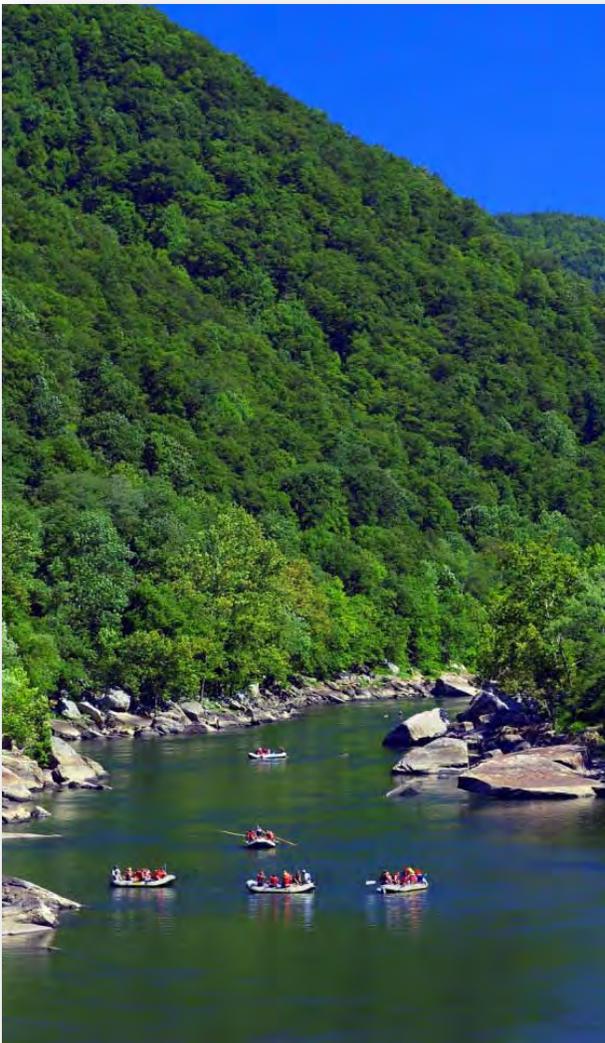




2010
Statewide Forest Resource Assessments and Strategies
in the Northeast and Midwest:
A Regional Summary



April 8, 2011

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1. Introduction

Background on State Forest Resource Assessments and Strategies

In 2010, State forestry agencies nationwide completed a Statewide Forest Resource Assessment and Strategy. These documents outline important issues, opportunities, and strategies for each State, and meet the Cooperative Forestry Assistance Act (CFAA) (as amended by the 2008 Farm Bill)¹ requirement for the State to be eligible for funds authorized by the CFFA. This assessment and strategy process is intended to ensure that Federal and State programs target shared management priorities and achieve meaningful outcomes. As a November 2008 memo from the National Association of State Foresters and the U.S. Forest Service stated, “[The State Forest Resource Assessments and Strategies] provide a historic opportunity for the State agencies and the Forest Service to work together to advance their shared resource management goals.”

Key elements of the State Forest Resource Assessments and Strategies:

Assessment: The State Forest Resource Assessment includes conditions, trends, and key forest-related threats, benefits, and opportunities. States also identify priority landscape areas within the State and multistate priorities.

Strategy: The State Forest Resource Strategy serves as the strategic planning document for all State and Private Forestry programs. Strategies address the issues and priority landscape areas identified in the State Assessment. States also identify resources from all sources needed to address the Strategy.

Links to State and Private Forestry National Priorities: This State-led process allowed flexibility for the content, structure, and process itself. States were required to consider and link their priorities to the State and Private Forestry National Priorities shown in table 1.

Engaged Stakeholders: States coordinated with many stakeholders and partners, including each State’s Forest Stewardship Committee, wildlife agency, NRCS Technical Committee, and Urban and Community Forestry Council. States also coordinated their efforts with applicable Federal land management agencies such as the U.S. Forest Service and U.S. Fish & Wildlife Service.

Other Plans: States were required to incorporate “any forest management plan of the State, including community wildfire protection plans and State Wildlife Action Plans.”

Table 1. S&PF National Priorities and Objectives

<p>Conserve and Manage Working Forest Landscapes for Multiple Values and Uses</p> <ol style="list-style-type: none">1.1. Identify and conserve high-priority forest ecosystems and landscapes.1.2. Actively and sustainably manage forests. <p>Protect Forests from Threats</p> <ol style="list-style-type: none">2.1. Restore fire-adapted lands and/or reduce risk of wildfire impacts.2.2. Identify, manage, and reduce threats to forest and ecosystem health. <p>Enhance Public Benefits from Trees and Forests</p> <ol style="list-style-type: none">3.1. Protect and enhance water quality and quantity.3.2. Improve air quality and conserve energy.3.3. Assist communities in planning for and reducing forest health risks.3.4. Maintain and enhance the economic benefits and values of trees and forests.3.5. Protect, conserve, and enhance wildlife and fish habitat.3.6. Connect people to trees and forests, and engage them in environmental stewardship activities.3.7. Manage trees and forests to mitigate and adapt to global climate change.

¹ The Forestry Title (VIII) of the Farm Bill (PL 110-246) is available at <http://www.northeasternforests.org/FRPC/>. The State Forest Assessments and Strategies are accessible from the National Association of State Foresters Web site: http://www.stateforesters.org/issues_and_policy/forests_in_the_farm_bill.

Purpose and Overview of this Report

The purpose of this report is to provide a regional-level summary of content and methodology that the 20 Northeast and Midwest States and the District of Columbia (figure 1) used to develop their State Forest Resource Assessments and Strategies. The objectives of this regional summary include:

Provide a regional context for the State Assessments and Strategies to (1) inform strategic efforts by the Northeastern Area Association of State Foresters (NAASF), U.S. Forest Service Northeastern Area State and Private Forestry (NA S&PF), U.S. Forest Service Northern Research Station (NRS), and U.S. Forest Service Eastern Region of the National Forest System (R9), including landscape-scale conservation efforts; (2) help States understand which forest-related issues and strategies are common across the region; and (3) provide a platform for exploring opportunities to collaborate with partners. As State forestry agencies work with State and local partners to implement their

Strategies, the NAASF and NA S&PF are collaborating with the U.S. Forest Service Eastern Region (R9), the Northern Research Station (NRS), and others to advance priorities identified in the State Forest Resource Assessments and Strategies. The information in this report can be used to help these partners strategically focus on and advance shared resource management goals.²

Highlight approaches and methods used in individual State Assessments and Strategies. In addition to summarizing information at a regional level, this report also highlights individual examples, unique approaches, and methods States used to develop their State Assessments and Strategies. This report not intended for State-to-State comparisons or for allocation of Federal funding.

Provide information to complement national efforts. The National Association of State Foresters is making an effort to promote the State Forest Resource Assessments and Strategies. A national report by the U.S. Forest Service, *Summary and Analysis of Statewide Forest Resource Assessments and Strategies 2010*, was shared with State Foresters in September 2010. This regional summary emphasizes aspects of particular importance in the Northeast and Midwest.

This summary report is not a regional assessment of forest resource conditions and trends. The following reports provide regional forest assessment information (see references for the full citations):

- *Forests of the Northern United States* (Shifley and others, in press), produced as part of the Northern Forest Futures Project.
- *A Snapshot of the Northeastern Forests* (USDA Forest Service 2005).
- *Sustainability Assessment Highlights for the Northern United States* (USDA Forest Service 2003).
- *Forest Sustainability Assessment for the Northern United States* (USDA Forest Service 2007).
- *National Report on Sustainable Forests—2010* (USDA Forest Service, in press).

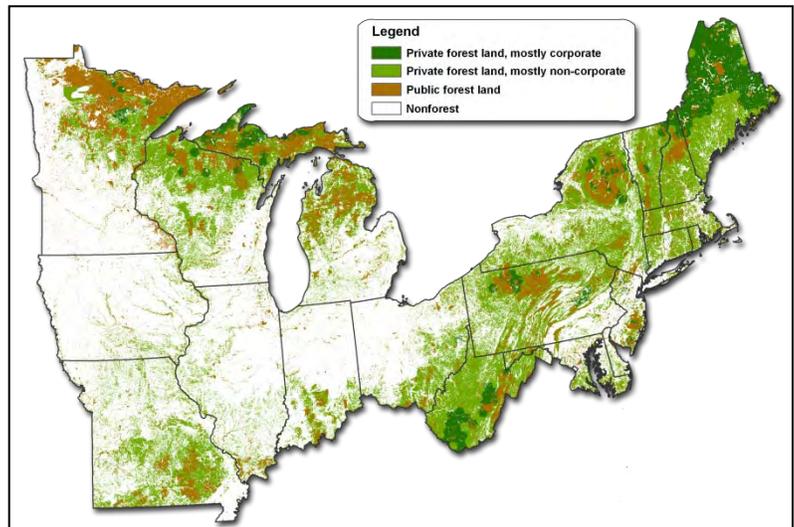


Figure 1. This report includes 20 States and the District of Columbia. Seventy-four percent of the forest land in this region is privately owned (areas in green on the map).

² Collaborative efforts are outlined in the “Statewide Forest Assessments and Strategies: Next Steps” briefing paper available under “Regional Documents and Resources” at <http://www.northeasternforests.org/FRPC/>.

2. Key Findings

Common Themes in Issues, Goals, and Strategies

State forestry agencies identified issues and goals related to trees and forests in their State Forest Resource Assessments and Strategies. The most common issues and goals across the Northeast and Midwest and the District of Columbia are listed below. In addition to being important at the State level and providing common themes across the region, these issues and goals and their related strategies contribute directly to the State and Private Forestry National Priorities and Objectives (see Chapter 5).

- Keeping forests as forests
- Forest ecosystem health and productivity
- Urban and community forest health and sustainability
- Water, biodiversity, recreation, and other ecosystem services
- Forest products industry and markets
- Sustainable forest management across all ownerships
- Climate change
- Wildfire threats to forests, public safety, and property
- State and private capacity for forestry
- Awareness of and support for forests

Keeping forests as forests: Private forest land is being fragmented, parcelized, and converted to nonforest uses at an alarming rate, making “Keeping Forests as Forests” one of the most critical issues facing natural resources managers throughout the Northeast and Midwest. This issue, whether identified as protecting private forest lands, changing forest landscapes, protecting existing forests, loss of forest land, maintaining the State’s forest land base, or keeping forests as forests, appeared in every State strategy document, often as the most significant priority issue. Some of the strategies commonly identified by States to address the issue included increasing forest land conservation easement opportunities, enhancing the financial viability of owning private forest land, and increasing societal awareness of the value of private forest land.



Forest ecosystem health and productivity: The forest health issue is variously described as forest health and productivity, forest health and functionality, protecting forests from threats, maintaining forest health, or ensuring forest health and vitality. Forest health maintenance or protection was cited explicitly as an issue by all of the States in their assessment and strategy documents. A common theme within the forest health issue is exotic and invasive species, including insects, diseases, and plants. Strategies to guide actions and investments include detecting and monitoring forest health threats; managing high-risk native and non-native pests; preventing introductions of new pests; increasing public awareness; developing risk assessments; providing emergency response; and providing training, tools, and technical assistance to land managers. Specific strategies were outlined by each State in response to the forest health issue, many of which focused on monitoring, evaluating, and protecting forest health across the urban to rural continuum.

Urban and community forest health and sustainability: Urban and community forests occur in nearly all communities within the Northeast and Midwest, from the most urban to the very rural. In the Assessments and Strategies, State forestry agencies placed emphasis on the benefits of trees and forests as green infrastructure that contributes to the quality of life in communities. In an integrated approach, most States seek to protect and maintain existing tree cover; implement best management practices; and engage local officials and the public in planning, sustaining, and improving forest resources in and around cities, suburbs, and towns.

Water, biodiversity, recreation, and other ecosystem services:

Ecosystem services or benefits provided by trees and forests underpin human health and well-being, our economy, and the natural world. Every State describes the importance of ecosystem services. There is emphasis on water quality and quantity, biodiversity and wildlife habitat, and recreation. Common themes in strategies that focus on water include the following: (1) protect drinking water supplies and water quality through sound stewardship of forest land, (2) protect and enhance or restore high-priority urban and rural watersheds and riparian areas, and (3) use forests as a solution to address nonpoint source pollution on agricultural lands. Biodiversity strategies focus on forest conservation and management to maintain or enhance biodiversity, critical habitat for wildlife, and rare species, in collaboration with State wildlife agencies. Recreation strategies focus on providing forest-based recreational opportunities and minimizing resource damage from recreation.



Forest products industry and markets: State forestry agencies described the challenges facing the forest products industry and traditional markets as a critical issue and outlined goals related to improving and diversifying markets for timber and nontimber forest products, woody biomass, ecosystem services, and renewable energy development. The States rely on the forest products industry to create jobs, contribute to the State’s economy, indirectly provide the backdrop for the region’s tourism industry, and provide economic incentives for landowners to keep forests as forests. Common themes in State strategies include the following: (1) develop, maintain, and expand traditional wood products markets; (2) diversify, strengthen, and create jobs in forest-based businesses; and (3) develop and expand nontraditional markets, including woody biomass and ecosystem services.

Sustainable forest management across all ownerships: Active, sustainable forest management of all forest land is essential for maintaining the flow of desired products and services that forests provide and for improving forest health and resilience to stressors. Across both public and private lands, most States pointed to regeneration issues, such as that due to overpopulation of white-tailed deer. Decline of oak-hickory forest is of particular concern across the range of this forest type. In turn, several States had goals or strategies specifically focused on maintaining balanced forest composition. Common goals and strategies for public forests include managing them for multiple benefits and services using them as demonstration areas for sustainable forest management, and for connecting people to forests. Lack of active, sustainable management on private forest lands is a common issue across the region. Most States have strategies focused on outreach and support to private forest land owners, including policies, programs, and initiatives that help landowners maintain working forests.

Climate change: Climate change effects are being assessed across urban and rural forested landscapes within the Northeast and Midwest. The States within this region vary in how they address climate change-related issues in their State Strategies. Half of the States responded to climate change with a few strategies that broadly encourage “forest management for adaptation and mitigation.” Eight other States approached climate change adaptation and mitigation through more detailed plans that address issues of resiliency, adaptation, uncertainty, scientific research and monitoring, carbon payments and markets, wood products, and public education.

Wildfire threats to forests, public safety, and property: States across the Northeast and Midwest are responsible for protecting more than 255 million acres of forest and grasslands from wildland fire. As a result, they identify wildfire threats to forests, public safety, and property as a key issue. Common themes in State strategies include wildfire preparedness, hazard mitigation, and prescribed burning.

Support and partnership with the structural fire community, such as local fire departments, are included in meeting critical preparedness needs, which is integral to the suppression of wildfire in all States. Community protection and preparedness are addressed through planning for hazard mitigation and developing Community Wildfire Protection Plans. Many States focus on using prescribed fire to restore or maintain plant communities and to protect life, property, and other values that could be degraded or destroyed by wildfire.

State and private capacity for forestry: Across the Northeast and Midwest, a number of State Assessments focused on forestry capacity issues, including the decline of both State and private forestry professionals, lack of funding for forestry programs, and community capacity to manage urban forest resources. While State, county, and municipal funding levels in the Northeast reportedly increased slightly during the middle of the decade, higher personnel costs and inflation effectively negated this increase. Over the same period, Federal funding declined sharply. Several States generally noted the loss of State positions. The concerns expressed in a number of State Assessments and Strategies have only amplified since June 2010 due to continuing State budget woes. Where State Strategies addressed the issue, most focused on general calls for increased human and other resources, and restated the consequences of the erosion of professional capacity; however, no specific strategies identified where additional resources would be found.

Awareness of and support for forests: Lack of awareness, appreciation, and support for urban and rural forests and forest management is a critical issue that cuts across all other issues and goals. Every State recognizes the importance of education and outreach. Strategies focus on communication, education, and outreach efforts for a variety of audiences, such as the public, partners and stakeholders, teachers and children, and private forest landowners. Common themes in State Strategies include raising public awareness and support for trees, forests, and forest management; communicating and collaborating with partners and stakeholders to implement the State Strategy; and reaching out to private forest landowners to encourage sustainable, active management of private forests.



Summary of Approaches and Methodology

State forestry agencies across the region used a variety of methods and approaches to develop their State Forest Resource Assessment and Strategy. Overall, most States organized their Assessment by the forest sustainability Criteria and Indicators and organized their Strategy by State-identified issues or goals. A summary of approaches for several elements of the State Assessments and Strategies follows.

Engaged stakeholders: Each State forestry agency consulted a wide range of stakeholders to develop their Assessment and Strategy, including the State Forest Stewardship committee, State wildlife agency, State NRCS technical committee, State Urban and Community Forestry council, universities, forest products and industry groups, woodland owner associations, conservation and recreation organizations, and Federal land management agencies such as the U.S. Forest Service and the U.S. Fish & Wildlife Service.

Consulted existing plans: Existing plans that were commonly consulted or integrated into the Statewide Forest Resource Assessment and Strategy include the State Wildlife Action Plan, Community Wildfire Protection Plans, S&PF Program-specific plans, a prior or existing statewide comprehensive forest plan, Statewide Comprehensive Outdoor Recreation Plan, and State climate or greenhouse gas plan.

Identified priority areas: Every State used GIS (Geographic Information System) technology to some extent to identify priority areas where some forestry program outreach and activity will be emphasized. The number of priority area maps included in each State Assessment ranged from 1 to 27, and the methods used to identify and display priority areas varied widely. For example, some States displayed all priority areas within the State on one composite map, while others displayed priority areas on separate maps for each State issue or each of the three State and Private Forestry National Priorities. The way in which States plan to use these priority areas to implement their strategies also varies.

Identified multistate priorities: Over 70 multistate priorities were identified in the Northeast and Midwest State Forest Resource Assessments and Strategies. Roughly two-thirds of the multistate priorities are specific landscape areas, such as the Upper Mississippi Watershed and the Chesapeake Bay. The rest are issues that could best be addressed through collaboration among multiple States, such as invasive insects and plants and sustaining forest industry. Roughly one-third of all the multistate priorities extend into areas outside of the 20 Northeast and Midwest States.

Identified resources needed: States commonly cited these resources for addressing their State Forest Resource Strategy: funding from State, Federal, and private sources; State and Private Forestry (S&PF) program staff; and partners to help implement the strategies. S&PF Program areas were commonly identified as important for implementing State Forest Resource Strategies. In addition, most States noted that resources to implement the State Forest Resource Strategy are limited.

Moving Forward Together

Beginning this Fiscal Year, State Forestry agencies will turn to their State Forest Resource Strategy to identify projects and activities to work on during the year. The priority landscapes and issues are focal points for collaboration, while the assessment and strategy process itself is leading to more focused, effective forest conservation and management across the landscape.

To address shared management priorities, all three branches of the U.S. Forest Service are engaged to provide support and assistance to State Forestry agencies as they implement their strategies. For example, at the regional level, the NAASF, U.S. Forest Service, and other partners are collaborating to 1) use S&PF Programs to help States implement their strategies; 2) develop a strategy to fill gaps in data desired for future assessment updates; and 3) pursue a cohesive, comprehensive landscape-scale conservation³ approach to land management, protection, and wise use. In addition, there are a number of lessons learned (see chapter 8) that will be a valuable reference as required updates to the State Forest Resource Assessments and Strategies are discussed.



State forestry and U.S. Forest Service NA S&PF staff that were engaged in developing regional guidance for State Forest Resource Assessments and Strategies gather for a photo.

³ For more information see the *Landscape Scale Conservation in the Northeast and Midwest* position paper at http://www.na.fs.fed.us/stewardship/pubs/conservation/landscape_conservation.pdf.

3. Approach, Involving Stakeholders, and Integrating Existing Plans

All 20 States and the District of Columbia completed a State Assessment and Strategy. The national requirements and regional guidance⁴ allowed flexibility for the format and content of State Forest Resource Assessments and Strategies so that each State could use the best data available; work with stakeholders without limitations; and adequately consider other State assessments, plans, and priorities. This flexibility allowed State forestry agencies to develop both a State Assessment that is valuable for communicating instate, forest-related issues, threats, and opportunities; and a State Strategy that is important for strategic planning and making the case for funding and other resources.

Organization of the State Forest Assessments and Strategies

Eleven States presented both the Assessment and Strategy components in one publication, while 10 produced separate Assessment and Strategy documents. State Forest Resource Assessments and Strategies are organized by the forest sustainability Criteria and Indicators (C&I) (see sidebar 1), State issues, State and Private Forestry National Priorities (see table 1 in the Introduction), and State forest agency programs. In this report, “State issues” refers to State-derived issue or goal lists, whose formats vary from State to State. Examples include *goals and objectives*, *desired future conditions*, and *threats and opportunities*. Overall, most States organized their State Forest **Assessment** by the forest sustainability C&I, while most organized their State Forest **Strategy** by State-identified issues or goals.

Organization of State Forest Assessments

As shown in figure 2, 15 States organized the “conditions and trends” portion of their State Forest Resource Assessment by the Criteria and Indicators (C&I) of forest sustainability. For the most part, the C&I framework was used as is; however, a few of these States did slightly modify the C&I to best meet State needs. In addition to presenting the conditions and trends by the C&I, a few of these States also presented detailed data organized by their State issues. A few using the C&I also used the National Priorities as a framework for their priority areas (see Chapter 4). Six States organized the conditions and trends portion of their assessment solely by State-developed issues.

Sidebar 1: Forest Sustainability Criteria and Indicators

NAASF and NA S&PF have worked collaboratively for more than a decade to assess and support forest sustainability at regional and State levels using agreed upon Criteria and Indicators (C&I). The Criteria, shown below, provide broad categories or goals for sustainable forest management. Commonly referred to as the Montreal Process Criteria, they are used at national and international levels. NAASF and NA S&PF use 18 base indicators of forest sustainability to measure the criteria (see appendix A). The regional guidance for State Forest Resource Assessments⁴ suggested that States use the C&I framework for the conditions and trends section of their Assessments.

Forest Sustainability Criteria

1. Conservation of biological diversity
2. Maintenance of productive capacity of forest ecosystems
3. Maintenance of forest ecosystem health and vitality
4. Conservation and maintenance of soil and water resources
5. Maintenance of forest contribution to global carbon cycles
6. Maintenance and enhancement of long-term multiple socioeconomic benefits
7. Legal, institutional, and economic framework for forest conservation and sustainable management

⁴ The NAASF Guide for Statewide Forest Resource Assessments, NAASF and NA Guide for Statewide Forest Resource Strategies are available at <http://www.northeasternforests.org/FRPC/>.

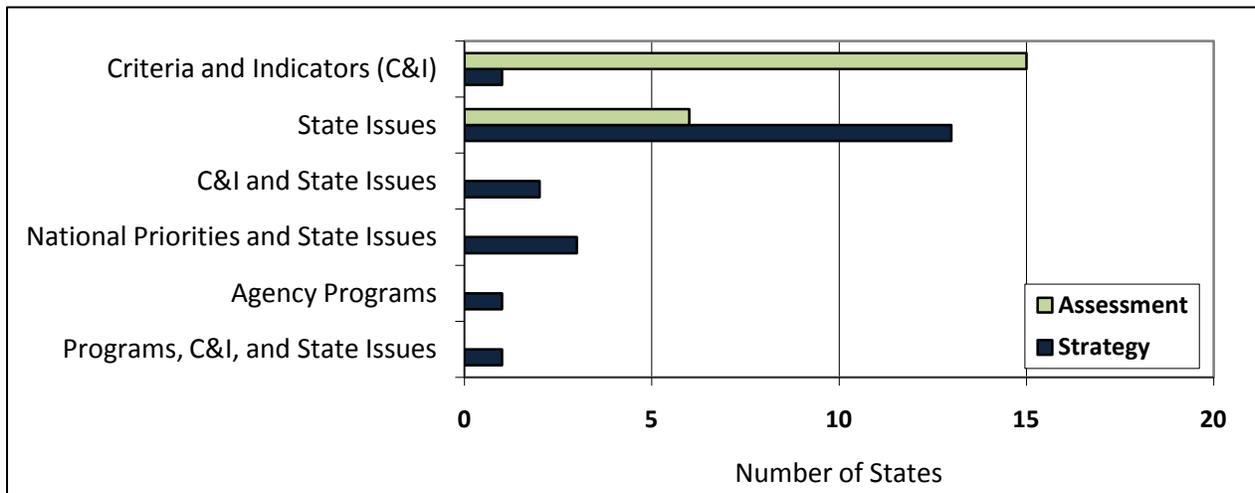


Figure 2. Organization of the conditions and trends in the State Forest Assessments and organization of the State Forest Strategies.

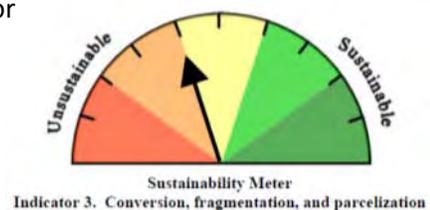
Organization of State Forest Strategies

Thirteen States organized their State Forest Resource Strategy solely by State issues or goals, as shown in figure 2. Three States organized their State Forest Strategy by both the S&PF National Priorities and State issues. Two States used both the C&I and State issues to organize their State Forest Strategy. One State organized its Strategy solely by the sustainability criteria (see Sidebar 2); one organized its Strategy solely by agency programs; and one presented *opportunities* by the C&I, *actions* by State issues, and its *strategies* by agency programs.

Sidebar 2: Unique Approaches Using the Forest Sustainability Criteria & Indicators

“Sustain-o-meter” in the Pennsylvania Statewide Forest Resource Assessment

Forest conditions and trends in the *Pennsylvania Statewide Forest Resource Assessment* are organized by the C&I. A major objective is to provide an initial assessment and to stimulate dialogue on the present and future sustainability of the State’s forests. Data, analysis, and a conclusion about sustainability are provided for each indicator. In addition, a “Sustainability Meter,” pictured to the right, visually interprets the sustainability of each indicator.



Sustainability Criteria the Primary Framework for Both the Vermont Assessment and Strategy

Although many States used the forest sustainability criteria as a framework for their assessment, few carried that framework into their strategy. In the *2010 Vermont Forest Resources Plan: State Assessment and Resource Strategies*, the seven forest sustainability criteria were slightly modified and framed as five “Desired Future Conditions.” Those desired future conditions, which are closely aligned with the sustainability criteria, were used to present the forest conditions and trends in the assessment section and as the framework in the strategy section. The strategy framework consists of desired future conditions, goals for each desired future condition, and strategies for each goal.

Strategy Matrices

States presented their strategies in a narrative format, in a strategies matrix, or both ways. Fourteen States provided a matrix of their strategies, such as the examples shown in figure 3. The elements in these strategy matrices varied from State to State. The following columns were commonly included in strategy matrices: contributing S&PF Programs, resources necessary/available, stakeholders or partners, and S&PF National Objectives. Some States included other elements in their strategy matrices such as priority areas, performance measures, secondary issues, and a link to the C&I for each strategy.

Part of the strategies matrix from the Delaware Statewide Forest Strategy						
State Issue #1 (DE-1): Forest Health and Functionality. A sufficient, healthy forestland base ensures the perpetual production of forest outputs (lumber, wildlife habitat, recreational opportunities, water quality protection, etc.).						
Strategy	Priority Landscape Area(s)	Other State Issues Addressed	Key Stakeholders	Resources Available/ Required to Implement	Performance Goals/ Measures of Success	National S&PF Objectives
DE-1.1 Maintain an updated, accurate inventory of Delaware's forests (public and private & rural and urban) including forest types/species, age, growth, and removals.	Rural and Urban UTC Areas	Forest Markets	USFS DNREC Division of Fish & Wildlife – Natural Heritage Program Forest industry	Forest Stewardship Forest Health State funds USFS FIA program	DE-1.1.1 Better acreage estimate of forest types and size classes. Updated loblolly pine estimate by 2012. DE-1.1.2 Develop annual estimates of timber harvest volumes. First survey in 2011. DE-1.1.3 Implement a U&CF tree inventory database in 2011.	1.1 1.2 3.4
DE-1.2 Establish scientifically-based, reasonable goals for both forest protection and the long-term maintenance and restoration of a variety of forest types	Rural	Sustainable Forest Management	USFS DNREC Division of Fish & Wildlife – Natural Heritage Program DNREC Division of Parks & Recreation	Forest Stewardship Forest Health State funds DNREC Division of Fish & Wildlife	DE-1.2.1 Establish goals including prioritization process for forestland protection and conservation including headwater forests, large contiguous forest blocks, and forested wetlands. Complete goals by 2013. DE-1.2.2 Establish maintenance and restoration goals for forest types including	1.1 2.1 3.5

Part of the strategies matrix from the Wisconsin Statewide Forest Strategy			
THEME A: FRAGMENTATION & PARCELIZATION			
	Strategy	Resources Available	Associated S&PF Programs
	FOREST LAND: The amount of forest land increases and is focused in desired landscapes.		
1	Encourage planting to enhance, protect, and connect larger tracts of forested land in appropriate locations consistent with ecological landscapes.	State; Federal (S&PF, NRCS, FSA); Private; Tribes	Stewardship, Watershed Forestry
2	Reduce the rate of conversion of forestland to alternative uses.	State; Federal; Local government; Private; Tribes	Stewardship, Forest Legacy, Fire (SFA)
	PARCEL SIZE: The rate of forest land parcelization is reduced.		
3	Reduce the rate of ownership parcelization of large forest blocks (i.e. greater than 500 acres).	Federal; State; Private; Tribes	Forest Legacy
4	Reduce the rate of ownership parcelization of small forest blocks (i.e. less than 500 acres).	Federal (S&PF, NRCS); State; Local government; Private; Tribes	Stewardship

Figure 3. Example strategy matrices

Involving Stakeholders and Partners in the Process

State forestry agencies engaged a wide variety of stakeholders and partners to develop their State Forest Resource Assessments and Strategies. The Farm Bill amendments to the Cooperative Forestry Assistance Act required coordination with the following:

- State Forest Stewardship Coordinating Committee
- State wildlife agency, with respect to strategies contained in State Wildlife Action Plans
- NRCS State Technical Committee
- Applicable Federal land management agencies. Examples include national forests, U.S. Fish and Wildlife Service (National Wildlife Refuges), National Park Service, U.S. Department of Defense, and Bureau of Land Management
- State lead agency for the Forest Legacy Program

Most State forestry agencies went well beyond the required list as they consulted with stakeholders and partners. Groups most commonly cited as being involved during development of the State Forest Resource Assessment and Strategy include:

- Other State departments, e.g., Parks, Agriculture, Environment, Transportation
- Urban & Community Forestry Council
- Universities and Cooperative Extension
- Forest products and industry groups
- Woodland owner associations
- The Nature Conservancy
- Local planning orgs. / local government
- U.S. Forest Service, State & Private Forestry
- Natural Resources Conservation Service

Examples of other stakeholders that State forestry agencies engaged include the National Audubon Society, land trusts, Society of American Foresters Chapters, U.S. Forest Service Research, tribes, arborists, recreation groups, and the Trust for Public Land.

As shown in figure 4, stakeholders and partners were involved in a number of ways—meetings with multiple stakeholders, one-on-one coordination, review of drafts, formal public comment period, and surveys.⁵ All States coordinated with stakeholders in multiple ways, and in different ways, depending upon the stakeholder. Twenty States held one or more meetings that brought multiple stakeholders together (see sidebar 3). Most States also met one on one with stakeholders and partners, in combination with other types of stakeholder coordination.

Most States involved stakeholders and partners in developing the list of State forestry issues. For example, New Hampshire contracted out the stakeholder engagement efforts to gather input on priorities from over 50 stakeholder groups in the State through one-on-one meetings, public meetings, and an online questionnaire.

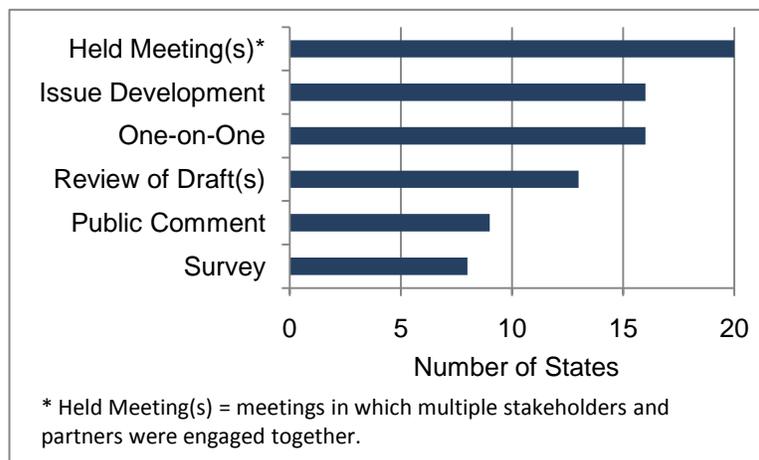


Figure 4. Stakeholders engaged in development of the State Forest Resource Assessments and Strategies in a variety of ways.

⁵ Note: These numbers reflect the information provided by States about how stakeholders and partners were involved. Not all States provided detailed information about stakeholder involvement.

At least eight States gathered input from stakeholders and partners through online mechanisms, such as an online survey or online comment form. Most of the States that used online strategies for gathering input received a high number of responses. For example, Indiana, Maine, Ohio, and Rhode Island all received over 600 responses to online surveys related to the State Assessment and Strategy. In several States, representatives from stakeholder groups and key partner organizations served on a State Assessment and Strategy advisory committee, where they were closely engaged throughout the process.



Sidebar 3: Highlights in Stakeholder Involvement

Forest Roundtables in Connecticut: In Connecticut, over 260 individuals participated in a series of six local Forest Roundtables held around the State and one Statewide Forest Forum. Participants came from all parts of the State, many as part of their work or their interest in one or more voluntary organizations. Through the roundtable process, stakeholders representing a variety of interests developed strong agreement on 10 visions for the future of Connecticut’s forests. Participants also developed principles and actions that are outlined in the State Forest Resource Strategy. As noted in *Connecticut’s Forest Resource Assessment and Strategy*, “The participants expressed their delight with Connecticut’s forests, and their worries about the future...Their involvement and their statements testify to their enthusiasm for Connecticut’s trees and forests, as well as their concerns about forces that lead to reduced area of working forests, increased harm from development and invasives, and decreased public benefits from forests.”

Survey, Listening Sessions, and Summit in Maryland: A multi-stakeholder partnership led by the Harry R. Hughes Center for Agro-Ecology and the Maryland Forest Service sponsored a survey, listening sessions, and a statewide forestry summit to help identify key issues and strategies for sustaining forests and forestry. The survey of Maryland’s forestry leaders and others was widely distributed and posted on networking sites. The response rate was 26 percent, and respondents included landowners, government agencies, nonprofit organizations, and forest industry interests. Survey results identified the most highly recommended actions for each issue area. Survey participants also ranked the importance of the recommendations, given the current economic, environmental, and political climate. Five regional listening sessions, with 45 to 55 participants each, were held around the State to more fully identify the problems that threaten Maryland forests and the kinds of technical support, educational opportunities, and cost-share programs needed. The Statewide Forest Summit gathered over 100 stakeholders. Speakers described the opportunities and challenges for each of the four issue categories, and there was discussion about the potential strategies and recommended actions. A report on Maryland’s public engagement process is available at <http://www.dnr.maryland.gov/forests/pdfs/sas/ForestrySummitReport.pdf>.

Coordination with National Forests

Thirteen of the Northeast and Midwest States contain all or part of 15 national forests and one prairie. These States coordinated in different ways with national forests (sidebar 4). Most coordinated one on one, specifically referencing portions of the relevant National Forest Land and Resource Plan. Many of these States asked national forest staff to review drafts of their State Forest Assessment and Strategy. Several national forests provided useful data for State Forest Assessments.

Sidebar 4: West Virginia Division of Forestry Coordination with National Forests

The West Virginia Division of Forestry (WV DOF) held several meetings with personnel from the Monongahela, George Washington, and Jefferson National Forests. The *West Virginia Statewide Forest Resource Assessment* incorporated national forest goals; management prescription areas, which emphasize a range of management conditions, activities, goods, and services; and other data. The WV DOF also worked closely with the Monongahela National Forest (MNF) to identify which State and multistate issues might be of mutual interest. In turn, the MNF identified 10 issues as being important from a national forest perspective.

Integrating Existing Plans

State forestry agencies were required to “incorporate any forest management plan of the State, including community wildfire protection plans and State Wildlife Action Plans.” The most commonly consulted plans, as shown in figure 5, are the State Wildlife Action Plan, Forest Legacy Assessment of Need, prior or existing Statewide forest plan, Community Wildfire Protection Plans, and Statewide Comprehensive Outdoor Recreation Plans.⁶ In addition to the specific plans most commonly referenced, States also consulted Forest Stewardship and Urban and Community Forestry Plans, other State and local plans, work by The Nature Conservancy, plans for Cooperative Weed/Pest Management Areas, and reports by the U.S. Forest Service, including the *Forests, Water, and People Analysis* by Northeastern Area State and Private Forestry and the Urban Forest Reports by the Northern Research Station.

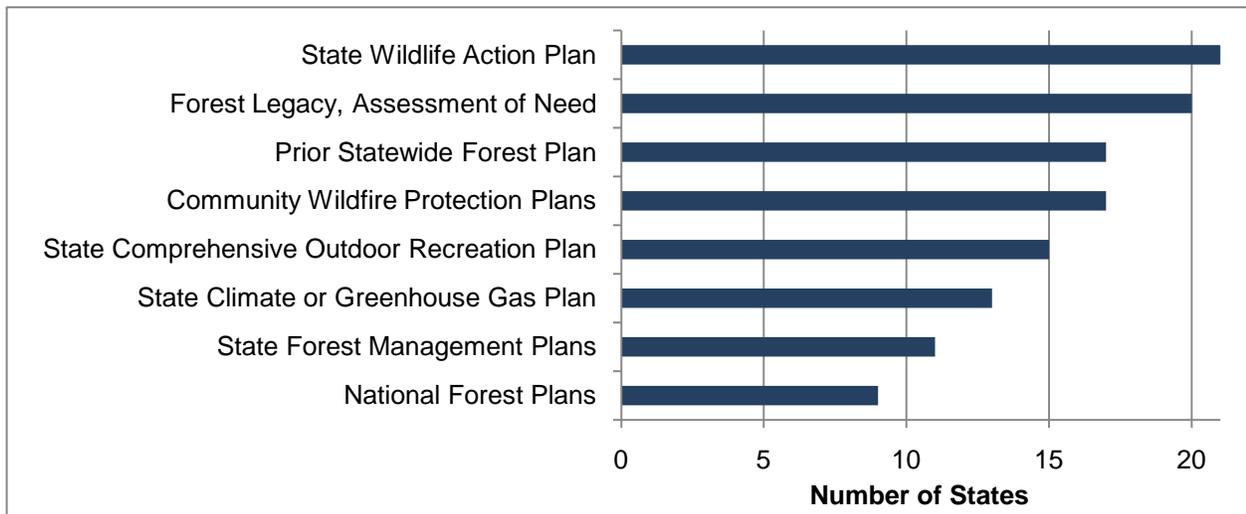


Figure 5. Plans commonly consulted in the development of the State Assessment and Strategy

⁶ These numbers are based on information provided in the State Forest Resource Assessment and Strategy documents. Not all States provided detailed information about the other plans that they consulted, so it is likely that the numbers reported here do not fully reflect the number of plans that were considered.

The extent and manner in which other plans were “incorporated” into the State Assessment and Strategy varied widely by State and by the specific plan being considered (such as the format, relevance, and date of the plan). States were not expected to fully incorporate these plans, but rather consider them as relevant. The intent was to build upon and complement other State natural resource plans, identify opportunities for coordination, and avoid planning contradictions or omission of key items.

State Wildlife Action Plans (SWAP)

A State Wildlife Action Plan (SWAP) is required for each State wildlife agency to be eligible for Federal funding from the U.S. Fish and Wildlife Service (<http://wildlifeactionplans.org/>). The extent to which each State could incorporate the SWAP into its State Strategy depended upon the scope and format of the SWAP. For instance, some SWAPs delineate specific landscape areas for focused habitat conservation efforts. Plans of this nature were easier and more relevant to consider in the State Forest Resource Assessment and Strategy. Other SWAPs simply describe all wildlife species in the State with information about which species are of concern or importance. Plans of this type were much more difficult to incorporate into the State Forest Resource Assessment and Strategy.

Twenty States incorporated some portion of the relevant SWAP in their Assessment, and 18 States incorporated the SWAP into their Strategy. Sidebar 5 highlights two examples. Ten States were able to include data layers from the SWAP in the geospatial priority area analysis as part of the State Forest Assessment.

Regardless of the SWAP format, many States coordinated closely with the State Fish and Wildlife agency to identify shared priorities. In some cases, activities related to the State Forest Assessment and Strategy led to efforts to further refine SWAP results. For example, the *Michigan Forest Resource Assessment and Strategy* notes that the Michigan SWAP “is presently being updated to include a spatial component for priority wildlife species. Incorporation of spatially explicit areas to address priority species from the Michigan [SWAP] will be integrated into a future revision of the *Michigan Forest Resource Assessment and Strategy*.”



Sidebar 5: Incorporating SWAPs

Missouri: The *Missouri Comprehensive Wildlife Strategy* identified the best geospatial opportunities for conserving the State’s natural communities. A map of Conservation Opportunity Areas (COA) was fully incorporated as a data layer in the priority area analysis for the State’s Forest Resource Assessment. There are 20 forest/woodland COAs, already with dedicated stakeholder groups, which nest almost entirely within the Priority Forest Landscapes. The Wildlife and Forestry Strategies “share many common goals and strategies, and will work together closely for the collective benefit of both of these initiatives.”

Iowa: Several components of the *Iowa Wildlife Action Plan* were incorporated into *Iowa’s Forest Resource Assessment and Strategies*. The assessment includes a summary table and map of priority habitats for the forest Species of Greatest Conservation Need (SGCN). A full list of forest SGCN is included as an appendix. Eight of the strategies are related to increasing forest habitat for SGCN.

Community Wildfire Protection Plans (CWPP)

Community Wildfire Protection Plans (CWPPs) address one or more issues such as wildfire response, hazard mitigation, community preparedness, and structure protection in communities. CWPPs help communities develop local solutions to local problems.⁷ The scale of “community” for which CWPPs are developed ranges from townships to counties. Due to the local scale of these plans, it was cumbersome to incorporate the CWPPs directly into the State Forest Resource Assessments and Strategies. At the time the State Forest Resource Assessments and Strategies were being developed, there were CWPPs in 17 States. These States included information about the CWPPs in their Assessment. Most analyzed the existing CWPPs in their State and provided a listing or map showing the location of CWPPs.

Seven States included CWPP data layers in the geospatial priority area analysis of their Assessment. For example, in the Maine Assessment, a CWPP data layer was among the geospatial datasets used to help identify the Priority Urban Forests. In the Wisconsin Assessment, as shown in figure 6, CWPP locations and other data were overlaid with “communities-at-risk to wildfire” to help prioritize areas for hazard mitigation. Eighteen States incorporated the future development of CWPPs into their State Forest Resource Strategy. For example, New Hampshire included a strategy to “Engage homeowners and communities in adopting ‘Firewise’ practices, reducing the risk of fires occurring, reducing the impact of fires and addressing accessibility. Encourage development of Community Wildfire Protection Plans with Regional Planning Commissions and Rural Fire Water Resource Plans with RC&Ds.

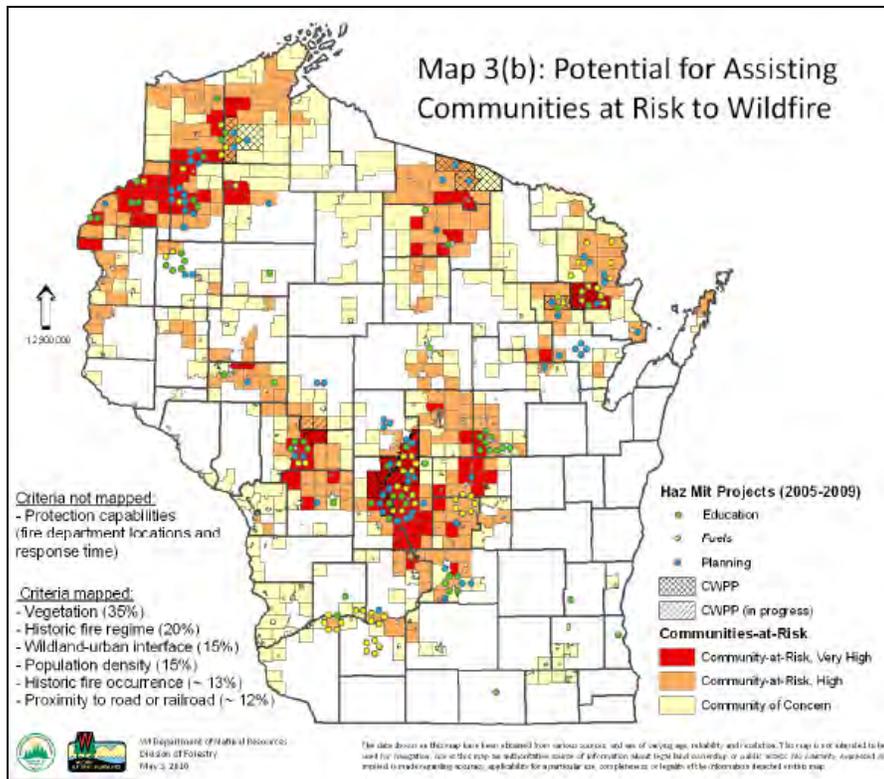


Figure 6. Community Wildfire Protection Plan data was used in the Wisconsin priority area analysis.

⁷ Read more about CWPPs at: <http://www.stateforesters.org/files/cwpphandbook.pdf>.

Prior S&PF Program Plans and Assessments

The 2008 Farm Bill stated that the State Forest Resource Assessment and Strategy “shall be deemed to be sufficient to satisfy all relevant State planning and assessment requirements under [the Cooperative Forestry Assistance Act].” Therefore, prior State and Private Forestry (S&PF) Program-specific plans and assessments were required to be incorporated into the State Assessment and Strategy. This included the 5-year State Forest Stewardship and Urban and Community Forestry Plans and the Forest Legacy Program Assessment of Need (AON). State S&PF Program managers were engaged in development of the State Forest Resource Assessment and Strategy so their interests and priorities could be incorporated. For example, several States directly incorporated the Forest Stewardship Spatial Analysis Project in the priority area analysis for their State Assessment. Many States also referenced, or attached, the prior State Urban and Community Forestry Plan.

The Forest Legacy Program has some separate, specific legal requirements. Seventeen States decided to keep their existing AON and incorporate it “by reference.” West Virginia conducted a geospatial overlay analysis to determine if any changes to their Forest Legacy Areas were warranted. Layers such as housing density, coalfield locations, and forest patch sizes/locations, among others, were used to determine that the current Forest Legacy Areas are still valid. A few of these 17 States plan to revise or update their AON during a future update to the State Forest Resource Assessment and Strategy. Several of the States that incorporated the Forest Legacy AON “by reference” also included key components of the AON in their State Assessment and Strategy. For example, Iowa’s Forest Legacy goals, critical issues, eligibility criteria for Forest Legacy Areas, and a map of the Forest Legacy Areas are included as a four-page summary in *Iowa’s Forest Resource Assessment and Strategies*. Four States completed revisions to their AON during development of the State Forest Assessment and Strategy. These States either attached the revised AON as an appendix or incorporated the AON sections into the main body of the State Assessment and Strategy.

Other Existing Forest Planning Processes

Several States had other State forest planning efforts that either pre-dated their State Forest Resource Assessment and Strategy or were in progress at about the same time. As noted in the *Maine State Forest Assessment and Strategies*, “Maine has integrated the Statewide Forest Resource Assessment and Strategy (SFAS) process into its existing forest resource planning framework.”

Some State Forestry agencies were able to synergize multiple efforts; for example, in the fall of 2008, the West Virginia Forest Management Review Commission, a statutory body created by the State legislature, directed the West Virginia Division of Forestry to complete a new strategic plan for forestry in West Virginia. The West Virginia Division of Forestry was able to integrate components of that State requirement into their State Forest Resource Assessment and Strategy, maximizing stakeholder engagement in both planning processes.

In other States, forest planning efforts were considered in the development of the State Forest Resource Assessment and Strategy, although not combined with it. For example, the *Michigan Forest Resource Assessment and Strategy* points to multiple Federal and State planning processes and documents, noting that “it does seek to provide some degree of implicit consistency in addressing priority issues that apply across multiple forest resource ownerships.” They also state that Michigan Department of Natural Resources and the Environment planning processes, such as eco-regional resource plans and Regional State Forest Management Plans that are consistent with the forest certification standards and the three S&PF National Priorities, may be integrated into future revisions of the *Michigan Forest Resource Assessment and Strategy*.

All-Lands Approach to Landscape-scale Conservation

To address the critical threats facing trees and forests across ownership types and along the urban to rural continuum, U.S. Forest Service units in the Northeast and Midwest and the Northeastern Area Association of State Foresters (NAASF) are collaborating with other partners on a cohesive, comprehensive landscape-scale conservation approach to land management, protection, and wise use (sidebar 6). As noted in a landscape-scale conservation position paper, “The Forest Service and NAASF together recognize that public benefits as well as forest threats cross boundaries and are best addressed through integrated partnerships and infrastructure (markets, resource professionals, and information).”⁸ This effort is also in line with the USDA “all-lands approach.” In 2009, USDA Secretary Tom Vilsack shared his vision “to conserve America’s forests through an *all-lands* approach, accentuating community health and wealth, sustaining clean and abundant water, restoring forests, and protecting communities from wildfire.”

As recognized by Secretary Vilsack in a 2010 speech, the State Forest Resource Assessments and Strategies “examine the conditions and trends in the States and provide a roadmap for State and Federal investments in forest stewardship and conservation. Further, these [Strategies] can also provide a roadmap for how USDA’s Natural Resources Conservation Service can work in partnership with the Forest Service and State forest agencies in keeping forests as forests. As budgets tighten, these may prove invaluable in helping us focus our dollars for maximum effect.”

Most States presented information in their State Assessment and outlined priorities in their State Strategy that are well aligned with or specifically respond to this call for an all-lands approach to landscape-scale conservation. For example, States presented data and analysis covering all forests from urban to rural, and public and privately owned. As explained in the *Michigan Forest Assessment and Strategy*, “Focusing the forest resource assessment on all lands—State, private, and Federal—and strategically assessing the forest areas that have the greatest need, high value, or innovation potential, will help to make the most out of every dollar invested.”

In addition, State forestry agencies coordinated with stakeholders representing all forest land ownership types, including relevant Federal land managers, local governments, Woodland Owners Associations, and tribes. Most States emphasized the importance of this stakeholder coordination in developing and implementing the State Forest Resource Assessment and

Sidebar 6: Landscape-scale Conservation as Defined by NAASF & NA S&PF⁸

Landscapes may be defined by a combination of geography and resource issues or opportunities, and may be of varying scale and scope. They give rise to communities of interest and a family of local, State, and Federal resource agencies, tribes, and other landowners bound together by a mutual interest in the outcomes within the landscape.

Landscape-scale conservation is an emerging framework to conceive, plan, finance, and manage projects with significant conservation value—ecological, economic, and social. The broad concept of landscape-scale conservation includes three basic features:

1. There is a *regional* system of interconnected properties (lands).
2. Actions are organized to achieve one or several specific *conservation objectives*.
3. Landowners and managers within a given conservation region *cooperate or collaborate* in some concrete fashion to achieve those objectives.

Examples of where landscape-scale conservation is being implemented are described in sidebar 7.

⁸ The Landscape Scale Conservation position paper signed by NAASF and the U.S. Forest Service’s Eastern Region, Northeastern Area State and Private Forestry, and Northern Research Station is available at <http://www.na.fs.fed.us/stewardship/>.

Strategy. For example, the *New York Forest Resource Assessment and Strategy* “provides practical recommendations on how landowners, forest stakeholders, and Federal, State, and local governments can work together to sustain the many benefits and ecosystem services our forests provide.”

Several States are engaged in State-level landscape-scale conservation initiatives. Examples of these are listed in sidebar 7. The following are some additional examples of strategies with a landscape-scale conservation focus:

- Coordinate with land conservation stakeholders to design complementary actions that support overall landscape conservation and restoration strategies statewide (MD).
- Encourage landowners and public agencies to manage forests collectively and in consideration of landscape-scale characteristics, such as age class proximity and remaining populations of early successional dependent wildlife (IN).
- Explore landscape-level or joint plans between neighbors or neighborhoods (MA).
- Goal: Landscape-scale planning: More forest land is being managed and protected under landscape-scale plans, or consistent with landscape-scale considerations. Strategy: encourage multistate landscape-scale planning (WI).
- Promote forest management actions and activities that consider landscape-level needs and/or deficiencies for specific habitat types (RI).
- Coordinate cost-share programs to develop and implement stewardship plans for groups of landowners, fostering landscape-scale forest management across property ownerships (NH).

Sidebar 7: Examples of State Landscape-Scale Conservation Efforts

Pennsylvania: Throughout the Commonwealth, stakeholders are working together across large regions to drive strategic investment and actions toward sustainability, conservation, community revitalization, and recreational projects. Known as Conservation Landscape Initiatives (CLIs), these collaborations are developing across landscapes where there are strong natural assets, local readiness and buy-in, and State-level investment support. Several State agencies, local governments, funders, and nonprofit organizations have worked strategically and collaboratively on the ground for several years in seven CLIs to develop this values-driven, place-based approach.

Connecticut: The Connecticut Department of Environmental Protection has a “Landscape Stewardship Initiative.” The goal of the initiative is to “coordinate and focus the Department’s many programs that influence land development to ensure that they are not having unintentional adverse effects.”

Minnesota: The State Sustainable Forest Resources Act directed the Minnesota Forest Resources Council “to establish regional forest resource committees to foster landscape-based forest resource management. These regional committees develop and implement landscape-level management plans for Minnesota’s six major forested regions. Volunteer, citizen-based regional landscape committees are central to carrying out landscape management processes. These committees provide an open public forum for diverse interests to cooperatively promote forest sustainability. By bringing together representative interests from landscape regions, the committees serve as springboards for effective forest management activities that address specific needs and challenges in each region.”

4. Identifying Priority Areas

The 2008 Farm Bill required State Forestry agencies to identify priority areas within the State where some forestry program outreach and activity will be emphasized and coordinated. This chapter summarizes the approaches taken by States in the Northeast and Midwest and the District of Columbia to determine and display priority areas. Representative examples as of approaches taken as well as unique approaches are presented.

While every State and the District of Columbia used Geographic Information System (GIS) technology to develop priority areas, usage varied depending on capacity, data availability, and the approach taken. Most States conducted some form of raster-based analyses, typically overlaying multiple spatial datasets to address resource elements (benefits and threats, among others) and identify areas of priority. As shown in figure 7, many States chose to display those priority areas at the cell, or “pixel scale,” while others chose to aggregate to a larger unit such as an administrative unit, watershed, or natural concentrations of like cells.

As illustrated in figure 8, States determined priority areas based on one or more of the following:

- State issues, goals, or themes
- S&PF National Priorities
- Named landscapes
- Landscape position, such as rural/urban

Most States provided separate priority area maps for rural and urban landscapes. Vermont, Ohio, and

Missouri included a third landscape category approximating the wildland-urban interface. A number of States determined priority areas by State-defined issues, goals, or themes, such as forest fragmentation (issue) or maintaining urban tree cover (goal), but categorized and presented those issues/goals/themes by landscape position, i.e., rural versus urban.

The number of priority area maps included in each State Assessment varies from 1 to 27. For example, three States each had one rural and one urban priority area map, while several States had one or more priority maps for each of their State issues. Most States have between 2 and 8 priority area maps. Six States displayed their priority areas on one composite map, such as the examples shown in figures 10 and 13.

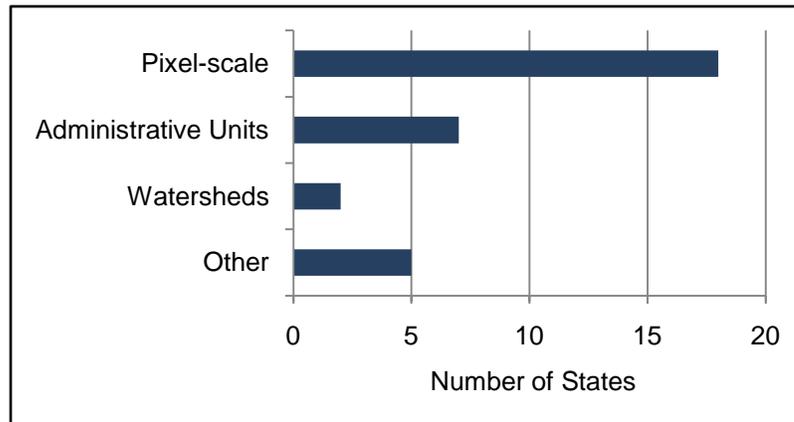


Figure 7. How priority areas were displayed.

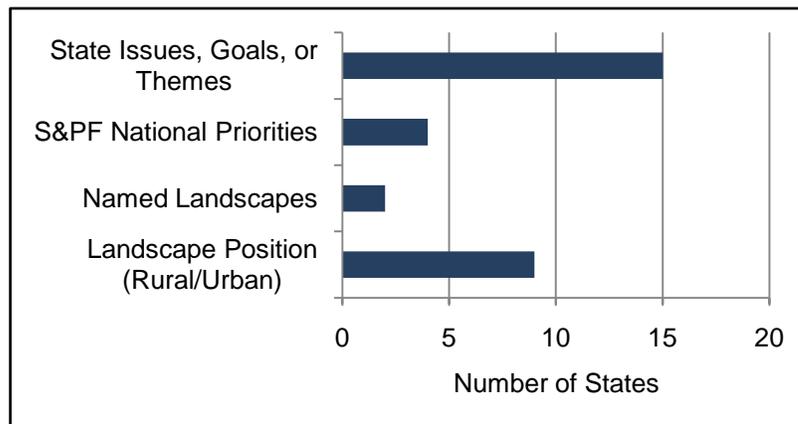


Figure 8. How priority areas were determined.

Priority Areas Based on State Issues, Goals, or Themes

Sixteen States chose to identify priority areas, at least in part, by one or more State issues, goals, or themes, typically producing a separate map for each.

Minnesota, for example, identified four separate themes—threats and risks, economic impact, ecological values, and recreational values—and developed a priority area map for each of them. To develop these priority area maps, they conducted separate analyses for each using multiple input data germane to the theme. The “threats and risks” map shown in figure 9, for example, was developed from spatial datasets, or layers, depicting areas of risk from fire, insect and disease, invasive species threats, and the risk of development. The final map was categorized to highlight areas of High, Medium, and Low risk.

Indiana developed priority areas based on seven different issues, but also combined them into one statewide composite map (figure 10) to generally show areas important for identified forest stakeholder issues.

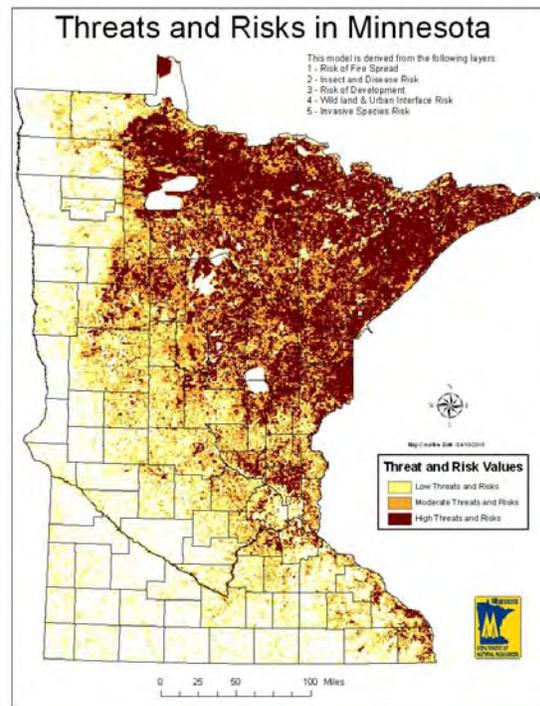


Figure 9. Minnesota’s priority areas for threats and risks to forests

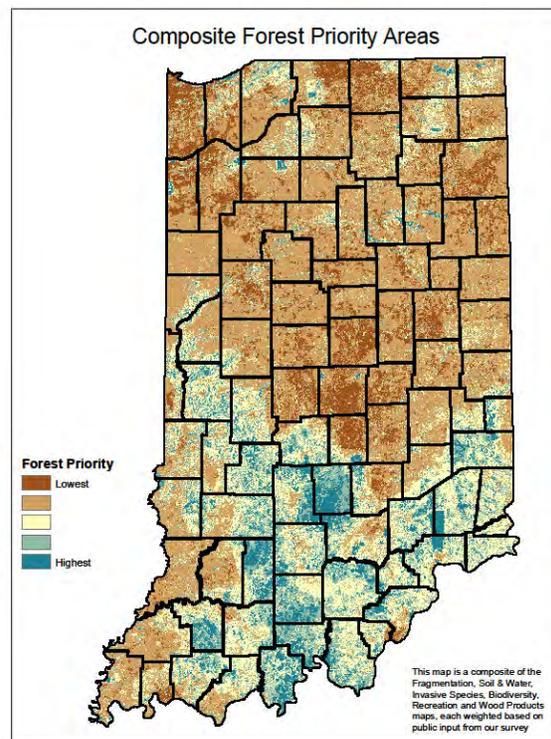


Figure 10. Indiana’s Composite Map of Statewide Priority Areas

Priority Areas Based on the State and Private Forestry National Priorities

Five States chose to develop priority areas, at least in part, by the three State and Private Forestry National Priorities: conserve and manage working forest landscapes for multiple values and uses, protect forests from threats, and enhance public benefits from trees and forests (see table 1 in the Introduction).

For example, Massachusetts conducted analyses using multiple input datasets to address each Priority. Figure 11 shows the Massachusetts map for the National Priority “enhance public benefits from trees and forests.” Three datasets addressing water resources and two datasets addressing biodiversity were combined to produce a raster dataset. That dataset was then aggregated to 12-digit watersheds (HUC) and categorized into *low*, *moderate*, *high*, and *very high* priority.

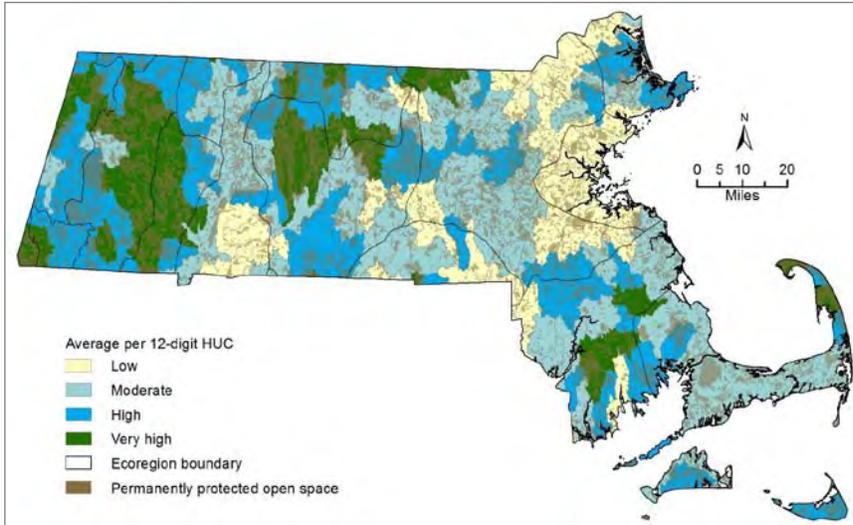


Figure 11. Massachusetts’ priority areas for the National Priority “Enhance public benefits from trees and forests”

Michigan conducted analyses to develop priority areas based on State-defined issues and produced a map for each, but also tied each of those issues to one of the three State and Private Forestry National Priorities. Figure 12 illustrates Michigan’s priority areas for reducing the high cost of owning private forest land, which addresses the National Priority “Conserve and manage working forest landscapes for multiple values and uses.”

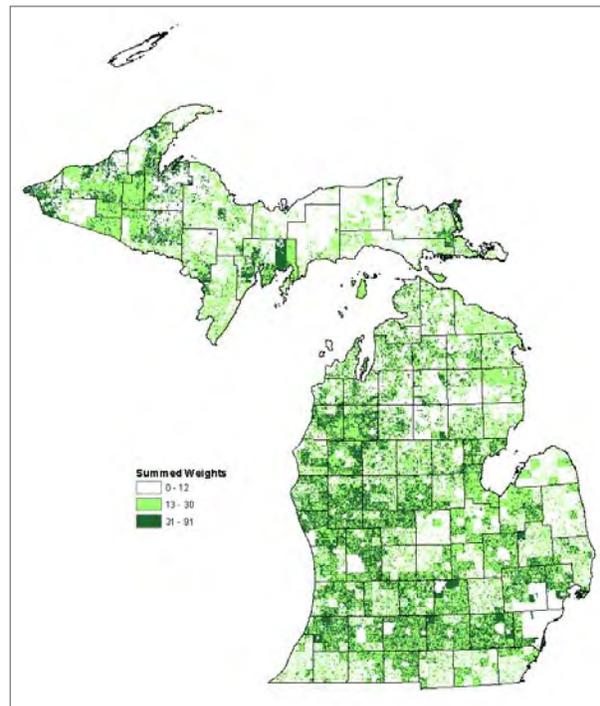


Figure 12. Michigan’s priority areas for reducing the high cost of owning private forest land

Priority Areas Based on Named Landscapes

Three States chose to present priority areas by named landscapes. Missouri, for example, conducted analyses using eight input datasets representing “forest benefits and attributes” and “forest vulnerabilities” to identify “Forest Opportunity Areas,” or areas of greatest opportunity for sustaining forests and forest benefits. They then identified Priority Forest Landscapes, defined as large landscapes (generally >10,000 acres) of concentrated Forest Opportunity Area, and named them by recognizable landscape features, as shown in figure 13.

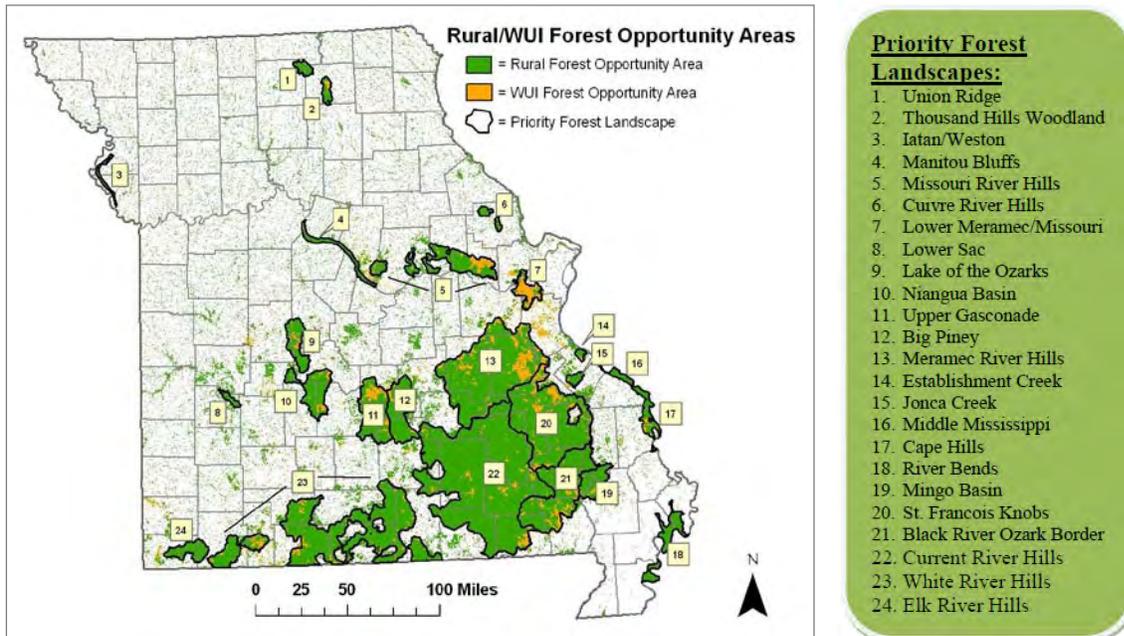


Figure 13. Missouri’s Priority Forest Landscapes defined by concentrations of Forest Opportunity Areas

Figure 14 shows how Pennsylvania incorporated its Conservation Landscape Initiatives (see sidebar 7) as priority areas. These named landscapes are areas where stakeholders are working together to drive strategic investment and actions toward sustainability, conservation, community revitalization, and recreational projects.

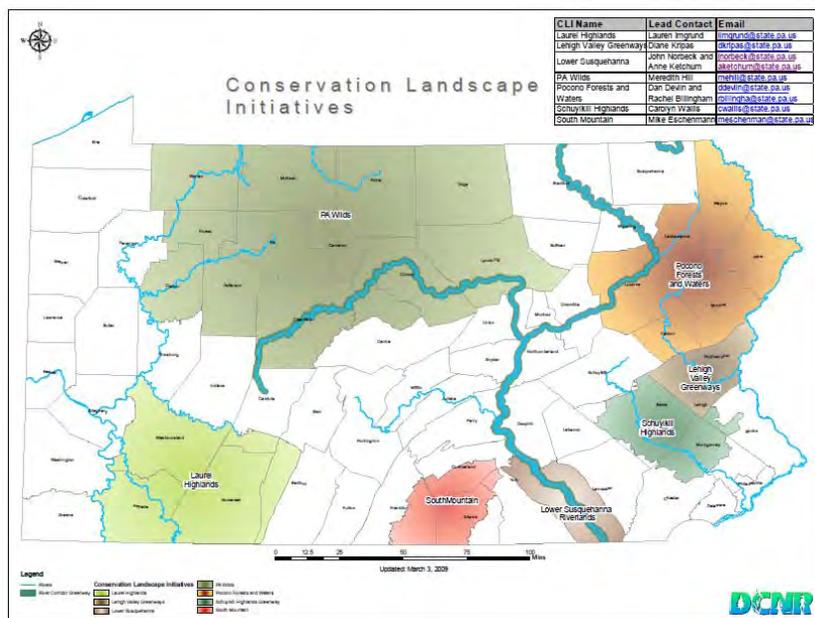
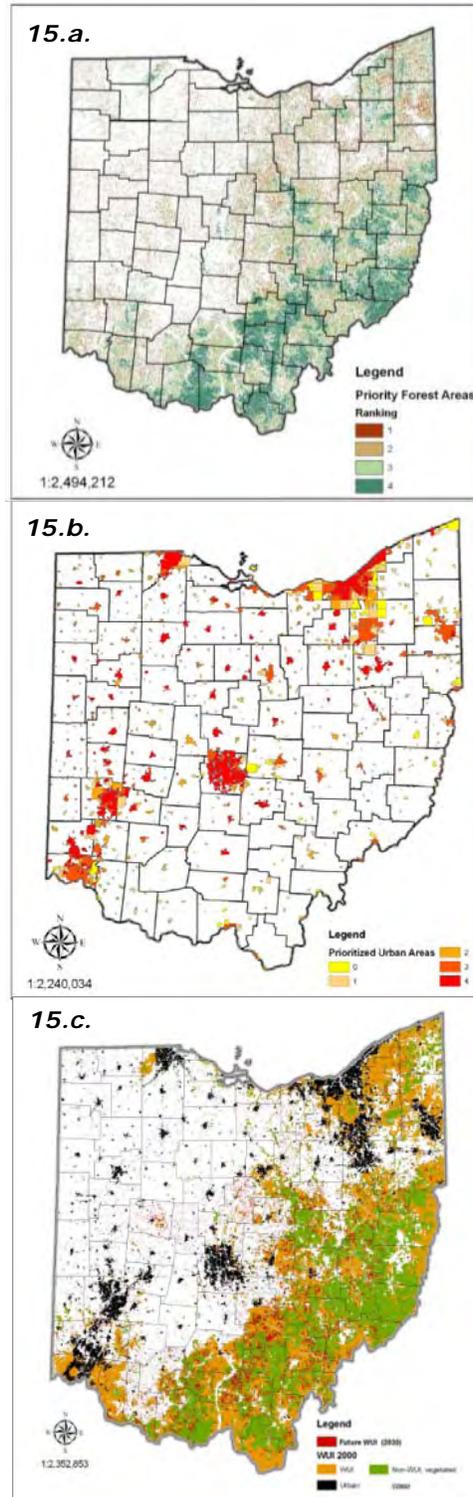


Figure 14. Pennsylvania incorporated its Conservation Landscape Initiatives as priority areas

Priority Areas Based on Landscape Position

Ten States in the Northeast and Midwest chose to determine priority areas, at least in part, by landscape position. For example, Ohio conducted separate geospatial analyses and provided separate priority maps for the rural landscape, the urban landscape, and wildland-urban interface lands.



For rural lands, Ohio’s geospatial analysis was built on the methodology from the previously completed Spatial Analysis Project (SAP) required through the Forest Stewardship Program, which used a GIS-based analysis of 12 core datasets to assess Stewardship Program potential of private forest lands across the State. Public lands were added to this analysis to cover all ownerships (public and private). Figure 15.a. illustrates Ohio’s rural priority forest lands (dark green, ranking of 4).

For urban lands, Ohio conducted a spatial overlay analysis that used Census-defined places as the unit of analysis. The analysis prioritized communities for setting urban tree canopy goals using the Maryland Method, a technique that prioritizes communities with the following characteristics:

- Greater than average population
- Greater than average urbanized area
- Greater than average impervious surface area
- Less than average urban tree canopy

Figure 15.b. illustrates Ohio’s urban priority areas. The highest priority areas are in red.

Ohio conducted a separate analysis using predicted population density changes to identify current and future wildland-urban interface (WUI) and to facilitate the planning of future efforts to address issues associated with the WUI. Figure 15.c. illustrates the existing WUI in orange and future WUI in red.

Figure 15. Ohio’s rural (a), urban (b), and WUI (c) priority areas

Data Gaps

States were asked to identify, summarize, and submit lists of data gaps—spatial and nonspatial data that were not available but would have been useful in conducting analyses and developing priority areas. Table 2 provides a summary of many of the most commonly identified data gaps.⁹ Some of these data gaps represent the relatively simple need for updates to existing datasets, while others constitute needs for new data development efforts. A number of these gaps, such as the National Land Cover Dataset (NLCD) and the National Forest Health Risk Map, are being addressed at this time through existing and/or ongoing efforts. Others will be evaluated and potentially addressed by the National Data Strategy Team,¹⁰ while still others will likely need to be addressed by States and organizations at a more local level.

Table 2. Summary of common gaps in data needed for State Forest Resource Assessments

<p>Land Use and Land Cover—National Land Cover Dataset (NLCD) needs to be updated, more detailed, and more accurate</p> <p>Forest Health</p> <ul style="list-style-type: none">• Risk map—higher resolution needed• Host species layers—distributions of tree species• Invasive plant distribution—consistent database <p>Forest Productivity/Soils—Soils-based forest productivity/site Index, some States are missing national forest land in SSURGO</p> <p>Development Pressure—An update based on the 2010 Census is needed. This is also referred to as “threat of development.”</p> <p>Protected Areas—Better information on private lands - conservation easements</p> <p>Fire—Consistent fire occurrence data</p> <p>Urban</p> <ul style="list-style-type: none">• Urban Tree Canopy assessments• Urban forest inventory• Green infrastructure <p>Climate Change, Carbon, and Biomass</p> <ul style="list-style-type: none">• Carbon sequestration/emittance rates and forest management implications• Woody biomass distribution <p>Forest Inventory and Analysis</p> <ul style="list-style-type: none">• Old growth data• Timber Products Outputs updates are needed in a number of States <p>Recreation—Recreational facilities and use</p> <p>Parcel Data</p> <p>Nontraditional Forest Products—Nontraditional and nontimber forest products and their economic importance</p>
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⁹ A complete list of all data gaps identified by States is available at <http://www.northeasternforests.org/FRPC/> (under “State Forest Resource Assessments and Strategies”).

¹⁰ The National Data Strategy Team was chartered by S&PF Deputy Chief Jim Hubbard primarily to support State Assessment work required by the 2008 Farm Bill and National S&PF Assessment efforts guided by the Redesign Implementation Council. The team addresses, as feasible within current work plan and staffing constraints, data needs identified by States as they develop and continue to improve upon their Assessments.

5. Common Themes in Issues, Goals, and Strategies

State forestry agencies identified trends, issues, and benefits related to trees and forests in the State Forest Resource Assessments and Strategies. Some States organized their strategies by *goals* and *objectives* while others organized their strategies by the State and Private Forestry *National Priorities and State issues*. A few listed the strategies according to *desired future conditions*. Regardless of the framework and the terms used, all States and the District of Columbia identified a list of elements that could be considered key “issues” or “goals.”

The most common issues and goals across the States in the Northeast and Midwest and the District of Columbia are listed in sidebar 8. They are important to most, if not all, States across the region. These issues and goals are highly interdependent. For instance, “sustainable forest management across all ownerships” is critical for forests to provide “biodiversity, water, recreation, and other ecosystem services,” and “awareness of and support for forests” is needed in order to “keep forests as forests.” As shown in table 3, the State issues and goals that are common across the region contribute directly to all of the State and Private Forestry National Priorities and Objectives. In addition, these State issues and goals are similar to those in the Northern Forest Futures Project, a joint venture of the U.S. Forest Service and the Northeastern Area Association of State Foresters that includes a regional-level assessment, scoping of trends and issues, and analysis of alternative futures based on the trends and the latest ecological and social science.

Sidebar 8: The most common issues and goals across the Northeast and Midwest

- Keeping forests as forests
- Forest ecosystem health and productivity
- Urban and community forest health and sustainability
- Water, biodiversity, recreation, and other ecosystem services
- Forest products industry and markets
- Sustainable forest management across all ownerships
- Climate change
- Wildfire threats to forests, public safety, and property
- State and private capacity for forestry
- Awareness of and support for forests

While the issues and goals listed in sidebar 8 were the most common, other issues and goals were identified as important to forests in individual States. Examples include forest-related research and information, policies and laws to encourage sustainable forest management, and energy development.

The following pages describe each of these issues and goals, as well as common themes in strategies and example strategies that States identified to address issues and goals.

Table 3. State issues and goals common across the region contribute to S&PF National Priorities.

State Issue or Goal	State and Private Forestry National Priorities		
	Conserve & Manage Working Forests	Protect Forests from Threats	Enhance Public Benefits from Trees & Forests
Keeping forests as forests	✓ Obj. 1.1		
Forest ecosystem health and productivity		✓ Obj. 2.2	✓ Obj. 3.3
Urban and community forest health and sustainability	✓	✓	✓ Obj. 3.3
Water, biodiversity, recreation, and other ecosystem services			✓ Obj. 3.1, 3.2, 3.5
Forest products industry and markets			✓ Obj. 3.4
Sustainable forest management across all ownerships	✓ Obj. 1.2		
Climate change			✓ Obj. 3.7
Wildfire threats to forests, public safety, and property		✓ Obj. 2.1	
State and private capacity for forestry	✓	✓	✓
Lack of awareness of and support for forests	✓	✓	✓ Obj.3.6

Keeping Forests as Forests



Although there has been a regional trend of increasing net forest area for decades, the Northeast and Midwest lost roughly 3.7 million acres of forest land to development from 1982 to 1997 (USDA Forest Service 2005). An assessment of development trends found that more than 12 million acres of privately owned forest land in the Northeast and Midwest could be converted to other uses by 2030 (Barnes and others 2009), roughly the total area of forest land in Vermont and New Hampshire combined. While the region’s population increased by about 10 percent during the past decade, the number of private forest landowners grew by 30 percent, suggesting a trend of increased parcelization. At the same

time, the amount of privately owned forest land has remained essentially stable (Smith and others 2009). Related concerns, including intergenerational transfer of family forest land, forest fragmentation, and the loss of associated ecosystem services, suggest that “keeping forests as forests” is one of the most critical issues facing natural resources managers throughout the Northeast and Midwest.

This issue, identified as “protecting private forest lands,” “sustainable forest management,” “changing forest landscapes,” “protecting existing forests,” “loss of forest land,” “maintaining the State’s forest land base,” or “keeping forests as forests,” appears in every State Strategy document in the 20 Northeast and Midwest States, often as the most significant priority issue. As described by most States, the key components of this issue are the lack of financial incentives to keep private forest lands forested and the conversion of forest land to nonforest uses following the transfer of land from one generation to the next.

In addition to broad strategies focused on forest land conservation, a variety of common approaches, described below, are identified as strategies, or solutions, to address this issue.

Viability of private forest land ownership: Most States include strategies for enhancing the financial viability of private forest ownership and for providing increased levels of customer service and technical assistance to private landowners. Strategies to maintain traditional and nontraditional forest markets are commonly outlined as a way to enhance the financial viability of owning forest land (see page 29).

Legal framework: Several States include strategies for working with State legislatures to create laws to protect forest land, such as “Slow the present rate of forest land conversion by fostering State and local government cooperation and legislation (PA).”

Building awareness: Increasing community outreach and societal awareness of the importance of private forest lands is also an important strategy outlined by many States, which ties to the related issue on page 34.

The conversion of forest land to other uses, forest fragmentation, and forest parcelization are critical issues that cut across the other issues and goals. A related issue is maintaining State forestry agency capacity to provide support and assistance to private forest landowners (see page 33).

Example Strategies

- Encourage the acquisition of conservation easements that enable the sustainable management of forest land (MI).
- Property tax relief for [private] forest landowners (IL).
- Produce materials to inform forest landowners about how and why they can reduce fragmentation of the forest resource on their property (IA).
- Provide successional planning information to landowners to help facilitate the smooth and sustainable transition of property to the next generation of landowners (MO).
- Increase teachers’ and students’ understanding and appreciation of forests and forest management (DE).
- Provide communities with resources and information to guide conservation decisions (CT).

Maintain Forest Ecosystem Health and Productivity



Health and productivity of forests is fundamental to enhancing public benefits and conserving working forests throughout the region. The forest health issue is variously described as forest health and productivity, forest health and functionality, protecting forests from threats, maintaining forest health, or ensuring forest health and vitality. Forest health maintenance or protection was specifically cited as an issue by all States.

A common theme within the forest health issue is the need to address threats posed by exotic and invasive species, including insects, diseases, and plants. This theme was cited by half of the States as a key issue and is mentioned in every State's Assessment. In Indiana, forest stakeholders were more concerned about invasives than forest fragmentation or conversion. New Hampshire cited that "In 1900, there were a handful of exotic insects and

diseases in North America. Today, there are more than 500 exotic, invasive insects and diseases impacting forests of the United States." Most States would agree with these statements in the Wisconsin and Missouri Assessments: "Exotic and invasive pests are posing a significant threat to the health of [trees] and the forest ecosystems they inhabit...[and] could have a potentially devastating impact" (Wisconsin); "Invasive plants crowd out native plants, impede tree regeneration, reduce forest management options, degrade forest health and wildlife habitat quality, and minimize recreational opportunities" (Missouri).

Native insects, diseases, and plants are also widely cited as key threats to maintaining biodiversity and forest productivity. Biodiversity, an important component of forest ecosystem health, is cited as a key to a greater potential to adapt to changes. Because regeneration is a critical component of maintaining biodiversity, understory concerns were important forest health issues in many States. In addition, invasive species and wildlife populations, specifically browsing by white-tailed deer, are commonly mentioned as factors that prevent adequate regeneration.

Strategies that guide actions and investments within the forest health issue have a number of common themes regionwide, including the following:

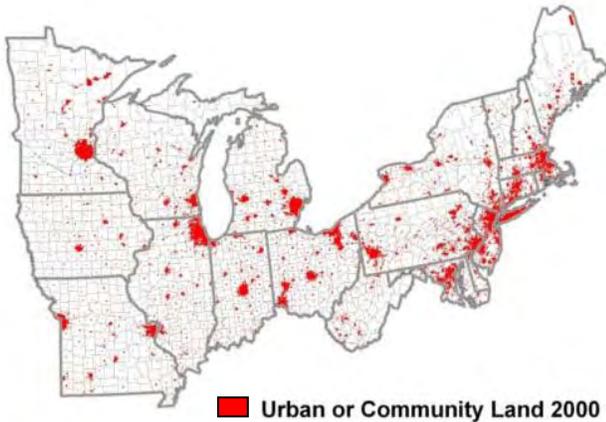
- Detect, monitor, and evaluate forest insect and disease threats across urban and rural forests.
- Actively manage for known high-risk insect and disease pests (native and exotic invasive pests).
- Prevent introductions of new invasive insects, diseases, and plants.
- Increase public awareness of forest threats.
- Provide landowners and managers with training, tools, and technical assistance to promote forest health.
- Develop risk assessments and provide emergency response to natural resource threats.

Within these common themes, specific strategies were outlined by each State in response to the forest health issue. As shown in the list of example strategies, most of the strategies are general in nature and focus on monitoring, evaluating, or protecting forest health.

Example Strategies

- Monitor and report current forest health and evaluate potential threats (VT).
- Identify and manage threats to the urban forest—exotic invasive pest species (DC).
- Develop restoration guidelines for both urban and rural forests, and modify landowner assistance program[s] to support restoration (MN).
- Develop and implement integrated pest management strategies and plans, and provide management recommendations for significant forest damage-causing agents (PA).
- Develop geographic information on the range, extent, and level of threat of invasive plants detrimental to forest health (MO).
- Development of cooperative weed management programs (IL).
- Expand BMPs [Best Management Practices] to include invasive species (IN).

Urban and Community Forest Health and Sustainability



Urban and community forests occur in nearly all communities within the Northeast and Midwest, from the most urban to the very rural. In the Assessments and Strategies, State forestry agencies emphasize the benefits of trees and forests as green infrastructure that contributes to the quality of life in communities. In an integrated approach, States seek to protect and maintain existing tree cover; implement best management practices; and engage local officials and the public in planning, sustaining, and improving forest resources in and around cities, suburbs, and towns.

According to the U.S. Forest Service Resource Planning Act (RPA) assessments, the average tree canopy cover is above 30 percent across the region (New England, Mid-Atlantic, and Midwest communities averaged 44 percent, 29 percent, and 18 percent, respectively) (Nowak and Greenfield 2008, 2009a, 2009b, 2010a, 2010b). These data are used to calculate the ecosystem services provided by urban forests. The State Assessments show that most States, especially across New England and the Mid-Atlantic, used the RPA analyses to assess the current status of tree canopy cover and prioritize their strategies for technical assistance in collaboration with local partners. The Assessments also note the value of the Community Accomplishment Reporting System (CARS), which State forestry agencies use to track their efforts to increase capacity at the local level to manage the urban forest.

Common themes in strategies for urban and community forest health and sustainability include the following:

Maintain ecosystem services: Most States have strategies focused on the role of urban and community forests regarding climate change, energy conservation, improved air quality, stormwater management, recreation, and wildlife habitat.

Public awareness: States emphasize the importance of their role in educating the public about the value and benefits of urban and community forests.

Threat of invasives: Nearly all States have strategies that focus on exotic and invasive pests in urban areas, particularly in the Midwestern States. Strategies highlight initiatives that will lead to the early detection and rapid response to pests such as the emerald ash borer. Planting a diversity of trees in communities is also highlighted as a means of building resilience.

Urban wood utilization: Many States intend to explore opportunities for urban biomass and wood utilization.

Build local capacity: Most States have strategies for building local capacity through outreach, technical assistance, and other support.

Example Strategies

- Provide... assistance to cities, suburbs, and towns to enhance and restore open space and expand urban tree canopy to improve human and community health (MD).
- Support efforts to improve comprehensive land use planning and zoning in urbanizing areas (OH).
- Provide GIS access to the public, local government, and communities to show where urban forestry and green infrastructure needs exist (NY).
- Place special focus on the larger cities and urban core areas...[and] those parts of the State undergoing the most population growth and development (CT).
- Active management and planning of the urban forest for stormwater management and carbon sequestration (DC).
- Provide technical assistance to communities to foster new tree advocacy groups and support existing tree boards (WV).
- Assist in the development of local markets for forest products...this includes such things as utilization of urban waste wood (PA).

Water, Biodiversity, Recreation, and other Ecosystem Services



Ecosystem services—the benefits provided by forests, riparian areas, and other natural landscapes—underpin human health and well-being, our economy, and the natural world. They can be grouped into four categories (Millennium Ecosystem Assessment 2005):

- Provisioning services, such as clean water, fuel, and timber;
- Regulating services, such as climate, water, and disease regulation;
- Supporting services, such as soil formation and nutrient cycling; and
- Cultural services, such as educational, aesthetic, and cultural heritage values as well as recreation and tourism.

In addition to having intrinsic worth, biodiversity is critical to many ecosystem services, both current and future. Every State described the importance of having a variety of ecosystem services and outlined related strategies. Several States have an overarching “ecosystem services” issue or goal area. The others have issues or goals focused on specific ecosystem services, such as “conservation of soil and water resources” (OH) and “protect and improve air quality” (DC). Most emphasize water quality and quantity, biodiversity and/or wildlife habitat, and forest-based recreation.

Water: Every State has at least one strategy focused on water. Clean and safe drinking water is one of the most valued commodities in the Northeast. Forests provide clean water and are the preferred land use in municipal watersheds. Many States emphasized the importance of protecting drinking water supplies and water quality through sound stewardship of forest lands.

There are a range of strategies for identifying, protecting, monitoring, and/or restoring high-priority watersheds, headwaters, riparian areas, and wetlands. For example, the Chesapeake Bay States make specific mention of relying on forestry to ameliorate water-quality issues in the Chesapeake. Other common themes include protecting and enhancing the health of urban watersheds and using forest ecosystems as a solution to address nonpoint source pollution on agricultural lands.

Biodiversity: Every State has one or more strategies to conserve and enhance wildlife habitat. Many cite forest conservation and/or management to maintain or enhance biodiversity, critical habitat, and/or rare species, and to collaborate with State wildlife agencies to implement shared management objectives.

Recreation: Most States have strategies to maintain forest-based recreational opportunities and several have strategies to minimize resource damage from recreation. Several intend to improve marketing and promotion, citing forest-based recreation as a means to promote healthy lifestyles and build support for forests.

Ecosystem services goals and strategies directly influence or are impacted by other goals. Eleven States touched on the importance of communicating with policymakers and the public about ecosystem services provided by trees and forests.

Example Strategies

- Protect and enhance impaired watersheds in Washington, DC (DC).
- Partner with nonprofit organizations, land trusts, and municipalities to connect sustainable forest management practices to long-term watershed health and a variety of ecosystem services (MA).
- Invest in forest conservation to contribute to a strong economy and provide clean water and air, wildlife, and other ecosystem services (WI).
- Manage forest lands within watersheds, especially adjacent to public water supplies and aquifers, to protect water quality as well as wildlife habitat, and maintaining aesthetics (RI).
- Develop new approaches that could be more effective in protecting biodiversity (e.g., having Federal agencies pool resources to reward landowners who manage to provide the full range of habitats needed by wildlife) (ME).
- Measure and monitor recreational use impacts to determine when ecosystems or recreation sites are being negatively affected (MN).

Forest Products Industry and Markets



A globally competitive forest products industry is essential to economically viable forest management activities, which provide forest-related goods that people need. Most States described critical challenges facing the forest products industry and traditional markets, and outlined goals related to improving and diversifying markets for timber and nontimber forest products, woody biomass, ecosystem services, and renewable energy development. The top three most forested States in the country are in the Northeast region (Maine, New Hampshire, and West Virginia). These and other States in the region rely on the forest products industry to create jobs,

contribute directly to the State's economy, and indirectly provide the backdrop for the tourism industry.

The forest products industry is of major importance to the States' economies. As manufacturing has moved offshore and the economic recession has devastated local economies, a focus on the forest products industry is critical for the health of local economies. The U.S. Census Bureau Annual Survey of Manufacturers (2010) shows a declining forest products industry. From 2008 to 2009, the total value of shipments fell from \$144.545 billion in 2008 to \$121.733 billion in 2009. Accordingly, employment dropped from 556,741 in 2008 to 464,626 in 2009. Annual payrolls declined from \$22.7 billion in 2008 to \$19.4 billion in 2009.

Across the region, common themes that emerged in strategies to address this issue include:

Traditional markets: Develop, maintain, and expand traditional markets.

Jobs: Diversify, strengthen, and create jobs in forest-based industries.

Emerging markets: Emerging market strategies commonly referenced by States include the following: (1) develop and expand markets for woody biomass; (2) engage in carbon, biodiversity, water quality, or other markets and payments for ecosystem services; and (3) develop readily available markets for ash and related tree species under attack by invasive pests and diseases.

Technical assistance and education: States commonly focused on providing technical assistance to address solutions listed above and education to promote the importance of the forest products industry.

This issue area is closely tied to many of the other issues highlighted in this chapter. For example, when economic opportunities to manage private and public forest lands exist, landowners and communities have additional incentives to keep forests as forests.

Example Strategies

- Maintain and expand the opportunities for traditional forest markets and operators (loggers, sawmills, etc.) (DE).
- Address the need for strong, stable markets for all forest products that bring in enough revenue to help landowners maintain ownership and effectively manage their forest holding (NH).
- Increase utilization of forest resources for biomass energy production and improve biomass energy marketing efforts (WV).
- Develop and promote markets for ecosystem services, such as carbon sequestration and clean drinking water, and incentives which make sustainable forest management a more affordable option for private landowners (MO).
- Develop, promote, and facilitate market solutions to fuel management issues and needs, e.g., expanded markets for brush and small-diameter material (MN).
- Enhance brand recognition of locally produced forest products (MA).

Sustainable Forest Management across All Ownerships



Active, sustainable management of all forest land is essential for maintaining the flow of desired forest products and services and for improving forest health and resilience to stressors. Most States have an overarching sustainable forest management issue or goal or related issues by ownership.

Across all lands: Many of the issues impacting sustainable forest management cut across both public and private lands. As described in the *Forests of the Northern United States* (Shifley and others in press), some important characteristics of forests in the region include low intensity of management on most private and many public lands, lack of both early successional and old-growth forest, and aging forests with increasing standing volume/biomass. Most States pointed to regeneration issues, such as that due to overpopulation of white-tailed deer. Decline of oak-hickory forest is of particular concern

across the range of this forest type. Several States had goals or strategies specifically focused on maintaining balanced forest composition, e.g., “Improve all forest communities and increase in quality and extent forest communities that are under-represented” (WI Strategy 2010). Several States had strategies for increasing the area of certified forest land. Prescribed fire (see page 32) is also commonly referenced as a management tool to sustain fire-adapted forest types and wildlife habitat.

Public forest lands: Some sustainable forest management goals are of particular importance for public lands. One such goal that was common across the region is managing public lands for multiple benefits and services, e.g., “Public lands are managed sustainably to provide multiple benefits (recreation, wildlife habitat, ecosystem services, timber, and aesthetics)” (Missouri 2010). Another common goal for public forests is to demonstrate sustainable forest management. Many States have strategies focused on providing recreational opportunities on public lands. Since lack of support for forests and forest management is also a major issue (see page 34), many States have goals for public forests focused on connecting people to forests and educating them about the importance of forests and forest management. Maintaining capacity to manage public lands is another related issue. Several States also had strategies focused on conducting inventories and assessments as well as developing management plans for State land.

Private forest lands: Private forest lands make up 74 percent of the forests across the Northeast and Midwest, so sustainable forest management of these lands is critical to the overall health, productivity, and resilience of forests (Smith and others 2009). Lack of active, sustainable management of private forest lands is a common issue across the region. According to the National Woodland Owner Survey, only four percent of family forest owners report having a written management plan (Butler 2008). As a result, most States have strategies focused on outreach and support to private forest landowners, such as, “Encourage and support policies, programs, and initiatives that assist private forest landowners in maintaining the working landscape” (Vermont 2010). This is closely related to the issue of keeping forests as forests, described on page 25.

Example Strategies

- Promote forest management activities on State and private lands that will diversify forest age classes to meet the needs for priority wildlife species and habitats (RI).
- Stress the importance of deer herd management in maintaining a healthy understory of native plants and trees (IN).
- Demonstrate on public lands methods to improve stocking levels (IA).
- Utilize recreational interest on State forest land to promote forest stewardship (PA).
- Increase acreage of privately owned forests managed based on generally accepted forest management practices (WI).
- Increase incentives and reduce costs for private forest landowners that will promote and implement sustainable forestry practices (NY).

Climate Change



Most States identified climate change as a critical issue. Its effects are being assessed across urban and rural forests in the Northeast and Midwest. Documented changes that are likely linked to climate change include more frequent days with temperatures above 90 degrees Fahrenheit, a longer growing season, reduced snowpack and increased snow density, earlier breakup of winter ice on lakes and rivers, earlier spring snowmelt resulting in earlier peak river flows, and rising sea-surface temperatures and sea levels (Frumhoff and others 2007, Karl and others 2009). Many of these changes can influence forest health, invasive species and pest control, tree growth and mortality, tree species range, and forest succession.

States vary in how they address climate change in their State Assessment and Strategy. Almost half of the States and the District of Columbia addressed the topic in a broad way. In general, these States tended to focus on climate-related and other benefits provided by urban tree cover and/or more generic “forest management for adaptation and mitigation” themes. Eight States developed more detailed strategies to address adaptation and mitigation that include the following: accommodate or facilitate adaptation; identify vulnerabilities and promote resiliency; conduct public education and outreach; facilitate payments, markets, or landowner aggregation related to forest carbon; expand scientific research and monitoring; enhance markets for forest products; and improve Best Management Practices and internal practices related to sustainable operations.

There are several common themes in the State Strategies to address climate change across the Northeast and Midwest, including:

Resilience, Mitigation, and Adaptation: Many States addressed climate change with broad strategies that identify the importance of forest management for increasing resilience and/or promoting mitigation and adaptation. Several States intend to facilitate adaptation by enhancing species diversity, planting trees for more southerly ranges, reducing other stressors, developing a range of future management strategies, and/or using other methods to enhance resilience.

Carbon markets: Several States created strategies to encourage the use and development of carbon markets or payments to preserve and enhance carbon stores. Others mention preparing for and/or enhancing carbon market opportunities in their State.

Monitoring and research: The need for scientific monitoring and research to better inform forest management practices was a common theme, while many States implied the need for scientific knowledge in their broad mitigation and adaptation strategies.

Example Strategies

- Manage trees and forests to mitigate and adapt to global climate change (NJ).
- Provide incentives to landowners that sequester carbon by using trees (IA).
- Educate and encourage landowners on the total values associated with forest land that, if successful, will maintain the major pools of forest carbon (CT).
- Influence the development of national and regional protocols for creating marketable carbon credits in forest offset projects (MN).
- Promote efforts to allow forests to adapt to climate change, e.g., maintain large contiguous areas as forests, reduce other stressors, and encourage species suited to future climates (ME).
- Review existing climate change models to determine best and worst case changes in temperature, precipitation, and water levels (NH).

Wildfire Threats to Forests, Public Safety, and Property



States across the Northeast and Midwest are responsible for protecting more than 255 million acres of forest and grasslands from wildland fire, in most cases mandated by statute (USDA Forest Service 2009). Most identify wildfire threats to forests, public safety, and property as a key issue in their State Assessment. State fire management programs vary in size and scope; however, all incorporate preparedness, suppression, training and safety, planning, prevention, prescribed fire, and hazardous fuels mitigation.

Volunteer fire departments are integral to the suppression of wildfires in all States. Therefore, support for and partnership with the structural fire community is important for State forestry agencies. States with Federal lands within their borders generally have cooperating agreements for fire suppression activities on Federal lands. Several States reported completing statewide fire risk assessments and identifying priority areas for the fire management program.

Variations in climate, topography, forest types, land uses, and housing densities across the region are reflected in the size and scope of the States' fire management priorities. Increasing population and housing density and subsequent expansion of the wildland-urban interface in every State add increasing complexity to community protection from wildfire. As described in the Maryland Assessment, "As the suburban fringe increases and people move into forested areas, the complexity of suppressing fires involving both natural vegetation and structures increases." Throughout the Northeast and Midwest, there are more than 62 million acres of land and more than 14 million housing units within the areas classified as wildland-urban interface. Common themes in the States' wildfire-related strategies are outlined below.

Wildfire preparedness: Most States cited critical preparedness needs, including firefighter safety and training, fire planning, increased initial attack capability, and mobilization readiness, for the efficient suppression and prevention of wildfires. Support for and partnership with the structural fire community, such as utilizing the Federal Excess Personal Property and DOD Firefighter Property programs is also important.

Hazard mitigation: States focused strategies on hazard fuels reduction, development and implementation of Community Wildfire Protection Plans (CWPPs), prevention and mitigation education, Firewise programming, and community hazard mitigation. Some States also included fuel reduction projects to support biomass energy.

Prescribed burning: Many States focus on using prescribed fire to restore or maintain plant communities and to protect life, property, and other values that could be degraded or destroyed by wildfire. The use of prescribed fire was identified in many State strategies not only for hazard mitigation but also for ecosystem management—to restore native plant communities, control invasive plants, improve wildlife habitat, and conduct silvicultural treatments.

Example Strategies

- Reduce wildfire risk in areas of Wildland Urban Interface (MD).
- Partner with Michigan State University Extension to deliver the *Firewise* message across fire-prone landscapes (MI).
- Provide educational information and assistance to communities for development of CWPPs; assist with the implementation of existing plans (WV).
- Support municipal fire agencies with quality assistance in the form of detection, suppression, prevention, and intelligence sharing (MA).
- Suppress wildfires in order to protect people, property, and natural resources through effective collaboration between public agencies and fire departments (MO).
- Position rural fire departments for success (OH).
- Utilize prescribed fire for forest and wildlife habitat restoration and management (DE).
- Restore fire-adapted lands and reduce risk of wildfire impacts (NJ).

Maintain State Forestry Agency Capacity and Qualified Professional Foresters



Across the Northeast and Midwest, a number of State Assessments focus on the capacity to deliver forestry programs, including a decline in the number of both State and private forestry professionals, lack of funding for forestry programs, and concerns about community capacity to manage urban forest resources. While State, county, and municipal funding for forests in the region reportedly increased 7 percent in nominal terms between 2006 and 2008 (NASF 2009), higher personnel costs (health insurance and retirement) and inflation effectively negated this increase. In addition, Federal funding declined by 22 percent over the same period.

State forestry capacity: Several States list the lack of State forestry capacity and loss of State forestry staff positions as a key issue in their State Forest Resource Assessment and Strategy. For instance, the Connecticut Assessment notes that the number of foresters managing State Forests has been cut in half in recent years. As a result, about half of State forest land is unmanaged. In Iowa, the Forestry Bureau’s State general fund allocation was cut 40 percent, or \$1 million, from State fiscal year 2009 to 2011. In another example, the *Maine State Forest Assessment and Strategies* explains that, with proposed budget reductions for the current biennial budget, it is uncertain that the Maine Forest Service will be able to fulfill its legislative mandates.

Although not every State identified the loss of professional forestry capacity as an issue, many have gone through significant budget reduction exercises since submitting their State Forest Assessment and Strategy. Therefore, the concerns expressed in a number of State Assessments and Strategies have multiplied since June 2010. Without adequate human resources in both the public and private sectors, implementation of State strategies will be difficult.

Strategies to address this issue most commonly focused on general calls for increased human and other resources and restated the consequences of the erosion of professional capacity.

Private forestry professionals: Several States across the region highlighted the lack of qualified private forestry professionals, especially for providing forestry services for private forest landowners. In a related issue, some States noted that enrollment in forestry degree programs has declined in recent years. Strategies in this area were focused on providing training and assistance to professional foresters, and increasing awareness and education to inspire future generations to consider forestry careers.

Community capacity: As described under “urban and community forest health and sustainability” (page 27), several States outlined strategies to build local community capacity.

Example Strategies

- Maintain infrastructure, staff, and an organizational structure to achieve desired future conditions (VT).
- Seek sustainable funding for more professional foresters to service priority forest areas (IA).
- Advocate for maintaining current levels of staffing, programs, and services as a minimum (ME).
- Maintain capacity to provide support to communities for suppression of wildland fires through technical assistance, specialized equipment, and fire prevention (NH).
- Increase funding for forest conservation programs administered by natural resource agencies, local governments, and nongovernmental organizations (OH).
- Increase the number of private businesses (loggers, foresters, arborists, timber stand improvement contractors) that provide high quality goods and services to effectively and efficiently reach more forest landowners and sustainably manage more forest (WI).

Lack of Awareness of and Support for Forests



Lack of awareness of and appreciation and support for forests and forest management is a critical issue that cuts across all other issues and S&PF Programs. In the Statewide Forest Resource Strategies, every State and the District of Columbia recognized the importance of education and outreach. This issue is further compounded by the fact that many State forestry agencies do not have communications expertise on staff (NAASF 2010).

Many States included this concern and related strategies as one issue or goal, such as “communicating natural resource values” (PA), “increasing the environmental literacy of citizens” (MA), and “public awareness and appreciation of forests” (DE). Other States included communication and education goals and/or strategies throughout their State Strategy. For example, the *New Hampshire Forest Resource Strategies* includes an “outreach and education” issue with strategies under each of eight focus

areas. In addition to addressing this issue individually, a few States also identified outreach and conservation education as an issue that could benefit from collaboration among multiple States.

Strategies for this issue include communications and education targeted to a variety of audiences:

Citizens across urban to rural areas: Most States had at least one strategy focused on connecting people to trees and forests, and raising public awareness of and support for forests and forest management. Several States had strategies related to increasing awareness and education through opportunities on public lands. Some emphasis areas include awareness of forest health threats, the economic value of forests, the benefits of prescribed fire as a management tool, the importance of forests for clean water, and increased trust and understanding of public land management.

Partners and stakeholders: Most States emphasized the importance of communication and collaboration with partners and stakeholders to implement the State Strategy.

Teachers and children: Strategies focused on the education of youth and their teachers were common across the region. Several States included a strategy to specifically work with State departments of education to contribute to the State environmental literacy plan.

Private forest landowners: Most States identified outreach and education for private forest landowners as critical to addressing the conversion of forests to nonforest uses and sustainable management of private forests. Strategies include raising awareness of the value of private forest land, and providing outreach and assistance to encourage sustainable, active management. Tools include field days, demonstrations on public lands, and private forest landowner networking opportunities.

In addition, several States had communications strategies that include utilizing technology such as on-line social networks and Webinars.

Example Strategies

- Connect people to trees and forests and engage them in environmental stewardship activities (NJ).
- Provide resources and partner with other organizations to educate the general public on the value of forest resources and forest management (RI).
- Develop public stakeholders for the environment (NY).
- Support efforts that encourage outdoor learning experiences for children inside and outside of the public education system (IN).
- Develop and disseminate forestry resources for landowners with emphasis on outreach to new and future owners to help them maintain and manage forests (MD).
- Build awareness of the important contributions that trees provide to urban areas and communities and highlight their quantitative value and impacts (MI).
- Promote forest stewardship through educational efforts to all citizens (VT).

6. Multistate Priorities

The 2008 Farm Bill (PL 110-246) required State Forest Resource Assessments to include “any multistate areas that are a regional priority.” As requested by State forestry agencies, Northeastern Area State and Private Forestry (NA S&PF) facilitated processes to help States identify multistate priority areas and issues. This started with the NAASF Forest Resource Planning Committee meeting in May 2009 where State forest planners and GIS professionals brainstormed a list of potential multistate priorities. The list was compiled and shared with State planning leads and refined based on their input. In fall 2009, each of the three NA S&PF Field Offices held conference calls with State Foresters to discuss potential multistate priorities. As a result, States identified multistate priority areas and issues within each of the NA S&PF Field Office regions for inclusion in the State Forest Resource Assessments and Strategies. NA S&PF staff compiled these lists of multistate priorities and, with input from the States, drafted briefing papers for each one. In July 2010, NAASF and NA S&PF agreed that, as requested by State forestry agencies, NA S&PF will facilitate efforts to implement State-identified multistate priorities in order to focus some work for FY 2011 and beyond.

All 20 Northeast and Midwest States and the District of Columbia included multistate priorities in their State Forest Resource Assessment and Strategy. There were just over 70 unique multistate priorities identified by the 20 States and the District of Columbia. Over half of these are existing efforts. The level of detail about multistate priorities varied widely. For example, some States included a simple list of “potential” multistate priorities, while others provided detailed information about each multistate priority they intend to pursue. Many States used portions of or attached the full briefing papers that were drafted through the process described above. Many States included strategies for specific multistate priority areas, such as the Chesapeake Bay. The *West Virginia Statewide Forest Resource Strategy* outlined strategies for each multistate priority. A full list of multistate priorities is available at <http://www.northeasternforests.org/FRPC/>.

Areas: Two-thirds of the multistate priorities are specific landscape *areas* such as the Connecticut River Watershed, Chesapeake Bay, and examples shown in figure 16. More than half of these multistate priority areas were identified by a majority of the States that the area covers. For example, four out of the seven States within the Ohio River Basin included it as a multistate priority area. For 13 of the multistate priority areas, all the States covered by the area identified it as a multistate priority area. For example, all four States that the Northern Forests span included it as a multistate priority.

Issues: One-third of the multistate priorities identified are *issues* that could benefit from collaboration among multiple States. The following were those most commonly listed:

- Insects, diseases, and invasive plants (13 States)
- Biodiversity and wildlife habitat (7 States)
- Forest industry and diverse markets (10 States)
- Forestation, reforestation, and restoration (7 States)
- Reduce wildfire risk (10 States)
- Ecosystem services (6 States)
- Promote sustainable and active private forest management (10 States)
- Biomass and renewable energy (5 States)
- Threats to forests along highways (9 States)
- Climate change (5 States)
- Forested watersheds and water quality (5 States)

Beyond the Northeast and Midwest: Seventeen of the multistate priority *areas* identified by States in the Northeast and Midwest extend into States outside the region. Examples include the Appalachian region and Chesapeake Bay watershed. Six of these were also identified as multistate priority areas by States outside the region; for example, the Missouri River Corridor and Watershed was listed as a multistate priority by Missouri and several States to the west. Several of the multistate priority areas cross into Canada, including the Great Lakes, Lake Champlain, and Red River basins. Fourteen of the multistate *issues* identified by States in the Northeast and Midwest were also identified as multistate issues by States that border the region, including many of those listed above.

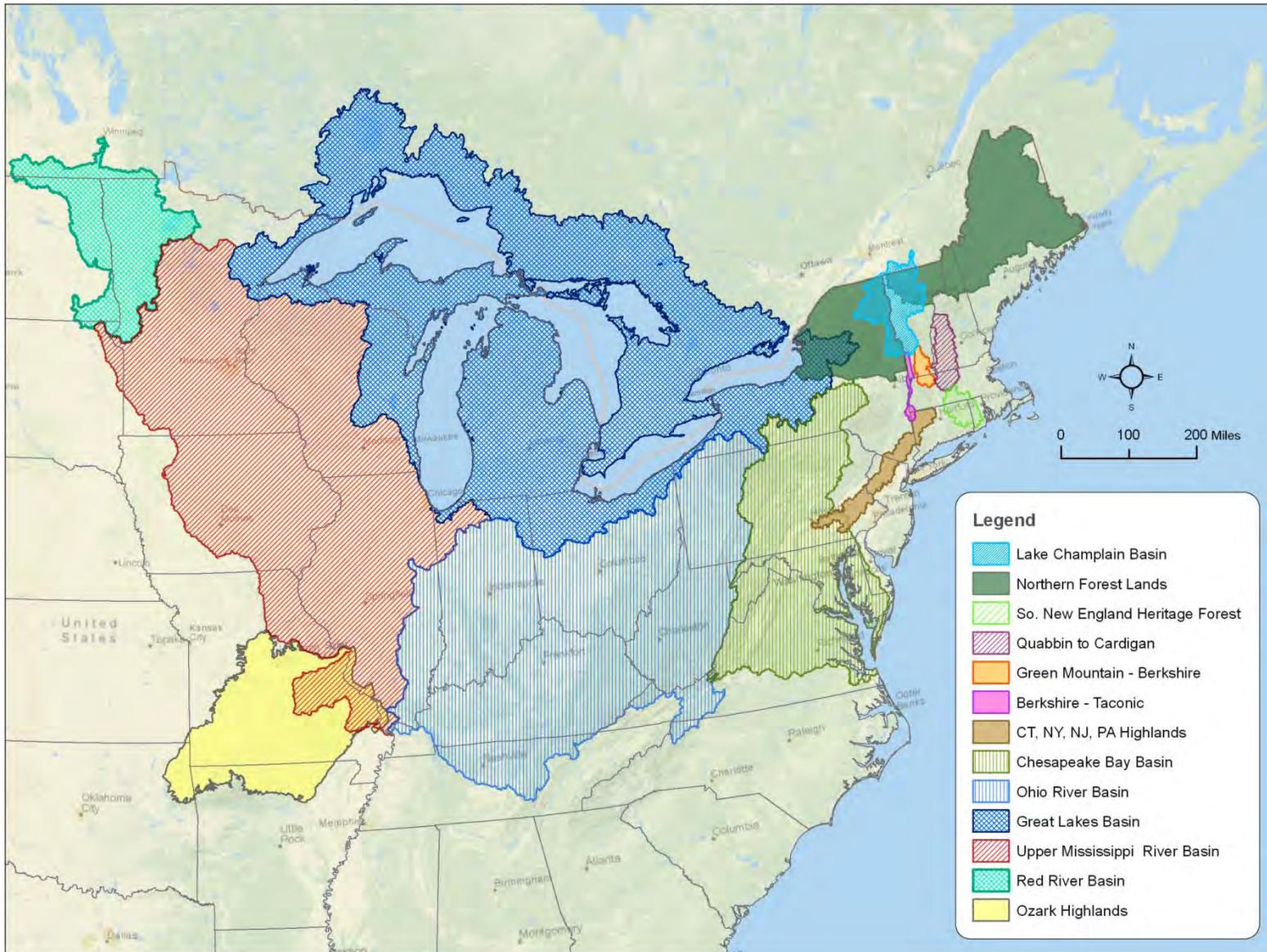


Figure 16. Example multistate priority areas identified in State Forest Resource Assessments and Strategies in the Northeast and Midwest.
 Note: This is a sampling from the list of over 40 multistate priority areas that were identified in the State Forest Assessments and Strategies.

7. Implementing the State Forest Resource Strategies

Process for Implementing the State Forest Resource Strategies

The overall process for implementing the State Forest Resource Strategies is shown in figure 17. First, State forestry agencies developed a State Forest Resource Assessment to identify key forest-related issues and priority landscape areas. Then they outlined strategies for addressing these issues and areas in the long-term (5+ years) State Forest Resource Strategy. The Strategy is an overarching document; more specific activities and detailed budget information for a given fiscal year are not in the State Forest Resource Strategy. The next main step is to outline activities and efforts to focus on with partners for a particular year. For Cooperative Forestry funding, State forestry agencies outline specific activities in the annual grant narratives for “core” State & Private Forestry (S&PF) funding and can submit proposal(s) as part of the NA S&PF competitive allocation process. Each Federal fiscal year, accomplishments are reported using the S&PF Core Performance Measures¹¹ and the “State Annual Report on Use of Funds,” which is required by the Farm Bill.

In the State Forest Resource Strategies, many States described their own specific process for implementing their strategies. For example, in both the *Delaware Statewide Forest Strategy* and *West Virginia Statewide Forest Resource Strategy*, there is a section titled “Translating Strategies into Annual Actions,” which includes steps on how the State forestry agency plans to implement the Strategy on an annual basis and an overview of the monitoring and reporting for the strategies.

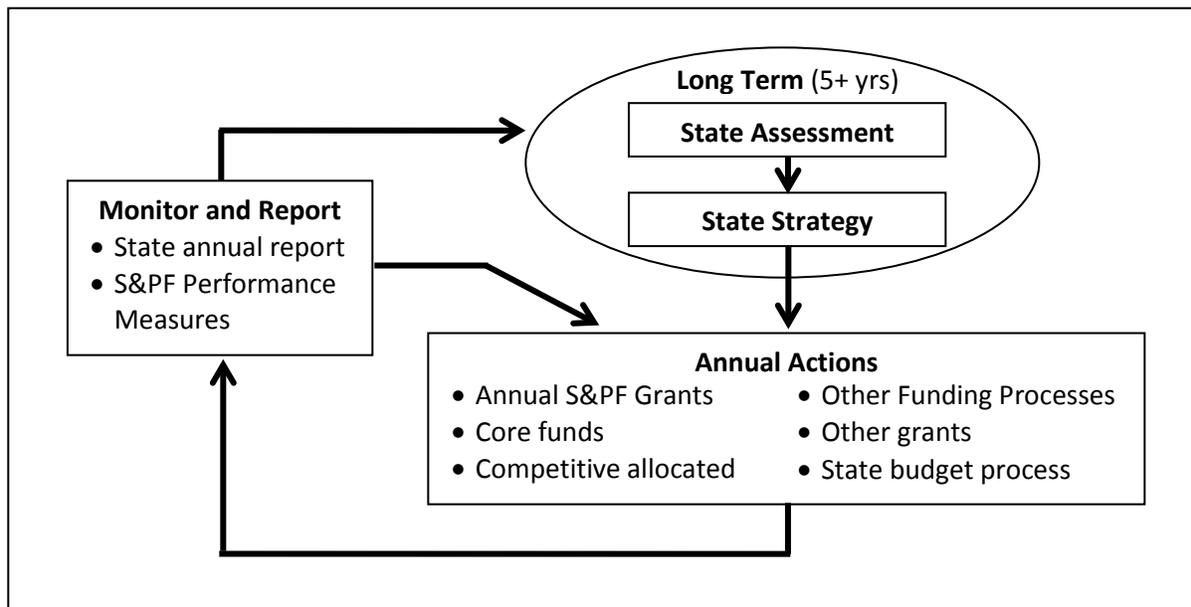


Figure 17. Process for Implementing the State Forest Strategies

¹¹ National S&PF Core Performance Measures are available at <http://www.northeasternforests.org/FRPC/> (under State Forest Resource Assessment and Strategy Resources > National Documents and Resources).

Resources Necessary

States were required to include a description of the resources from all sources that are necessary to address the State Forest Resource Strategy. Most States noted that resources to implement the State Strategy are limited. For example, Maine noted, “Resources needed to carry out the strategies...far exceed the resources currently available.” Beyond that common theme, “resources necessary” were presented in a wide variety of ways in the State Forest Resource Strategies. Many of the 14 States that included a strategies matrix (see Chapter 3) included a column for “resources” in their matrix, but the heading and focus of that column varied from State to State. Here are three examples of how “resources necessary” are included in strategy matrices:

- Ohio has a column that identifies the resources that are limiting factors for each strategy.
- Minnesota included funding sources, partners, and other resources in one column.
- Missouri separated out resources that are currently available and resources that are needed.

As described below, resources necessary to address the State Forest Resource Strategies include, but are not limited to, S&PF Programs, funding, and partners and stakeholders.

S&PF Program Resources

Northeastern Area State and Private Forestry (S&PF) and its State partners provide technical assistance and financial support using voluntary programs. S&PF Programs authorized by the Cooperative Forestry Assistance Act include Cooperative Fire Protection, Forest Health, Forest Legacy, Landowner Assistance (including Forest Stewardship), and Urban and Community Forestry. State forestry agencies have incorporated existing S&PF program plans into the State Assessments and Strategies. In turn, these programs provide resources for implementing the State Forest Resource Strategies. In addition, the U.S. Forest Service has encouraged State forestry agencies to integrate relevant S&PF programs to address their strategies. As Stated in the *Michigan Forest Resource Assessment and Strategy*, this effort is “a major step toward greater integration of cooperative forestry programs for the long-term, sustainable stewardship of the private forest resources of Michigan.”

Although not specifically required, several States described how S&PF Programs will be used to implement their strategies in either a separate section or woven throughout the State Forest Resource Strategy document. Thirteen States identified which S&PF Programs would be utilized to implement each strategy. A majority of these strategies identified more than one S&PF Program. For example, in the *New York State Forest Resource Assessment and Strategy*, a strategy to “fight invasive pests and diseases” identified Forest Health, Forest Legacy, Forest Stewardship, and Urban and Community Forestry Programs as “contributing programs.”

Program areas commonly identified as contributing to implementation of the strategies include:

- Conservation Education
- Cooperative Fire Protection
- Forest Health
- Forest Legacy
- Forest Stewardship
- Urban and Community Forestry
- Utilization and Marketing

Other programs cited by several States include the Chesapeake Bay or Watershed Programs, Conservation Reserve Program, and the Conservation Reserve Enhancement Program, administered by the USDA Farm Services Agency.

Funding

All States presented information about funds available from multiple sources to implement the State Forest Resource Strategy. Most pointed to difficult economic times and limited State and Federal funding. Several States provided detailed information about funding currently available, and what is needed to adequately address the State Forest Resource Strategy. For example, Maryland included a “funding needs” bar chart that illustrates the estimated work force needed for delivering priority actions, comparing it to the existing workforce and current State forestry funding. In another example, Delaware outlined the various sources of funding available to implement the strategies. They also included several examples of projects that could be accomplished under an increased funding scenario.

Partners and Stakeholders

Most States emphasized the importance of partners and stakeholders to successful implementation of the State Forest Strategy (sidebar 9). Stakeholders commonly identified as important to implementation include:

- Other State departments, e.g., agriculture, fish & wildlife, education
- Universities and Cooperative Extension
- Municipalities/local governments
- Forest products and industry associations
- Woodland owner associations
- Consulting foresters
- The Nature Conservancy
- Land trusts
- Local fire departments
- USDA agencies: Forest Service, Natural Resources Conservation Service, Animal and Plant Health Inspection Service
- Soil and Water Conservation Districts
- Outdoor recreation organizations/councils
- Federal land managers (National Forests, National Wildlife Refuges, etc.)
- Horticulture associations
- Project Learning Tree

Sidebar 9: Importance of Partners in Implementing the State Strategies in Wisconsin

The *Wisconsin Statewide Forest Strategy* is presented as a statewide document, not the Wisconsin Division of Forestry “to do” list. As an immediate next step, the Division is reaching out to stakeholders and partners to prioritize the strategies and identify who will be responsible for each one. As stated in the document, “This is an opportunity to build synergy and focus efforts. Partners and the public who have engaged in this conversation are helping to identify the key issues and have a voice in determining the most important action to take.”

Performance Measures

Many States outlined performance measures or goals in their State Forest Resource Strategy. Several included “measures of success” for each strategy in their State strategy matrix, while others had performance measures or outcome goals in the Strategy narrative. A few States provided targets or goals for each performance measure. Other States outlined a list of overall performance measures rather than strategy-specific measures.

8. Lessons Learned

The following highlights, challenges, and lessons learned from development of the State Forest Resource Assessments and Strategies were synthesized from an indepth discussion on this topic with the lead planners and GIS contacts in the Northeast and Midwest that took place in August 2010.

The Statewide Forest Resource Assessments and Strategies are valuable! From the national and regional perspective, it is extraordinary that all U.S. States and territories have taken a fresh look at the state of forest resources and developed related resource priorities and strategies. For some States, this was the first statewide forest resource strategy in decades. At the State level, the results are being used to elevate the importance of forest resources and to advocate for trees, forests, and forestry in the midst of State budget cuts. The assessments provide State agencies, partners, and stakeholders with a variety of important information in one place, while the strategies are valuable tools for collaborating with partners and making informed, strategic decisions.

Lack of time and funding was a major challenge. The 2-year timeframe given to States to develop their assessment and strategy was very tight. For example, States would ideally complete the assessment at least a year before the strategy was due. However, as a result of the limited timeline, some States felt there was not enough time to get adequate feedback on the assessment before shifting to the strategy, and other States ran out of time to adequately engage partners in developing the strategy. In addition, due to challenging economic times, it was difficult for many States to obtain adequate funding and staff time to develop their assessment and strategy. Some States reassigned job duties to produce the document(s) and forfeited other forestry services due to that reassignment. In some States that do not have a planner on staff, it was difficult to find staff with statewide assessment and planning expertise to handle this task.

Collaboratively developed and flexible guidance was important. In the Northeast and Midwest, NAASF and NA S&PF staff collaborated to develop regional guidance documents for both the assessment and strategy. This collaboration took time, but was recognized as extremely valuable. To allow States a full 2 years for developing their documents, the U.S. Forest Service guidance should be available at least 2 years before the documents are due. There is no “one size fits all” approach, and States appreciated that the national guidance provided ample flexibility; however, future guidance should consider how to balance the need for flexibility and the desire to summarize or roll-up the State results regionally and nationally.

U.S. Forest Service support was appreciated. States greatly appreciated the assistance and support received from NA S&PF staff. States needed different types and extent of support, so it would be helpful in the future for the U.S. Forest Service to provide different levels of support and followup. For example, some States wanted feedback from the U.S. Forest Service on the substance of the documents, while others preferred to focus primarily on the requirements, primarily due to time constraints. Some States expressed interest in receiving more input from NA S&PF staff now that the documents are complete. In addition, NA S&PF could help by partnering up States that have more planning and GIS experience with States that need help building that capacity. In addition, the national meeting was very valuable, but held rather late in the process. In the future, a similar national meeting should be held at the beginning of the assessment and strategy process to increase information sharing and networking, and to minimize confusion regarding the requirements. There was also concern about how the U.S. Forest Service might use the State Forest Assessments and Strategies; therefore, States would appreciate clarity on that front. Some States would like the U.S. Forest Service to outline a list of publications and data available for future updates to assist with analysis of the information.

State Forester support was a critical factor for success. State planners that received a high level of State Forester support saw that as a highlight and critical factor for success that lead to higher quality products, whereas planners lacking this support found it to be a major challenge. Supportive leaders dedicated planning, GIS resources, and funding to the effort and promoted involvement by all staff.

Agency staff involvement and program integration were difficult. State agency program staff involvement was critical for the strategy to adequately address issues related to each program. Planning leads in many States found it difficult to engage program staff, and program integration was seen as a challenge by many State program staff. In addition, incorporating S&PF program-specific plans, e.g., Stewardship and Urban and Community Forestry, was problematic for some States. In a State where the program staff was fully engaged, they felt the resulting Strategy is more inclusive than other past planning efforts.

Stakeholder and partner engagement was worth the effort. Some States found it challenging to obtain meaningful input from stakeholders, especially with limited time and funding, while others successfully engaged stakeholders and partners, and felt that was one of the greatest benefits of the process. Re-engaging existing stakeholders and partners and, in some cases, engaging new partners led to support from constituent groups, synergy between partners and programs, re-alignment of priorities, and more willingness to share data. Clear communication to manage the expectations of partners and stakeholders was important. For example, in some States, partners assumed that the State agency had already decided on the priorities and actions, when the State agency was really sharing a draft for genuine input. Now that the documents are complete, several States look forward to engaging partners in implementation of the strategies. NA S&PF can assist by providing training and guidance on how to engage partners and stakeholders.

Overall organization and managing multiple planning processes present both opportunities and challenges. The workload overall was overwhelming for some. They worried that key points or partners may have been missed in the process of synthesizing large amounts of information and managing input from multiple authors and contributors. Many struggled with how to best lump or split complex issues so they could be presented in a concise way. For some States, this effort provided consistency with other State planning processes; this was an opportunity to consolidate multiple forestry initiatives or required planning into one. For other States, it was a challenge to manage this along with other planning efforts; the timelines did not always coincide and made the processes more complicated.

Criteria and Indicators (C&I) were a useful framework for the assessment. The C&I framework was valuable for organizing assessment information. Since the C&I are supported at national and regional levels, and now that States have baseline data, many intend to keep using the framework. Some found it challenging to address issues that fit under multiple criteria. A few noted that the C&I framework is missing an indicator to assess trends in wildfire suppression and property protection.

Data development and GIS analysis take time, skill, and a proactive approach. Compiling and developing the assessment information takes time. Using GIS technologies to spatially identify and prioritize forest landscapes requires a well-thought-out process. GIS capacity was lacking in some States. Data gaps and outdated or poor-quality data also presented a challenge during this process. GIS data and related analyses are a foundation for future work. If we want to continue relying on this type of data to inform decisions and priorities, we need to be proactive and have a data strategy for more consistent development, updating, and maintenance of the needed datasets. In addition, datasets and analysis tools were continually being discovered as part of this process, in some cases too late in the process for States to use. Sharing data, GIS methods, and analysis information was important to States. It would be helpful to compile a list of pertinent GIS datasets for answering common resource questions and provide example analysis and information about how to use and interpret the data. The U.S. Forest Service should continue to facilitate training via Webinars on using Forest Service-developed and other GIS datasets.

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Appendix A.

NAASF and NA S&PF Forest Sustainability Criteria and Indicators¹²

These NAASF and NA S&PF indicators span the Montreal Process criteria and are recommended for use in regional and State-level forest assessments. More information about the collaborative regional forest sustainability criteria and indicators (C&I) effort and links to the National and International C&I efforts are available at <http://na.fs.fed.us/sustainability>.

Criterion 1: Conservation of Biological Diversity

1. Area of total land, forest land, and reserved forest land
2. Forest type, size class, age class, and successional stage
3. Extent of forest land conversion, fragmentation, and parcelization
4. Status of forest/woodland communities and associated species of concern

Criterion 2: Maintenance of Productive Capacity of Forest Ecosystems

5. Area of timberland
6. Annual removal of merchantable wood volume compared with net growth

Criterion 3: Maintenance of Forest Ecosystem Health and Vitality

7. Area of forest land affected by potentially damaging agents

Criterion 4: Conservation and Maintenance of Soil and Water Resources

8. Soil quality on forest land
9. Area of forest land adjacent to surface water, and forest land by watershed
10. Water quality in forested areas

Criterion 5: Maintenance of Forest Contribution to Global Carbon Cycles

11. Forest ecosystem biomass and forest carbon pools

Criterion 6: Maintenance and Enhancement of Long-Term Multiple Socioeconomic Benefits to Meet the Needs of Societies

12. Wood and wood products production, consumption, and trade
13. Outdoor recreational participation and facilities
14. Investments in forest health, management, research, and wood processing
15. Forest ownership, land use, and specially designated areas
16. Employment and wages in forest-related sectors

Criterion 7: Legal, Institutional, and Economic Framework for Forest Conservation and Sustainable Management

17. Forest management standards/guidelines
18. Forest-related planning, assessment, policy, and law

¹² No priority or order is implied in the numeric listing of the criteria and indicators.