United States Department of Agriculture

Forest Service

Southern Region

Planning for the Future of Southern Forests

Summary Document:
2010 Statewide Forest Resource Assessments and Strategies

R8-PR 61 May 2011

Contents

This summary was created by Katie Cerretani, Program Specialist and Presidential Management Fellow, for the USDA Forest Service, Southern Region. Multistate priority area maps were produced by Wm. David Jones, Southern Region GIS Analyst. Many thanks to the State forestry agency staff who provided GIS layers to assist in mapping efforts.

The following individuals provided review and comments that helped shape the document:

For the Southern Group of State Foresters—

Tom Boggus and Brad Barber, Texas Forest Service
Mike Zupko, Southern Group of State Foresters

For the USDA Forest Service, Southern Region—

Ken Arney and John Greis, State and Private Forestry;
John Dondero, Tim Mersmann, Ed Macie, and Mike Murphy, Cooperative Forestry;
Don Duerr, Forest Health Protection;
Shardul Raval, Fire and Aviation Management;
Paul Arndt, National Forest System;
Ginger Hollingsworth-Cox and Wendi Weaver, Public Affairs; and
Steve Norman, Felipe Sanchez, and Andy Mason, Southern Research Station.

Additional comments from the following State Foresters helped us to refine this summary:

Linda Casey, Alabama Forestry Commission;
Robert Farris, Georgia Forestry Commission;
Leah MacSwords and Stewart West, Kentucky Division of Forestry;
David Arnold, Tennessee Division of Forestry; and
Carl Garrison, Virginia Department of Forestry.

Photos are courtesy of Bill Lea and L. David Dwinell (via the Southern Research Station photo gallery), Risher Willard (Georgia Forestry Commission), and Katie Cerretani (USDA Forest Service).

Executive Summary

June 2010 marked the completion of statewide forest resource assessments and strategies for nearly all States and Territories in the United States. States produced these documents in response to the 2008 Farm Bill mandate to prioritize national, regional, and State forest management activities. The U.S. Department of Agriculture (USDA) Forest Service's Southern Region has developed this summary analysis in order to celebrate and capitalize on the tremendous efforts States put forth to complete their assessments and strategies.

Southern forests are being shaped by several trends, including population growth, urbanization, and changing landowner characteristics. A number of common themes can be drawn from the State assessments. Major topics identified by all States include:

Urbanization and urban forest management – Population growth and urbanization present challenges to maintaining healthy, productive, and resilient forests, while at the same time increasing the demand for forest ecosystem services such as clean air and water.

Working rural forest landscapes – While 87 percent of forest land in the South is privately owned, changing markets and ownership patterns create new challenges. Maintaining the economic, environmental, and social benefits provided by forest lands is a priority across the region.

Forest ecosystem restoration – Restoration of specific ecosystems (such as longleaf pine, shortleaf pine, American chestnut, and the "Cross Timbers") helps to maintain or enhance the health and resilience of forest landscapes and provide ample wildlife habitat.

Forest pests – Insects, disease, and invasive plants threaten the health and productivity of Southern forests, particularly when the balance between host and pest is upset.

Wildland fire – Alteration of natural fire regimes and associated ecosystems, exacerbated by the increasing wildland-urban interface, has contributed to increased loss from wildfire in recent years. States are faced with increasing fire management needs alongside often insufficient resources.

Extreme weather events – Storms, floods, and drought impact forest ecosystems and cause economic and cultural losses. Hurricanes, ice storms, and tornadoes are of particular concern in the South.

Ecosystem services maintained by forests – Healthy, resilient forests and trees filter our water, reduce air pollution, help cities and towns conserve energy, and contribute to biodiversity. States are concerned about multiple factors that threaten the ability of forests to continue to provide these services.

Local economic and social benefits of forestry –The forest industry is vital to the South, which produces over half the United State's timber products on just under a third of the Nation's forested land.

Climate change – Climate change is expected to increase stress on forest ecosystems due to storms, drought, pests, fire, and sea level rise. Land management can mitigate the effects of climate change by making forests more resilient to stress.

As part of their assessments, States also identified priority issues or areas where they plan to focus forest management strategies. States used various approaches for involving stakeholders and the general public and for identifying priority landscapes. Most Southern States used a geospatial analysis to

map out priority areas. However, methods varied based on the particular needs and capacity of each individual State. This summary discusses the different methods used by States to identify priorities, in an attempt to share the information across the region. It also highlights potential multistate or regional priority issues and areas that were identified in the assessments.

State strategies lay out goals, objectives, and strategies or tactics that will address the priority issues and threats detailed in State assessments. Common themes in the Southern State strategies include:

Partnerships – Partnerships were essential to the development of the forest resource assessments and strategies, and States have indicated that the process itself helped to strengthen existing and spur new working relationships. These will also be essential to implementing State strategies.

Education and outreach – States plan to provide information and technical assistance to various audiences from landowners to policymakers.

Sustainable forest management – State strategies emphasized managing forests sustainably and for multiple benefits. Examples of managing forests for multiple benefits include incorporating woody biomass harvest with fuel control efforts and integrating forest and agricultural lands through silvopasture (combining forestry and livestock grazing on existing farms).

Incentives and markets – Creating incentives and supporting markets helps to sustain working forest landscapes and their associated economic, environmental, and social benefits.

Information generation – Through research, development, and other activities, States hope to generate useful knowledge for forest management. Topics to investigate include climate change adaptation and mitigation; best practices for pest control, fire management, and urban forestry; and the effects of forestry on water resources.

Enhancing capacity – Given increasingly limited budgets, States developed a number of strategies to maintain or enhance their capacity, including providing more comprehensive or cross-cutting staff training, seeking new funding sources, partnering with the private sector, leveraging funds through program integration, and further refining their priorities.

The State assessments and strategies provide a powerful tool to guide forest management across all lands. The USDA Forest Service will not only use the information from the State assessments and strategies in reviewing its own strategic goals, but also hopes to assist States in refining and implementing their strategies as needed. The USDA Forest Service will continue to partner with States and the Southern Group of State Foresters to prioritize and invest in efforts to conserve, protect, and enhance our forests.

Introduction

The Food, Conservation, and Energy Act of 2008, also known as the 2008 U.S. Farm Bill, provided new guidance on how forestry agencies and programs identify and prioritize national, regional, and State forest management goals. It includes the requirement for each State to complete a statewide forest resource assessment and strategy. The assessments provide an analysis of forest conditions and trends in the State and delineate priority areas and issues. The strategies provide long-term plans for investing resources where they can be most effective. States have contributed significant resources to developing their assessments and strategies with the intent of focusing resources and demonstrating results.

Through this summary, the USDA Forest Service, Southern Region, hopes to capitalize on the tremendous effort put forth by the 13 States and one Territory (U.S. Virgin Islands)[1] in the region. This document identifies common themes and highlights different approaches and methods used to develop the assessments and strategies. The purpose is not to evaluate States alongside one another but share information for mutual benefit. Finally, this summary explores possible roles for the USDA Forest Service in facilitating regional collaboration in response to States' findings and in helping to achieve the Southern Region's goals.

The Forest Service will use the information contained in State assessments and strategies to inform program-level decisions and facilitate collaboration among States, Federal agencies, and other relevant stakeholders. Individual assessments and strategies can be obtained by contacting state forestry agencies. The National Association of State Foresters also has Web links to the documents, available on their web site (http://www.stateforesters.org/issues_and_policy/forests_in_the_farm_bill).

Southern Forest Resources

The South is home to vast and diverse forest resources. Forests account for a large portion of land in the Southern Region, with some States—such as Alabama and Georgia—having two-thirds or more of their land area in forests. The region produces over half of the nation's timber products (Prestemon 2002). It is also home to an array of species—595 types of birds, 246 mammals, 197 reptiles, and 170 amphibians (Trani 2002). This is attributed in part to a diverse range of forest ecosystems that have changed over time due to both human intervention and natural events. Prior to European settlement, Native Americans used fire to manage forests and grew crops across the landscape. With colonization came increased land use. Over the past two centuries, nearly every acre of forest land in the South has been harvested at least once. Past land use shapes the types of forest we see today (Wear 2002).

In recent decades, many Southern communities have been experiencing rapid population growth. Between 1970 and 2008, the population of the region increased by 84 percent compared with the national average of 50 percent (Hanson, et al. 2010). Population growth and the development that accompanies it exacerbate many of the threats to forest resources, as discussed below.

About 87 percent of forest land in the South is under private ownership, nearly 70 percent of which is held by individuals or families (Smith, et al. 2009). In many States, forest industry ownership has declined in recent years, while ownership by nonindustrial private owners (families and corporations)

[1] The Puerto Rico assessment and strategy were not available at the time of the writing of this summary.

and public entities has increased. The major trends that States identified as driving change in Southern forests are related to population and land use and forest land ownership.

Drivers of Change: Population and Land-Use Trends

As human populations increase, some forest lands are lost directly to development, while others are fragmented into smaller blocks by new roads, houses, and businesses. While some conversion to agricultural use also occurs, loss to development has dominated since the mid-1980s (Conner 2002). Along with loss and degradation of forests that comes with development, increasing urbanization presents challenges to effectively managing the forests that remain. In particular, it becomes more difficult to use prescribed fire. This can be due to public perception about the practice as well as liability concerns. Also with urbanization comes air pollution, making smoke management increasingly important to ensuring compliance with air quality standards.

Drivers of Change: Forest Ownership Trends

Two major trends in forest ownership patterns present challenges to forestry professionals who are dedicated to helping landowners meet their goals while being good stewards of their forests—changing ownership type and changing management objectives.

Ownership Type

About a third of Southern forest land is owned by private companies. While these companies were traditionally integrated industrial forestry operations, they have been sold or transitioned to timber investment management organizations (TIMOs) or real estate investment trusts (REITs). These landholdings tend to be smaller and to change ownership more often than traditional industry landholdings. To date, most of these lands have been managed for long-term commercial forest products harvest (Smith, et al. 2009). However, there is concern that land under this relatively new ownership is more vulnerable to loss to other uses.

Many Southern forest ecosystems are considered fire dependant. This photo shows understory regeneration following a prescribed burn. Urbanization and new ownership patterns present challenges to effective fire management.

Management Objectives

Over half of forest land in the South is owned by families, and many of these parcels are small (less than 10 acres). There is predicted to be a trend of decreasing forest parcel size in the coming decades. These owners often wish to manage their land for its aesthetic, cultural, or wildlife value rather than for forest products (Butler 2008). Forestry agencies may need to update or revise their outreach efforts to serve this type of forest owner.

Other forces of change in the assessments included biological and physical factors, which are discussed under the major issues below.

Common Issues, Threats, and Priorities Identified in Assessments

The following broad issues categories were developed based on reviewing all State-identified issues and organizing them into nine groups that relate to the national State and Private Forestry priorities. The Farm Bill requires States to address the national priorities in their assessments. Table 1 illustrates the relationship of issues to national priorities. For a listing of top issues identified by individual States, see table 3 on page 9.

National Priority: Conserve Working Forest Lands	National Priority: Protect Forests From Harm	National Priority: Enhance Public Benefits From Trees and Forests
Urbanization and Urban Forest Management	Forest Pests	Ecosystem Services Maintained by Forests
Working Rural Forest Landscapes	Wildland Fire	Local Economic and Social Benefits of Forestry
Forest Ecosystem Restoration	Extreme Weather Events	Climate Change

Table 1. State-Identified Priority Issue Topics

National Priority: Conserve Working Forest Lands

Urbanization and Urban Forest Management

Population growth and urbanization present challenges to maintaining healthy, productive, and resilient forests, while at the same time increasing the demand for forest ecosystem services. Each State and Territory identified some aspect of urbanization or urban forest management as a priority issue or threat, mentioning the detrimental effects of forest loss and fragmentation and the unique challenges of managing forests in an increasingly urban environment. Six States (AR, LA, MS, SC, TN, VA) discussed the importance of public perceptions to continuing to actively manage forest lands.

Forest Loss and Fragmentation

Poorly planned urban and suburban growth results in loss and fragmentation of forest lands. Fragmentation is the division of forested areas into smaller or more isolated forest patches as land is converted to other uses (such as agriculture or development) or intersected by roads or other infrastructure. This process can affect the economic viability of forestry activities and impact water quality, biodiversity, and the ability of forests to adapt to changing climate. The issue is a priority for all States, and Georgia even made the decision to use this issue as the basis for identifying its overall priority landscapes.

Urban Forest Management

Urban forests provide a number of benefits to communities, including stormwater management, energy conservation, and improved quality of life. However, due to the human influence on the landscape, these forests are subject to increased stressors. Although urban and suburban forests are integral parts of working forest landscapes, they are often not adequately conserved, utilized, or managed. Six States (GA, NC, OK, SC, TN, TX) and the Virgin Islands geospatially identified overall urban and/or community forest priority areas in their assessments.

Working Rural Forest Landscapes

It is a priority across the South to conserve working forests in order to maintain the economic, environmental, and social benefits these lands provide. States identified various priority issues related to this goal.

Changing Markets and Ownership Patterns

The vast majority of forest land in the South is under private ownership. In addition to urbanization, market trends and private land ownership changes have resulted in loss of forest land to other uses. States included significant discussion of the impact of changing forest resource markets on the ability or willingness of owners to continue to maintain their lands in forest. They also highlighted changing ownership patterns as a challenge to conserving working forests.

While the South produces much of the Nation's forest products, its industry faces considerable competition in the global market. Falling prices due to changing market demands and the economic downturn have caused landowners to decrease planting rates. New or expanding markets for Southern forest products include those for biomass and ecosystem services such as carbon sequestration and water quality.

Demand for certified wood products has increased as retailers move toward requiring certification labels on products. However, a number of barriers prevent landowners from participating in the certified wood products market, including the costs of becoming certified.

Changing landowner values and shifting public perceptions may also present challenges to actively managing forests for both economic and environmental benefit. For example, States discussed challenges on the part of landowners in managing their forest lands sustainably. The shift to new owners and smaller landholdings has potential to bring changes in management objectives. Due to smaller parcel sizes, collaboration among landowners may be one tool in achieving landscape scale conservation.

Policy and Regulatory Environment

Public policies can encourage or discourage forest management and maintenance. State assessments emphasized the challenges posed by policies (such as local tax laws) and regulations (such as air quality standards).

Fire Management

Fire is a critical component for maintaining many types of Southern forests, and people have used fire to manage forests in the South for thousands of years. Excluding fire from these ecosystems can result in increased fire risk (as highly flammable plant material accumulates) and a loss of biodiversity (as the composition of the forest changes). However, a number of factors make it increasingly difficult to continue to use fire for forest management.

As urbanization progresses, people and structures mingle with traditionally forested areas, creating concerns about liability. With urbanization also comes increased air pollution, heightening the importance of smoke management and even preventing prescribed burning in some areas. Finally, public perceptions can spur greater political restrictions on the use of fire. In this way, a number of priority issues combine to make fire management increasingly difficult.

Forest Ecosystem Restoration

Though all forest lands provide a variety of benefits to the public, States also plan to restore particular forest types that

have been in decline or specific landscape types essential to maintaining environmental services such as clean, abundant water and wildlife habitat. Under this category, longleaf pine was the most frequently discussed. For example, Florida and Virginia identified priority areas within their borders for longleaf pine restoration efforts; they and other States included the issue as a potential multistate priority (see table 5 on page 18). Shortleaf pine, American chestnut, and the "Cross Timbers" post oak-blackjack oak forest types were also highlighted by multiple States.

National Priority: Protect Forests from Harm

Forest Pests

Forest pests, such as insects, diseases, and invasive plants, threaten the health and productivity of our forests. The balance sometimes achieved in forest ecosystems between native pests and hosts can be disturbed by extreme weather, intense wildfire, or lack of management. Nonnative invasive species can also alter the composition, structure, and function of native forests, adversely affecting a variety of economic and ecological benefits that forests provide. A number of species are of particular concern in the South. States identified more than 100 pests posing some threat to their forest resources. Several pests, however, appear to be more prominent than others. Table 2 shows the forest pests identified most frequently[2] as threats to forest resources in the Southern State assessments. In addition to these, States are on alert for pests that have the potential to spread from other parts on the country through interstate commerce or firewood transport. One example is thousand cankers disease, which was recently discovered in Tennessee black walnuts. It had previously only affected forests in the western United States. Five States (GA, KY, LA, MS, TN) identified thousand cankers disease as a threat to forest health; future assessments may highlight this and other pests as conditions evolve.

	AL	AR	FL	GA	KY	LA	MS	NC	OK	SC	TN	TX	VA
Insects													
Emerald Ash Borer	■	■	■	■	■	■	■	■	■	■	■	■	■
Gypsy Moth	■	■		■	■	■	■	■	■	■	■		■
Sirex/Eurasian Woodwasp	■		■	■			■	■	■	■	■		■
Southern Pine Beetle	■	■	■	■	■	■	■	■	■	■	■	■	■
Asian Longhorned Beetle	■	■	■	■			■	■	■	■	■		■
Hemlock Woolly Adelgid	■			■	■			■		■	■		■
Diseases													
Laurel Wilt Disease	■		■	■			■	■		■	■		
Sudden Oak Death	■		■	■	■	■	■	■		■	■		■
Oak Decline	■	■						■	■	■	■		■
Plants													
Cogongrass	■	■	■	■		■	■	■		■	■	■	
Kudzu	■	■		■	■		■	■	■	■	■		
Privets	■		■	■	■		■	■	■	■	■	■	
Tallowtree	■		■	■			■			■	■	■	

Table 2. Pests identified by at least seven States as posing a threat to Southern forests.

[2] By seven or more States.

The U.S. Virgin Islands highlighted invasive plant species as the most significant type of pest threatening its forest resources. In fact, the exotic tan-tan is the most commonly found tree species in the territory. However, little information is available on the extent of other forest pests.

Wildland Fire

Alteration of natural fire regimes and associated ecosystems, exacerbated by the increasing wildland-urban interface, has contributed to increased loss from wildfire in recent years. All States included significant discussion of wildland fire. Many Southern ecosystems are considered to be fire dependant, and certain species of plants require fire in order to regenerate. However, fire suppression over the course of the past century has changed the landscape, allowing highly flammable material to build up within forests. This increases the risk of large wildfires that are difficult to control. The combination of this heighted risk, urban sprawl, and other factors has increased the complexity of managing fire. High rates of arson in some States and the U.S. Virgin Islands adds even more to fire risk. Additionally, many State and local fire agencies struggle with reduced capacity.

Extreme Weather Events

Storms, floods, and drought impact forest ecosystems and cause economic and cultural losses. States emphasized the significance of hurricanes and high winds, ice storms, drought, and other weather-related events to the health of forests and value of forest products. Hurricanes, ice storms, and tornadoes are of particular concern, as they can cause considerable damage to valuable forest products resources and trees in communities and along transportation routes. Tree care and land management practices can help prevent some of the damage. When damage is not preventable, States can help landowners and communities salvage some of the resources and mitigate potential hazards.

National Priority: Enhance Public Benefits from Trees and Forests

Ecosystem Services Maintained by Forests

Healthy, resilient forests and trees filter our water, reduce air pollution, help cities and towns conserve energy, and contribute to biodiversity. Multiple factors, including forest fragmentation, intense fire and storms, forest pests, and certain management practices, threaten the ability of forests to continue to provide these services.

Protection of water resources stands out as a primary State-identified issue related to ecosystem services. States highlighted the need to manage forests for provision of clean, abundant water and to manage stormwater. About half of those also identified priority areas specific to water; others incorporated the issue into composite priority areas. Tennessee emphasized the role forests play in providing clean water as the basis for identifying

Protecting Water Resources

Although forest lands provide two thirds of the Nation's water supply (Smail and Lewis 2009), their ability to do so is threatened by forest fragmentation and loss to development. At the same time, urbanization increases demand for clean water. Other factors, such as agricultural practices, other land management practices, and forest pests, can also threaten water resources.

States have identified several solutions, including increasing use of forestry best management practices; planting trees in communities, along rivers and streams, and around critical water sources; reaching out to communities to help them conserve existing forests and manage urban forests for water quality; creating partnerships for landscape scale management; and providing incentives such as cost share and markets for ecosystem services.

its highest priority landscapes.

All States incorporated their State Wildlife Action Plans (SWAP) into their forest resource assessments, discussing the importance of forests in maintaining biodiversity and wildlife habitat. For example, North Carolina highlighted ways in which forest management practices can conserve or improve wildlife habitat. Threats to wildlife include forest loss and fragmentation, fire exclusion, and degradation of rare ecosystems such as those in karst areas. Specific critical habitat types include longleaf pine savannahs and early successional forest lands.

States indicated benefits to protecting both game and nongame species. To name a few, States gave specific mention to whitetail deer, northern bobwhite, wild turkey, sandhill crane, red cockaded woodpecker, gopher tortoise, and native fish and mussels.

In addition to numerous ecological benefits, protecting wildlife habitat can produce revenue through tourism and recreation. Florida's assessment highlighted that hunting, fishing, and wildlife viewing supported about 120,000 jobs in 2007. Improved environmental quality also saves communities money. Tennessee's urban FIA project estimates the value of their urban forests for removing pollutants from the atmosphere is over $203 million annually. Ecosystem services are, therefore, integral to other types of benefits we get from forests.

Local Economic and Social Benefits of Forestry

Working forests not only preserve open space; they also provide jobs, forest products and tax revenue, recreational opportunities, and cultural resources to local communities. Although the South contains a little under a third of the forested land in the United States (Conner 2002), the region produces over half of the nation's timber products (Prestemon 2002). Globally, the U.S. South produces 18 percent of pulpwood for paper and 7 percent of industrial roundwood on just 2 percent of the world's forested land (Hanson, et al. 2010).

Forestry is vital to the economy of the South. For example, Tennessee's assessment indicated the forestry sector accounts for nearly 6 percent of that State's economic output. Based on 2008 data, Georgia's found that its forest industry employs 128,000 people at an estimated economic benefit to the State of nearly $29 billion.

The U.S. Virgin Islands highlighted the importance of forests to its economy through provision of raw material for local handicrafts and opportunities for ecotourism. Indeed, forest-based recreation can contribute significantly to economic well-being throughout the South. North Carolina found that businesses related to fishing, rafting, and camping in forests contributed $7.5 billion to the State's economy in 2007.

Trees and forests can also help communities conserve energy and mitigate the heat island effect in urban areas. Georgia's assessment

references a study that estimates Atlanta avoids over 650,000 tons of carbon dioxide emissions each year because of the shade its trees provide. Texas highlighted a study of the Houston area showed that shade trees save energy consumers about $112 million annually.

Climate Change

A majority of States identified climate change as a major issue or threat related to forest resources. The primary impacts States expect to see are:

- Increased stress on forests due to storms, drought, pests, fire, and sea level rise
- Changes in productivity of valuable timber species

States emphasized that land management can mitigate climate change and its impacts on forests and human communities. Trees and forests have the ability to sequester carbon dioxide, reducing the concentration of that greenhouse gas in the atmosphere and potentially reducing the severity of climate change. Not only planting trees, but also increasing the use of long-lasting forest products can help offset carbon emissions. Planting trees in towns and cities can also help conserve energy, thereby reducing emissions outright. Finally, land management may be tailored to help people and forests adapt to climate change. Conserving and restoring forest lands will help to maintain vital ecosystem services, as will managing for resilience.

While there are a number of common themes among the assessments, each State spent a significant amount of time and resources to describe their unique set of forest resources and the trends and threats impacting them. Based on this information, they developed priority issues tailored to their individual circumstances. The following table lists some of the top priorities by individual State. Note that this is not a comprehensive list of issues and threats. The list represents those receiving the heaviest emphasis from each State, either by being highlighted as strategic or critical, being tied directly to strategies, or being tied to priority areas.

Native longleaf pine ecosystems such as the one pictured here are highly adaptive and resilient to climate change and other stressors.

State	Issue or Threat Title	State	Issue or Threat Title
AL	Air Quality	NC	Maintaining Viable Urban Forests
AL	Catastrophic Natural Events	NC	Protecting Forests and Communities from Wildfire Risk
AL	Changing Markets	NC	Threats to Forest Health
AL	Climate Change	OK	Community Forests Health and Care
AL	Fragmentation and Parcelization	OK	Forest Economics and Markets
AL	Insects and Disease	OK	Forest Sustainability and Health
AL	Invasive Species	OK	Impacts of Climate Change on Oklahoma's Forest Resources
AL	Urban Growth and Development	OK	Water Quality and Availability
AL	Wildfire	OK	Wildfire Risk to the Forest Resource
AR	Climate Change	PR	Fragmentation of forest systems
AR	Fire Management	PR	Water resources and watershed conservation strategies
AR	Forest Fragmentation/Parcelization/Changing Ownerships	PR	Information needs related to ecosystem services and other benefits from public and private forest land
AR	Forest Health	PR	Disturbances affecting forests (hurricanes, floods, fires, pests, etc.)
AR	Increase and Enhance Benefits of Working Forests	PR	Concerns over invasive species
AR	Water Quality and Quantity	PR	Economic opportunities and alternative market development
FL	Economic Viability of Forests	SC	Climate Change
FL	Forest Fragmentation	SC	Conserving South Carolina's Working Forests
FL	Forest Health: Insects, Diseases, and Non-Native Pest Plants	SC	Enhancing the Benefits of South Carolina's Trees and Forests
FL	Longleaf Pine Ecosystems	SC	Population Growth
FL	Meeting the Challenges of Climate Change	SC	Protecting South Carolina's Forests From Harm
FL	Water Quality and Quantity	SC	Public Perceptions About Forestry
FL	Wildfire Threat/Use of Prescribed Fire	TN	Education and Outreach
GA	Air Quality - Carbon Sequestration	TN	Forest Health
GA	Biodiversity	TN	Forest Industry
GA	Economics and Changing Markets	TN	Private Lands
GA	Fire Management	TN	Public Benefits
GA	Forest Health	TN	Urban Forestry
GA	Fragmentation and Parcelization	TN	Wildlife
GA	Urbanization	TX	Central Texas Woodlands Conservation
GA	Water Quality and Quantity	TX	Population Growth and Urbanization
KY	Forest Health	TX	Sustainability of Forest Resources in East Texas
KY	Forest Loss and Fragmentation	TX	Texas Urban Forest Sustainability
KY	Forest Management	TX	Water Quality and Quantity
KY	Funding	TX	Wildfire and Public Safety
KY	Water Quality and Quantity	VA	Conserve and restore diminished species
LA	Cypress-Tupelo Management	VA	Conserve the Forestland Base
LA	Forest Health: Insects and Disease	VA	Enhance the role of forests in maintaining water quantity and quality
LA	Hardwood Regeneration	VA	Ensure the sustainable use of woody biomass
LA	Invasive Species: Cogongrass	VA	Expand and improve urban and community forests
LA	Longleaf Regeneration	VA	Facilitate opportunities for forest certification among landowners
LA	Storms	VA	Promote a larger, connected forest landscape
LA	Urban Sprawl and WUI	VA	Promote initiatives for ecosystem services
LA	Wildfire & Protection	VA	Protect forests from invasive species
MS	Climate Change	VA	Protect woodland home communities from fire
MS	Forest Health	VI	Contiguous Forest Loss
MS	Forest Resource Markets	VI	Degradation of Coastal Forest Ecosystems
MS	Forest Sustainability	VI	Hazard Mitigation
MS	Land Ownership Policies	VI	Invasive Species
MS	Stewardship Education	VI	Loss of Transitional Forests to Development
MS	Wildfire Fuel Reduction	VI	Urban Forest Sustainability
MS	Wildlife	VI	Water Management
NC	Conserving Working Forest Lands	VI	Wildfires

Table 3. Listing of Top Issues or Threats Identified by Each States and Territory. Note that while Puerto Rico's assessment and strategy were not included in this review, the Territory did provide information to populate this table.

Identifying Priority Areas

States used various approaches when identifying priority areas for their forest resources, depending on their particular needs and capacity. This section highlights several representative examples of the various State approaches. Tables 4 and 5 provide summary information. Regardless of the methodology used, States put much effort into developing their priorities in order to focus their resources and demonstrate results.

Overall Priority Areas

Most Southern States provided composite maps of their priority areas; however, only four (Arkansas, Georgia, Kentucky, and Louisiana) presented their priority areas as formally named landscapes. Figures 1-4 show those named overall priority landscapes. States described specific priority issues that fall within each landscape.

When they created overall priority area maps, States typically used a geographic information system (GIS) analysis to overlay a number of layers related to important forest issues or threats. As an example of how this was done for a single issue, North Carolina used three types of information to derive its wildfire risk map (see figure 13 on page 14). Another method was to choose one overarching issue to identify priority landscapes. Still others chose to rely on stakeholder input and agency expertise to designate priority landscapes that were then delineated on a map.

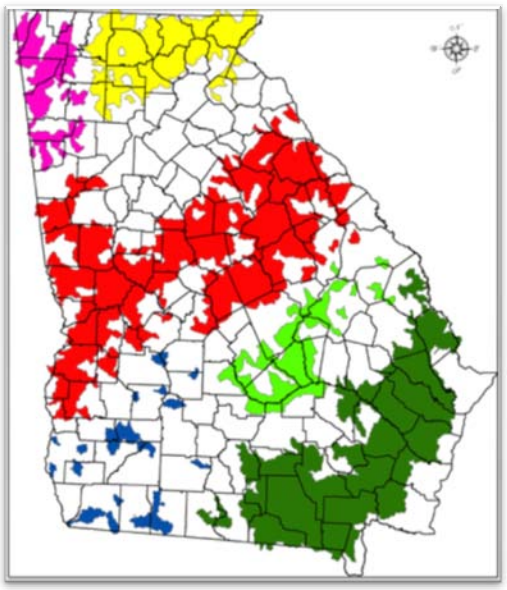


Figure 1. Georgia's priority landscapes.

Source: *Georgia Statewide Assessment of Forest Resources 2010*

Georgia focused on a single theme–forest loss and fragmentation–to identify priority watersheds with high forest cover. It then combined watersheds to come up with six priority landscapes (figure 1).

Arkansas used an overlay analysis to identify its priority landscapes. These represent areas where high priority issues overlapped most (figure 2).

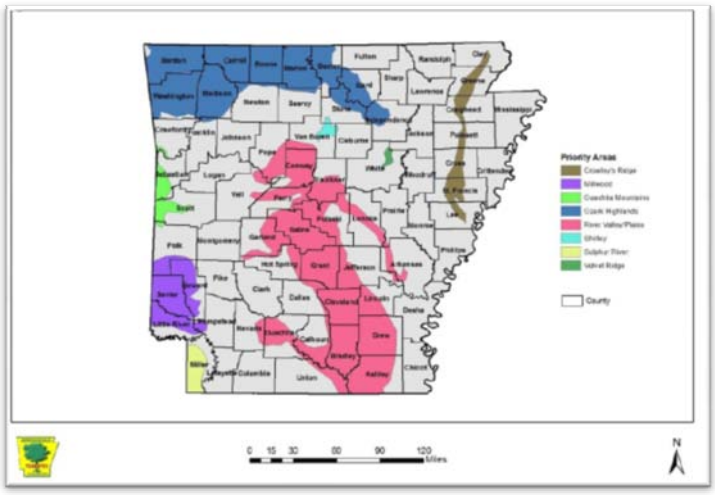


Figure 2. Arkansas' priority landscapes

Source: *Arkansas Statewide Forest Resource Assessment 2010*

Kentucky and Louisiana used expert and stakeholder input to delineate their priority areas (see figures 3 and 4). Whereas Kentucky's landscapes were hand-digitized based on this information, Louisiana used a combination of administrative and ecological boundaries to map its landscapes.

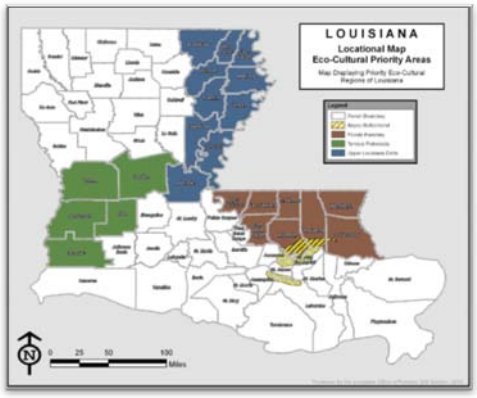


Figure 3. Louisiana's priority landscapes

Source: *Louisiana Statewide Forest Resource Assessment and Strategy: A Comprehensive Analysis of Forest-Related Conditions, Trends, Threats, Opportunities, and Management Strategies*

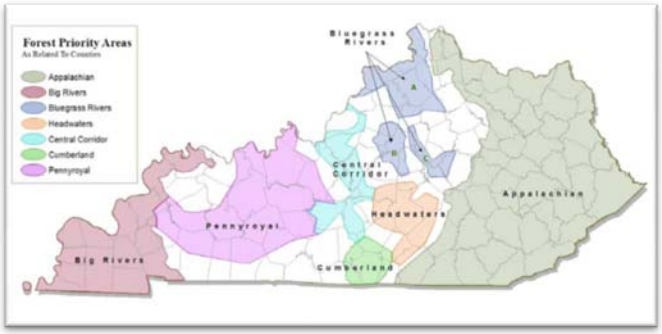
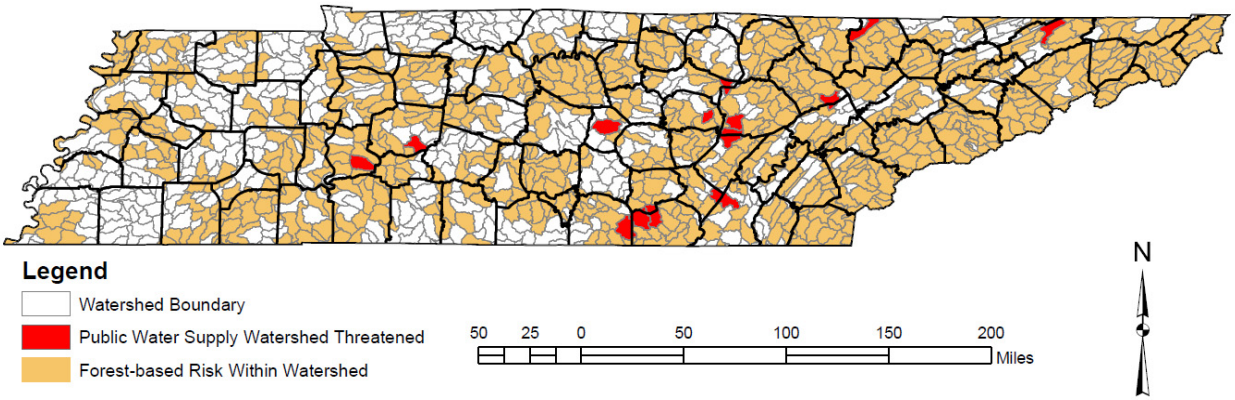


Figure 4. Kentucky's priority landscapes

Source: *Kentucky Statewide Assessment of Forest Resource: A Comprehensive Analysis and Plan For Action*

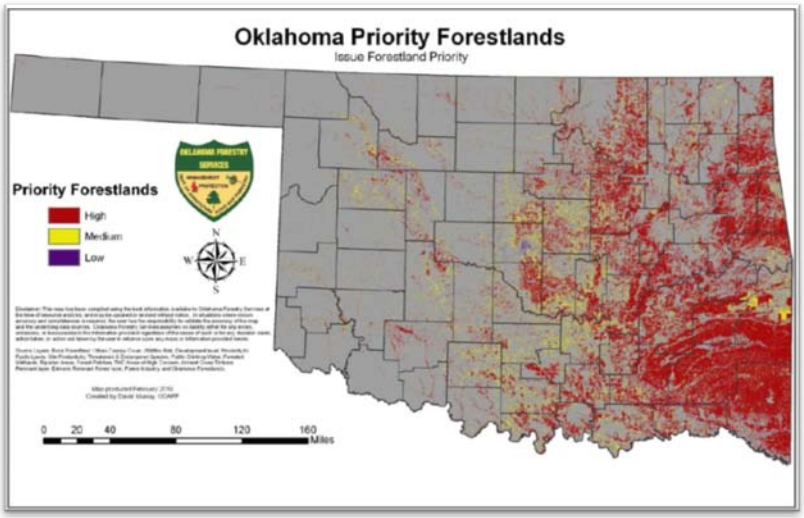
Other States created overall priority maps but did not separate high-priority areas into named landscapes. Tennessee's Stewardship priority area map used input from other state agencies and National Insect and Disease Risk Maps to identify the watersheds (at the 12-digit HUC) facing high risk from insect and disease, in need of riparian forest buffers, or in need of public water supply protection (figure 5).



Source: Data layers from Tennessee Department of Environment and Conservation, and USDA Forest Service Health Technology Enterprise Team National Insect and Disease Risk Map (2006)

Figure 5. Tennessee's Stewardship priority areas

Source: *Tennessee Forest Resource Assessment and Strategy: A comprehensive forest resource assessment and strategy to address the forest-related conditions, trends, threats, and opportunities in Tennessee*



The case of Oklahoma illustrates one common method where States ranked lands within their boundaries according to priority level (such as high, medium, low priority). Each 30- by30- meter piece of land is ranked and color coded. In figure 6, red is considered high priority, yellow medium, and purple low. This was the general approach used in the Forest Stewardship program's Spatial Analysis Project and the related Southern Forest Land Assessment.

Figure 6. Oklahoma's priority lands

Source: *The Oklahoma Forest Resource Assessment, 2010: A comprehensive analysis of forest-related conditions, trends, threats and opportunities*

South Carolina used a similar method, and also combined high-priority pixels into broader landscapes (figures 7 and 8). In this case, darker green is higher priority and lighter green is lower priority. Many States presented priority area maps using different options for boundaries. These States started with GIS analysis output showing priority areas within 30-meter-square areas, called pixels. They would then summarize (using a zonal statistics tool) the information to display it within boundaries that are meaningful to different stakeholders.

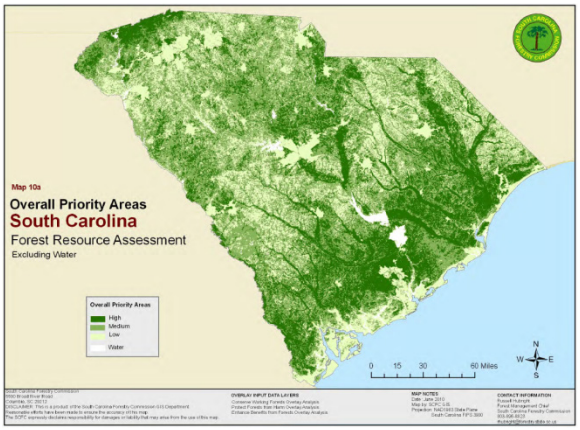


Figure 7. South Carolina's priority lands

Source: *South Carolina's Statewide Forest Resource Assessment and Strategy: Conditions, Trends, Threats, Benefits, and Issues*

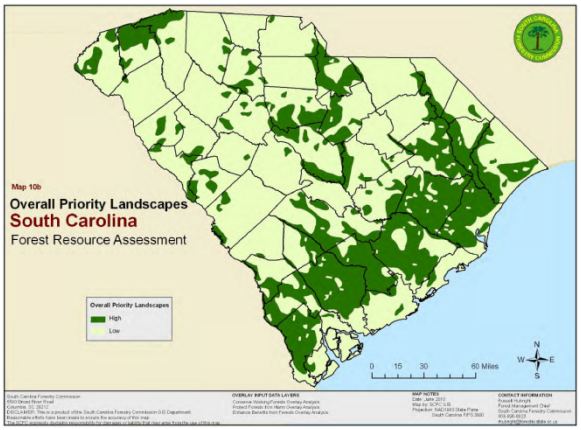


Figure 8. South Carolina's priority landscapes

Source: *South Carolina's Statewide Forest Resource Assessment and Strategy: Conditions, Trends, Threats, Benefits, and Issues*

For example, in addition to ranking all lands by 30-meter pixel (figure 9), Texas also displayed priority lands using county, watershed, and ecoregion boundaries. Each of these maps may be relevant to a different audience. The ecoregion map in figure 10 illustrates one way in which States incorporated their

SWAP. In the map, Texas compares the priority ecoregions from the SWAP—shown in the inset—with those using its Forest Resources Assessment to identify where priorities overlap.

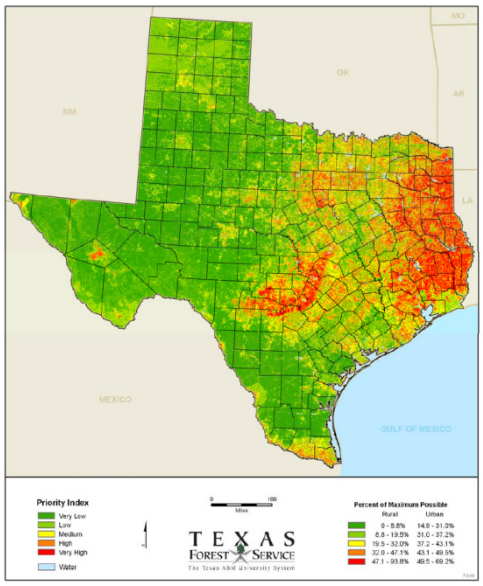


Figure 9. Texas' priority lands

Source: *Texas Statewide Assessment of Forest Resources: A comprehensive analysis of forest-related conditions, trends, threats, and opportunities*

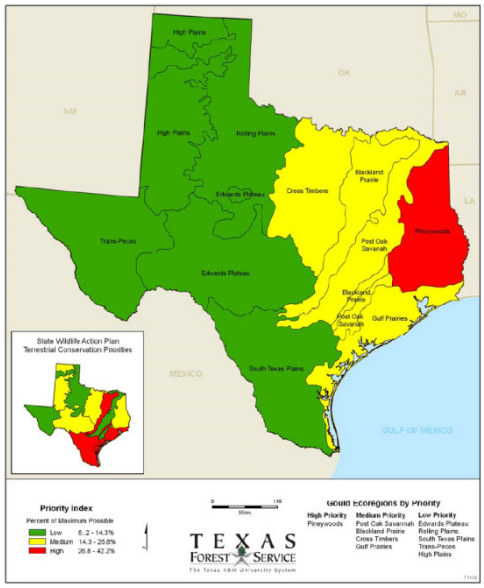


Figure 10. Texas' priority ecoregions

Source: *Texas Statewide Assessment of Forest Resources: A comprehensive analysis of forest-related conditions, trends, threats, and opportunities*

Of the States that did not choose to identify overall priority areas, most mapped priorities for particular issues, such as water conservation, protection from pests, or fire management. Others took a different approach, indicating criteria that will be used to prioritize areas for their various programs on a local level.

Issue-Based Priority Areas

Whether or not they produced overall or composite priority area maps, States typically identified individual priority areas using the issues or threats they had laid out earlier in their assessments of forest resources. Of the major issues outlined above, States produced priority area maps most frequently in relation to urbanization and urban forest management, working rural forest landscapes, wildfire risk, ecosystem services provided by forests, and forest pest threats. The following examples show a sampling of issue-based priority area maps.

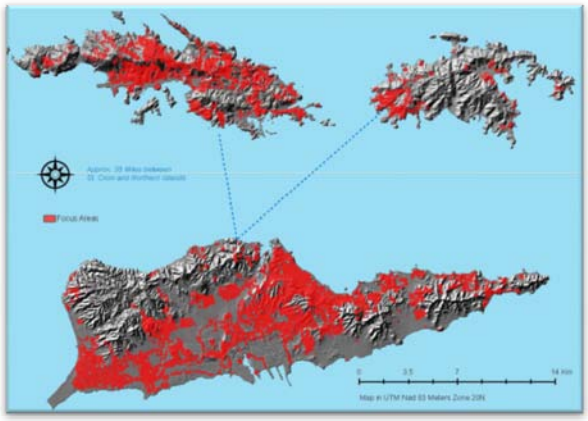


Figure 11. U.S. Virgin Islands's urban forest management priority areas

Source: *U.S. Virgin Islands Forest Resources Assessment and Strategies: A comprehensive analysis of forest-related conditions, trends, threats, and opportunities*

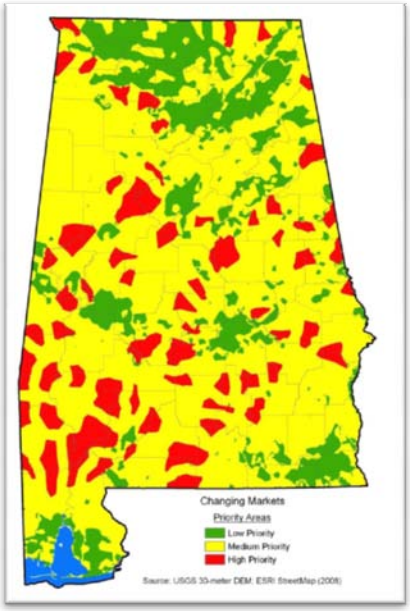


Figure 12. Alabama's changing markets priority areas

Source: *Forests at the Crossroads: Alabama's Forest Assessment and Resource Strategy*

In figure 11, the U.S. Virgin Islands highlights in red those areas in which it will focus its urban forest management strategies.

On the subject of working rural forests, Alabama used data on the presence of roads and primary wood using facilities to identify forest blocks where it will focus on the issue of changing markets (figure 12). Red areas are the highest priority, yellow medium, and green low priority for that particular issue. Alabama, like other States, produced one such map for each of its priority issues or threats. It then combined the individual maps to come up with an overall priority area map, showing where threats to forests overlap most.

North Carolina used data from the Southern Wildfire Risk Assessment and the U.S. Census to identify high-priority areas for wildland fire protection efforts. Figure 13 shows these areas in red. It also illustrates the three layers used (in an overlay analysis) to select the wildfire risk priority areas. These include where the wildland-urban interface occurs, areas with a significant number of vacation homes, and areas susceptible to wildland fire.

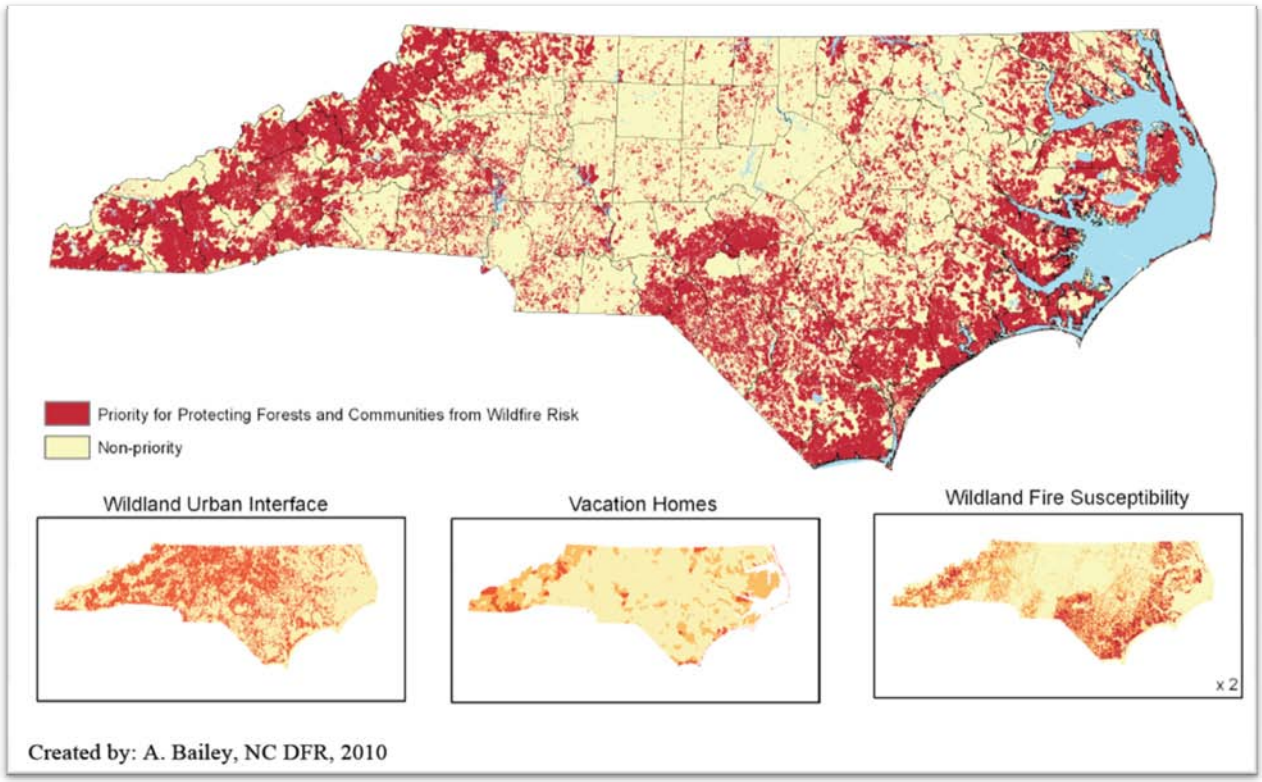


Figure 13. North Carolina's wildfire priority areas

Source: *North Carolina's Forest Resources Assessment: A statewide analysis of the past, current, and projected future conditions of North Carolina's forest resources, 2010*

Several States provided maps showing where they plan to focus on the issue of water quality and/or quantity. Mississippi worked with its Department of Environmental Quality to identify priority basins for water protection efforts, which are shaded in pink in figure 14.

Figure 14. Mississippi's priority water basins

Source: *Mississippi's Assessment of Forest Resources and Forest Resources Strategy: An analysis of forest-related conditions, trends, threats, and an overview of opportunities and strategies to address them*

Virginia used National Insect and Disease Risk Maps (NIDRM) supplemented with risk data for gypsy moth and Southern pine beetle to come up with its forest health priority lands, shown in figure 15. The areas in red and yellow have a higher risk index than those in green. Urban areas are blocked out in black. Some States chose to focus on one specific pest at a time rather than combine several into a comprehensive risk map.

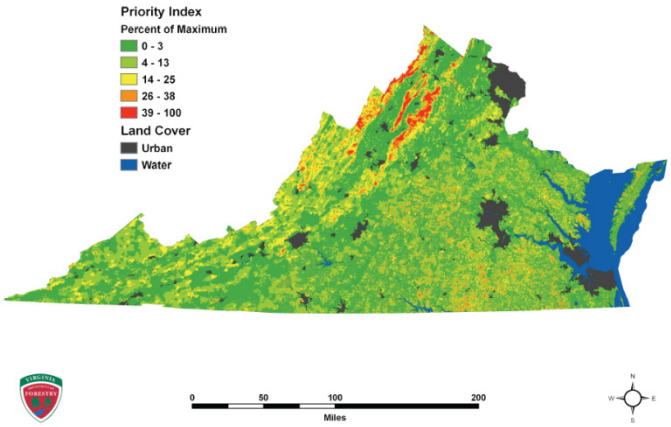


Figure 15. Virginia's forest health priority areas

Source: *Virginia's Statewide Assessment of Forest Resources: A Comprehensive Analysis of Forest Conditions, Trends, Threats and Priorities*

Florida developed a longleaf pine restoration priority area map based on the *Range-Wide Conservation Plan for Longleaf Pine*, Florida Natural Areas Inventory, and Division of Forestry data (figure 16). Named priority areas within the historic longleaf pine range are depicted in orange, alongside public lands shown in green and pink.

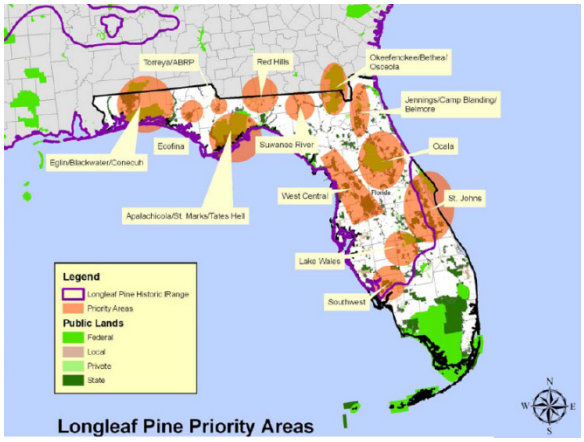


Figure 16. Florida's longleaf pine priority areas

Source: *Forest Resources—2010 Florida's Statewide Assessment*

Summary of Approaches Used To Identify Priority Areas

States used a variety of approaches in delineating their overall or single-issue priority areas, summarized in the table below. While the table does not discuss all methods used for each map, it lists the primary approach each State or Territory took.

State	How Priority Areas were Identified	Named Landscapes?	One Composite Map?
Alabama	Created nine individual strategy maps using issue-specific data layers. Combined these to develop an overall priority area map.	No	Yes
Arkansas	Used six equally weighted priority issues to identify eight priority landscapes on one map.	Yes	Yes
Florida	Used preexisting analyses to illustrate how programs will be prioritized on a more local level. Developed a new priority area map for longleaf pine.	No	No
Georgia	Identified watersheds (12-digit HUCs) that contained large forest blocks; summarized these to delineate priority landscapes. Also identified counties where the State will prioritize urban/community forestry programs.	Yes	Yes
Kentucky	Used expert and stakeholder input to identify landscapes where priority issues overlap; hand-digitized these on one map.	Yes	Yes
Louisiana	Used expert and stakeholder input to identify landscapes where priority issues overlap; delineated these along county and ecological boundaries on one map.	Yes	Yes
Mississippi	Used preexisting analyses to illustrate how action on priority issues is currently or will be prioritized in coordination with partners.	No	No
North Carolina	Relying on several input layers, created four programmatic priority area maps and two overall maps (one for urban landscapes and another for rural landscapes); used an overlay analysis.	No	Yes
Oklahoma	Created maps for eight priority issues/programs using an overlay analysis. Also presented a combined map of overall priority areas.	No	Yes
Puerto Rico	Used SFLA plus issue based priority areas that would maximize benefits to water, wildlife and public safety, and that provided opportunities to leverage resources with other state and federal agencies.	Yes	No
South Carolina	Used an overlay analysis to created nine priority area maps; combined these to create one overall priority area map. Summarized several maps into broader landscapes.	No	Yes
Tennessee	Created a composite forest stewardship priority area map using seven single-issue priority area maps, based on 12-digit HUCs.	No	Yes
Texas	Building upon the SFLA, used a weighted overlay analysis to create six issue-based and six sub issue priority area maps; provided a combined rural and urban priority area map. Summarized overall priority areas at various levels.	No	Yes
Virginia	Provided eight issue/program priority area maps as well as an overall priority landscape map.	No	Yes
Virgin Islands	Used a weighted overlay analysis to created issue-based priority area maps.	No	Yes

Table 4. Summary of State priority area identification approaches. Note that while Puerto Rico's assessment and strategy were not included in this review, the Territory did provide information to populate this table.

Building Off of Existing Efforts

In keeping with the intent of the Farm Bill, most States used preexisting geospatial analysis efforts as a point of reference as they identified priority areas. As they refined their priority issues, these were often enhanced to tailor the analysis to each State's particular situation.

Southern Forest Land Assessment

The Southern Forest Land Assessment (SFLA) is a project of the Southern Group of State Foresters to identify important rural lands across the South where efforts in rural forestry assistance should be focused. It addresses objectives of the USDA Forest Service Spatial Analysis Project. The SFLA project combined 13 weighted layers to produce an index map showing areas across the South of high, medium, and low priority. Ten of the layers relate to the status of forest resources; three are related to threats to those resources.

A majority of States used SFLA layers to develop one or more of their priority area maps. For example, Texas created most of its priority area maps using one or more SFLA layer for each. To address urban priority areas, it supplemented SFLA with information such as tree canopy cover and amount of impervious surface.

Southern Wildfire Risk Assessment

The Southern Group of State Foresters also manages the Southern Wildfire Risk Assessment (SWRA) tool to help States identify wildfire-related priority lands. Of the States that identified geospatial wildfire-specific priority areas, nearly all used this tool, either on its own or in conjunction with other information. The States that provided named priority landscapes either used SWRA to inform those areas or plan to use the tool to further refine their priority areas.

Forest Inventory and Analysis

Through the Forest Inventory and Analysis (FIA) program, the USDA Forest Service and State forestry agencies collect, analyze, and publish data on the extent and condition of forests across the United States. States relied on FIA data for their assessments, and some used the information to identify priority areas.

National Insect and Disease Risk Maps

Several States made use of the USDA Forest Service Insect and Disease Risk Maps (NIDRM). These maps estimate the risk of tree mortality due to various forest pests. States typically used this information in combination with other data as part of their priority area identification process. Others used one or more maps to illustrate threats to their forest resources.

For more information, visit —

Southern Forest Land Assessment: http://tfsweb.tamu.edu/sfla.

Spatial Analysis Project: http://www.fs.fed.us/na/sap/.

Southern Wildfire Risk Assessment: http://www.southernwildfirerisk.com/.

Forest Inventory and Analysis: http://fia.fs.fed.us/. (FIA data is currently limited for some States, including Oklahoma and Texas.)

National Insect and Disease Risk Maps: http://www.fs.fed.us/foresthealth/technology/nidrm.shtml.

Opportunities to Work across State Boundaries

The States' top priorities are summarized in the section on common issues, threats and priorities. Top priorities for individual States are listed in table 3. However, each State also discussed areas or issues that represent potential multistate or regional priorities. As with the individual State priority areas, there were a variety of approaches to identifying multistate areas. Most States provided narratives about possible or existing multistate initiatives, and some provided simple maps delineating potential priority areas that cross State boundaries. Table 5 summarizes the potential multistate priorities identified by more than one State in the region. It indicates which States highlighted the issue specifically as a potential multistate or regional priority. It also lists any geographic areas shown on a map or otherwise discussed. States that included the issue only as an individual priority are not listed in table 5. While these do not necessarily represent top regional priorities, they may serve as a starting point as States discuss future collaboration.

Multistate Issue	**States Identifying Issue as a Potential Regional Priority**	**Geographic Area Identified** (n/a = not applicable)
Climate Change	AL, FL, MS, NC, TX	n/a
Economics and Changing Markets	AL, FL, KY, NC, SC, TX	n/a
Cross Timbers Restoration (See Figure 18)	AR, OK	"Ancient cross timbers distribution" includes parts of AR, KS, OK, TX
Longleaf Pine Restoration (See Figure 17)	AL, FL, GA, LA, MS, NC, SC, VA	Historic range of longleaf pine
Appalachian Forest/Mined Lands Restoration	KY, VA	Appalachian Region
Shortleaf Pine Restoration	AR, OK, SC	"Local distribution of shortleaf pine" area covers AR, IN, LA, MO, OK, TX
Forest Pests(general)	AL, FL, GA, KY, LA, MS, NC, SC	n/a
Cogongrass (See Figure 20)	AL, LA, MS, SC, TX	Counties of occurrence throughout the South
Emerald Ash Borer	KY, MS, TN, VA	n/a
Hemlock Woolly Adelgid	GA, KY, NC, TN	n/a
Southern Pine Beetle	MS, TN, TX. VA	n/a
Urbanization (See Figure 19)	AL, FL, KY, NC, SC	"Urban mega-regions" provided by AL
Water Quality/Quantity (See Figure 21)	AL, AR, FL, GA, NC, OK, SC, VA	Watershed identified in Figure 21
Wildfire Risk and Fire Management	AL, AR, FL, GA, LA, NC, SC	AR – "High wildfire risk" area identified around the intersection of AR, LA, TX GA – Okefenokee National Wildlife Refuge
Research	NC, VA	n/a

Table 5. Potential priority multistate or regional issues

Examples of Potential Multistate Priority Areas

The following maps illustrate the geographic extent of a selection of potential multistate priorities identified above. Further analysis and assessment on a regional scale may be useful to States as they address these issues in a strategic manner.

For example, nine States identified longleaf pine restoration as a potential regional priority (figure 17), typically referencing the historic range of the species as a priority area. However, the *Range-Wide*

Conservation Plan for Longleaf Pine (RWCP) provides strategies and identifies significant landscapes for focusing longleaf pine restoration activities. States can use this plan as a tool for prioritizing efforts and partnerships related to longleaf pine. Florida used information from the RWCP along with other data to develop its initial longleaf pine priority areas (see figure 16). Other States indicated in their strategies that they would also participate in the RWCP.

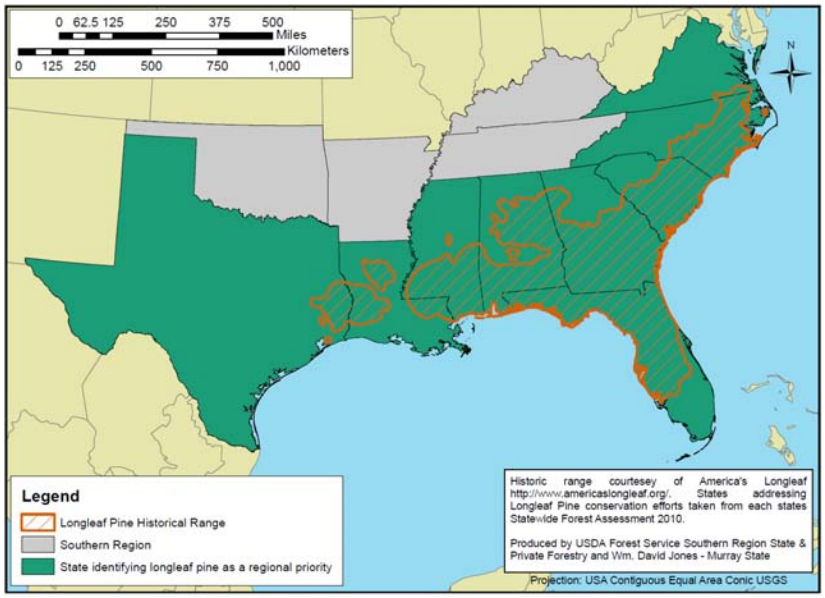


Figure 17. Longleaf pine as a potential regional priority

The "Cross Timbers" post oak-blackjack oak forest type is one of the least disturbed forest ecosystems in the Eastern United States, but faces threats from development and invasive species. Figure 18 shows historic distribution and the Southern States that have committed to restoring these forests, either within an individual or a potential regional priority.

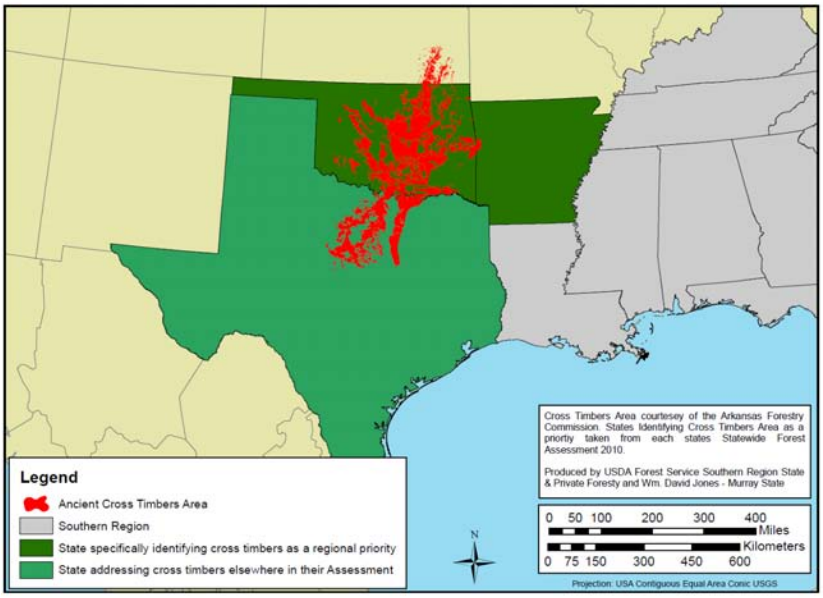


Figure 18. Cross Timbers as a potential regional priority

Urbanization and its associated forest fragmentation was identified as a major driver of change in Southern forests. Alabama provided a map of "urban mega-regions" to help focus regional attention on the issue (figure 19).

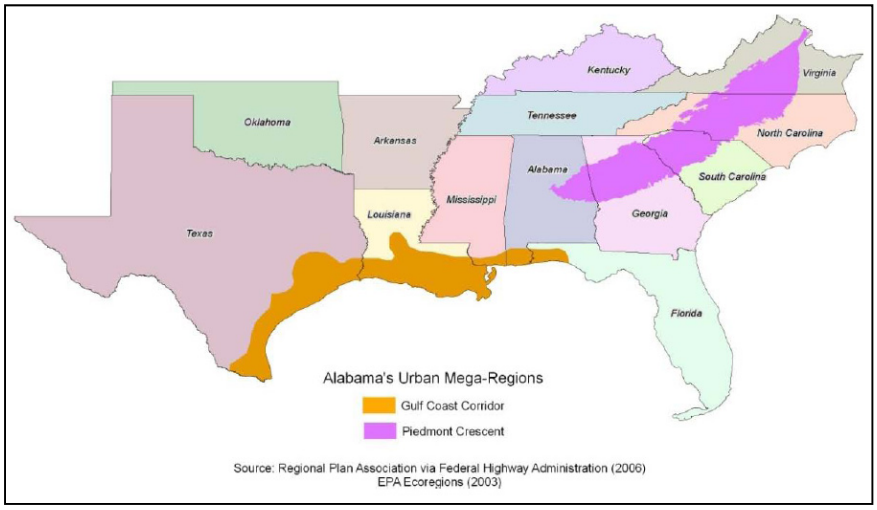


Figure 19. Urban mega-regions identified by Alabama as a potential regional priority

Source: *Forests at the Crossroads: Alabama's Forest Assessment and Resource Strategy*

Since forest pests do not respect political boundaries, they were frequently mentioned as potential multistate priorities. In the example of cogongrass, States experiencing outbreaks and those in bordering States identified the pest as an issue to potentially deal with at the regional level (figure 20).

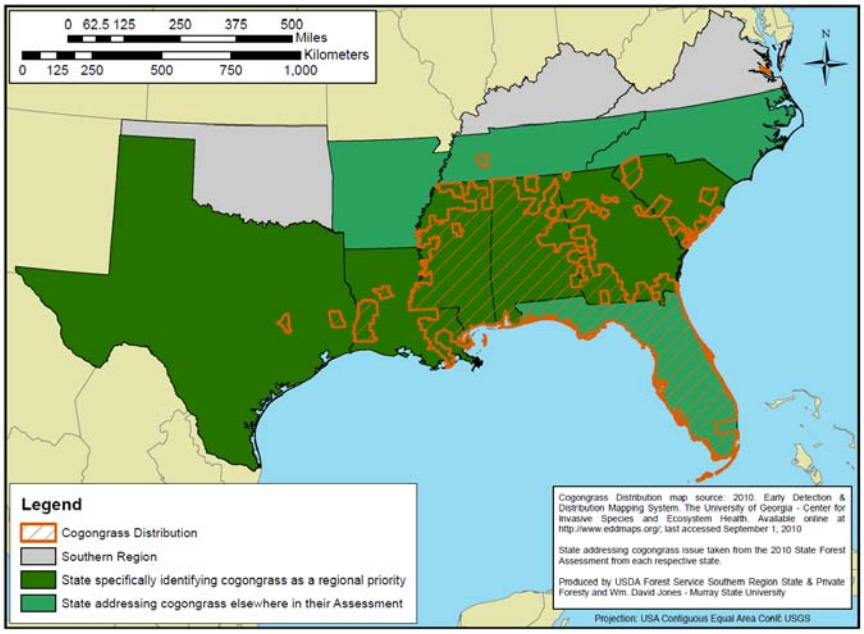


Figure 20. Cogongrass as a potential regional priority

Managing forests for protection of water resources is one of the top priorities States identified in their assessments. Eight States (AL, AR, FL, GA, NC, OK, SC, VA) also identified water quality and/or quantity as a potential regional priority, and six of those specified watersheds of importance (shown in figure 21).

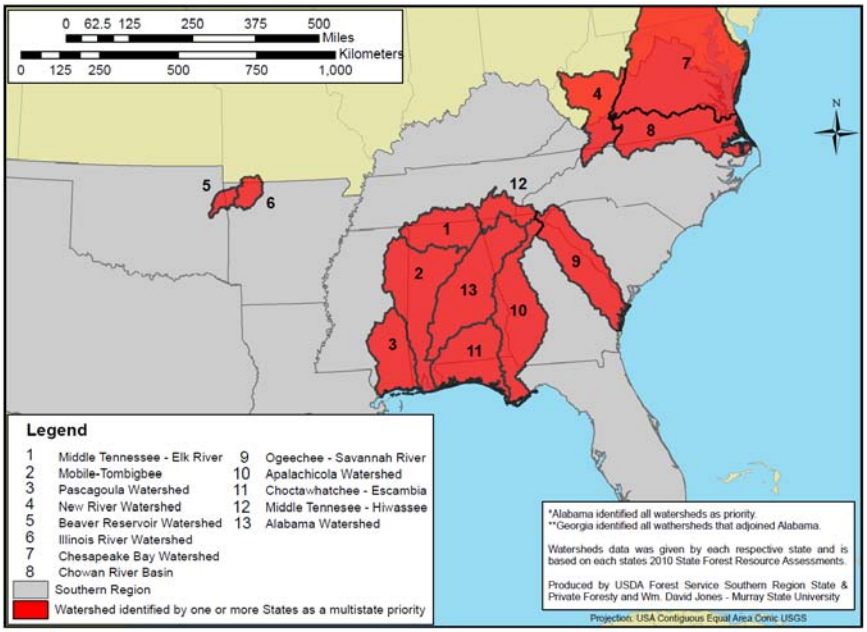


Figure 21. Watershed identified as potential multistate priorities

These examples point to a number of issues and areas where States may choose to collaborate in order to achieve regional goals. As States implement their individual strategies, they may find it helpful to collaborate both within and outside of the Southern region to meet their goals.

Common Strategies for Southern Forests

States identified a number of broad solutions and specific strategies to address the threats and issues discussed in their assessments. These are outlined below. State strategies build upon extensive assessment efforts to focus resources on top priorities.

Partnerships

Partnerships were essential to the development of the forest resource assessments and strategies, and States have indicated that the process itself helped to strengthen existing and spur new working relationships. These relationships with both public and private sector entities will be essential to successful implementation of State strategies.

As States highlighted in their strategies, a partnership example is working with local fire departments to:

- Recognize their contributions to wildfire management;
- Improve communications among State and local entities; and
- Enhance the capacity of localities through mutual training activities, direct funding, and in-kind support for appropriate equipment.

Other types of partnerships include, but are not limited to:

- Working with universities and other government agencies to perform research, education, and outreach; and
- Participating in regional efforts such as the Longleaf Alliance or the Mississippi River Basin Initiative.

Educating and Assisting Partners and Stakeholders

Roughly a third of the strategies States identified involve education and outreach to various audiences. Methods for education and outreach include direct technical assistance, training courses and workshops, field demonstrations, visits to schools, and media campaigns.

Many education and outreach strategies indicated multiple target audiences to comprehensively address information needs. Of the strategies that indicated a singular target audience, about a third were aimed at landowners or industry stakeholders. Local governments and community organizations represented another major target audience, particularly when addressing the issues of urbanization and urban forest management. Public perceptions can impact the ability to manage forest land; they can also influence the value placed on forest resource conservation. States plan to increase education of the general public about forest values, threats, and sound management practices. States also discussed a need to outreach to new audiences, including new landowners, traditionally underserved populations, and those outside the forestry world.

Finally, States highlighted the need to educate local, State, and Federal policymakers and to advocate for policy changes to remove barriers and increase incentives for managing forests. As with public outreach, States can provide general educational materials to policymakers to help them understand the multiple values of forest resources and the impacts of laws and regulations on them.

Specific policy advocacy efforts include:

- Revising tax policies to discourage parcelization and fragmentation of forest lands;
- Ensuring a broad definition for biomass in renewable energy legislation;
- Encouraging local governments to adopt tree ordinances and other "tree-friendly" legislation or policies;
- Minimizing barriers to prescribed burning by clarifying liability laws;
- Providing dedicated funding for State forestry agencies;
- Creating disincentives for poor land management practices; and
- Incorporating language in cost share legislation to support conservation of resilient ecosystems.

Managing Forests Sustainably

States implement and encourage land management practices on all land ownerships. Their strategies emphasized continual use of and increased compliance with existing BMPs to manage forests with minimal negative impact on the environment and particularly water resources. States strategies also focused on restoration of native ecosystems, including longleaf pine, shortleaf pine, American chestnut, Atlantic white cedar, and the Cross Timbers.

A common theme for afforestation and reforestation was to focus these activities on particular lands–along rivers and streams, in targeted water recharge areas, on agricultural lands, in communities, and on former mine lands–for the provision of ecosystem services, such as water protection or resilience to climate change stresses. In the same way, many States indicated plans to integrate harvesting with other management objectives (see sidebar).

Managing Forests for Multiple Benefits

Harvesting Woody Biomass
States highlighted the need for biomass utilization for energy along the rural to urban continuum. They frequently indicated a need to integrate the harvesting of woody biomass with other efforts, such as controlling of invasive species, reducing wildfire risk (especially where prescribed fire is not feasible), and reducing urban wood waste.

Agroforestry
Some States identified strategies to integrate forest and agricultural lands through agroforestry practices, namely silvopasture (combining forestry and livestock grazing on the same land) and planting riparian forest buffers on agricultural land to protect water quality.

Addressing Climate Change

In an effort to mitigate predicted impacts of climate change, States identified strategies to manage forests for resilience, such as increasing the diversity in forest structure and composition, restoring native ecosystems and creating or enhancing linkages among forest blocks. Many States plan to acquire land where appropriate to increase connectivity, focusing on riparian areas and lands adjacent to existing public lands.

Wildfire Management

Wildfire prevention and mitigation, including preventing arson, was another common land management strategy. Many States emphasized the need to restore fire-adapted ecosystems through prescribed burning. Barriers to prescribed burning include liability concerns among forestry professionals and landowners, public disapproval of the practice, and the need to comply with air quality standards while urbanization tends to decrease ambient air quality. These are addressed in strategies related to policy advocacy, partnerships, and public education.

Combating Forest Pests

Strategies for controlling forest pests included responding early, using mechanical or chemical means to contain outbreaks, eradicating pests that have not yet gotten a foothold in the State (for example cogongrass in Arkansas), and implementing decontamination procedures to stop pests from spreading.

Forests and Wildlife

States were required to incorporate their SWAPs in their assessments and strategies. In their strategies, States typically emphasized implementing land management activities to protect or increase population of the species of greatest concern identified in SWAPs. Ecosystems given specific mention were early successional and longleaf pine habitats. Practices may include prescribed burning, thinning, and stand improvement.

Providing Incentives and Supporting Markets

Incentives

In addition to providing encouragement and technical assistance in implementing forest resource strategies, States highlighted the need to provide financial and other incentives to keeping working forests in forests and achieving desired land management or conservation outcomes. Cost-share programs and conservation easements help landowners manage their forests for multiple benefits and adapt to changing conditions. Recognition of landowners, industry professionals, and communities for stewardship provides further incentive; it also highlights models for successful management.

Market Support

Robust markets have the ability to incentivize forest conservation and management. States support new and existing markets by providing market information, performing market assessments, supporting infrastructure, and promoting forest products and services.

States have also identified strategies to assist landowners in accessing markets for certified forest products. This includes working with those participating in the Forest Stewardship program to ensure they are certified under third party programs. Certified forest products markets not only provide an alternative outlet for the forest industry but also serve as an added incentive to manage forests sustainably. Similarly, States plan to pursue development of markets for ecosystem services as a way to improve conservation outcomes on private lands.

As new markets emerge, such as those for woody biomass, carbon sequestration, and other ecosystem services, State forestry agencies play a role in educating landowners and industry professionals about the market opportunities and limitations. States most frequently planned to support markets for woody biomass, certified wood products, and carbon credits. Some States also identified strategies to support markets for water quality, biodiversity, nontimber forest products, tourism, and recreation.

Generating Information for Forest Management

Forest landowners and managers face a number of challenges and uncertainties. States can provide research, tools, and other information materials to support active and sustainable land management. Inventory and mapping of forest resources across the rural to urban continuum helps communities understand the status of these valuable resources and plan for their protection or enhancement.

Monitoring of resource condition trends and potential threats is essential to preventing or mitigating forest loss or damage. Monitoring of land management practices helps States to continually refine their outreach efforts. Examples of the topics that States plan to carry out or support research on include:

- Predicted responses of forest ecosystems to climate change;
- Forest pest impacts and associated monitoring and treatment strategies;
- Wildfire impacts on forests and fire management methodologies;
- Woody biomass harvesting practices and impacts;
- Landowner capacity and values in key restoration areas;
- Silvopasture methods;
- Impacts of management practices (such as fertilization) on water resources;
- Coal mining impact on forests;
- Impact of air pollution on forests; and
- The impact of increasing prescribed burning for the purpose of longleaf pine restoration.

States also identified strategies to produce or update tools for forest management, including:

- Integration of biomass considerations into forest inventory efforts to support information on renewable energy resources;
- Prescribed fire management and planning tools;
- Longleaf pine management guidelines and growth and yield models;
- Fire response decision support systems;
- Guidelines for managing forests in the WUI;
- Models for quantifying ecosystem services, including carbon sequestration; and
- Continually updated best management practices (BMPs), paying particular attention to protection of water resources new BMPs or guidelines for:
    - Urban forest management, such as use of trees to mitigate the heat island effect in cities;
    - Preserving natural landscapes in new developments; and
    - Invasive species control.

Enhancing Capacity of State Forestry Agencies

State agencies operate under limited budgets and have been particularly hard hit in the past few years. Added to this are a host of trends mentioned earlier, including the increased complexity of managing fire, the obstacles presented by urbanization, changing markets, changing land ownerships, and climatic uncertainty, to name a few.

In order to meet these challenges, State forestry agencies identified a number of strategies to increase their internal capacity to continue to provide needed services to their stakeholders and partners. These strategies include maintaining and initiating training for staff, including integrating functions. They also include seeking additional funding from both traditional and nontraditional sources, partnering with the private sector, and leveraging funds within and across programs, agencies, and partnerships. Another strategy is to use forestry consultants as a means of increasing capacity to produce forest management plans. Finally, States identified actions to continue their planning efforts through further assessment, refining of priorities, and mechanisms to periodically update strategies.

Partnerships

Given limited funding and the myriad challenges land managers face, partnerships are essential to States achieving their goals. The sidebar on page 26 lists the most common partners and stakeholders States consulted as they developed their assessments and strategies. States typically identified which partners they anticipate contributing to their strategies. As they develop their annual implementation plans, they will further define these relationships.

Involving National Forests

Each State and Territory consulted the USDA Forest Service as they developed their assessments and strategies. Many States specifically involved National Forest System staff in the development of their assessments and strategies. This involvement ranged from giving national forest staff the opportunity to review and comment on drafts to mapping out where the State forestry agency strategies contribute to national forest management plans and vice-versa. For the majority, it appears National Forest System staff involvement came in the form of participation on a committee or review team involved in the process.

Examples of where States envision partnering with National Forests to implement their strategies include:

- Prioritizing lands for restoration or protection;
- Restoring various forest ecosystems;
- Protecting forested watersheds;
- Monitoring threats to forests such as pest outbreaks and air pollution indicators;
- Promoting the use of local firewood to prevent the spread of insects and disease;
- Training natural resource managers and loggers
- Providing conservation education;
- Promoting responsible forest-based recreation; and
- Using adaptive management strategies in response to climate change.

Additional opportunities for the USDA Forest Service to partner with States are discussed in the next section.

Partners and Stakeholders Consulted

Universities and schools
Forest industry companies and associations
Landowners and landowner associations
The public
Forest Stewardship Coordinating Committees
State Technical Committees
State urban forestry councils
State invasive species task forces
State legislatures
Local governments and fire departments
Local and regional planning associations
Soil and Water Conservation Districts
Nongovernmental organizations:
- The Nature Conservancy
- National Wild Turkey Federation
- Land Trusts
- The Longleaf Alliance
- Defenders of the Environment
- International Society of Arboriculture
- Southern Environmental Law Center
- The Audubon Society

State agencies, departments, or divisions:
- Environment and/or Natural Resources
- Parks
- Transportation
- Agriculture
- Fish and Wildlife
- Economic Development

U.S. Department of Agriculture:
- Forest Service
- Natural Resources Conservation Service
- Farm Service Agency
- Animal and Plant Health Inspection Service
- Cooperative State Research, Education, and Extension Service

U.S. Department of Interior:
- U.S. Fish and Wildlife Service
- National Park Service

U.S. Department of Defense
U.S. Environmental Protection Agency

Opportunities for the Forest Service to Support State Strategies

The USDA Forest Service would like to take the opportunity to build upon the significant investment States have made in developing their assessments and strategies, State strategies overlap with a number of USDA Forest Service regional goals and objectives, including protecting water supplies, reducing forest loss and fragmentation, restoring populations of native plants and animals, mitigating the impacts of wildfires on communities and forest products resources, providing biomass for alternative energy markets, and managing forests to be resilient to a number of threats. In these and other areas, the agency intends to partner with States to ensure goals are met. Additionally, as a part of this summary effort, the USDA Forest Service compiled a database that can be used to support coordination with and among States. The Southern Region can provide support in the form of leadership, coordination, information development, funding, and program delivery.

Coordination and Consistency

The USDA Forest Service is willing to host meetings in a variety of formats to help States identify strengths in their assessments and strategies and discuss how these strengths can lead to effective strategy implementation and cooperation with each other. The agency, in coordination with the Southern Group of State Foresters, can also facilitate the sharing of knowledge among States so those with more experience in certain programs can share their lessons learned.

Where strategies address multistate priorities, the USDA Forest Service can provide coordination and support. Examples include:

- The regional efforts in longleaf pine, shortleaf pine, and Appalachian forest restoration;
- Efforts to better track the occurrence and air quality impacts of wildland and prescribed fire; and
- The development of programs to more effectively use trees to increase energy efficiency in communities.

Information Development and Dissemination

The Southern Research Station can help facilitate research projects to address research needs identified in consultation with States. The Environmental Threat Assessment Center (EFETAC) continuously carries out research to provide map products and other assessment tools and map products that States can use to prioritize risk. In order to help States understand the impacts of their strategies, the USDA Forest Service can also assist with developing strategies to monitor and select indicators. See pages 24 - 26 for examples of information needs identified by States.

The agency can also assist in interpreting forest trends and threats to predict future conditions. The *Southern Forest Futures Project* will forecast several scenarios for the South over the next 50 years and discuss what consequences each scenario would have for the region's forests. The Southern Regional Office can work with States individually or collectively to help them understand and make use of the project's findings when refining their strategies.

Program Delivery

The USDA Forest Service can provide technical assistance, funding, and advice to support State program delivery. Through its competitive grants mechanism, the agency can fund innovative strategies across a range of programs. Individual programs through which the USDA Forest Service will continue to assist States include Forest Stewardship, Forest Legacy, Urban and Community Forestry, Forest Health Protection, and Fire and Fuels Management. For instance, the Forest Health Protection program can help States develop and improve cost-share programs for Southern pine beetle prevention, nonnative invasive plant suppression, and other pest control programs. Additionally, the National Agroforestry Center can provide training on: silvopasture, green infrastructure, and conservation buffer planning and design to assist States in implementing their strategies.

~

The State assessments and strategies provide a powerful tool to guide forest management across all lands. The USDA Forest Service will continue to partner with States and the Southern Group of State Foresters to prioritize and invest in efforts to conserve, protect, and enhance our forests.

References

Barber, Brad; J. Jacobs; and R. Srinivasan, 2008. *Southern Forest Land Assessment.* Southern Group of State Foresters.

Butler, B.J., 2008 *Family Forest Owners of the United States, 2006.* Gen. Tech. Rep. NRS-27. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northern Research Station.

Conner, R.C. and A.J. Hartsell, 2002. "Forest Area and Conditions" In *Southern Forest Resource Assessment*, by David N. and Gries, John G., eds Wear. Asheville, NC: U.S. Department of Agriculture, Forest Service, Southern Research Station.

Hanson, Craig, et al, 2010. *Southern Forests for the Future.* World Resources Institute.

Prestemon, J.P.; and R.C. Abt, 2002. "Timber Products Supply and Demand" In *Southern Forest Resource Assessment.* Gen. Tech. Rep. SRS-53, by Wear, David N. and Greis, John G. Asheville, NC: U.S. Department of Agriculture, Forest Service, Southern Research Station.

Regional Working Group for America's Longleaf, 2009. *Range-Wide Conservation Plan for Longleaf Pine.* America's Longleaf.

Smail, R.A.; and D.J. Lewis, 2009. *Forest-land conversion, ecosystem services, and economic issues for policy: a review.* Gen. Tech. Rep. PNW-GTR-797. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station.

Smith, W.B., tech. coord.; D. Patrick, data coord.; C.H. Miles, map coord.; Perry; and S.A. Pugh, 2009. *Forest Resources of the United States, 2007.* Gen. Tech. Rep. WO-78. Washington, DC: U.S. Department of Agriculture, Forest Service, Washington Office., 336 p.

Trani, Margaret K. 2002. “Maintaining Species in the South.” In *Southern Forest Resource Assessment.* Gen. Tech. Rep. SRS-53, by Wear, David N. and Greis, John G. Asheville, NC: U.S. Department of Agriculture, Forest Service, Southern Research Station.

Wear, D.N., and J.G. Greis, 2002. *Southern Forest Resource Assessment: Summary Report.* Asheville, NC: U.S. Department of Agriculture, Forest Service, Southern Research Station.

Individual State forest resource assessments and strategies are listed on the following pages. This summary used examples from the documents as submitted to USDA in June 2010. Up-to-date links to the reports are available on the National Association of State Foresters Web site: http://www.stateforesters.org/issues_and_policy/forests_in_the_farm_bill.

Individual Assessments and Strategies

Arkansas
Arkansas Statewide Forest Resource Assessment

Arkansas Statewide Forest Resources Strategy: A comprehensive strategy for investing resources to address management and landscape priorities

Alabama
Forests at the Crossroads: Alabama's Forest Assessment and Resource Strategy

Florida
Forest Resources — 2010 Florida's Statewide Assessment

Forest Resources — 2010 Florida's Statewide Strategies

Georgia
Georgia Statewide Assessment of Forest Resources 2010

Georgia Statewide Forest Resources Strategy 2010

Kentucky
Kentucky Statewide Assessment of Forest Resources and Strategy:
A Comprehensive Analysis and Plan for Action

Louisiana
Louisiana Statewide Forest Resource Assessment and Strategy: A Comprehensive Analysis of Forest-Related Conditions, Trends, Threats, Opportunities, and Management Strategies

Mississippi
Mississippi's Assessment of Forest Resources and Forest Resource Strategy: An analysis of forest-related conditions, trends, threats and an overview of opportunities and strategies to address them

North Carolina
North Carolina's Forest Resources Assessment: A statewide analysis of the past, current and projected future conditions of North Carolina's forest resources, 2010

Oklahoma
The Oklahoma Forest Resource Assessment, 2010: A comprehensive analysis of forest-related conditions, trends, threats and opportunities

The Oklahoma Forest Resource Strategy, 2010 to 2015, *and Beyond*

South Carolina
South Carolina's Statewide Forest Resource Assessment and Strategy: Conditions, Trends, Threats, Benefits, and Issues

Tennessee
Tennessee Forest Resource Assessment and Strategy: A comprehensive forest resource assessment and strategy to address forest-related conditions, trends, threats and opportunities in Tennessee

Texas

Texas Statewide Assessment of Forest Resources: A comprehensive analysis of forest-related conditions, trends, threats, and opportunities

Texas Statewide Forest Resource Strategy: A comprehensive strategic plan to address forest-related conditions, trends, threats, and opportunities as identified in Texas Forest Service September 2008 Texas Statewide Assessment of Forest Resources

US Virgin Islands

U.S. Virgin Islands Forest Resources Assessment and Strategies: A comprehensive analysis of forest-related conditions, trends, threats and opportunities

Virginia

Virginia Statewide Assessment of Forest Resources: A Comprehensive Analysis of Forest Conditions, Trends, Threats and Priorities

Virginia Department of Forestry Strategic Plan: Harnessing the Winds of Change

For more information, please contact:
Tim Mersmann
Rural Forestry Program Manager
USDA Forest Service, Southern Region
404-347-1649
tmersmann@fs.fed.us