

Pennsylvania Forest Action Plan **National Priorities Addendum**

The Forest Action Plans collectively represent the first-ever strategic plan for the nation's forests. The impetus for this historic effort grew out of landmark changes in the Food, Conservation, and Energy Act of 2008 (the 2008 Farm Bill), when Congress tasked the states and territories to craft assessments of the forests within their boundaries and develop strategies to address threats and improve forest health. The resulting Statewide Forest Resource Assessments and Strategies, or Forest Action Plans, provide an analysis of forest conditions and trends and delineate priority forest landscape areas. They offer practical, long-term plans for investing state, federal, and other resources where they can be most effective in achieving national conservation goals.

Pennsylvania, or “Penn’s Woods,” provides countless benefits and services to its citizens. Pennsylvania’s 17 million acres of forest provide a vast array of values, including clean air and water, recreation opportunities, wood products, and habitats for thousands of plants and animals. Understanding the forest’s status and condition is necessary to conserve it for future generations. Our Forest Action Plan describes current conditions and trends, identifies priority issues, delineates priority landscapes, and sets the stage for developing long-term management strategies. It evaluates the condition of Pennsylvania’s forests across all ownerships and establishes a framework for achieving long-term forest sustainability.

States were asked to compile a document that highlights some of the accomplishments relating the National Priorities set forth in the 2008 Farm Bill to provide insight into how the strategies within each state’s Forest Action Plan are supporting the larger initiatives defined by the federal government. In this document, examples of accomplishments are presented for each of the three National Priorities and the long-term strategy moved forward by the effort is listed. This is not an exhaustive inventory but simply a few examples of the ways in which PA is using its Forest Action Plan to target specific objectives that relate to the goals and emphasis outlined at the national level. In addition, the matrices in the strategies section of the PA Forest Action Plan include a column that illustrates the national priorities and objectives that are supported by each long-term strategy.

Priority 1: Conserve and manage Working Forest Landscapes for Multiple Values and Uses

State Issue	Sub Issue	Long-term Strategy	Measure of Success
Land Use	--	1. Promote acquisition of priority forestlands through fee purchase or easements	Acres Protected

Strategy Narrative:

Issue Overview

The prognosis for forested lands conservation in Pennsylvania is stable but threatened. The Commonwealth is slowly losing net forested acreage, particularly in the rapidly developing southeast and the south-central Chesapeake Bay watershed, though somewhat offset by afforestation of agricultural lands. Because of increasing rates of agricultural land conversion, this loss rate is likely to accelerate in coming years if no new programs or funding are developed. Other factors influencing loss of high-value forestland include fragmentation from rights-of-way and energy development; continuous parcelization as private forestland owners turn over lands to the next generation; proliferation of plant and insect invasives; and economy-driven divestiture of forestlands, particularly by hard-hit farmers.

Funding for forestland conservation has come primarily from state special funds such as Growing Greener funds, Key '93 funds, and the Oil and Gas Lease Fund. Federal funds have also contributed toward forest conservation over the years, particularly Forest Legacy, the Land and Water Conservation Fund, and the Highlands Act. State special fund sources are in jeopardy, as some will be substantially expended soon, and others are declining with the recession or are being diverted to help balance the state budget. New creative funding solutions hold some hope for conservation of these lands in the future. The newly re-energized Chesapeake Bay Program is putting increasing emphasis on protection of forestland and urban forest renewal. Trading schemes such as carbon and nutrients may be able to offer cash to forestland owners soon, and economic incentives like tax credits may help forestall more forestland sell-offs. Landowner networks that pool information, aggregate forest-resource value-added chains and promote land preservation have begun to help regions resist fragmentation and development, while new planning and prioritization efforts like the development of voluntary Forest Security Areas may help neighbors access more federal funding for conservation.

Strategies

1. Promote acquisition of priority forestland in fee or through permanent easements by leveraging existing private, state, local and federal funding sources.

2. Identify and promote new funding mechanisms to finance forestland conservation.
3. Slow the present rate of forestland conversion by fostering state and local government cooperation and legislation.
4. Address forest fragmentation and conversion from inter-generational land transfers through outreach and education of individual private forestland owners.
5. Develop and promote approaches to conserving and revitalizing forest-dependent communities.
6. Accelerate afforestation and reforestation through new and ongoing state, federal, local and private programs.

Strategic Accomplishments:

The strategic accomplishment directly relates to strategies in the forest action plan;

- Promote acquisition of priority forestlands through fee purchase or easements.

State Forest Acquisitions

One of the bureau's greatest assets is its land base. For more than 100 years, the commonwealth has been acquiring lands to be held and managed as state forests. As called for in Penn's Woods, the bureau continues to strategically acquire lands to add to the state forest system. New acquisitions meet one or more of the following priorities:

- Interior holdings or deeply indented tracts that will simplify boundaries and thus make land management more efficient
- Properties that strategically link existing state forest lands or other public/conserved lands
- Lands that contain species of special concern or unique habitats or plant communities
- Lands that are threatened by development pressure or that will buffer existing state forest land from nearby development
- Lands that help protect and conserve critical water resources
- Lands that provide new or unique recreational opportunities
- Properties that provide a new or improved point of access to existing state forest lands, which will enhance access for management and recreation
- Expansive properties that create a new core land holding (typically 1,000 acres or more)

The bureau evaluates each acquisition opportunity according to these priorities and in light of present funding availability.

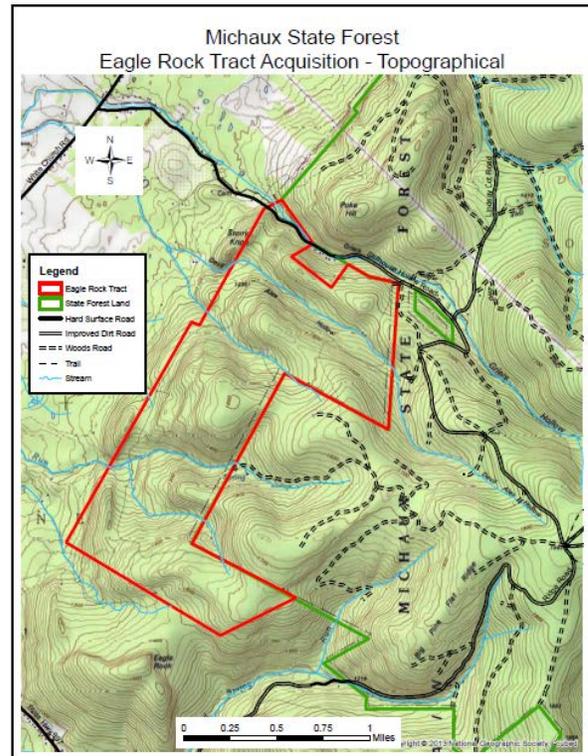
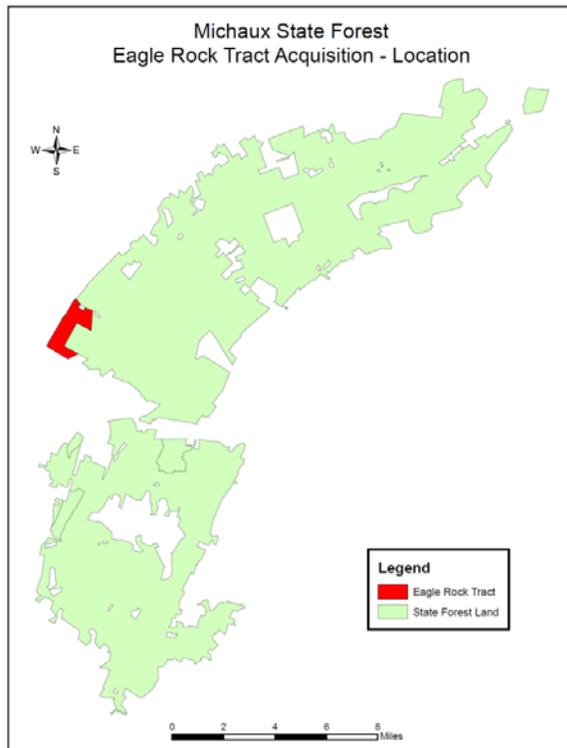
Acreage of State Forest Lands Acquired Each Year since 2010	
Year	Acres
2010	11,784
2011	1,888
2012	419
2013	1,899
2014	11,016

Forest Legacy Program

A portion of the bureau's land acquisitions are made possible with the support of the Forest Legacy Program, which is administered through the USDA Forest Service and its state partners. In Pennsylvania, DCNR has been designated the state lead agency. The program's mission is to protect working forestland threatened by development through fee simple acquisitions or conservation easements. The Forest Legacy Program allows DCNR to acquire and protect private forestland in perpetuity, to the benefit of all residents of Pennsylvania. Pennsylvania entered the program in 2002 and currently has four completed projects. Woodland Stewardship personnel continue to manage and monitor the program and its easements. Only properties located within Forest Legacy Areas (FLAs) are eligible for funding through the program. New FLAs can be added through the state's application process, with support from county government and a sponsoring conservation organization.

One of these projects, Eagle Rock, was recently closed. Eagle Rock is a key acquisition in the South Mountain Conservation Landscape Initiative (CLI) within the Michaux State Forest district. It offers unique recreation opportunities, including trail infrastructure that connects to the Appalachian National Scenic Trail. Eagle Rock is one of the last remaining large tracts of private forest in the region. It features high quality habitat suitable for several plant and animal species of special concern. Due to its proximity to several major metropolitan areas and the Maryland state border, this tract faces strong development pressure. Support from the Forest Legacy Program made the acquisition possible for the long-term conservation of Eagle Rock.

Project Title	Federal Funds	Fiscal Year	Non-Federal Cost Share	Acres Protected
Eagle Rock	\$1,500,000	2013	\$1,500,000	1,100



More information about the Forest Legacy Program in PA can be found: http://www.dcnr.state.pa.us/cs/groups/public/documents/document/dcnr_20030028.pdf

Priority 2: Protect forests from threats

State Issue	Sub Issue	Long-term Strategy	Measure of Success
Forest Health	Forest Insects & Disease	1. Develop & implement IPM plans & provide management recommendations for significant forest damage causing agents. An emerald ash borer management plan will be the first plan	# of IPM plans developed
Wildland Fire & Public Safety	--	7.Ensure the safe use of prescribed fire in Pennsylvania and build capacity for its use as appropriate.	Cooperation among partners; number of prescribed fires; number of rx burn acres; number of escaped prescribed fires

Strategy Narrative (Forest Health-Forest Insects & Disease):

Issue Overview

Forest insects and diseases, invasive plants, inadequate forest regeneration, and overabundant deer populations are the principal factors affecting forest health in Pennsylvania (Wildland fire and climate change are covered as separate issues with their corresponding strategies elsewhere in this document).

All the major forest tree species and many other tree species are at risk in Pennsylvania. Oaks, maples, eastern hemlock, ash, American beech, pines, black cherry, walnut, butternut and elm all have significant forest stressors that threaten their health. Forest benefits in both urban and rural areas are at risk from non-native invasive species. Gypsy moth, hemlock woolly adelgid, emerald ash borer, beech bark disease, *Sirex noctilio*, and many invasive plant species such as Japanese stilt grass, tree-of-heaven, and mile-a-minute weed are already established in Pennsylvania. Other non-native invasive species, not yet established in Pennsylvania, threaten our forests, such as the Asian longhorned beetle, thousand cankers disease/walnut twig beetle, and winter moth.

Inadequate forest regeneration and over-abundant deer populations are additional factors affecting the long-term health of Pennsylvania’s forests. Addressing these issues will require managing and mitigating many of these impacts and stressors across agency, land use, and program areas. An integrated approach is required as well as providing the leadership in the field of forest health management that will lead to sustainable and healthy forests in Pennsylvania.

Strategies

1. Develop and implement integrated pest management strategies and plans, and provide management recommendations for significant forest damage causing agents. An emerald ash borer management plan will be developed in 2010-2011.
2. Detect, monitor, and evaluate forest pests and forest health conditions statewide and regionally using a permanent plot system and a pest event reporting system. Participating in the early detection and rapid response programs for invasive species is a part of this strategy.
3. Identify high-risk habitats threatened by invasive species using inventory and monitoring.
4. Implement invasive species management projects on DCNR managed lands and on private lands through the Forest Stewardship and Urban Forestry programs; and through cooperative agreements with county governments and municipalities.
5. Identify and conserve high priority eastern hemlock ecosystems and landscapes through the development of a conservation management plan for eastern hemlock.
6. Identify and utilize soil zones and data to prepare forest regeneration plans.
7. Improve on monitoring and reporting forest regeneration progress on public and private lands through integration of available datasets.
8. Develop an adaptive management framework for deer management and forest health management and provide and support basic scientific research regarding deer management and forest health issues.

Strategic Accomplishments (Forest Health-Forest Insects & Disease):

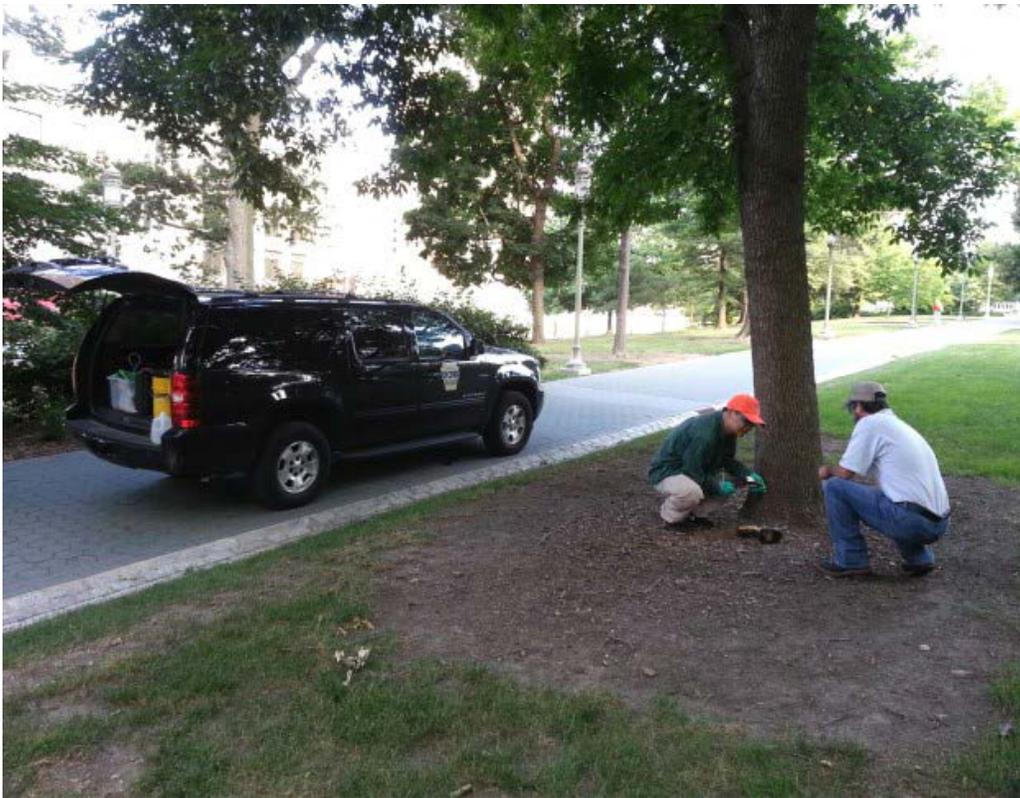
The strategic accomplishment directly relates to strategies in the forest action plan;

- Develop and implement integrated pest management strategies and plans, and provide management recommendations for significant forest damage causing agents. An emerald ash borer management plan will be developed in 2010-2011.

The bureau has developed emerald ash borer management and hemlock conservation plans.

Emerald Ash Borer Management Plan for Pennsylvania Communities

The purpose of this document is to provide information and guidelines for local communities (counties, cities, boroughs and towns/townships) in Pennsylvania to prepare for the negative economic, social and environmental impact of emerald ash borer on urban forests. While proper procedures and actions are recommended in general terms, each community should customize the template plan by selecting applicable options to address its own management goals. A template plan for the imaginary city of Ashville is included to illustrate the utilization of these guidelines and principles. Being proactive against this invasion will serve the community better and more efficiently.



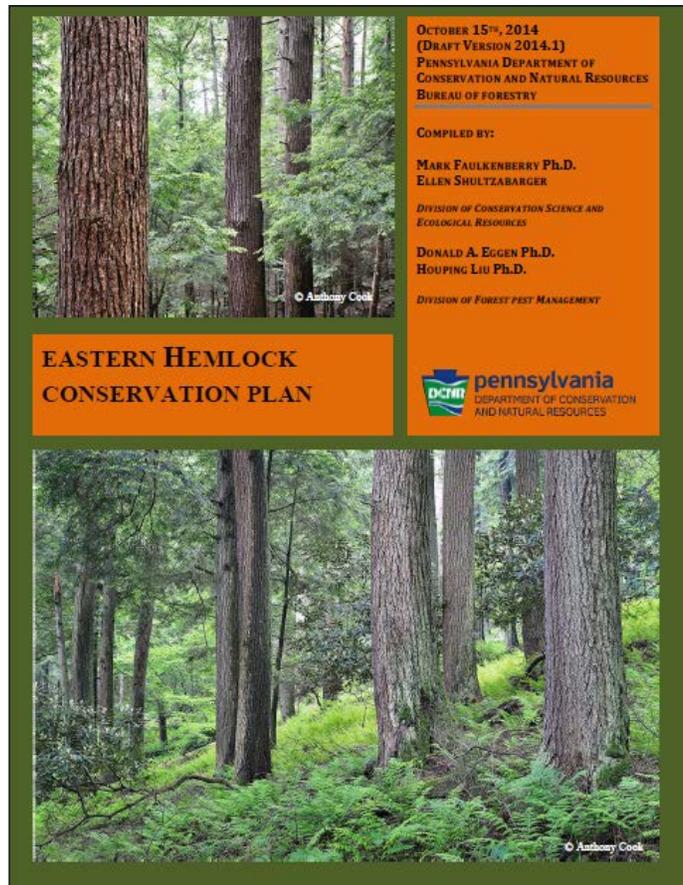
http://www.dcnr.state.pa.us/cs/groups/public/documents/document/dcnr_20028831.pdf

<http://www.dcnr.state.pa.us/forestry/insectsdisease/eab/index.htm>

Hemlock Conservation Plan

With its rich history in the state's economy and its importance in riparian ecosystems, it is fitting that eastern hemlock (*Tsuga canadensis*) is the state tree of Pennsylvania. In recent years, eastern hemlock has been threatened by a non-native insect, the hemlock woolly adelgid (*Adelges tsugae*). In an effort to conserve eastern hemlock in Pennsylvania the Bureau of Forestry has developed a conservation plan for the species.

The purpose of this plan is to provide a sustainable conservation strategy for eastern hemlock, integrating all available information regarding the species and its associated threats into a comprehensive and science based approach. The information provided is not solely meant for State Forests, and is equally applicable to public or private land. Although written for a broad audience, citations are provided throughout the document for those wishing to further explore any topics covered.



http://www.dcnr.state.pa.us/cs/groups/public/documents/document/dcnr_20030071.pdf

Strategy Narrative (Wildland Fire & Public Safety):

Issue Overview

Fire in wildlands introduces a dynamic that has far reaching impacts on both public safety and the health and viability of Pennsylvania's natural resources. The Bureau's authority and responsibility in protecting our residents and wildlands from wildfire is clear. Recent legislation has provided the opportunity to use fire as a tool where appropriate and necessary for natural resource benefit.

Although there may be tension at times between fire suppression and fire use, the Bureau's role is to understand the differences and "manage" fire in the best interest of the citizens of the Commonwealth.

Pennsylvania has a rich history of forest fire protection. Equipment development and technology has changed fire-fighting methodology in many ways. However, most of the elements of an effective wildland fire protection program are grounded upon basic and timeless principles.

In recent years, Pennsylvania has invested in building the capacity to reach beyond the state's borders to help neighbors across the nation. Although wildfire suppression has been the usual focus, staff experience and expertise has positioned the Bureau to help mitigate other natural and manmade disasters.

The following list of long-term strategies is an effort to clarify the complexity and range of activities concerned and to see each strategy in the context of the larger mission.

Strategies

1. Maintain capacity within the Bureau of Forestry to engage in safe and effective wildfire suppression activities.
2. Train and equip volunteer Forest Fire Wardens and volunteer fire departments for safe and effective wildfire.
3. Ensure the Bureau of Forestry is prepared to respond to all-risk incidents as needed.
4. Cooperate with other fire management agencies in the Commonwealth and the nation.
5. Provide for the Bureau-wide safe and effective operation of aircraft.
6. Engage in and support efforts that prevent unwanted fires in wildlands.
7. Ensure the safe use of prescribed fire in Pennsylvania and build capacity for its use as appropriate.

Strategic Accomplishments (Wildland Fire & Public Safety):

The strategic accomplishment directly relates to strategies in the forest action plan;

- Ensure the safe use of prescribed fire in Pennsylvania and build capacity for its use as appropriate.

Prescribed fire is an emergent tool that has use in a variety of plant communities to promote desirable species compositions and structure. The number of acres burned through prescribed fire on state forest land has increased in recent years. There is also a growing desire and interest to use prescribed fire to attain ecological land management goals. In addition to increasing acreage, the average size of prescribed fires has also increased. Most prescribed burning on state forest land has been used as part of silviculture systems to promote oak regeneration and reduce undesirable tree species competition in combination with regeneration harvests. Because of the success of these prescribed burns and research supporting its use in oak ecosystems, there is increasing interest in expanding the prescribed fire program on state forest land as a part of ecosystem management.

The bureau has incorporated prescribed fire as a forest management tool and has increased acreage burned with prescribed fires each year over the last 5 years. The bureau works with state and federal partners to successfully and safely use this tool, and has formed several valuable partnerships that we have been able to leverage to increase the amount of prescribed fires conducted over the past few years. In 2015, we were able to successfully complete 36 prescribed fires on DCNR land totaling slightly over 1,000 acres, including our largest single project to date of approximately 340 acres.

Year	Number of Prescribed Fires	Acres Burned, Prescribed Fires	Average Acres per Prescribed Fire
2010	12	186	14
2011	11	189	17
2012	10	208	21
2013	33	844	26
2014	22	357	16
2015 (as of Oct. 5)	36	1013	28



Prescribed Fire in Bald Eagle State Forest, Pennsylvania Bureau of Forestry, May 2014

Priority 3: Enhance Public Benefits from Trees & Forests

State Issue	Sub Issue	Long-term Strategy	Measure of Success
Climate Change	--	8. Maintenance and Expansion of Urban Tree Cover	Maintenance of existing urban tree cover; measureable increase in urban tree cover
Land use		4. Accelerate afforestation and reforestation through new and ongoing, state, federal, local and private programs	Number of trees

Strategy Narrative (Climate Change):

Issue Overview

Climate change is widely regarded as one of the greatest threats to the medium and long-term survival of the Earth's biodiversity. Projections reported by the Intergovernmental Panel on Climate Change (IPCC) suggest that as the global average temperature increase exceeds 3.5° Celsius, significant numbers of species (40-70%) could go extinct around the globe. Models using realistic assumptions about the output of greenhouse gases concur that much of North America will reach this threshold in just 50 years. While there are still many unknowns, climate change combined with other major stressors will have impacts on Pennsylvania's forests and in some cases is already affecting the structure and composition of our forestland in Pennsylvania.

Developing practical conservation measures that address existing stresses and improve forest resilience will provide the most effective approach to retaining healthy forest ecosystems in Pennsylvania while addressing climate change. Developing baseline information, identifying trends and gaining a better understanding of the impacts of climate change will help guide future management decisions to help natural systems adapt.

Strategies

- 1. Identify climate change impacts and prioritize research and survey efforts:** Consider both direct and indirect impacts of climate change; identify and execute research in partnership with other conservation organizations, and state and federal agencies to gain economy of scale and consider climate change as an additional "layer" of threats added to existing threats.
- 2. Promote resilience to climate change:** Evaluate and adapt as needed forest management practices to reduce or eliminate other stresses of forest resources (e.g., wild land fire, pest and pathogen outbreaks).
- 3. Identify species and resources vulnerable to climate change:** Identify and prioritize plant and wildlife species and other natural resources most vulnerable to climate change impacts. Identify survey, management, and monitoring needs for vulnerable species and resources.

4. **Plan for changes in forest composition:** Assess potential response of forest species and communities to climate change projections through scenario building, plan for the appearance and implications of novel communities/ecosystems and consider appropriate spatial and temporal scales including where species and habitats are likely to occur.
5. **Identify the range of conservation options:** Consider actions for a range of likely future climate conditions; identify/describe how conservation actions will be prioritized when considering multiple threats; identify actions that minimize, not necessarily eliminate climate change impacts; provide for plant and wildlife adaptation; and provide for resilience and/or facilitate movement to suitable habitats and conditions.
6. **Adapt monitoring programs:** Strive to adapt and streamline existing monitoring programs to inform management decisions under a changing climate; work with other states and partners to monitor species and habitats across their entire range.
7. **Coordinate with partners:** Coordinate and collaborate with partners since the scope, scale and uncertainty of climate change impacts will require a broad interdisciplinary approach that includes sharing data, strategies and expertise.
8. **Maintenance and Expansion of Urban Tree Cover:** Urban tree cover provides significant benefits to communities and will face challenges in the context of a changing climate. Projections of increased drought, shifting geographic species suitability, and a number of increased stressors, will challenge the ability to maintain and/or expand urban tree canopy cover.
9. **Educate the public:** Strive to improve understanding of the impacts to forest resources and gain public support for communication, mitigation and adaptation plans; involve conservation partners early during the public participation planning process. Reach out to landowners, communities and industry to educate them about the issue and to encourage them to implement BMPs and long-term forest sustainability practices.

Strategy Narrative (Land Use):

Issue Overview

The prognosis for forested lands conservation in Pennsylvania is stable but threatened. The Commonwealth is slowly losing net forested acreage, particularly in the rapidly developing southeast and the south-central Chesapeake Bay watershed, though somewhat offset by afforestation of agricultural lands. Because of increasing rates of agricultural land conversion, this loss rate is likely to accelerate in coming years if no new programs or funding are developed. Other factors influencing loss of high-value forestland include fragmentation from rights-of-way and energy development; continuous parcelization as private forestland owners turn over lands to the next generation; proliferation of plant and insect invasives; and economy-driven divestiture of forestlands, particularly by hard-hit farmers.

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Strategies

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3. Slow the present rate of forestland conversion by fostering state and local government cooperation and legislation.
4. Address forest fragmentation and conversion from inter-generational land transfers through outreach and education of individual private forestland owners.
5. Develop and promote approaches to conserving and revitalizing forest-dependent communities.
6. Accelerate afforestation and reforestation through new and ongoing state, federal, local and private programs.

Strategic Accomplishments (Climate Change & Land Use):

The strategic accomplishment directly relates to strategies in the forest action plan;

- **Maintenance and Expansion of Urban Tree Cover:** Urban tree cover provides significant benefits to communities and will face challenges in the context of a changing climate. Projections of increased drought, shifting geographic species suitability, and a number of increased stressors, will challenge the ability to maintain and/or expand urban tree canopy cover.
- Accelerate afforestation and reforestation through new and ongoing state, federal, local and private programs.

TreeVitalize

Tree-lined streets make communities look great, and they also clean the air, provide shade to cool buildings and paved areas, increase property values and help control stormwater. Responding to an alarming trend of the loss of trees in Pennsylvania's metropolitan areas, TreeVitalize was launched in 2004 in southeastern Pennsylvania. TreeVitalize is a public-private partnership to help restore tree cover, educate citizens about planting trees as an act of caring for our environment, and build capacity among local governments to understand, protect and restore their urban trees. In 2013, TreeVitalize became available to all counties. TreeVitalize has planted over 400,000 trees through the help of many partners and interested community volunteers. The program also trains citizens to become involved in tree care as Tree Tenders®, in which individuals complete a 7-hour workshop offered over a full day or over a period of weekly sessions. Instruction is provided through the Bureau of Forestry, Penn State Extension, Tree Pittsburgh, and the Pennsylvania Horticultural Society. Participants leave with a greater awareness of the importance of urban trees and with the tools to organize tree planting and maintenance projects in their own neighborhoods.



In addition to planting trees, canopy cover assessments were needed to work towards maintenance and expansion of urban tree cover. As planted trees mature, these initial assessments can be used to gauge change in urban tree cover and success of urban reforestation/afforestation programs. Tree canopy assessments use high resolution imagery to identify existing tree cover and potential planting sites and monitor threats to canopy/ecosystems for a community or region. These assessments offer the information and tools for setting tree canopy goals, prioritizing planting locations, and developing comprehensive tree management plans. Communities in Pennsylvania have used the data for acquiring tree planting grants, designing stormwater management plans, calculating ecosystem services of their urban forest, and planning for green infrastructure. Throughout the state, assessments have been completed, ranging from small communities to entire counties.

**Total Impact of the Program
(2004—2014)**

DCNR Grant \$ Awarded: \$5,241,608

Total Match \$ Raised: \$6,037,217

Trees Planted: 426,720

Tree Tenders Trained: 6,165