

Annual Report for 1998

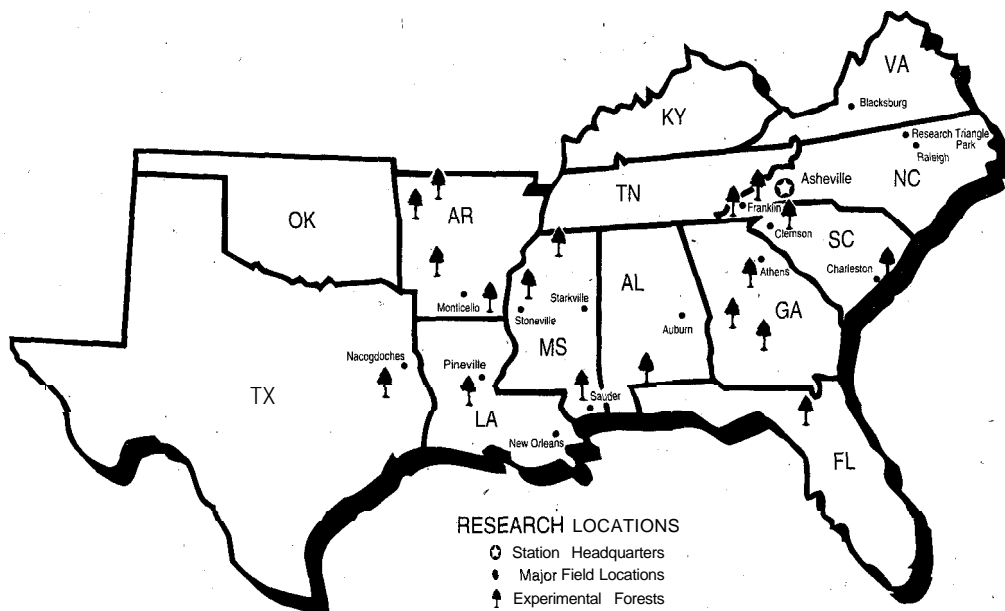
Southern Research Station



United States
Department of
Agriculture

Forest Service





Our mission is to create the science and technology needed to sustain and enhance southern forest ecosystems and the benefits they provide.



USDA Forest Service
 Southern Research Station
 200 Weaver Boulevard
 P.O. Box 2680
 Asheville, NC 28802

August 1999

The Director's View



Report for the Southern Research Station for FY '98

I am pleased to provide you with the Report for the Southern Research Station for Fiscal Year (FY) '98, which highlights the time period from September, 1997 to October, 1998. It will provide you with an overview of the work that we do, and examples of our accomplishments. Included is a list of our publications

for the year; it includes abstracts, journal articles, technical reports, and books. The main "product" we offer is information-increased knowledge about the forested environments of the South. Much of our research takes place over the course of several years, so many studies are underway that are not discussed.

We have continued to progress with our Strategic Planning. The Strategic Framework' for the Southern Research, Station has set the stage for us to restructure our research program so that it is well aligned with the Forest Service Natural Resource Agenda's, goal to achieve resource sustainability. I am excited about the direction this effort will be taking us in the future, as it allows us to be flexible in response to the needs of our customers. Cross-cutting theme enhancements to address national priorities are expected to include the following topics in the near future: expanded productivity on non-industrial private lands; the urban/wildland interface; recreation, wilder-

ness, and social dynamics; nonnative invasive species; carbon sequestration; water quality effects of forest operations; pine productivity; monitoring; soil and water resource health; threatened and endangered species of plants and animals; and environmental and social implications of population growth.

In our internal administration, we succeeded in improving our financial management operations in accordance with national goals. Our Customer Service and Civil Rights programs are flourishing, with our workforce maintaining the vitality to provide and support exemplary research and development.

As part of the world's largest forestry research organization, we are committed to meeting the needs of America's people in applying research findings to land and resource management.

Our Web site — www.srs.fs.fed.us — is a great place to start if you want to find out more about the work we do. You may also contact us in person, by mail, or phone at our headquarters office:

USDA Forest Service
Southern Research Station
PO Box 2680
200 WT Weaver Blvd.
Asheville, NC 28802
8 2 8 - 2 5 7 - 4 8 3 2

PETER J. ROUSSOPOULOS
Director

FY 98-Accomplishment Summary

WORK UNITS	25
PUBLICATIONS	714
PEST-IMAGE SOFTWARE (CD-ROMS)	2
PATENTS	1
WEB SITES	13
PUBLICATION REQUESTS FILLED	
Hard Copy	> 70,000
ONLINE/ELECTRONIC . . .	25,000
SITE TOURS	11
INVITED PRESENTATIONS	297
CONSERVATION EDUCATION INTERN	
PROGRAM CONTACTS	2,400
TOTAL EMPLOYEES	492
SCIENTISTS	144
BUDGET	
(RESEARCH FUNDS ONLY). \$36,451,000	
AWARDS TO STATES, UNIVERSITIES AND	
OTHER FEDERAL AGENCIES	
(ALL FUNDS)	\$7,756,192
EXTERNAL FUNDING RECEIVED FROM	
NONFEDERAL SOURCES AND OTHER	
FEDERAL AGENCIES	\$1.666~452
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The Southern Appalachians
The Interior Highlands
Large Scale Assessment and Modeling
Inventory and Monitoring



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Restoring Ecosystems...
Providing Options for Wise Use and Management...
Understanding Environmental and Biological Threats...
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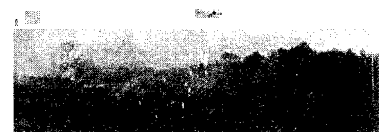
<i>Auburn, Alabama</i>	<i>Asheville, North Carolina</i>
<i>Monticello, Arkansas</i>	<i>Otto, North Carolina</i>
<i>Athens, Georgia</i>	<i>Raleigh, North Carolina</i>
<i>New Orleans, Louisiana</i>	<i>Research Triangle Park, North Carolina</i>
<i>Pineville, Louisiana</i>	<i>Charleston, South Carolina</i>
<i>Saucier, Mississippi</i>	<i>Clemson, South Carolina</i>
<i>Mississippi State, Mississippi</i>	<i>Nacogdoches, Texas</i>
<i>Stoneville, Mississippi</i>	<i>Blacksburg, Virginia</i>



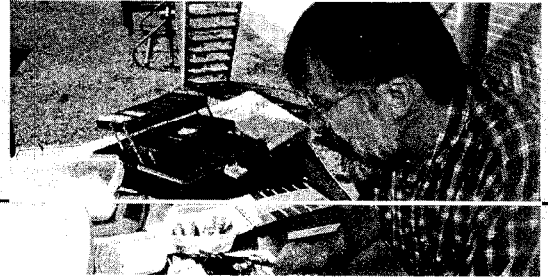
Our Most Important Product: Knowledge

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Southern Pines
Wetlands, Bottomland Hardwoods, and Streams
The Southern Appalachians
The Interior Highlands
Large Scale Assessment and Modeling
Inventory and Monitoring
Foundation Programs



The Basics: Your Tax Dollars at Work



Snapshot of the Southern Research Station in 1998

Allocations to Resource Categories

Allocations to Research Work Units

Collaboration: The Key to Leveraging Appropriated Funds

Jumpstarting Collaborative Research Efforts

Changing the Way We Work: Breaking Boundaries, Building Cooperation

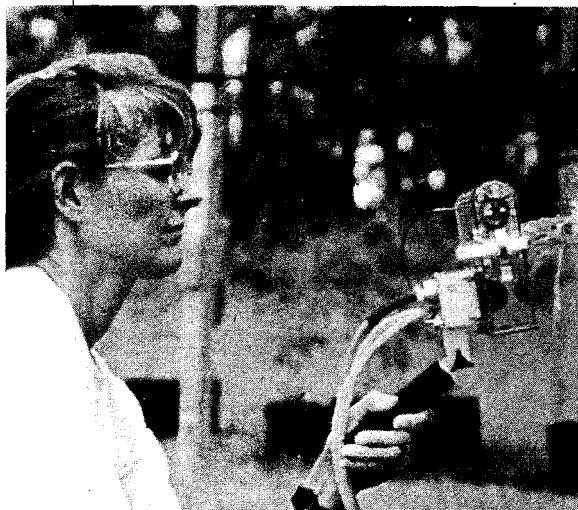
Individual and Team Recognition

The Basics: Your Tax Dollars at Work

Snapshot of the Southern Research Station in 1998

Our mission is to create the science and technology needed to sustain and enhance southern forest ecosystems and the benefits they provide.

The Southern Research Station is part of the Nation's largest forestry research organization-USDA Forest Service Research and Development.



Since the beginning of the 20th Century, the Southern Research Station's researchers have excelled in studies on temperate and tropical forests, forest resources, and forest products. These studies provide a wealth of long-term data sets and conclusions on the dynamics of tree plantations and natural stands, watershed management, and wildlife habitats.

Working at laboratories, experimental forests, and university campuses throughout the South, our scientists produce research results that are useful to producers and consumers

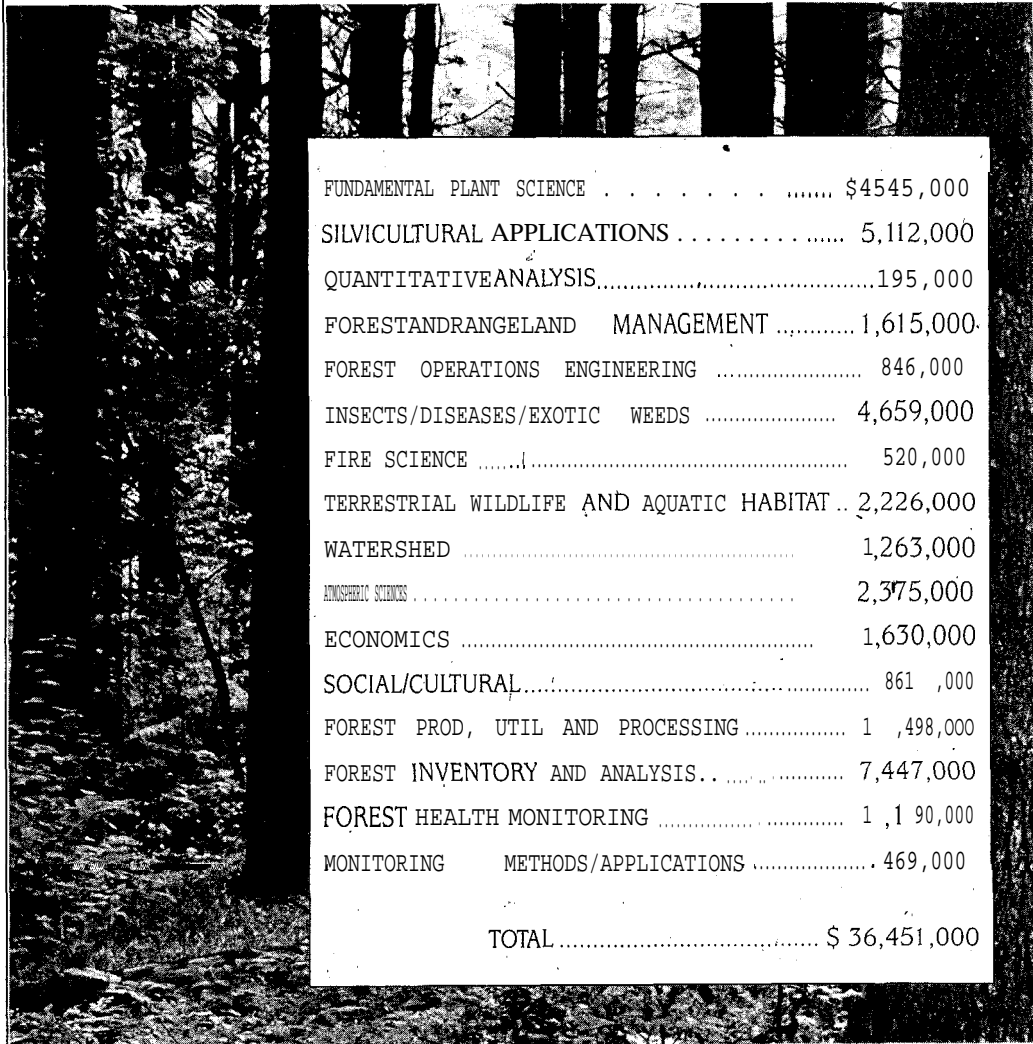
of forest products and services: commodity and industry associations, conservation groups, landowners, educators, professional societies, legislative bodies, and managers of local, State and Federal agencies. Our scientific workforce is divided up into Research Work Units that are stationed at 17 locations throughout the South; we are responsible for research and inventory and monitoring for 13 southern States. Our research findings reach far beyond benefits to the citizens of the South; they have valuable applications throughout the country and internationally as well.

Our strategic planning effort, The Strategic Framework for the Southern Research Station, continues to be integrated into our work and budget planning, as well as being adapted to support the Forest Service Natural Resource Agenda. The Natural Resource Agenda focuses on four key areas that need to be addressed on a national basis: watershed health and restoration; recreation; forest roads; and sustainable forest ecosystem management.

This Report about the Southern Research Station presents examples of recent accomplishments from our Research Work Units and gives an update on several of our programs.

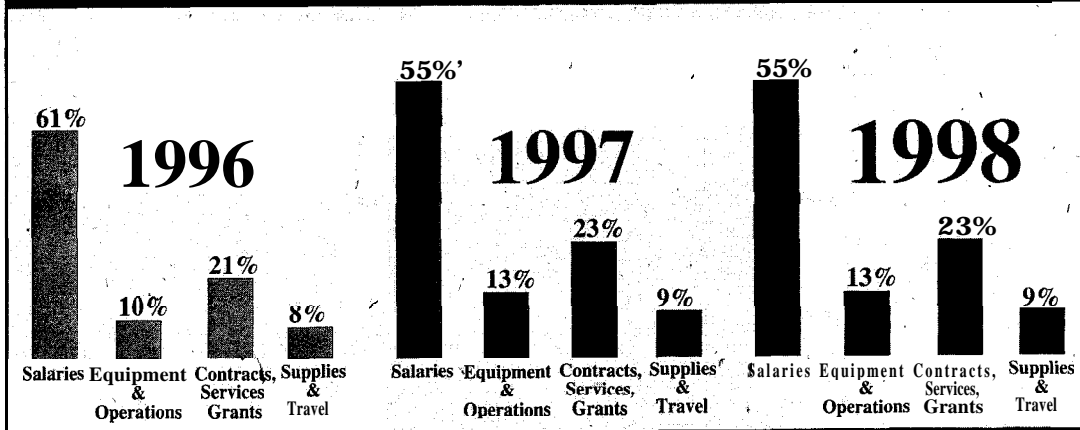
The Basics: Your Tax Dollars at Work

Allocations to Resource Categories



FUNDAMENTAL PLANT SCIENCE	\$4545,000
SILVICULTURAL APPLICATIONS	5,112,000
QUANTITATIVE ANALYSIS	195,000
FOREST AND RANGELAND MANAGEMENT	1,615,000
FOREST OPERATIONS ENGINEERING	846,000
INSECTS/DISEASES/EXOTIC WEEDS	4,659,000
FIRE SCIENCE	520,000
TERRESTRIAL WILDLIFE AND AQUATIC HABITAT	2,226,000
WATERSHED	1,263,000
ETHNOHISTORIC STUDIES	2,375,000
ECONOMICS	1,630,000
SOCIAL/CULTURAL	861,000
FOREST PROD, UTIL AND PROCESSING	1,498,000
FOREST INVENTORY AND ANALYSIS	7,447,000
FOREST HEALTH MONITORING	1,190,000
MONITORING METHODS/APPLICATIONS	469,000
TOTAL	\$ 36,451,000

Three-Year Budget Comparison



The Basics: Your Tax Dollars at Work ,

Allocations to Research Work Units

4101	Southern Appalachian Hardwoods Asheville, North Carolina	\$ 1,255,000
4103	Center for Forested Wetlands Charleston, South Carolina	1,115,000
4104	Disturbance and the Management of Southern Pine Ecosystems Athens, Georgia	1,698,000
4105	Vegetation Management and Longleaf Pine Auburn, Alabama	977,000
4106	Upland Forest Ecosystems Hot Springs, Arkansas	219,000
4111	Ecological Management of Southern Pines Pineville, Louisiana	1,432,000
4153	Southern Institute of Forest Genetics Saucier, Mississippi	1,754,000
4154	Biological Foundations of Sustainability Research Triangle Park, North Carolina and Athens, GA	1,878,000
4155	Bottomland Hardwoods and Wetlands Stoneville, Mississippi	3,231,000
4201	Threatened and Endangered Species Clemson, South Carolina	779,000
4202	Coldwater Streams and Trout Habitat Blacksburg, Virginia	483,000
4251	Wildlife Habitat and Timber Resources Nacogdoches, Texas	783,000
4351	Watershed Responses to Disturbance Franklin, North Carolina	967,000
4501	Southern Pine Beetle Pineville, Louisiana	918,000
4502	Wood Products Insect Research Starkville, Mississippi	792,000
4505	Insects and Diseases of Southern Forests Athens, Georgia	1,703,000
4701	Southern Forest Resource Utilization Pineville, Louisiana	1,100,000
4702	Integrated Life Cycle of Wood Blacksburg, Virginia	398,000
4703	Biological/Engineering Technologies Auburn, Alabama	1,096,000
4801	Forest Inventory and Analysis Asheville, North Carolina and Starkville, Mississippi	7,447,000
4802	Legal, Tax, and Economic Influences New Orleans, Louisiana	930,000
4803	Forest Health Monitoring Research-Triangle Park, North Carolina	1,190,000
4851	Economics of Forest Resources Research Triangle Park, North Carolina	930,000
4852	Southern Global Change Program Raleigh, North Carolina	1,441,000
4901	Trends in Recreation and Wilderness Athens, Georgia	631,000
TOTAL		\$36,451,000

The Basics: Your Tax Dollars at Work

Collaboration: The Key to Leveraging Appropriated Funds



Collaborative research with universities, private corporations, and other Federal and State agencies is a cornerstone of the Southern Research Station program: These programs involve the funding of extramural studies under cooperative agreements, grants, and interagency agreements. Working with these partners is an effective way to leverage our funding to conduct research efforts that result in benefits to a wide range of research results users.'

A total of \$7,756,192 was involved in supporting research studies under these agreements in Fiscal Year '98, with the following:

<i>Alabama A&M</i>	<i>University of Minnesota</i>
<i>Alabama Forestry Commission</i>	<i>Mississippi State University</i>
<i>Arkansas Nature Conservancy</i>	<i>University of Missouri</i>
<i>Arkansas Natural Heritage Commission</i>	<i>University of Nevada</i>
<i>University of Arkansas</i>	<i>University of New Hampshire</i>
<i>Arkansas Tech University</i>	<i>North Carolina Department of Environ-</i>
<i>Auburn University</i>	<i>ment, Health, and Natural Resources</i>
<i>Botanical Garden Foundation</i>	<i>North Carolina Central University</i>
<i>University of California: Berkeley and</i>	<i>North Carolina Agricultural Research</i>
<i>Davis</i>	<i>Service</i>
<i>University of Charleston</i>	<i>North Carolina State University</i>
<i>Clemson University</i>	<i>University of North Carolina -Asheville</i>
<i>Dartmouth College</i>	<i>University of North Carolina -Pembroke</i>
<i>Department of Defense — Navy</i>	<i>Oak Ridge National Laboratory</i>
<i>Duke University</i>	<i>Oklahoma State University</i>
<i>Eastern Sierra Institute for Collabora-</i>	<i>University of Oklahoma</i>
<i>tive Education</i>	<i>Pacific Lutheran University</i>
<i>Florida A&M University</i>	<i>Purdue University</i>
<i>University of Florida</i>	<i>Rutgers University</i>
<i>Freshwater Institute</i>	<i>University of Sheffield</i>
<i>Georgia Forestry Commission</i>	<i>South Carolina Forestry Commission</i>
<i>General Services Administration</i>	<i>Stephen F. Austin State University</i>
<i>UGA Research Foundation, Inc.</i>	<i>Tennessee Department of Agriculture</i>
<i>University of Greenwich</i>	<i>University of Tennessee</i>
<i>International Centre for Research in</i>	<i>Texas Agricultural Experiment Station</i>
<i>Agroforestry</i>	<i>Texas A&M Research Foundation</i>
<i>Louisiana Agricultural Experiment</i>	<i>Texas Forest Service</i>
<i>Station</i>	<i>Tuskegee University</i>
<i>Louisiana State University</i>	<i>Université Victor Segalen Bordeaux II</i>
<i>Louisiana Tech University</i>	<i>Western Carolina University</i>
<i>Louisiana Department of Agriculture,</i>	<i>USCS Biological Resources Division</i>
<i>and Forestry</i>	<i>USDA Agricultural Research Service</i>
<i>University of Massachusetts</i>	<i>USDI Geological Survey</i>
<i>Michigan Technological University</i>	<i>University of Wisconsin</i>

Caring for the Land and Serving People

The Basics: Your Tax Dollars at Work

Jumpstarting Collaborative Research Efforts

The Challenge Cost Share program for Research and Development leverages Federal forestry research funding dollars with matching resources from non-federal sources, to accomplish research objectives. The criteria used by the Southern Research Station's Leadership Team to evaluate and select the proposals to fund included:

- ‡ Support of the Strategic Framework and Cross-Cutting Themes
- ‡ Initiation of collaborative research with new partners
- ‡ Initiation of new research with existing partners
- ‡ Research that contributes to a balanced program aimed at meeting the demand of our multiple partners
- ‡ Potential to complete research within a one-year time frame

In Fiscal Year '98, thirteen proposals were funded:

- ‡ Productivity processes: understanding the impact of competition control and fertilization on nutrient and carbon dynamics for maintaining soil productivity (\$10,000, SRS-4154; \$10,000 International Paper Company).
- ‡ Intensive culture of short-rotation woody crops: pilot study (\$6,000, SRS-4155; \$6,000, Southern Hardwood Forest Research Group).
- ‡ Nitrogen cycling in buffer zones adjoining short rotation hardwood plantations (\$12,000, SRS-4103; \$12,000, Westvaco Corporation).
- ‡ Monitoring productivity and environmental quality in southern pine plantations: Phase IV-additional measurements of soil, and tree growth (\$22,500, SRS-4111; \$15,000, Temple-Inland Forest Products Corporation; \$10,000 International Paper; \$2,500 Willamette Industries).
- ‡ Performance evaluation of the Certified Pallet Repair (CPR) wood pallet to extend our timber resources (\$10,000, SRS-4702; \$10,000 National Wooden Pallet and Container Association).
- ‡ Development of a soil carbon model for forested wetlands (\$7,500, SRS-4103; \$7,500, NCASI).
- ‡ Diurnal and seasonal effects of light, and soil moisture availability on physiology of Nuttall oak seedlings established beneath an eastern cottonwood nurse crop (\$16,500, SRS-4155; \$17,400, NCASI).
- ‡ Effects of long-term increased water and nutrient supply on drought response, water relations and water balance of loblolly pine (\$8,500, SRS-4154; \$8,500, Westvaco Corporation).
- ‡ Economic analysis of managed forested landscapes incorporating both timber production and wildlife habitat quality: a component to LEEMATH (\$15,000, SRS-4103; \$15,000, NCASI).
- ‡ A sawing trainer for primary hardwood processing (\$30,000, SRS-4702; \$30,000, National Hardwood Lumber Association).
- ‡ Dynamics of carbohydrates in mature loblolly pine tissue supporting developing upper-crown and terminal shoots (\$15,000, SRS-4154; \$15,000, Westvaco Corporation).
- ‡ Dendroecological history of old-growth bottomland hardwood forest in southern Arkansas (\$6,000, SRS-4155; \$6,000, Arkansas Natural Heritage Commission).
- ‡ Impacts of volunteer pine seedlings in plantations (\$8,010, SRS-4111; \$8,010, Willamette Industries).

Caring for the Land and Serving People

The Basics: Your Tax Dollars at W&k

Jumpstarting Collaborative Research Efforts

Many Research Work Units have agreements to receive external funding from other sources. The Fiscal Year '98 total for these dollars was \$285,021 from nonfederal sources. From other federal sources, the Southern Research Station received \$1,381,431 to support research and development projects designed to meet the missions of the agencies involved.

This external funding came in from the following:

Non-Federal:

Composite Panel Association
Fiber Research International
'Industrial Measurement Systems
Mecker Technologies
Omega International
QST Environmental
Rhone-Roulenc
Royston Lab
Temple-Inland
Texas Parks and Wildlife
Texas Water Development Board
Union Camp
University of Georgia Research
Foundation

Federal:

Department of Defense
Department of Energy
USDA CSREES
USDI Fish and Wildlife Service and
Bureau of Land Management;
Environmental Protection Agency
APHIS
FAS/ICD



The Basics: Your XIX Dollars at Work

Changing the Way We Work: Breaking Boundaries, Building Cooperation

We are reconfiguring administratively to better meet the needs of our constituents, internally and externally. We are moving forward with new technology, new accounting systems, continuing our emphasis on civil rights, and recruitment initiatives.

Sharing Resources: The Southern Research Station participates in the Combined Eastern Leadership Team (CELT) which consists of the Forest Products Laboratory in Madison, Wisconsin, North Central Forest Experiment Station, in St. Paul, Minnesota, Northeastern Area State and Private Forestry in Radnor, Pennsylvania, the International Institute of Tropical Forestry, in San Juan, Puerto Rico, the Southern Region, in Atlanta, Georgia, and the Eastern Region, in Milwaukee, Wisconsin.

The CELT is cooperating administratively to share positions and work in order to more effectively serve customers and to bring administrative savings to the respective units. Successes include shared health and safety programs which are providing expertise to all units in industrial hygiene, OSHA standards and requirements, improved safety inspections and investigations, better safety with hazardous materials, laboratory and chemical safety. The CELT is also sponsoring joint unit reviews, which are bringing more expertise to the review process and enhancing the transfer of technology, and procedures which streamline business administration processes and improve internal customer service:

Fiscal Resources: The Fiscal Resources staff provides budgeting, accounting, auditing, processing, and financial analysis to internal and external customers. In addition to providing these services, we reviewed all our functions and streamlined processes, and procedures which resulted in increased effectiveness and efficiency.

Information Resources: For the past 15 years, the Forest Service has used an internal computer platform that provided us with an integrated office suite of word processing, spreadsheets, and exceptional internal communications, but the system was very difficult to use for external communications. During the past year, we have converted to a client-server based, fully networked personal computer environment, which facilitates excellent external communications. This system gives us the capability to communicate with our customers and partners on the Internet and to provide useful scientific information to the public through the World Wide Web. We plan to continue to enhance this system and take advantage of the opportunities we have to improve communication with everyone who benefits from the work that we do.

Caring for the Land and Serving People

The Basics: Your Tax Dollars at Work:

Changing the Way We Work: Breaking Boundaries, Building Cooperation

Civil Rights: This year the Civil Rights Unit at the Station focused on implementing the recommendations of the Civil Rights Assessment Team. An Implementation Team named to recommend actions developed a "New Perspectives for Civil Rights" and a video and discussion guide for internal training. This new perspective stresses that "civil rights" is actually a "human rights" issue, and that it begins with each employee. The working definition of civil rights is, "the right of every employee in the workplace to be treated fairly, impartially, and with respect." The Southern Research Station perspective encourages employees to address differences and problems one to one as they occur. It also encourages employees to rethink civil rights and their own responsibility in it. The video produced discusses the use of the formal processes and tools already available to us and encourages the use of the Continuous Improvement Process survey and action planning sessions as a way to address issues. All of our locations are working to make this new approach a reality.

Our efforts, too, have been focused to encouraging all employee groups—the Station's Civil Rights Committee and the various employee resource groups—to work together more closely on common issues. As a result, the leaders of these groups meet and discuss the various pieces of the Station's Affirmative Em-

ployment and Recruitment Plan to decide what role each group will play in accomplishing the Station's proposed actions within the plan. We feel this is helping us to become more productive and holistic in our thinking.

Recruitment Initiatives: The Southern Research Station serves as the Lead Unit of two special recruitment initiatives at Historically Black Colleges and Universities: Alabama A&M University (AAMU) and Florida A&M University (FAMU). Five initiative students at AAMU graduated—all with honors, one with high honors. All five were converted into the USDA Forest Service to full-time, permanent, professional positions with promotion potential. Four FAMU students graduated and two are now permanent full-time employees, a third is scheduled to be converted, and one is continuing on for a Master's Degree. AAMU conferred 26 Bachelor of Science degrees to graduates with majors in Environmental/Plant/Soil Sciences and Forestry. Of those, 14 students received full, or partial financial support from the Forest Service. The Special Recruitment Initiative at AAMU, enabled 40 students to receive direct financial assistance in school year 97-98. There were 12 students in the program at FAMU. Both schools had student interns participating in the Conservation Education Outreach Program during the summer of 1998.



The Basics: Your Tax Dollars at Work

Individual and Team Recognition

USDA Secretary's Honor Awards:

The purpose of this awards program is to recognize outstanding contributions to agriculture; the consumers of agricultural products; and the ability of the Department of Agriculture (USDA) to serve rural America. The Honor Awards are the most prestigious awards presented by USDA. Employees at all grade levels and private citizens are eligible to receive these awards. Four Southern Research Station employees received Honor Awards from the US Department of Agriculture at a ceremony in Washington, DC on June 10, 1998:

Cindy Arnette received the Support Personnel award for her exceptional customer service attitude and her consistently high standards of personal performance.

James A. Richmond received the Public Service award for outstanding public service by fostering a multi-cultural Forest Service workforce and involving minorities in natural resources.

William D. Boyer received the Personal and Professional Excellence award for excellence of long-term research on the ecology and management of longleaf pine ecosystems.

Chung Y. Hse received an Environmental Protection award for innovative research into value-added recycling of preservation treated wood waste.

Chief's Honor Award:

The Chief of the Forest Service recognizes outstanding contributions that support the Department's Employee Recognition Program and reinvention of Government Initiatives, major improvements in service to the public, work force diversity, and Ecosystem Management initiatives.

James B. Baker received a Superior Scientist Chief's Honor Award for outstanding career-long contributions to southern pine and hardwood silviculture contributing to, better natural resource management in national forests, private nonindustrial forests, and industrial forests.

The Southern Research Station received the Chief's Customer Service Award in recognition of our outstanding customer service contributions and demonstration of the spirit and intent of the National Customer Service Plan-to create a "customer-driven" Forest Service.

External Awards:

Dennis **Lemly** received a commendation from the US Department of Interior in recognition of scientific contributions and assistance to the National Irrigation Water Quality Program.

Melvin L. Warren, Jr. and Wendell R. Haag received a Group Research Achievement award for contributing significantly to the Rise to the Future aquatic resources program.

James Granskog received the Forest Products Society's Fred W. Gottschalk Award in recognition of exceptional service to the Society, and a Recognition Award for outstanding leadership as regional board member of the Forest Products Society representing the South Central Region. Granskog received an award for distinguished service to forestry from the Louisiana Society of American Foresters.

The Stephen F. Austin Interpretive Trail, a collaborative effort between the Southern Research Station and the Arthur Temple College of Forestry at Stephen F. Austin State University, received two awards at the Texas Trails Symposium:

Merit in Innovative Trail Planning and Design (Ron Thill and Steve Kirkindall) and Achievement and Efforts in Advancing Trails (Steve Kirkindall).

John Stanturf, **Emile Gardiner**, **Paul Hamel**, **Callie Schweitzer**, **Chris Woodson**, **Keith Willis**, and **Dexter Bland** were among an interagency group which received the Taking Wing award for public awareness for wetlands and waterfowl work from Ducks Unlimited and Forest Service.

Caring for the Land and Serving People