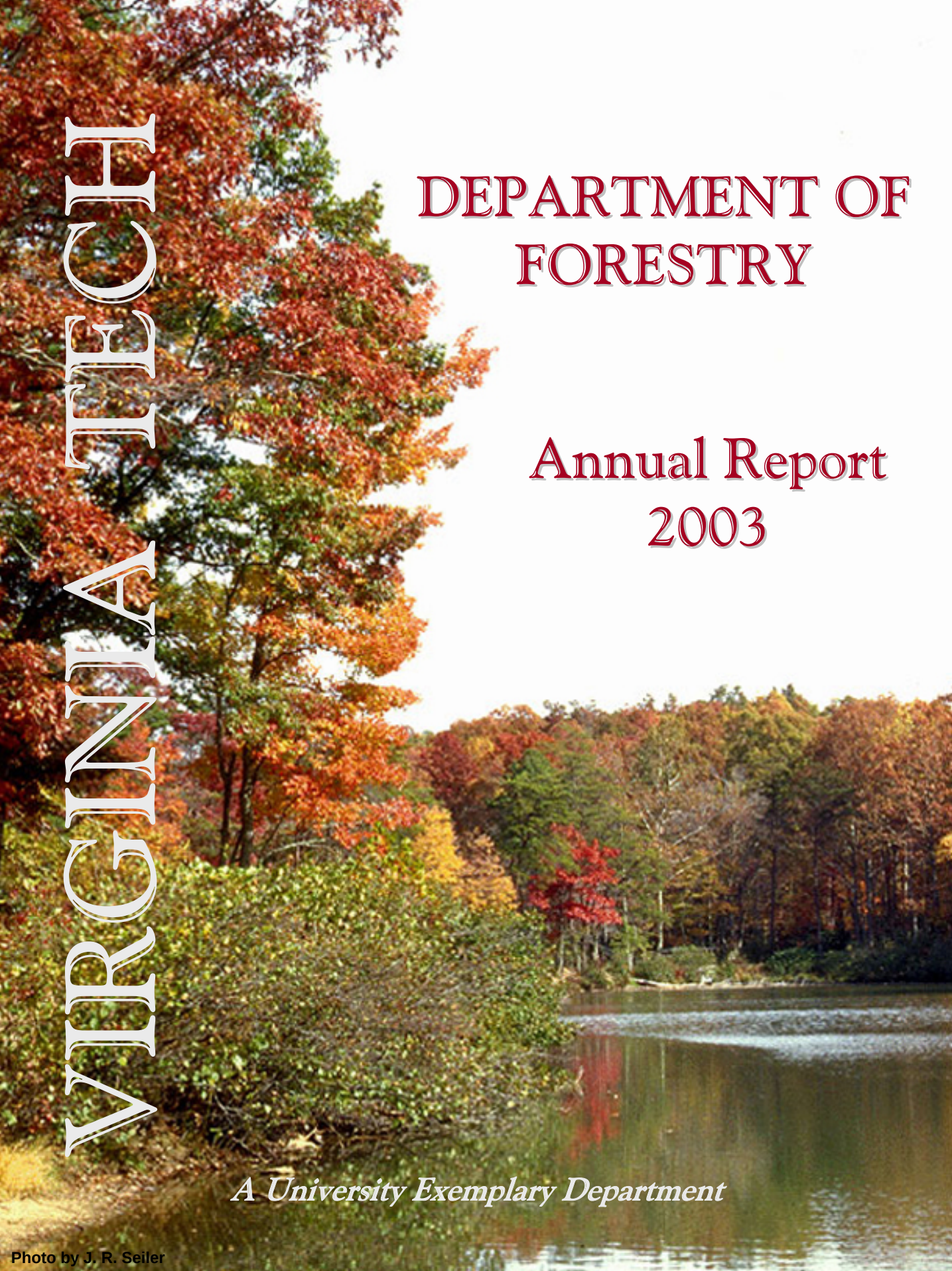

VIRGINIA TECH

DEPARTMENT OF FORESTRY

Annual Report 2003

A University Exemplary Department

Photo by J. R. Seiler

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ANNUAL REPORT
2003

Department of Forestry
College of Natural Resources*
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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.**

TABLE OF CONTENTS

INTRODUCTION

This annual report highlights accomplishments in teaching, research, and outreach in the Department of Forestry for calendar year 2003. 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 2003. Harry Haney, Garland Gray Professor and Extension Specialist in Forest Management, retired October 1. Harry is hardly "retired;" he continues carrying out a busy schedule of workshops and continuing education courses on taxes and finance and serving as President of the Forest Landowners Association. Shawn Baker joined the department in June as Extension Associate for Landowner Education. Shawn, who earned his B.S. and M.S. degrees in forestry at Virginia Tech, maintains a full schedule of landowner education courses, and he is coordinating the Woodlands Management Course offered in distance-education format. John McGee (Ph.D., University of Massachusetts-Amherst) was hired in August to coordinate Virginia's Geospatial Extension Program. This program, which is a partnership between the Virginia Space Grant Consortium and Virginia Cooperative Extension, seeks to promote the integration of geospatial tools and techniques through a coordinated approach at the local, regional, and state levels. In December Bill Lakel started as Research Associate/Instructor in the forest hydrology area. Bill will be teaching forest operations courses while conducting research in watershed management/GIS and pursuing a Ph.D. with Professor Mike Aust. In June Tom Gallagher, who served as an Instructor in forest operations while studying for the doctoral degree, finished requirements for the Ph.D. and accepted an appointment as Assistant Professor at Auburn University.

The campus in Blacksburg continues to grow and change. In March 2003 we dedicated an addition to Cheatham Hall. This addition adds some 9,300 square feet of office and classroom space. And in summer 2003 construction started on the new Agriculture/Natural Resources building. When completed in 2005 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. In addition to the M.F. (Master of Forestry) degree, a new M.N.R. (Master of Natural Resources) degree has been approved for offering in Northern Virginia. 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 in Danville. The Institute's new 94,000-square-foot building will be fully occupied in 2004. Part of the new facility is a tissue culture/plant propagation laboratory shared by Horticulture and Forestry.

The department's educational programs continue to thrive. There were 468 undergraduates in the College of Natural Resources for Fall Semester 2003. Approximately 35% of those students who had decided upon a career path were in options associated with the Department of Forestry. There were 44 graduate students (39 full-time and 5 part-time) in our department Fall Semester 2003. 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 3 Ph.D. degrees, 13 master's degrees, and 54 bachelor's degrees for the academic year ending May 2003.

In 2001 a strategic plan for the Department of Forestry was finalized and distributed to various stakeholder groups, and we recently incorporated updates into the plan. This updated strategic plan provides a useful blueprint 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, 2003 was a highly successful year for the Department of Forestry; we look forward to the challenges and opportunities ahead.

Harold E. Burkhart
Department Head

PERSONNEL

Faculty

Amacher, Gregory S., Associate Professor
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, Associate 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
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

Brown, Gregory N., Professor and Dean, College of Natural Resources
Ph.D., Duke University
Special Interests: Physiology of cold hardiness and dormancy in woody plants

Buhyoff, Gregory J., Julian N. Cheatham Professor of Forestry and Adjunct Professor of Landscape Architecture
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

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

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

Conway, M. Christine, Research Assistant Professor (Hired September 2003)
Ph.D., Virginia Polytechnic Institute and State University
Special Interests: Forest management and economics with a focus on timber harvesting and land use decisions of nonindustrial private forest landowners

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

Day, Susan D., Research Assistant Professor
Ph.D., Virginia Polytechnic Institute and State University
Special Interests: Urban forestry, including effects of soil compaction, changes in soil grade, construction damage, urban runoff mitigation, and tree fertilization

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

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

Gallagher, Thomas V., Instructor (Resigned July 2003)
Ph.D., Virginia Polytechnic Institute and State University
Special Interests: Industrial forestry operations

Goerlich, Daniel L., Extension Agent, Agriculture and Natural Resources
M.S., State University of New York-College of Environmental Science and Forestry
Special Interests: Silviculture; landowner, logger, natural resource professional, and youth education

Haney, Harry L., Jr., Garland Gray Professor of Forestry and Extension Specialist (Retired October 2003)
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

Hull, R. Bruce, Professor
Ph.D., Virginia Polytechnic Institute and State University
Special Interests: Human dimensions of natural resource issues with emphasis in the public's understanding of nature, the urban/wildland interface, landscape aesthetics, the recreation experience, public participation

Jenkins, Dylan H., Extension Associate (Resigned March 2003)
M.S., Virginia Polytechnic Institute and State University
Special Interests: Private forest landowner education; impacts of education and technical assistance on landowner adoption of sustainable forestry practices; special forest products; community forestry

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

Kane, Brian C. P., Assistant Professor
Ph.D., University of Massachusetts-Amherst
Special Interests: Tree risk management and analysis; impact of pruning on carbon sequestration; dynamics of tree rigging and climbing; arborist techniques

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

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 Professor
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

Meller, Russell D., Associate Professor, Department of Industrial and Systems Engineering; courtesy appointment in the Department of Forestry
Ph.D., University of Michigan
Special Interests: Manufacturing logistics; facility layout; distribution material handling systems; operations research applications in production and forest systems

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

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

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

Popescu, Sorin C., Postdoctoral Associate (Resigned June 2003)
Ph.D., Virginia Polytechnic Institute and State University
Special Interests: Lidar remote sensing; automated image processing for forest inventory

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: Theoretical and applied statistics; operations research applications 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, Associate Professor
Ph.D., University of California, Berkeley
Special Interests: Regional economic analysis, particularly the dynamics of forest-based economies; forest resource economics and management; operations research

Trobaugh, John R., Research Associate
M.S., University of Wisconsin – Stevens Point
Special Interests: Seedling nutrition; nursery management; Christmas tree farm management; forest regeneration; silviculture

Visser, J. M. (Rien), Assistant 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

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

Willis, James R., Extension Agent, Agriculture and Natural Resources
M.S., University of Georgia
Special Interests: Water quality; environmental affairs; youth education; private forest management

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

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

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

Kreh, Richard E., Senior Research Associate
M.S., Virginia Polytechnic Institute and State University
Special Interests: Forest regeneration; tree growth and productivity; vegetation management

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 2003

Allen, H. Lee – C. A. Schenck Distinguished Professor of Forestry, North Carolina State University, Raleigh, NC
Chojnacky, David – Researcher, USDA Forest Service, Washington, DC
Cleaves, David – Director of Forest Valuation and Use, USDA Forest Service, Washington, DC
Cochran, Jamie – Supervisory Forester, USDA Forest Service Southern Research Station, Knoxville, TN
Damon, William – Forest Supervisor, George Washington and Jefferson National Forests, Roanoke, VA
Daxner, Peter – Researcher, Vienna Agricultural University, Vienna, Austria
Dull, Chuck – Assistant Director of Engineering/Geospatial Applications, USDA Forest Service, Washington, DC
Fajvan, Mary Ann – Associate Professor, West Virginia University, Morgantown, WV
Garner, James – State Forester, Virginia Department of Forestry, Charlottesville, VA
Gul, Atila – Head, Landscape Architecture Department, Suleyman Demirel University, Turkey
Hayden, Bruce – Chair, Department of Environmental Sciences, University of Virginia, Charlottesville, VA
Hensyl, Curtis – GIS Project Manager, International Paper Company, Savannah, GA
Howe, Paul – Executive Vice President, Virginia Forestry Association, Richmond, VA
Hughes, Dan – Area Manager, Holmes Timber Company, Spartanburg, SC
Jenkins, Dylan – Mid-Atlantic Director of Forest Conservation, The Nature Conservancy, Harrisburg, PA
Koskela, Erkki – Professor, Department of Economics, University of Helsinki, Finland
Lehman, Mary – Assistant Professor, Longwood College, Farmville, VA
Looney, Ted – Regional Manager, Weyerhaeuser Company, Oglethorpe, GA
McTague, John Paul – Biometrics Section Manager, International Paper Company, Savannah, GA
Michaels, Patrick – Research Professor and State Climatologist, Department of Environmental Sciences, University of Virginia, Charlottesville, VA

Morrell, Matt – Procurement Forester, Georgia-Pacific Corporation, Wytheville, VA
Olivares, Gonzalo – Researcher, Universidad Austral de Chile, Valdivia, Chile
Ollikainen, Markku – Professor, Department of Economics, University of Helsinki, Finland
Sharma, Mahadev – Research Forester, Forintek Canada Corporation, Quebec, Canada
Toure, Mohamed Sidy Mohamed – Institut d'Economie Rurale, Mali
Turner, Harrell – Region Forest Manager, International Paper Company, Franklin, VA
Waring, Richard – Distinguished Professor Emeritus, Oregon State University, Corvallis, OR
Wersinger, J.-M. – NASA Space Grant Fellow, Department of Physics, Auburn University, Auburn, AL
Williams, Claire – Professor of Genetics, Texas A&M University, College Station, TX
Williams, Kath – Senior Lecturer, University of Melbourne, Australia

Technical Personnel

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

Bird, Jackson R.
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

College of Natural Resources Advisory Board

Forest Resources Management Committee – 2003 & 2004

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. - Lewistown, PA
Kitchen, Ollie W. - MeadWestvaco Corporation, Covington, VA
Kuykendall, Jim – Glatfelter Pulp Wood Company, Spotsylvania, VA
Porter, Terry - B. A. Mullican Lumber & Manufacturing Corporation, Appalachia, VA
Scheerer, Greg - MeadWestvaco Corporation, Appomattox, VA

Teel, Jaime - Smurfit-Stone Container Corporation, Florence, SC
Tinsley, Marvin - Virginia Fibre Corporation, Amherst, VA
Turner, C. Harrell – Branchville, VA

Natural Resource Recreation Committee - 2003 & 2004

Brown, David - American 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, Lorton, VA
Lemanski, Ursula - USDI National Park Service, Harpers Ferry, WV
Middaugh, Geoff - USDI Bureau of Land Management, Washington, DC
More, Tom - USDA Forest Service, Burlington, VT
Perales, Kathleen - USACE Engineer Research and Development Center, Vicksburg, MS
Schiffer, Cindy - USDA Forest Service, Blacksburg, VA
Stubbs, Christopher - USDI National Park Service, Oneida, TN
Sweeney, Sam - Grayson Highlands State Park, Mouth of Wilson, VA
Williams, Daniel - USDA Forest Service, Fort Collins, CO

Ex-Officio Members

Damon, William - USDA Forest Service, Roanoke, VA
Garner, James - 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 2003 was 3.7 out of a possible 4.0.

During this past year curricular revisions were approved. 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 468 in Fall Semester 2003. Approximately 35% of the “decided” CNR undergraduates were enrolled in Department of Forestry options. Enrollment at the graduate level in the department was 39 full-time and 5 part-time students in Fall Semester 2003.

Formal Courses Taught in 2003
Spring Semester

Course Number	Course Name	Instructor(s)	Enrollment
NR 2984	Special Study: Introduction to Renewable Natural Resources	R. G. Oderwald	27
FOR 2154	Introduction to Microcomputing in Forestry	L. G. Fuller, L. A. Weber, J. Galang	47
FOR 2324	Dendrology Laboratory	J. R. Seiler	50
FOR 2554	Nature and American Values	R. B. Hull	55
FOR 3216	Forest Measurements	P. J. Radtke	33
FOR 3224	Forest Measurements Field Laboratory (Spring Camp)	P. J. Radtke	31
FOR 3324	Silviculture Principles and Applications	T. R. Fox	32
FOR 3334	Silviculture Field Laboratory (Spring Camp)	S. M. Zedaker, C. A. Copenheaver, T. R. Fox, T. V. Gallagher	31
FOR 3344	Forestry Field Studies	R. M. Shaffer	31
FOR 3434	Forest Management Field Laboratory (Spring Camp)	W. M. Aust, G. S. Amacher, J. Sullivan	31
FOR 3524	Environmental Interpretation	J. W. Roggenbuck	16
FOR 3534	Outdoor Recreation Field Studies	J. W. Roggenbuck	15
FOR 3544	Outdoor Recreation Management	K. W. Larkin	38
FOR 3724	Applied Forest Engineering	W. M. Aust	12
FOR 3734	Timber Procurement	T. V. Gallagher	15
FOR 4114	Computer Applications in Natural Resources	S. P. Prisley	10
FOR 4364	Advanced Silviculture and Forest Vegetation Management	S. M. Zedaker, T. R. Fox	5
FOR 4374	Forested Wetlands	W. M. Aust	31
FOR 4434	Forest Resource Policy	M. J. Mortimer	43
FOR 4444	Integrated Forest Management Practicuum	B. Sullivan, R. B. Hull, J. R. Seiler, C. A. Copenheaver, S. P. Prisley	47
FOR 4454	Urban Forest Management and Policy	B. C. Kane	12
FOR 4714	Harvesting Systems Evaluation	R. Visser	9
FOR 4974	Independent Study: Interpretation Research	J. W. Roggenbuck	1
FOR 4974	Independent Study: Nature Journaling	C. A. Copenheaver	1
FOR 4974	Independent Study: Advanced Agroforestry Plan	J. A. Burger	1
FOR 4994	Undergraduate Research: Tree Rings	C. A. Copenheaver	5
FOR 4994	Undergraduate Research: Plants of Grassy Balds	C. A. Copenheaver	1
FOR 5004	Graduate Seminar	S. P. Prisley	5
FOR 5004	Graduate Seminar – Recreation	R. B. Hull	3

Course Number	Course Name	Instructor(s)	Enrollment
FOR/GEOG 5104	Seminar on Remote Sensing and GIS	R. H. Wynne	8
FOR 5254	Remote Sensing of Natural Resources	R. H. Wynne	5
FOR 5974	Independent Study: Introduction to Dendrochronology	C. A. Copenheaver	1
FOR 5974	Independent Study: Revegetation of Balds	C. A. Copenheaver	2
FOR 5974	Independent Study: Nutrition of Southern Pine Plantations	T. R. Fox	1
FOR 5974	Independent Study: Silviculture	T. R. Fox	1
FOR 5974	Independent Study: Urban Forestry—Educational Outreach and Inventory Experience	J. L. Kirwan J. R. Seiler	1
FOR 5974	Independent Study: Recreation Ecology	J. L. Marion	1
FOR 5974	Independent Study: GIS Landslide Modelling	S. P. Prisley	1
FOR 5974	Independent Study: Analysis of Logging Injuries	R. M. Shaffer	1
FOR 5984	Special Study: GIS for Natural Resource Applications	D. L. Trauger	3

Formal Courses Taught in 2003
Summer Sessions

Course Number	Course Name	Instructor(s)	Enrollment
FOR 5974	Independent Study: Using ARCGIS to Model Habitat	S. P. Prisley	1
FOR 5984	Special Study: Forest Biology and Ecology for Educators (online course)	W. M. Aust, J. R. Seiler	14

Formal Courses Taught in 2003
Fall Semester

Course Number	Course Name	Instructor(s)	Enrollment
NR 1114	Introduction to Renewable Natural Resources	Various CNR faculty	101
FOR 2214	Introductory Forest and Land Measurements	P. J. Radtke	74
FOR 2314	Forest Biology and Dendrology	J. R. Seiler	72
FOR 2324	Dendrology Laboratory	J. R. Seiler	62
FOR/LAR 2554	Nature and American Values	R. B. Hull	137
FOR 2714	Introduction to Industrial Forestry Operations	R. M. Shaffer	5
FOR 3215	Forest Measurements	R. G. Oderwald	39
FOR 3314	Forest Ecology and Silvics	C. A. Copenheaver	40
FOR/HORT 3354	Urban Forestry and Arboriculture	B. C. Kane	32
FOR 3364	Survey of Forest Ecology and Management	S. M. Zedaker	45
FOR 3424	Forest Resource Economics	G. S. Amacher	28
FOR 3564	Outdoor Recreation Planning	R. B. Hull, J. W. Roggenbuck	30
FOR 3714	Forest Harvesting	R. Visser	24
FOR 4214	Forest Photogrammetry and Spatial Data Processing	R. H. Wynne	37
FOR 4334	Agroforestry	J. A. Burger	6
FOR 4354	Forest Soils and Hydrology	W. M. Aust, T. R. Fox	18
FOR 4424	Forest Resource Management	J. Sullivan	22
FOR 4514	Forest Protection	S. M. Zedaker, G. Griffin (PPWS), S. Salom (ENT)	21
FOR 4974	Independent Study: Custom GIS Applications in VB	S. P. Prisley	1
FOR 4974	Independent Study: Forestry Outreach	J. L. Kirwan, J. R. Seiler	6
FOR 4984	Special Study: Environmentally Sensitive Harvesting	R. Visser	12
FOR 4984	Special Study: Law of Natural Resource Management	M. J. Mortimer	6
FOR 5004	Graduate Seminar	T. R. Fox	8
FOR 5264/ GEOG 5364	GIS in Natural Resource Management	S. P. Prisley	20
FOR/PLPP 5334	Plant Water Relations	J. R. Seiler	12
FOR 5415	Advanced Forest Management and Economics	G. S. Amacher	11
FOR 5454	Wildland Recreation Theory	J. W. Roggenbuck	2
FOR 5484	Wilderness Management	J. W. Roggenbuck	2
FOR 5974	Independent Study: Landscape Design in Accordance with Principles of Arboriculture	B. C. Kane	1

Course Number	Course Name	Instructor(s)	Enrollment
FOR 5974	Independent Study: Service Learning in Urban/Community Forestry	B. C. Kane	1
FOR 5974	Independent Study: Wildland Fire and Tree Mortality	S. M. Zedaker	1
FOR 5984	Special Study: Science/Policy Forest Management Issues	M. J. Mortimer, S. P. Prisley	1
FOR 5984	Special Study: Law of Natural Resource Management	M. J. Mortimer	4
ECON 4014	Environmental Economics	G. S. Amacher	111

RESEARCH

The overall research effort in 2003 involved expenditures (fiscal year ending September 30) of $4.1 million. Funding from contracts and grants generated by the faculty accounted for approximately 58% of the total research expenditures in 2003. There were 30 new research projects initiated in 2003.

Altogether, 2003 was a very productive year. Sixteen students completed graduate programs in the Department of Forestry during the academic year ending May 2003; 1 M.F., 12 M.S., and 3 Ph.D. degrees were awarded. The faculty, staff, and graduate students published 33 technically reviewed journal articles in 2003. More than 50 additional papers, including proceedings, popular articles, etc., were published. Eighteen new students entered our graduate program during 2003.

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 2003 is contained on the following pages.

Forest Biometrics Research During 2003

Faculty

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

Cooperating Faculty

Patrick A. Miller, Department of Landscape Architecture

Senior Research Associates

Ralph L. Amateis, Leslie G. Fuller

Postdoctoral Associate

Sorin C. Popescu

Growth and Yield Modeling

Loblolly Pine Growth and Yield Research Cooperative. H. E. Burkhart, R. L. Amateis. Industrial forestry members, 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.

Economic Assessment of Plantation-Grown Southern Yellow Pine. R. D. Seale, Mississippi State University; R. G. Oderwald. Forest and Wildlife Research Center, Mississippi State University.

The objective is to determine the feasibility of various plantation treatment and harvesting methods from an economic standpoint. Plantation growth will be simulated to determine the boundaries of such a study.

A Loblolly Pine Management Model for Virginia Landowners. H. E. Burkhart, R. L. Amateis, D. H. Jenkins. Virginia Agricultural Council.

The objective of this project is to develop a crop management model for intensively cultured loblolly pine plantations for Virginia farmers and landowners. This model will enable landowners to evaluate the impacts of various management decisions on wood production and assess the economic consequences of these decisions.

****Loblolly Pine Growth and Yield Research.*** H. E. Burkhart, R. L. Amateis. USDA Forest Service.

The objective of this project is to develop joint research programs between the loblolly pine growth and yield modeling efforts at Virginia Tech and at the USDA Forest Service Southern Research Station Unit in Pineville, Louisiana.

*****New research project in 2003

***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.

Sampling and Forest Inventory

Incorporating Prior Information in Forest Inventories. R. G. Oderwald. McIntire-Stennis.

A wealth of prior information concerning the volume of a forest area is available from previous inventories, aerial photographs, and growth and yield estimates. The purpose of this research is to determine the techniques necessary to use the prior information effectively and to determine the reductions in sample size possible for a given level of prior information.

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, Department of 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.

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 research project in 2003

Comparison of Techniques for Estimation of Forest Soil Carbon using GIS Data. S. P. Prisley; J. M. Galbraith, Department of Crop and Soil Environmental Sciences. USDA Forest Service Northeast Experiment Station.

The objective is to conduct quantitative comparisons of techniques for estimating forest soil carbon from digital spatial data. These estimates are subject to high levels of uncertainty, yet form a substantial portion of the U.S. forest carbon budget.

Patterns and Processes of Landscape Change in the Brazilian Amazon (Remote Sensing Component). R. H. Wynne; R. H. Browder, Department of 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.

Carbon from Communities (Remote Sensing Component). R. H. Wynne; P. Doraswamy, University of Hawaii; C. Neely, University of Georgia. National Aeronautics and Space Administration.

This project uses in situ measurements, remote sensing, and state-of-the-art crop and biomass modeling to predict biomass changes associated with specific land management practices. As such, the potential carbon sequestration capacities of alternative management systems can be identified.

Remote Sensing for Precision Forest Management. R. H. Wynne; J. B. Campbell, Department of Geography; S. P. Prisley. National Aeronautics and Space Administration.

The principal project objective is to begin to facilitate the adoption of advanced remote sensing and related geospatial information technologies to enable precision forest management by forest managers in the public and private sector.

****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.

****Geospatial Analysis of Aquatic Indicators of Land Condition.*** S. P. Prisley; P. L. Angermeier, Department of Fisheries and Wildlife Sciences. USDI Bureau of Land Management.

This project will attempt to identify relationships between management activities, land conditions, and stream macroinvertebrate data using geospatial analysis, with a goal of developing indicators of land condition that will support BLM land management planning processes.

*****New research project in 2003

Virginia Space Grant Workforce Initiative. R. H. Wynne, S. P. Prisley, H. E. Burkhart. 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.

Support of Geospatial Specialist. S. P. Prisley; R. H. Wynne; C. E. Zipper, Department of Crop and Soil Environmental Sciences. Virginia Space Grant Consortium.

This project provides support for a Geospatial Applications Designer, whose overall mission is to provide targeted support for the Geospatial Extension Program's initiatives. The Geospatial Applications Designer provides computer programming support for the program, facilitates the implementation of GIS workshops and other educational venues, particularly through the OVERspace program. In addition, the Geospatial Applications Designer provides technical support for individuals on campus as well as across the Commonwealth.

Remote Sensing for Forest Productivity, Carbon Management, and Monitoring. R. H. Wynne; J. B. Campbell, Department of Geography; C. E. Zipper, Department of Crop and Soil Environmental Sciences; L. T. Watson, Department of 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, Department of 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.

Decision Analysis and Computer Applications

Analysis of a Landowner Decision-Making Framework for Forest Fragment Management Objectives in the Urban Fringe. G. J. Buhyoff, R. B. Hull. USDA Forest Service, McIntire-Stennis.

Objectives: A study will be conducted of forest landowners located in the fragmenting urban-wildland interface to identify and interpret the perceptual indicators (e.g., health, scenery, naturalness, stewardship, productivity) that these landowners use to evaluate the quality of their forested lands and to examine the real and expected impacts of active forest management on these indicators.

*New research project in 2003

Conflict in Interface Forestry: Mapping the Language of Nature, Science, Landscape Change, and Forest Productivity. R. B. Hull, G. J. Buhyoff. USDA Forest Service North Central Research Station.

This work intends to identify, map, and interpret the uses of "ecological quality" as used by the public, forest managers, and scientific stakeholders involved in interface forest management.

****Research on Guidelines for Using Models for Forest Carbon Accounting: A Synthesis.*** S. P. Prisley, M. J. Mortimer. USDA Forest Service.

This project will compile and interpret scientific and policy literature on guidelines for using environmental or ecological models in regulatory settings. The results will be used to inform the development of forest carbon accounting model guidelines.

Utilization and Marketing

****Manufacturing and Marketing Natural Hardwood Charcoal in Virginia.*** P. J. Radtke; A. L. Hammett, Department of Wood Science and Forest Products. Virginia Department of Forestry.

Objective: Develop and test a prototype small-scale natural hardwood charcoal manufacturing process that uses a portable kiln and small-diameter logs as raw material. Determine the feasibility of small-scale natural hardwood charcoal production and marketing in Virginia.

Graduate Students Enrolled During 2003

Adams, Jeffrey	PhD	BS, University of Maryland MS, Humboldt State University
Amichev, Beyhan	MS	BS, Virginia Tech
Blinn, Christine	PhD	BS, Rutgers University MS, Virginia Tech
Bortolot, Zachary	PhD	BS, Brown University MS, University of British Columbia
Dorr, Jessica	MS	BS, Virginia Tech
Galang, Jeff	MS	BS, Virginia Tech
Henning, Jason**	PhD	BS, Cook College, Rutgers University MS, University of Minnesota
Johnson, Laura	MS	BS, Virginia Tech
Joseph, Katherine	MS	BS, Virginia Tech
Kent, Nicole	MS	BS, Virginia Tech
Musy, Rebecca	MS	BS, University of Florida
Srusti, Gautam	MS	ME, Virginia Tech BE, University of Poona, India

*New research project in 2003
** Recipient of a Cunningham Fellowship awarded by the Graduate School to outstanding Ph.D. candidates

Trincado, Guillermo	PhD	BS, Universidad Austral de Chile MS, University Göettingen, Germany
van Aardt, Jan	PhD	BS, University of Stellenbosch, South Africa MS, Virginia Tech
VanderSchaaf, Curtis	PhD	BS, Stephen F. Austin State University MS, University of Idaho

Natural Resource Recreation Research During 2003

Faculty

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

Supporting Faculty

Gregory S. Amacher, Gregory J. Buhyoff, Jay Sullivan
Steve L. McMullin, James D. Fraser, Department of Fisheries and Wildlife Sciences

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.

Evaluation of Conservation Education Programs. J. W. Roggenbuck, R. B. Hull. USDA Forest Service.

Objective: To assess the benefits of conservation education programs directed towards urban youth.

Wilderness Experiences, Conflict, and Learning at Okefenokee Wilderness. J. W. Roggenbuck. USDA Forest Service, USDI Fish and Wildlife Service.

Objective: To identify the socio-demographic characteristics, trip motives, wilderness philosophy and knowledge, attitudes about wilderness, preferences for management actions, and conflict experienced among Okefenokee wilderness visitors.

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.

Understanding and Advancing the Role of Desired Future Condition Statements in Carrying Capacity Decision Making. J. L. Marion. USDI National Park Service.

Objectives: To understand the role and function of desired future condition statements in carrying capacity decision making and to explore the pros and cons of greater comprehensiveness and specificity in defining these statements.

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.

Protection of Paleontological Resources through Interpretation: An Assessment of Visitor Knowledge, Attitudes, and Behavior. J. W. Roggenbuck. USDI National Park Service.

Objective: To determine visitor knowledge and attitudes about fossil resource protection and to test the effectiveness of interpretation to increase visitor knowledge, promote visitor ethics, and reduce fossil theft.

Visitor and Key Stakeholder Groups' Use Patterns and Preferences for Future Conditions at Appomattox Court House National Historic Park. J. W. Roggenbuck, R. B. Hull. USDI National Park Service.

Objective: To determine visitor demographics, use patterns, expenditures, perceptions of crowding and conflict, management preferences, and knowledge of park story.

****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.

Human Dimensions

Ecosystem Management Along Urban-Suburban Forest Continuum. R. B. Hull, G. J. Buhyoff. USDA Forest Service North Central Forest Experiment Station.

Objective: To examine issues of forest fragmentation and new ownership patterns on forest management objectives of nonindustrial private landowners.

Managing Sense of Naturalness: Managing Relationships Between Forests and Local Communities. R. B. Hull, T. E. Hall. USDA Forest Service.

Objectives: Ecological health has become a dominant and accepted goal of much land management policy. Ecological health, however, is a social construct and, as such, does not offer specific prescription for forest land management. This project attempts to define forest health from the perspectives of communities surrounding the forest and, thus, to define the broad range of socially acceptable conditions for forest management.

*****New research project in 2003

Analysis of a Landowner Decision-Making Framework for Forest Fragment Management Objectives in the Urban Fringe. G. J. Buhyoff, R. B. Hull. USDA Forest Service.

Objectives: A study will be conducted of forest landowners located in the fragmenting urban-wildland interface to identify and interpret the perceptual indicators (e.g., health, scenery, naturalness, stewardship, productivity) that these landowners use to evaluate the quality of their forested lands and to examine the real and expected impacts of active forest management on these indicators.

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.

Conflict in Interface Forestry: Mapping the Language of Nature, Science, Landscape Change, and Forest Productivity. R. B. Hull, G. J. Buhyoff. USDA Forest Service North Central Research Station.

Objective: To examine the expectations and practices of forestry in the urban-wildland interface.

Communication of Fire Messages and Meanings. J. W. Roggenbuck, K. W. Larkin. 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.

Graduate Students Enrolled During 2003

Cahill, Kerri*	PhD	BS, University of Miami MS, Florida State University
Daniels, Melissa	MS	BS, Saint Mary's College
Garst, Barry	PhD	BS, Virginia Tech MS, Arizona State University
Grau, Amanda**	MS	BS, Mississippi State University
Harvey, William	MS	BS, Frostburg State University
Hockett, Karen	PhD	BS, Ohio Northern University MS, University of Maine
Reid, Scott***	MS	BA, Middlebury College
Woosnam, Kyle	MS	BS, University of Illinois-Urbana-Champaign

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

**2002-04 recipient of the Georgia-Pacific Dean's Graduate Fellowship awarded to an outstanding graduate degree candidate by the College of Natural Resources

*** 2001-03 recipient of a William J. Dann Fellowship awarded to an outstanding graduate degree candidate by the College of Natural Resources

Industrial Forestry Operations Research During 2003

Faculty

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

Emeritus Faculty

Thomas A. Walbridge, Jr.

Cooperating Faculty

Russell D. Meller, Department of Industrial and Systems Engineering

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 2000 Total Case Incident Rate (TCIR) for fully- and partially-mechanized feller-buncher/grapple skidder operations in the South.

The Economic and Operational Feasibility of "Green" Hardwood Inventory for Southeastern Pulpmills. T. V. Gallagher, R. M. Shaffer. International Paper Company, USDA Forest Service.

Objective: The project will determine the feasibility of managing short-rotation hardwood plantations for availability to southern pulpmills during critical wood supply situations.

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.

Analysis of Timber Theft in the Southern Appalachian Region. R. M. Shaffer. Virginia Tech IFO Research Cooperative (MeadWestvaco Corporation, Georgia-Pacific, Plum Creek Timber Company, Forestland Group, Wagner Forest Management).

Objective: Document the amount of timber theft and level of prosecution that is occurring in the southern Appalachians. Examine legal constraints to effective prosecution of timber theft cases. Determine county attorney and law enforcement personnel level of knowledge and experience with timber theft. Develop recommendations to reduce the occurrence of timber theft.

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.

*New research project in 2003

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.

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.

Graduate Students Enrolled During 2003

Baker, Shawn	MS	BS, Virginia Tech
Gallagher, Thomas	PhD	BS, University of Maine at Orono MS, Virginia Tech
Hodges, Christine	MS	BS, Virginia Tech
Jensen, Kris	MS	BS, Virginia Tech
Yonce, Mary	MS	BS, Western Carolina University

*New research project in 2003

Forest Biology Research During 2003

Faculty

W. Michael Aust (joint with Industrial Forestry Operations), James A. Burger, Carolyn A. Copenheaver, Susan D. Day, Thomas R. Fox, Brian C. P. Kane, J. L. Kirwan, James E. Johnson, John R. Seiler, Shepard M. Zedaker

Emeritus Faculty

Robert E. Adams, David Wm. Smith

Cooperating Faculty

Kurt D. Johnsen, USDA Forest Service
Robert H. Jones, Department of Biology
Scott M. Salom, Department of Entomology

Research Associate

John Trobaugh

Research Scientist

David A. Sampson

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.

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.

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.

*New research project in 2003

Sustainability of Intensive Pine Plantation Management: Rotation-age Responses. J. A. Burger. National Council of the Paper Industry for Air and Stream Improvement, Inc.; International Paper Company.

Objectives: (1) Determine forest productivity as a function of land management practices; (2) determine carbon sink/source relationships for different management approaches.

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. J. R. Seiler, S. M. Zedaker, T. R. Fox. 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 Corporation.

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, R. E. Kreh, 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. F. A. Kamke, Department of Wood Science and Forest Products; S. M. Zedaker; P. J. Radtke; T. V. Gallagher; S. P. Prisley; 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, J. M. Galbraith, Department of 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 seedlings in Virginia.

Soils

Sustaining the Productivity and Function of Intensively Managed Forests. J. A. Burger, W. M. Aust, Y-J. Xu. National Council of the Paper Industry for Air and Stream Improvement, Inc.

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.

Best Management Practices for the Control of Erosion on Civil War Battlefield Earthworks. W. M. Aust. National Park Service.

Objective: Evaluate the effects of different management regimes on Civil War earthworks in order to minimize erosion.

*****New research project in 2003

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.

Water Quality

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

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

Use of Riparian Buffers in Appalachian Hayfields and Pastures to Protect Water Quality. W. M. Aust. USDA Forest Service Coweeta Hydrologic Laboratory.

Objective: To determine the effects of riparian buffers on nitrate and phosphate fluxes from upland pastures to adjacent streams.

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, Department of Fisheries and Wildlife Sciences. 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.

Tom's Creek Riparian Corridor Restoration Project. L. E. Skabelund, Department of Landscape Architecture; J. O. Browder, Department of Urban Affairs and Planning; R. H. Jones, Department of Biology; W. M. Aust; W. L. Daniels, Department of 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.

Tree and Seedling Physiology

The Influence of Adjuvants and Formulations on the Uptake and Movement of Basal- and Foliar-Applied Herbicides in Forest Trees. S. M. Zedaker, J. R. Seiler. DowElanco, BASF.

Objectives: (1) Determine the rate of uptake in foliar- and basal-applied herbicides; (2) evaluate the influence of uptake and translocation on efficacy; (3) evaluate the influence of surfactants on herbicide uptake.

*New research project in 2003

The Impacts of Forest Management on Soil CO_2 Efflux and Organic Matter Content in Loblolly Pine Plantations. J. R. Seiler; C. Maier, 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 CO_2 efflux in managed loblolly pine stands.

Agroforestry

Kentland Farm Agroforestry Project: Research and Demonstration of Agroforestry Systems for the Appalachian Region. J. A. Burger, P. P. Mou, R. E. Kreh. 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

The Effects of Post-Transplant Fertilization Practices on Shade Tree Establishment and Growth. S. D. Day. International Society of Arboriculture Research Trust.

Objectives: (1) Determine the effects of post-transplant fertilization and fertilization timing on the early growth and establishment of landscape-sized red maples and littleleaf linden trees in urban situations; (2) evaluate the interaction of fertilization and irrigation on the establishment of these trees; (3) relate fertilization effects to root and shoot growth periodicity for these species.

Detecting Failure Patterns in Shade Trees in Massachusetts. B. C. P. Kane; P. Clouston, University of Massachusetts. International Society of Arboriculture.

Objective: Determine the likelihood of stem versus branch failure in shade trees by applying a static load, calculating stress at points in the tree, and comparing stress to see if innate failure points exist in open-grown trees.

****Detecting Failure Patterns and Stresses in Small Trees.*** B. C. P. Kane; J. R. Harris, Department of Horticulture. Mid-Atlantic Chapter International Society of Arboriculture.

Objectives: Measure failure stresses and strains in small trees, detect patterns, and compare to existing study on large trees.

*****New research project in 2003

Measuring Dynamic Wind Loading of Shade Trees. B. C. P. Kane; K. James, University of Melbourne. International Society of Arboriculture.

Objectives: Measure branch and trunk strains of shade trees under wind loading, correlate to wind velocity, and compare with forest trees; also compare trunk to branch strains.

Connections between Demographics and Trees on Elementary School Campuses. B. C. P. Kane, J. L. Kirwan. Virginia Department of Forestry.

Objectives: Determine the effect, if any, of demographic factors such as affluence, race, and ethnicity on tree cover, extent of tree care, and student academic performance across Virginia.

Genetics

Long-Term Growth and Performance of F_2 Pitch x Loblolly Pine Hybrid Families in the Virginia Piedmont. T. R. Fox, J. Trobaugh. 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 F_2 families of pitch x loblolly pine.

Educational

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

Objective: Conduct three-week 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.

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

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.

Extension Outside the Box – Natural Resources Programming Across Landscapes. J. E. Johnson. USDA Cooperative State Research, Education, and Extension Service.

Objective: Conduct a nationwide conference emphasizing new approaches to natural resources extension programming.

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.

Forestry and Natural Resources Issues in Africa. J. E. Johnson. U. S. Agency for International Development.

Objective: To conduct a national forum to assess current conditions in Africa and propose solutions to forestry and natural resource problems from the U.S. forestry school sector.

Graduate Students Enrolled During 2003

Arbogast, Kelley	MS	BS, Virginia Tech
Amichev, Beyhan	PhD	BS, Virginia Tech MS, Virginia Tech
Amishev, Dzhamal	MS	BS, University of Forestry, Bulgaria
Auch, Ted	MS	BS, University of Vermont
Blair, Mitchell	MS	BS, Virginia Tech
Casselman, Chad	MS	BS, SUNY-CESF
Easterbrook, Amy	MS	BS, Virginia Tech
Eisenbies, Mark	PhD	BS, Virginia Tech MS, University of Tennessee-Knoxville
Fuhrman, Nicholas	MS	BS, Virginia Tech
Gann, Sara	MF (NOVA)	BS, Northwest Missouri State MURPL, University of Virginia
Gellerstedt, Paul	MS	BS, Virginia Tech
Gough, Christopher**	PhD	BS, James Madison University MS, Virginia Tech

*New research project in 2003

**2000-03 recipient of a William J. Dann Fellowship awarded to an outstanding graduate degree candidate by the College of Natural Resources; recipient of the 2003 A. B. Massey Award from the College of Natural Resources; named Outstanding Graduate Student for 2003 for the College of Natural Resources

King, Nathan	MS	BS, Virginia Tech
Kyle, Kevin	MS	BS, Virginia Tech
Lorber, Jean	MS	BS, Virginia Tech
Matthews, Bonnie	MS	BS, Virginia Tech
Matthews, Jeff	MS	BS, Virginia Tech
Mitchem, David	MS	BS, Virginia Tech
Parrish, Paige	MS	BS, Vassar College
Phillips, Guy	MF	BS, Boston College
Pittman, Judd	MS	BS, Juniata College
Selig, Marcus*	MS	BS, Virginia Tech
Sharp, Elizabeth	MS	BS, Virginia Tech
Showalter, Julia	MS	BS, West Virginia University
Stephens, Laura	MS	BS, Virginia Tech
Tyree, Michael	MS	BS, Pennsylvania State University
Wood-Arendt, Ann	MF (NOVA)	BS, Medical College of Virginia
Zegre, Nicolas	MS	BS, West Virginia University

*Outstanding Presenter, 2003 Southern Silviculture Research Conference

Forest Economics, Policy, and Management Research During 2003

Faculty

Gregory S. Amacher, M. Christine Conway, Harry L. Haney, Jr., Michael J. Mortimer, Jay Sullivan

Emeritus Faculty

Otis F. Hall, W. David Klemperer, Harold W. Wisdom

Cooperating Faculty

Russell D. Meller, Department of Industrial and Systems Engineering

Research Scientist

Frank D. Merry

International Forestry

Estimating Technical Efficiency of Forest Processors in the Amazon Rainforest as a Means for Understanding and Controlling Deforestation. G. S. Amacher. Woods Hole Research Institute, IPAM.

This project seeks to estimate the efficiency of forest processors throughout the Amazon River Basin, i.e., processors at the rural frontier as well as those located in urban areas. Once differences in efficiency are estimated and compared, policies for improving efficiency and reducing wood dependency—hence, pressure on primary forests—will be proposed.

Project Preparation and Development of the Instituto Floresta Tropical in Amazonia. G. S. Amacher, F. D. Merry. USDA Forest Service Office of International Programs.

A survey will be made of forest processors in Amazonia, principally Brazil, for the purpose of assessing the economic returns to logging and nonlogging benefits produced by forests and then analyzing how these returns change across the landscape when compared with other land uses. This information will be used to structure policies to reduce deforestation in endangered economic corridors within the Amazon.

Analyzing Forest Policy and the Timber Industry in the Brazilian Amazon. G. S. Amacher, F. D. Merry. NASA/LBA 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.

Estimation of Forest Rent and Land Use Change in the Amazon. G. S. Amacher, F. D. Merry. Woods Hole Research Institute, National Aeronautics and Space Administration.

This project involves estimating net rents to forest and other land uses in the Amazon, primarily within frontier deforestation areas. The objective is to study policies proposed to control deforestation. Market and nonmarket rents will be estimated and compared. An important component will be an analysis of smallholder–forest harvester contracts, which are a basis of extensive deforestation. We will estimate the welfare impacts of these contracts and study how information plays a role in the types of contracts that are developed.

Seed Monies for Development of an International Forestry Center at Virginia Tech Department of Forestry. G. S. Amacher, F. D. Merry. Woods Hole Research Institute, USDA Forest Service Office of International Programs.

The International Forestry Center (IFC) at Virginia Tech was created to facilitate research in international forestry problems, principally in the areas of forest economics, management, and policy. The center is currently managing projects in Asia, Africa, and Latin America.

****Efficiencies of the Timber Processing Industries in Expansion Corridors within Amazonia.*** G. S. Amacher, F. D. Merry. Woods Hole Research Center, IPAM.

This project will consider the efficiency of mills in Amazonia at various parts of the economic frontier using mill-level cost data. The data will also be used for an analysis of forestry land rents in Amazonia, eventually being integrated into large-scale landscape models used to predict patterns of deforestation. Technology choice and responses of forest industry to various policy instruments will also be estimated.

****Smallholder Behavior and Legal Deforestation in the Brazilian Amazon.*** G. S. Amacher, F. D. Merry. Woods Hole Research Center, IPAM.

This project considers the behavior of smallholders in Amazonia. The objective will be to estimate the welfare effects of reductions in legal deforestation, as well as the effects of information on smallholder land clearing and forest use decisions.

Forest Taxation and Regulation

Survey and Analysis of Local Forest Regulations. H. L. Haney, Jr. USDA Forest Service.

A survey and analysis of local forestry ordinances in the South has been completed. A survey of local forestry ordinances in the balance of the United States is underway.

A Review and Update of "Estate Planning for Forest Landowners: What Will Become of Your Estate?" H. L. Haney, Jr. USDA Forest Service.

The federal estate and gift tax changes will be incorporated into USDA Forest Service Publication SO-97 to bring this estate planning guide into compliance with the current federal and gift tax statutes.

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.

*****New research project in 2003

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."

Economics of Multiple Use, Amenity Outputs, and Regional Economics

Using IMPLAN to Develop Applied General Equilibrium Models. J. Sullivan. USDA Forest Service.

The work will explore how general equilibrium models can be developed to recognize fundamental economic structural changes associated with forestry activities.

General Equilibrium Analysis of Forest Policies. J. Sullivan, G. S. Amacher. McIntire-Stennis.

This project will explore the application of a general economic equilibrium framework to the economic impact analysis of contemporary forest policy issues including endangered species protection, wetlands reforestation, and timber supply. Regional trade and factor (labor and capital) mobility questions will be addressed explicitly.

Forest Landowners

Understanding Decisions of NonIndustrial Forest Landowners. G. S. Amacher. McIntire-Stennis.

The objective is to examine household (and landowner) labor supply for timber production and for a variety of recreational services and to compare results for Virginia with those for a variety of other locations.

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, J. M. Galbraith, Department of 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.

Assessing and Estimating the Value of Information Under Risk of Fire: Implications for Government Budgeting and Management. G. S. Amacher. USDA Forest Service North Central Research Station.

In this project we will estimate the value of information regarding fire arrival and study the different incentives that both landowners and governments have in undertaking efforts to reduce fire probabilities and fire loss. Differences in landowner and government behavior will be used to design policies that reduce the risk of fire for a given minimum budget target of the government. Policies considered will include incentives for landowners to undertake fire management at various points in a rotation as well as improving information landowners have about fire arrival.

*New research project in 2003

Estimating Trends in Landowner Behavior Regarding Management of Aspen in the Lake States. M. C. Conway, G. S. Amacher. USDA Forest Service North Central Research Station.

This project will consider landowner behavior regarding aspen management in the Lake States. Both harvesting behavior and parcelization will be considered.

Forest and Natural Resource Policy

Forest Certification and Eco-labeling. G. S. Amacher.

The objective of this project is to determine how industries compete in quality competition as a means for studying adoption of green technologies or procedures involving wood utilization.

Fire Risk and the Value of Information. G. S. Amacher. USDA Forest Service North Central Research Station.

The objectives of this project are to model and then estimate the value of information regarding fire risk to a landowner. Results will be used to develop a model of optimal targeting for fire control policies and effort by the government. The project will involve data from the North Central United States Region.

Policy Instruments and Forest Fragmentation: A Spatial Approach. Phase I. G. S. Amacher. USDA Forest Service.

This project will link spatial and landowner data for the purpose of designing economic policies to manage forest land parcelization. The importance of wildlife corridors and nontimber benefits to this design will also be investigated.

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.

Graduate Students Enrolled During 2003

Aggett, Jonathan	MS	BS, University of Stellenbosch, South Africa
Bauch, Simone	MS	BA, University of São Paulo, Brazil
Huff, Jeffrey**	MS	BS, West Virginia University
Johnson, Franklin	MS	BS, Virginia Tech

*New research project in 2003
**2002-04 recipient of the Robert S. Burruss Fellowship awarded to an outstanding graduate degree candidate by the College of Natural Resources

Scardina, Anthony	MS	BS, West Virginia University
Smith, Nathan	MS	BS, Stephen F. Austin State University
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 2003

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	Jan. 31	25	6
		Cumberland, VA	March 21	27	6
		Chesterfield, VA	Aug. 8	22	6
		Boydton, VA	Oct. 2	18	6
		Lynchburg, VA	Oct. 10	34	6
	J. R. Willis	Lebanon, VA	June 20	19	6
		Willis, VA	Sept. 12	6	6
SHARP Logger Safety Program (Core Course)	S. M. Barrett	Lynchburg, VA	Jan. 22	29	6
		Cumberland, VA	March 14	25	6
		Chesterfield, VA	Aug. 1	26	6
		Boydton, VA	Sept. 12	29	6
		Lynchburg, VA	Oct. 17	30	6
	A. K. Downing	Madison County, VA	Jan. 10	26	6
	J. R. Willis	Lebanon, VA	June 10, 12	21	6
		Willis, VA	Sept. 2, 4	6	6
SHARP Logger Sustainable Forestry (Core Course)	S. M. Barrett	Lynchburg, VA	Feb. 28	26	6
		Chesterfield, VA	July 25	22	6
		Lynchburg, VA	Oct. 24	37	6
	S. M. Barrett D. L. Goerlich	Cumberland, VA	March 7	26	6
		Boydton, VA	Sept. 5	22	6
	J. R. Willis	Lebanon, VA	June 6	29	6
		Willis, VA	Aug. 22	5	6
Advanced Harvest Planning	R. M. Shaffer S. M. Barrett	Franklin, VA	June 25	29	3
		Martinsville, VA	Aug. 15	29	3
Basic Finance for Loggers	R. M. Shaffer	Wintergreen, VA	April 4	18	3
Gypsy Moth Control for Loggers	J. R. Willis	Wytheville, VA	March 14	17	3
Log Grading & Merchandising Workshop	D. L. Goerlich	Ontario, VA	Oct. 17	33	6
Logger Safety Awareness Workshop	S. M. Barrett	Alberta, VA	Oct. 31	47	6

SHARP Logger Programs	VT Forestry Faculty	Location	Dates	No. Participants	Duration (Hours)
Map Reading and Road Layout	J. R. Willis	Critz, VA	Feb. 28	17	3
		Wytheville, VA	March 28	5	3
		Oakwood, VA	July 10	9	3
Negotiating Skills for Loggers	J. R. Willis	St. Paul, VA	Nov. 25	15	3
SHARP Logger Roadway Safety Program	D. L. Goerlich	Charlotte Court House, VA	Oct. 9	16	3
		Blackstone, VA	Oct. 9	8	3
		Martinsville, VA	Oct. 30	22	3
		Chatham, VA	Oct. 30	9	3
		Lawrenceville, VA	Nov. 20	19	3
		Cumberland, VA	Dec. 4	11	3
SHARP Logger Best Management Practices Field Demo	S. M. Barrett	New Kent, VA	Dec. 5	45	6
SHARP Logger Chainsaw Safety	A. K. Downing	Green County, VA	Dec. 10	25	6
	D. L. Goerlich	Mountain Valley, VA	April 23	15	6
		Bedford, VA	June 26	24	6
		Danieltown, VA	Dec. 11	22	6
		Danieltown, VA	Dec. 12	27	6
	J. R. Willis	Galax, VA	April 24	40	6
SHARP Logger Preharvest Planning, Best Management Practices, and Silviculture	A. K. Downing	Spotsylvania County, VA	Dec. 4	25	6
SHARP Logger Wildlife Management and Endangered Species	S. M. Barrett	Clifton Forge, VA	May 16	56	6

Cooperative and Industrial Extension Programs

Cooperative and Industrial Extension Programs	VT Forestry Faculty	Location	Dates	No. Participants	Duration (Hours)
Clinch Mt. Forestry	J. R. Willis	Abingdon, VA	Aug. 9	15	3
Forest Nutrition Cooperative Annual Meeting	T. R. Fox	Raleigh, NC	Oct. 8-9	50	16
Forestry and Wildlife Field Day	J. Trobaugh	Critz, VA	Oct. 23	9	6
Forestry and Wildlife Field Tours	D. L. Goerlich S. A. Baker	Prince Edward County, VA	Oct. 3	11	8
	A. K. Downing S. A. Baker	Nelson County, VA	Oct. 10	26	8
	S. A. Baker	Richmond County, VA	Oct. 16	60	8
	J. R. Willis S. A. Baker	Grayson County, VA	Oct. 23	32	8
Forestry Cooperatives Satellite Downlink Program	S. A. Baker	Blacksburg, VA	Nov. 18	11	3
	A. K. Downing	Madison, VA		8	
	D. L. Goerlich	Halifax, VA		8	
Forum on Assessing the Future of Forest Landowner Education in Virginia	J. E. Johnson	Charlottesville, VA	July 15	8	5
Growing Quality Sawtimber	J. R. Willis	Bland, VA	April 12	14	3
Identification and Control of Non-native Plants	J. R. Willis	Abingdon, VA	Nov. 6	50	2
Landowners Woods & Wildlife Conference	A. K. Downing	Manassas, VA	Jan. 18	164	8
Landscape Tree Selection and Care	J. R. Willis	Big Stone Gap, VA	Sept. 20	21	3
Low Impact Forest Management of Small Woodlots	R. Visser T. R. Fox	Raphine, VA	Aug. 30	95	5
Management Options for Cutover Land	D. L. Goerlich	Halifax, VA	Sept. 25	16	6
		Farmville, VA	Sept. 26	10	6
		Rocky Mount, VA	Oct. 31	9	6
Measuring and Maintaining Soil Fertility	J. Trobaugh	Natural Bridge, VA	Aug. 16	45	3
Pond Management for Recreation, Fun, and Profit	D. L. Goerlich	Blackstone, VA	May 14	43	6
		Halifax, VA	June 4	58	6
Portable Timber Bridges	R. Visser	Hillsville, VA	July 1	12	2
		St. Paul, VA	July 10	15	2

Cooperative and Industrial Extension Programs	VT Forestry Faculty	Location	Dates	No. Participants	Duration (Hours)
Preserving and Protecting Historic Forests Workshop	J. E. Johnson	Flat Rock, NC	Aug. 20	8	4
Silvicultural Practices for Small Woodlots in Virginia	R. Visser T. R. Fox	Stuarts Draft, VA	Aug. 30	93	6
Sustainable Timber Marketing and Harvesting	D. L. Goerlich J. E. Johnson M. J. Mortimer	Brookneal, VA	Feb. 11, 15, 18, 25	18	13
Tree Steward Volunteer Training	A. K. Downing	Albemarle County/ Charlottesville, VA	Jan. 14, 21, 28 Feb. 4, 11, 25 March 4, 11, 18, 22	25	36
Tree Work by the Book	B. C. Kane	Blacksburg, VA	Aug. 18-22	15	35
Water Quality and Conservation	D. L. Goerlich	Halifax, VA	March 4	15	3
		Lawrenceville, VA	April 22	4	3
Wildlife Options for Landowners	A. K. Downing S. A. Baker	Fredericksburg, VA	Sept. 25, Oct. 2, 9, 16	20	12
Woodland Options for Landowners	A. K. Downing S. A. Baker	Warrenton, VA	Sept. 24, Oct. 1, 8, 15	13	12
Woody Plants: Selection, Use, and Care	D. L. Goerlich	Halifax, VA	April 15	15	3
		Lawrenceville, VA	April 29	4	3

Continuing Education Programs

Continuing Education Programs	VT Forestry Faculty	Location	Dates	No. Participants	Duration (Hours)
Best Practices in Forestry Extension	J. E. Johnson	Troutdale, OR	Oct. 1	49	8
Forum on Forestry and Natural Resources Issues in Africa	J. E. Johnson	Shepherdstown, WV	Feb. 24-26	18	16
ISA Certification Exam	B. C. Kane	Blacksburg, VA	Aug. 22	30	4
Post-Forum on Forestry and Natural Resources Issues in Africa	J. E. Johnson	Washington, DC	Sept. 4	6	6
Regeneration Silviculture	A. K. Downing D. L. Goerlich	Wintergreen, VA	April 4	17	3
USDA Forest Service Sale Area Harvest and Layout Initiative (SAHLI)	R. M. Shaffer W. M. Aust R. Visser	Blacksburg, VA	Feb. 18-March 7	32	120
Urban Tree Workshop Series	A. K. Downing	Loudoun County, VA	Feb. 20, March 6, 13	39	7
		Albemarle County, VA	Feb. 21, March 7, 14	33	7
2003 Joint Conference of Southern and Northeastern Mensurationist Organizations	P. J. Radtke	Roanoke, VA	Oct. 5-7	59	8

Other Outreach Programs

Other Outreach Programs	VT Forestry Faculty	Location	Dates	No. Participants	Duration (Hours)
Advanced Master Gardener Training – Backyard Forestry	A. K. Downing	Fauquier County, VA	April 17	19	1
Advanced Master Gardener Training – Tree ID	A. K. Downing	Stafford County, VA	May 1	26	2
Master Gardener and Tree Steward Training – Winter Tree ID	A. K. Downing	Albemarle County/ Charlottesville, VA	March 11, 12	41	2
Tree Pruning Workshop	A. K. Downing	Arlington, VA	Nov. 22	14	3
Tree Steward Training – Tree ID	A. K. Downing	Arlington County, VA	Sept. 23	25	3
Update and Prospects for Timber Theft in Virginia	M. J. Mortimer	Charlottesville, VA	Aug. 27	20	2

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 2003:

- 4-H Projects and Activities in Forestry and Wildlife - J. L. Kirwan, A. K. Downing, D. L. Goerlich, J. R. Willis

  - 23,000 youth completed forestry and wildlife projects as part of their 4-H participation in clubs, schools, and special interest groups.
  - 30,000 youth attended camp at a 4-H Center where forestry, aquatic, and outdoor recreation classes were taught.
  - 500 youth participated in forestry, wildlife, and Envirothon competitions, where students are required to complete timber stand evaluations and wildlife management plans.

- State 4-H Congress - J. L. Kirwan, P. J. Radtke

  Approximately 850 youth participated in leadership development activities on the Virginia Tech campus. Two days were devoted to a forestry judging contest and natural resources-related presentations and community service.

- Forestry outreach to schools and colleges throughout Virginia - A. K. Downing, D. L. Goerlich, J. L. Kirwan, J. R. Seiler, J. R. Willis, College of Natural Resources' undergraduate students.

  Numerous classroom and field presentations were made across the state by on-campus faculty and district extension agents. In addition, eight undergraduate students gave 188 presentations to 3,739 students at 17 middle and high schools. They presented topics on forest measurements, GPS and GIS, watersheds, dendrology, and wildlife ecology. The forestry outreach websites, which involve students in scientific investigations on tree growth, forest biodiversity, and wildlife road kill, reached over 13,000 visitors.

- FORSite Program – J. R. Seiler

  A service-learning program where students in the College of Natural Resources develop natural resource-based presentations which are then delivered to middle and high school biology classes around the state.

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

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

- Holiday Lake Forestry Camp – J. L. Kirwan, D. L. Goerlich, undergraduate students in the College of Natural Resources

  A week-long residential camp experience for youth ages 13-16 organized by the Virginia Department of Forestry. 4-H uses the camp as a way to develop teen leadership for local 4-H forestry programs.

  82 student participants in 2003

- Project Learning Tree – J. L. Kirwan, J. R. Willis, S. M. Zedaker

  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 2003 PLT conducted 46 workshops in Virginia reaching over 704 educators.

- Watershed Education – J. L. Kirwan

  Two grants totaling $95,000 were received to conduct watershed education and restoration projects in the Potomac and Shenandoah Valleys. K-12 and 4-H youth planted 10,000 hardwood seedlings with 75% survival after one month. Knowledge gain about watersheds, land use impacts, and tree planting ranged from 19-85%. Teachers were provided with GPS kits and GIS data products.

- Careers in Natural Resources – J. L. Kirwan

  Presentations about careers in natural resources were given to visiting members of Virginia's eight American Indian tribes and children from Tazewell County Public Schools.

- Youth Conservation Camp – Virginia Association of Conservation Districts – J. L. Kirwan

  Approximately 90 youth participated in conservation activities on the Virginia Tech campus. One day was devoted to forest and wildlife management, and field activities were conducted on the Jefferson National Forest.

- GPS Training for Teachers – J. A. McGee

  Approximately 25 high school math and science teachers participated in a GPS workshop, where they were provided with instruction on how GPS works, as well as with hands-on experience with GPS units. Teaching resources were provided for classroom use.

- Arbor Day Program – A. K. Downing

  527 youth participated in tree appreciation and planting exercises in Madison County, VA.

- Meaningful Bay Experience – A. K. Downing

  1,196 youth in Spotsylvania County, VA, explored forests and discovered the multiple benefits of this natural resource through hands-on interaction; program met Virginia's Standards of Learning (SOLs).

- Agriculture Awareness Day – Prince Edward County – D. L. Goerlich

  180 youth participated

- Natural Resources Weekend, Holiday Lake 4-H Educational Center – D. L. Goerlich

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 Focus
Monthly forestry column written for 11 southwestern Virginia newspapers; produced by J. R. Willis

Forestry For'um
Quarterly newsletter distributed to 650 program participants, cooperators, and volunteers; contains upcoming events, electronic resources, and timely information; produced by D. L. Goerlich

IFO Co-op Newsletter
Distributed quarterly 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 2,001 loggers and foresters; produced by S. M. Barrett and R. M. Shaffer

Taxing Questions
Quarterly column in the Virginia Forestry Association's *Virginia Forests* magazine; produced by H. L. Haney, Jr.

Timber Tax Issues
Bi-monthly column in *Forest Landowner* magazine; produced by H. L. Haney, Jr.

Tree Topics
Published eight times annually in the Fredericksburg, Virginia, area newspaper, *Free Lance Star*; produced by A. K. Downing; covers topics such as tree care, natural resource issues, and urban forestry

Virginia Forest Landowner Update
Newsletter distributed three times per year to 19,000 forest landowners and natural resource professionals; produced by S. A. Baker

Virginia Geospatial Newsletter
Eight-page quarterly newsletter distributed to over 1,500 individuals and organizations throughout the Commonwealth; produced by J. A. McGee

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

Baker, S. A. Virginia Forest Landowner Update Online.
www.cnr.vt.edu/forestupdate

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

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.)
http://www.ext.vt.edu/resources/4h/virtualforest/

Johnson, J. E. Forum on Forestry and Natural Resources Issues in Africa.
http://www.napfsc.org/africa/Africa%202%20Website.htm

Kirwan, J. L. Forest Communities of the Eastern U.S. (Provides youth and teachers with an interactive map of county forestry data in 13 eastern states)
www.cnr.vt.edu/forsite/forestcommunity/countymap

Kirwan, J. L. 4-H Natural Resources Programs. (Outlines programs, projects, and activities available to 4-H clubs in Virginia)
www.ext.vt.edu/resources/4h/eenr.html

Kirwan, J. L. NOAA Watershed Project. (Provides GIS data products, including historic aerial photographs, for high school teachers in the Potomac and Shenandoah Valleys)
http://teacherbridge.cs.vt.edu/public/projects/NOAA+Project/Home

Kirwan, J. L. Restoring the Chesapeake. (Provides land use data and hardwood seedlings to clubs and schools in the Potomac/Shenandoah watershed)
www.cnr.vt.edu/PLT/potomacshenandoah/index.html

Kirwan, J. L. Virginia Big Tree Program Site.
www.cnr.vt.edu/4h/bigtree/index.htm

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

McGee, J. A. and P. 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 860 tree species, and an interactive "Ask Dr. Dendro" site to get tree-related questions answered)
www.cnr.vt.edu/dendro

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. and J. L. Kirwan. FORSite - Forestry Outreach Site for Virginia Middle Schools. (Provides forestry resources to middle schools, with emphasis on tree identification and data collection)
www.cnr.vt.edu/dendro/forsite/welcome.htm

FORSite Teachers' Edition.
www.cnr.vt.edu/forestrySol/index.html

Virginia Tech Department of Forestry Site.
www.cnr.vt.edu/forestry/

Visser, R. Cable Logging/Cable Yarding Site.
www.cnr.vt.edu/visser/cable_logging/

Visser, R. Industrial Forestry Operations Co-op
www.cnr.vt.edu/ifo

Visser, R. Stream Crossing Options.
www.cnr.vt.edu/visser/streamcrossings/

Technical Assistance Program (TAP) Projects Funded

Management Plan for Carl Sandburg Home National Historical Site. J. E. Johnson.
USDI National Park Service.
September 20, 2001-August 31, 2003.

THESES AND DISSERTATIONS
FOR GRADUATE DEGREES AWARDED IN 2003

Aggett, Jonathan E. 2003. Financial analysis of restoring sustainable forests on Appalachian mined lands for wood products, renewable energy, carbon sequestration, and other ecosystem services. M.S.
Faculty Chair: J. Sullivan
Current Position: Quantitative Forest Analyst, National Council of the Paper Industry for Air and Stream Improvement, Inc., Lowell, MA

Amichev, Beyhan Y. 2003. Comparison of techniques for estimation of forest soil carbon. M.S.
Faculty Chair: S. P. Prisley
Current Position: Ph.D. candidate, Department of Forestry, Virginia Tech

Baker, Shawn A. 2003. An analysis of timber trespass and theft issues in the southern Appalachian region. M.S.
Faculty Chair: R. M. Shaffer
Current Position: Extension Associate, Department of Forestry, Virginia Tech

Cahill, Kerri L. 2003. Exploring the structure and development of management prescriptions for public lands. Ph.D.
Faculty Chair: J. L. Marion
Current Position: Park Planner, DOI National Park Service, Denver, CO

Conway, M. Christine. 2003. Targeting nonindustrial private landowner groups for timber market entry. Ph.D.
Faculty Chair: G. S. Amacher
Current Position: Research Assistant Professor, Department of Forestry, Virginia Tech

Farrell, Robert W. 2003. Structural features related to tree crotch strength. M.S.
Faculty Chairs: S. M. Zedaker and J. R. Loferski
Current Position: Urban Forester, Virginia Department of Forestry, Gloucester, VA

Gallagher, Thomas V. 2003. Assessing the cost and operational feasibility of “green” hardwood winter inventory for southeastern pulp mills. Ph.D.
Faculty Chair: R. M. Shaffer
Current Position: Assistant Professor, Auburn University, Auburn, AL

Gann, Sara B. 2003. A methodology for inventorying stored carbon in an urban forest. M.F.
Faculty Chair: D. L. Trauger
Current Position: Research Assistant, International Finance Corporation, The World Bank Group, Washington, DC

Gough, Christopher M. 2003. Quantification and physiology of carbon dynamics in intensively managed loblolly pine (*Pinus taeda* L.) Ph.D.
Faculty Chair: J. R. Seiler
Current Position: Postdoctoral Researcher; Department of Evolution, Ecology, and Organismal Biology; Ohio State University; Columbus, OH

Issem, Cristina M. 2003. Forest productivity as a function of root growth opportunity. M.S.
Faculty Chair: J. A. Burger
Current Position: Ph.D. candidate, Department of Forestry, Virginia Tech

Johnson, W. Franklin. 2003. Survey and analysis of local forestry-related ordinances in the northeast, mid-west, and western United States. M.S.
Faculty Chair: H. L. Haney, Jr.
Current Position: Procurement Forester, Mid-Atlantic Tree Harvesters, Aylett, VA

Kendra, Angelina M. 2003. New landowners in Virginia's forest: A study of motivations, management activities, and perceived obstacles. Ph.D.
Faculty Chair: R. B. Hull
Current Position: Assistant Professor, Central Connecticut State University, New Britain, CT

Lorber, Jean H. 2003. Effects of alternative silvicultural practices on oak regeneration in the southern Appalachians. M.S.
Faculty Chair: T. R. Fox
Current Position: Forester, Virginia Department of Forestry, Powhatan/Cumberland, VA

Musy, Rebecca F. 2003. Refinement of automated forest area estimation via iterative guided spectral class rejection. M.S.
Faculty Chair: R. H. Wynne
Current Position: Information Technology Specialist, Department of Forestry, Virginia Tech, Blacksburg, VA

Phillips, Guy E. 2003. Culture and propagation of Japanese maple. M.F.
Faculty Chair: J. R. Seiler
Current Position: Research Assistant, Department of Horticulture, Virginia Tech, Blacksburg, VA

Reid, Scott E. 2003. An adaptive assessment of visitor impacts to protected areas. M.S.
Faculty Chair: J. L. Marion
Current Position: Trails Resource Specialist for Summit County Open Space, Colorado

Selig, Marcus F. 2003. Soil CO_2 efflux and soil carbon content as influenced by thinning in loblolly pine plantations on the Piedmont of Virginia. M.S.
Faculty Chair: J. R. Seiler
Current Position: Research Associate, Department of Forestry, Purdue University, West Lafayette, IN

Sharp, Elizabeth P. 2003. Watershed and streamside management zone characterization in the Allegheny Plateau of West Virginia. M.S.
Faculty Chair: W. M. Aust
Current Position: Self-employed, Blacksburg, VA

Wood-Arendt, Ann E. 2003. The role of outreach education in achieving environmental literacy. M.F.
Faculty Chair: D. L. Trauger
Current Position: Medical Technologist, Arlington Hospital Department of Pathology, Arlington, VA

Woosnam, Kyle M. 2003. Place attachment as an interactional process: A case study of Isle au Haut, Maine. M.S.
Faculty Chair: J. W. Roggenbuck
Current Position: Considering Ph.D. offer at Clemson University

2003 EDITORSHIPS, AWARDS, AND ACHIEVEMENTS

Gregory Amacher

Adjunct Professor, Chinese Academy of Sciences, Beijing University and Center for Agricultural Policy
Editor, *Forest Science*
Editorial Council, *Journal of Environmental Economics and Management*
Associate Editor, *Journal of Forest Economics*
Member, Research Review Team, USDA Forest Service Southern Research Station, 2003
College of Natural Resources' Certificate of Teaching Excellence, 2003
Virginia Tech Panhellenic Teaching Excellence Award, 2003

Michael Aust

College of Natural Resources' Curriculum Clubs Award for Teaching Excellence, 2003
Co-editor of special edition of *Water-Air-Soil Pollution Focus* on forestry BMP research in the eastern U.S.
Certified Forester, Society of American Foresters

Gregory Buhyoff

Julian N. Cheatham Professor of Forestry

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
Associate Editor, *Canadian Journal of Forest Research*
Editorial Board, *Journal of Environmental and Ecological Statistics*
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
Certified Forester, Society of American Foresters

Adam Downing

Vice President, Board of Directors, Virginia Urban Forestry Council
Chair Elect, Skyline Chapter, Society of American Foresters

Thomas Fox

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)

Daniel Goerlich

Virginia Division Society of American Foresters Young Forester Leadership Award, 2003
National Association of County Agricultural Agents Communication Award – National Winner, Feature Story, 2003
National Association of County Agricultural Agents – National Finalist, Fact Sheet, 2003
Board of Directors, Virginia Forestry Association
Board of Directors, Halifax Soil and Water Conservation District
Certified Forester, Society of American Foresters

Harry Haney

Garland Gray Professor of Forestry
Fellow, Society of American Foresters
President, Forest Landowners Association
Distinguished Service Award, Virginia Forestry Association, 2003

Bruce Hull

Fellow, Virginia Natural Resource Leadership Institute

James Johnson

Award for Excellence in Education Programs for Non-Industrial Private Forest Landowners from the National Woodland Owners Association and the National Association of Professional Forestry Schools and Colleges, 2003
Board of Directors, Virginia Forestry Association
Certified Forester, Society of American Foresters

Brian Kane

Certified Arborist and Tree Worker, International Society of Arboriculture

Jeffrey Kirwan

Editorial Committee, *Virginia Forests*
Member, National 4-H Forestry Invitational Committee
Member, National 4-H Curriculum Review Committee
Member, 2004 National 4-H Wildlife Habitat Evaluation Program Committee

Jeffrey Marion

Editorial Board, *Journal of Environmental Management*

Michael Mortimer

Chair, Committee on Forest Policy, Society of American Foresters
Co-Chair, Task Force on Forest Practices Regulation, Society of American Foresters

Stephen Prisley

Certified Forester, Society of American Foresters

Philip Radtke

Guest Associate Editor, *Forest Science*
Third Place, Geospatial Solutions 4th Annual Applications Contest, 2003 (for paper written jointly with S. C. Popescu and R. H. Wynne)

Marion Reynolds

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

Joseph Roggenbuck

Associate Editor, *Leisure Sciences*
Associate Editor, *International Journal of Wilderness*
Associate Editor, *Society and Natural Resources*

John Seiler

The Honorable and Mrs. Shelton H. Short, Jr., Professor of Forestry
Editorial Board, *Tree Physiology*
National Award for Innovative Excellence in Teaching, Learning and Technology, 2003

Robert Shaffer

Charles Nettleton Professor of Forestry
2003 Extension Forester of the Year Award, Forest Landowner Association

Jay Sullivan

Associate Editor, *Forest Science*

Rien Visser

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

James Willis

Forestry Merit Award presented by New River/Highlands Resource Conservation and Development Council, 2003

Randolph Wynne

Third Place, Geospatial Solutions 4th Annual Applications Contest, 2003 (for paper written jointly with S. C. Popescu and P. J. Radtke)
Selected as Course Creation Fellow (with co-author S. Sader) for Forest Monitoring and Management course, Institute for Advanced Education in Geospatial Sciences, 2003-04

Shepard Zedaker

Editorial Board, *New Forests*
Advisory Board, *Weed Technology*
Editorial Board, *Journal of Forestry*

PROFESSIONAL PRESENTATIONS MADE DURING 2003

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

Adams, J. D.*, R. Visser and S. P. Prisley. GIS risk management support system for strategic harvest planning. 2nd International Precision Forestry Conference, Seattle, WA.

Adams, J. D.*, **R. Visser** and S. P. Prisley. Modeling steep terrain harvesting risks using GIS. Austro2003: High Tech Forest Operations for Mountainous Terrain, Stift Schlaegl, Austria.

Amateis, R. L. Some final basal area growth relationships from a long-term loblolly pine thinning study. 2003 Joint Conference of the Southern Mensurationists and Northeastern Mensurationist Organization, Roanoke, VA.

Amateis, R. L. and H. E. Burkhart. An economic assessment model for intensively managed loblolly pine plantations. 12th Biennial Southern Silvicultural Research Conference, Biloxi, MS.

Baker, S. A. An analysis of timber trespass and theft in the southern Appalachian region. Forest Resources Association Timber Security Workgroup Fall Meeting, Morgantown, WV.

Baker, S. A. Southern region forestry education initiatives. Forum on Assessing the Future of Forest Landowner Education Initiatives in Virginia, Charlottesville, VA.

Baker, S. A. Sustainability and forest management: What are reasonable goals and expectations? The Trenton Forestry Seminar - Sustainability and Certification: The Inevitable Convergence, Trenton, NJ.

Baker, S. A. Timber trespass and theft in the southern Appalachian region. Annual Meeting of the West Virginia Forestry Association, Davis, WV.

Baker, S. A. and M. J. Mortimer. Timber theft in Virginia. Virginia Department of Forestry Forest Management Training, Lynchburg, VA.

Baldassaro, P. M. Creating an ArcMap project. Montgomery County GIS Day, Christiansburg, VA.

Baldassaro, P. M. Mapping rural growth. Montgomery County GIS Day, Christiansburg, VA.

Buergler, A., C. Bowden, J. Fike, C. M. Feldhake and J. A. Burger. Optimizing forage production within a temperate silvopasture system. 8th North American Agroforestry Conference, Corvallis, OR.

Buergler, A. L., J. H. Fike, J. A. Burger, J. A. McKenna and C. M. Feldhake. Cool season forage production and nutritive value in a temperate silvopasture. Soil Science Society of America Annual Meeting, Denver, CO.

Buergler, A. L., J. H. Fike, C. M. Feldhake, J. A. Burger and J. A. McKenna. Microclimate responses to shade in a temperate silvopasture. Soil Science Society of America Annual Meeting, Denver, CO.

Burger, J. A. Procedures and guidelines for mined land reforestation. 3rd Annual Applied Research Conference: Conservation and Restoration Innovations, Athens, OH.

Burger, J. A. Restoring forests on drastically disturbed land in the Appalachians. Enhancing the Southern Appalachian Forest Resource: A Symposium Engaging Economic, Ecological and Social Principles and Practices, Hendersonville, NC.

Burger, J. A. Restoring forests on mined land in the Appalachians: Results and outcomes of a 20-year research program. 10th North American Forest Soils Conference, Sault Ste. Marie, Ontario, Canada.

Burger, J. A., W. E. Auch*, R. G. Oderwald and M. H. Eisenbies*. White pine growth and yield on a mined site in Virginia: Response to thinning and pruning. American Society for Mining and Reclamation Annual Meeting, Billings, MT.

Burger, J. A. and J. A. Rodrigue. Carbon inventory of reforested mined land in the eastern United States: Preliminary results. 2nd Annual Conference on Carbon Sequestration: Developing and Validating the Technology Base to Reduce Carbon Intensity, Alexandria, VA.

Copenheaver, C. A. Dendrochronology: Unlocking the key to forest history. Appalachian Society of American Foresters Annual Meeting, Williamsburg, VA.

Copenheaver, C. A. Influence of topographic position on dendroclimatic responses in white and chestnut oak in the southern Appalachians. Ecological Society of America Annual Meeting, Savannah, GA.

Day, S. D. and J. R. Harris. Can fertilization speed the establishment of urban trees? Arboricultural Research and Education Academy, Society of Arboriculture Annual Conference, Montreal, Canada.

Downing, A. K. Pesticide recertification. Soil and Water Conservation District Inservice Training, Madison, VA.

Downing, A. K. Private forest landowners: What they want in an educational program. Programming in a Changing Landscape: Southern Extension Forestry/Wildlife Triennial Meeting, Asheville, NC.

Easterbrook, A. W.*, W. M. Aust and C. A. Dolloff. Watershed and SMZ characterization in the Piedmont of Virginia. MeadWestvaco Annual Research Symposium, Charleston, WV.

Easterbrook, A. W.*, W. M. Aust, C. A. Dolloff and P. D. Keyser. Natural erosion rates for riparian buffers in the Piedmont of Virginia. Virginia Water Research Symposium, Blacksburg, VA.

Eisenbies, M. H.*, J. A. Burger, W. M. Aust and S. C. Patterson. Soil properties controlling loblolly pine growth at stand closure. Soil Science Society of America Annual Meeting, Denver, CO.

Estes, C., **D. L. Goerlich**, J. L. Kirwan, J. Hunnings, M. Sumner and K. Cronin. 4-H virtual forest: The tree detective. Southern Extension Forestry/Wildlife Triennial Meeting, Asheville, NC.

Fisher, R. F., T. R. Fox, T. A. Terry and R. Harrison. Forest soils education and research: Trends, needs and wild ideas. 10th North American Forest Soils Conference, Sault Ste. Marie, Ontario, Canada.

Fox, T. R. The history of southern pine plantation silviculture. Appalachian Society of American Foresters Annual Meeting, Williamsburg, VA.

Fox, T. R. and N. B. Comerford. Phosphorus uptake and associated changes in the rhizosphere of *Pinus elliottii* seedlings growing in surface and subsurface soils from Spodosols. 3rd International Symposium on Dynamics of Physiological Processes in Woody Roots, Perth, Australia.

Fox, T. R., N. F. DeBarros, N. B. Comerford and M. F. Skinner. Phosphorus fertilization and soil phosphorus dynamics in forest ecosystems. 2nd International Symposium on Phosphorus Dynamics in the Soil Plant Continuum, Perth, Australia.

Fox, T. R. and R. E. Kreh. Growth response of pitch x loblolly pine hybrids following crown touching release. 12th Biennial Southern Silvicultural Research Conference, Biloxi, MS.

Fox, T. R., J. Sullivan, J. Aggett*, J. A. Burger, G. S. Amacher, C. Zipper and J. Galbraith. Restoring sustainable forests on Appalachian mined land for carbon sequestration, wood products, renewable energy and other ecosystem services. USDOI/National Environmental Technology Lab Carbon Sequestration Program Review, Pittsburgh, PA.

Fuhrman, N. E.* and C. A. Copenheaver. Forest encroachment into glades on Buffalo Mountain, Virginia. Ecological Society of America Annual Meeting, Savannah, GA.

Gallagher, T. V. Assessing the cost and operational feasibility of "green" hardwood inventory. 2003 Southeast Region Council on Forest Engineering Meeting, Portsmouth, VA.

Gellerstedt, P.* and W. M. Aust. Sixteen-year effects of helicopter and skidder harvesting in a tupelo-cypress swamp. 12th Biennial Southern Silvicultural Research Conference, Biloxi, MS.

Goerlich, D. L. Just watchin' 'em grow: Meet Johnny & Sharon Angell. National Association of County Agricultural Agents 88th Annual Meeting and Professional Improvement Conference, Green Bay, WI.

Goerlich, D. L. and **A. K. Downing**. Regeneration silviculture. Virginia Forestry Association Annual Convention, Wintergreen, VA.

Goerlich, D., C. Estes, J. Hunnings, J. L. Kirwan and M. W. Sumner. 4-H virtual forest – An interactive learning module on forestry. Southern Region Extension Forestry Conference, Asheville, NC.

Gough, C. M.*, J. R. Seiler and P. E. Wiseman*. A comparison of soil CO_2 efflux in Virginia and South Carolina loblolly pine stands varying in age. 12th Biennial Southern Silvicultural Research Conference, Biloxi, MS.

Gough, C. M.*, J. R. Seiler, P. E. Wiseman* and C. A. Maier. Impacts of forest management, climate, and productivity on soil CO_2 efflux from loblolly pine (*Pinus taeda* L.) stands located on the Virginia Piedmont and the South Carolina coastal plain. American Geophysical Union Fall Meeting, San Francisco, CA.

Haas, C. A., T. R. Fox, S. M. Zedaker, D. Wm. Smith, R. H. Jones and A. L. Hammett. Alternative silvicultural practices in Appalachian forest ecosystems: Implications for diversity, resilience and commercial production. Enhancing the Southern Appalachian Forest Resource: A Symposium Engaging Economic, Ecological and Social Principles and Practices, Hendersonville, NC.

Haynes, H.* and **R. Visser**. An applied hardwood value recovery study in the Appalachian region of Virginia and West Virginia. Council on Forest Engineering 26th Annual Meeting, Bar Harbor, ME.

Henning, J. G.* and P. J. Radtke. Non-destructive stem taper measurements: Can you see the trees through the point-cloud? 2003 Joint Conference of the Southern Mensurationists and Northeastern Mensurationist Organization, Roanoke, VA.

Johnson, J. E. Best practices in forestry extension – A state perspective. IUFRO Extension Working Party Conference: Building Capacity through Extension Best Practices, Troutdale, OR.

Johnson, J. E. Coordinating international extension efforts in forestry: The IUFRO Extension Working Party. Bridging the Gap between Forestry Research and Practice – The Role of the Communicator Conference, Riga, Latvia.

Johnson, J. E. Ecosystems, sustainability, and private land. Woods and Wildlife Conference, Manassas, VA.

Johnson, J. E. Hardwood forest management. Reynolds Homestead Forest Resources Research Center Field Day, Critz, VA.

Johnson, J. E. Principles of sustainable forestry and management objectives. Sustainable Timber Marketing and Harvesting Shortcourse, Brookneal, VA.

Johnson, J. E. Research-based information in the U.S. – Spreading the word to forest owners. Bridging the Gap between Forestry Research and Practice – The Role of the Communicator Conference, Riga, Latvia.

Johnson, J. E. Woodland options internet-based course for landowners – A distance education model for decision making on private forests. Decision Support for Multiple Purpose Forestry International Conference, Vienna, Austria.

Kane, B. C. P. and H. D. P. Ryan. Comparing formulas that examine strength loss due to decay in trees. California Tree Failure Report Annual Meeting, Half Moon Bay, CA.

Kirwan, J. L. and L. Deaton. Integrating Project Learning Tree into camping programs. American Camping Association Winter Workshop, Palmyra, VA.

Kirwan, J. L. and M. Hayslett. The Master Naturalist program in Virginia. American Camping Association Winter Workshop, Palmyra, VA.

Kirwan, J. L., J. A. McGee and M. Adcock. Integrating GPS and GIS technologies into the classroom. Virginia Association of Secondary Principals, Lynchburg, VA.

Kirwan, J. L. and M. E. Williams. Restoring the Chesapeake – A 4-H project using GPS/GIS and information technologies. American Fisheries Society Annual Meeting, Quebec City, CA.

Kyle, K. H.* and T. R. Fox. Evaluating slow-release formulations of nitrogen made with isobutyldenediurea for forestry applications in the southern United States. 12th Biennial Southern Silvicultural Research Conference, Biloxi, MS.

Kyle, K. H.* and T. R. Fox. Evaluating slow-release nitrogen fertilizers applied at stand establishment in loblolly pine plantations. Soil Science Society of America Annual Meeting, Denver, CO.

Kyle, K. H.*, T. R. Fox, W. M. Aust and G. Hansen. Effects of ditching, bedding, and fertilization on growth of wet flat loblolly pine plantations after 32 years. 12th Biennial Southern Silvicultural Research Conference, Biloxi, MS.

Lorber, J. H.* and T. R. Fox. Oak regeneration after five silvicultural treatments in the southern Appalachians. 7th Annual Meeting of MeadWestvaco Wildlife and Ecosystem Research Forest, Charleston, WV.

Lorber, J. H.* and T. R. Fox. Oak regeneration after five silvicultural treatments in the southern Appalachians. 12th Biennial Southern Silvicultural Research Conference, Biloxi, MS.

McGee, J. GIS software applications and the ESRI state contract. VCCS Building Technology Peer Group Conference, Roanoke, VA.

McGee, J. Introducing Virginia's geospatial extension program. Farm and Family Showcase, Blacksburg, VA.

McGee, J. Introduction to geographic information systems (GIS). VCCS Workforce Development/Continuing Education Peer Conference, Williamsburg, VA.

McGee, J. Overview of GIS applications. VCCS Advanced Technology Peer Group Conference, Roanoke, VA.

McGee, J. Virginia's geospatial extension program: Providing tools and techniques for geographic information system applications. VCCS IST/Marketing Peer Group Conference, Virginia Beach, VA.

McGee, J. and P. M. Baldassaro. Visualizing GPS waypoints. Montgomery County GIS Day, Christiansburg, VA.

Mortimer, M. J. Preparing forest policy position statements. Appalachian Society of American Foresters Leadership Workshop, Williamsburg, VA.

Mortimer, M. J. Private forests, local governments and perverse incentives. Society of American Foresters National Convention, Buffalo, NY.

Mortimer, M. J. and D. H. Jenkins. Private forestry and local governments: Perverse incentives in the South. Southern Forest Economics Workers Annual Meeting, New Orleans, LA.

Mortimer, M. J. and R. J. M. Visser. Logging, flooding, and lawsuits: A new role for Best Management Practices. Virginia Water Research Symposium, Blacksburg, VA.

Prisley, S. P. Information technology trends in forestry. SAF Technology Seminar Series, Calloway Gardens, GA.

Prisley, S. P. Measuring C loss in forest degradation. Intergovernmental Panel on Climate Change Authors Meeting, Sydney, Australia.

Prisley, S. P. What if no one complained? Comments on the FIA program from a university perspective. 2003 FIA National Users Group Meeting, Washington, DC.

Prisley, S. P. and P. J. Radtke. Modeling decay rates in loblolly pine dead and downed woody debris. 2003 Joint Conference of the Southern Mensurationists and Northeastern Mensurationist Organization, Roanoke, VA.

Prisley, S. P., D. F. Stauffer and T. M. Fearer*. Evaluating population-habitat relationships of forest breeding birds at a landscape scale using FIA data. 2003 FIA Science Symposium, New Orleans, LA.

Seiler, J. R., C. H. Gough*, M. Selig* and C. A. Maier. Estimating soil CO_2 efflux in managed loblolly pine ecosystems: What we know and how we can apply it to enhancing carbon sequestration. 2nd Annual Conference on Carbon Sequestration, Alexandria, VA.

Selig, M.* and J. Seiler. Changes in soil CO_2 efflux following the thinning of a 22-year-old loblolly pine plantation on the Piedmont of Virginia. 12th Biennial Southern Silvicultural Research Conference, Biloxi, MS.

Shaffer, R. M. The forest industry's fight for survival. Virginia Tech Alumni Association (Southeastern Virginia Chapter) Annual Meeting, Franklin, VA.

Shaffer, R. M. Logger training – Now and in the future. Council on Forest Engineering 26th Annual Meeting, Bar Harbor, ME.

Shaffer, R. M. Process versus outcome-based forest regulation. Society of American Foresters (Virginia Division) Annual Meeting, Roanoke, VA.

Shaffer, R. M. The Virginia Tech IFO Research Cooperative. Forest Resources Association (Appalachian Technical Division) Spring Board Meeting, Blacksburg, VA.

Shaffer, R. M. and R. Visser. Assessment of planning and communications in the wood supply system. Smurfit-Stone Container Forest Managers Group Meeting, Richmond, VA.

Shaffer, R. M. and R. Visser. Assessment of planning and communications in the wood supply system. Virginia Logger's Association Annual Meeting, Franklin, VA.

Trobaugh, J. Oregon Douglas-fir fertilization research. Virginia Christmas Tree Growers Association Annual Meeting, Natural Bridge, VA.

Wear, D., R. Abt, G. Amacher, J. Chang, D. Newman and C. Zinchan. The future of forest economics. 2003 Southern Forest Economics Workshop, New Orleans, LA.

Willis, J. R. Care of trees and forests. Farm and Family Showcase, Blacksburg, VA.

Willis, J. R. Forest value. Scott County Pasture Walk, Duffield, VA.

Willis, J. R. Improved logger education in SW Virginia. Southern Triennial Extension meeting, Waynesville, NC.

Willis, J. R. Preventing timber theft. Extension clubs in Meadowview, Oak Hill, Abingdon, and Spoon Gap, VA.

Willis, J. R. Tree pruning. Extension clubs in Norton, Abington, and Saltville, VA.

Zedaker, S. M. Ecological site and setting as indicators of herbicide/application selection. National Advanced Herbicide Course, Phoenix, AZ.

Zedaker, S. M. Properties of vegetation communities affecting herbicide efficacy. National Advanced Herbicide Course, Phoenix, AZ.

INTERNATIONAL ACTIVITIES DURING 2003

Gregory Amacher

Director of the International Forestry Center (IFC) within the Virginia Tech Department of Forestry. The IFC facilitates research projects related to forest economics, management, and policy in Asia, Africa, and Latin America.

Appointed as Adjunct Professor, Chinese Academy of Sciences, Beijing University and Center for Agricultural Policy.

Harold Burkhart

Served as Deputy Leader of IUFRO S4.11 Statistical Methods, Mathematics and Computers.

Thomas Fox

Attended 10th North American Forest Soils Conference in Sault Ste. Marie, Canada; co-authored keynote address on forest soils education and research trends and needs.

Traveled to Perth, Australia, to attend and present papers at the 2nd International Symposium on Phosphorus Dynamics in the Soil-Plant Continuum and the 3rd International Symposium on Dynamics of Physiological Processes in Woody Plants.

Traveled to Cali, Colombia, to evaluate silvicultural practices and land classification/soil mapping program of Smurfit Carton de Columbia; also provided technical assistance and recommendations for changes needed to improve productivity and efficiency of forest management operations.

James Johnson

Traveled to the Dominican Republic to meet with USAID staff to gather information for the preparation of an international development project proposal.

Traveled to Austria to deliver a presentation at a conference on Decision Support for Multiple Purpose Forestry.

Traveled to Latvia to present two papers at a conference on forestry communication for the Nordic and Baltic countries. The trip was sponsored by the conference organizer, the Danish Forest and Landscape Research Institute.

Brian Kane

Collaborated with colleague from the University of Melbourne, Australia, to measure the dynamic loading of shade trees under wind forces.

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

Presented a paper at the IUFRO conference on History and Forest Biodiversity in Leuven, Belgium.

Stephen Prisley

Participated in a working meeting of international authors of a special report of the Intergovernmental Panel on Climate Change (IPCC) in Sydney, Australia.

Robert Shaffer

Participated in a ten-day Forest Resources Association group field tour of forestry operations in southern Brazil. The 18-member group observed a range of timber harvesting and forest management operations in the southern Brazilian states of Parana, São Paulo, Santa Catarina, and Espirito Santo, conducted by Brazilian forest industry firms Rigesa, Klabin, BrasPine, Duratex, and Aracruz.

Rien Visser

Presented a guest lecture at the Technical University of Munich, Germany.
Participated in the 1st European Council on Forest Engineers Meeting in Stift Schlagl, Austria.
Hosted a Chilean master's student for three months.

James Willis

Made a presentation on Appalachian woods to a group of international wood buyers from Poland, Mexico, and Vietnam.

Randolph Wynne

Continued work as a co-investigator for a NASA-funded project entitled "Carbon from Communities: A Satellite View;" other cooperators are from the Virginia Tech Office of International Research, Education, & Development, the University of Georgia, and the University of Hawaii.
Continued to serve as co-investigator with faculty in the Virginia Tech Department of Urban Affairs and Planning and at Michigan State University on an NSF-funded project, "Patterns and Processes of Landscape Change in the Brazilian Amazon."
Traveled to Umeä, Sweden, to attend and present a paper at ScandLaser 2003.
Attended and presented a paper at Africa GIS 2003 in Dakar, Senegal.

Shepard Zedaker

Continued to serve as coordinator for undergraduate student and faculty 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).

2003 PUBLICATIONS

Refereed Journal Articles

Amacher, G. S., M. C. Conway and J. Sullivan. 2003. Econometric analysis of nonindustrial forest landowners: Is there anything left to study? Jour. For. Econ. 9:137-164.

Amateis, R. L., M. Sharma and H. E. Burkhart. 2003. Scaling growth relationships from seedling plots using similarity analysis. For. Sci. 49:188-195.

Amateis, R. L., M. Sharma and H. E. Burkhart. 2003. Using miniature scale plantations as experimental tools for assessing sustainability issues. Can. Jour. For. Res. 33:450-454.

Aust, W. M., R. Visser, T. V. Gallagher, T. Roberts and M. Poirot. 2003. Cost of six different stream crossing options in the Appalachian area. S. Jour. Appl. For. 27:66-70.

Azola, A., W. M. Aust and J. E. Johnson. 2003. Management effects on erosion of Civil War military earthworks. Jour. Soil and Water Conserv. 58:13-20.

Bortolot, Z. J. and R. H. Wynne. 2003. A means of spectroscopically determining the nitrogen content of green tree leaves measured at the canopy level that requires no *in situ* nitrogen data. Intl. Jour. Remote Sensing 24:619-624.

Bullock, B. P. and H. E. Burkhart. 2003. Equations for predicting green weight of loblolly pine trees in the South. S. Jour. Appl. For. 27:153-159.

Burch, P. L. and S. M. Zedaker. 2003. Removing the invasive tree *Ailanthus altissima* and restoring natural cover. Jour. Arbor. 29:18-24

Conway, C., G. Amacher, J. Sullivan and D. Wear. 2003. Decisions nonindustrial forest landowners make: An empirical investigation. Jour. For. Econ. 9:1-21.

Copenheaver, C. A. and M. D. Abrams. 2003. Dendroecology in young stands: Case studies from jack pine in northern lower Michigan. Forest Ecol. & Mgmt. 182:247-257.

Esen, D., S. M. Zedaker, J. R. Seiler and P. P. Mou. 2003. Growth responses of six seed sources of *Pinus brutia* Ten. (Turkish red pine) to herbaceous weed competition. New Forests 25:1-10.

Giese, L. A. B., W. M. Aust, R. K. Kolka and C. C. Trettin. 2003. Biomass and carbon pools of disturbed riparian forests. For. Ecol. & Mgmt. 180:493-508.

Hull, R. B., D. Richert, E. Seekamp, D. P. Robertson and G. J. Buhyoff. 2003. Understandings of environmental quality: Ambiguities and values held by environmental professionals. Env. Mgmt. 31:1-13.

Hull, R. B., D. P. Robertson and G. J. Buhyoff. 2003. Beyond the interventionist-preservationist duality. Conserv. Ecol. 7:r4. [online] URL: http://www.consecol.org/vol7/iss1/resp4

Jenkins, D. H. and D. L. Goerlich. 2003. Local land use planning: How to make a difference. In: Focus on Community Development. Jour. Forestry 101:5-6.

Johnson, J. E. and O. J. Delgado. 2003. Farmer perspectives on agroforestry opportunities and constraints in Cape Verde. Small-Scale Forest Econ., Mgmt., & Policy 2:343-355.

Johnson, J. E., D. O. Mitchem and R. E. Kreh. 2003. Establishing royal paulownia on the Virginia Piedmont. New Forests 25:11-23.

Kane, B. C. P. and H. D. P. Ryan. 2003. Comparing formulas that examine strength loss due to decay in trees: Wound wood toughness improvement in red maple (*Acer rubrum*). Jour. Arbor. 29:208-215.

MacFarlane, D. W., E. J. Green, A. Brunner and R. L. Amateis. 2003. Modeling loblolly pine canopy dynamics for a light capture model. For. Ecol. & Mgmt. 173:145-168.

Mortimer, M. J., H. H. Haney, Jr. and J. J. Spink. 2003. When worlds collide: Science and policy at odds in the regulation of Virginia's private forests. Jour. Nat. Res. & Environ. Law 17:1-26.

Oderwald, R. G. 2003. Augmenting inventories with basal area points to achieve desired precision. Can. Jour. For. Res. 33:1208-1210.

Oderwald, R. G. and B. A. Boucher. 2003. GPS after selective availability: How accurate is accurate enough? Jour. For. 101:24-27.

Oderwald, R. G. and S. Popescu. 2003. A simplified method of predicting percent volume in log portions. S. Jour. Appl. For. 27:149-152.

Popescu, S. C., R. H. Wynne and R. F. Nelson. 2003. Measuring individual tree crown diameter with lidar and assessing its influence on estimating forest volume and biomass. Can. Jour. Remote Sensing 29:564-577.

Radtke, P. J., J. A. Westfall and H. E. Burkhart. 2003. Conditioning a distance-dependent competition index to indicate the onset of inter-tree competition. For. Ecol. & Mgmt. 175:17-30.

Robertson, D. P. and R. B. Hull. 2003. Biocultural ecology: Exploring the social construction of the Southern Appalachian ecosystem. Natural Areas Jour. 23:180-189.

Robertson, D. P. and R. B. Hull. 2003. Public ecology: An environmental science and policy for global society. Environ. Sci. & Policy 6:399-410.

Sharma, M., R. L. Amateis and H. E. Burkhart. 2003. Forest stand dynamics and similarity theory. Ecol. Mod. 167:165-180.

Sharma, M. and H. E. Burkhart. 2003. Selecting a level of conditioning for the segmented polynomial taper equation. For. Sci. 49:324-330.

Visser, R. and K. Stampfer. 2003. Tree-length system evaluation of second thinning in a loblolly pine plantation. S. Jour. Appl. For. 27:77-82.

Visser, R. J. M., B. Troppmann and E. Pertlik. 2003. Forces in wire rope slings used to prevent log loss on steep slopes. Am. Soc. Ag. Eng. 19:85-88.

Westfall, J. A. and R. L. Amateis. 2003. A model to account for potential correlations between growth of loblolly pine and changing ambient carbon dioxide concentrations. S. Jour. Appl. For. 27:279-284.

Xu, J., W. Hyde and G. Amacher. 2003. China's paper industry: Growth and environmental policy during economic reform. Jour. Econ. Develop. 28:49-79.

Other Publications

Amacher, G., L. Ersado and W. Hyde. 2003. Economic and policy effects of microdams and watershed afforestation on agriculture and the prevalence of disease in Tigray, Ethiopia. Final report submitted to World Health Organization, Geneva, Switzerland. 250 pp.

Amacher, G., E. Koskela and M. Ollikainen. 2003. Environmental quality competition. The Research Institute of the Finnish Economy, Helsinki, Finland. Discussion Paper #848, March, 2003. 43 pp.

Amacher, G., E. Koskela and M. Ollikainen. 2003. Quality competition and social welfare in markets with partial coverage: New results. The Research Institute of the Finnish Economy, Helsinki, Finland. Discussion Paper #851, April, 2003. 37 pp.

Amacher, G., A. Malik and R. Haight. 2003. Burning questions: Uncertainty and the value of information in forest fire management. Final report submitted to USDA Forest Service North Central Research Station, St. Paul, MN. 149 pp.

Amacher, G. S. and J. Sullivan, editors. 2003. Proc. 2002 Southern Forest Economics Workshop; Mar. 17-19, 2002; Virginia Beach, VA. 326 pp.

Amateis, R. L. 2003. Quantitative tools and strategies for modeling forest systems at different scales. In: Amaro, A., D. Reed and P. Soares, eds. Modelling Forest Systems, CAB International. pp. 87-95.

Amateis, R. L., P. J. Radtke and G. D. Hansen. 2003. The effect of spacing rectangularity on stem quality in loblolly pine plantations. Virginia Tech Loblolly Pine Growth and Yield Research Cooperative Report No. 133. Department of Forestry, Virginia Polytechnic Institute and State University, Blacksburg, VA. 12 pp.

Baker, S. A., editor. 2003. Virginia Forest Landowner Update. Department of Forestry, Virginia Polytechnic Institute and State University, Blacksburg, VA. Fall 2003 17(2). 6 pp.

Bishop, I. D., R. B. Hull IV and C. Stock. 2003. Envisioning systems: Software with a world view. In: Proc. 5th Intl. Symp. on Environ. Software Systems, Intl. Federation for Info. Processing; May 27-30, 2003; Semmering, Austria. pp. 328-339.

Bortolot, Z. J. and R. H. Wynne. 2003. An adaptive technique for automatically digitizing tree crowns in high resolution aerial images. In: Tech. Papers, 69th Annual Meeting Amer. Soc. for Photogrammetry and Remote Sensing; May 5-9, 2003; Anchorage, AK. 12 pp. (CD)

Burger, J. A., W. E. Auch, R. G. Oderwald and M. Eisenbies. 2003. White pine growth and yield on a mined site in Virginia: Response to thinning and pruning. In: R. I. Barnhisel, ed. Working Together for Innovative Reclamation. Proc. 20th Natl. Conf. Amer. Soc. Mining and Reclam.; June 3-6, 2003; Billings, MT. pp. 226-240.

Burger, J. A. and J. A. Rodrigue. 2003. Carbon inventory of reforested mined lands in the eastern United States: Preliminary results. In: Proc. DOE/NETL 2nd Annual Carbon Sequestration Conference; May 5-8, 2003; Washington, DC. 11 pp. (CD)

Burkhart, H. E. 2003. Assessing the sustainability of plantation management. Forest Landowner 62(2):18-21.

Burkhart, H. E. 2003. Suggestions for choosing an appropriate level for modeling forest stands. In: Amaro, A., D. Reed and P. Soares, eds. Modelling Forest Systems, CAB International. pp. 3-10.

Burkhart, H. E. and R. L. Amateis. 2003. Annual report of Virginia Tech Loblolly Pine Growth and Yield Research Cooperative. Virginia Tech Loblolly Pine Growth and Yield Research Cooperative

Report. No. 135. Department of Forestry, Virginia Polytechnic Institute and State University, Blacksburg, VA. 10 pp.

Burkhart, H. E., R. L. Amateis, J. A. Westfall and R. F. Daniels. 2003. PTAEDA3: Simulation of individual tree growth, stand development and economic evaluation in loblolly pine plantations. Virginia Tech Loblolly Pine Growth and Yield Research Cooperative Report No. 134. Department of Forestry, Virginia Polytechnic Institute and State University, Blacksburg, VA. 23 pp.

Copenheaver, C. A. and L. D. Leslie. 2003. Travels on the Appalachian Trail. Women in Natural Resources 24:13-16.

Downing, A. K. 2003. The fragmented forest. In: Jenkins, D. H., ed. Virginia Forest Landowner Update. Department of Forestry, Virginia Polytechnic Institute and State University, Blacksburg, VA. Winter 2002-03 17(1):3.

Fox, T. R. 2003. Factors affecting the success of a forestry business enterprise. In: Market-Based Approaches to Mined Land Reclamation and Reforestation: A Technical Interactive Forum; May 15-16, 2002; Fort Mitchell, KY. pp. 71-77.

Goerlich, D. L. 2003. Chairman's chance: About sticks. The Traveller 18(2):1.

Goerlich, D. L. 2003. Chairman's chance: The issue of relevance. The Traveller 18(1):1-2.

Goerlich, D. L. 2003. Chairman's chance: Leadership by example. The Traveller 18(3)1-2.

Goerlich, D. L. 2003. Just watchin' 'em grow: Meet Johnny and Sharon Angell. Forest Landowner 62(1):32-34.

Goerlich, D. L. and J. Parkhurst. 2003. Combining pine timber and wildlife management objectives. Forest Landowner 62(4):42-44.

Hood, S., S. M. Zedaker, W. M. Aust and D. Wm. Smith. 2003. Erosion estimates on Appalachian harvest sites. Forest Resources Assoc. Tech. Rel. No. 03-R-35. Forest Operations Review 5(3):31-32.

Hubbard, B., G. Glover, J. Johnson, D. Jenkins, W. Ross, G. Kessler and H. G. Hughes. 2003. Forest landowner education programs. Forest Landowner 62(2):10-15.

Jenkins, D. H., editor. Virginia Forest Landowner Update. Department of Forestry, Virginia Polytechnic Institute and State University, Blacksburg, VA. Winter 2002-03 17(1). 6 pp.

Jenkins, D. H. and J. E. Johnson. 2003. Woodland options internet-based course for landowners – A distance education model for decision making on private forests. In: Vacik, H., M. J. Lexer, M. H. Rauscher, K. M. Reynolds and R. T. Brooks, eds. Proc. Decision Support for Multiple Purpose Forestry Intl. Conf., Univ. of Nat. Res. & Appl. Life Sciences; April 23-25, 2003; Vienna, Austria. 5 pp. (CD)

Johnson, J. E. 2003. Best practices in forestry extension – A state perspective. In: Proc. 6th IUFRO Exten. Working Party Symp. – Building Capacity through Extension Best Practices; Sept. 28-Oct. 3, 2003; Troutdale, OR. 9 pp. (CD)

Johnson, J. E. 2003. Coordinating international extension efforts in forestry: The IUFRO Extension Working Party. In: Nielsen, E. J., ed. Proc. Bridging the Gap between Forestry Research and Practice – The Role of the Communicator; June 1-4, 2003; Sigulda, Latvia. pp. 16-18.

Johnson, J. E. 2003. Research-based information in the U.S. – Spreading the word for forest owners. In: Nielsen, E. J., ed. Proc. Bridging the Gap between Forestry Research and Practice – The Role of the Communicator; June 1-4, 2003; Sigulda, Latvia. pp. 7-9.

Johnson, W. F., D. L. Goerlich and H. L. Haney, Jr. 2003. Reforestation in the absence of cost-share: Does it pay? Forest Landowner 62(5):5-9.

Johnson, W. F., D. L. Goerlich and H. L. Haney, Jr. 2003. Reforestation in the absence of cost-share: Does it pay? In: Jenkins, D. H., ed. Virginia Forest Landowner Update. Department of Forestry, Virginia Polytechnic Institute and State University, Blacksburg, VA. Winter 2002-03 17(1):5.

Kane, B. C. P. and H. D. P. Ryan. 2003. How well do we assess tree risk due to decay? Arborist News 12(2):49-52.

Marion, J. L. 2003. Camping impact management on the Appalachian National Scenic Trail. Report published by the Appalachian Trail Conference, Harpers Ferry, WV. 109 pp.

Merry, F. D., G. Amacher, B. Pokorny, E. Lima, E. Scholz and D. Nepstad. 2003. Some doubts about forest concessions in the Brazilian Amazon. Tropical Forest Update 13(3):7-9.

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Mortimer, M. J. and J. W. Garner. 2003. Yes, Virginia, there is a “Forest Practices Act.” In: Jenkins, D. H., ed. Virginia Forest Landowner Update. Department of Forestry, Virginia Polytechnic Institute and State University, Blacksburg, VA. Winter 2002-03 17(1):1.

Mortimer, M. J. and D. H. Jenkins. 2003. Forests at the fringe: Sustaining private forests by avoiding perverse incentives. Jour. Multistate Taxation and Incentives 12(10):28-37.

Mortimer, M. J. and D. H. Jenkins. 2003. Perverse policy incentives: Challenges for local governments and Virginia’s forests. Virginia Issues and Answers 10(1):26-31.

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Scardina, A. and M. J. Mortimer. 2003. Public involvement in national forest decision making: Building trust or trouble? PA (Public Administration) Times 26(7):6.

Shaffer, R. M. 2003. Logging injuries continue downward trend. Forest Operations Review 5(2):41-42.

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Shaffer, R. M. and T. A. Walbridge. 2003. Timber harvesting. In: Young, R. A. and R. L. Giese, eds. Forest Ecosystem Science and Management, 3rd Edition. John Wiley & Sons, Hoboken, NJ. pp. 412-420.

van Aardt, J. A. N. and R. H. Wynne. 2003. Extending inherent pine spectral separability to operational data: A case study in the Virginia Piedmont. In: Proc. Intl. Symp. on Spectral Sensing Research; June 2-6, 2003; Santa Barbara, CA. 11 pp. (CD)

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