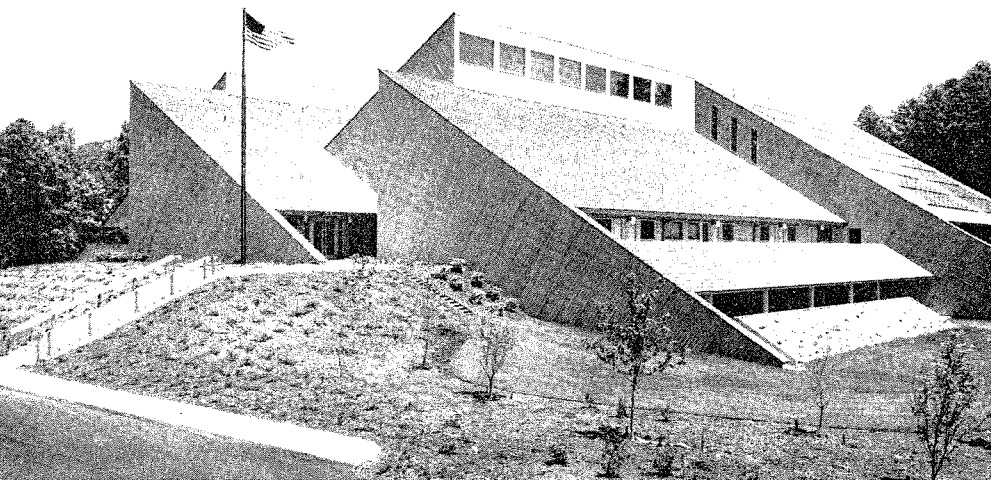


United States
Department of
Agriculture

Forest Service



INTRODUCTION



to the Southern
Research Station

Cover photo: Station headquarters in Asheville, NC

Introduction to the Southern Research Station

The phrase, "CARING FOR THE LAND AND SERVING PEOPLE," captures the USDA Forest Service Mission. The Southern Research Station supports that mission by finding solutions that further the diversity, use, and sustainability of southern forest ecosystems.

June 1996

SOUTHERN RESEARCH STATION
P.O. Box 2680
Asheville, NC 28802

The Southern Research Station, with headquarters in Asheville, NC, conducts forestry research that emphasizes measuring and monitoring forest resources; understanding ecosystem structure, function, and processes; managing resources for sustained and enhanced productivity; and protecting environmental quality.

The Southern Research Station is the result of consolidating two Stations, which have somewhat parallel histories. Both were established in 1921 when the Forest Service merged its five western forest experiment stations into one "Branch of Research," and opened two regional centers for research—the Appalachian Forest Experiment Station in Asheville (later called the Southeastern Forest Experiment Station) and the Southern Forest Experiment Station in New Orleans.

Consolidation of the two Stations was part of a larger effort to improve customer service and to make research results more accessible and useful. It is consistent with the principles of USDA Reorganization and Forest Service Reinvention. In addition to placing related research under a single management team, the merger makes better use of a smaller administrative staff and provides facilities for large-scale, multi-disciplinary studies.

The Station conducts forestry research in 13 Southeastern and Midsouth States: Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, and Virginia. In Florida, Kentucky, Oklahoma, and Tennessee—where there are no research facilities—the Station inventories forest resources and shares data and research findings with State natural resource agencies.

The Station's leadership team consists of the Station Director, two Assistant Directors for continuing research, three Managers for special research programs, the Assistant Director for Planning and Applications, Assistant Director for Administration, and Communications Officer.

Specific research activities of the Southern Research Station are centered in research work units based in Forest Service laboratories and in experimental forests throughout the Southeast and Midsouth. Many of the laboratories are on or near university campuses where Station scientists can exchange ideas with university scientists.

ALABAMA

AUBURN

The G.W. Andrews Forestry Sciences Laboratory is located on the campus of Auburn University. Speakers at the October 1976 dedication heralded the facilities and its two research projects as "destined to be a major center in the South for research on forest engineering systems and the control of unwanted forest vegetation." The modern office/laboratory facility contains well-equipped environmental chemistry and soil laboratories and a large engineering research laboratory. Adjacent buildings house greenhouse, shop/warehouse, and chemical storage facilities. Cooperating USDA and university departments on campus provide additional research facilities. The vegetation management unit has recently expanded its longleaf pine mission and continues to maintain long-term longleaf studies and demonstrations on the 3,000-acre Escambia Experimental Forest in south Alabama. The biological/engineering unit, established by the Forest Service with Auburn University in 1962, is one of four units across the Nation that conduct research in forest operations. In 1989, in collaboration with Auburn University, the unit established the Center for Southern Forest Engineering. Both units conduct research and are engaged in technology transfer that support the needs of the private and public forestry sectors in the South. Special attention is given to meeting the needs of the small nonindustrial private forest landowners.

Vegetation Management Research and Longleaf Pine Research for Southern Forest Ecosystems. This unit is responsible for determining the environmental fate and impact of forest herbicides; for developing integrated vegetation management prescriptions for multiple resource benefits in southern forestry; and for developing systems and models for the development of a variety of regeneration and management alternatives for longleaf pine ecosystems.

Biological/Engineering Systems and Technologies for Ecological Management of Forest Resources. This unit is responsible for developing an understanding of the interaction between biological and engineering systems in forest ecosystems and for providing engineering knowledge and improved, economically viable forest operations for sustained resource management.

HUNTSVILLE

The Station has one unit (co-located in Huntsville, AL and Saucier, MS) housed on the campus of Alabama A&M University in Huntsville. The Station also has a cooperative education program, the National Recruitment Initiative, at the university to assist in training minority candidates for professional natural resource careers with the Forest Service.

Southern Institute of Forest Genetics. This unit conducts basic and applied research to enhance the use of vegetative propagation procedures to produce southern pine and hardwood clonal material for research and reforestation. The Project Leader for this co-located unit is stationed in Saucier, MS.

ARKANSAS

MONTICELLO

The Station has one research work unit in Monticello, located at the University of Arkansas, in cooperation with the School of Forest Resources and the Arkansas Agricultural Experiment Station. Subunits are located at the University of Arkansas-Fayetteville, at Crossett Experimental Forest, and in the towns of Harrison and Hot Springs. A special team is working with the Ouachita and Ozark National Forests to evaluate a broad array of environmentally sensitive methods and systems to replace clearcutting. The 1,675-acre Crossett Experimental Forest, located 7 miles south of Crossett, is maintained as a research and demonstration forest. Since 1934, this forest has served as an "outdoor classroom" for university students, foresters, landowners, and others. The demonstration forest provides a viable and effective means for technology transfer.

Multi-resource Management of Naturally Regenerated Upland Forests in the Midsouth. This unit provides silvicultural information and techniques for multi-resource management of naturally regenerated loblolly and shortleaf pines, mixed pine-hardwoods, and hardwoods on uplands in the Midsouth.

GEORGIA

ATHENS

In 1963, the Station built the Forestry Sciences Laboratory on 4 acres of land near the University of Georgia's School of Forestry to solidify the cooperative relationship that had existed since 1940, when the first Forest Service research unit was established on campus. The facility, containing 17,962 square feet of laboratory space and 14,000 square feet of office space, consists of two buildings, an insectary, greenhouses, a headhouse, a nursery, a fully equipped woodworking and fabricating shop, and a wood products testing laboratory. It houses five research projects (four concentrating on softwood growth, protection, and utilization, and one on forest recreation and wilderness). The nearby 4,500-acre Scull Shoals Experimental Forest is the site of several silvicultural research studies.

Insect Associates of Southern Seed Orchards and Forest Trees of the Piedmont and Southern Appalachians and Diseases of Southern Forests. The result of merging two units, a new title has not been developed yet. This unit is responsible for acquiring the knowledge necessary to develop effective, practical, and environmentally acceptable management options to control insects attacking seed orchards; and for elucidating the role of insects associated with Piedmont and Southern Appalachian forests. This unit is also responsible for acquiring basic knowledge necessary to develop controls for dogwood anthracnose and major diseases of southern pines in plantations and nurseries.

One scientist associated with this unit works in Olustee, FL. The scientist concentrates on integrated pest management in the slash and longleaf pine ecosystem.

Tree Root Biology Team. This team is part of the Forest Soil Productivity in the Southeast unit located in Research Triangle Park, NC. The team conducts fundamental research on tree roots and microbial associates necessary for basic understanding of belowground processes in forests and for making prudent decisions on issues related to the impact of natural and human-caused stress on forest health, productivity, and diversity. The Project leader is stationed in Research Triangle Park, NC.

Management and Properties of Piedmont and Atlantic Coastal Plain Forest Species. This unit will relocate from the Hitichi Experimental Forest, Juliette, GA in 1996 and merge with the Utilization of Southern Timber unit in 1997. This unit develops scientific knowledge needed for regenerating, managing, protecting, and improving pine plantations, natural stands, and ecosystems.

Utilization of Southern Timber. This unit is responsible for defining how environmental and socioeconomic factors will change the southern timber resource, and for developing fundamental information and technology for utilizing this resource while conserving biodiversity and providing for a sustained supply of raw material.

Assessing Trends, Values, and Rural Community Benefits from Outdoor Recreation and Wilderness in Forest Ecosystems. This unit applies research theory and methodology to assessments of outdoor recreation and wilderness, with emphasis on supply-and-demand trends, economic values, and benefits to rural communities.

LOUISIANA

NEW ORLEANS

The Station maintains two research work units in the U.S. Postal Service building in downtown New Orleans. New Orleans was the headquarters for the Southern Forest Experiment Station until its merger with the Southeastern Forest Experiment Station. Some administrative units, such as personnel management, computer services, and information services, remain in the New Orleans building. They interact with and will eventually merge with administrative units at the Asheville headquarters.

Evaluation of Legal, Tax, and Economic Influences on Forest Resource Management. This unit evaluates the economic implications of taxation, legislation, foreign trade, and silvicultural practices on forest resource management and investment, and develops guidelines for the forest landowner, operator, and investor under changing management strategies and objectives.

Quantitative Studies for Forest Ecosystem Management Decisions. This unit develops improved quantitative tools for

southern forestry applications in the areas of inventory, biodiversity assessment, climate effects, GIS/remote sensing, and ecosystem management.

PINEVILLE

The Alexandria Forestry Center in Pineville was constructed in 1963 to house the Forest Sciences Laboratory of the Southern Forest Experiment Station, the Supervisor's Office of the Kisatchie National Forest, and Forest Pest Management of State and Private Forestry. The Center is one of the few locations where the three separate groups of the Forest Service are co-located and share support services. The Center is situated on about 27 acres that were obtained from the historical Pineville Veterans Hospital. The research complex includes an insectory, a headhouse with two greenhouses, a forest products building, and a main office/laboratory building. Although research units involved in range management and fire research were originally located at the facility, the current research provides regional and national leadership on problems related to the southern pine beetle, forest products, and forest management research. The nearby Palustris Experiment Forest consists of two separate tracts that total 7,500 acres. Numerous long-term studies evaluating the ecology and management of southern pines, as well as national studies on forest sustainability and ecophysiology, are located on the experimental forest.

Ecology and Management of Even-aged Southern Pine Forests. This unit provides fundamental knowledge on the ecology and physiology of southern pine species and even-aged management options to enhance and sustain the productivity of southern pine ecosystems.

Southern Pine Beetle: Ecology, Behavior, and Management. This unit provides improved methods for predicting and managing the southern pine beetle through acquisition and use of basic knowledge of its ecology and behavior.

Utilization of Southern Forest Resources. The unit defines and applies fundamental chemistry, material science, and engineering principles to the utilization and processing of southern forest resources in an environmentally sound way.

MISSISSIPPI

SAUCIER

The Southern Institute of Forest Genetics was established July 1, 1954 on the Harrison Experimental Forest (HEF). The HEF is located 25 miles north of Gulfport and 7 miles east of Saucier, MS on the Biloxi Ranger District of the DeSoto National Forest. The 3,850 acres, selected in 1934 to represent 3 million acres of cut-over and second-growth longleaf pine land in southern Mississippi, typify about 31 million acres of forest land with similar soils and topography in the South. The oldest buildings date back to the mid-1930's and were constructed through programs such as CWA, WPA, and CCC. The physical structures and the site have been recommended to the National Register of Historic Places. Four new laboratories (3,840 sq ft) for molecular genetic analyses on southern pines were recently added. A new cabin for visiting scientists replaces the demolished "Lodge." The scientists on the HEF have participated in the longest continuous program of genetics research in southern forests.

Southern Institute of Forest Genetics. The unit is co-located in Saucier, MS and Huntsville, AL. The unit develops procedures for improving the health, productivity, and genetic diversity of southern forests through better understanding of the genetics, ecology, and evolutionary relationships in forest ecosystems. The project leader resides in Saucier, MS.

One scientist is located on Texas A&M University in College Station, TX. The scientist concentrates on assessing levels of genetic diversity in forest stands.

STARKVILLE

The Forestry Sciences Laboratory, established in 1969 to house seed tree research, genetics, and rural fire research, is on an 7-acre tract adjacent to Mississippi State University. The Forest Inventory and Analysis (FIA) Unit moved to the site from the New Orleans U.S. Postal Service Building in 1983. Modified to support extensive record keeping for some 17,000 permanent plots on forest land and nearly twice as many photo-based plots, computer facilities include data base management, image analysis, and geographic information systems.

Wood Products Insect Research. This unit develops chemical, biological, and physical methods of controlling or preventing termite and wood-destroying beetle damage to wood during processing, storage, and use.

Southern Forest Inventory, Monitoring, and Analysis Program. This unit, co-located in Asheville, NC and Starkville, MS, develops, analyzes, and maintains renewable forest resources information for Midsouth and Puerto Rico and conducts research to provide improved inventory and evaluation techniques.

STONEVILLE

The Southern Hardwoods Laboratory was dedicated by Senator John Stennis on April 1962. The lab is located on a 3.45-acre site that is part of the Mississippi State Forestry and Agriculture Experiment Station at Stoneville. The 18,000-square-foot building houses offices, a photo lab, and lab facilities for plant pathology, entomology, plant physiology, and soils. The site also has 2,000 square feet of greenhouse space, a separate soils building, and an insectory. The 2,900-acre Delta Experimental Forest, 3 miles north of Stoneville, is the site of numerous research plots. Forestry research at Stoneville predates the building by 13 years. Researchers at the hardwoods lab pioneered techniques to establish and manage hardwood plantations, and they "wrote the book" on managing natural hardwood stands, which is very difficult since there are more than 50 commercially valuable species in bottomland hardwood forests. Scientists at the lab also developed genetically superior cottonwood trees.

Center for Bottomland Hardwood and Wetland Forest Ecosystems Research. The end result of consolidating four research work units, this unit has four emphasis areas. First, the unit develops methods of collection, conditioning, and storage of eastern tree seed to produce and maintain high quality. Second, the unit provides information required for ecologically sound management guidelines necessary to maintain, protect, or enhance the structure, function, productivity, and value of southern bottomland hardwood and wetland forest ecosystems. Third, the unit develops pest management strategies and guidelines necessary to minimize insect and disease losses in intensive culture and multi-use natural stands of southern hardwoods. And fourth, the unit conducts hydrologic and aquatic ecological

research to identify rational forest management strategies that will aid in the maintenance of diverse, healthy ecosystems; that will allow sustainable use of forest resources; that will promote recovery of depleted species and communities; and that will produce quality water.

NORTH CAROLINA

ASHEVILLE

Station headquarters occupies 11 acres of land leased from the University of North Carolina. The headquarters building houses the Station Director and staff, as well as administrative units of engineering, data processing, systems analysis, personnel, procurement, accounting, and editorial services for the Station's 26 field research work units. The headquarters building also houses one of the research work units—the Southern Forest Inventory, Monitoring, and Analysis Program—as well as a unit of Forest Health, which is a satellite of the National Forest System regional office in Atlanta.

Southern Forest Inventory, Monitoring, and Analysis Program.

Co-located in Starkville, MS and Asheville, NC, this unit conducts a program of research to inventory and evaluate past trends, current status, and potential supply, use, condition, and productivity of the renewable natural resources of the forest ecosystems in the southeast States. The Station biometrics team works within this unit.

BENT CREEK

Originally part of George Vanderbilt's mountain reforestation effort and the site of the first American forestry school, the Bent Creek valley was sold to the Forest Service for a dollar an acre. When the Forest Service established a research station in Asheville, Bent Creek became its first experimental forest. Early research included reforestation planting, prescribed burning, evenaged versus unevenaged management, long versus short rotations, and extensive versus intensive stand improvements. Today, scientists at the 6,000-acre experimental forest concentrate on regeneration of northern red oak, site classification, and intermediate stand management. In the late 1980's, the Station developed a demonstration program at Bent Creek, opening the experimental

forest to a wide spectrum of people, from private land owners to senators to students.

Ecology and Management of Southern Appalachian Hardwood Forests. This unit develops and disseminates the scientific knowledge and silvicultural techniques needed to provide a full range of benefits in Southern Appalachian hardwood forests.

FRANKLIN

For over 60 years, scientists at the Coweeta Hydrologic Laboratory have studied the 5,400-acre Coweeta basin. Rainfall is plentiful and soils overlay solid bedrock, permitting scientists to account for most of the rainfall that enters the basin. Measurements of rainfall, nutrient cycling, forest growth, water use, soil water, and streamflow have been the basis of universally accepted forest hydrology principles and forest management guidelines. Using watersheds as landscape units, Coweeta scientists have studied ecosystem behavior, often by measuring responses to disturbances and forest management treatments, such as clearcutting, farming, logging, road building, insect infestations, chemical exposure, fire, and airborne nutrients and pollutants. This world-renowned lab was selected by the National Science Foundation as 1 of 11 Long-Term Ecological Research sites, and was included in the International Biological Program, the International Hydrologic Decade, and UNESCO's "Man and the Biosphere" Program.

Evaluation of Watershed Ecosystem Responses to Natural, Management, and Other Human Disturbances of Southeastern Forests. This unit is responsible for evaluating, explaining, and predicting how water, soil, and forest resources respond to management practices, natural disturbances, and the atmospheric environment; and for identifying practices that mitigate impacts on these watershed resources.

RESEARCH TRIANGLE PARK

In 1962, the Station built the Forestry Sciences Laboratory on a 26-acre tract donated by the Research Triangle Foundation, and later added greenhouse, nursery, and service buildings. The site was selected to encourage close contacts with both forestry schools in the area—Duke University and North Carolina State University—and to ensure access to their libraries. The facility—6,246 square feet of laboratory space and 3,473 of office space—houses three research

projects: one concentrating on forest economics, one on soil productivity, and one on forest health monitoring.

Forest Soil Productivity in the Southeast. This unit is co-located in Athens, GA and Research Triangle Park, NC. The unit determines the relationships between the growth of trees and soil properties and the effects of species composition, stand conditions, silvicultural practices, and soil amendments on the biological and chemical properties of soils in southeastern Piedmont and Coastal Plain loblolly pine stands.

Forest Health Monitoring. This unit collaborates with State agencies on monitoring the Nation's forests to detect unexpected deviation from established baseline conditions or trends, identify cause, and define basic relationships sufficient to predict consequences.

Economics of Forest Protection and Management. This unit analyzes the economic status, trends, and opportunities for forest management in the South, including the effect of public programs and regulations on private forest landowners; performs economic and impact assessments of forest insect, disease, and other forest health questions; develops and implements regional forest resource analysis models of inventory, multiple-use, and land area interactions; and evaluates economic and social impacts of changing public values, laws, and programs.

RALEIGH

Station scientists work at two locations on the campus at North Carolina State University. The Air Resources Consortium houses our global change unit, and the School of Forest Resources houses a subunit of our loblolly pine regeneration unit in Macon, GA.

Impacts of Global Change to Southern Forest Ecosystems/Southern Global Change Program. This unit is responsible for research and monitoring in the southern region of the United States; for determining the interaction among forest ecosystems, atmospheric pollution, and climate change; and for incorporating this knowledge into management and protection of forest environments and resources.

SOUTH CAROLINA

CHARLESTON

Forest Service scientists have been working in the Charleston area since 1937, when 5,000 acres of the Francis Marion National Forest were set aside to establish the Santee Experimental Forest. In 1945, the Charleston Research Center was established; and in 1977, Southeastern Station scientists moved to the newly built Forestry Sciences Laboratory. Early research concentrated on effective management of timber resources over a wide range of land-use patterns and geographic regions, the most famous example being a study on the effects of prescribed burning in loblolly pine stands. In 1987, the Station and Clemson University established the Center for Forested Wetlands Research at the laboratory to determine the function and value of forested wetlands with the ultimate goal of encouraging wise management and use. Soon after, the Station formed a wetlands research unit by merging two other research units—one on pine productivity and the other on soils productivity—that had been working independently at the laboratory.

Ecology and Management of Forested Wetland Ecosystems of the South Atlantic Coastal Plain. This unit provides management guidelines for the maintenance and protection of the structure, functions, values, and productivity of the forested wetland ecosystems in the Southeast.

CLEMSON

One Station unit is located at Clemson University's School of Forest and Recreation Resources, working on threatened, endangered, and sensitive plant and animal species.

Endangered, Threatened, and Sensitive Wildlife in Southern Forests. This unit is responsible for determining habitat and population relationships of wildlife and plant species associated with fragmented and isolated forest communities.

AIKEN

Although it is a Department of Energy forest holding managed by the Southern Region of the Forest Service, the 200,000-acre Savannah River Site has become a popular field location for Station scientists because of its limited public access and its cooperative management environment. In 1990, the Department of Energy designated the

Savannah River Site as a National Environmental Research Park (NERP). The Forest Service is one of several organizations doing environmental research there. Current studies include work on mycorrhizae, fusiform rust, pine productivity, red-cockaded woodpeckers, biodiversity, and land classification systems.

TEXAS

NACOGDOCHES

The Nacogdoches Wildlife Habitat and Silviculture Laboratory is a key unit in the Southern Research Station's ecosystems management research in the South. It is located near the Stephen F. Austin Experimental Forest in Nacogdoches. This unit has wide latitude to investigate questions concerning wildlife and habitat interactions. It is the only Forest Service wildlife research unit in the South whose mission focuses on game and nongame species in addition to threatened and endangered species. The unit focuses on areas of major concern to public land managers, forest industry, and private forest owners: mature forest strips along streams, insectivorous birds (especially woodpeckers), wildlife response to harvesting techniques, endangered and sensitive species, and fire climax pine communities.

Integrated Management of Wildlife Habitat and Timber Resources. This unit is responsible for quantifying relationships between wildlife habitat values and forest management strategies and for incorporating findings into management planning processes.

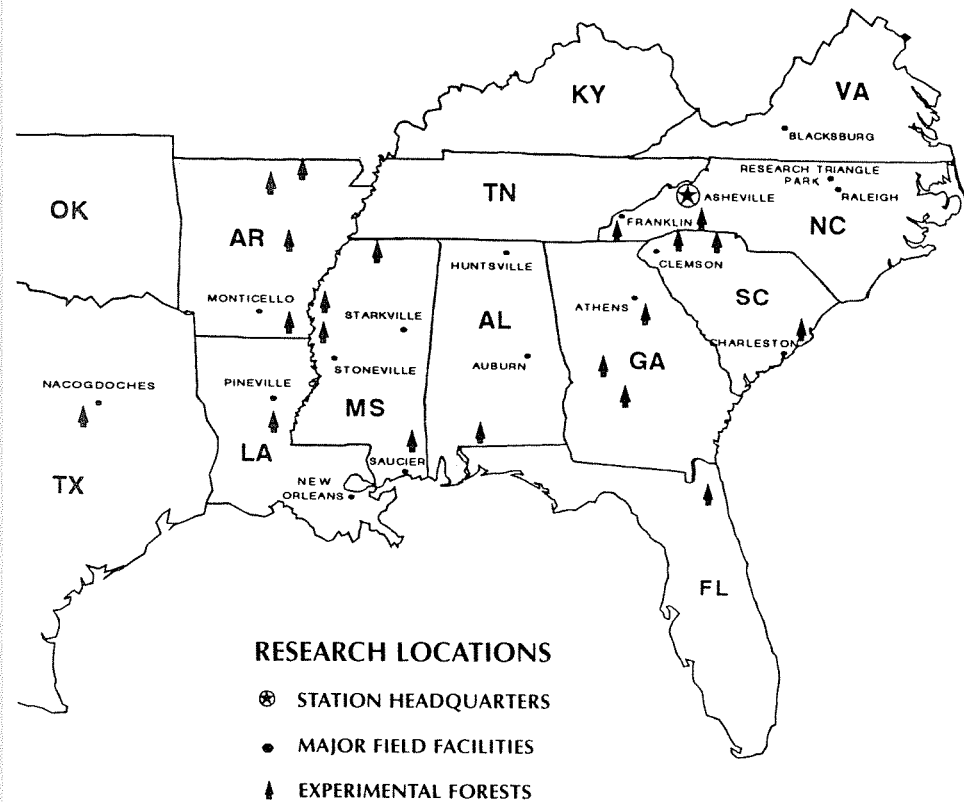
VIRGINIA

BLACKSBURG

The Station has two research work units located in the Brooks Forest Products Center at Virginia Polytechnic Institute and State University in Blacksburg, with research emphases of hardwood primary wood processing technologies and fisheries research on trout in southern Appalachian streams.

Primary Hardwood Processing and Products. This unit identifies, evaluates and develops new or improved automated primary hardwood processing technologies and hardwood products that make U.S. industry more competitive in domestic and foreign markets and develops and evaluates pallet repairs and other uses of discarded pallets to extend timber resources.

Trout Productivity in Southern Appalachian Streams. This unit is responsible for determining the factors that influence the distribution, abundance, and productivity of trout in southern Appalachian streams.



SOUTHERN STATION EXPERIMENTAL FORESTS AND RANGES

The Southern Research Station maintains 20 experimental forests, located on or near National Forest System lands. The Station's scientists in research work units use these as sites for their studies, often in conjunction with the particular National Forests. A list of the nearest National Forest to each experimental forest is shown below.

State	Experimental Forest or Range	National Forest	Acres	Date Established
AL	Escambia	—	2,990	06/14/61
AR	Alum Creek	Ouachita	4,281	04/02/59
	Crossett	Ouachita	1,675	08/27/40
	Henry R. Koen	Ozark	720	09/17/51
	Sylamore	Ozark	4,180	03/28/34
FL	Olustee	Osceola	3,135	03/28/34
GA	Hitchiti	Oconee	4,602	09/17/38
	Holt Walton	—	4,360	06/16/61
	Scull Shoals	Oconee	4,487	12/04/61
LA	Palustris	Kisatchie	7,515	07/19/35
MS	Bluff	—	450	06/02/61
	Delta	—	2,580	06/14/61
	Harrison	DeSoto	3,970	07/19/39
	Tallahatchie	Holly Springs	4,569	04/12/50
NC	Bent Creek	Pisgah	5,242	04/28/31
	Blue Valley	Nantahala	1,400	06/23/64
	Coweeta	Nantahala	5,482	03/28/34
SC	Calhoun	Sumter	10,692	10/08/47
	Santee	Francis-Marion	6,000	07/06/37
TX	Stephen F. Austin	Angelina	2,499	06/28/61

ACCOMPLISHMENTS

- Strategies for selection and breeding of southern pines.
- Advances in identifying and treatment of tree diseases.
- Effects of land use on runoff and water quality in mountain ecosystems.
- Guidelines for constructing logging roads and skid trails that have little or no impact on trout streams.
- A simple, inexpensive system for assessing potential losses from southern pine beetle infestation.
- A system for identifying resistance of Southern pines to fusiform rust, the most serious tree disease in the South.
- Effective methods for gathering gum naval stores from living pines.
- Development of an effective and nontoxic treatment that uses borates to protect wood from termites.
- Beneficial effects of mycorrhizae in site restoration and regeneration of longleaf pines.
- Oriented strandboard, Com-ply, and other technologies that make use of nonselect lumber.
- Forest management methods and equipment that are both safe and environmentally acceptable.
- Guidelines on harvesting timber without eroding soils.
- Alternatives for regenerating forests for every major landscape type in the South.
- Growth and yield models for all commercial tree species.
- Multiresource inventories of extent, status, and trends of forest ecosystems across all ownerships, derived from revisiting permanent plots, remote sensing, and GIS.
- Inexpensive and accurate methods for processing timber cruise data and estimating volume.
- Effects of prescribed burning on forest productivity and guidelines for smoke management.
- Data bases on forest inventory, species productivity, and watershed responses for more than 60 years.
- Recommendations for collecting, handling, and storing seed.
- Guidelines for reducing the impacts of pest infestations.
- Recommendations for maintaining wildlife habitats and for increasing populations of declining species.
- Predictions of how alternative public policies influence forest investments.
- Process simulation, animation programming systems, machine vision technologies, and other automated systems to maximize use and processing efficiency of logs.
- Technology for refurbishing wooden pallets.
- Effects of acid rain and ozone on seedlings and mature trees.
- Models that predict the economic impacts of forest pests and pollution, and that evaluate areas of research likely to produce significant returns.