



## NORTH CAROLINA

### FOREST SERVICE RESEARCH AND DEVELOPMENT

STATE FUNDING HISTORY	Enacted FY 2003 (\$)	Enacted FY 2004 (\$)	Pres. Budg. FY 2005 (\$)
<b>ASHEVILLE</b>			
SRS-4801 Subunit: Forest Inventory & Analysis	820,000	820,000	1,808,000
SRS-XXYY Agenda 20/20	(153,800)*	5,000	0
SRS-XXZZ WCU Biotechnology		988,000	0
<b>ASHEVILLE TOTAL</b>	<b>666,200</b>	<b>1,813,000</b>	<b>1,808,000</b>
<b>BENT CREEK</b>			
SRS-4101 Appalachian Ecology & Mgmt.	1,771,000	2,051,091	2,075,759
<b>FRANKLIN</b>			
SRS-4351 Watershed Response to Disturbance	1,486,000	1,916,651	1,949,651
<b>RALEIGH</b>			
SRS-4852 Southern Global Change	1,375,861	1,363,502	1,378,296
<b>RESEARCH TRIANGLE PARK</b>			
SRS-4154 Forest Sustainability	2,343,311	2,320,838	1,905,157
SRS-4803 Forest Health Monitoring	333,538	430,542	730,542
SRS-4851 Economics	970,009	1,061,295	1,076,385
<b>RTP TOTAL</b>	<b>3,646,858</b>	<b>3,812,675</b>	<b>3,712,084</b>
<b>NORTH CAROLINA TOTAL</b>	<b>8,945,919</b>	<b>10,956,919</b>	<b>10,923,790</b>

*\*Includes Agenda 20/20 \$244,400 and FY03 Rescission (\$398,200).*

**RESEARCH & DEVELOPMENT**, a division of the USDA Forest Service (FS R&D), strives to be the "go to" organization for information and solutions to sustain forests and rangelands and the values they provide people. FS R&D has the flexibility to address today's issues effectively and to respond to tomorrow's needs. Among the world's leaders in forest conservation research, scientists contribute to the stewardship of land, real property and society

by providing research results that help create jobs and affordable homes, and improve the health of trees, forests and forest ecosystems. Innovative research products permit the Forest Service and other public and private land managers to monitor and manage forest responses to environmental change, contributing significantly to the sustainability of the nation's forests and rangelands and improving human health.

FS R&D operates six research stations, the Forest Products Laboratory, and the International Institute of Tropical Forestry located in Puerto Rico. It employs over 500 scientists and hundreds of technical and support personnel at 67 field sites throughout the nation. The FY 2005 President's Budget includes \$280,654,000 for Forest and Rangeland Research.

The **Southern Research Station**, with headquarters in Asheville, NC, and 26 Research Work Units in eleven States, conducts forest research and development in laboratories, on university campuses, and at experimental forests in the 13 Southern States (i.e., FL, LA, OK, NC, KY, GA, SC, TN, MS, TX, AR, AL, and VA). In addition to the Station headquarters in Asheville, six Research Work Units and one sub-unit are located in North Carolina; the sub-unit is in Asheville, and the Research Work Units are in Bent Creek, Franklin, Raleigh, and three are in Research Triangle Park.

The FY 2005 President's Budget includes \$50,640,000 for the Southern Research Station, an increase of \$1,304,000 over the FY 2004 Final Appropriation.

#### **ASHEVILLE**

**Southern Research Station Headquarters.** The station headquarters, at Asheville, occupies 11 acres of land on the campus of the University of North Carolina - Asheville. The building houses the Station Director and staff, as well as employees who provide engineering and editorial services for field units; and personnel, procurement, computer, accounting and civil rights services for the Station and several national forests in North and South

Carolina, and Virginia. The building also provides office space for Forest Health Protection, a field unit of State and Private Forestry in the Southern Region, and a sub-unit of the Station's Forest Inventory & Analysis research program.

#### **SRS-4801 Subunit, Forest Inventory & Analysis (FIA) of Southern States.**

This subunit is part of the Forest Inventory & Analysis (FIA) unit headquartered in Knoxville, TN, with subunit locations in Asheville, NC and Starkville, MS. The FIA unit develops, analyzes, and maintains forest resources information for Southern States, Puerto Rico, and the Virgin Islands; and conducts research to provide improved inventory and evaluation techniques. The FIA program includes plot-based forest health indicators that were previously developed under the Forest Health Monitoring program. The program provides comprehensive information about forest resources in each state. The project leader is located in Knoxville, TN.

#### **BENT CREEK**

**Bent Creek Experimental Forest.** Bent Creek is the oldest experimental forest in the Station. For over 75 years, researchers at Bent Creek have studied ecological responses in Southern Appalachian forests, and developed silviculture prescriptions based on this understanding. In the late 1980's, the Station developed a demonstration and education program at Bent Creek, opening the experimental forest to a wide spectrum of people, from private landowners, to legislators and students.

#### **SRS-4101, Ecology and Management of Southern Appalachian Forests.**

This unit's mission is to develop and disseminate the scientific

knowledge and silvicultural techniques needed to provide a full range of benefits in the forests of the Southern Appalachians and the Cumberland Plateau and associated highlands. A subunit of this unit is located at Huntsville, AL.

#### **FRANKLIN**

**Coweeta Hydrologic Laboratory.** Since 1934, scientists have studied the 5400-acre Coweeta basin. Long-term measurements of rainfall, nutrient cycling, forest growth, water use, soil water, and stream flow at Coweeta have been the basis for widely used forest hydrology principles and forest management. The National Science Foundation selected this world-renowned lab as one of 24 Long-Term Ecological Research sites in the U.S.

**SRS-4351, Evaluation of Watershed Ecosystem Responses to Disturbances in Southeastern Forests.** This unit's mission is to evaluate, explain, and predict how water, soil, and forest resources respond to ecosystem management practices, natural disturbances, and changes in the atmospheric environment. Scientists use this information to identify practices that can protect and enhance watershed health.

#### **RESEARCH TRIANGLE PARK**

**SRS-4154, Biological Foundations of Southern Forest Productivity & Sustainability.** The unit studies the above- and below-ground processes that govern forest productivity and sustainability. Their efforts to understand the biological and physical processes in forests and the factors governing these processes will provide the basis for future advances in intensive forest management in the South. Scientists at RTP study the effects of silvicultural practices, soil and atmospheric

properties on forest growth and productivity. A subunit of this unit is located in Athens, GA.

**SRS-4803, Forest Health Monitoring.** This unit serves as the national headquarters for the Forest Service's efforts to monitor the health of U.S. forests. Scientists develop forest health monitoring protocols and work with others around the country to collaboratively evaluate the health and sustainability of forest resources nationwide. Their evaluations determine the specific nature of detected changes and provide the basis for corrective actions if needed. They explore the causes of these changes through intensive ecosystem monitoring at a few key locations.

**SRS-4851, Economics of Forest Protection and Management.** This unit analyzes the uses and values of forests in the South, focusing especially on markets for timber products, opportunities for forest management, and effects of suburban sprawl and agriculture on forest conditions and uses, multiple values placed on forests, and how regulations and programs influence private forest management.

#### **RALEIGH**

**SRS-4852, Southern Global Change Program.** Through cooperative and in-house research efforts, the Southern Global Change Program provides increased understanding of forest ecosystem response to global change. Global change impacts include air pollution, current and potential future climate stress, and changing human resource demands including land use change. The program develops and evaluates science-based strategies to ensure sustained productivity and ecosystem health.

## FIRE RESEARCH IN NORTH CAROLINA SUPPORTS THE NATIONAL FIRE PLAN

National Fire Plan funding continues the long tradition of Forest Service Research and Development building and leading Federal, State, and local partnerships (the guiding principle of the 10 year Comprehensive Strategy) to develop and deliver the scientific foundation of modern management practices.

### PROGRAM CHANGES:

- The FY 2005 President's Budget calls for increased research in areas associated with the President's Healthy Forests Initiative, including invasive species impacts, and the expansion of technology transfer activities. The FY 2005 President's Budget also provides new funding for research on water quality and quantity issues; and funding to cover inflationary fixed cost increases.
- Increases for research on water and watershed issues will:
  - Provide \$33,000 in SRS-4851 to expand research on water quality and quantity on a variety of ecosystems.
  - Provide \$150,000 in SRS-4803 to expand research on forest health monitoring of drinking water sources and the evaluation of potential effects from watershed management options.
- An increase of \$150,000 for research on invasive species issues will be used to monitor the extent and magnitude of distribution or damage from invasive plants, insects and diseases in the South at SRS-4803.
- Forest Service Research and Development will lead an Agency-wide effort to optimize the

delivery and practical use of research findings. This is essential to successful implementation of Forest Service priorities, including the President's Healthy Forest Initiative. Opportunities have been identified that leverage current science and technology applications efforts in healthy forests applied science, watershed management, invasive species, hazardous fuels utilization and management, and community preparedness. New funds in FY 2005 will be targeted to leading-edge technical assistance on a competitive basis.

- To support expanded research pertaining to the President's Healthy Forest Initiative, research being conducted at the Research Triangle Park's Plant Physiology Unit (SRS-4154) that focuses on below ground physiological issues will be curtailed.
- Funding increases of \$24,426 for SRS-4101, \$14,649 for SRS-4852, \$30,022 for SRS-4154, and \$14,943 for SRS-4851 will be used to cover fixed cost (facilities, salaries, utilities, etc.).

### SIGNIFICANT RESEARCH PRODUCTS

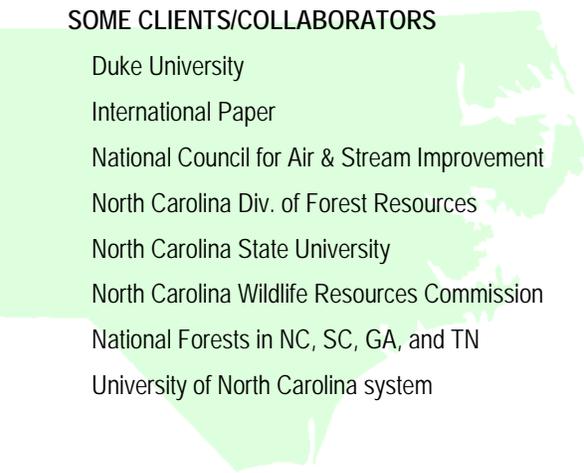
- Collaborated with 11 States to conduct annual forest inventories. In North Carolina, the Station is working with the State Division of Forest Resources in conducting annual inventory work. The final periodic inventory in North Carolina was completed in 2003. FIA information is used extensively to assess resource sustainability by State forestry agencies, forest industry, consultants, national forests, and NGOs.
- Published a book on *Forests in a Market Economy* that outlines different ways to quantify forest market processes, identify timber and nonmarket forest values, and measure the effects of forest policies.

- Developed an online hypertext encyclopedia that organizes scientific information about forests in the Southern Appalachians, their ecology and management and makes this information readily available to internet users.
- Developed a model that assesses the probability and extent of wildfires in western and southern forests. Important variables include current year climate, road networks, forest types, wildfire history, and understory vegetation.
- Developed methods to localize nationwide forest fragmentation statistics by forest type, so land owners and land managers can understand how forest fragmentation patterns in their localized region influence the role their forests play in providing wildlife habitats, dispersing invasive species, and maintaining ecosystem function.
- Monitored ground level ozone and examined its impact on forest resources through the use of bioindicator plants.
- Developed a sampling design for the detection of sudden oak death, a newly identified forest disease that has killed thousands of tanoaks and oaks in coastal California, and has the potential to spread to oaks in the Southern Appalachians or the Gulf Coast.
- Determined the amount of sediment introduced into streams from four different types of road surfaces; paved roads produced the least amount of sediment.
- Hosted the *USDA Symposium on Natural Resource Management to Offset Greenhouse Gas Emissions*. Over 200 scientists, policy makers, and land managers from eight nations attended.
- Adapted existing ground-penetrating radar (GPR) technology to develop a tool that allows

scientists to study tree roots without destroying the trees.

- Tested a decision support system called NED on an 85-acre tree farm in Georgia and, based on feedback from this trial, developed an improved version of the software that provides landowners with understandable, practical and affordable recommendations for sustainable forest management to meet changing landowner goals.

#### SOME CLIENTS/COLLABORATORS



Duke University  
 International Paper  
 National Council for Air & Stream Improvement  
 North Carolina Div. of Forest Resources  
 North Carolina State University  
 North Carolina Wildlife Resources Commission  
 National Forests in NC, SC, GA, and TN  
 University of North Carolina system