus)	J. L. Kirwan	3
GIA/NR/PSCI 5984	Special Study: Urban Ecology	D. P. Robertson	12

**Formal Courses Taught in 2005
Fall Semester**

Course Number	Course Name	Instructor(s)	Enrollment
FOR 2214	Introductory Forest and Land Measurements	P. J. Radtke	52
FOR 2314	Forest Biology and Dendrology	J. R. Seiler	71
FOR 2324	Dendrology Laboratory	J. R. Seiler	80
FOR 2514	Wildland Fire: Ecology and Management	S. M. Zedaker	14
FOR/LAR 2554	Nature and American Values	R. B. Hull	63
FOR 2714	Introduction to Industrial Forestry Operations	R. M. Shaffer	14
FOR 3215	Forest Measurements	R. G. Oderwald	21
FOR 3314	Forest Ecology and Silvics	C. A. Copenheaver	24
FOR/HORT 3354	Urban Forestry and Arboriculture	P. E. Wiseman	27
FOR 3364	Survey of Forest Ecology and Management	S. M. Zedaker	37
FOR 3424	Forest Resource Economics	G. S. Amacher	20
FOR 3564	Outdoor Recreation Planning	S. R. Lawson	18
FOR 3714	Forest Harvesting	R. Visser	15
FOR 4214	Forest Photogrammetry and Spatial Data Processing	R. H. Wynne	30
FOR 4354	Forest Soils and Hydrology	W. M. Aust, T. R. Fox	18
FOR 4424	Forest Resource Management	J. Sullivan	24
FOR 4474	Consulting Forestry Business	W. A. Lakel	10
FOR 4514	Forest Protection	G. Griffin (PPWS), S. Salom (ENT)	23
FOR 4974	Independent Study: Leadership and Outreach in Natural Resources	J. L. Kirwan, J. R. Seiler	6
FOR 4974	Independent Study: GIS for Refuge Management	S. P. Prisley	1
FOR 4974	Independent Study: Forest Measurements	R. G. Oderwald	1
FOR 5004	Graduate Seminar	T. R. Fox	11
FOR 5264/ GEOG 5364	GIS in Natural Resource Management	S. P. Prisley	17
FOR/PPWS 5334	Plant Water Relations	J. R. Seiler	17
FOR 5415	Advanced Forest Management and Economics	G. S. Amacher	1
FOR 5454	Wildland Recreation Theory	J. W. Roggenbuck, S. R. Lawson	4
FOR 5974	Independent Study: Biosolids Applications in Forestry	T. R. Fox	1
FOR 5974	Independent Study: ArcGIS Programming	S. P. Prisley	1
FOR 5974	Independent Study: Forestry Consulting	W. A. Lakel	1
FOR 5984	Special Study: Environmental Conflict Management	M. J. Mortimer	7
ECON 4014	Environmental Economics	G. S. Amacher	92

Course Number	Course Name	Instructor(s)	Enrollment
NR 5984	Special Study: Constructing Sustainability	R. B. Hull (50%)	9
NR 5984	Special Study: Urban Ecology (virtual campus)	D. P. Robertson	15
UCCS 2984	Special Study: Earth Sustainability III	J. R. Seiler (5%)	20

RESEARCH

The overall research effort in 2005 involved expenditures (fiscal year ending September 30) of \$4.5 million. Funding from contracts and grants generated by the faculty accounted for approximately 60% of the total research expenditures in 2005. There were 25 new research projects initiated in 2005.

Fifteen students completed graduate programs in the Department of Forestry during the academic year ending May, 2005; 1 M.F., 10 M.S., and 4 Ph.D. degrees were awarded. The faculty, staff, and graduate students published 47 technically reviewed journal articles in 2005. More than 50 additional papers, including proceedings, popular articles, etc., were published. Nineteen new students entered our graduate program during 2005.

Research programs in the department are carried out within five interest groups, each of which focuses upon an allied group of specialties. These groups are (1) Forest Biometrics, (2) Natural Resource Recreation, (3) Industrial Forestry Operations, (4) Forest Biology, and (5) Forest Economics, Policy, and Management. A summary of research activities during 2005 is contained on the following pages.

Forest Biometrics Research During 2005

Faculty

Harold E. Burkhart, John A. McGee, Richard G. Oderwald, Stephen P. Prisley, Philip J. Radtke, Marion R. Reynolds, Jr. (joint with Statistics), David Arthur Sampson, Randolph H. Wynne

Emeritus Faculty

Gregory J. Buhyoff

Senior Research Associate

Ralph L. Amateis

Postdoctoral Associates

Christine E. Blinn
Jason G. Henning

Growth and Yield Modeling

Loblolly Pine Growth and Yield Research Cooperative. H. E. Burkhart, R. L. Amateis. Industrial forestry members, Virginia Department of Forestry, USDA Forest Service (by cooperative agreement).

The cooperative's objective is to develop growth and yield models for intensively managed loblolly pine plantations. Current efforts include analysis of growth and mortality relationships for thinned and unthinned stands, incorporation of silvicultural treatment effects in growth and yield models, and impacts of competing vegetation on pine growth and mortality.

Modelling Production and Decay of Coarse Woody Debris in Loblolly Pine Plantations. S. P. Prisley, P. J. Radtke, C. A. Copenheaver, R. L. Amateis, H. E. Burkhart. USDA National Research Initiative.

The objective is to sample long-term research plots for dead wood and develop a modeling system to predict mass and volume of dead wood in thinned and unthinned plantations. This model will be valuable for predicting carbon storage in dead wood, as well as nutrients, forest fuel, and related values.

**** Modeling Forest Growth and Yield in a Changing Environment.*** P. J. Radtke. McIntire-Stennis.

The objective of this project is to adopt and adapt existing models to develop a system of forest growth and yield models capable of accounting for the effects of management activities and changing environmental conditions on the growth and yield of Virginia's forests.

* New in 2005

***Evaluating and Augmenting the FVS Southern Variant for Southeastern Mixed Forests.** P. J. Radtke, T. R. Fox, C. A. Copenheaver, S. P. Prisley. USDA Forest Service.

This project aims to develop sensitivity analyses, uncertainty assessment, and calibration of the USDA Forest Service FVS-Sn variant for eight ecological sections in the Appalachian Mountains of the eastern United States. Assessments will account for the hierarchical structure of this individual-tree multi-species, age-independent growth and yield model.

Sampling and Forest Inventory

Assessment of the Small-Diameter Timber Resource in the Eastern United States. R. G. Oderwald. USDA Forest Service.

Much of the hardwood resource in the eastern United States is not large enough to justify sawlog production, yet use as pulp or similar products is not economically attractive to forest landowners. The objective of this project is to document the possible products, producers, and values for small-diameter material to assist forest landowners with forest management decisions.

Evaluating Population-Habitat Relationships of Forest Breeding Birds at a Landscape Scale Using Forest Inventory Data. S. P. Prisley, D. F. Stauffer (Fisheries and Wildlife Sciences). National Council of the Paper Industry for Air and Stream Improvement, Inc.

The objective is to analyze USFS Forest Inventory and Analysis (FIA) data in spatial conjunction with Breeding Bird Survey (BBS) data to determine if forest structure changes can explain variation in songbird population trends.

***Improving Estimates of Land Use, Land-Use Change, and Forestry in the United States.** S. P. Prisley. USDA Forest Service.

Transparent, verifiable estimates of forest carbon storage are needed for reporting greenhouse gas emissions at the national and state levels. This effort will develop methods to improve forest carbon estimates in the U.S.

Remote Sensing, Photogrammetry, and Geographic Information Systems

Applications of Remote Sensing to Forest Assessment and Inventory. R. H. Wynne. McIntire-Stennis.

Objective: To provide methods that will eventually enable accurate, objective, and routine use of remotely-sensed data for forest assessment and inventory.

Net Ecosystem Productivity of Managed Forests. R. H. Wynne, J. R. Seiler, K. H. Johnsen (USDA Forest Service). National Aeronautics and Space Administration.

Project objectives are to (1) develop and apply a regional scale modeling approach to predict and map the net ecosystem productivity of loblolly pine plantations in the southeastern United States, (2) estimate and map the total stand carbon sequestration of loblolly pine plantations across the southeastern United States, and (3) evaluate process models developed at a specific intensive research site for use across a broad region (southeastern United States).

* New in 2005

Patterns and Processes of Landscape Change in the Brazilian Amazon (Remote Sensing Component). R. H. Wynne, J. O. Browder (Urban Affairs and Planning). National Science Foundation.

This project uses traditional survey instruments, satellite remote sensing, and GIS modeling to (1) gain a fuller understanding of the patterns and processes of landscape change underway in the region and (2) use our increased understanding of both pattern and process to simulate the landscape evolution that arises from the aggregated impacts of individual household land use decisions.

Quantitative Tools for Spatial and Temporal Forest Management Planning. S. P. Prisley. McIntire-Stennis.

The objective of this project is to enhance the set of quantitative tools that can enable forest managers to analyze forest resource data.

Virginia Space Grant Workforce Initiative. J. A. McGee, R. H. Wynne, S. P. Prisley, H. E. Burkhardt, J. E. Johnson. Virginia Space Grant Consortium.

This project provides support for a Geospatial Extension Specialist, whose overall mission is to facilitate the awareness of geospatial tools and applications (GIS, GPS, RS) among pre-college, higher education, and local communities. A major program area of the Geospatial Extension Specialist is to support the efforts of Virginia Cooperative Extension to seamlessly integrate geospatial tools and applications to support the daily business demands of extension agents and specialists. The Geospatial Extension Specialist works closely with program partners.

Remote Sensing for Forest Productivity, Carbon Management, and Monitoring. R. H. Wynne, J. B. Campbell (Geography), C. E. Zipper (Department of Crop and Soil Environmental Sciences), L. T. Watson (Computer Science and Mathematics). National Aeronautics and Space Administration, George Mason University.

The overall aim of this project is to refine or develop the remote sensing applications needed to improve the statistical efficiency and spatial specificity of carbon monitoring and management in Virginia's timberland and urban forests. Building on a strong existing base, we are developing tools and data products that will use remote sensing capabilities developed by both NASA and the private sector for resource management and policy decision support in two related, high-priority NASA Earth Science Enterprise (ESE) applications: agricultural (forest) productivity and carbon management.

Horseshoe Crab Monitoring Program, Remote Sensing Component. R. H. Wynne, J. Berkson (Fisheries and Wildlife Sciences). National Marine Fisheries Service.

This project uses aerial photography, videography, and imaging technology to determine an abundance index of spawning horseshoe crabs for stock assessment purposes.

VirginiaView. J. B. Campbell (Geography), R. H. Wynne, J. A. McGee. U.S. Geological Survey.

VirginiaView is a consortium composed, at present, of nine Virginia institutions, including universities, state agencies, federal partners, non-profit organizations, and service organizations. In January 2004, VirginiaView was designated as an affiliate member of AmericaView. Member organizations encompass a broad range of activities, including university education, research, and extension, K-12 education, achieving of geospatial data, training and outreach, technology transfer, and other related activities.

Improving the Economical and Statistical Efficiency of FIA Phase I Estimates.

R. H. Wynne. USDA Forest Service.

The objective of this project is to improve precision and cost of forest area estimates through the use of satellite imagery.

**** Application of Spatial Uncertainty Models to Automate and Enhance Data Fusion.*** S. P.

Prisley, L. W. Carstensen (Geography), K. Ye (Statistics), E. P. Smith (Statistics). National Geospatial-Intelligence Agency.

Geospatial analysis involves the combination of multiple sources of spatial data, each with differing source scale, timeliness, and reliability. This project will apply statistical models of spatial uncertainty to improve the process of spatial overlay by incorporating measures of uncertainty.

**** Virginia Space Grant Workforce Proposal.*** J. A. McGee, R. H. Wynne, J. E. Riddell (Virginia Cooperative Extension). Virginia Space Grant Consortium.

The goal of this project is to increase the use of remote sensing, GIS, and GPS throughout the Commonwealth of Virginia to enhance economic and workforce development.

Utilization and Marketing

**** Marketing Natural Hardwood Charcoal in Southwest Virginia.*** P. J. Radtke, A. L. Hammett (Wood Science and Forest Products). New River-Highlands RC&D.

This project aims to determine consumer attitudes about natural hardwood charcoal, quantify profit potential for marketing locally-made lump charcoal, and to link brand to various forest management activities and objectives.

Education

**** On-line Course Development to Enhance Community College Transfers into the College of Natural Resources.*** J. R. Seiler, P. J. Radtke, S. P. Prisley. Virginia Tech Office of the Provost.

This project aims to develop an introductory course on land and forest measurements for delivery by the worldwide web. The goal is to facilitate increased enrollment of community college students transferring to the Virginia Tech College of Natural Resources.

* New in 2005

Graduate Students Enrolled During 2005

Bernard, Aaron	MS	BS, Virginia Tech
Blinn, Christine	PhD	BS, Rutgers University MS, Virginia Tech
Brown, John	PhD	BS, Richard Stockton College of New Jersey MS, University of Maine-Orono
Dorr, Jessica	MS	BS, Virginia Tech
Folledo, Renato A.	PhD	BS, University of the Philippines Los Baños MS, University of the Philippines Los Baños
Henning, Jason	PhD	BS, Cook College, Rutgers University MS, University of Minnesota
Herring, Nathan*	MS	BS, Pennsylvania State University
Johnson, Laura	MS	BS, Virginia Tech
Joseph, Katherine	MS	BS, Virginia Tech
Packard, Kevin	PhD	BA, Carleton College MS, SUNY-CESF
Quirino, Valquiria F.	PhD	BS, Federal University of Parana, Brazil MS, Albert-Ludwigs University, Germany
Shrestha, Rupesh	PhD	BS, Tribhuvan University, Nepal MS, Stuttgart University of Applied Sciences, Germany
Trincado, Guillermo**	PhD	BS, Universidad Austral de Chile MS, University Göttingen, Germany
VanderSchaaf, Curtis	PhD	BS, Stephen F. Austin State University MS, University of Idaho

* 2005-07 recipient of the William J. Dann Fellowship awarded to an outstanding graduate degree candidate by the College of Natural Resources

** 2005 recipient of the A. B. Massey Award presented by the College of Natural Resources in recognition of outstanding academic and professional leadership

Natural Resource Recreation Research During 2005

Faculty

R. Bruce Hull, Steven R. Lawson, Jeffrey L. Marion, Joseph W. Roggenbuck

Supporting Faculty

Gregory S. Amacher, David P. Robertson, Jay Sullivan, Steve L. McMullin (Fisheries and Wildlife Sciences), James D. Fraser (Fisheries and Wildlife Sciences)

Research Associate

Aurora Moldovanyi

Recreation Site and Visitor Management

Trail and Campsite Impact Assessment and Evaluation of Strategies to Manage Backcountry Use at Shenandoah National Park. J. L. Marion. USDI National Park Service.

Objective: To identify and evaluate visitor impacts to campsites and trails and to evaluate the effectiveness of alternative impact management strategies.

Design and Testing of a Sampling Protocol for Monitoring Visitor Use and Resource Impact at Cape Cod National Park. J. L. Marion. USDI United States Geological Survey.

Objective: To identify and evaluate alternative protocols for monitoring both visitor use (type, amount, and distribution) and its more significant effects on park natural resources.

Assessing Trail Conditions and Development of Long-Term Monitoring Protocols for Big South Fork National River and Recreation Area. J. L. Marion. USDI National Park Service.

Objective: To develop and apply trail condition monitoring protocols to a random sample of park trails to characterize current conditions and understand the relative importance of factors contributing to trail degradation.

Research to Support Application of the Visitor Experience and Resource Protection Framework at Zion National Park. J. L. Marion. USDI National Park Service.

Objective: To assist in identifying resource condition indicators and developing trail and campsite monitoring protocols in support of carrying capacity planning and decision making.

Evaluating the Effectiveness of Camping Management Actions at High-use Destination Areas on the Appalachian Trail. J. L. Marion. Appalachian Trail Conference.

Objective: To conduct a longitudinal examination of responses in resource conditions to management actions implemented at selected high-use camping areas along the Appalachian Trail.

Understanding Horse Trail Impacts: Best Management Practices for Hoosier National Forest. W. M. Aust, J. L. Marion. USDA Forest Service.

Objective: To investigate horse trail impacts to gain an improved understanding of the relationship between horse use and resource conditions mitigated by various trail management actions.

Research to Support Management of Social Carrying Capacity at Acadia National Park. S. R. Lawson. University of Vermont.

Objective: To assist in identifying visitor experience and resource condition indicators and standards of quality and to evaluate the acceptability of alternative visitor management practices at "icon" sites within the park.

Assessing the Amount, Type, and Environmental Effects of Climbing at Shenandoah National Park. J. L. Marion, S. R. Lawson. USDI National Park Service.

Objective: To help determine the amount and type of recreational use and associated resource impacts at cliff areas in the park.

*** Prince William Forest Park Neighborhood Residents and Visitor Survey.** S. R. Lawson. USDI National Park Service.

Objective: To provide the National Park Service with information about neighborhood residents', visitors', and the general public's park visitation patterns, demographic characteristics, and attitudes and preferences for park management.

*** Examining the Utility of Computer Simulation for Monitoring Multiple Dimensions of Wilderness Solitude in Great Smoky Mountains National Park.** S. R. Lawson. Virginia Tech Research Division, Virginia Tech College of Natural Resources, Virginia Tech Department of Forestry.

Objective: To use computer simulation modeling to develop precise estimates of visitor use and inter-group interactions among hiking, horseback riding, and backpacking visitors in the Cosby and Big Creek areas of Great Smoky Mountains National Park.

Human Dimensions

The Use and Meaning of Nearby Forest Landscapes Among Second-Home Owners. J. W. Roggenbuck. USDA Forest Service.

Objectives: To identify the activities and experiences in second homes in the forest and the role of second homes in self-identity, place identity, and in quality of life.

Communication of Fire Messages and Meanings. J. W. Roggenbuck, K. W. Larkin (USDA Forest Service). USDA Forest Service Pacific Southwest Research Station.

Objective: To discover the content, interpretation, and symbolic meanings of public service fire management messages provided at two communities.

* New in 2005

An Exploration of Forest Camping Experiences and Meanings. J. W. Roggenbuck. USDA Forest Service.

Objective: To determine whether the experiences and meanings of forest camping differ by level of campground development and mode of camping.

The Nature, Meanings, and Benefits of Forest Camping in Postindustrial America. J. W. Roggenbuck. McIntire-Stennis.

Objective: To learn how the activity, experiences, and meanings of developed and primitive forest camping are changing across time and to correlate changes in camping style and benefits to personal, cultural, and environmental changes.

Social Expectations and Acceptability of Post-fire Rehabilitation Work. R. B. Hull, D. P. Robertson, B. E. Goldstein (Urban Affairs and Planning). USDA Forest Service, North Central Experiment Station.

Objectives: Examine the roles of science, policy, and community involvement in management and community responses to fire, fire-dependent ecosystems, and post-fire restoration.

Management of Interface Forests: Professional Development Program. R. B. Hull, R. Visser. USDA Forest Service.

Objectives: Develop a training manual for resource professionals working in urbanized forested environments. The materials will focus on management issues such as small-scale harvesting, amenity, health, wildlife, and working with new owners of small forests.

Graduate Students Enrolled During 2005

Ashton, Sarah*	MS	BS, University of Maryland, College Park
Bullock, Steven	MS	BS, Utah State University
Garst, Barry	PhD	BS, Virginia Tech MS, Arizona State University
Hockett, Karen	PhD	BS, Ohio Northern University MS, University of Maine
Kiser, Brett	MS	BS, Virginia Tech
Presley, Jacquelyn**	PhD	BS, University of the South MS, University of North Carolina-Chapel Hill
Wood, Kerry	MS	BS, Southwest Texas State University

* Also included with Industrial Forestry Operations graduate students

** Recipient of a Cunningham Fellowship awarded by the Graduate School to outstanding Ph.D. candidates

Industrial Forestry Operations Research During 2005

Faculty

W. Michael Aust (joint with Forest Biology), Stephen P. Prisley (joint with Forest Biometrics), Robert M. Shaffer, J. M. (Rien) Visser

Research Associate/Instructor

W. A. Lakel

Emeritus Faculty

Thomas A. Walbridge, Jr.

Forest Operations

Determining Injury Rates for Mechanized Logging Operations in the South. R. M. Shaffer. Timber Harvesting and Transportation Safety Foundation.

Objective: Using Worker's Compensation Insurance records, determine the 2003 Total Case Incident Rate (TCIR) for fully- and partially-mechanized feller-buncher/grapple skidder operations in the South.

Analysis of Logging Accidents and Injuries on Mechanized Operations in the South. R. M. Shaffer. Timber Harvesting and Transportation Safety Foundation.

Objective: Using claims data from cooperating Workers' Compensation Insurance (WCI) companies, conduct an in-depth analysis of logging accidents and injuries on mechanized logging operations in the South.

Low-Impact Harvesting at the Urban Interface. R. Visser. Virginia Department of Forestry.

Objective: To evaluate and demonstrate low-impact harvesting system suitable for thinning small woodlots, especially at the urban interface. This harvesting system will be evaluated on ability to reduce fire risk as well as meet other landowner objectives such as visual impacts and wildlife.

Managing Streamside Management Zones. R. Visser.

Objective: To evaluate harvesting practices within a streamside management zone (SMZ) that allows commercial objectives to be met without reducing the functional integrity of the SMZ.

Assessing the Need for Spanish-Language Safety Training Materials for the Logging Industry in the Southeastern United States. R. M. Shaffer. USDA Forest Service.

Objective: To determine the current percentage of the logging workforce in the southeastern United States comprised of Spanish-speaking workers and develop a strategy to address the safety training needs for these workers.

Site Impacts from Forest Operations

Integrating TMDL Monitoring and In-field Forest Operations Auditing Programs. R. Visser. U.S. Environmental Protection Agency.

Objective: Develop a protocol on integrating TMDL and in-field forest operations auditing programs and test the feasibility in three watersheds.

International

****Improving Harvesting Operations in Bolivia.*** R. Visser. U.S. Agency for International Development.

Objective: To assess the current state of harvesting practices, develop research programs, and recommend improvements. Focus is not only on economic viability but also safety and environmental standards.

Graduate Students Enrolled During 2005

Ashton, Sarah**	MS	BS, University of Maryland, College Park
Currie, Joseph	MF	BS, University of the South
Hodges, Christine	MS	BS, Virginia Tech
Horcher, Andy	PhD	BS, University of Montana MS, University of Illinois
Jensen, Kris	MS	BS, Virginia Tech
Lakel, William	PhD	BS, Virginia Tech MS, Virginia Tech
O'Neal, Brandon	MS	BS, University of Missouri-Columbia
Yonce, Mary	MS	BS, Western Carolina University

* New in 2005

** Also included with Natural Resource Recreation students

Forest Biology Research During 2005

Faculty

W. Michael Aust (joint with Industrial Forestry Operations), Amy M. Brunner, James A. Burger, Carolyn A. Copenheaver, Susan D. Day, Ulrika Egertsdotter, Thomas R. Fox, Jeffrey L. Kirwan, James E. Johnson, John R. Seiler, P. Eric Wiseman, Shepard M. Zedaker

Emeritus Faculty

Robert E. Adams, David Wm. Smith

Cooperating Faculty

H. Lee Allen, North Carolina State University
John Fike, Department of Crop and Soil Environmental Sciences
Kurt D. Johnsen, USDA Forest Service
Robert H. Jones, Department of Biology
David L. Loftis, USDA Forest Service
Scott M. Salom, Department of Entomology
James M. Vose, USDA Forest Service
Carl E. Zipper, Department of Crop and Soil Environmental Sciences

Postdoctoral Associate

Mark H. Eisenbies

Research Associates

Colleen A. Carlson
Elizabeth R. Etherington
Kyle R. Peer

Christmas Trees

Comparison of Cultural Treatments and Tree Species for Christmas Tree Production on Reclaimed Mineland in Virginia. J. A. Burger. Powell River Project.

Objectives: (1) Determine the feasibility of growing seven Christmas tree species on reclaimed mined land using several cultural treatments; (2) provide demonstration areas and activities for the general public.

Ecology

Restoration of Flat-Rock Forest Communities. J. E. Johnson. USDI National Park Service.

Objective: Investigate methods for restoring native vegetation to successional flat-rock plant communities along the New River.

Ecological Monitoring of Civil War Battlefield Earthworks. J. E. Johnson. USDI National Park Service.

Objective: To develop and implement an ecological monitoring system for selected Civil War earthworks.

Modelling Production and Decay of Coarse Woody Debris in Loblolly Pine Plantations. S. P. Prisley, P. J. Radtke, C. A. Copenheaver, R. L. Amateis, H. E. Burkhart. USDA National Research Initiative.

The objective is to sample long-term research plots for dead wood and develop a modeling system to predict mass and volume of dead wood in thinned and unthinned plantations. This model will be valuable for predicting carbon storage in dead wood, as well as nutrients, forest fuel, and related values.

****Monitoring the Effectiveness of a Wetland Mitigation Project in the Virginia Piedmont.*** C. A. Copenheaver, W. M. Aust. Boxley Materials Company.

Objectives: To gain a better understanding of how to create successful wetland mitigation areas by (1) monitoring survivorship and growth of planted trees within an actual wetland mitigation site and (2) monitoring competing vegetation at these sites.

Regeneration/Silviculture

Reforestation and Forest Land Uses of Reclaimed Mined Lands. J. A. Burger. Powell River Project.

Objectives: (1) Develop productive mine soils for reforestation; (2) evaluate cultural treatments including the use of mycorrhizal seedlings, fertilization, weed control, nurse trees, and organic mulches; (3) develop recommendations for timely, successful restoration of forests on drastically disturbed land.

A Comparison of Hardwood Reforestation Techniques on Reclaimed Mine Land. J. A. Burger. Penn-Virginia Corporation, Plum Creek Corporation, MeadWestvaco Corporation.

Objective: Develop procedures for establishing hardwoods on mined land by handplanting versus direct seeding with a conventional ground cover.

Response of Loblolly Pine and Woody Plant Diversity to Competition Control. S. M. Zedaker. Virginia Tech Foundation, Dow Chemical, Monsanto Chemical, Acorn Alcinda Foundation (The Kennedy Family).

Objectives: (1) Develop objective measures of competition in pine plantations based on size, proximity, numbers, species, and control of site resources by competing species; (2) quantify the competitive status created by site preparation and various levels of release for loblolly pine plantations; (3) predict early growth response to release of planted pines; (4) evaluate several new herbicides for control of competition using technologies applicable to small woodland owners.

Early Stand Development and Competition in Piedmont Mixed Forests. S. M. Zedaker, D. Wm. Smith, J. E. Johnson. McIntire-Stennis, Acorn Alcinda Foundation (The Kennedy Family).

Objectives: (1) Determine the growth, yield, and stand development of the hardwood, hardwood-pine, and pine stands created by density-induced mortality (stand closure); (2) determine the relative yields and competitiveness of loblolly pine, red maple, and black locust when grown with and without the influence of herbaceous vegetation; (3) determine the patterns of biomass allocation and resource partitioning in simplified systems of pine growing with a non-nitrogen-fixing hardwood and a nitrogen-fixing hardwood, with and without the influence of herbaceous vegetation.

* New in 2005

Impacts of Gypsy Moth Defoliation on Mixed Pine-Hardwood Stands in Virginia. J. E. Johnson, C. B. Davidson. USDA Forest Service Northeastern Forest Research Station.

Objectives: (1) Determine the impact of gypsy moth defoliation in mixed pine-hardwood stands on the Coastal Plain and Piedmont; (2) develop a predictive model based upon species composition and other stand attributes.

Contrasting Productivity of Four Genetic Lines of Loblolly Pine and Single Sources of Shortleaf Pine, Virginia Pine, and White Pine as well as Native Regeneration after Clearcutting on the Virginia Piedmont. T. R. Fox, J. R. Seiler, S. M. Zedaker. Reynolds Homestead Endowment.

Objective: To determine differences in productivity among and between pine species in planted and native stands using various vegetation management alternatives.

Evaluating Slow-Release Formulation of Nitrogen Fertilizer Made with Isobutylidenediurea (IB) for Forestry Applications in the Southern United States. T. R. Fox. Nu-Gro Corporation.

Objectives: The overall objective of the project is to increase the efficiency of forest fertilization in southern pine plantations through the use of slow-release nitrogen fertilizers made with IB. Specific objectives include: (1) to evaluate fertilizer uptake efficiency from granular and pelletized forms of IB nitrogen for use at planting and in established plantations; (2) to compare the growth response of loblolly pine to conventional and slow-release formulations of nitrogen; (3) to determine the longevity of fertilizer response following application of slow-release N sources and conventional fertilizers; (4) to evaluate the opportunity to apply N fertilizers during the summer months without excessive N loss through the use of slow-release formulations.

The Impact of Alternative Silvicultural Treatments on Light, Water, and Nutrient Availability and Commercial Tree Regeneration in the Southern Appalachians. T. R. Fox. MeadWestvaco.

Objectives: (1) Evaluate the impacts of seven silvicultural systems, including even-aged and uneven-aged systems, on hardwood regeneration in the southern Appalachians; (2) determine changes in stand composition, growth, and development following the alternative regeneration systems; (3) correlate treatment differences with changes in light, water, and nutrient availability.

Evaluating the Effects of Annual Fertilization and Weed Control on the Growth and Productivity of Four Genetic Lines of Loblolly Pine and Single Sources of Shortleaf Pine, Virginia Pine, and White Pine in the Virginia Piedmont. T. R. Fox, J. R. Seiler, S. M. Zedaker. Reynolds Homestead Endowment.

Objectives: (1) Determine the impacts of intensive plantation management on growth of various pine sources in the Virginia Piedmont; (2) evaluate physiologic response of different species to changes in resource availability and correlate those changes with growth response.

Sustainable Engineered Materials from Renewable Resources. S. M. Zedaker, P. J. Radtke, S. P. Priskey, T. R. Fox. CSREES/USDA Special Research Grants.

Objectives: (1) Evaluate and interpret the effects of alternative silvicultural systems and site characteristics for the sustainable production of composite wood; (2) develop a systematic approach to wood materials selection and composite wood structure design and manufacture; (3) develop technology to improve the durability of wood-based composites.

Crop-Tree Release in Pitch x Loblolly Pine. T. R. Fox. Reynolds Homestead Endowment.

Objectives: Evaluate the effect of crop tree release on the growth and quality of pitch x loblolly pine hybrids in the Piedmont of Virginia.

Restoring Sustainable Forests on Appalachian Mined Lands for Wood Products, Renewable Energy, Carbon Sequestration, and Other Ecosystem Services. J. A. Burger, T. R. Fox, G. S. Amacher, C. E. Zipper (Crop and Soil Environmental Sciences), J. M. Galbraith (Crop and Soil Environmental Sciences), J. Sullivan. U.S. Department of Energy.

Objectives: (1) Determine cause-and-effect relationships between rate of forest growth and mine soil properties; (2) develop a site classification and mapping system for mined sites that will be returned to forests; (3) develop silvicultural procedures for preparing mined sites and establishing and managing native hardwoods; (4) complete a benefit-cost analysis of reforestation alternatives for mined land; (5) complete a regional assessment of carbon sequestration potential of reforested mined land.

Forest Nutrition Cooperative. T. R. Fox. Industrial affiliates.

Objective: Develop and provide to members innovative solutions to enhance and sustain forest productivity through management of nutrients.

Restoration Silviculture – Developing Silvicultural Practices to Improve the Productivity and Health of Forest Ecosystems in the South. T. R. Fox. McIntire-Stennis.

Objective: Develop silvicultural practices that increase growth and improve the sustainability of managed forests in the South.

Clonal Forestry for Southern Pines. T. R. Fox, J. R. Seiler. Reynolds Homestead Forest Resources Research Center.

Objective: To evaluate the growth and physiology of clonal loblolly pine in Virginia.

Effects of Prescribed Burning, Mechanical, and Chemical Treatments to Curtail Rhododendron Dominance and Reduce Urban Interface Fuel Loads. S. M. Zedaker. Joint Fire Science Program, George Washington & Jefferson National Forests. USDA Forest Service.

Objectives: (1) Measure the response of rhododendron-dominated sites to prescribed burns, cutting, herbicide application, and their combinations for fuel loading, rhododendron survival, and immediate treatment installation costs; (2) document short-term (three-year) and predict long-term efficacy of fuel treatments and costs over time for different treatments by measuring rhododendron recovery and fuel build-up; (3) predict differences in fire behavior and annual cost of fuel management as a result of differences in fuel treatment.

What Mechanisms Control Understory Biodiversity, Resilience, and Nutrient Processes in Managed Appalachian Forest Ecosystems. C. A. Haas (Fisheries and Wildlife Sciences), T. R. Fox, R. H. Jones (Horticulture). USDA National Research Initiative.

Objectives: Evaluate the impact of alternative harvesting systems on ecosystem processes, wildlife population, and stand structure of Appalachian hardwood forests.

Tree Growth Response, Nutrient Dynamics, and Water Quality Following Land Applications of Biosolids to Forests in Virginia. T. R. Fox, W. L. Daniels (Crop and Soil Environmental Sciences), G. K. Evanylo (Crop and Soil Environmental Sciences), W. M. Aust, J. A. Burger. Metropolitan Washington Council of Governments.

Objectives: Evaluate the impacts of biosolid application on nutrient dynamics and tree growth in loblolly pine plantations in the Virginia Piedmont.

Soils

Sustaining the Productivity and Function of Intensively Managed Forests. J. A. Burger, W. M. Aust, M. H. Eisenbies. MeadWestvaco.

Objectives: Quantify the effects of severe soil disturbance on hydrology, soils, and site productivity of intensively managed forested wetlands and evaluate the relative efficacy of amelioration treatments.

Edaphic Factors Influencing Hardwood Regeneration in the Southern Appalachians. T. R. Fox. USDA Forest Service Southern Research Station.

Objectives: Evaluate the soil and site factors that influence regeneration and growth of Appalachian hardwood forests following alternative silvicultural systems.

Understanding Horse Trail Impacts: Best Management Practices for the Hoosier National Forest. W. M. Aust, J. L. Marion. USDA Forest Service.

Objectives: To monitor current trail erosion and develop best management practices for maintaining trails and improving water quality.

Long-Term Impact of Phosphorus Fertilization on Forms and Availability of Phosphorus in Forest Soils. T. R. Fox. USDA National Research Initiative.

Objectives: Determine changes in soil phosphorus availability in loblolly pine at rotation age following phosphorus fertilization at plantation establishment.

**** Potential for Large-Scale Carbon Sequestration by Reforestation of Mined Lands Using Managed Forests.*** J. A. Burger, C. E. Zipper (Crop and Soil Environmental Sciences). Virginia Division of Mines, Minerals and Energy.

Objectives: (1) Estimate forest productivity and carbon sequestration potential on reclaimed mined land; (2) develop husbandry practices for enhancing the potential of mined land to sequester carbon.

**** Forest Productivity as a Function of Root Growth Opportunity in Compacted Forest Soils.*** J. A. Burger. USDA Forest Service.

Objectives: (1) To determine the physical response of different soil types to compactive forces to better understand the management implications of soil disturbance on forest landscapes; (2) to validate root growth models *in situ* for different soil types using continuous climate data.

* New in 2005

*** Carbon Sequestration Project on Surface Mined Sites in the Clinch and Powell River Valleys of Virginia.** J. A. Burger, C. E. Zipper (Crop and Soil Environmental Sciences). The Nature Conservancy.

Objectives: (1) To develop analytical techniques for measuring pedogenic soil organic carbon in mine soils; (2) to design and implement a detailed carbon sequestration monitoring plan and protocol for mined land; (3) to develop and implement a detailed reforestation plan for a reclaimed surface mine.

*** Linking Intensively Sampled Soil and Foliar Chemistry Data with Forest Health Monitoring Protocols to Better Evaluate the Effects of Acidic Deposition on Forest Health.** J. A. Burger. USDA Forest Service.

Objectives: (1) Evaluate the current FHM protocol to determine its suitability for monitoring changes in forest health due to acid deposition; (2) test the utility of foliar chemistry as an indicator of forest health.

*** Developing an Improved Forest Land Classification System for the Appalachians Based on Climate, Topography, Landform, and Geology.** T. R. Fox, P. J. Radtke, C. A. Copenheaver, S. P. Prisley. USDA Forest Service.

Objectives: The goal of this project is to develop an improved system for determining forest site quality in the southern and central Appalachians. Many of the existing forests in the Appalachians have been repeatedly high-graded, and it is difficult to accurately determine site quality using conventional measures such as site index. This work is developing and testing a GIS-based method to evaluate forest site quality using data such as climate, landform, topography, geology, and soils that is applicable throughout the region.

Water Quality

Effects of Forested Riparian Buffer Width and Timber Harvest Intensity on Headwater Appalachian Watersheds. W. M. Aust, C. A. Dolloff (USDA Forest Service). National Council of the Paper Industry for Air and Stream Improvement, Inc.; MeadWestvaco; USDA Forest Service.

Objective: To evaluate the effects of Stream Management Zone (SMZ) width and harvest level on water quality.

Use of Forested Buffer Strips to Improve Water Quality in Agricultural Landscapes in the Tidewater Region of Virginia. T. R. Fox, W. M. Aust. Virginia Agricultural Experiment Station, International Paper Company.

Objectives: (1) Evaluate the effect of forested buffer strips on reducing non-point pollution from agricultural fields; (2) compare the effects of loblolly pine and sweetgum planted in buffer strips; (3) contrast grassed buffer strips with forested buffer strips.

Streamside Management Zone Width and Harvest Level Effects on Stream Water Quality and Benthic Organisms within Loblolly Pine Plantations. W. M. Aust, C. A. Dolloff (USDA Forest Service). USDA Forest Service.

Objectives: To quantify the effects of SMZ harvest level and width on stream water quality and benthic organisms in Piedmont watersheds managed for loblolly pine plantations.

* New in 2005

Tom's Creek Riparian Corridor Restoration Project. L. E. Skabelund (Landscape Architecture), J. O. Browder (Urban Affairs and Planning), R. H. Jones (Biology), W. M. Aust, W. L. Daniels (Crop and Soil Environmental Sciences). National Fish and Wildlife Foundation.

Objectives: To use student service learning projects to develop management strategies for restoration of Tom's Creek riparian buffers for municipal park lands.

Establishing and Managing Streamside Management Zones as Best Management Practices for Protection of Water Quality and Site Productivity. W. M. Aust, J. R. Seiler. McIntire-Stennis.

Objectives: (1) Evaluate the effects of forest land use/disturbance on watershed water yield, surface erosion, and stream water quality by examining existing literature and hydrologic data sets; (2) quantify the long-term effects of timber harvesting (aerial and ground-based systems) on the biomass, sediment accumulation, and stand composition in a 20-year-old riparian area associated with a major river system characterized by annual flooding; (3) quantify the effects of SMZ width and harvest level on stream water quality; (4) demonstrate and contrast the benefits and costs of establishing riparian forests versus grass filter strips on agricultural lands used for row crops; (5) quantify the hydrologic pathways and nutrient inputs from pastureland to and from recently established riparian forests; (6) quantify how riparian forest functions will change over time by continuing to monitor disturbed and non-disturbed forested wetlands (2004 is year 18 for the oldest study); (7) quantify the effects of forest roads and trails on soil erosion and sediment inputs to riparian forests; (8) quantify how riparian forests store, transform, and export carbon, both above and below ground.

***Development of a Riparian Enhancement Plan for Black Creek, Wise County, Virginia.** C. A. Copenheaver, W. M. Aust. Virginia Department of Mines, Minerals, and Energy.

Objective: To develop a riparian enhancement plan for a surface-mined watershed.

***Development of Building Blocks to Prescribe Ecological Flows for the Rivanna River Watershed.** P. L. Angermeier (Fisheries and Wildlife Sciences), T. M. Wynn (Biological Systems Engineering), P. Diplas (Civil and Environmental Engineering), W. M. Aust. The Nature Conservancy.

Objective: To characterize the riparian zone of the Rivanna River for potential enhancements.

***Evaluation of Existing Hydrologic Models for Prediction of Flooding in Forested Watersheds.** W. M. Aust, J. A. Burger, M. H. Eisenbies. USDA Forest Service.

Objective: To evaluate existing hydrologic models that may be appropriate for modeling land use effects on flooding.

***Forest Watershed Land Use and Flooding.** W. M. Aust, J. A. Burger. USDA Forest Service.

Objective: To develop an extensive literature review of land use effects on flooding and identify models that may be used to predict flooding causative factors.

Tree and Seedling Physiology

The Impacts of Forest Management on Soil CO₂ Efflux and Organic Matter Content in Loblolly Pine Plantations. J. R. Seiler, C. Maier (USDA Forest Service), K. H. Johnsen (USDA Forest Service). USDA Forest Service.

Objectives: To develop soil carbon budgets and determine the range and magnitude of carbon dioxide efflux from managed loblolly pine forests.

Net Ecosystem Productivity of Managed Forests. R. H. Wynne, J. R. Seiler. National Aeronautics and Space Administration.

Objectives: To develop linkages between remotely sensed information, pine productivity, and soil CO₂ efflux in managed loblolly pine stands.

Agroforestry

Kentland Farm Agroforestry Project: Research and Demonstration of Agroforestry Systems for the Appalachian Region. J. A. Burger. USDA Agricultural Research Service, Beckley, WV.

Objective: Explore the potential for Appalachian agroforestry and demonstrate systems and principles of agroforestry.

Opportunities and Constraints to Agroforestry in the Agua de Gato Watershed, Cape Verde. J. E. Johnson. U.S. Agency for International Development.

Objective: Assess knowledge and attitudes of rural farmers and use this information to design workable agroforestry systems to meet landowner objectives.

Urban Forestry

Development of a Green Infrastructure Technology that Links Trees and Engineered Soils to Minimize Runoff from Pavement. S. D. Day, J. R. Harris (Horticulture), J. E. Dove (Civil and Environmental Engineering), N. L. Bassuk (Cornell University), P. Trowbridge (Cornell University), Q. Xiao (University of California, Davis). USDA Forest Service—National Urban & Community Forestry Advisory Council.

Objectives: (1) Develop a system using trees and structural soil—a new technology that permits root growth under pavement—in an innovative application that will minimize runoff; (2) evaluate the impact of the system on runoff reduction, water quality, and the contribution of trees to water removal from the system; (3) build demonstration sites with public/private partnerships.

The Role of Adventitious Roots in Deeply Planted Trees. S. D. Day, J. R. Harris (Horticulture). Mid-Atlantic Chapter – International Society of Arboriculture Frank J. Santamour Grant Program.

Objectives: Evaluate the occurrence of and contribution to tree vigor of replacement root systems that result from planting the root collar below soil grade.

Planting Deep: Evaluating Long-term Effects on Trees and Methods of Diagnosis and Treatment. S. D. Day, J. R. Harris (Horticulture). Tree Research & Education Endowment (TREE) Fund.

Objectives: To evaluate the effects of deep planting on food-sensitive tree species.

Long-term Effects of Container Production. J. R. Harris (Horticulture), S. D. Day. Tree Research & Education Endowment (TREE) Fund.

Objective: Evaluate the influence of container production on long-term root architecture of street trees.

Assessing and Mapping Parkwide Tree Hazards. J. E. Johnson. USDO National Park Service.

Objective: To develop and implement procedures for a hazardous tree assessment for the Richmond National Battlefield Park.

**** A Web-based Geographic Information System (GIS) for Virginia Tech Campus Trees.*** P. E. Wiseman. Virginia Tech Center for Excellence in Undergraduate Teaching.

Objective: To develop a web-based geographic information system (GIS) of Virginia Tech's campus trees.

**** Long-term Effects of Soil Contact with the Trunks of White Oak and Sweetgum.*** S. D. Day. Morton Arboretum.

Objectives: Continuation of a long-term study evaluating the effects of changes in soil grade (such as occur during construction) on the health of forest trees.

Genetics

Long-Term Growth and Performance of F₂ Pitch x Loblolly Pine Hybrid Families in the Virginia Piedmont. T. R. Fox. Reynolds Homestead Endowment.

Objectives: (1) Compare the long-term growth of loblolly pine, pitch pine, and hybrids of pitch x loblolly pine in the Virginia Piedmont; (2) evaluate the performance of individual F₂ families of pitch x loblolly pine.

Methods for Production of Christmas Trees. U. Egertsdotter with international colleagues. The Research Council of Norway.

Objective: To develop scale up methods for production of Christmas trees from superior varieties of Sub alpine fir and Fraser fir.

**** Functional Genomics of Flowering in the Woody Perennial Populus.*** A. M. Brunner with colleagues at Mississippi State University, Pennsylvania State University, and University of Alabama. National Science Foundation Plant Genome Program.

Objectives: (1) Identify the genes and genetic pathways controlling the initiation of flowering in *Populus*; (2) discover the important differences and similarities in the regulation of flowering between a tree and an annual herbaceous plant.

* New in 2005

*** New Genetic Tools for Modifying Tree Properties to Enhance Carbon Sequestration. Microarray Expression Analysis of Poplar Regulatory Gene Families.** A. M. Brunner with colleagues at Oregon State University, North Carolina State University, and University of West Virginia. DOE/Terrestrial Carbon Sequestration.

Objectives: (1) Identify poplar regulatory genes that act as major genetic control points for tree growth, development, and response to environmental stimuli; (2) demonstrate how this information can be used to produce trees with modified qualities important to carbon sequestration, such as modified root and shoot architecture, root-shoot biomass ratio, and cell wall chemistry.

International Forestry

International and Domestic Approaches to Building and Supporting Extension Forestry Programs. J. E. Johnson. USDA Cooperative State Research, Education, and Extension Service.

Objective: To (1) assess current forestry extension practices worldwide and develop a compendium of best practices and (2) support an international conference to highlight best practices in forestry extension.

Sustainable Forestry in Bolivia. J. E. Johnson, A. L. Hammett (Wood Science and Forest Products), R. Visser, R. Smith (Wood Science and Forest Products). The Nature Conservancy – Bolivia.

Objectives: To provide research and educational support to the BOLFOR II project and the Bolivian Forest Research Institute in the following areas: (1) community forestry; (2) GIS and forest management; (3) reduced impact logging; (4) wood technology; (5) forest products marketing; and (6) institutional capacity building.

*** Soil and Site Quality Indicators for Measuring Change in Forest Productivity Across Site Types in New Zealand.** S. H. Schoenholtz (University of Oregon), J. A. Burger. Forest Research Institute, New Zealand.

Objectives: (1) To determine organic matter decomposition and nitrogen mineralization dynamics as a function of soil disturbance, species, and site type; (2) to model soil and site quality changes due to intensive forest management.

Educational

Program of Advanced Studies in Silviculture. J. E. Johnson. USDA Forest Service Regions 8 and 9.

Objective: Conduct silviculture training programs for district silviculturists on national forests throughout the eastern United States.

Development of Innovative Learning Techniques in Woody Plant Identification and Forest Biology. J. R. Seiler. Virginia Forestry Educational Foundation, Virginia Tech Enterprise Development Fund.

Objective: Develop multimedia, on-line educational programs to enhance learning of plant identification, forest biology, and forestry.

* New in 2005

Sustainable Forestry Education. J. E. Johnson. Virginia Forestry Association.

Objective: Develop and deliver a series of forest landowner educational programs.

Forest Stewardship Education Program. J. E. Johnson. Virginia Department of Forestry.

Objective: Develop and deliver educational programs in support of the Virginia Forest Stewardship Program.

Forestry Outreach Site (FORSite). J. R. Seiler, J. L. Kirwan. Virginia Tech ReachOut Grant, Virginia Forestry Educational Foundation.

Objective: Develop a web-based and service learning forestry educational site for Virginia middle school students and teachers.

***Program Enhancements to Accelerate the Growth of Virginia Tech's Urban Forestry Option.** S. D. Day, P. E. Wiseman, J. L. Kirwan. Virginia Department of Forestry.

Objective: Accelerate the growth and impact of the urban forestry undergraduate and graduate programs at Virginia Tech.

***Big Trees = Big Values.** J. L. Kirwan, J. R. Seiler, P. J. Radtke. National Urban and Community Forestry Foundation, American Forests.

Evaluation of the methods used in measuring and listing national champion trees and communicating the value of big trees on the web.

Graduate Students Enrolled During 2005

Aaltonen, Kristin	PhD	BS, Butler University
Aksamit, Dawn	MS	BS, Virginia Tech
Alvey, Alexis	MS	BS, Cornell University
Amichev, Beyhan	PhD	BS, Virginia Tech MS, Virginia Tech
Amishev, Dzhamal	MS	BS, University of Forestry, Bulgaria
Arbogast, Kelley	MS	BS, Virginia Tech
Arellano, Eduardo	PhD	BS, Pontificia Universidad Catolica de Chile MS, Oregon State University
Auch, Ted	MS	BS, University of Vermont
Casselmann, Chad	MS	BS, SUNY-CESF
DeBruyne, Scott	MS	BS, Virginia Tech
Elias, Patrica	MS	BS, University of Notre Dame

* New in 2005

Elliot, Rob	MS	BS, University of North Carolina, Chapel Hill
Feldt, Robert	MF	BS, Virginia Tech
Flatley, William	MS	BA, Dartmouth College
Fritz, Erica	MS	BS, Virginia Tech
Harrell, Charles	MS	BS, Clemson University
Issem, Cristina	PhD	BS, California Polytechnic and State University-San Luis Obispo MS, Virginia Tech
King, Nathan	MS	BS, Virginia Tech
Matthews, Bonnie	MS	BS, Virginia Tech
Miller, Bradley	PhD	BS, Mount Olive College MS, Appalachian State University
Pittman, Judd	MS	BS, Juniata College
Rasamoelina, Mami	PhD	MS, University of Antananarivo, Madagascar Diploma of Agricultural Engineer, University of Antananarivo, Madagascar
Ratnaparkhe, Supriya	PhD	BS, Gujarat University, India MS, Gujarat University, India MPhil, Gujarat University, India
Salzburg, Adam	MF	BS, University of Vermont
Showalter, Julia	MS	BS, West Virginia University
Sucre, Eric	PhD	BS, North Carolina State University MS, University of Washington
Sypert, Robert	MS	BS, University of Arkansas-Monticello
Tyree, Michael*	PhD	BS, Pennsylvania State University MS, Virginia Tech
Yancey, Matthew	MF	BS, Virginia Tech

* 2005-06 recipient of the John F. Hosner Scholarship established by the Virginia Forestry Educational Foundation on behalf of interested industrial forestry contributors

Forest Economics, Policy, and Management Research During 2005

Faculty

Gregory S. Amacher, Michael J. Mortimer, Jay Sullivan

Emeritus Faculty

Otis F. Hall, Harry L. Haney, Jr., W. David Klemperer, Harold W. Wisdom

International Forestry

Analyzing Forest Policy and the Timber Industry in the Brazilian Amazon. G. S. Amacher, F. D. Merry. NASA-LBA (Large-Scale Biosphere-Atmosphere) Experiment Program.

This project will involve modeling of deforestation patterns in the Brazilian Amazon. Both rents to different land uses and processing costs and benefits will be estimated from surveys of both smallholders and industrial firms. Policies, including royalties and incentives for efficient harvesting and management, will be considered to reduce frontier forest exploitation. A particularly important piece of the analysis will involve analyzing the implications of illegal logging to policy design.

An Assessment of Smallholder Forest Families in Brazil. G. S. Amacher, F. D. Merry. IPAM (Instituto de Pesquisa Ambiental da Amazônia), Woods Hole Research Center.

This project examines the effects of logging contracts and smallholders in migrant communities within the Brazilian Amazon. Both welfare effects and decisions such as land clearing and labor use are being evaluated based on surveys of thousands of smallholders in Para and the Transamazon.

Feedbacks Among Forestry, Agriculture, and Fire in Amazonia. D. Nepstad (Woods Hole Research Center), G. S. Amacher, L. Curran (Yale University), R. Kaufmann (Boston University), F. D. Merry. National Science Foundation.

Models of smallholder behavior and forest industry expansion will be developed on new and future Amazon frontiers, with particular interest in how these respond to various policy scenarios, market parameters, and government programs. The logging and smallholder models being developed at Virginia Tech will eventually be integrated into a spatially-explicit model of development and logging expansion to predict patterns of Amazon development over time.

Forest Taxation and Regulation

A Survey on Conservation Easements in the United States and their Impact on Timber Supply. H. L. Haney, Jr., M. J. Mortimer. USDA Forest Service.

The survey will determine the type and acreage of easements on forest land in the United States. A model will be developed to predict the impact of conservation easements on timber supply. The study has been completed, and a publication is underway.

Assessing the Impact of Administrative Structure and Processes on the Enforcement of Forest Practices Controls in the Southern United States. M. J. Mortimer. McIntire-Stennis.

This project will assess the effectiveness of forest practices controls from an administrative perspective, with emphasis on how well various laws and regulations work “on the ground.”

Forest Landowners

Restoring Sustainable Forests on Appalachian Mined Lands for Wood Products, Renewable Energy, Carbon Sequestration, and Other Ecosystem Services. J. A. Burger, T. R. Fox, G. S. Amacher, J. Sullivan, C. E. Zipper (Crop and Soil Environmental Sciences), J. M. Galbraith (Crop and Soil Environmental Sciences). U.S. Department of Energy.

This project will examine the financial feasibility of converting previously reclaimed mined lands into productive forests. Through survey methodology, an assessment will be made of the incentives required by landowners to convert lands formerly reclaimed to grass species to a forested condition, and the viability of policy instruments that could be used to encourage this conversion will be examined. Ultimately the projected costs of sequestering carbon through this means will be investigated.

Ice Damage Risk and Forest Stand Management in Virginia. J. Sullivan, G. S. Amacher. Acorn Alcinda Foundation (The Kennedy Family).

We are examining the consequences of ice storm risk to private forest management by incorporating risk of ice damage into landowner decision models. Recommendations will be made for landowners facing ice damage risk at a variety of stand ages and site productivity classes.

The Forest Bank: Concept to Reality (Economics module). G. S. Amacher, J. Sullivan. USDA Fund for Rural America.

We are examining economic incentives and barriers for landowners to enroll in a forest banking program. Programs to encourage landowner adoption of the program also are being explored.

****Bioenergy: Optimum Incentives and Sustainability of Non-Industrial Private Forests in the U.S. South.*** J. Alavalapati (University of Florida), G. S. Amacher, S. Mehmood (University of Arkansas-Monticello), W. Say (University of Florida). U.S. Department of Agriculture, U.S. Department of Energy.

This project will evaluate incentives for landowners to adopt bioenergy-relevant management on forest lands in the South. Effects on risk from fire and several policy instruments will also be considered.

Forest and Natural Resource Policy

Decision Models for Wildfire Protection. G. S. Amacher, A. S. Malik (George Washington University). USDA Forest Service North Central Research Station.

This project will build upon the value of information project by examining a policy problem where the government can either disseminate information to landowners or engage in traditional subsidies to encourage landowners to undertake fuel reduction. Adjacent landowner effects will be modeled as an underlying consequence of any policy. Both first-best and second-best models will be evaluated.

* New in 2005

Public Involvement in Forest Service Project-Level Decision Making. M. J. Mortimer. USDA Forest Service (partial funding).

This project conducted a qualitative analysis of public comments, administrative appeals, and legal arguments from case studies on the George Washington & Jefferson National Forests. The project has been completed, and publication of results is underway.

Fire Economics and Policy

Dynamic Models of Fire Policy Design and Fuel Reduction with Multiple Landowners. G. S. Amacher, A. S. Malik (George Washington University). USDA Forest Service.

This project will develop a dynamic game theory model revealing incentives for adjacent landowners to practice fuel reduction. Various policy instruments will be evaluated in terms of social cost reduction and effect on fuel reduction. The interaction of adjacent landowners and the information they have will be important in developing the strategic nature of their decisions.

Developing a Framework to Assess the Value of Remote Sensing Technology and GIS Applications for Wildfire Management. H. Hesseln (University of Saskatchewan), G. S. Amacher. National Center for Fire Landscape Analysis at University of Montana.

The objective of this project is to conduct a benefit cost analysis of various geospatial technologies employed in fire suppression management at the operational strategic planning level. The work will focus mainly on fire suppression in the northern Rocky Mountains.

Graduate Students Enrolled During 2005

Bauch, Simone	PhD	BA, University of São Paulo, Brazil MS, Virginia Tech
Bowman, Maria	MS	BS, Juniata College
Freeman, James	PhD	BA, Virginia Tech MPA, Virginia Tech
Lima, Eirivelton	PhD	BS, Rural University of the Brazilian Amazon, Brazil MF, Yale University
Predmore, Andrew	PhD	BA, University of Virginia MS, Auburn University
Stull, Lauren	MS	BS, Virginia Tech
Vokoun, Melinda	PhD	BS, Michigan Technological University MS, Virginia Tech

OUTREACH AND EXTENSION

The outreach and extension programs in the Department of Forestry seek to strengthen and enhance the management of forest resources through educational programming and information transfer to all publics of our society. Programming is diversified to serve many audiences having varied objectives and interests.

Outreach programs are conducted in a variety of fields and using a host of methods. In the College of Natural Resources, outreach programs are organized into the following five categories:

- § Cooperative and industrial extension programs
- § Continuing education programs
- § Youth and teacher education programs
- § Economic development programs
- § International development programs

In the Department of Forestry, faculty, staff, and students are actively involved in programs within all of these categories. Cooperative and industrial extension programs are offered to a variety of audiences, such as forest landowners and loggers. Primary subject areas include forest management and economics, silvicultural applications, and timber harvesting. Educational programs are offered throughout the state in cooperation with the Virginia Department of Forestry, the Virginia Forestry Association, the State Implementation Committee of the Sustainable Forestry Initiative, and many other groups. One or more of the department's extension specialists and associates generally coordinates extension programs.

Continuing education (CE) programs are offered to professional audiences such as foresters, wildlife managers, certified public accountants, etc. These fee-based programs are conducted in cooperation with Virginia Tech's Office of Outreach Program Development and include several different types, such as open enrollment programs, contract programs, conference services, and research dissemination programs. The Department of Forestry has an active CE program, involving both extension and non-extension faculty as coordinators and instructors. Programs are regularly offered in the areas of forest management and economics, silviculture, forest biometrics, timber harvesting, and forest taxation and regulation.

The Department of Forestry is actively involved in educational programs to benefit youth and the teachers and adult leaders who work with school-aged children. Department faculty, staff, and students are actively involved through 4-H summer camp programs, 4-H in-school projects and judging programs, and middle school teacher and student projects.

In addition to educational programs and projects, faculty in the department are actively engaged in publishing educational bulletins, developing educational curriculum materials, producing newsletters and magazine columns, preparing videotapes, and developing and maintaining educational web sites.

The Department of Forestry is committed to supporting economic development activities throughout the commonwealth. Faculty and staff regularly consult and provide technical assistance to companies and other state agencies in support of broad-based economic development efforts. In addition, many of the continuing education and cooperative extension programs support the economic development mission.

International programs are an important component of the Department of Forestry's outreach portfolio. Active involvement in international projects broadens the knowledge base of faculty, staff, and students and helps to connect the department with the rest of the world. Raw wood resources and finished wood products are bought and sold internationally every day, and the Department of Forestry recognizes that "going global" is an important part of all of the department's programs. A Center for International Forestry serves the department's outreach and research programs.

Outreach and Extension Programs Offered in 2005

SHARP Logger Programs

SHARP Logger Programs	VT Forestry Faculty	Location	Dates	No. Participants	Duration (Hours)
SHARP Logger Harvest Planning and Best Management Practices (Core Course)	S. M. Barrett	Lynchburg, VA	May 20	42	6
		Martinsville, VA (with K. Peer)	June 16	53	
		Franklin, VA	Oct. 28	37	
SHARP Logger Safety Program (Core Course)	S. M. Barrett	Lynchburg, VA	May 13	32	6
		Martinsville, VA (with K. Peer)	June 17	54	
		Franklin, VA	Nov. 4	33	
SHARP Logger Sustainable Forestry (Core Course)	S. M. Barrett	Lynchburg, VA	May 6	37	6
		Martinsville, VA (with K. R. Peer, D. L. Goerlich)	June 18	49	
		Franklin, VA	Oct. 21	40	
SHARP Logger BMP Field Workshop	S. M. Barrett	Thaxton, VA	Oct. 14	34	6
		Aylett, VA	Dec. 9	35	
SHARP Logger Chainsaw Safety	S. M. Barrett	Richlands, VA	June 28	29	6
		Warsaw, VA	Sept. 28	29	
	A. K. Downing S. M. Barrett	Louisa, VA	Sept. 30	34	
Basic Finance for Loggers	R. M. Shaffer	Willis, VA	Jan. 18	33	3
		Halifax, VA (with D. L. Goerlich, J. L. Gagnon)	Aug. 8	44	
VDOT Entrance Permits/Flagger Certification/ Underground Utility Safety	S. M. Barrett	Clifton Forge, VA	June 21	26	3
		Holiday Lake, VA	July 12	45	
		Franklin, VA	Oct. 27	18	
		Stuart, VA	Dec. 14	32	
		St. Paul, VA	Dec. 15	30	
Roadway Safety and Gas Pipeline Safety for Loggers	A. K. Downing S. M. Barrett D. L. Goerlich	Madison, VA	Aug. 16	17	6
		Spotsylvania, VA	Aug. 18	18	

Cooperative and Industrial Extension Programs

Cooperative and Industrial Extension Programs	VT Forestry Faculty	Location	Dates	No. Participants	Duration (Hours)
Best Management Practices for Site Preparation and Road Construction Contractors	D. L. Goerlich W. M. Aust	Appomattox, VA	Mar. 31	120	6
Chainsaw Maintenance and Repair	D. L. Goerlich	Rustburg, VA	Dec. 6	13	5
			Dec. 7	18	
Chainsaw Safety Training Program	D.L. Goerlich	Chatham, VA	Mar. 10	55	6
Family Forest Heritage Day	D. L. Goerlich	Alberta, VA	April 1	29	5
Financial Assistance Options for Forest Landowners	J. E. Johnson	Petersburg, VA	Feb. 15	12	5.5
		Mountain Lake, VA	April 15	18	3
Forest Roads and Water Quality Research	D. L. Goerlich W. M. Aust	Clarkesville, VA	Mar. 11	35	6
Forestry and Wildlife Field Tours	D. L. Goerlich	Buckingham County, VA	Oct. 21	29	8
		Appomattox County, VA	Oct. 22	12	
	A. K. Downing	Loudoun County, VA	Oct. 31	54	
			Oct. 28	84	
GPS and National Plant Identification System Workshop	J. A. McGee P. M. Baldassaro	College Park, MD	Mar. 7	30	6
		Eastern Shore, MD	May 25	25	
		Hagerstown, MD	May 26	25	
Income Alternatives for Woodlot Owners Conference	A. K. Downing and others	Madison, VA	April 15-16	127	12
The Loblolly Pine Growth and Yield Research Cooperative: 1979-2005	R. L. Amateis H. E. Burkhart	Charlottesville, VA	Dec. 8	20	5
Log Grading and Merchandising III	D. L. Goerlich B. Bond	Keysville, VA	Sept. 9	55	6
Managing Small Woodlots	D. L. Goerlich L. A. Helfrich P. J. Radtke	Appomattox, VA	April 7-8	84	18
Northern Virginia Urban Forestry Conference: Clearing the Air with Virginia's Trees	A. K. Downing and others	Sterling, VA	Nov. 10	93	6
On-Target: Handheld GIS to Support Resource Management	J. A. McGee	Salt Lake City, UT	Oct. 17-21	20	20
Safeguarding Animal Health in Virginia	J. A. McGee and others	Abingdon, VA	Mar. 2	20	7
		Rockingham, VA	Mar. 3	20	
		Harrisonburg, VA	Mar. 9	20	
		Madison, VA	Mar. 10	20	
		Danville, VA	Mar. 16	20	
		Suffolk, VA	Mar. 17	20	
Tree Workers Field Day	A. K. Downing and others	Culpeper, VA	Mar. 11	54	3

Cooperative and Industrial Extension Programs	VT Forestry Faculty	Location	Dates	No. Participants	Duration (Hours)
Trees and Shrubs	D. L. Goerlich	Chase City, VA	April 12	25	3
Virginia Forestry Association Field Tour	J. E. Johnson	Mountain Lake, VA	April 16	26	4
Woods & Wildlife Conference for Landowners (3rd Annual)	A. K. Downing R. M. Shaffer S. A. Baker R. Visser and others	Charlottesville, VA	Feb. 5	145	8

Continuing Education Programs

Continuing Education Programs	VT Forestry Faculty	Location	Dates	No. Participants	Duration (Hours)
Cruising Timber with Speed and Accuracy	R. G. Oderwald D. L. Goerlich	Halifax, VA	Aug. 3-4	30	12
Explore 4-H Virtual Forest!!!	D. L. Goerlich J. L. Kirwan	Wirtz, VA	Jan. 26	15	1.5
Extension Methods in Forestry	J. E. Johnson	Santa Cruz, Bolivia	May 31-June 1	8	8
Forest Fertilization Workshop	T. R. Fox	Smith Mt. Lake, VA	Sept. 19	15	4
Forest Inventory	R. G. Oderwald	South Boston, VA	Aug. 4-5	40	12
Forest Nutrition Cooperative Contact Meeting	T. R. Fox	Jacksonville, FL	June 8-9	132	16
Forest Visualization for Natural Resource Professionals	A. K. Downing	Fredericksburg, VA	Nov. 7-8	22	9.5
Forested Wetlands	W. M. Aust	Blacksburg, VA	April 25	120	2
Forestry, Flooding, and Modeling Issues in the Appalachian Region	W. M. Aust	Charleston, WV	Oct. 18	50	8
Geospatial Strategies and Tactics for Local Governments	J. A. McGee P. M. Baldassaro	Weyers Cave, VA	Feb. 11	20	4
A Geospatial SWOT Analysis for Waynesboro, VA	J. A. McGee P. M. Baldassaro	Weyers Cave, VA	Feb. 1	20	6
GIS Needs Assessment for the City of Waynesboro, VA	J. A. McGee P. M. Baldassaro	Waynesboro, VA	Jan. 19-20	33	18
GPS/GIS for Teachers	J. L. Kirwan	Portsmouth, VA	Oct. 27	24	16
Highgrading of Forests of Virginia: Impacts of Forest Conditions and Silvicultural Options	T. R. Fox	Smith Mt. Lake, VA	Sept. 20	18	4
Introduction to the Geodatabase	P. M. Baldassaro J. A. McGee	Danville, VA	Nov. 4	10	2
Introduction to GIS for Community College Faculty/Staff	P. M. Baldassaro J. A. McGee	Big Stone Gap, VA	Dec. 7-8	20	14
Introduction to GIS for Emergency Management	P. M. Baldassaro J. A. McGee	Richmond, VA	Nov. 10-11	8	13
Introduction to GIS for Local Governments	P. M. Baldassaro J. A. McGee	Weyers Cave, VA	Nov. 17-18	14	13
Introduction to GIS for Public Safety	P. M. Baldassaro J. A. McGee	Danville, VA	Nov. 4	10	2
Local GIS Coordination: Lessons from Harrisonburg, VA	J. A. McGee P. M. Baldassaro	Waynesboro, VA	Jan. 13	20	2
Local Government GIS Applications	J. A. McGee P. M. Baldassaro	Weyers Cave, VA	Mar. 11	16	4

Continuing Education Programs	VT Forestry Faculty	Location	Dates	No. Participants	Duration (Hours)
NASA/NSGIC GIS and Remote Sensing Integration Workshop	P. M. Baldassaro J. A. McGee R. H. Wynne with GEOG faculty	Waynesboro, VA	May 26	60	7
Nutrient Cycling in Forest Ecosystems and its Implications for Biosolids Applications in Virginia	T. R. Fox	Richmond, VA	July 20	50	4
Outreach Opportunities through the Virginia Geospatial Extension Program	P. M. Baldassaro J. A. McGee	Blacksburg, VA	Sept. 28	30	6
Principles of Forest Productivity and Intensive Silviculture Workshop	T. R. Fox	Meridian, MS	April 18-19	6	16
		Warren, AR	May 16-17	30	16
		Jacksonville, FL	June 6-8	32	24
		Southern Pines, NC	Aug. 15-16	48	16
		Franklin, VA	Sept. 8	30	8
		Critz, VA	Oct. 27-28	12	16
		Auburn, AL	Dec. 14-15	85	16
Program of Advanced Studies in Silviculture	J. E. Johnson	Blacksburg, VA	March 7-17	35	64
Program of Advanced Studies in Silviculture (Communications Module)	M. J. Mortimer	Blacksburg, VA	March 16	35	1
Review of Forest Management and Research Activities	T. R. Fox	Diboll, TX	May 19	10	8
		Lawrenceburg, TN	May 24-25	2	16
		Summerville, SC	May 31	8	8
Review of Forest Soils and Land Classification Work in Texas and Louisiana	T. R. Fox	Diboll, TX	May 18	45	8
Review of Silviculture and Land Management Activities	T. R. Fox	Warren, AR	May 16-17	30	16
Sale Area Layout and Harvesting Institute (SALHI)	R. M. Shaffer R. Visser W. M. Aust	Blacksburg, VA	May 31-June 17	32	120
The State of Virginia's Framework Data Layers	J. A. McGee	Richmond, VA	June 2-3	20	7
Strengthening Collective Innovation Capacity of Forest Stakeholders	J. E. Johnson	Brisbane, Australia	Aug. 9	25	2
Virginia Department of Forestry Annual In-Service Training	P. M. Baldassaro A. K. Downing J. L. Kirwan J. A. McGee R. Visser	Wirtz, VA	Sept. 21-23	120	3
Virginia Tech Faculty Development Institute – GIS	R. L. Dymond S. P. Prisley B. Carstensen	Blacksburg, VA	May 17-19	24	24

Other Outreach Programs

Other Outreach Programs	VT Forestry Faculty	Location	Dates	No. Participants	Duration (Hours)
Ask Dr. Dendro	J. R. Seiler	Responded to 500+ questions from around the world submitted via the Department of Forestry's FORSite (Forestry Outreach Website)			
Forest Management Plans	J. Sullivan – with R. B. Hull, J. R. Seiler, C. A. Copenheaver, S. P. Priskey	Eleven management plans were completed for seven private, two federal government, one city government, and one NGO clients in the senior FOR 4444 Integrated Forest Management Practicum course.			
Forest Vegetation Simulator – Southern Variant Working Group	P. J. Radtke T. R. Fox	Blacksburg, VA	Nov. 14-15	30	10
Global Positioning Systems	R. G. Oderwald	Blacksburg, VA	Oct. 15	30	2
Patrick County Farm Tour	K. R. Peer	Critz, VA	Aug. 27	12	6
Tour of Secondary Wood Processors of Madison County	A. K. Downing	Madison County, VA	June 16	3	3
Virginia Master Naturalist Program	J. L. Kirwan J. E. Riddell J. E. Johnson	Virginia Tech, along with the Virginia Departments of Conservation and Recreation, Forestry, Game and Inland Fisheries, and the Museum of Natural History, is establishing a statewide program that develops a cadre of volunteers who provide education, outreach, stewardship, and citizen science service to communities in Virginia. The first Master Naturalist Program Coordinator, Michelle Prysby, was hired in 2005.			

Youth and Teacher Education Programs

Faculty, staff, and students in the Department of Forestry coordinated and/or participated in the following youth and teacher education programs during 2005:

§ 4-H Projects and Activities in Natural Resources

- 30,500 youth throughout Virginia conducted natural resource projects as part of their 4-H participation in clubs, schools, and special interest groups. (J. L. Kirwan)
- 500 youth participated in district and state environmental trainings and competitions and competed in three national competitions. In 2005 the Envirothon team from Fort Defiance High School finished second in the United States, the Wildlife Judging Team from Augusta County finished third, and the Forestry Judging Team from Dickenson County finished eleventh. (J. L. Kirwan, D. L. Goerlich)
- Tazewell 4-H Career Days – All fourth graders from Tazewell County visited the College of Natural Resources to learn about natural resources management. (J. L. Kirwan, A. Zink-Sharp)
- Forestry classes at 4-H Centers – Undergraduate students in the College of Natural Resources taught at Jamestown and Holiday Lake 4-H Centers. (J. L. Kirwan)

§ FORSite Program – Forestry outreach to schools and colleges throughout Virginia – J. L. Kirwan, J. R. Seiler, College of Natural Resources' undergraduate students

The Forestry Outreach (FORSite) Program reached 2,280 K-12 students in 22 schools in 14 counties during 2005. K-12 students were taught natural resource management topics by undergraduate students from the College of Natural Resources and conducted research projects at their schools.

§ Virginia Governor's School for Agriculture

Eric Wiseman served as advisor to four students in an urban forestry independent study group. The students conducted an urban tree inventory on the Virginia Tech campus. Wiseman also conducted a lecture and lab on urban forestry for approximately 60 students outside the natural resources track.

John McGee made a presentation on "Finding Your Home: Introduction to Geospatial Tools on the Web" at the 2005 Governor's School.

§ Forest Biology and Ecology for Educators (FOR 5984) – J. R. Seiler

An online, CD-delivered graduate class targeted to public school biology teachers.

§ Project Learning Tree

Project Learning Tree (PLT) is a national award-winning environmental education program for educators working with students in Pre-K through grade 12. It is sponsored by the American Forest Foundation; primary responsibility for administering PLT in Virginia rests with the Virginia Department of Forestry, with fiscal and administrative oversight provided by the Virginia Forestry Association. PLT helps students gain awareness and knowledge of the natural and built environment and their place within it, as well as their responsibility for it.

During 2005 J. L. Kirwan conducted three workshops for pre-service teachers.

- § Watershed Education: Restoring Forest Cover to the Chesapeake Watershed – J. L. Kirwan

Youth are planting 12,000 hardwood seedlings in Tidewater and Shenandoah Valley counties and an additional 50,000 pine seedlings statewide.
- § Using GPS and GIS in a Meaningful Bay Experience – J. L. Kirwan, J. A. McGee

Teachers in targeted counties in Tidewater, Virginia, receive four days of training so that they can provide a meaningful Bay experience for their students. Funding provided by National Oceanic and Atmospheric Administration.
- § GIS, GPS, and Geospatial Tools – J. A. McGee

“Introduction to Geospatial Tools to Support Forestry Applications” – presentation at the Virginia Department of Forestry Camp, Holiday Lake, VA

“Finding Your Home: Introduction to Geospatial Tools on the Web” – presentation at 4-H Congress, Blacksburg, VA

“GPS Training for Youth and Education” – presentation to 4-H Extension, Tidewater, VA
- § Agriculture Awareness Day – Prince Edward County – D. L. Goerlich

275 youth participated
- § Kids Forestry Workshop at the Reynolds Homestead – K. R. Peer

120 youth participated
- § Children’s Christmas Tree Farm Tours – Patrick County – R. E. Kreh, K. Peer

190 youth participated
- § Ag in the Classroom – Madison County – A. K. Downing

140 third-graders participated
- § Arbor Day Program – Madison County – A. K. Downing

523 youth participated
- § Ag Field Day – King George County – A. K. Downing

208 youth participated
- § Meaningful Day Program – Spotsylvania County – A. K. Downing

1,905 youth participated
- § Teacher Training – Spotsylvania County – A. K. Downing

20 participants

Newsletters and Magazine Columns Published

Extension Forestry Update

Biannual six-page newsletter of the IUFRO Extension Working Party, distributed to 500 extension foresters worldwide; produced by J. E. Johnson

Forestry and Wildlife Notes

Monthly column in the *4-H Information Newsletter*, distributed to 1,150 extension agents and key volunteers statewide; produced by J. L. Kirwan

Forestry For'um

Quarterly newsletter distributed to 700 program participants, cooperators, and volunteers; contains upcoming events, electronic resources, and timely information; produced by D. L. Goerlich

IFO Co-op Newsletter

Distributed biannually to 55 cooperators and interested individuals; produced by R. Visser

The Logroll: Notes and News for Loggers

Quarterly column in the Virginia Forestry Association's *Virginia Forests* magazine; produced by R. M. Shaffer

SHARP Logger Newsletter

Two-page newsletter with quarterly distribution to approximately 2,000 loggers and foresters; produced by S. M. Barrett and R. M. Shaffer

TREE Cookies Etc.

Bi-monthly electronic newsletter which provides unbiased research-based information on forest stewardship, tree care, and natural resource management; produced by A. K. Downing

Virginia Forest Landowner Update

Quarterly newsletter distributed to 22,000 forest landowners and natural resource professionals; produced/edited by J. L. Gagnon

Virginia Geospatial Newsletter

Eight-page quarterly newsletter distributed to approximately 2,000 individuals and organizations throughout the Commonwealth; produced by J. A. McGee and P. M. Baldassaro

World Wide Web Sites Developed and Maintained

Amateis, R. L. Virginia Tech Loblolly Pine Growth and Yield Research Cooperative.
www.cnr.vt.edu/g&y_coop

Baldassaro, P. M. and J. A. McGee. The Virginia Geospatial Academy (Provides public access and points of contact to geospatial educational opportunities at the precollege, higher education, and professional development levels; contains contacts from academic, private, and non-profit entities)
<http://www.cnr.vt.edu/geoacademy>

Barrett, S. M. and R. M. Shaffer. Virginia SHARP Logger Program.
www.sharplogger.vt.edu

Burger, J. A. Forest Soils Program (Provides teaching, research, and outreach activities of the forest soils program at Virginia Tech)
<http://soils.fw.vt.edu/index.html>

- Day, S. D., J. R. Seiler and J. A. Peterson. Virginia Urban Street Tree Selector. (Currently in a beta version, this site helps professionals and others select tree species for downtown streets, parking lots, and other urban sites. The site is linked with the dendrology databases.)
<http://www.cnr.vt.edu/dendro/treeselector/index.cfm>
- Day, S. D. and P. E. Wiseman. Urban Forestry Gateway at Virginia Tech (Links all urban forestry information at Virginia Tech, including information for prospective undergraduate and graduate students, faculty research from several departments, scholarship information, and outreach sites)
www.cnr.vt.edu/urbanforestry/
- Fox, T. R. and H. L. Allen (North Carolina State University). Forest Nutrition Cooperative.
www.forestnutrition.org
- Gagnon, J. L. Virginia Forest Landowner Update Online.
www.cnr.vt.edu/forestupdate
- Goerlich, D. L., J. L. Kirwan and others. 4-H Virtual Forest (Provides youth with an interactive web-based learning experience that introduces the concepts of forest management to young people ages 9-13. Learning modules complement 4-H experiential techniques and are consistent with the Standards of Learning for Virginia public schools.)
www.ext.vt.edu/resources/4h/virtualforest/
- Kirwan, J. L.. Virginia Big Tree Program Site.
www.cnr.vt.edu/4h/bigtree/index.htm
- Kirwan, J. L. Virginia 4-H Natural Resources and Environmental Education (NREE) Projects. . (Outlines programs, projects, and activities available to 4-H clubs in Virginia)
www.ext.vt.edu/resources/4h/eenr.html
- Kirwan, J. L. Virginia Project Learning Tree. (Provides SOL correlations and resources for teachers who use PLT in their classrooms)
www.cnr.vt.edu/plt
- Kirwan, J. L. and D. Dunlap. www.AugustaSprings.org
A collaborative website for volunteers and visitors to Augusta Springs, a popular Forest Service wetlands and conservation education center on the Deerfield Ranger District, George Washington National Forest. The purpose of the site is to help students of all ages learn about the role that forests, particularly the national forests, play in protecting and enhancing our most precious resource—clean water. Funding provided by Northern Initiatives, USDA Forest Service.
- Kirwan, J. L. and D. Dunlap. NOAA Watershed Project. (Provides GIS data products, including historic aerial photographs, for high school teachers in the Potomac and Shenandoah Valleys)
www.watershedded.org/
- Kirwan, J. L. and A. N. Meeks. Remarkable Tree Program.
[http://www.cnr.vt.edu/4h/remarkable tree/](http://www.cnr.vt.edu/4h/remarkable%20tree/)
- McGee, J. A. and P. M. Baldassaro. The Virginia Geospatial Extension Program (Provides overview, data and software resources, articles, and workshop materials to support geospatial activities through pre-college, higher education, local, state, and federal geospatial initiatives in Virginia)
<http://www.cnr.vt.edu/gep/>

- Merry, F. D. and G. S. Amacher. International Forestry Center at Virginia Tech.
www.cnr.vt.edu/ifc/FMerry/pages/IFChome.htm
- Peterson, J. A. and J. R. Seiler. Forest Biology and Dendrology Educational Site. (Provides an electronic textbook for basic tree biology, fact sheets for 940 tree species, and an interactive "Ask Dr. Dendro" site to get tree-related questions answered)
www.cnr.vt.edu/dendro
- Robertson, David P. Grayson LandCare. (Grayson Grassroots is a LandCare initiative in Grayson County and Southwest, Virginia. Grayson Grassroots works with local landowners, businesses, government agencies, and other partners to improve the quality of the regional economy, community, and environment.)
www.publicecology.org/graysonlandcare/
- Seiler, J. R., W. M. Aust and J. A. Peterson. Forest Biology and Ecology for Educators.
www.cnr.vt.edu/dendro/forbioeco/index.html
- Seiler, J. R., J. L. Kirwan, J. A. Peterson and A. N. Meeks. FORSite - Forestry Outreach Site for Virginia Middle Schools. (Provides forestry resources to middle schools, with emphasis on tree identification and data collection)
<http://www.cnr.vt.edu/dendro/forsite/contents.htm>
- Virginia Tech Department of Forestry Site. Website maintained by C. Linkous.
www.cnr.vt.edu/forestry/
- Visser, R. and T. Sherman. Cable Logging/Cable Yarding Site.
www.cnr.vt.edu/visser/cable_logging/
- Visser, R. and T. Sherman. Harvesting Systems.
www.cnr.vt.edu/harvestingsystems
- Visser, R. and T. Sherman. Industrial Forest Operations Cooperative.
www.cnr.vt.edu/ifo
- Visser, R. and T. Sherman. Stream Crossing Options.
www.cnr.vt.edu/visser/streamcrossings/

THESES AND DISSERTATIONS FOR GRADUATE DEGREES AWARDED IN 2005

17 degrees awarded in calendar year 2005 – 4 Ph.D., 12 M.S., 1 M.F.

- Amishev, Dzhamal Y. Fall 2005. Impact of weed control and fertilization on growth of eastern white, loblolly, shortleaf, and Virginia pine plantations in the Virginia Piedmont. M.S.
Faculty Chair: T. R. Fox
Current Position: Ph.D. candidate, Oregon State University
- Arbogast, Kelley L. Fall 2005. Attitudes toward and the influence of vegetation on elementary school grounds in Virginia. M.S.
Faculty Co-Chairs: J. L. Kirwan and B. C. Kane, University of Massachusetts-Amherst
Current Position: Forester, Virginia Department of Forestry, Loudoun/Price William Counties, VA
- Blinn, Christine E. Second Summer 2005. Increasing the precision of forest area estimates through improved sampling for the nearest neighbor satellite image classification. Ph.D.
Faculty Chair: R. H. Wynne
Current Position: Postdoctoral Associate, Virginia Tech Department of Forestry
- Casselman, Chad N. Spring 2005. Effects of silvicultural treatments and soil properties on the establishment and productivity of trees growing on mine soils in the Appalachian coalfields. M.S.
Faculty Chair: T. R. Fox
Current Position: Forester, International Paper Company, Tupper Lake, NY
- Garst, Barry A. Spring 2005. An exploration of developed forest camping experiences and meanings in the Mount Rogers National Recreation Area. Ph.D.
Faculty Chair: J. W. Roggenbuck
Current Position: Extension Specialist, Virginia Cooperative Extension, Blacksburg, VA
- Henning, Jason G. Second Summer 2005. Modeling forest canopy distribution from ground-based laser scanner data. Ph.D.
Faculty Chair: P. J. Radtke
Current Position: Postdoctoral Associate, Virginia Tech Department of Forestry
- Hensyl, Curtis H. Spring 2005. Impacts of land and ownership characteristics on the stumpage prices for Virginia's nonindustrial forests. M.S.
Faculty Chair: J. Sullivan
Current Position: Land Transaction Analyst, International Paper, Wilmington, NC
- Johnson, Laura L. Fall 2005. Evaluation of Bureau of Land Management protocols for monitoring stream condition. M.S.
Faculty Chair: S. P. Prisley
Current Position: GIS Instructor, Great Basin College, Elko, NV
- Joseph, Katherine A. Spring 2005. Comparison of segment and pixel based non-parametric classification of land cover in the Amazon Region of Brazil using multitemporal Landsat TM/ETM+ imagery. M.S.
Faculty Chair: R. H. Wynne
Current Position: GIS & Remote Sensing Analyst, LeadDog Consulting, Corinth, VT

- King, Nathan T. Second Summer 2005. The short-term effects of fertilization on loblolly pine (*Pinus taeda* L.) photosynthesis, dark respiration, and leaf area. M.S.
Faculty Chair: J. R. Seiler
Current Position: Research Associate, Purdue University, West Lafayette, IN
- Matthews, Bonnie L. C. First Summer 2005. Silvicultural methods for improving hardwood management on non-industrial private forest land in Virginia. M.S.
Faculty Chair: S. M. Zedaker
Current Position: Teacher, Nathaniel Greene Academy, Shiloam, GA
- Pittman, Judd R. Second Summer 2005. Coarse woody debris in industrially-managed *Pinus taeda* L. plantations in the southeastern United States. M.S.
Faculty Chair: C. A. Copenheaver
Current Position: Ph.D. candidate, University of Quebec at Montreal, Montreal, Canada
- Showalter, Julia M. Second Summer 2005. Evaluation of topsoil substitutes for restoration of Appalachian hardwoods on strip mined lands. M.S.
Faculty Chair: J. A. Burger
Current Position: U.S. Peace Corps, Malawi, Africa
- Tyree, Michael C. Fall 2005. The short-term effects of fertilization on total soil CO₂ efflux, heterotrophic, and autotrophic respiration of loblolly pine (*Pinus taeda* L.). M.S.
Faculty Chair: J. R. Seiler
Current Position: Ph.D. candidate, Virginia Tech Department of Forestry
- Vokoun, Melinda M. Spring 2005. Investigating the cooperative behavior of nonindustrial private forest landowners when stands are spatially interdependent. Ph.D.
Faculty Chair: G. S. Amacher
Current Position: Postdoctoral Research Associate, North Carolina State University, Raleigh, NC
- Yancey, Matthew W. Fall 2005. Forest stewardship plan for Hull Springs Farm. M.F.
Faculty Chair: T. R. Fox
Current Position: Extension Agent-Natural Resources, Virginia Cooperative Extension, Harrisonburg, VA
- Yonce, Mary E. Spring 2005. Opportunities for standardization in monitoring silvicultural best management practices in the southeastern United States. M.S.
Faculty Chair: R. Visser
Current Position: Forester Trainee, USDA Forest Service, Chattahoochee-Oconee National Forests, Gainesville, GA

2005 EDITORSHIPS, AWARDS, AND ACHIEVEMENTS

Gregory Amacher

Honorary Adjunct Senior Professor, Center for Agricultural Policy, Chinese Academy of Sciences,
Peking University
Adjunct Research Scientist, Woods Hole Research Center, Woods Hole, MA
Affiliate Researcher, The Institute of Environmental Research for Amazônia (Instituto de Pesquisa
Ambiental do Amazonia – IPAM), Belem, Brazil
Adjunct Faculty, Virginia Tech Department of Economics
Senior Editor (Forestry and Economics), *Natural Resource Modeling*
Editorial Council, *Journal of Environmental Economics and Management*
Associate Editor, *Journal of Forest Economics*

Michael Aust

Certified Forester, Society of American Foresters

Amy Brunner

Board of Advisors, *New Phytologist*

James Burger

Fellow, Soil Science Society of America

Harold Burkhart

University Distinguished Professor of Forestry
Fellow, Society of American Foresters
Fellow, American Association for the Advancement of Science
Review Board, *International Journal of Environmental Research*
International Scientific Committee, *Annals of Forest Science*
Board of Directors, Forest Landowners Association
Board of Directors, Virginia Forestry Association
Advisory Committee, Reynolds Homestead
Certified Forester, Society of American Foresters

Adam Downing

National Association of County Agricultural Agents Communication Award – National Finalist,
Radio Program, 2005
Association of Natural Resources Extension Professionals – Gold Award for Outstanding
Educational Materials, Radio, 2005
Association of Natural Resources Extension Professionals – Bronze Award for Outstanding
Educational Materials, Short Publication, 2005
President, Board of Directors, Virginia Urban Forestry Council
Chair, Skyline Chapter, Society of American Foresters-Virginia Division

Ulrika Egertsdotter

Committee member, IUFRO Division 2, Unit 2.04.06 Molecular Biology of Forest Trees

Thomas Fox

Soil Science Society of America Service Award, 2005
Recognition Award from the H. J. Heinz III Center for Science, Economics and the Environment,
2005
Adjunct Faculty Appointment, North Carolina State University
Co-Director, NCSU/VPI&SU Forest Nutrition Cooperative
Associate Editor, *Soil Science Society of America Journal*
Certified Forester, Society of American Foresters
Certified Professional Soil Scientist, American Society of Agronomy
Registered Professional Forester (Georgia)
Licensed Professional Forester (Maine)

Jennifer Gagnon

Master Online Educator Certificate Program, Virginia Tech College of Agriculture and Life
Sciences, 2005

Daniel Goerlich

Virginia Tech College of Natural Resources Outstanding Young Alumnus, 2005
Epsilon Sigma Phi State Team Award, 2005
NREM Flagship Program Award, 2005
ANREP Gold Award – Web Page, 2005
National Association of County Agricultural Agents 4-H Youth Development Search for
Excellence – National Finalist, 2005
National Association of County Agricultural Agents Communication Award – National Finalist,
Learning Module, 2005
National Association of County Agricultural Agents Communication Award – Regional Finalist,
Fact Sheet, 2005
National Association of Extension 4-H Agents National Winner, Educational Piece – Team, 2005
Southern Extension Forest Resource Specialists Award for Excellence – Extension Newsletter,
2005
Board of Directors, Virginia Forestry Association
Board of Directors, Halifax Soil and Water Conservation District
Certified Forester, Society of American Foresters

Bruce Hull

Fellow, Virginia Natural Resource Leadership Institute

James Johnson

Society of American Foresters National Technology Transfer Award, 2005
Associate Editor, *Small-Scale Forest Management, Economics and Policy*
Board of Directors, Virginia Forestry Association
Certified Forester, Society of American Foresters

Jeffrey Kirwan

National Association of Extension 4-H Agents – 4-H Youth Search for Excellence Award, 2005
National Association of Extension 4-H Agents – Southern Region Award, Educational Piece – Team, 2005
National Association of County Agricultural Agents – National finalist, Communications Award, 2005
Association of Natural Resources Extension Professionals – Gold Award for Educational Materials, Web Page, 2005
Epsilon Sigma Phi Team Award, for hosting the National WHEP Contest - 2005

Steven Lawson

Associate Editor, *Journal of Park and Recreation Administration*

Jeffrey Marion

Associate Editor, *Journal of Environmental Management*
Associate Editor, *International Journal of Wilderness*
Advisory Board, International Centre for Ecotourism Research, Queensland, Australia

John McGee

Material reviewer for NASA Kids Science Online Workshop

Michael Mortimer

Society of American Foresters, Young Forester Leadership Award, 2005

Richard Oderwald

Associate Editor for Geospatial Technologies, *Journal of Forestry*

Stephen Prisley

Certified Forester, Society of American Foresters

Philip Radtke

Associate Editor, *Forest Science*

Marion Reynolds

Editorial Board, *Journal of Quality Technology*
Editorial Board, *Sequential Analysis*
Editorial Board, *IIE Transactions*

David Robertson

Director, The Public Ecology Project
Vice President, Greater Lynchburg Environmental Network
Public Director, Blue Ridge Forest Cooperative
Founding Member and Chair of Steering Committee, Appalachian LandCare Partnership
Member, Southside Implementation Team, Virginia Tech

Joseph Roggenbuck

Associate Editor, *Leisure Sciences*
Associate Editor, *International Journal of Wilderness*

John Seiler

The Honorable and Mrs. Shelton H. Short, Jr., Professor of Forestry
Editorial Board, *Tree Physiology*

Robert Shaffer

Charles Nettleton Professor of Forestry

Jay Sullivan

Associate Editor, *Forest Science*

Rien Visser

Assistant Editor (Forestry Section), *Transactions of American Society of Agricultural Engineers*
Division Editor (Forestry Section), *Transactions of American Society of Agricultural Engineers*

Randolph Wynne

First Honorable Mention for the 2005 American Society for Photogrammetry and Remote Sensing
Talbert Abrams Award for best 2004 article in *Photogrammetric Engineering and Remote Sensing*

Shepard Zedaker

Editorial Board, *New Forests*
Advisory Board, *Weed Technology*

PROFESSIONAL PRESENTATIONS MADE DURING 2005

(Presenter's name indicated in **bold**; * denotes graduate student)

- Adams, N. T.** and C. A. Copenheaver. Carbon and nitrogen analysis of decomposing loblolly pine. 5th North American Forest Ecology Workshop, Gatineau, Quebec, Canada.
- Albaugh, T. J.**, H. L. Allen, T. R. Fox and H. E. Quick. Response of *Pinus taeda* to midrotation vegetation control and fertilization. 5th International Conference on Forest Vegetation Management, Corvallis, OR.
- Amishev, D. Y.*** and T. R. Fox. Impact of weed control and fertilization on growth of four species of pine in the Virginia Piedmont. 13th Biennial Southern Silvicultural Research Conference, Memphis, TN.
- Amateis, R. L.** Microcosm analogs: A tool for forest experimentation. 2005 Southern Mensurationists Conference, Wilmington, NC.
- Amateis, R. L.** Thinning and fertilization in midrotation stands (RW-9 and RW-11 results). 2005 Annual Meeting of the NCSU/VPI&SU Forest Nutrition Cooperative, Blacksburg, VA.
- Amateis, R. L.** and H. E. Burkhart. Growth following pruning of young loblolly pine trees: Some early results. 13th Biennial Southern Silvicultural Research Conference, Memphis, TN.
- Amateis, R. L.** and J. Liu. Regional variation in loblolly pine basal area: Correlations but no causes. 2005 Southern Mensurationists Conference, Wilmington, NC.
- Auch, W. T.*, **J. A. Burger** and D. O. Mitchem. Hardwood stocking after five years on reclaimed mined land in the Central Appalachians. 2005 Annual Meeting of American Society for Mining and Reclamation, Breckenridge, CO.
- Bailey, B.**, J. A. McGee, G. Choate and J. Fuller. Implementing a local government GIS through collaborative partnerships. National Council for Continuing Education and Training Conference, Jacksonville, FL.
- Baldassaro, P. M.** and J. A. McGee. Introduction to GIS. Virginia Community College New Horizons Conference, Roanoke, VA.
- Baldassaro, P. M.** and J. A. McGee. Providing geospatial education and facilitating geospatial implementation through the Virginia Geospatial Extension Program. Environmental Systems Research Institute (ESRI) Education User Conference, San Diego, CA.
- Blinn, C. E.***, R. H. Wynne and J. A. Scrivani. Optimal sampling for satellite-based forest area estimation. 71st Annual Meeting of the American Society for Photogrammetry and Remote Sensing, Baltimore, MD.
- Blinn, C. E.***, R. H. Wynne, J. A. Scrivani and G. A. Reams. Training data needs for Landsat ETM+ forest/nonforest classifications used to produce FIA Phase I forest area estimates. 7th Annual Forest Inventory and Analysis Symposium, Portland, ME.
- Budruk, M.**, W. Valliere, D. Laven, R. Manning and S. Lawson. Indicators and standards of quality for the built environment: Visitor centers, roads, walkways, and other built areas. George Wright Society Biennial Conference, Philadelphia, PA.

- Bullock, S.* , K. Wood***, A. Moldovanyi, S. Lawson and J. Roggenbuck. Wilderness and the Southeastern American mind: A comparison of local and non-local Okefenokee Swamp visitors' wilderness knowledge and attitudes. Southeastern Recreation Research Conference, Savannah, GA.
- Burger, J. A.** University of Canterbury, School of Forestry Seminar Series, Christchurch, New Zealand.
- Burger, J. A.** Pine plantation response to harvest residue removal and soil tillage on the Appalachian Piedmont, USA. Multiple Benefits from Sustainable Bioenergy Systems, International Energy Agency Bioenergy Task 30/31 Meeting, Perth, Australia.
- Burger, J. A.** Restoring forest and ecosystem services on mined land in the eastern United States. XXII IUFRO World Congress, Brisbane, Australia.
- Burger, J. A.,** D. O. Mitchem, C. E. Zipper and R. Williams. Herbaceous ground cover control effects on native hardwoods planted on mined land. 2005 Annual Meeting of American Society for Mining and Reclamation, Breckenridge, CO.
- Burkhart, H. E.** Growth and yield models for southern pines. Society of American Foresters 2005 National Convention, Fort Worth, TX.
- Burkhart, H. E.** Stand density management: Results from research in southern pine. Symposium on Managing Stand Density: The Science Behind the Art, Canyonville, OR.
- Burkhart, H. E.** Sustaining forest resources. Virginia Tech Provost's Office "Focus on Distinguished Faculty" Lecture Series, Blacksburg, VA.
- Burkhart, H. E.** and J. Nowak. The "green industry": An economic development opportunity for Southside Virginia. Open house at the Institute for Advanced Learning and Research, Danville, VA.
- Casselman, C. N*** and T. R. Fox. First-year survival and growth of three species assemblages grown on post-SMCRA mined land as affected by three levels of silvicultural intensity. 13th Biennial Southern Silvicultural Research Conference, Memphis, TN.
- Casselman, C. N.***, T. R. Fox and J. A. Burger. First-year seedling response to three levels of silvicultural inputs on post-SMCRA reclaimed lands. 2005 Annual Meeting of American Society for Mining and Reclamation, Breckenridge, CO.
- Choi, J.-K.,** B.-O. Yoo and O.-H. Seo. A computer simulation of second-growth development in natural deciduous forests in Korea. 2005 Southern Mensurationists Conference, Wilmington, NC.
- Cole, D., **R. Manning**, S. Lawson, R. Gimblett, R. Itami, J. van Wagtendonk, M. Hoff and M. Vande Kamp. Computer simulation as a tool for park and wilderness planning and management. George Wright Society Biennial Conference, Philadelphia, PA.
- Copenheaver, C. A.** Using dendrochronology to reconstruct historical disturbance patterns at Buffalo Mountain, Virginia. 5th North American Forest Ecology Workshop, Gatineau, Quebec, Canada.
- Day, S. D.** Deep planting and root collar treatments: Current research at Virginia Tech. Arboriculture Research and Education Academy (AREA) Conference at International Society of Arboriculture Annual Conference, Nashville, TN.
- Day, S. D.** In search of space: Improving tree root growth in urban sites. Facultad de Ciencias Agroalimentarias, Universidad de Costa Rica, San José, Costa Rica (presented in Spanish).

- Day, S. D.** Underground trees—What happens when root collars are too deep. Annual Meeting of Mid-Atlantic Chapter – International Society of Arboriculture, Morgantown, WV.
- Day, S. D.** and J. R. Harris. Buried trunks: How deep planting affects trunk tissue, adventitious rooting, and tree growth. Trees and Planting: Getting the Roots Right, Lisle, IL.
- Day, S. D.** and J. R. Harris. Long-term soil contact with trunk tissue in buried white oaks and sweetgums. Root Depth Symposium of the National Coalition on Structural Roots, Lisle, IL.
- Day, S. D.** and J. R. Harris. Response of deeply planted Turkish hazelnut to flooding and root collar excavation. Root Depth Symposium of the National Coalition on Structural Roots, Lisle, IL.
- Day, S. D.** and J. R. Harris. The role of adventitious roots in the health of deeply planted trees. Root Depth Symposium of the National Coalition on Structural Roots, Lisle, IL.
- Dharmawardhana, P., S. P. Diazio and **A. M. Brunner**. From genome sequence to transcriptome: Studies using a whole-genome poplar microarray. IUFRO Tree Biotechnology 2005, Pretoria, South Africa.
- Dove, J.**, G. Smith, S. D. Day and J. R. Harris. Development of a sustainable infrastructure technology: Linking trees and engineered soil to minimize runoff. NSF National Cross-Disciplinary Workshop in Engineering and Geoscience: Process-Driven Risk Assessment and Sustainable Mitigation Strategies, Nashville, TN. (Poster)
- Downing, A. K.** Biomass, a primer for foresters. Skyline Chapter Society of American Foresters, Charlottesville, VA.
- Downing, A. K.** Exploring Virginia 4-H's Virtual Forest: New ways to teach youth. Adult 4-H Volunteers Fall Conference, Charlottesville, VA.
- Downing, A. K.** Forest visualization for natural resource professionals. Rappahannock Chapter - Society of American Foresters, Aylette, VA.
- Downing, A. K.** Small woodlot valuation. Farmland Marketing Realtor Conference, Culpeper, VA.
- Downing, A. K.** Small woodlots: Possibilities and management. Piedmont Landscape Association, Charlottesville, VA.
- Downing, A. K.** TIMO, an inside look. Skyline Chapter Society of American Foresters, Waynesboro, VA.
- Downing, A. K.** Tree identification skills. Arlington/Alexandria Tree Steward Volunteer Training, Arlington, VA.
- Downing, A. K.** Tree identification skills. Four-County Master Gardener Training, Madison, VA.
- Downing, A. K.** Wood flooring processing and introduction to arboriculture. Skyline Chapter Society of American Foresters, Waynesboro, VA.
- Downing, A. K.** and J. Finley. What private forestland owners want in an educational program. National Association of County Agricultural Agents 90th Annual Meeting and Professional Improvement Conference, Buffalo, NY.
- Egertsdotter, U.** and J. Cairney. Genomics of conifer embryo development – Old and new approaches. IUFRO Tree Biotechnology 2005, Pretoria, South Africa.

- Eisenbies, M. H.**, W. M. Aust, J. A. Burger and M. B. Adams. New forestry runoff curves. West Virginia Forestry Association Forest Symposium, Flatwoods, WV.
- Elliot, J. R.*** and T. R. Fox. Comparison of fertilization with controlled release N and urea on soil nutrient availability and N volatilization in a loblolly pine stand. Annual Meeting of Soil Science Society of America, Salt Lake City, UT.
- Elliot, J. R.*** and T. R. Fox. Evaluating the efficiency of controlled release fertilizer in a mid-rotation loblolly pine plantation in the Virginia Piedmont. 13th Biennial Southern Silvicultural Research Conference, Memphis, TN.
- Espinosa, C., **J. Young**, G. S. Pullman, K. Olsen and U. Egertsdotter. Somatic embryogenesis of Fraser fir (*Abies fraseri*). 7th International Christmas Tree Research & Extension Conference, Tustin, MI.
- Flatley, W. T.*** and C. A. Copenheaver. Dendroecology study of Pedlar Hills Natural Area Preserve, Virginia. 5th North American Forest Ecology Workshop, Gatineau, Quebec, Canada.
- Fox, T. R.**, C. A. Haas, R. H. Jones, S. M. Zedaker, A. L. Hammett, D. Wm. Smith, D. Hammond, D. Harpole, S. Hood, S. Knapp, J. Lorber, P. Parrish and B. Wender. 2005. Silvicultural practices and biodiversity in the southern Appalachians. Annual Meeting of the MeadWestvaco Ecosystem Research Forest, Charleston, WV.
- Gagnon, J. L.**, S. B. Jack, S. Pecot and R. J. Mitchell. Interactions between litter accumulation, fire temperature, and seedling size on the survival and growth of naturally regenerated longleaf pine seedlings. 13th Biennial Southern Silvicultural Research Conference, Memphis, TN. (Poster)
- Galang, J. S.**, C. E. Zipper, S. P. Prisley, J. M. Galbraith and R. H. Wynne. Evaluating terrestrial carbon sequestration options for Virginia. USDA Symposium on Greenhouse Gases and Carbon Sequestration in Agriculture and Forestry, Baltimore, MD.
- Garst, B. A.*** and J. W. Roggenbuck. From tent pads to satellite dishes: An exploration of the modern developed forest camping experience. Southeastern Recreation Research Conference, Savannah, GA.
- Goerlich, D. L.** 4-H forestry judging. Holiday Lake 4-H Educational Center, Appomattox, VA.
- Goerlich, D. L.** Managing for big trees. Holiday Lake 4-H Educational Center, Appomattox, VA.
- Goerlich, D. L.** Prioritizing objectives and planning for success. Holiday Lake 4-H Educational Center, Appomattox, VA.
- Goerlich, D. L.** Timber cruising. Holiday Lake 4-H Educational Center, Appomattox, VA.
- Goerlich, D. L.** Tree identification. Holiday Lake 4-H Educational Center, Appomattox, VA.
- Goerlich, D. L.** Weird trees. Holiday Lake 4-H Educational Center, Appomattox, VA.
- Goerlich, D. L.** Winter tree ID – No leaves? No problem! Holiday Lake 4-H Educational Center, Appomattox, VA.
- Goerlich, D. L.** Woodlot rehabilitation through crop tree release. Holiday Lake 4-H Educational Center, Appomattox, VA.
- Goerlich, D. L.**, J. L. Kirwan and others. Explore 4-H Virtual Forest! National Association of County Agricultural Agents 90th Annual Meeting and Professional Improvement Conference, Buffalo, NY.

- Goerlich, D. L.**, J. L. Kirwan and others. 4-H Virtual Forest. Virginia Cooperative Extension: An Engaged Learning Organization, Roanoke, VA.
- Henning, J. G.*** Non-destructive tree measurements using ground-based scanning lidar. 2005 Annual Meeting of the Virginia Tech Loblolly Pine Growth and Yield Research Cooperative, New Bern, NC.
- Henning, J. G.*** and P. J. Radtke. Ground-based laser imaging for assessing three-dimensional forest canopy structure. Silviscan: LiDAR Applications in Forest Assessment and Inventory, Blacksburg, VA.
- Howe, D.**, A. M. Brunner, M. Cherry, K. Krutovsky, D. B. Neale and G. T. Howe. Identifying candidate genes associated with cold hardiness in coastal Douglas-fir using DNA microarrays. Western Forest Genetics Association Meeting, Corvallis, OR.
- Jack, S. B.** and J. L. Gagnon. Seasonal and annual leaf area dynamics in mature longleaf pine forests in southwest Georgia. 13th Biennial Southern Silvicultural Research Conference, Memphis, TN. (Poster; designed and written by J. L. Gagnon)
- Jackson, M. L.** and T. R. Fox. Impact of crop tree release on wood properties of pitch x loblolly hybrid pine. 28th Southern Forest Tree Improvement Conference, Raleigh, NC.
- Johnson, J. E.** Communicating forestry information through newsletters, posters, and pamphlets. Communications for Silviculturists Shortcourse, Blacksburg, VA.
- Johnson, J. E.** Ecology and silviculture in shortleaf pine. Virginia Department of Forestry Training Academy, Smith Mountain Lake, VA.
- Johnson, J. E.** Environmental effects of prescribed burning. Virginia Certified Prescribed Burning Manager Program, Charlottesville, VA.
- Johnson, J. E.** Forestry extension in Virginia. Canadian Ecology Centre Seminar, Mattawa, Ontario, Canada.
- Johnson, J. E.** Forestry extension in Virginia. Community Stewardship Council Seminar, Almonte, Ontario, Canada.
- Johnson, J. E.** Leadership in university outreach. Outreach Now Forum, Blacksburg, VA.
- Johnson, J. E.** Library and internet resources. Communications for Silviculturists Shortcourse, Blacksburg, VA.
- Johnson, J. E.** Overview of forestry and forest resources in Virginia. Financial Assistance Options for Forest Owners Shortcourse, Petersburg, VA.
- Johnson, J. E.** Overview of sustainable forestry in Virginia. Financial Assistance Options for Forest Owners Shortcourse, Mountain Lake, VA.
- Johnson, J. E.** Technical writing for silviculturists: Comparing methods, formats, and results. Communications for Silviculturists Shortcourse, Blacksburg, VA.
- Johnson, J. E.** The Virginia Forest Landowner Education Program. Canadian Ecology Centre Seminar, Mattawa, Ontario, Canada.
- Johnson, J. E.** The Virginia Forest Landowner Education Program. Community Stewardship Council Seminar, Almonte, Ontario, Canada.

- Johnson, J. E.** Web-based instruction: A new approach for forestry extension. Washington State University Cooperative Extension Service Forestry Training Program, Coeur d'Alene, ID.
- Johnson, J. E.**, L. S. Gellerstedt and D. O. Mitchem. Silvicultural treatments to regenerate principal species in the Flat Rock forest community. 13th Biennial Southern Silvicultural Research Conference, Memphis, TN.
- Johnson, J. E.** and E. R. Norland. Evaluating best practices in forestry extension. XXII IUFRO World Congress, Brisbane, Australia.
- Johnson, J. E.**, E. R. Norland and J. H. Creighton. North American perspectives on successful strategies in extension and technology transfer. IUFRO Conference on Transfer of Forest Science Knowledge and Technology, Troutdale, OR.
- Jones, A. T.**, J. M. Galbraith and J. A. Burger. Development of a forest site quality classification model for mine soils in the Appalachian Coalfield Region. 2005 Annual Meeting of American Society for Mining and Reclamation, Breckenridge, CO.
- Joseph, K. A.***, R. H. Wynne, J. O. Browder and P. M. Summers. Land use classification in the Amazon region of Brazil using interannual Landsat imagery. Centennial Meeting of the American Association of Geographers, Denver, CO.
- Joseph, K. A.***, R. H. Wynne, J. O. Browder and P. M. Summers. Non-parametric land use classification in the Amazon region of Brazil. 7th Annual Virginia Tech GIS and Remote Sensing Research Symposium, Blacksburg, VA.
- King, N. A.***, J. R. Seiler, T. R. Fox and K. H. Johnsen. The short-term effects of fertilization on loblolly pine photosynthesis, dark respiration, and leaf area. 13th Biennial Southern Silvicultural Research Conference, Memphis, TN.
- Kearns, E.** and **J. L. Kirwan.** Communicating the values of big trees. Nature at Your Service – National Urban Forestry Conference, Charlotte, NC.
- Kirwan, J. L.** and **A. T. Barnes.** Using technology in environmental education. Chesapeake Bay Education Summit, Lancaster, PA.
- Klopfer, S. D.**, K. M. Convery, C. E. Blinn, R. H. Wynne, P. N. Laver and J. Berkson. An evaluation of breeding horseshoe crab estimates derived from aerial photography. 61st Annual Conference of the Northeastern Association of Fish and Wildlife Agencies, Virginia Beach, VA.
- Lakel, W. A.***, W. M. Aust and C. A. Dolloff. Commercial timber value of streamside management zones in managed pine and hardwood stands. 13th Biennial Southern Silvicultural Research Conference, Memphis, TN.
- Lakel, W. A.***, W. M. Aust and C. A. Dolloff. Effects of forestry streamside management zone characteristics on water quality and soil movement. 2005 Soil and Water Conservation Society Annual Meeting, Rochester, NY.
- Lakel, W. A.***, W. M. Aust and C. A. Dolloff. Soil erosion from harvested sites versus streamside management zone deposition in the Piedmont of Virginia. 13th Biennial Southern Silvicultural Research Conference, Memphis, TN.
- Lawson, S., T. Hall, J. Roggenbuck and **A. Moldovanyi.** A conjoint analysis of wilderness preferences among subgroups of Okefenokee Swamp Wilderness visitors. Southeastern Recreation Research Conference, Savannah, GA.

- Lawson, S.,** R. Itami, R. Gimblett and R. Manning. Benefits and challenges of computer simulation for describing, monitoring and managing backcountry recreation use. George Wright Society Biennial Conference, Philadelphia, PA.
- Lawson, S.,** R. Manning, W. Valliere, D. Laven, J. Hallo, M. Budruk, P. Newman and J. Bacon. Research on crowding-related indicators and standards of quality. George Wright Society Biennial Conference, Philadelphia, PA.
- Marion, J. L.** Designing and managing sustainable trails for recreation. Commonwealth of Virginia State Park Manager Workshop, Twin Lakes State Park, VA.
- Marion, J. L.** Determining physical carrying capacity: Selecting good indicators and setting reasonable standards. Arthur Carhart National Wilderness Training Center, Visitor Use Management Workshop, Atlanta, GA.
- Marion, J. L.** Developing campsite and trail impact monitoring programs. Arthur Carhart National Wilderness Training Center, Visitor Use Management Workshop, Atlanta, GA.
- Marion, J. L.** Finding the unexpected and unexpected use of findings. George Wright Society Biennial Conference, Philadelphia, PA.
- Marion, J. L.** Indicators and standards of quality for natural resources: Trail and campsite impacts. George Wright Society Biennial Conference, Philadelphia, PA.
- Marion, J. L.** Managing visitor impacts in wilderness. Arthur Carhart National Wilderness Training Center, Visitor Use Management Workshop, Atlanta, GA.
- Marion, J. L.** Methodological challenges for assessing soil erosion on trails. George Wright Society Biennial Conference, Philadelphia, PA.
- Marion, J. L.** Recreation ecology monitoring methods and research findings. National Park Service, Northeast Coastal Parks Inventory and Monitoring Protocol Workshop, Gateway NRA, NJ.
- Marion, J. L.** Recreation ecology research findings: Implications for Leave No Trace practices. American Hiking Society, Southeastern Foot Trails Conference, Table Rock State Park, SC.
- Marion, J. L.** Research findings and management implications from investigations of horse trail impacts. Hoosier and Shawnee National Forest Workshop, Bedford, IN.
- Marion, J. L.** State of recreation research and implications for Leave No Trace practices. Leave No Trace National Coordinators Conference, Great Smoky Mountains National Park, NC.
- Marion, J. L.** Sustainable trail management: Implications from research. American Hiking Society, Southeastern Foot Trails Conference, Table Rock State Park, SC.
- Marion, J. L.** Sustainable trail management: Implications from research. Governor's Conference on Greenways, Blueways and Trails, Richmond, VA.
- Marion, J. L.** Visitor use and resource impact monitoring: Importance, utility, and purpose of park monitoring strategies. George Wright Society Biennial Conference, Philadelphia, PA.
- McGee, J. A.** and P. M. Baldassaro. Exploring collaborative opportunities through the National Geospatial Extension Program. National States Geographic Information Council (NSGIC) Annual Conference, Rochester, NY.

- McGee, J. A.** and P. M. Baldassaro. Geospatial educational efforts in Virginia. GISExpo 2005, Danville, VA.
- McGee, J. A.** and P. M. Baldassaro. Geospatial opportunities within the Virginia Community College System. Virginia Community College New Horizons Conference, Roanoke, VA.
- McGee, J. A.** and P. M. Baldassaro. Lead adopters as catalysts to support geospatial implementation. GISExpo 2005, Danville, VA.
- McGee, J. A.** and P. M. Baldassaro. The National Geospatial Technology Extension Network. Aerospace States Association Conference, Washington, DC.
- McGee, J. A. (with B. Bailey)** and P. M. Baldassaro. Innovative partnerships. Virginia Community College New Horizons Conference, Roanoke, VA.
- Miller, B. W.*** and T. R. Fox. Changes in phosphorus forms in forest soils in the southeastern U.S. twenty years after phosphorus fertilization. Annual Meeting of Soil Science Society of America, Salt Lake City, UT.
- Mitchem, D. O.,** J. E. Johnson and L. S. Gellerstedt. Soil physical and chemical properties associated with flat rock and riparian forest communities. 13th Biennial Southern Silvicultural Research Conference, Memphis, TN.
- Moldovanyi, A.,** S. Lawson, J. Roggenbuck and T. Hall. Managing for multiple and potentially competing values in the Okefenokee Swamp Wilderness. George Wright Society Biennial Conference, Philadelphia, PA.
- Mortimer, M. J.** Forest management: Concept, codeword, or cliché? 13th Fall Section Meeting, American Bar Association, Section of Environment, Energy and Resources, Nashville, TN.
- Mortimer, M. J.,** J. J. Richardson, Jr. and J. S. Huff. A survey of forestland conservation easements in the United States: Implications for the management and stewardship of working private forests. 11th Annual International Symposium on Society and Resource Management: From Knowledge to Management, Ostersund, Sweden.
- Newman, P.,** R. Manning, W. Valliere, D. Laven, L. Park, S. Lawson, J. Marion, M. Budruk, Y. Leung and W. Freimund. Indicators and standards of quality for natural resources: Trail and campsite impacts. George Wright Society Biennial Conference, Philadelphia, PA.
- Nowak, J., R. Visser** and **F. Agblevor.** Bio-energy: European development and opportunities for Virginia. Presentation made at the Institute for Advanced Learning and Research, Danville, VA.
- O'Neal, B. S.*, **R. M. Shaffer** and R. J. M. Visser. Safety issues concerning Spanish-speaking workers in the logging industry in the southeastern United States. Council on Forest Engineering 28th Annual Meeting, Fortuna, CA.
- Packard, K. C.*** and P. J. Radtke. Volume estimation by height tally. 2005 Southern Mensurationists Conference, Wilmington, NC.
- Phillips, R. D.,** L. T. Watson and R. H. Wynne. Hybrid image classification using a shared memory parallel algorithm. Pecora 16: Global Priorities in Land Remote Sensing, Sioux Falls, SD.
- Pittman, J. R.*** and C. A. Copenheaver. Decomposition rates of coarse woody debris in loblolly pine plantations of the southeastern United States. 5th North American Forest Ecology Workshop, Gatineau, Quebec, Canada.

- Prisley, S. P.** Terrestrial carbon sequestration in the Kyoto Protocol: From science to policy. Annual Meeting of Soil Science Society of America, Salt Lake City, UT.
- Prisley, S. P.** Uncertainty in forest stand maps: Revisiting an old challenge. Society of American Foresters 2005 National Convention, Fort Worth, TX.
- Prisley, S. P.,** W. Carstensen, E. Smith and K. Ye. Application of spatial uncertainty models to automate and enhance data fusion. NGA Academic Research Program Annual Symposium, Washington, DC.
- Prisley, S. P., **P. J. Radtke,** C. A. Copenheaver, R. L. Amateis and H. E. Burkhart. Modelling production and decay of coarse woody debris in loblolly pine plantations. USDA NRI Project Directors Meeting, Washington, DC.
- Radtke, P. J.** and R. L. Amateis. Linking downed woody material production and decay to PTAEDA3. Northeastern Mensurationists Organization, Freeport, ME.
- Radtke, P. J.** and J. G. Henning*. Emerging applications of ground-based LiDAR for forest measurements. Silviscan: LiDAR Applications in Forest Assessment and Inventory, Blacksburg, VA.
- Reynolds, M. R., Jr.** and Z. G. Stoumbos. Multivariate monitoring of the process mean vector with sequential sampling. *Journal of Quality Technology*-sponsored session, INFORMS Annual Meeting, San Francisco, CA.
- Robertson, D. P.** Describing and measuring the social benefits of restoration. Revitalizing Communities through Integrated Restoration, Morgantown, WV.
- Robertson, D. P.** Evaluating the social benefits of community-based collaboratives. 5th National Community-Based Collaboratives Research Consortium Conference, Sedona, AZ.
- Roggenbuck, J. W.,** S. Lawson, A. Moldovanyi and T. E. Hall. Managing for multiple and potentially competing visitor experiences in the Okefenokee Wilderness. 11th Annual International Symposium on Society and Resource Management: From Knowledge to Management, Ostersund, Sweden.
- Sampson, D. A., **C. M. Gough** and J. R. Seiler. Rotation-length carbon storage in managed loblolly pine (*Pinus taeda* L.) forests of the southeastern United States. 7th International Carbon Dioxide Conference, Boulder, CO.
- Shaffer, R. M.** and T. Roberts. An analysis of logging injuries in the southeastern U.S. – 1996 to 2003. Council on Forest Engineering 28th Annual Meeting, Fortuna, CA.
- Sharma, M.,** H. E. Burkhart and R. L. Amateis. Forest stand dynamics similarities and allometric scalings between small and conventional scale spacings. 2005 Southern Mensurationists Conference, Wilmington, NC.
- Showalter, J. M.*,** J. A. Burger, C. E. Zipper and J. M. Galbraith. Influence of physical, chemical and biological mine soil properties on white oak growth. 2005 Annual Meeting of American Society for Mining and Reclamation, Breckenridge, CO.
- Stenstrup A.** and **J. L. Kirwan.** Exploring environmental issues in the places we live. Project Learning Tree Annual Coordinators Conference, Welches, OR.
- Stoumbos, Z. G.** and M. R. Reynolds, Jr. Control charts and the efficient allocation of sampling resources. *Technometrics*-sponsored session, Fall Technical Conference, St. Louis, MO.

- Strub, M.** and R. L. Amateis. Allometric relationships between large- and small-scale tree spacing studies. 2005 World Conference on Natural Resource Modeling, Arcata, CA.
- Trincado, G.*** and H. E. Burkhart. Tree-level calibration of a segmented taper equation. 2005 Southern Mensurationists Conference, Wilmington, NC.
- Tyree, M. C.***, J. R. Seiler and T. R. Fox. Effects of fertilization on CO₂ efflux in a two-year-old loblolly pine stand on the Virginia Piedmont. 13th Biennial Southern Silvicultural Research Conference, Memphis, TN.
- Valliere, W.**, R. Manning, S. Lawson, P. Newman and M. Budruk. Indicators and standards of quality for cultural resources: Archeological and historical sites. George Wright Society Biennial Conference, Philadelphia, PA.
- van Aardt, J. A. N. and **R. H. Wynne**. An object-oriented approach to volume and aboveground biomass modeling using height distributions from small-footprint lidar data. 71st Annual Meeting of the American Society for Photogrammetry and Remote Sensing, Baltimore, MD.
- Westfall, J. A.** and H. E. Burkhart. Modeling early stand growth of intensively-managed loblolly pine plantations. 2005 Southern Mensurationists Conference, Wilmington, NC.
- Williams, D. R.**, N. McIntyre and J. W. Roggenbuck. Cabin owners' perceptions of the management of recreation residences in the U.S. national forests. 11th Annual International Symposium on Society and Resource Management: From Knowledge to Management, Ostersund, Sweden.
- Wiseman, E.** The big bang: Lightning strikes and tree lightning protection systems. 2005 Annual Meeting of MAC-ISA, Morgantown, WV.
- Wiseman, E.** Soil aeration stress: Causes, tree responses, and management strategies. International Society of Arboriculture Southern Chapter Conference, Savannah, GA.
- Wynne, R. H.** Alternative approaches to estimating volume and biomass using small-footprint lidar. USDA Forest Service Lidar Concepts and Resource Applications Workshop, Salt Lake City, UT.
- Wynne, R. H.**, J. O. Browder, K. A. Joseph and P. M. Summers. Remotely sensing the farm-system-type continuum in the Brazilian Amazon. Centennial Meeting of the American Association of Geographers, Denver, CO.
- Zedaker, S. M.** Living on the edge in Tennessee. Firewise Communities Workshop, Columbia, TN.
- Zedaker, S. M.** Living on the edge in Tennessee. Firewise Communities Workshop, Monteagle, TN.
- Zedaker, S. M.** Silvicultural practices and invasive exotic plants. Forests Out of Balance: The Impact of Invasive Plant Species, Shepherdstown, WV.
- Zedaker, S. M.** and W. M. Aust. Virginia Tech's field forestry camp: Beating the bush for benefits to students. 12th Annual Meeting of The Wildlife Society, Madison, WI.

INTERNATIONAL ACTIVITIES DURING 2005

Gregory Amacher

Began work on a research project titled "Feedbacks Among Forestry, Agriculture, and Fire in Amazonia." This is a multi-institutional, multi-year research project that includes Virginia Tech, Woods Hole Research Center, Boston University, Yale University, and IPAM (Instituto de Pesquisa Ambiental da Amazônia), funded by the National Science Foundation. The work focuses on development of models of smallholder behavior and forest industry expansion on new and future Amazon frontiers, with particular interest in how these respond to various policy scenarios, market parameters, and government programs. The logging and smallholder models being developed at Virginia Tech will eventually be integrated into a spatially-explicit model of development and logging expansion to predict patterns of Amazon development over time.

Amy Brunner

Served on Scientific Planning Committee for IUFRO Tree Biotechnology 2005 Conference in Pretoria, South Africa; assisted in the planning of scientific program and selection of speakers; along with co-chair, organized symposium on molecular biology and biotechnology of tree development.

James Burger

Awarded a research leave from July to December, 2005, to work with New Zealand's Forest Research Institute in Christchurch. While there, he studied the effects of intensive forest management on the productivity of radiata pine plantations. He also made presentations at the XXII IUFRO World Congress in Brisbane, Australia, and at the International Energy Agency Task 30/31 Bioenergy Meeting in Perth, Australia.

Harold Burkhart

Attended the XXII IUFRO (International Union of Forest Research Organizations) World Congress in Brisbane, Australia, and participated as an officer of Research Group 4.11 "Statistical Methods, Mathematics, and Computers."
Made a presentation on "Forests and Forestry in Virginia" to a Chinese delegation from Apollo Development Corporation.

Susan Day

Worked with colleagues in the Virginia Tech Department of Horticulture to create a Memorandum of Understanding with the University of Costa Rica (UCR); visited UCR and presented a seminar on urban forestry. Contacts are currently being facilitated for other interested faculty; a research intern will be hosted during the summer of 2006.

Ulrika Egertsdotter

Continued collaboration on a project funded by the Norwegian Research Council to develop scale-up methods for production of Christmas trees from superior varieties of subalpine fir and Fraser fir; attended project meeting in Norway.
Served as symposium chair for a session titled "From Somatic Embryos to Genetic Transformation" at IUFRO Tree Biotechnology 2005 in Pretoria, South Africa.
Served as an advisor on biotechnology applications to clonal propagation of forest trees for a project sponsored by Swedish Industrial Forestry Coop through SweTree Inc.

Thomas Fox

Continued participation in research and technology transfer activities of the Forest Nutrition Cooperative in Latin America, including active research in Argentina, Chile, Venezuela, and Colombia; worked with members of the Forest Nutrition Cooperative with operations in Latin America including Smurfit Carton de Colombia, Smurfit Carton de Venezuela, Bioforest, Forestal Mininco, and Bosque del Plata.

Traveled to Colombia as part of a six-person team to review silviculture, genetics, and forest health research of Smurfit Carton de Colombia; made an invited presentation on plantation silviculture at CIAT – Centro de Investigación Agrícola Tropical and discussed potential collaborations on soils and silviculture research in Colombia.

James Johnson

Traveled to Santa Cruz, Bolivia, to conduct a training program for the Bolivian Forest Research Institute.

Traveled to Brisbane, Australia, to present a paper at the XXII IUFRO (International Union of Forest Resource Organizations) World Congress.

Traveled to Ontario, Canada, to present seminars to forestry and forest owner audiences; served on a planning committee for a 2006 Canadian/USA forum on extension forestry.

Served as Chair of the IUFRO Extension Working Party.

Jeffrey Kirwan

Participated in a study tour of Bangkok, Surin Province, Kachestarat University, Khao Yai National Park, and other points in Thailand, meeting with villagers, government officials, and K-12 students and teachers.

Jeffrey Marion

Serves on the Advisory Board of the International Centre for Ecotourism Research, Queensland, Australia

Frank Merry

With Gregory Amacher, participated in administration of an International Forestry Center within the Virginia Tech Department of Forestry to oversee research projects in Asia, Africa, and Latin America related to forest use and policy.

Michael Mortimer

Attended and presented a paper at the 11th Annual International Symposium on Society and Resource Management in Ostersund, Sweden. The theme of this meeting of approximately 500 scholars and resource managers from about 50 countries was "From Knowledge to Management: Balancing Resource Extraction, Protection, and Experiences."

Philip Radtke

Presented a paper at the IUFRO Conference on Statistics, Information and Computer Applications in Natural Resources Monitoring and Management in Taipei, Taiwan.

David Robertson

Traveling Faculty, Virginia Tech Honors Program/Boston University; taught a five-week undergraduate course on urban ecology in Paris, France.

Joseph Roggenbuck

Attended, chaired a session, and gave papers at the 11th Annual International Symposium on Society and Resource Management in Ostersund, Sweden. The theme of this meeting of approximately 500 scholars and resource managers from about 50 countries was "From Knowledge to Management: Balancing Resource Extraction, Protection, and Experiences."

John Seiler

Invited to Chile to tour research plots and offer technical expertise for Arauco, Bioforest S.A.; visited fertilization and weed control experiments in *Pinus radiata* and *Eucalyptus* plantations and discussed ideas for future experiments. Also presented a two-day workshop on water relations and photosynthesis to Arauco land managers.

Robert Shaffer

Participated in a nine-day Forest Resources Association's Forest Operations Study Tour in New Zealand.

Rien Visser

Visited BOKU University in Vienna, Austria, and helped mentor Ph.D. students; also provided guidance to a Virginia Tech master's student who was there on exchange.

Traveled to Bolivia to visit forest operations and work with local forestry agencies as part of the USAID BOLFOR project.

Led a three-person "delegation" to biomass/bio-energy sites in Germany, Austria, and Italy; visited co-generation stations, plant design engineers, and regulatory authorities, as well as a bio-crop plantation.

Shepard Zedaker

Continued to serve as coordinator for undergraduate student exchange programs with the University of Melbourne, Australia (since 1990), the University of Canterbury, New Zealand (since 1996), and the University of Stellenbosch, South Africa (since 1997).

2005 PUBLICATIONS

Refereed Journal Articles

- Allen, H. L., T. R. Fox and R. G. Campbell. 2005. What's ahead for intensive pine plantation silviculture. *South. Jour. Appl. For.* 29:62-69.
- Amacher, G., E. Koskela and M. Ollikainen. 2005. Quality competition and social welfare in markets with partial coverage: New results. *Bulletin of Econ. Res.* 57:391-405.
- Amacher, G., A. Malik and R. Haight. 2005. Don't get burned: The importance of fire prevention in forest management. *Land Econ.* 81:284-302.
- Amacher, G., A. Malik and R. Haight. 2005. Forest landowner decisions and the value of information under fire risk. *Can. Jour. For. Res.* 35:2603-2615.
- Amacher, G., A. Malik and R. Haight. 2005. Nonindustrial private landowners, fires, and the wildland-urban interface. *Forest Policy and Econ.* 7:796-805.
- Amateis, R. L. and H. E. Burkhart. 2005. The influence of thinning on the proportion of peeler, sawtimber, and pulpwood trees in loblolly pine plantations. *South. J. Appl. For.* 29:158-162.
- Balandier, P., C. Collet, J. H. Miller, P. E. Reynolds and S. M. Zedaker. 2005. Designing forest vegetation management strategies based on the mechanisms and dynamics of crop tree competition by neighboring vegetation. *Forestry* 79:3-27.
- Bernard, A. M. and S. P. Prisley. 2005. Digital mapping alternatives: GIS for the busy forester. *Jour. Forestry* 103:163-168.
- Bishop, I. D., R. B. Hull and C. Stock. 2005. Supporting personal world-views in an envisioning system. *Environ. Modeling and Software* 20:1459-1468.
- Bortolot, Z. J. and R. H. Wynne. 2005. Determining forest biomass in small footprint LIDAR scenes: An individual tree-based approach that incorporates training data. *Jour. Photogrammetry & Remote Sensing* 59:342-360.
- Browder, J. O., R. H. Wynne and M. A. Pedlowski. 2005. Agroforestry diffusion and secondary forest regeneration in the Brazilian Amazon: Further findings from the Rondonia Agroforestry Pilot Project (1992-2002). *Agroforestry Systems* 65:99-111.
- Bullock, B. P. and H. E. Burkhart. 2005. An evaluation of spatial dependency in juvenile loblolly pine stands using stem diameter. *For. Sci.* 51:102-108.
- Bullock, B. P. and H. E. Burkhart. 2005. Juvenile diameter distributions of loblolly pine characterized by the two parameter Weibull function. *New For.* 29:233-244.
- Busov, V. B., A. M. Brunner, R. Meilan, S. Filichkin, L. Ganio, S. Gandhi and S. H. Strauss. 2005. Genetic transformation: A powerful tool for dissection of adaptive traits in trees. *New Phytol.* 167:9-18.
- Copenheaver, C. A., K. H. Kyle, G. N. Stevens and M. H. Kamp. 2005. Comparing *Juniperus virginiana* tree-ring chronologies from forest edge vs. forest interior positions in the Cedars Natural Area Preserve in Virginia, USA. *Dendrochronologia* 23:39-45.

- Dieguez-Aranda, U., H. E. Burkhart and R. Rodriguez-Soalleiro. 2005. Modeling dominant height growth of radiata pine (*Pinus radiata* D. Don) plantations in north-western Spain. *For. Ecol. and Manage.* 215:271-284.
- Downing, A. K. and J. C. Finley. 2005. Private forest landowners: What they want in an education program. *Jour. Extension* 43. [online: <http://www.joe.org/joe/2005february/rb4.shtml>]
- Eisenbies, M. H., J. A. Burger, W. M. Aust and S. C. Patterson. 2005. Soil physical disturbance and logging residue effects on changes in soil productivity. *Soil Sci. Soc. Amer. J.* 69:1833-1843.
- Eisenbies, M. H., J. A. Burger, W. M. Aust, S. C. Patterson and T. R. Fox. 2005. Change in soil-site productivity of loblolly pine plantations under intensive management. *Soil Sci. Soc. Amer. J.* 70:130-140.
- Fettig, C., J. Fidgen and S. Salom. 2005. A review of sampling procedures available for IPM decision-making of forest and shade tree insects in North America. *J. Abor.* 31:38-47.
- Fisher, R. F., T. R. Fox, T. Terry and R. Harrison. 2005. Forest soils education and research: Trends, needs and wild ideas. *For. Ecol. and Manage.* 220:1-16.
- Flowers, R., S. Salom and L. Kok. 2005. Competitive interactions among two specialist predators and a generalist predator of hemlock woolly adelgid, *Adelges tsugae* (Homoptera: Adelgidae) in the laboratory. *Environ. Entomology* 34:664-675.
- Fuhrman, N. E., C. A. Copenheaver and D. W. Duncan. 2005. A comparison of first-year college student attitudes toward coarse woody debris following review of a brochure and participation in a cooperative learning activity. *NACTA Journal* 49:27-35.
- Gough, C. M., J. R. Seiler, P. E. Wiseman and C. A. Maier. 2005. Soil CO₂ efflux in loblolly pine (*Pinus taeda* L.) plantations on the Virginia Piedmont and South Carolina Coastal Plain over a rotation length chronosequence. *Biogeochemistry* 73:127-147.
- Green, E. J., W. E. Strawderman, R. L. Amateis and G. A. Reams. 2005. Improved estimation for multiple means with heterogeneous variances. *For. Sci.* 51:1-6.
- Johnson, J. E. and O. J. Delgado. 2005. Agroforestry adoption potential in Cape Verde. *Small-Scale Forest Economics, Management, and Policy* 4:205-214.
- Kendra, A. and R. B. Hull. 2005. Motivations and behaviors of new forest owners in Virginia. *For. Sci.* 51:142-154.
- Kim, K. and M. R. Reynolds, Jr. 2005. Multivariate monitoring using an MEWMA control chart with unequal sample sizes. *Jour. Quality Technology* 37:267-281.
- Kirwan, J. L. and J. R. Seiler. 2005. Using undergraduate students and the internet to enhance K-12 science education. *NACTA Jour.* 49:52-56.
- Kirwan, J. L., M. E. Williams and M. L. Kirwan. 2005. Restoring the Chesapeake – A watershed education and restoration project for Virginia youth. *Jour. Extension* 43:6.
- Kohlin, G. and G. S. Amacher. 2005. Welfare implications of social forestry projects: The case of Orissa, India. *Amer. Jour. of Agric. Econ.* 87:855-869.
- Kvaalen, H., O. G. Dæhlen, A. T. Rognstad, B. Grønstad and U. Egertsdotter. 2005. Somatic embryogenesis for plant production of *Abies lasiocarpa*. *Can. Jour. For. Res.* 35:1053-1060.

- Kyle, K. H., L. J. Andrews, T. R. Fox, W. M. Aust, J. A. Burger and G. H. Hansen. 2005. Long-term effects of drainage, bedding, and fertilization on growth of loblolly pine (*Pinus taeda* L.) in the Coastal Plain of Virginia. *S. Jour. Appl. For.* 29:205-214.
- Lamb, A., S. Salom and L. Kok. 2005. Survival and reproduction of *Laricobius nigrinus* Fender (Coleoptera: Derodontidae), a predator of hemlock woolly adelgid, *Adelges tsugae* Annand (Homoptera: Adelgidae) in field cages. *Biol. Control* 32:200-207.
- Manning, R., S. Lawson and J. Morrissey. 2005. What's behind the numbers? Qualitative insights into normative research in outdoor recreation. *Leisure Sciences* 27:205-224.
- Merry, F. and G. Amacher. Forest concessions and policy choices for the Brazilian Amazon. *Jour. Sustainable Forestry* 20:15-44.
- Mortimer, M. J., S. A. Baker and R. M. Shaffer. 2005. Assessing and understanding timber trespass and theft laws in the Appalachian region. *North. Jour. Appl. For.* 22:94-101.
- Reid, S. E. and J. L. Marion. 2005. A comparison of campfire impacts and policies in seven protected areas. *Environ. Manage.* 36:48-58.
- Reynolds, M. R., Jr. and K. Kim. 2005. Multivariate monitoring of the process mean vector with sequential sampling. *Jour. Quality Technology* 37:149-162.
- Reynolds, M. R., Jr. and Z. G. Stoumbos. 2005. Should exponentially weighted moving average and cumulative sum charts be used with Shewhart limits? *Technometrics* 47:409-424.
- Roberts, E. T., R. M. Shaffer and R. J. Bush. 2005. Injuries on mechanized logging operations in the Southeastern United States. *Forest Products Journal* 55:86-89.
- Siegel-Issem, C. M., J. A. Burger, R. F. Powers, F. Ponder and S. C. Patterson. 2005. Tree seedling growth as a function of soil density and water content for four forest soils. *Soil Sci. Soc. of Amer. J.* 69:215-226.
- Stoumbos, Z. G. and M. R. Reynolds, Jr. 2005. Economic statistical design of adaptive control schemes for monitoring the process mean and variance: An application to analyzers. *Nonlinear Analysis: Real World Applications* 6:817-844.
- Sullivan, J., G. Amacher and S. Chapman. 2005. Forest banking and forest landowners: Forgoing management rights for guaranteed financial returns. *Forest Policy and Econ.* 7:381-392.
- Wadenback, J., D. H. Clapham, D. Craig, R. Sederoff, G. F. Peter, S. von Arnold and U. Egertsdotter. 2005. Comparison of standard exponential and linear techniques to amplify small cDNA samples for microarrays. *BMC Genomics* 4:6:61.
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- Zilahi-Balogh, G., C. Broeckling, L. Kok and S. Salom. 2005. Host acceptance and development of *Laricobius rubidus* LeConte (Coleoptera: Derodontidae) on two adelgid pests in eastern North America. *Biocontrol Sci. and Tech.* 15:1-7.

Other Publications

- Agblevor, F., R. Visser, K. Moss and O. Heatwole. Bioenergy production facilities in Germany, Austria and Italy. Trip report to sponsors (Institute for Advanced Learning and Research, Danville, VA; Windy Acres Nursery, Gretna, VA; Waste Solutions Forum). 17 pp.

- Amacher, G. and A. Malik. 2005. Reducing the social costs of forest fire. Technical report submitted to the USDA Forest Service, North Central Research Station, St. Paul, MN.
- Amateis, R. L. and H. E. Burkhart. 2005. Growth following pruning of young loblolly pine trees: Some early results. Virginia Tech Loblolly Pine Growth and Yield Research Cooperative Report No. 141. Department of Forestry, Virginia Polytechnic Institute and State University, Blacksburg, VA.
- Amateis, R. L., J. Liu, S. P. Prisley and H. E. Burkhart. 2005. Regional variation in basal area of loblolly pine plantations. Virginia Tech Loblolly Pine Growth and Yield Research Cooperative Report No. 143. Department of Forestry, Virginia Polytechnic Institute and State University, Blacksburg, VA.
- Angel, P., V. Davis, J. Burger, D. Graves and C. Zipper. 2005. The Appalachian reforestation initiative. Appalachian Regional Reforestation Initiative. FRA No. 1, USDOJ Office of Surface Mining.
- Ashton, S. F., R. B. Hull and R. M. Visser. 2005. Forest landowner cooperatives. In: Monore, M. (ed.). Toolbox for Managing Interface Forests. USDA Forest Service - Southern Forest Experiment Station, Urban-wildland Interface Research Project, Gainesville, FL.
- Auch, W. T., J. A. Burger and D. O. Mitchem. 2005. Hardwood stocking after five years on reclaimed mined land in the Central Appalachians. In: Barnhisel, R. I. (ed.). Proc. 22nd Annual Meeting, Amer. Soc. for Mining and Reclamation; June 18-24, 2005; Breckenridge, CO. ASMR, Lexington, KY. pp. 24-39.
- Aust, W. M., J. L. Marion and K. H. Kyle. 2005. Research for the development of Best Management Practices for minimizing horse trail impacts on the Hoosier National Forest. Management Report. Final report to USDA Forest Service, Bedford, IN. 77 pp.
- Aust, W. M., R. Visser and W. A. Lakel. 2005. Estimation of road costs using an itemized planning guide. Forest Resource Assoc. TR 05-R-23. Serial Bulletin Publication. <http://www.forestresources.org/MEMBERS/serpub/05-R-23.html> (name: fra; password: members)
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- Burkhart, H. E. 2005. Foreword to the book *The Measurement of Roundwood: Methodologies and Conversion Ratios* by M. A. Fonseca. CABI Publishing, Wallingford, U.K. pp. xi-xii.
- Burkhart, H. E. and R. L. Amateis. 2005. 2005 Annual Report. Virginia Tech Loblolly Pine Growth and Yield Research Cooperative Report No. 145. Department of Forestry, Virginia Polytechnic Institute and State University, Blacksburg, VA.
- Conway, C. and G. Amacher. 2005. Willingness of Michigan NIPF landowners to harvest aspen: A stated preference approach. Technical report submitted to USDA Forest Service, North Central Research Station, St. Paul, MN.
- Downing, A. K., editor. 2005. TREE cookies etc. Vol. 1, Issue 1. November 2005. 4 pp. (online only) [http://offices.ext.vt.edu/view.cfm?webname=madison§ion=newsletters_a&idn=9814]

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- Forest Nutrition Cooperative. 2005. Responses of loblolly pine and slash pine plantations to midrotation fertilization and vegetation control. FNC Report No. 55. Forest Nutrition Cooperative, North Carolina State University, Raleigh, NC, and Virginia Polytechnic Institute and State University, Blacksburg, VA. 36 pp.
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- Forest Nutrition Cooperative. 2005. Summary of operational forest fertilization in the southeastern United States: 2004 update. FNC Research Note 21. Forest Nutrition Cooperative, North Carolina State University, Raleigh, NC, and Virginia Polytechnic Institute and State University, Blacksburg, VA. 7 pp.
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- Howe, G. T. and A. M. Brunner. 2005. An evolving approach to understanding plant adaptation. *New Phytol.* 167:1-5.
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- Hull, R. B., S. F. Ashton and R. M. Visser. 2005. Income generation on private lands. In: Monore, M. (ed.). *Toolbox for Managing Interface Forests*. USDA Forest Service - Southern Forest Experiment Station, Urban-wildland Interface Research Project, Gainesville, FL.
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- Johnson, J. E., editor. 2005. *Communications for Silviculturists Workshop Notes*. College of Natural Resources, Virginia Polytechnic Institute and State University, Blacksburg, VA. 302 pp.

- Johnson, J. E., editor. 2005. Small-Scale Forest Economics, Management, and Policy. Special Issue on Agroforestry Adoption. Vol. 4, No. 2. pp. 135-228.
- Johnson, J. E. 2005. Technical writing for silviculturists: Comparing methods, formats, and results. In: Johnson, J. E. (ed.). Communications for Silviculturists Workshop Notes. College of Natural Resources, Virginia Polytechnic Institute and State University, Blacksburg, VA. pp. I-1 – I-10.
- Jones, A. T., J. M. Galbraith and J. A. Burger. 2005. Development of a forest site quality classification model for mine soils in the Appalachian Coalfield Region. In: Barnhisel, R. I. (ed.). Proc. 22nd Annual Meeting, Amer. Soc. for Mining and Reclamation; June 18-24, 2005; Breckenridge, CO. ASMR, Lexington, KY. pp. 523-539.
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