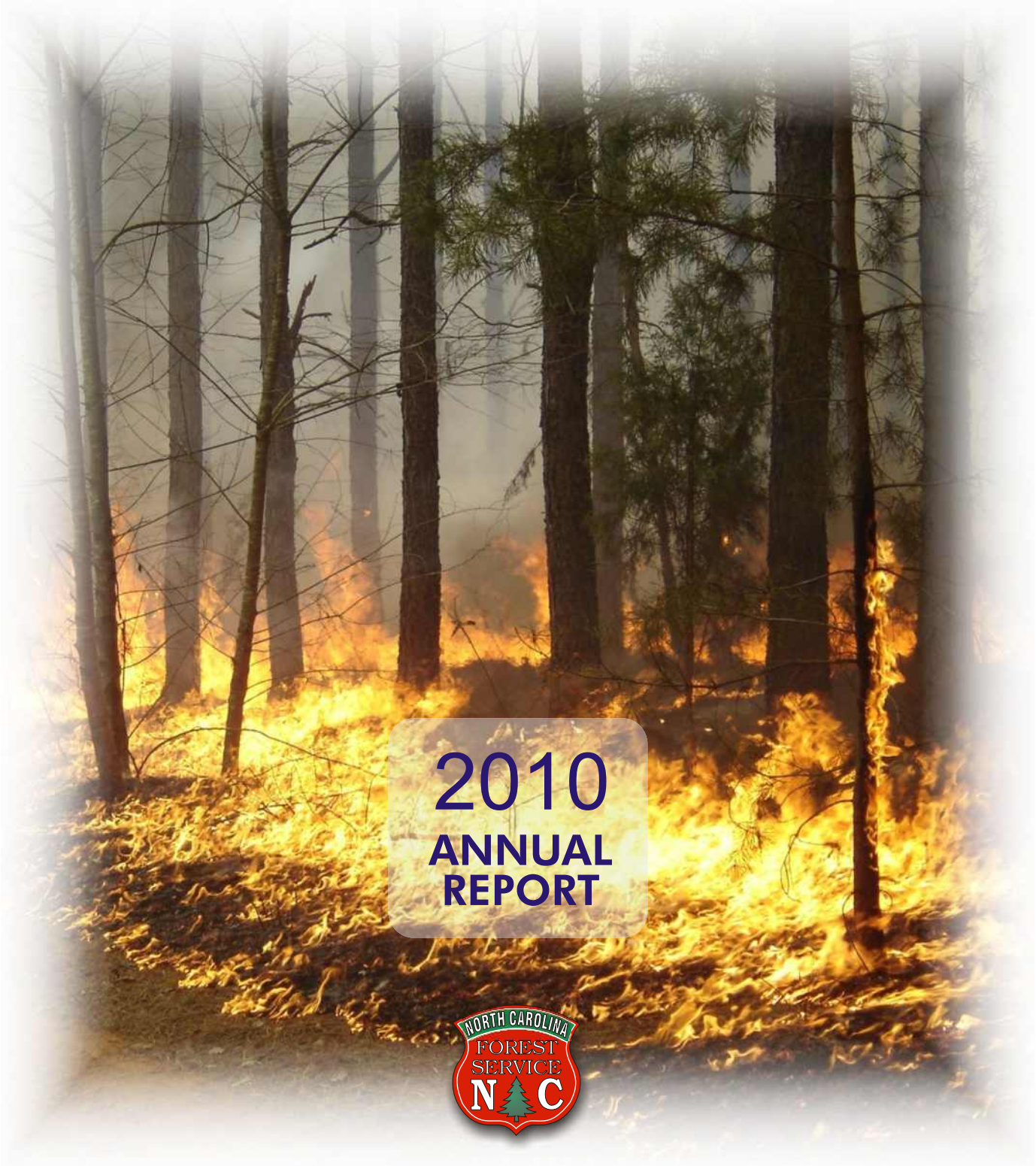
The North Carolina Division of Forest Resources



2010 ANNUAL REPORT

Managing and Protecting the Forest Resources of North Carolina

North Carolina Department of Environment and Natural Resources

Wib L. Owen, Director
N.C. Division of Forest Resources

A Message from the Director

Dear friends and colleagues,

Periodic reviews of our forest resources are needed to evaluate their ever-changing status and assess the ability of our programs to meet the conservation and sustainability directives of the North Carolina Division of Forest Resources. These directives are to lead the people of our state to develop, protect and manage these resources to ensure that they will be conserved now and sustained for future generations.

In 2010, we completed our first statewide forest resources assessment that evaluates and analyzes the past and current conditions and projects the future conditions of these resources. In addition, the document includes goals and objectives that describe what we need to do to address key findings of the assessment. The document also outlines strategies on how we plan to achieve these goals and objectives. Finally, it contains priority maps to help tell the story of our forest resources and help build partnerships. This compilation of assessment, goals, objectives, strategies and priority maps will guide us in the next five years in planning for the conservation of these resources and the associated economic, ecological and public benefits these resources provide.

North Carolina is blessed to have rich and diverse forest resources. From our seashores to the peaks of the Appalachian and Blue Ridge Mountains, our forest resources enrich the lives of all North Carolinians. Forests provide us with clean water and air, wildlife, recreation and forest products. They provide jobs and income and a place to escape from our jobs. They support the No. 1 manufacturing industry in North Carolina. Our forests entice people to come to North Carolina and they make our state great.

All North Carolinians are stewards of our forests and we must work together to be successful. Throughout the past 18 months we have invited the help of partners to make the statewide forest resource assessment and strategic plan useful and pertinent. If you have been a partner in this project, I want to thank you for your help. At this time of rampant change, it is critical that we work together to develop, protect and manage the multiple resources of North Carolina's forests through professional stewardship, enhancing the quality of life for our citizens while ensuring the continuity of these vital resources.

Wib Owen
North Carolina State Forester

About the Cover: *This hazard reduction burn is a type of prescribed fire that reduces the chance of a catastrophic wildfire.*

Our Mission

To develop, protect and manage the multiple resources of North Carolina's forests through professional stewardship, enhancing the quality of life for our citizens while ensuring the continuity of these vital resources.

North Carolina's Forests Benefit All!

FACTS ABOUT NORTH CAROLINA'S FOREST RESOURCES

- North Carolina's forests cover 18.6 million acres, or 60 percent of the state's land area. Nearly 97 percent of our forest land is classified as timberland - available and capable of producing wood products. Between 2002 and 2007, North Carolina gained 362,000 acres of timberland, reversing a decline in timberland acres since the mid-1960's.

- Most of the state's timberland (11.5 million acres or 64 percent) is owned by individuals, families and non-corporate entities. About 2.6 million acres is owned by private corporations not involved in forest product manufacturing and about 1.4 million acres is owned by forest industry. Public lands (federal, state and local) total 2.6 million acres, or 14 percent of timberland.

- Recent forest inventory data reveal that the state's forests are growing more wood volume each year than is being harvested or lost due to mortality or conversion to non-forest uses. This is true for both hardwoods and softwoods and is a positive reflection on the ability of the state's forests to sustainably supply the goods and services for all North Carolinians.

- North Carolina's timberland is diverse and includes over more than 60 commercially-important tree species. Hardwoods are the dominant forest type, occurring on 68 percent of the state's timberland acres, compared with 32 percent in softwood forest types. Primary forest types in order of occurrence include upland hardwoods, natural pine, planted pine, lowland hardwoods and oak-pine.

THE ECONOMIC VALUE OF NORTH CAROLINA'S FORESTS & FOREST RESOURCE-BASED ECONOMY

- The wood products industry is a major contributor to North Carolina's manufacturing economy. In 2008, the industry had about 2,562 companies employing 82,780 people, a payroll of $3.1 billion, and shipping products valued at $18.3 billion. The majority of these companies are small, employing fewer than 100 people. The forestry sector contributes more than $6 billion to the state's gross product, and provides more than $28 billion in economic benefit. The industry typically ranks as one of the top two in the North Carolina manufacturing economy.

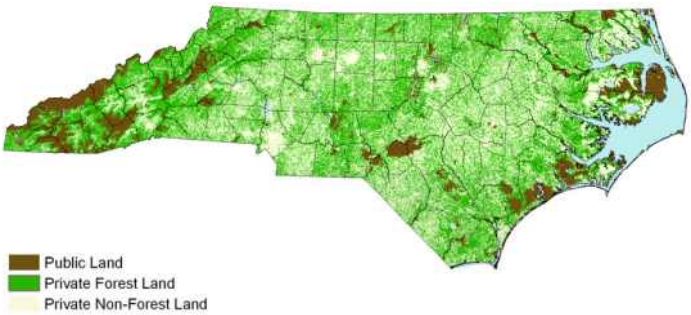
- The primary forest products industry consists of mills that process logs or whole trees (roundwood) into a variety of products, and include facilities processing lumber, pulp and paper, veneer, plywood, composite panels, posts, logs for log homes, biomass for energy and other products. While the number of roundwood processing facilities has declined steadily since 1990, total roundwood production has remained flat. North Carolina is a net exporter of roundwood for pulp, panels, and other industrial uses, while it is a net importer of veneer and sawlogs.

- With the passage of Senate Bill-3 2007, the North Carolina General Assembly established a Renewable Energy Portfolio Standard (RPS) that sets targets for the use of in-state renewable energy sources in the generation of electricity by public utilities. To meet these targets, it is estimated that at least 60 percent of the renewable energy target will be met using woody biomass produced from forest residues generated during forest thinning and logging operations. Policies guiding the development of renewable energy and biomass utilization to support the RPS are currently under consideration. Specific information regarding the future of forest-based biomass resource usage in North Carolina is unclear. Some experts claim that biomass use could be a multibillion dollar industry for the state.

North Carolina's Forest Resources Assessment
A statewide analysis of the past, current and projected future conditions of North Carolina's forest resources.

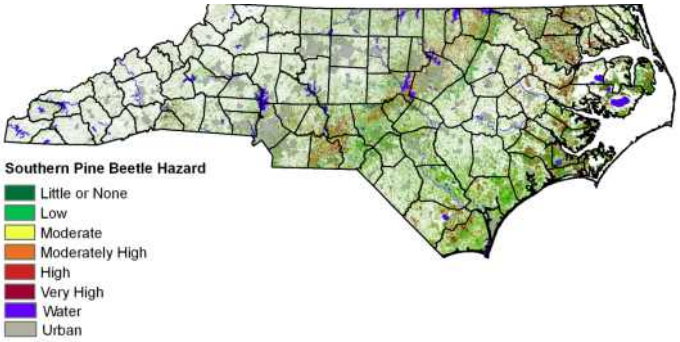
The forest resource assessment, strategic plan and priority maps constitute a coordinated plan for moving North Carolina forests into the future. Driven by the need to efficiently target efforts to address state and national priorities, this document constitutes a broad vision for protecting and enhancing North Carolina forest values and benefits. While the mandate for this document and critical assessment originated in the 2008 Farm Bill under the Cooperative Forestry Assistance Act, its origins are deeply seated in a public that is demanding increased impact, accountability and innovation from its agencies. With that challenge as our goal, a committed group of staff, partners and sister agency personnel met over the past 18 months to make this publication a reality. The scope of this immense effort was only surpassed by the dedication and commitment of partners and staff who labored enthusiastically to complete this publication on time and within budget.

The arrangement of chapters mirrors the evolution of this effort from the Introduction (the process), Chapters 2-4 reflect the national themes of conserving working forests, protecting forests from harm and enhancing the public benefits from forests. Within each of those chapters are comprehensive reviews of the condition of our forests and the impending threats and opportunities that exist to make them healthier, more productive and yielding increased public benefits including clean air, water and precious wildlife habitat in urban and rural communities. The concluding Chapter 5 (Goals and Strategies) is the logical follow-up to the assessment effort and constitutes a comprehensive "strategic plan" for the next five years.



The plan is organized by global goals that narrow to specific strategies that can be implemented at county and landowner level. Individual strategies specify the priority area, partners involved, resources required and connection to state assessment and national goals. The seven goals identified for North Carolina are listed below:

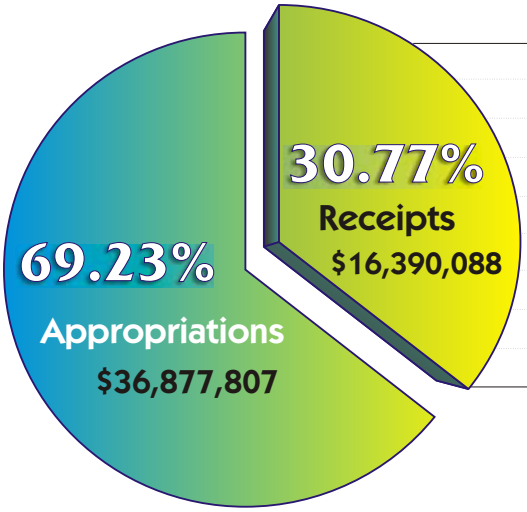
- **Goal 1:** Increase the sustainable management and conservation of forest lands in North Carolina.
- **Goal 2:** Reduce negative impacts from forest threats.
- **Goal 3:** Increase the restoration, maintenance and management of fire-adapted species and ecosystems.
- **Goal 4:** Maintain or increase the viability and sustainability of existing and emerging markets.
- **Goal 5:** Increase and enhance fish and wildlife habitat on North Carolina's forests.
- **Goal 6:** Manage, conserve, restore and enhance forestlands important to current and future supplies of clean water for economic, social and ecological uses.
- **Goal 7:** Enhance the benefits and sustainable management of urban forests.



The priority landscape and program maps complete the document by illustrating areas in North Carolina that will best be served by the strategic efforts detailed in the plan. The maps reflect the conservation, protection and enhancement themes that permeate the assessment document and federal directives. The priority landscape and program maps were developed to educate and inform constituents and focus implementation and ultimately deploy resources. Priority areas will likely be used for U.S. Forest Service accomplishment reporting by the N.C. Division of Forest Resources and for multi-state partnerships funding pursuits. Priority areas will not restrict program delivery nor interfere with equitable provision of assistance or services. Certain functions, such as firefighting and insect / disease outbreak response, imminent threats to life and property will always take precedent. The intent from the onset was to use the assessment and planning process to become a more efficient agency in the delivery and deployment of resources to protect, enhance and conserve our state forest resources. We welcome your assistance and support in making our intentions your reality!

To view the complete Assessment, go to: www.ncforestassessment.com

Budget: Fiscal Year 2009-2010



Total= $53,267,895

PROGRAM TITLE	APPROPRIATION	RECEIPTS	TOTAL
Forestry Field Operations	$35,440,959	$9,464,289*	$44,905,248
Dare Bomb Range	--	1,591,512	1,591,512
Young Offenders Program	920,200	300	920,500
Forest Stewardship	--	262,806	262,806
Forest Tree Improvement	516,648	1,768	518,416
Bladen Lakes State Forest	--	914,053	914,053
Nursery	–	1,563,560	1,563,560
Forest Development	--	2,591,800	2,591,800
	$36,877,807	$16,390,088	$53,267,895
	69.23%	30.77%	100%

*This includes Federal grants, county cooperative contracts, fees and other receipts.

Harvesting at Clemmons Educational State Forest

The Forestry Council

The Forestry Council is an advisory council consisting of 18 members appointed by the governor, president pro tempore of the senate and speaker of the house. The council provides advice to the Secretary of the Department of Environment and Natural Resources with respect to all matters concerning the protection, management and conservation of state-owned privately-owned, and municipally-owned forests in the state. A list of council members is available on the division's website www.dfr.nc.gov.

Forestation Program

The Forestation Program provides site preparation, prescribed burning, fuel mitigation, timber stand improvement, invasive species control and soil stabilization services on a fee basis to landowners where these services do not exist. Additionally, forestation services have also been used to accomplish mine reclamation and stream restoration projects. While we focus on serving private landowners, we have been able to help other state and federal agencies, on a fee basis, to accomplish their management goals. This directly relates to accomplishing the directives, missions and goals in all program areas. This is all provided by a receipt-supported program.

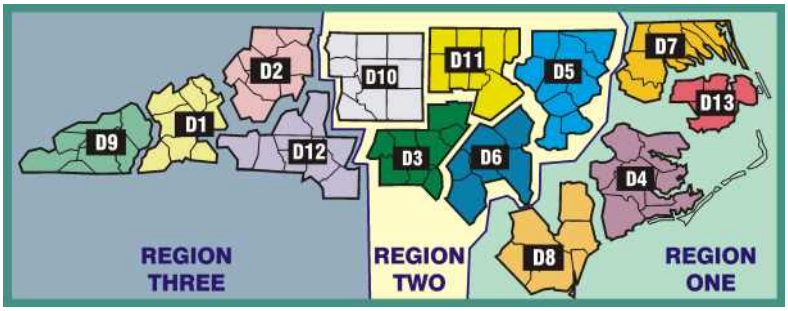
Organization:

The division's mandate is to protect, manage and conserve North Carolina's forest resources efficiently and effectively. The division is organized as follows:

- Director's office -- Director (State Forester), deputy director and assistant director (Raleigh);
- Four sections -- Administrative Services, Forest Protection, Forest Management/ Forest Development and Safety, Planning and Analysis. (Raleigh);
- Three regional offices -- Coastal (Kinston), Piedmont (Chapel Hill) and Mountain (Asheville);
- 13 Districts headquartered at Asheville, Lenoir, Rockingham, New Bern, Rocky Mount, Fayetteville, Elizabeth City, Whiteville, Sylva, Lexington, Hillsborough, Mount Holly and Fairfield
- County forest ranger and staff (13 counties are solely staffed by a county ranger) in all 100 counties.

Each county signs an agreement with the division and shares in the cost of the county program. The county share varies from 35-to-40 percent, depending on the tax base of the county. All personnel employed in the counties are state employees; however, the county boards of commissioners are consulted in the selection of the county ranger.

The county ranger is responsible for carrying out all division programs within his or her county. The county ranger is a forest technician who has completed either a two-year forest technician course at a technical school and/or a comparable in-service training program administered by the division.



Professional assistance in technical areas is provided by foresters, specialists and the district staff who are responsible for managing all programs administered by the counties in that district.

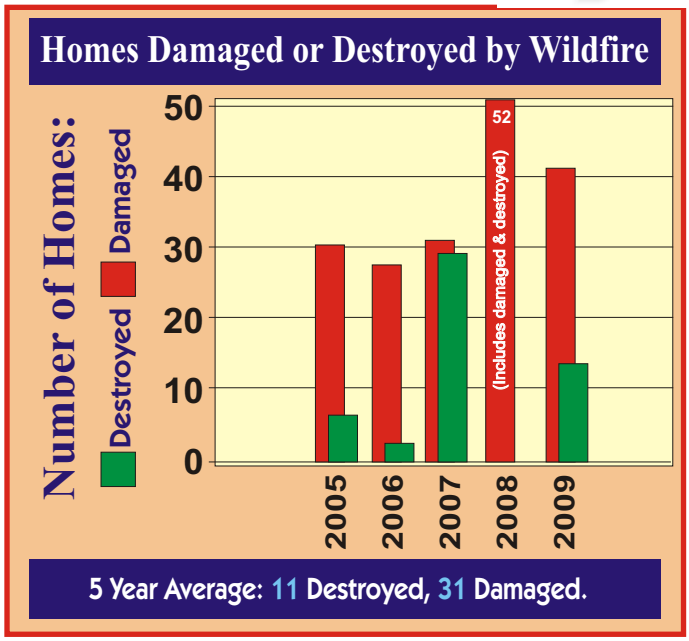
Forest Protection Program

(G.S. 113-52, 113-55,113-55.2,113-60.4, 113-60.11, 113-60.24, 113-60.43)

The Division of Forest Resources (DFR) is mandated by the North Carolina General Statutes to detect and suppress all forest fires under the jurisdiction of the state. There are approximately 23 million acres that fall under the jurisdiction of the state where a fire may occur that will require suppression action. A combination of ground and aerial resources are required to provide for the safety of firefighters and the public and to minimize the loss of forestland, homes, and personal property to wildfires. The division has agreements in place and works cooperatively with our federal partners and other agencies to achieve our goals. The program is managed on a cooperative basis with the State's counties. All 100 counties participate in the forest fire protection program.

Wildfire in Brunswick County

Emphasis in the fire program include fire prevention efforts, pre-suppression activities (including extensive training of division and non-division personnel), aggressive suppression efforts on all wildfires and law enforcement. DFR's aviation program has helped North Carolina develop aggressive initial attack strategies for wildfires that allow the state to have one of the lowest fire size averages and one of the best firefighter safety records in the nation. DFR has a variety of aircraft that fill a role in ensuring that we maintain the ability to keep fire sizes at a minimum.



- **Firewise Projects: 46**
- **Community Wildfire Protection Plans: 60**
- **Pest Control Assists: 1,407**
- **Southern Pine Beetle Projects: 4,482**
- **Hemlock Woolly Adelgid Trees Treated: 3,910**
- **Southern Pine Beetle Prevention Program**
  Acres thinned (5 years): 50,000
- **Warning Tickets: 1,305**
- **Citations: 286**
- **Warrants: 53**

Wildland Urban/Interface & Firewise

The division is raising awareness, prevent and mitigate the wildland urban/Interface hazards in North Carolina through initiatives that include Firewise, Southern Wildfire Risk Assessment (SWRA), Community Wildfire Protection Plans (CWPP), and the Community Protection Program. North Carolina leads the nation with the number of homes at-risk from wildfires.

The division and its cooperating agencies consider the Firewise program an essential resource to prepare the more than 1,400 communities at risk from wildfire and mitigate the hazards preemptively. North Carolina ranks first in the country in the number of acres of wildland urban interface acres and fifth in the number of homes in the wildland urban interface. Eighteen communities have received national recognition under the Firewise Communities/USA program, and more than a dozen communities across the state are currently participating in the Firewise program in an attempt to receive national recognition in the Firewise Communities USA program. The division has developed and is using an interactive DVD training program titled “Living on the Edge in North Carolina” to educate homeowners, local leaders, developers and builders about the risk of homes in or near forested areas. This DVD utilizes photos and video specific to North Carolina, and is accompanied by another educational DVD program titled “How to have a Firewise Home in North Carolina”.

The division, in coordination with its neighboring state forestry agencies, completed the SWRA. This Geographic Information System assessment allows the division and its partners at the national, state and local levels to obtain a clearer picture of what the overall potential is for wildland fire and its associated challenges. The division is using the SWRA to identify high hazard areas and for educating the public about the risk of their community to wildfires. The division plans to make the SWRA web based in North Carolina to provide for maximum exposure to our wildfire history and its associated challenges.

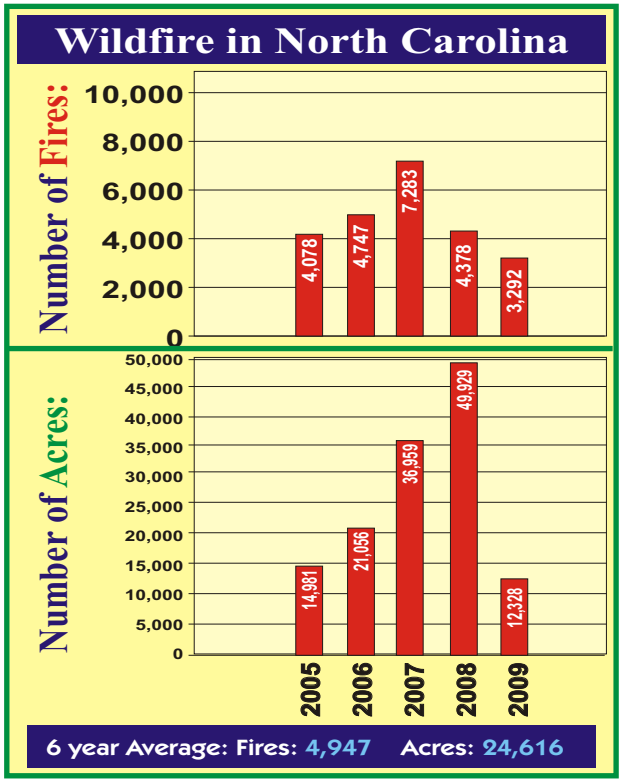
The division is taking the lead to complete CWPPs in all fire districts in the state. A CWPP brings together diverse local interests to discuss their mutual concerns for public safety, community sustainability and natural resources. It offers a positive, solution-oriented environment in which to address challenges such as: firefighting capability, the need for defensible space around homes and subdivisions, and where and how to prioritize land management.

Natural Disaster Assistance *(G.S. 113-60.11)*

The Division has a distinguished reputation in assisting the public during or following natural disasters within North Carolina or wherever else needed anywhere in the country. Having three Type Two, highly trained and nationally certified teams is a significant accomplishment within the Southeast. The training and equipping of personnel make DFR ready to assist with tornadoes, hurricanes, floods and other events. The incident command system allows us to quickly mobilize and organize large forces on the ground anywhere in North Carolina or throughout the country. Working with the State Division of Emergency Management, DFR is often the first called and last to leave many disasters.

Law Enforcement *(G.S. 113-55.1)*

The Division of Forest Resources is a service organization charged by general statutes with the responsibility of preventing and controlling forest fires and enforcing forest laws. Law enforcement is an essential part of forest fire prevention. Escaped fires from debris burning account for 40 percent of all forest fires while woods arson accounts for 24 percent of all forest fires. The division's four full-time law enforcement officers coordinate the enforcement activities of the 580 forest rangers in the state. They provide specialized training in arson investigation, fire cause and origin determination and forest laws to the forest rangers.



Training

The division has an extensive training program in forest fire protection and all-hazard incident management and response. The division uses more than 100 training courses from the National Wildfire Coordinating Group and National Incident Management System wildfire, prescribed burning and incident management training courses as well as approximately 20 agency specific courses. Training targets division personnel as well as state and federal cooperators and local fire departments. More than 40 classroom and functional training courses were conducted in 2009. More than 700 DFR and other agency personnel were trained. Our training and use of the all-hazard Incident Command System enables the division to be one of the primary responders to natural and man-made disasters in the state including hurricanes, tornadoes, blizzards and other emergencies.

Training Facilities

The division operates three training facilities. The facilities in Crossnore and Kinston offer overnight accommodations, dining facilities and classrooms with multimedia capabilities. The third facility, at Jordan Lake does not have overnight accommodations. These facilities are available to state agencies or other organizations at reasonable rates.

Insect and Disease Control *(G.S. 113-52, 113-60.7, 113-60.8)*

The Division of Forest Resources is responsible for providing assistance to forest landowners in the detection and control of destructive forest insects and diseases. A staff of four foresters and two technicians in the Forest Protection Section oversee this responsibility. Services are provided to landowners through district and county organizations with pest control staff providing training and professional/technical expertise in identification, biology and control of destructive insect and disease epidemics.

Tracking, monitoring, controlling and managing non-native invasive species creates new challenges. Increasingly, the program has been involved with prevention, monitoring and control of non-native invasive species of insects and diseases that threaten our forests. These invasive pests are more difficult than native pests because they come to North Carolina without their natural enemies and attack native trees and forests. Much of the division's pest control program attention has been directed toward these more destructive and difficult to control pests. Existing non-native invasive pests in North Carolina that damage forests include: balsam and hemlock woolly adelgid, beech bark disease, dogwood anthracnose, butternut canker, phytophthora root rots, and gypsy moth.

In addition, several non-native invasive pests found elsewhere in the United States are capable of impacting our forests when they reach North Carolina. These include redbay ambrosia beetle/laurel wilt, emerald ash borer, Asian longhorn beetle, sirex woodwasp, thousand cankers of walnut and sudden oak death. All of these threats have a high potential to alter forest ecosystems could lead to localized extinction of some forest species in the state. Pest control staff, working with other agencies and universities, constantly monitor movement of these pests through trappings and surveys, and alert and train division personnel, forestry and agricultural and environmental interests to recognize and deal with these pests.

Fire Department Assistance

The N.C. Division of Forest Resources provides assistance to the more than1600 North Carolina fire departments through several programs. These programs offer a variety of fire training courses, equipment by loan agreements, equipment and supplies for purchasing by fire departments, and the Volunteer Fire Assistance Grant program for purchasing wildland firefighting personal protective equipment.

- **2010 Wildland Suppresion Classes: 137**
- **2010 V.F.D Firemen Trained: 2452**
- **Over the past 5 years, NCDFR has given more than $2.5 million in D.O.D. equipment to VFD's throughout the state.**

Information and Education

(G.S. 113-22, 113-32, 113-35,113-60)

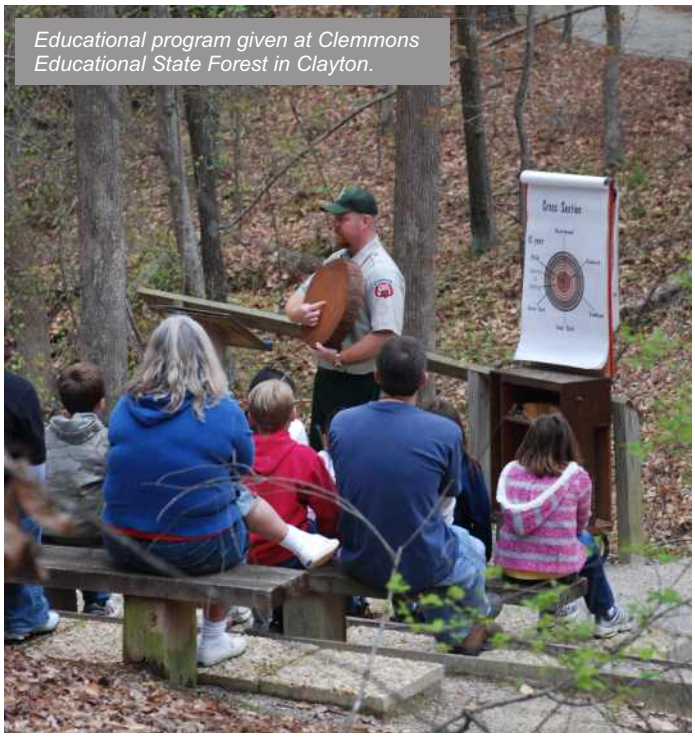
The Information and Education Branch is responsible for the production and distribution of educational materials and programs used by the division for public awareness. The division maintains an active public outreach program designed to heighten the public awareness about the division's services and the importance and need to protect and manage our state's vital forest resources.

This branch also provides staff support to seven educational state forests operated by the division. The primary purpose of the educational state forests is to educate the public, primarily school children, about forest management practices, the forest resources of the state and the need to properly manage these resources. The forests have demonstration and research area that show visitors many of these management principles. These forests now receive more than 198,000 visitors per year. To learn more, visit: www.ncesf.org

Educational State Forest Attendance: 198,000
Total Students Taught: 27,548
Total Correlated Classes given: 1,849

BRIDGE crew at work in western N.C.

Equipment supplied to VFD's through the FEPP Program.



Educational program given at Clemmons Educational State Forest in Clayton.

Young Offenders Forest Conservation Program (BRIDGE)

The Young Offenders Forest Conservation Program (also known as B.R.I.D.G.E. Building, Rehabilitating, Instructing, Developing, Growing, Employing) is a cooperative effort with the Division of Prisons to train and use non-violent young inmates. The program offers rehabilitation and education opportunities to inmates and provide important services in the protection and management of the state's natural resources.

- **The primary goal of the BRIDGE program is to provide well-trained and equipped forest fire fighting crews ready for immediate dispatch. To date, BRIDGE crews have contributed more than 569,000 man-hours to wildland fire suppression.**
- **BRIDGE crews save the division an average of $800,000 per year.**

B.R.I.D.G.E. (continued)

- **BRIDGE crews have indirectly provided services for all 100 North Carolina counties through involvement with the nursery, tree improvement, and stewardship programs.**
- **Inmate labor costs have remained at $1 per day from the inception of the program, while local and federal contract firefighters' rates have steadily increased. Local contractors are paid $9.05/hour, while federal contractors are paid $17.08 hour.**
- **Results of an informal recidivism study conducted by the North Carolina Division of Forest Resources for calendar year 2008 showed a 7.3 percent rate of return for the BRIDGE program as opposed to a 37.5 percent rate of return for the general population of inmates of the same age as shown by N.C Department of Corrections.**
- **Sister DENR agencies such as the N.C. Division of Parks and Recreation and the N.C. Wildlife Resource Commission have realized substantial benefits from the 203,647 man-hours of labor provided to their programs for such projects as fire control, controlled burns, storm clean-up and trail maintenance. State Parks saved $75,900 from January 2008 through October 2009 based on $7.25 per hour for a state park seasonal worker.**

***BRIDGE** Crew at work.*

Single Engine Air Tanker(SEAT) making a water drop in Robeson County.

Helicopter dropping on a fire at Morrow Mountain State Park.

Aviation

(G.S. 113-52, 113-55)

The division operates multiple fixed-wing aircraft and helicopters statewide. These aircraft are instrumental in forest fire detection and suppression programs throughout the state, including assisting on national forests, national parks and military installations. The division's aircraft are also essential for firefighters on the ground who rely on the aerial view of the pilot to keep them in as safe a working environment as possible. With the dynamic and unpredictable nature of fire, this is always needed. The fixed-wing/rotary-wing aircraft also operate in support of the division's forest management, pest control and water quality programs. The aircraft may also be used for emergency management, coastal and land management activities. These aircraft support DFR by providing aerial survey platforms to ensure that all established guidelines for all programs are adhered to in the state. Seven of the aircraft were obtained through the Federal Excess Personal Property (FEPP) program, thus are technically owned by the U.S. Forest Service. Federal law limits the use of these aircraft to 10 percent for non-fire use.

The Division's aviation assets are critical in maintaining our readiness and ability to safely and quickly suppress wildfires.

Forest Management *(G.S. 113-29, 113-33)*

The objective of the Forest Management program is to assist private, non-industrial forest landowners in establishing and perpetually sustaining a high level of productivity of the natural resources within the state's forests. The major resources include timber, wildlife, water, soils, outdoor recreation and the aesthetic values of the environment.

The N.C. Division of Forest Resources is responsible for assuring those recommendations proposed for private lands are technically sound, practical and serve the best interest of the public.

Management Plans: 3,621
Management Plan Acres: 212,730
Practice Plans: 1,110
Practice Plan Acres: 44,514
Regeneration Plans: 2,175
Regeneration Plan Acres: 74,377

Timber harvesting operation at Clemmons Educational State Forest.

Bladen Lakes State Forest

The division's forest management activities provide a wide range of assistance to the public including forest establishment assistance, intermediate stand management practices and proper harvesting methods. This also includes managing for non-timber benefits, as well as water quality protection and improvement during forestry operations. This is often accomplished through the use of forestry Best Management Practices (BMPs) and insuring compliance with Forest Practice Guidelines (FPGs) Related to Water Quality, which is part of the Sedimentation Pollution Control Act. The division also provides landowners with information on forest taxation, threatened and endangered species, forestry herbicides, prescribed fire, invasive species, insects and diseases, forest fertilization, and other common and unique forestry practices. DFR also coordinates federal cost-share programs, as well as the state's Forest Development Program (FDP) which provides cost-share funds for reforestation and forest stand improvement. Other responsibilities include providing technical expertise for the Forest Stewardship Program; administering the Forest Legacy Program, coordinating forest management training for forest technicians and foresters; and serving as liaison with federal agencies, the forest industry, consulting foresters and other groups or entities with an interest in forestry.

Forest Establishment Total Acres: 78,122
Survival Check Acres: 43,623
Land Measure for Cost Share (Acres): 64,336

Technical Development, Planning and Utilization *(G.S. 113-29, 113-35)*

The Division's Research and Development program conducts applied forestry research that improves resource management knowledge. Our focus is on developing and applying new techniques that enhance productivity and sustainability of the state's natural resources. Technology transfer, staff training and outreach are key components of this effort. Forest-based economic development efforts support traditional forest products industries as well as emerging markets such as carbon sequestration, woody biomass for energy and ecosystem services. To help address these traditional and emerging markets, the division is involved in efforts to re-establish declining tree species and ecosystems such as Longleaf and Shortleaf pine, Atlantic white cedar, Baldcypress, American chestnut, Butternut and other upland and bottomland hardwoods. Collection and analysis of vital forest resource data is a critical component of the division's strategic planning efforts to address forest sustainability issues.

Forest Stand Improvement Acres: 17,254

New Longleaf seedling production area at Claridge Nursery in Goldsboro, funded by an ARRA Grant.

Tree Improvement Program *(G.S. 113-29, 113-35)*

The Tree Improvement program ensures that seed of the best genetic quality is available to the state nurseries so that seedlings of the highest productivity, form, wood quality and disease resistance are available for use throughout the state. This helps North Carolina landowners obtain the greatest return from planting these seedlings. Tree improvement activities include selection, breeding and testing of numerous species. Establishment of seed production areas, genetically improved seed orchards and clone banks include the southern Yellow Pine species, Eastern White Pine, Atlantic White Cedar (Juniper) and Fraser Fir. Several hardwood species are also being improved. Third cycle Loblolly Pine and second generation Fraser Fir seed orchards are now producing seeds for commercial use from our nurseries.

2010 Longleaf Seedling

Forest Tree Seedling Nursery Program *(G.S.113-35)*

The Forest Tree Nursery program is a receipt-based program. The goals of the program are to produce and sell seedlings of native forest tree species for aforestation and reforestation planting, wetland mitigation, stream bank restoration, and for research efforts related to the program. This program is essential in ensuring a wide variety of tree species to North Carolina landowners. Several species, including Fraser Fir are also grown for the Christmas tree industry. Seedlings are grown at cost as bare-root, container and greenhouse plants and may include 40-to-50 species of conifers and deciduous hardwoods in any given year. More than 10.7 million seedlings were sold in 2010. A seed processing facility is associated with the nursery program to process, extract and store seed for nursery use. Both wild and genetically- improved seed is processed at this facility. Wild seed used by the nursery is collected by DFR personnel throughout the state. More than 92 percent of the seedlings raised by the nurseries were genetically improved to enhance growth and form.

- **More than 10.7 million seedlings were sold in 2010.**
- **More than 92 percent of the seedlings raised by the nurseries were genetically improved.**

Longleaf re-establishment area at Clemmons Educational State Forest.

Forest Stewardship Program

The Forest Stewardship program is a federally-funded, on-the-ground approach to natural resources, education, assistance and recognition. The Forest Stewardship program aids landowners in meeting their forestry objectives in environmentally sensitive and ecologically sound ways. A requirement of the program is to create and maintain a forest in a productive, vigorous and healthy manner.

The program provides landowners with on-the-ground assistance and planning. A working partnership between the division, the N.C. Wildlife Resources Commission and other organizations work together to enhance and protect the timber, soil and water, wildlife and fish, and recreational and aesthetic values of the ownership.

- **Since 1990, 4,733 Forest Stewardship Plans covering more than 644,000 acres have been written for North Carolina forest landowners. In this same period, 720 tracts have been certified involving over 132,000 acres.**
- **2009 Stewardship Plans: 230**
  Stewardship Plan Acres: 31,898

Managing forests for wildlife

Forest Legacy Program

The Forest Legacy program helps landowners, state and local governments, and private land trusts identify environmentally important forest lands threatened by conversion to non-forest uses. Once enrolled, the program permanently ensures the forest land remains a "working forest." Forest Legacy is a partnership in which North Carolina develops its own assessment guidelines that conform to federal requirements. The Forest Legacy program costs are shared between the federal government (75 percent) and the landowner (25 percent) in cash or in kind. The responsibility of easement monitoring rests with the state and local governments.

Since the program began in 2000, 10 projects have been added to the Forest Legacy program involving 8,249 acres.

Forest Development Program

(Cost-Share Assistance for Landowners) *(G.S. 113A-179)*

The Forest Development Program (FDP) was designed to encourage private woodland owners to reforest their land after harvest, and to put idle or unproductive land into trees, thus ensuring future timber supplies while providing environmental protection to the state's forest land. This program typically offers 40 percent cost-share assistance to private landowners as an incentive to encourage reforestation and forest stand improvement. This helps to ease the financial burden of their long-term investment. Many landowners will not realize any return on this investment for 20 years or longer.

In July 1993, a "Longleaf Initiative" was undertaken to increase this species in its natural range and restore this important ecosystem. Additional attention was also focused on hardwood production and the planting of desirable species in wetland areas. The higher cost to landowners to undertake these practices is prohibitive in many cases. To make restoration of longleaf, hardwood and wetland species more equitable and attractive, the cost-share reimbursement rate for the planting of these species was raised to 60 percent (as opposed to the 40 percent for all other practices). Additional practices were added to the program in 2006, such as prescribed burning, stand improvement, fertilization and crop tree release. These are starting to be used by landowners in order to improve existing forests.

Number of Landowner Contracts: 2,096
Total FDP Acres: 72,136
Total FDP Dollars: 4,758,421

Young longleaf pine plantation.

The program has been funded most years by both timber assessments (paid by primary processors of wood products) and state appropriations. The last two fiscal years have seen no state appropriations allotted to the program. Each year there is more than a $2 million backlog of fully qualified applicants for this program.

Since the program's inception in 1978, the FDP has helped establish more than 1.2 million acres of new forests in North Carolina. This includes 3,705 acres of hardwood/wetland planting and 50,348 acres of longleaf pine.

Urban & Community Forestry Program

The division's Urban and Community Forestry (U&CF) program promotes the health and management of urban forests in North Carolina by offering technical assistance, education opportunities and program support to municipalities, organizations, agencies, industries and private landowners. Urban forests can be individual trees along a street, scattered trees in a park, or a private or public forested area affected by urban and suburban surroundings. This federally-funded program strives to help the states citizens and communities realize the importance of urban trees in environmental protection, economic development and the environmental benefits they provide such as clean air and water, cooling effects and recreational opportunity. The U&CF program works closely with the N.C. Urban Forest Council to promote tree care professionalism and education statewide.

2009-2010 Accomplishments:

- During the 2010 U&CF grant cycle, 24 grant projects were awarded totaling $227,507 in financial support given to North Carolina communities and non-profit organizations. These are 50/50 match grants.
- In 2009, there were 77 Tree City USA communities in the state, four of which were brand new participants; five Tree Campus USA participants, three were new to the program; and two Tree Line USA utilities.
- In 2009, 177 local governments (cities and counties) were provided educational, technical, or financial assistance through the U&CF Program. This equates to 4,392,711 people, living in those communities, being assisted through the U&CF Program.
- The N.C. Woodland Steward Series was successfully held in all three regions of the state, with 116 landowners participating in the workshop series.

Urban forests have many benefits.

Dupont State Forest

Water Quality and NPS Branch *(G.S. 113A-52.1)*

Water quality compliance inspections, site evaluations, logger training and water resource protection or restoration projects are administered by a core team of staff specialists who support the division's nine water quality foresters. Annual accomplishments are summarized in the Year-In-Review color brochure, available from the division's web site. Selected accomplishments for fiscal year 2009-2010:

2009-2010 Accomplishments:

- 3,202 forestry site inspections were conducted to monitor compliance with the state water quality regulations of the Forest Practices Guidelines (FPG's). An additional 1,870 follow up inspections were also conducted. The overall state FPG compliance rate was 95 percent, while five sites were referred to cooperating state agencies for further enforcement action.
- 99 complaints were received by the DFR regarding forestry operations. Approximately 31percent of inspections on those complaints resulted in a notice of non-compliance.
- 75 loggers trained through our ongoing partnership with the N.C. ProLogger Program.
- 18 students from the N.C. State University Department of Forestry and Environmental Resources received instruction about forestry best management practices (BMP's) at Jordan Lake Educational State Forest.
- The division's portable bridgemats were used on 52 logging sites to protect or establish 64 stream crossings, which provided access to more than 2,100 acres of timber harvest. A six year project status report on the bridgemats was produced in April 2009.
- A new 30-minute training video was produced to show installation of silt fence and erosion matting, to be used for training approximately 1,400 ProLoggers statewide. Copies of this video were distributed by the division's field offices as well.

Safety, Planning and Analysis Program:

The Safety, Planning and Analysis program supports the division by promoting a safe and healthy work environment through assisting/encouraging employees in efforts to assure safe working conditions, and by providing research, education, and training; and by providing timely and relevant information to aid in planning, decision making, accountability, effectiveness, and efficiency.

Safety *(G.S. 95-148)*

The division's safety program promotes safe and healthy working conditions. It provides managers, supervisors, and employees with a clear and firm understanding of the division's concern for protecting employees from job-related injuries and illnesses; preventing accidents and fires; planning for emergencies and emergency medical procedures; identifying and controlling physical, chemical, and biological hazards in the workplace; communicating potential hazards to employees; and maintaining a sanitary environment.

Fire Environment *(G.S. 113-51)*

The Fire Environment Branch provides decision support services to the state's wildland fire community. In general, the branch consists of assimilating intelligence, fire behavior, and fire weather information to produce state and area-wide fire weather / fire danger / fire behavior outlook products. In addition, program specific products are developed ranging from, weather station monitoring, and weather forecasting, to fuel moisture and fire behavior analysis. Extensive training on fire danger and fire environment areas is provided to fire fighting interagency partners and the natural resource community. Research is conducted on subjects such as smoldering potential and smoke management in coastal soils, the effects of smoke on wildland firefighters and the development of scientific based decision tools for go/no- go calls on prescribed burning and burning bans.

Smoke Management *(G.S. 113-60.43)*

Smoke from forestry prescribed burns throughout the state is managed through a Voluntary Smoke Management Program. The volume of fuel that can be burned is determined by atmospheric conditions and by the distance the burn will take place from a smoke sensitive area, such as a major highway or a populated area.

Prescribed Burning

Landowner Hazard Reduction Prescribed Burning Program *(G.S. 113-60.43)*

The Landowner Hazard Reduction Prescribed Burning program trains landowners to conduct prescribed burning on their forestland in an effort to reduce forest fires and property losses caused by forest fires. This is accomplished by reducing fuel buildup (litter, leaves, twigs, etc.) on property through the use of prescribed burning.

Forest Inventory and Analysis (FIA) Program *(G.S. 113-51)*

The Forest Inventory and Analysis (FIA) program is a cooperative project funded by the U.S. Forest Service. The program provides the information needed to assess North Carolina's forests. Measurements of the forest are taken at more than 5,000 fixed plots located randomly throughout the state. The data collected is used to determine availability of feed stock for biomass or conventional wood products, trends in forest ecosystems, as a tool to gauge the success of present and future policy changes, determine economic impact of forest products, determine economic and ecological impact of natural disasters and provide answers to the questions about the state's forest resources.

Geospatial Services *(G.S. 113-29, 133-51)*

Geospatial technologies such as GIS, GPS and remote sensing have become critical to decision-making in forest protection and forest management. Geospatial technology is used to determine priority areas in which DFR will work, and demonstrate accountability in program delivery. To this end, the Geospatial Services branch facilitates spatial technology accompanied with knowledge, theory and hands-on experience in activities related to mapping, GIS data collection and analysis.

Data Analysis *(G.S. 113-3)*

The division collects data from numerous sources that may be used to assess such things as the health of our forest, fire suppression resource locations and manning requirements, as well as budgetary efficiencies and effectiveness. The data analysis branch is responsible for data integration which involves combining data residing in different sources and providing users with a unified view of the data. Analysis of data is also conducted through a process of inspecting, cleaning, transforming, and modeling data with the goal of highlighting useful information, suggesting conclusions, and supporting decision-making.

State Forests

Bladen Lakes State Forest

(G.S. 113-22, 113-29, 113-34, 113-35)

Bladen Lakes State Forest is a 33,014-acre forest operated by the division as a commercial demonstration forest. The forest is 100 percent supported by receipts derived from the sale of forest products and hunting. It is part of the North Carolina Wildlife Resource Commission Game Land Program.

It is located just northeast of Elizabethtown in Bladen County. Because the land was poor for farming, it was acquired by the federal government from 1936 to 1942. Families were then relocated to other areas where farming was more profitable. The land was deeded to the state on October 19, 1954, but the federal government has the reversionary right to retake the property if it ceases to be used for public purposes. Since then, forest stand development, tree planting, cultural practices and harvesting have taken place on the Forest, as well as considerable amounts of forestry research and development of innovative silvicultural management procedures.

More than 5,000 acres of rare ecosystems have been set aside to be managed as natural areas. Accomplishments that satisfy the Longleaf Pine Initiative include the doubling of longleaf pine plantation acreage on the forest since 1998, and enhancements to the longleaf pine ecosystem that have benefitted native and endangered species of plants and animals on many more acres.

Administration of the public lands portion of the American Recovery and Reinvestment Act Longleaf grant is currently being performed primarily at Bladen Lakes State Forest.

In fiscal year 2009-10, accomplishments at BLSF include the following:

- **Prescribed Burning Acres: 2,540**
- **Plantation Thinning Acres Sold: 661**
- **Total Acres Planted: 492**
- **Break Down of Acres Planted:**
  - **Longleaf: 446**
  - **Hickory: 13**
  - **Shortleaf Pine: 20**
  - **Atlantic White Cedar: 13**

Bladen Lakes State Forest

High Falls, Dupont State Forest

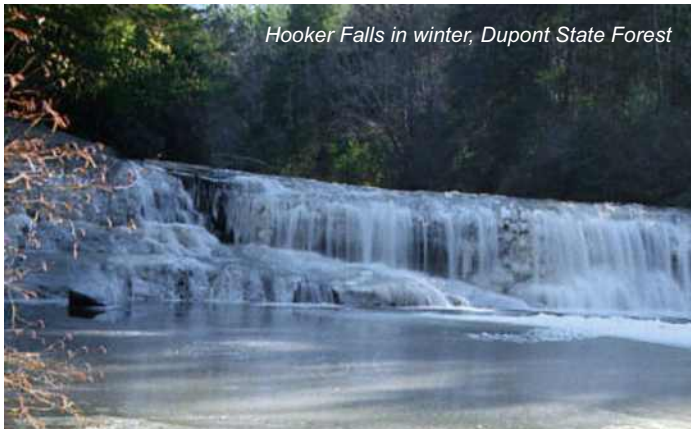
Dupont State Forest

(G.S. 113-22, 113-29, 113-34, 113-35)

The 10,400-acre DuPont State Forest is located between Hendersonville and Brevard. Management on the forest focuses on forest health and also to sustain and improve wildlife habitat. This forest is used to demonstrate forest management practices and conduct research. The forest also has a strong recreation component attracting more than 130,000 visitors per year. The forest contains four major waterfalls and five mountain lakes.

There are more than 80 miles of roads and trails open to hikers, mountain bikers, equestrians and others recreational uses. The DuPont Dedicated Nature Preserve contains 2,584 acres of primary area with unique plant communities. The forest is in the N.C. Wildlife Resources Commission's Game Land program. Hunting is allowed with a Game Land permit. In the past five years, 9.2 miles of trails were reconstructed, DSF staff and volunteers completed 16 construction projects, and public restrooms were constructed. The forest visitor center will be completed when funds become available.

In 2009, the forest served as an outdoor classroom for school children (more than 2,300 visits), tours were conducted for more than 1,600 people and about 2,000 participated in other special events. Groups and agencies conducting training sessions in the forest included: DFR, search and rescue units, N.C. Division of Emergency Management, local fire departments, Professional Trail Builders Association and several branches of the U.S. Armed Forces.


Hooker Falls in winter, Dupont State Forest

The N.C. Division of Forest Resources and the

American Recovery and Reinvestment Act

The N.C. Division of Forest Resources was awarded more than $6.8 million dollars through the American Recovery and Reinvestment Act (ARRA) for six projects in North Carolina.

Mechanical hazardous fuel reduction

Hazard Forest Fuel Mitigation Program

The division was awarded approximately $4.6 million in wildfire hazard reduction money with the goal of reducing the hazardous fuel loads in North Carolina forests in and adjacent to forested communities or forested developments, resulting in the expenditure of fewer tax dollars to fight wildfires while maintaining and creating jobs. In addition, three full time employees have been hired to coordinate mitigation efforts for each geographic region of the state, coastal, piedmont and mountain. These employees seek out areas that need fuel mitigation and establish contracts to carry out that work. Two temporary employees were also hired as equipment operators for a mulching machine that is used to create fire breaks or to modify hazardous fuel by grinding and mulching down the excessive forest understory fuels.

To aid the division with the creation of Community Wildland Fire Protection Plans (CWPP) an assistant coordinator was hired to manage the collection of data and development of CWPP's under the ARRA program. Private contractors are also being hired to provide wildfire mitigation and prevention education, and complete CWPP's by collecting data in 300 fire districts and reporting the information using NCDFR protocols. The information in the CWPP's will be used to identify communities for NCDFR to promote the N.C. Firewise program to, which provides the knowledge necessary for citizens to protect their homes in the wildland urban interface from wildfire. Eighteen communities in North Carolina have received national recognition from the Firewise Communities/USA program.

DFR received $6.8 million in ARRA funding.

Longleaf Pine Restoration Initiative

The division was also awarded more than $1.7 million for the Regional Longleaf Pine Restoration Initiative through the ARRA. NCDFR is partnering with four other state forestry agencies (South Carolina, Georgia, Florida, and Alabama) on a collaborative effort to restore longleaf pine in its native range. Total funding for the regional ARRA initiative exceeds $8.9 million.

Longleaf pine once covered 92 million acres from Virginia to eastern Texas. Today, approximately 3 million acres remain. During the colonial and early statehood periods, longleaf pine forests were a vital part of North Carolina's economy and culture, and are embodied in the state toast and nickname, “The Tar Heel State.”

Longleaf Pine restoration at Clemmons Educational State Forest.

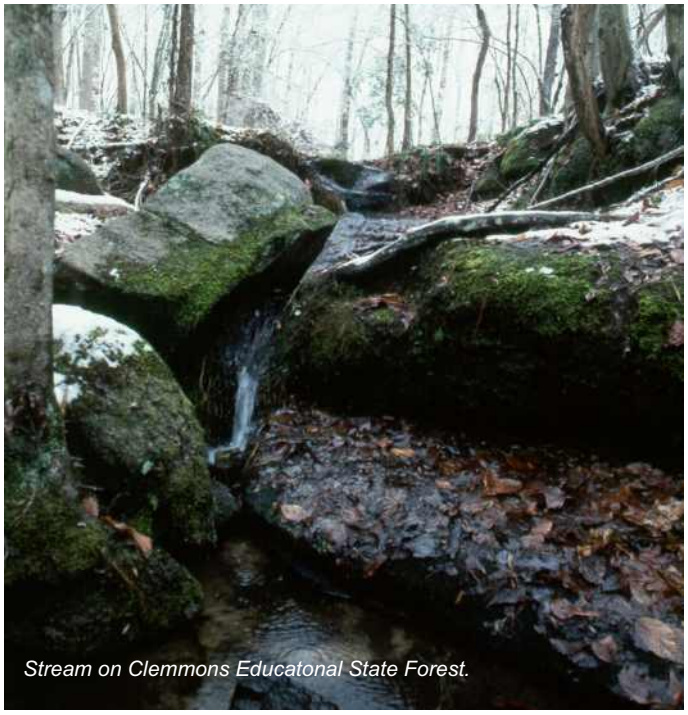
In North Carolina, the ARRA Longleaf Initiative is providing support in the following areas:

The majority of the longleaf restoration efforts are occurring at Bladen Lakes State Forest (BLSF) to establish longleaf pine on 700 acres within and near red cockaded woodpecker forage habitat. A number of other management activities are underway at BLSF, including the establishment of 300 acres of wiregrass groundcover under canopies of existing longleaf pine, prescribed burns on approximately 6,300 acres of existing, and soon to be converted longleaf stands, and more than 300 acres of stand improvement treatments. This work is being accomplished with the help from seven temporary employees and private contractors hired using ARRA grant money.

ARRA funding has supported significant improvements at the division's Claridge State Forest Nursery in Goldsboro. The nursery's longleaf pine containerized seedling production capacity has increased by 4.2 million seedlings annually, and for the first time, our nursery is growing several native warm-season grasses and forbs that will be made available for longleaf ecosystem restoration projects in North Carolina.

Stimulus funding is also supporting two positions; an ARRA grant coordinator, and an ARRA Longleaf Program Coordinator. As part of this initiative, the division was instrumental in the formation of the N.C. Longleaf Coalition, an organization committed to promoting the maintenance and restoration of the state's longleaf pine ecosystems. A joint meeting of the N.C. Longleaf Coalition and the N.C. Prescribed Fire Council attracted almost 200 professional resource managers and longleaf advocates to New Bern and the Croatan National Forest to promote increased prescribed burning as a means to restore the longleaf ecosystem. The initiative's education and outreach component has supported in-depth training for 21 foresters and natural resource professionals who have graduated from the week-long Longleaf Academy course provided by the Longleaf Alliance. Future plans include holding several educational workshops for forest landowners and the development and distribution of educational materials.

Longleaf pine forest with wire grass understory.



Stream on Clemmons Educatonal State Forest.

Keeping Sediment in Check with BMPs

A $247,000 grant has also been awarded through the ARRA to the N.C. Division of Forest Resources to fund a project entitled "Keep Sediment in Check." Funding has helped retain two jobs that help to protect water quality across North Carolina through educational or training workshops, stream restoration, examining logging sites, and studying the effects of timber harvesting on streams. As of July 2010, personnel with the Division of Forest Resources, whose salaries are partially-supported by this ARRA "Keep Sediment in Check" grant, have:

- Instructed four training/education workshops, reaching more than 180 individuals. These individuals included loggers, college forestry students, and high school students.
- Produced the fourth in a series of training videos that demonstrate forestry best management practices for erosion and sediment control. This video was incorporated into the 2010-2011 annual training module for the N.C. ProLogger Program that will reach approximately 1,400 loggers statewide.
- Provided oversight of our partners at N.C. State University's Department of Biological and Agricultural Engineering on the design and engineering work for a proposed stream restoration project at DuPont State Forest in Transylvania County.
- Examined logging jobs associated with a watershed study that will evaluate the effects of timber harvesting, stream crossings and stream side buffers on water quality and stream condition.

Hazard reduction burning at Bladen Lakes State Forest

Forest management activities on Bladen Lakes State Forest.

Fuel Hazard Reduction and Invasive Species Control

Two grants have been awarded to NCDFR's Young Offenders Forest Conservation Program, also known as the B.R.I.D.G.E (Building, Rehabilitating, Instructing, Developing, Growing, Employing) program.

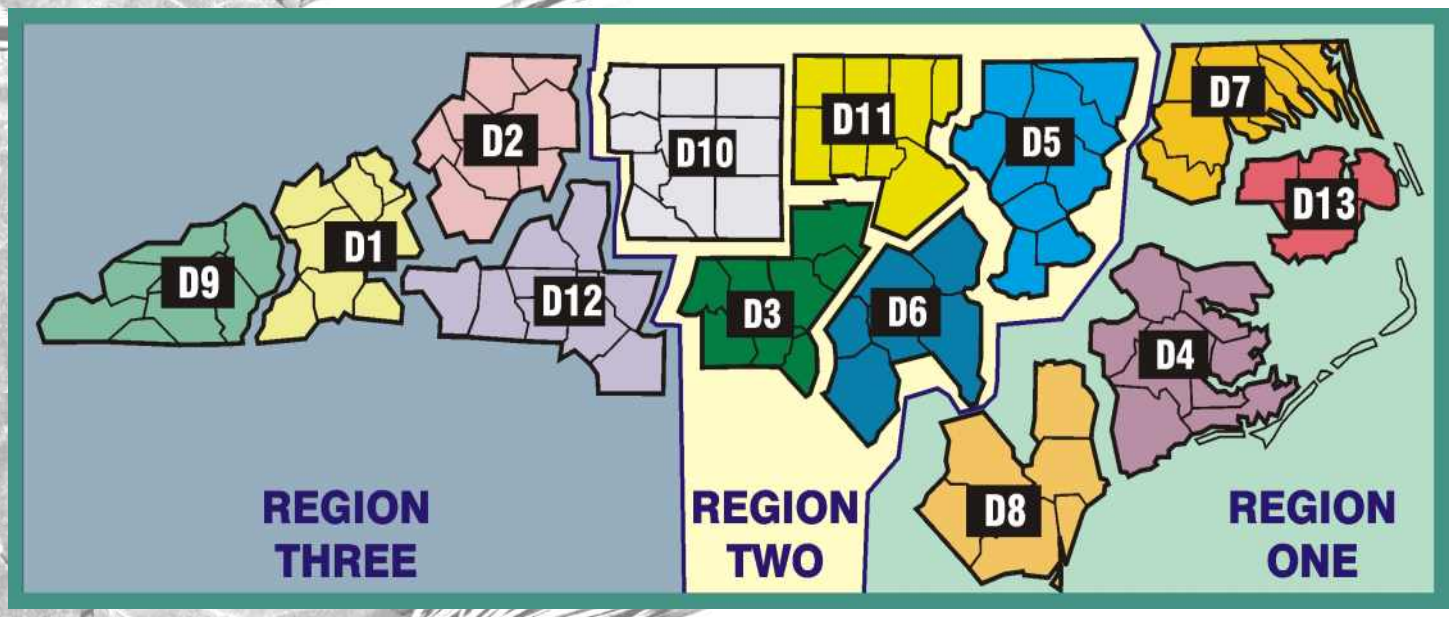
- A grant for $105,390 has been awarded for invasive species control in the Linville Gorge area. BRIDGE crews will work collaboratively with the U.S. Forest Service to complete this project.
- BRIDGE was also awarded a second grant for $36,800 for hazardous fuels reduction in the Grandfather Ranger District in Pisgah National Forest. BRIDGE will also work together with the U.S. Forest Service on this project.

DFR's District 4 in New Bern has also been awarded a $52,220 ARRA grant to work with the U.S. Forest Service on reducing hazardous fuels in the Croatan National Forest.

The North Carolina Division of Forest Resources is an equal opportunity/affirmative action employer. Its programs, activities and employment practices are available to all people regardless of race, color, religion, sex, age, national origin, handicap or political affiliation.

Our Mission:

To develop, protect, and manage the multiple resources of North Carolina's forests through professional stewardship, enhancing the quality of life for our citizens while ensuring the continuity of these vital resources.



NCDFR DISTRICT OFFICES:

District 1: Asheville	(828) 667-5211
District 2: Lenoir	(828) 757-5611
District 3: Rockingham	(910) 997-9220
District 4: New Bern	(919) 514-4764
District 5: Rocky Mount	(252) 442-1626
District 6: Fayetteville	(910) 437-2620
District 7: Elizabeth City	(252) 331-4781
District 8: Whiteville	(910) 642-5093
District 9: Sylva	(828) 586-4007
District 10: Lexington	(336) 956-2111
District 11: Hillsborough	(919) 732-8105
District 12: Mt. Holly	(704) 827-7576
District 13: Fairfield	(252) 926-3041

Central Office (Raleigh) (919) 857-4801

www.dfr.nc.gov

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