

# FOREST ACTION PLAN

## NATIONAL PRIORITIES

November 2015

The 2008 Farm Bill, under Title VIII – Forestry, amended the Cooperative Forestry Assistance Act of 1978, to include the requirement that each state develop a long-term, state-wide assessment and strategies for forest resources. These assessments and strategies focused on three national priorities:

- Conserve and Manage Working Forest Landscapes for Multiple Values and Uses
- Protect Forests from Threats
- Enhance Public Benefits from Trees and Forests

These documents were developed with a comprehensive team of stakeholders to address cross-boundary, landscape scale actions that would be the most efficient activities to address issues of concern developed for the assessment phase of the Forest Action Plan.

This National Priorities Section Update lists the issues, goals, objectives, and strategies of South Carolina's Forest Action Plan aligned with the three national priorities. It also provides highlights of some of the work that has been accomplished since the Plan was completed in 2010. Challenges, data needs, new issues, and future plans related to these strategies are listed where appropriate.

# Conserve and Manage Working Forest Landscapes for Multiple Values and Uses

***Issues: Population Growth, Climate Change, Public Perceptions about Forestry, Adequate Markets, Forest Regulation, Fragmentation/Parcelization***

**Objective 1.1:** Develop, promote, and deliver forestry education programs to all audiences.

**Performance Measures:** Desired outcome is an increase in the number of educational programs conducted and the number of participants in these programs. Metrics include number of programs developed or updated, number of requests for educational programs, number of participants trained, and overall positive evaluations.

**Strategy 1.1.1:** Continue to develop Harbison State Forest and Piedmont Forestry Center for forestry education centers, and expand programs to select field locations.

**Strategy 1.1.2:** Promote conservation education programs such as Wood Magic, Project Learning Tree, and Teaching KATE (Kids About The Environment). Increase SC Forestry Commission personnel participation in education programs.

## **Highlights:**

**Wood Magic Forest Fair** – this educational program is designed to improve the awareness of fourth grade students of how much society depends on forests for many everyday products as well as ecosystem benefits that improve the quality of life. (<http://www.trees.sc.gov/wmfair.htm> )

- Since 2010, nearly 6,000 students, teachers, and chaperones have attended this event.
- Student test scores increased from an average of 51 on the pre-test to 82 on the post-test.

**Project Learning Tree** – the number of educator workshops has dropped to an average of 15 workshops per year with approximately 300 total participants. This is in contrast to the level of activity in the late 1990s and early 2000s (average of 30 workshops per year with 600 participants). One of the primary reasons for this reduction is the change in how school districts handle professional development for their teachers. Instead of allowing them to participate in environmental education workshops like PLT, they are often required to take classes associated with new statewide initiatives like Read to Succeed (<http://ed.sc.gov/instruction/read-to-succeed/>).

**Strategy 1.1.3:** Continue annual teacher's tour and development of forestry education material.

## **Highlight:**

**SC Sustainable Forestry Teachers' Tour** – this annual program increases the awareness and appreciation of teachers for the forest industry. This goal is accomplished by touring forest products facilities, visiting harvesting operations, observing other forest management activities and participating in Project Learning Tree activities. Since 2010, over 125 teachers have taken part in this event (<http://www.trees.sc.gov/tour.htm>).

**Objective 1.2:** Improve contacts and communication with state and local levels of government concerning forestry-related issues

**Performance Measures:** Desired outcome is an improved outreach plan that targets specific audiences and ensures that relevant information is shared. Metrics would include number of meetings attended,

number of lawmakers contacted, number of issues in which the agency participated, inquiries responded to, and number of employees trained in communication skills.

**Strategy 1.2.1:** Encourage active participation in forestry issues at all organizational levels. Identify specific audiences to be reached by each program and/or operating segment of the SC Forestry Commission.

**Strategy 1.2.2:** Invite legislative staff to participate in high profile forestry events, and plan periodic field trips for legislative staff and the Governor's office staff, focusing on all services provided to citizens of the state.

**Highlight:**

**Legislative Staff Tours** – since 2010, the Forestry Commission has conducted two tours for Congressional staff and two tours for state legislative staff. These two tours showcased forest management, wood products facilities and agency operations.

**Strategy 1.2.3:** Address regulatory and liability issues associated with forest management practices such as prescribed burning, use of pesticides, and timber harvesting.

**Highlights:**

**County Burning Ordinances** – agency personnel attend county council meetings to provide guidance regarding potential county burning ordinances to protect the right for landowners and others to conduct prescribed burning.

**Tree Protection Ordinances** – SCFC urban forestry staff assist counties in the development of tree protection ordinances, ensuring that the rights of rural property owners to practice forestry are upheld.

**Prescribed Fire Act** – provides increased protection from litigation for Certified Prescribed Fire Managers. These burners are not to be held liable for “damages caused by the resulting smoke of a prescribed fire unless gross negligence is proven.” (<http://www.scstatehouse.gov/code/t48c034.php>)

**Strategy 1.2.4:** Train personnel to be effective communicators

**Objective 1.3:** Utilize all media to reach targeted audiences with relevant forestry information.

**Performance Measures:** Desired outcomes are identification of targeted audiences and development of appropriate materials.

**Strategy 1.3.1:** Research potential audiences for which to develop targeted information and/or education campaigns.

**Strategy 1.3.2:** Develop audio-visual, print, and exhibit material, promoting forestry and forest management, for use by agency personnel in their communities.

**Objective 1.4:** Increase interaction, cooperation, and communication with other state agencies, local governments, forestry organizations, universities, professional societies, and environmental and conservation groups.

**Performance Measures:** Desired outcome is increased collaboration with other organizations. Metrics include number of informal and formal partnerships developed, increased participation by SC Forestry Commission personnel in partner organizations, and number of assists to other state agencies.

**Strategy 1.4.1:** Partner with the South Carolina Forestry Association (SCFA), American Forest and Paper Association (AF&PA), Association of Consulting Foresters (ACF), Clemson University, the National Association and Southern Group of State Foresters (NASF, SGSF) and other sister organizations to identify common messages and deliver to targeted audiences.

**Highlight:**

**TELE Workshop** – hosted a Tools for Engaging Landowners Effectively workshop in July 2015. Participants included representatives of the USDA Forest Service, USDA-NRCS, Center for Heirs Property Preservation, SC Tree Farm Committee, Longleaf Alliance, National Wild Turkey Federation, US Fish & Wildlife Service, SC Forestry Association, and Clemson Extension Service.

**Strategy 1.4.2:** Improve contacts and communication with local governments.

**Strategy 1.4.3:** Encourage SCFC personnel to participate in landowner associations and other forestry and conservation-related organizations.

**Strategy 1.4.4:** Provide leadership for state agencies to cooperatively provide forest conservation information to landowners in forest management, recreation, wildlife management and wildland/urban interface concerns.

**Objective 1.5:** Manage and restore trees and forests to mitigate and adapt to global climate change.

**Performance Measures:** Desired outcome is to update SC Forestry Commission Strategic Plan to reflect the best available scientific data for response to the effects of climate change.

**Strategy 1.5.1:** Increase tree planting to mitigate the effects of climate change.

**Strategy 1.5.2:** Promote forest management and arboriculture practices such as thinning, prescribed burning, and favoring of resistant species to address the increased risk of insect attacks that is predicted due to climate change.

**Highlight:**

**Southern Pine Beetle Prevention Program** – the SC Forestry Commission’s SPB Prevention and Restoration Cost-Share Program (SPB Program) seeks to mitigate future loss from SPB by managing pine density. The table below provides data on some of the recent accomplishments of this program.

Year	Acres pre-commercially thinned	Acres of longleaf planted at reduced density	Acres of loblolly planted at reduced density
2015	387	334	2,326
2014	387	189	1,641
2013	206	696	713

**Strategy 1.5.3:** Increase wildfire mitigation efforts, especially in wildland-urban interface areas, to address the increased number and intensity of wildfires that is predicted due to climate change.

**Highlight:**

**FireWise Communities** – much progress has been made in FireWise recognition across South Carolina in the last five years with the number of communities with this status increasing from 9 to 30 with 32 more in progress.

**CWPPs** – the SC Forestry Commission has conducted approximately 1,200 assessments of communities with more than 1,100 being rated as having moderate, high, or extreme risk from wildfire. To date, more than 200 Community Wildfire Protection Plans have been completed, benefitting 639 distinct communities.

**Urban Forester Training:** - urban staff participated in Post Fire Assessment Training and in the Back Yards and Beyond training

**Strategy 1.5.4:** Seek additional resources to increase the SC Forestry Commission's capacity to respond to the increased number and intensity of wildfires that is predicted due to climate change.

**Highlight:**

**Equipment Replacement** – the Forestry Commission, with the aid of its partners, was able to secure five years of recurring funding for replacement of outdated, unsafe tractor plow units beginning in 2013. This has allowed the agency to obtain 54 enclosed cab bulldozers, which is approximately 1/3 of its fleet of 160 suppression units.

**Strategy 1.5.5:** Increase monitoring of forestland to address the increased threat of invasive species that is predicted due to climate change.

**Strategy 1.5.6:** Increase the amount of urban canopy cover to mitigate the increased heat island effect and CO2 production that is predicted due to climate change.

**Objective 2.1:** Serve as a catalyst for promotion, development and expansion of the forest resource and forestry-related industry in the state.

**Outcomes and Performance Measures:** Desired outcome is a positive five-year trend in each of the following metrics: total economic impact of forestry on the state (billions of dollars); new capital investments announced (millions of dollars); and forestry jobs created (actual number). For R&D efforts, the metric is research projects with SC Forestry Commission involvement (number).

**Strategy 2.1.1:** Provide leadership in the identification, marketing, and development of appropriate primary and secondary forest industries.

**Highlights:**

**20 by 15 Project** - the SC Forestry Commission initiated the “20/15 Project” in 2009 to increase forestry’s economic impact from \$17.4 billion to \$20 billion by 2015. Six committees addressed high priority issues identified in a SWOT (strengths, weaknesses, opportunities, and threats) analysis early in the process. After six years of work, forestry stakeholders came together in a Forestry Summit on August 18, 2015 to summarize the current status of South Carolina’s forest resource and its impact on the state’s economy. Progress toward meeting the 20/15 Project goal will be determined when 2015 IMPLAN data becomes available late in 2016.

**IMPLAN Study** – the economic impact of forestry was estimated in 2006 through an IMPLAN (Impact Analysis for Planning) analysis. The total economic impact of forestry was estimated to be \$17.4 billion at that time. These study results were the basis for the 20/15 Project that sought to grow forestry’s economic impact from \$17.4 billion to \$20 billion by 2015. In the summer of 2015, the Forestry Commission commissioned a second IMPLAN analysis to update the 2006 impact with 2013 data. Total economic output grew from \$17.4 billion to \$18.6 billion. The industry created 90,320 jobs with a labor income of \$4.5 billion.

**Revised Export Data** – the Forestry Commission published updated forest product export statistics in 2015. This export report has typically been published every other year, but will become an annual report in the future. South Carolina forest product exports have risen significantly since 2010 to a high of \$1.5 billion by 2014. Pulp and paper products account for the vast majority of exports. Forest products are the leading commodity export by volume from the Port of Charleston. In the last report, China replaced Canada as SC’s leading trade partner in forest products.

**Forest Products Directories** – to assist South Carolina’s existing forest industry in growing market share and business to business commerce, the Forestry Commission developed two business directories for primary and secondary forest product mills. Both directories are available in either spreadsheet or Google Earth formats. The directories will need to be kept current in order to be useful. This is an ongoing job as there are 119 primary and 732 secondary forest product mills.

**Strategy 2.1.2:** Cooperate with national, state, regional and local economic development organizations to promote forestry-based businesses in South Carolina.

**Highlight:**

**Forest Industry Growth** - since the 2008 recession, forest industry growth has been strong for both primary and secondary mills. The strongest growth area was in consumer tissue products with three major companies announcing new South Carolina plants: First Quality, SC Tissue, and Orchids Paper Products. Biomass has been a growth industry, also, with biomass boilers constructed at two paper mills: Sonoco in Hartsville and Domtar in Bennettsville. Other biomass projects include two EDF-Renewable Energy plants and Portucel’s pellet plant in Greenwood County. Georgia Pacific’s oriented-strand board plant in Clarendon County opened for business in 2013 and multiple existing sawmills expanded production potential primarily by adding continuous dryers.

**Future Plans:**

**Partnership with Clemson University** – the Forestry Commission has teamed with Clemson’s new WU+D (Wood Utilization + Design) Institute to grow wood markets for South Carolina forest products. Besides serving on WU+D’s advisory committee, the Forestry Commission is enlisting Clemson’s help in organizing an export conference for Charleston in Fall 2016 to grow markets for South Carolina wood globally.

**Strategy 2.1.3:** Expand delivery of forestry-related rural development programs in cooperation with other agencies/entities.

**Strategy 2.1.4:** Identify and recommend mechanisms that would encourage management of forestlands for products and forest-related amenities.

**Strategy 2.1.5:** Develop mechanisms to recognize and compensate landowners who provide ecosystem services that benefit the public.

**Strategy 2.1.6:** Encourage full utilization of current and projected timber supplies.

**Highlights:**

**Forest Products Directories** – to assist South Carolina’s existing forest products industry in growing market share and business to business commerce, the Forestry Commission developed two business directories for our primary and secondary forest product mills. Both directories are available in either spreadsheet or Google Earth formats. The directories will need to be kept current in order to be useful. This is an ongoing job as there are 94 primary and 732 secondary forest product mills.

**SRTS Model** – the Forestry Commission completed two analyses in 2013 and 2015 of future wood supply using the Subregional Timber Supply (SRTS) model. This project was initiated as part of the 20/15 Project. The 2013 analysis projected future wood supply based on three consumer demand scenarios (high-medium-low). The 2015 analysis updated the previous study to determine the impact of a severe 2014 ice storm. Both studies predicted a relative scarcity of small-diameter pine in the short run and a relative abundance of large-diameter pine throughout the 20-year projection period.

**Challenge:**

**Shortage of Small-Diameter Wood** – although South Carolina has more wood than ever recorded through our FIA program, the wood is not evenly distributed across size or age classes. This uneven distribution of the forest resource was primarily caused by three factors: (1) Hurricane Hugo impacts, (2) the Conservation Reserve Program (CRP), and (3) final harvest and reforestation of Soil Bank plantings. The result is a “baby boom like” generation in the state’s forest peaking at 26 years of age. With an abundant resource comes reduced wood prices, resulting in forest landowners delaying final harvests and reforestation. Without final harvests creating acres to plant, tree planting has declined to 40-year lows. This is of significant concern to the existing industry, especially those sectors that utilize small-diameter trees. This is a regional problem and should be addressed through a regional solution that results in increased tree planting.

**Future Plans:**

**Wood Basket Supply Analysis** – contingent upon funding, the Forestry Commission will host training for personnel from across the South on the utilization of Forest Inventory and Analysis data and Timber Product Output reports to analyze wood basket supplies.

**Strategy 2.1.7:** Support research and development efforts in silviculture and new product development.

**Strategy 2.1.8:** Encourage expansion of domestic and international markets for South Carolina forest products.

**Highlight:**

**SCFC Marketing Team** – budget cuts had reduced the Forestry Commission’s utilization and marketing program to one-half of a position for over a decade. With other responsibilities in Nursery & Tree Improvement, Forest Inventory & Analysis and Environmental Management, this half position was grossly inadequate to meet industry demands. Two full time positions have recently been added, which is allowing the agency to build expertise in resource analysis and forest products marketing. Over the next few years, we will be building a marketing program to promote South Carolina forest products.

**Strategy 2.1.9:** Develop relationships with educational institutions and research organizations to encourage the use of state forest lands as potential research sites and forestry practices demonstration sites.

**Highlight:**

**Mixed Genetics Plantings** – the SC Forestry Commission established plantings of open-pollinated and varietal seedlings as demonstration areas on three agency-owned sites. These seedlings are planted in alternating rows with plans to remove the open-pollinated trees during the first thinning and retain the varietals as crop trees.

**Objective 2.2:** Provide policy makers, the forestry community and the interested public accurate and timely information on the state's forest inventory and health of the forest.

**Outcomes and Performance Measures:** Desired outcome is meeting the required federal standards (completing 20% per year and meeting accuracy standards). Metric is accurate (80% accuracy) and timely (20% or more per year) data gathered in FIA and TPO.

**Strategy 2.2.1:** Maintain funds and personnel to re-measure the state's Forest Inventory and Analysis (FIA) plots on a five-year cycle.

**Highlight:**

**Forest Inventory** – the Forestry Commission’s Forest Inventory & Analysis (FIA) Program has been successful in completing re-measurement of one panel (20%) of the FIA plots per year. Crews are on track to complete the eleventh cycle of forest resource assessment in South Carolina by December 2016. South Carolina’s FIA Program has completed one additional cycle of forest re-measurement ahead of all other state programs. The state’s forest resource trends are predominantly positive. Forestland acreage is stable at roughly 13 million acres. Wood volumes for both hardwood and softwood are at record highs with more wood in standing inventory than ever recorded. Annual forest growth exceeds removals by approximately 50%. Industrial expansion has followed the growing forest resource as it reached merchantability and increased in size.

**Challenge:**

**Reduced Federal Funding** – The current level of federal funding is insufficient for SCFC to maintain the 5-year cycle, which is essential for an accurate forest resource inventory.

**Strategy 2.2.2:** Survey adequate forest plots to ascertain a picture of forest health.

**Strategy 2.2.3:** Continue to collect and provide information about land use, fragmentation, and ownership issues.

**Objective 2.3:** Identify and conserve high priority forest ecosystems and landscapes.

**Outcome and Performance Measures:** Desired outcome is an increase in the number of acres of forestland in some form of protected status (acres).

**Strategy 2.3.1:** Collaborate with other natural resource organizations to identify and conserve high quality forest ecosystems and landscapes.

**Highlight:**

**NRCS Agreement** – the SC Forestry Commission entered into an agreement with USDA NRCS in which SCFC foresters will provide technical assistance to private landowners enrolled in the EQIP Longleaf Initiative. The table below shows accomplishments during the four years during which this agreement has been in place.

Assistance Type	Number	Acres
Practice Plans	378	18,607
Compliance Checks	136	5,911

**DNR Heritage Advisory Board** – the State Forester is a member of this advisory board which helps guides the SC Department of Natural Resources on protection of land that contains critical habitat.

**Longleaf Pine Restoration** – numerous groups are working to restore the longleaf pine ecosystem in South Carolina. Included in these organizations are the SC Forestry Commission, The Nature Conservancy, USDA-NRCS, USDA-FSA, The Longleaf Alliance, SC DNR, SC State Park Service, US Fish & Wildlife Service, US Army, US Air Force, and the National Wild Turkey Federation. The SC Forestry Commission provides a Longleaf Coordinator, who annually compiles longleaf restoration accomplishment data and provides it to the Longleaf Pine Recovery Coordinator.

**Rocky Point Project** – the SC Forestry Commission assisted The Nature Conservancy and Waccamaw River Keepers in managing a newly protected property in Georgetown County that will be used as a public forest demonstration site for longleaf restoration, prescribed fire and forest management.

**Strategy 2.3.2:** Actively seek out grants, federal funds and other income sources to expand the state forest system, with the primary goal of acquiring tracts contiguous to existing properties.

**Highlight:**

**Manchester State Forest** – partnership with The Conservation Fund to acquire funds from the SC Conservation Bank and the Department of Defense Readiness and Environmental Protection Integration Program (REPPI) allowed Manchester State Forest to acquire property adjacent to the Forest. This acquisition also helped Shaw Air Force Base secure its runway approach path, improving the likelihood that this military base will be retained and will continue to provide economic benefits to the Sumter area.

**Strategy 2.3.3:** Utilize Stewardship Contracting and Agreement Authorities in collaboration with the USDA Forest Service to benefit landscape scale ecosystem restoration projects on both public and private lands near federal lands.

**Highlight:**

**Indian Creek Initiative** – funded through a Joint Chiefs Landscape Scale Restoration grant, this project expands the area of a successful initiative encompassing national forest land and adjacent private land. The Forestry Commission is providing technical assistance to landowners participating in NRCS's Environmental Quality Incentives Program (EQIP) in this area as well as writing Forest Stewardship plans for property owners when requested. Demonstration areas and field tours are planned to show landowners several options for managing their open land as well as forestland.

**Objective 2.4:** Promote informed management of public and private forestland in South Carolina.

**Outcome and Performance Measures:** Desired outcome is greater informed management as indicated by the number of forest management plans written (number), implementation of Forest Stewardship Plans (%), implementation of Forest Stewardship Plans in priority areas (acres), number of landowners assisted (number), acres assisted on other state lands (acres), number of consultant-written plans (Forest Stewardship) (number), number of Memorandum of Understandings with other agencies (number), number of referrals to consulting foresters (number), number of current plans (Forest Stewardship and FRP) (number), and number of landowners that indicated on seedling survey that they worked with a SC Forestry Commission forester (%).

**Strategy 2.4.1:** Utilize the Stewardship program to deliver comprehensive management plans to all landowners with multiple natural resource management objectives.

**Challenge:**

**Reduced Funding:** decreased federal funding for the Forest Stewardship program has been a major challenge in recent years. Since 2007, this support has been reduced by 63% with a 25% reduction in

Fiscal Year 2014. During the current fiscal year, federal funds are only used for foresters' salaries, leaving no funds for operating costs. The Forestry Commission is no longer able to provide funding for consultant-written Stewardship plans or for technical assistance from wildlife biologists. These reductions have also reduced the agency's ability to partner with other agencies on outreach and education projects.

**Strategy 2.4.2:** Provide special services, for a fee, that are not sufficiently provided by the private sector, such as prescribed burning, firebreak plowing, and water bar construction.

**Strategy 2.4.3:** Actively seek partnerships that increase the number of sources for reforestation assistance and the funding available for forestry practices.

**Highlight:**

**Partnerships** – several organizations are working together in South Carolina to provide cost-share assistance for longleaf pine practices. Included in these organizations are the SC Forestry Commission, The Nature Conservancy, USDA-NRCS, USDA-FSA, The Longleaf Alliance, US Fish & Wildlife Service, and the National Wild Turkey Federation.

**Strategy 2.4.4:** Provide technical assistance to landowners to promote informed management of private forestland in South Carolina.

**Highlight:**

**Landowner Assistance** – SCFC foresters routinely provide forest management advice to landowners, frequently referring them to consulting foresters for additional professional assistance. The chart below shows the number of plans written during the last five years as compared to the 10-year average.

Time Period	# of Exams	Acres
2010-2015	8,006	496,916
5-Year Average	1,601	99,317
10-Year Average	1,508	94,355

**Strategy 2.4.5:** Provide forest management assistance to public entities that hold forested lands.

**Highlight:**

**Community Forestry** – SCFC urban forestry staff conducted 4 workshops for community leaders resulting in 11 community forestry management plans

**State Lands Assistance** – the SC Forestry Commission provides assistance to other state agencies that own forestland. Agencies assisted in the last five years include SC Department of Natural Resources, SC Department of Corrections, SC Park Service, University of South Carolina, SC Department of Mental Health, and John De La Howe School.

**Strategy 2.4.6:** Stay current with new management techniques and methods of forest management to ensure delivery of the best possible advice.

**Strategy 2.4.7:** Develop and maintain effective partnerships with organizations, agencies, and private consultants to collaboratively provide forest management information and services.

**Highlight:**

**Military Appreciation** – coordinated with agency staff and conservation partners (National Wild Turkey Federation, Quality Deer Management Association, and SC Department of Natural Resources) to host military appreciation, youth, and other outreach hunts at Niederhof Forestry Center. These hunts are a relatively new platform for education and outreach to nontraditional customers, support for SC National Guard soldiers, and are an innovative outreach mechanism to promote the mission, benefits and services of the Forestry Commission and forestry in SC. Hunts have also been an excellent platform to build relationships with conservation organizations who share common interests with the agency.

**Tree Farm** – partnered with SC Tree Farm program to encourage landowners to actively manage their forestland. This partnership includes providing Tree Farm inspectors to help forest landowners meet Tree Farm eligibility criteria, filling positions of leadership on the SC Tree Farm Committee, and assisting with field tours and legislative days. The SC Forestry Commission has been a co-sponsor of the SC Tree Farm program since its inception in 1946.

**Objective 2.5:** Provide landowners with optimum quality forest tree seedlings to meet needs not filled by the private sector.

**Outcomes and Performance Measures:** Desired outcomes are customers satisfied with the product (% satisfaction of customers that self-report), revenues meet or exceed costs (over 5-year period), and Performance Rating System (PRS) comparable with that available from other sources.

**Strategy 2.5.1:** Partner with nursery and tree improvement organizations to maintain access to technical expertise, high value plant material, and funding sources.

**Challenge:**

**Funding for Tree Improvement:** the SC Forestry Commission has lacked the funding to remain a full member of the NC Tree Improvement Cooperative which has limited the agency's ability to maintain a robust tree improvement program.

**Strategy 2.5.2:** Provide the best available forest tree seedlings through self-sustaining nursery operations.

**Challenge:**

**Funding for Nursery Operations:** the Forestry Commission consolidated nursery operations to one nursery, but has not received adequate funding to fully staff this operation. Efforts to make this segment of the agency self-sustaining have been unsuccessful.

**Objective 2.6:** Enhance the image of the Forestry Commission as an initial source for forest management information and assistance in South Carolina.

**Outcome and Performance Measures:** Desired outcome is increased public awareness of the SC Forestry Commission as measured by the number of people surveyed (% of respondents).

**Strategy 2.6.1:** Develop creative approaches to reaching landowners and explore diverse methods for marketing the agency's programs and promoting services to new audiences.

**Future Plans:**

**SGSF Outreach Initiative** – the Southern Group of State Foresters is in the planning phase of developing a South-wide outreach initiative that will encourage private landowners to actively manage their forestland.

**Strategy 2.6.2:** Improve, maintain, and continually update the Forestry Commission website to communicate effectively to the public.

# Protect Forests from Threats

## ***Issues: Wildfire Risk, Prescribed Fire, Threats to Forest Health, Forest Product Theft***

**Objective 3.1:** Ensure prompt and effective response to wildfires and other natural disasters.

**Performance Measures:** Desired outcome is a positive five-year trend in each of the following metrics: 1) Decreased fire size as measured by the mean number of acres burned; 2) Reduced response time to fires as measured from the time a call is received to the time a suppression unit is on-site; and 3) Reduced relative fire size as compared to the mean fire size in the southeast.

**Strategy 3.1.1:** Serve as a primary point of contact for 9-1-1 centers, fire departments, and the public. Forestry Commission dispatch operations will be current with technology, equipment, and staffing to support the agency's statewide fire dispatch, smoke management, and emergency communication roles.

### **Highlights:**

#### **Dispatch Center Improvements**

1. Implementation of Radio over IP and Voice over IP technology at the agency's dispatch centers with the implementation of a new communications console system from Avtec, Inc. of Lexington, SC. The new system's capabilities have greatly improved efficiencies of dispatching personnel and directing calls.
2. A new automated burn notification system was implemented to replace an in-house, 16 year old, "end-of-life" system. Notifications can be automatically forward to county fire departments or 9-1-1 Centers for easier access. This new system also allows for easier modification of messages used in the system.
3. Creation of a statewide mosaic of the 2011 and 2013 NAIP leaf-on, true color aerial photography from the 46 individual county mosaics and distributed to field personnel and utilized in the agencies computer aided dispatch system.
4. Implementation of "confidential" pipeline data from the US Department of Transportation Pipeline & Hazardous Materials Safety Administration for use in agency's computer aided dispatch system.
5. Replaced alphanumeric pagers with Verizon pager/phones as initial dispatch point of contact. This provided statewide coverage through a single vendor.
6. Conducted a pilot of current automatic vehicle location (AVL) technology, interfacing it with the Forestry Commission's computer-aided dispatch system.

**Wildfire Information on the Web** – near real-time smoke management burn notifications and wildfires are posted on the agency's website in a web mapping application for public access. These maps allow the public and cooperating state, federal, and local agencies to see where wildfires are occurring and where prescribed burns are being conducted.

### **Challenges:**

**Funding for AVL Technology** (see below)

**Information Security** - as forestry agencies rely more on the use of mobile devices (laptops, tablets, smartphones, etc.) in using and accessing data in the field over unsecure connections (such as the Internet, public hotspots and Wi-Fi), protecting personally identifiable, confidential and sensitive information is ever more challenging. The implementation of such devices within the agency has been delayed until adequate controls and systems are in place to help address these concerns and new State Information Security requirements. Employees will need continuous security awareness training as they are usually the "weakest link" in the protection of data and computer systems.

**Data Needs:**

**Leaf-Off, Color IR Photography** – although the agency has access to recent (every 3-5 years) leaf-on, true color, 1 meter (about 3'), aerial photography of the state through the National Agriculture Image Program (NAIP), it has been over 10 years since the last statewide coverage of leaf-off, color infrared (CIR) aerial photography has been acquired. CIR can improve the delineation of the hydrology, stand and property boundaries, and difference in vegetation over leaf-on and true color imagery.

**Parcel Data** – the State GIS Coordination Council (which the Forestry Commission is a member of) has been very successful in obtaining parcel data from every county in the state. The counties have agreed to share this data only with members of the State GIS Coordination Council. But many counties will not share the ownership data associated with it.

The Forestry Commission needs to maintain its membership and support of the State GIS Coordination Council to continue to have access to county GIS data which include not only parcel data but other layers such as roads and local governmental boundaries. Efforts need to continue to get all counties to include ownership information along with the parcel boundary information to help the Forestry Commission to better serve the citizens of South Carolina.

**Future Plans:**

**Automatic Vehicle Location (AVL)** – this technology can greatly improve safety for wildfire suppression personnel. The Forestry Commission has initiated a couple of pilots using automatic vehicle location (AVL) technology with its wildfire suppression fleet and computer aided dispatch system (CADS). The cost of equipment and monthly data charges has dropped significantly and the technology has greatly improved over the years. Implementation of this technology will be contingent upon funding availability.

**Strategy 3.1.2:** Increase emphasis on training Forestry Commission personnel and cooperators in the Incident Command System (ICS) and general wildfire suppression tactics. Seek out non-fire and additional opportunities to use ICS and complete task books.

**Strategy 3.1.3:** Cooperate with Emergency Management Division, fire departments, and other emergency response organizations. Explore opportunities to train and utilize private and/or non-traditional cooperators.

**Strategy 3.1.4:** Evaluate staffing, equipment and technology to ensure adequate response to all wildfires and other disasters within the scope of the SC Forestry Commission's mission.

**Highlight:**

**Equipment Replacement** – the Forestry Commission, with the aid of its partners, was able to secure five years of recurring funding for replacement of outdated, unsafe tractor plow units beginning in 2013. This has allowed the agency to obtain 54 enclosed cab bulldozers, which is approximately 1/3 of its fleet of 160 suppression units.

**Future Need:**

**Equipment Replacement** – the agency will be seeking re-authorization of this funding, preferably without the current sunset clause.

**Objective 3.2:** Evaluate and develop wildfire protection strategies, priorities and capabilities as urban development into forested areas creates additional hazards.

**Performance Measures:** Desired outcome is a positive five-year trend in each of the following metrics: 1) reduction in the number of structures lost to wildfire; 2) increase in the number of Firewise communities; 3) increase in the number of CWPP's; 4) increase in the number of local fire departments that have received wildfire training; and 5) evidence of cooperative agreements with non-traditional partners.

**Strategy 3.2.1:** Redefine and strengthen the cooperative relationship with local fire departments as urban developments expand into forested areas.

**Strategy 3.2.2:** Implement low-impact suppression techniques where applicable.

**Strategy 3.2.3:** Incorporate a FireWise approach to wildland urban interface areas by identifying communities at risk through hazard assessment, developing wildfire protection plans for communities, developing education/awareness efforts for communities, and developing fuel management strategies.

**Highlights:**

**FireWise Communities** – much progress has been made in FireWise recognition across South Carolina in the last five years with the number of communities with this status increasing from 9 to 30 with 32 more in progress.

**CWPPs** – the SC Forestry Commission has conducted approximately 1,200 assessments of communities with more than 1,100 being rated as having moderate, high, or extreme risk from wildfire. To date, more than 200 Community Wildfire Protection Plans have been completed, benefitting 639 distinct communities.

**Strategy 3.2.4:** Continue to promote fire prevention and emphasize wildfire prevention through the deployment of fire prevention teams during Fire Prevention Week and periods of high wildfire occurrence.

**Strategy 3.2.5:** Seek out non-traditional partners who may provide assistance with changing fire protection issues.

**Strategy 3.2.6:** Promote prescribed burning to restore fire-adapted lands to reduce the risk of wildfire impacts.

**Highlights:**

**Resolutions Supporting Prescribed Fire** – in 2015, the SC Prescribed Fire Council initiated an effort to get every county to pass a resolution supporting the use of prescribed fire as a land management tool. Since January, six county councils have passed these resolutions and five additional counties are in progress of adopting resolutions. In addition, the SC Prescribed Fire Council obtained a Governor's proclamation for March 2015 to be "Prescribed Fire Awareness Month" in South Carolina.

**Certified Prescribed Fire Manager Classes** – since 2010, the SC Forestry Commission has held 23 Certified Prescribed Manager (CPFM) classes for a total of 742 students (<http://www.trees.sc.gov/cpfm.htm>).

**Prescribed Fire Act** – provides increased protection from litigation for Certified Prescribed Fire Managers. These burners are not to be held liable for "damages caused by the resulting smoke of a prescribed fire unless gross negligence is proven." (<http://www.scstatehouse.gov/code/t48c034.php>)

**Longleaf Implementation Teams** – each of the three Longleaf Implementation Teams have taken actions to promote prescribed burning and make landowners and others aware of the benefits of prescribed burns. The Sewee Longleaf Conservation Cooperative held a Fire Festival that included children’s activities as well as a small demonstration burn. The Sandhills Longleaf Pine Conservation Partnership conducted a demonstration burn in which participants were able to practice using a drip torch. The SoLo ACE Longleaf Partnership sponsored a Fire and Longleaf 201 workshop for landowners.

**Objective 3.3:** Lead in law enforcement services in wildfire and forest product theft and fraud arenas.

**Performance Measures:** Desired outcome is a positive five-year trend in each of the following metrics: 1) an increase in the number of successful prosecutions as measured by the % of successful/total prosecutions; and 2) the number of certified officers.

**Strategy 3.3.1:** Provide forest product theft awareness and prevention training to SCFC personnel, landowners, and cooperators.

**Strategy 3.3.2:** Develop and enforce a standardized procedures manual for field investigation and prosecution of cases involving violations of burning, timber theft, or other laws.

**Strategy 3.3.3:** Continue to implement a Class 1 Certification Program for SC Forestry Commission officers and investigators.

**Strategy 3.3.4:** Review law enforcement officer staffing levels and adjust accordingly.

**Highlight:**

**Timber Theft Initiative** – In the early 1990s, the SCFC began investigating timber transaction crime, primarily in response to public demand. Specially trained agents now investigate hundreds of timber thefts and fraudulent timber deals every year, and the agency has become recognized as a Southeastern leader in this area. In 2013 SCFC assisted the Georgia Forestry Commission in establishing timber theft laws in their state and in securing jurisdictional power to enforce these laws. The Florida Division of Forestry has also sought SCFC’s assistance in establishing timber theft laws in their state.

**Objective 3.4:** Detect, identify, and respond promptly to forest pests (insects, diseases, non-native plants, and invasive species).

**Outcomes and Performance Measures:** Desired outcome is a positive five-year trend in each of the following metrics: 1) early detection and rapid response to forest pest problems as measured by evidence that all pests identified as major or moderate threats or Early Detection Rapid Response (EDRR) in the assessment are identified as appropriate; 2) number of workshops conducted, number of educational materials distributed, and positive responses to participant surveys (how useful they have found information); and 3) response time from the time at which Forest Health Section is notified or detects a forest pest until a recommendation is made.

**Strategy 3.4.1:** Provide education and training to agency foresters, technicians, and cooperators (consulting foresters, industry foresters, federal agencies in combination with USFS, other state agencies, (PRT, DNR, DOT, for example), and other organizations) on survey techniques, identification and control of forest pests, and integrated pest management.

**Strategy 3.4.2:** Conduct continuous monitoring of forest pests (insects, diseases, non-native plants, and invasive species).

**Highlight:**

**Work with Partners** – the SCFC has partnered with Clemson University Department of Plant Industry, South Carolina State Park Service, and other entities to identify, monitor and increase public awareness of significant threats to South Carolina’s forests. These include identifying and managing cogongrass, increasing awareness of the dangers of moving firewood, and participating in monitoring and detection surveys for invasive pests (emerald ash borer, walnut twig beetle, and gypsy moth among others).

**Challenges:**

**Changing Threats** - the single most important challenge in addressing forest health issues is that threats are continually changing. When the Forest Action Plan was written, specific threats to South Carolina’s Forest were included. Since 2010, new threats have emerged that may be more severe. Because of the fluidity of this situation, our tactics will need to change frequently to address these changing threats to forest health.

**Lack of Efficient Monitoring Methods** – for example, many states are using purple sticky board traps, which are not very efficient or effective, to monitor for emerald ash borer. However, in every case, forest health workers estimate that populations have been infesting ash trees two to five years prior to their detection. Identifying efficient and sensitive detection and monitoring methods should be a key research goal.

**Insufficient Funds** – lack of sufficient funds has affected the agency’s ability to carry out successful actions against invasive forest pests. For example, the use of systemic insecticides has been very successful at protecting individual hemlock trees from the hemlock wooly adelgid. In many cases, however, it has been difficult to efficiently deploy applicators to trees that need treatment.

**Data Need:**

**Threat Data** – there is a distinct lack of quantifiable data on threats: What are the tangible impacts invasive weeds have on forest health? What is the mortality rate caused by threats such as emerald ash borer? What hosts are impacted by laurel wilt? These are just examples, but while these threats are quantified by counties where they are found, it would be more meaningful to understand what proportion of trees are impacted. Very little research is being done to answer these questions.

**Strategy 3.4.3:** Provide detailed field or lab evaluation of specific forest pest problems for use by land managers. Partner with federal, state, local, and private organizations on issues of mutual interest.

**Strategy 3.4.4:** Enhance staffing, technology and equipment to combat forest pest problems on a timely basis and as required by state law.

**Objective 3.5:** Promote the responsible use of prescribed fire.

**Performance Measures:** Desired outcome is a positive five-year trend in each of the following metrics: 1) an increase in the number of acres burned using prescribed burning; 2) an increase in the number of certified prescribed fire managers; 3) an improved climate for prescribed burning as evidenced by fewer legal restrictions.

**Strategy 3.5.1:** Continue to implement and educate the public regarding smoke management guidelines.

**Strategy 3.5.2:** Continue to monitor and research smoke management guidelines to maintain air quality standards.

**Highlights:**

**Particulate Matter Standards** - the SC Forestry Commission, along with partners from forest industry and the SC Prescribed Fire Council (PFC), provided comments to the US EPA as it considered changes to the National Ambient Air Quality Standards for particulate matter 2.5 microns or smaller and for ozone. These two pollutants are often associated with prescribed fire and South Carolina’s Smoke Management Guidelines are in place to minimize the impacts on air quality. The SCFC and the PFC explained the significant benefits of prescribed burning under conditions when smoke can be effectively managed to reduce impact on air quality and public safety.

**Data Sharing** – current smoke management burn notifications and wildfire information are exported every 5 minutes from SCFC dispatch to the US Forest Service High Resolution Modeling Consortium for use in air quality, wildfire control, smoke modeling, and impact mitigation work.

**Strategy 3.5.3:** Maintain an active leadership role on the SC Prescribed Fire Council.

**Strategy 3.5.4:** Examine regulations and liability issues concerning prescribed burning and seek solutions that will provide for public safety while promoting prescribed burning.

**Highlight:**

**Prescribed Fire Act** – provides increased protection from litigation for Certified Prescribed Fire Managers. These burners are not to be held liable for “damages caused by the resulting smoke of a prescribed fire unless gross negligence is proven.” (<http://www.scstatehouse.gov/code/t48c034.php>)

**Strategy 3.5.5:** Develop a method for prioritization of prescribed burning in order to effectively utilize resources to accomplish prescribed burning goals.

**Strategy 3.5.6:** Restore fire adapted lands and/or reduce risk of wildfire impacts by encouraging the increased use of prescribed burning.

# Enhance Public Benefits from Trees and Forests

## *Issues: Water Quality and Quantity, Stormwater Management, Air Quality, and Community Forests*

**Objective 4.1:** Enhance water quality protection by increasing awareness and compliance with South Carolina Best Management Practices for Forestry (BMPs).

**Performance Measures:** Desired outcome is increased awareness and compliance with BMPs as shown by training participation, courtesy exam requests, requests for assistance, and continued high level of compliance as evidenced by monitoring.

**Strategy 4.1.1:** Improve delivery of pre-harvest planning and BMP recommendations through the Courtesy Exam Program to protect water quality and site productivity during forestry operations.

**Highlight:**

**Courtesy Exams:** One of the agency’s most effective tools for monitoring compliance with BMP guidelines is conducting courtesy exams, which consist of a series of checklists, measurements and observations designed to assess the impact of forest operations on water quality. Offered to timber harvesters and other contractors who perform forestry activities, the exams are free and intended both to educate the contractors and prevent possible BMP violations.

Year	# Exams
2015	339
2014	289
2013	231
2012	212
2011	283

**Strategy 4.1.2:** Provide classroom and field BMP training for forestry contractors, private landowners, industry, SCFC employees, and other agencies through the Timber Operations Professional (TOP) training program, in cooperation with industry and through SCFC workshops.

**Highlight:**

**TOP Logger Training** – the SC Forestry Association and the SC Forestry Commission have partnered to provide Timber Operations Professional (TOP) Logger training since 1995. SCFC BMP Foresters deliver instruction related to BMPs and Sustainable Forestry Initiative (SFI) standards. In 2012, the SCFC BMP Program began producing 10-15 minute BMP related video clips to be included in the TOP Logger annual update video. So far, SCFC has written and produced 4 of these videos. In 2014, SCFC BMP Foresters also began facilitating the annual TOP Logger updates throughout the year. SCFC Law Enforcement is also involved, providing 1 hour of training related to forest products theft, trespassing, and burning laws.

**Strategy 4.1.3:** Encourage contractors to include BMP compliance statements in their contracts.

**Strategy 4.1.4:** Work with SC Forestry Association, Association of Consulting Foresters, Clemson University, SC Department of Health and Environmental Control, SC Timber Producers Association, county landowners association, and other organizations to encourage landowners, loggers, foresters, and contractors to request courtesy BMP examinations.

**Strategy 4.1.5:** Continue BMP monitoring to document success and provide opportunities for education of landowners, loggers, and forestry professionals.

**Highlight:**

**BMP Compliance** - BMP compliance and implementation monitoring for timber harvesting was completed in 2012 with a compliance rate of 93.4%, a slight dip from the previous survey, but still above the regional average. In 2015, the follow-up to the 2012 survey was completed, having made return visits to those sites 1 year and 2 years post-harvest. For this survey, compliance and implementation of BMPs for non-harvest activities were assessed. Overall compliance for non-harvest activities was 96.6%.

**Challenge:**

**Reduced Federal Funding** – in 2010, federal EPA 319 funding for the BMP program was reduced from \$215k to \$175k. The 319 funds are a 60% federal/40% state match. This reduction resulted in the loss of one full-time position in the BMP Program reducing the program to one statewide coordinator and three regional field foresters.

**Future Plans:**

**LandSatFact** – this satellite imagery was developed by the University of North Carolina and the NC Forest Service. The SCFC BMP program plans to transition away from aerial detection for identification of sites for BMP monitoring and begin using LandSatFact this fall for the next round of monitoring. By February 2016, LandSatFact should be available to all 13 southern states.

**Strategy 4.1.6:** Respond to BMP complaints and provide technical expertise to appropriate enforcement agencies.

**Strategy 4.1.7:** Periodically review Best Management Practices (BMP) guidelines and update as needed to better protect water quality.

**Highlights:**

**Biomass Guidelines** – in 2012, the SCFC developed guidelines for biomass harvesting. The focus of the guidelines is to ensure that site productivity will not be compromised due to complete removal of logging debris. All water quality BMPs that apply to a normal harvest also apply to a biomass harvest.

**Revise BMP Manual** – the current version of South Carolina’s BMP manual was published in 1994. A revision of this manual is planned for next year. Major changes to the current BMPs are not expected, but the addition of new information is expected. Other additions include explaining a few issues in more detail, updating photos and drawings, and combining the basic manual, braided streams manual, and biomass manual into one document.

**Strategy 4.1.8:** Update cooperative agreements with state and federal regulatory agencies, forest industry, and private organizations to protect environmental functions.

**Highlight:**

**Partnerships** - SCFC is partnering with the SC Rural Water Association, SC Forestry Association, NRCS, and the Endowment for Forestry and Communities to promote forest management and BMP implementation by fostering relationships between water utilities and the forest landowners in the watersheds from which they acquire their drinking water. This is part of a larger effort called the Southeastern Partnership for Forests and Water that involves SC, GA, TX, AR and KY.

**Strategy 4.1.9:** Provide pre-harvest planning and technical assistance to forest landowners and forestry professionals on implementation of BMPs.

**Objective 4.2:** Provide technical, educational, and financial assistance in community forestry to local governments and organized groups living and working within established, developing, and populated areas.

**Performance Measures:** Desired outcome is a sustained capacity for communities of place and communities of people to actively manage and care for trees and associated vegetation as measured by professional staff, tree/natural resource inventory information and management plans, skilled and knowledgeable workers, recurring funding, tree management and conservation policies, and advocacy groups.

**Strategy 4.2.1:** Meet with local government personnel, advocacy groups, professional organizations and natural resource associations to provide technical assistance in the development and management of sustainable community tree/forest programs.

**Highlight:**

**Community Forestry** – SCFC urban forestry staff conducted 4 workshops for community leaders resulting in 11 community forestry management plans

**Strategy 4.2.2:** Develop and/or acquire tools to facilitate technical, educational and financial assists and services.

**Strategy 4.2.3:** Administer the community forestry cost-share grant program as available and provide information on other available sources of grants and funding to assist in the development and management of sustainable community tree/forest programs.

**Challenge:**

**Reduced Federal Funding** - reduction of federal funds to a baseline level has prohibited the SC Forestry Commission from offering the community forestry cost-share program.

**Strategy 4.2.4:** Conduct on-site programs, provide literature and website information, and work through partners to sponsor / present information regarding arboriculture, community forestry issues, and the value of ecosystem services and environmental benefits of trees to targeted audiences.

**Strategy 4.2.5:** Work with local, regional, and state partners on issues where trees and forests can help address common objectives such as energy conservation, green infrastructure implementation, storm planning and mitigation, economic development, air quality, and stormwater management.

**Highlight:**

**Green Infrastructure Workshops** – SCFC partnered with the Green Infrastructure Center and the Councils of Government of South Carolina to conduct 10 workshops across the state.

**Challenge:**

**Reduced Federal Funding** - reduction of federal funds to a baseline level has allowed only 2 of 3 full-time urban forester positions to be filled. Without an increase in funding, the agency urban and community forest management capacity will be limited across the state.

**Future Plans:**

**Stormwater Management** - developed a grant proposal for FY2016 which, if awarded, will demonstrate Stormwater Management BMPs through implementation of Green Infrastructure plans in 6 states across USFS Region 8 (SC, NC, VA, OK, GA, AL and FL).

**Green Infrastructure Plans** – these plans incorporate existing green assets into county comprehensive plans. Sustainable forestry, agriculture, recreation, cultural assets and urban development are taken into consideration by planners using the Green Infrastructure (GI) model. The SCFC is taking the leadership role in GI planning, training, and grant opportunities.

**Legislative Tour of Urban Forests** – studies show that tree-lined streets are better for business in communities across the US. A legislative tour of urban forestry in SC will show the vibrancy of communities that implement proper urban forest management.

**Strategy 4.2.6:** Offer expertise to other SC Forestry Commission program areas and support opportunities for professional development and technical skill enhancement of agency foresters regarding arboriculture and/or community forestry issues and involve them in local forestry issues within their assigned areas.

**Objective 4.3:** Enhance air quality by actively managing smoke from prescribed burns and wildfires and by maintaining a healthy forest cover that increases air filtration, temperature reduction, and energy efficiency.

**Performance Measures:** Desired outcome is a reduction in the number of smoke-related complaints, increased participation in the SC Forestry Commission's burning notification program, increased amount of acres prescribed burned, and participation in reforestation and urban tree programs.

**Strategy 4.3.1:** Continue to monitor and research smoke management guidelines to maintain air quality standards. (Duplicate of 3.5.2)

**Strategy 4.3.2:** Include air quality measures from other agencies into SC Forestry Commission burn advisories.

**Strategy 4.3.3:** Promote prescribed burning and fuel load reduction to reduce potential air quality impacts from wildfires.

**Highlight:**

**Fuel Mitigation Work** – this includes fuel reduction burns, mechanical fuel reduction, and neighborhood brush chipping events

Year	# Communities	Acres Treated	Funds Expended
2015	25	377	\$287,921
2014	34	1,016	\$225,210
2013	43	5,697	\$265,929
2012	24	1,888	\$125,321
TOTALS	126	8,978	\$904,381

**Strategy 4.3.4:** Promote healthy forest cover to increase air filtration, temperature reduction, and energy efficiency.