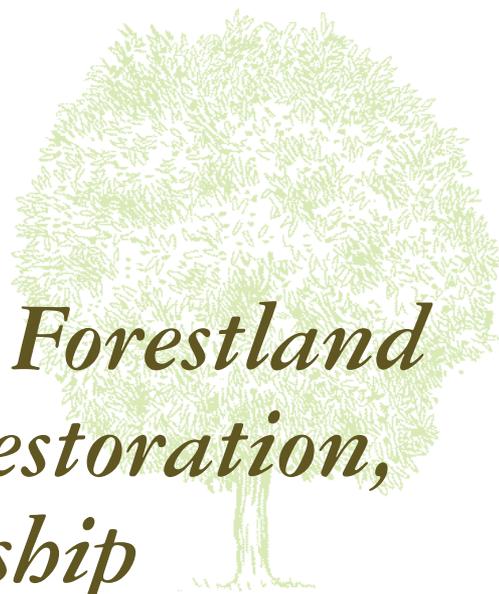


Chapter 8:

Strategies for Forestland Protection, Restoration, and Stewardship



The loss of healthy forests directly affects the forest landowners, communities, habitat, and economy of the Chesapeake Bay watershed. At stake is the long-term sustainability of Chesapeake forests as well as the ability to improve and sustain the future health of the Bay. But this and other trends need not continue unabated or unchanged. Choices made in the next decade have the potential to alter these trends and lead to a more sustainable future.

To meet the many “forces of change” altering the health of Chesapeake forests, a collection of potential goals and strategies is presented in this chapter to guide government agencies, regional environmental groups, and other organizations. Many of these protection, restoration, and stewardship strategies are still emerging and may require new funding sources, creative approaches, and diverse partnerships. They do not represent the only means to achieve each goal identified, but are real and innovative ways to sustain healthy forests. Perhaps most critical is realizing that no one strategy alone will ensure forest sustainability. A combination of approaches is needed to best protect forest habitats, drinking water sources, jobs and income, and public health.



GOALS AND STRATEGIES FOR SUSTAINABLE CHESAPEAKE FORESTS

GOAL	STRATEGY
<p>Retain and expand the Chesapeake’s exceptional forest resource</p>	<ol style="list-style-type: none"> 1. Protect the Chesapeake’s exceptional forest resource by identifying, conserving, and restoring forests that have high environmental, economic, and social value at a landscape scale. 2. Direct land use planning efforts to reduce the loss and fragmentation of forest resources in developing areas. 3. Lower the risk of forest loss due to parcelization by encouraging management on family-owned and other private forests. 4. Protect large tracts of forestland by enhancing the viability of the forest products industry.
<p>Improve and sustain the health and high diversity of Chesapeake forests</p>	<ol style="list-style-type: none"> 5. Sustain the naturally high diversity of Chesapeake forests by managing for a variety of habitats and balanced deer populations. 6. Protect Chesapeake forests from widespread damage by preventing new introductions of invasive plants, pests, and pathogens; curbing the sale of highly invasive species; and focusing control efforts on high priority forests.
<p>Manage forests to enhance ecological services and public health benefits</p>	<ol style="list-style-type: none"> 7. Recognize the public benefits of private forestland by compensating landowners with funding and other incentives to sustainably manage their forests to benefit the Bay watershed. 8. Make forest conservation and restoration a primary tool for improving stormwater management by accounting for the superior ability of forestland to remove pollutants, improve stream health, and moderate runoff. 9. Sustain the ability of forestland to improve water quality by restoring and managing forest cover in areas with high nitrogen air deposition rates. 10. Use tree canopies to protect public health by incorporating forest benefits in air quality attainment strategies. 11. Maximize watershed benefits by ensuring that forests buffer greater than 70% of riparian areas in a watershed through a combination of incentives and regulations. 12. Ensure a long-term drinking water supply and reduce treatment costs by protecting and restoring forests in high priority areas. 13. Expand existing urban tree canopy to enhance environmental benefits, public health, and quality of life by assessing tree cover, setting local goals or land use targets, and adopting implementation plans. 14. Bring ecological services into the market place by establishing forest mitigation and trading systems and a registry to facilitate transactions.
<p>Increase public appreciation of forest values and track their condition over time</p>	<ol style="list-style-type: none"> 15. Communicate the public’s dependency on forests for daily needs such as high quality drinking water, clean air, jobs, and recreational opportunities, and articulate the need for sustainable management. 16. Measure changes in the state of the Chesapeake’s forests through a set of condition indicators.



GOAL 1: RETAIN AND EXPAND THE CHESAPEAKE'S EXCEPTIONAL FOREST RESOURCE.

Strategy 1: Protect the Chesapeake's exceptional forest resource by identifying, conserving, and restoring forests that have high environmental, economic, and social value at a landscape scale.

The Chesapeake Bay watershed contains an expansive stretch of the highest quality hardwood forestland remaining in the temperate climates of the world. A landscape level approach is necessary to prioritize and protect forests for biodiversity, economics, water quality, public health, and quality of life. This is particularly important since funding for conservation is uncertain. A growing number of Chesapeake communities have developed landscape analyses to identify conservation priorities using tools such as green infrastructure and resource land assessments. In 2004, Talbot County, Maryland, developed a green infrastructure assessment in conjunction with a comprehensive plan update in order to help county planners preserve their natural resources, ensure the economic viability of working farms and forests, and orient development in a way that is compatible with the resources and character of the county.

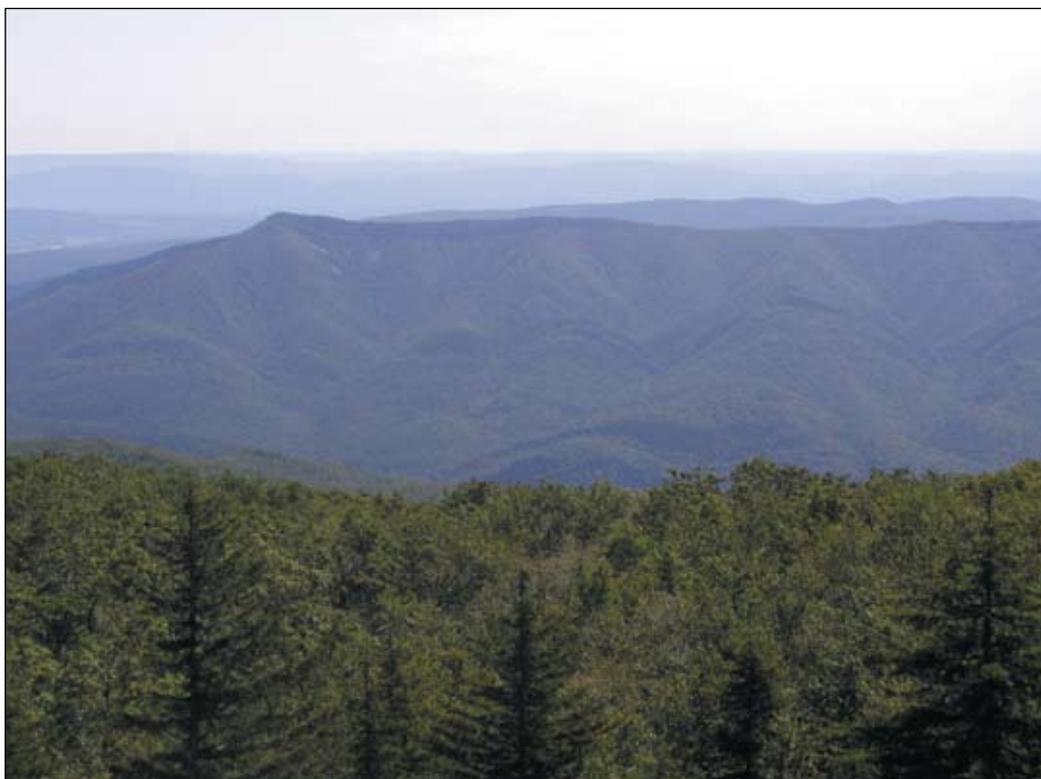


Photo: Ted Weber

Green infrastructure assessment and mapping efforts provide baseline conditions that can be tracked over time as a barometer of the local forest landscape and the related features they protect, such as streams, air quality, habitats, groundwater, and soils. Goals for future forest cover should be established for watersheds or jurisdictions based on desired ecosystem services and the geographic location of existing green infrastructure. Too often, forest conservation is not considered as an integral part of land use planning. Goal setting should be approached with a strong emphasis on science and quantitative methods that recognize the need to protect the functional role forests play in a specific landscape.

Forest conservation will never again be as cost-effective as it is today. State and local governments, land trusts, and other organizations have a significant opportunity to connect existing forests and restore high priority forests on marginal agricultural land and abandoned mine land in Pennsylvania, along with smaller areas in Maryland, West Virginia, and Virginia.¹

CHESAPEAKE BAY GREEN INFRASTRUCTURE ASSESSMENTS

The Chesapeake Bay Program completed a Resource Lands Assessment to identify the most important remaining forests and wetlands in the Bay watershed. The Resource Lands Assessment identifies conservation focus areas that help guide government, land trusts, and other organizations with forest protection efforts. For customizable data and other information, visit <http://www.chesapeakebay.net/land.htm>.

Through its Green Infrastructure program, The Conservation Fund works with the

public and private sector to promote protection, management, and resource planning activities that are proactive, holistic, multi-functional, and multi-scale. From GIS mapping and land acquisition to education and training, the Fund's Green Infrastructure program is a comprehensive initiative that helps advance strategic land conservation benefiting people, wildlife, and the economy. The Fund has developed plans and scoping assessments for communities and states across the Bay watershed. For more information, visit www.greeninfrastructure.net.



Strategy 2: Direct land use planning efforts to reduce the loss and fragmentation of forest resources in developing areas.

Sprawl or low density, automobile-dependent development is the main cause of forest loss and fragmentation in the Bay watershed. States, local governments, and individual citizens can assess how their land use plans are affecting forest loss and fragmentation. Regional and local land use plans rarely address the future extent of forests, but such plans are needed to direct new development to existing communities and away from high priority forestland. While development pressure may be most acute near metropolitan areas, even rural communities should have a plan that supports their vision, or the future will be decided for them. Compared to sprawl, managed growth can reduce the conversion of forests and wetlands by 26% in

Bay watershed states and save nearly 300,000 acres between 2000 and 2025.²

The conservation of forestland in the face of development is critical because of the high cost of restoration and difficulty of creating man-made systems to mimic natural processes like water filtration. Too often, open space protection plans are identified after the development of buildings and roads. Using zoning overlays or other techniques that are implemented at the time of land use change (from forest or farmland to development) can be powerful tools protect and restore green infrastructure.



Photo: Jennifer Curkendall

Strategy 3: Lower the risk of forest loss due to parcelization by encouraging management on family-owned and other private forests.

A big unknown for the future of Chesapeake forests is whether the nearly 15,000 families and individuals that own 64% of all forestland in the Bay watershed will sell their land or, alternatively, retain it and become better forest stewards. The owners of small parcels are not likely to manage their forests, and many do not even consider themselves forest landowners. Fewer than 20% of family forest owners have written management plans and only a third have sought professional advice.⁴ A well thought-out forest management plan helps landowners identify and recognize the value of their land and better predict the effects of any activities. The State of Maryland has estimated that 75% of privately owned forestland need management plans in order to have a stable, productive land base that sustains both the ecosystems and industries that depend on it.⁵ At a minimum most landowners need professional advice.

As the parcelization of Chesapeake forests continues, the risk of forest loss rises due to changing landowner objectives and decreasing economic opportunities for managing forests. Increasing the value landowners derive from their forests—either economic or aesthetic—through management could persuade more owners to hold on to their land instead of selling to developers or investment organizations. A program in the State of Wisconsin works with third parties like non-governmental organizations, local governments, and forest product companies to increase sustainable management on private lands by connecting landowners with

markets. Landowners can receive forestry services including plans, harvest assistance, and other plan implementation services such as tree planting at a lower cost than if they acted alone. The forest products industry can profit from easier access to small, private parcels, while environmental concerns can be addressed with less difficulty.

Cooperative management of nearby small forest parcels also can help to pool resources and mitigate some of the economic disincentives to management that small landowners face. Governments and other organizations could establish mechanisms and financial incentives that reduce barriers and encourage cooperative management of forest parcels.

States or university extension programs can also train interested landowners to demonstrate and encourage the development and use of management plans to their neighbors. Pennsylvania has had success with their Forest Stewards program that provides classroom and field training in forest ecology, biodiversity, silviculture, wildlife science, environmental resource management, and other subjects related to stewardship. In exchange, the volunteers agree to invest a like amount of their time relaying what they have learned to motivate forest landowners in their communities. Furthermore, marketing successful local examples of forest management on varying parcel sizes could be a powerful tool to show that management is a viable option.

MARYLAND'S FOREST CONSERVATION ACT

The State of Maryland's Forest Conservation Act provides for the conservation and restoration of trees during development projects. A forest conservation plan is required for any activity needing an application for a subdivision, grading permit, or sediment control on areas 40,000 square feet or greater. Between 1992 and 2002, Maryland forest conservation programs retained 65% of existing tree cover on development sites.³ This unique model can be modified for local considerations and serve as a valuable tool for protecting forestland in other Bay states as well.

Forest certification is another potential strategy for increasing sustainable forest management on family forests. Certification systems provide a “seal of approval” that serves as a marketing tool among consumers. The American Tree Farm system offers small landowners recognition for good practices and provides professional advice.⁶ This certification system also allows small forestland owners to enter into group certifications with surrounding landowners to help offset some of the associated administrative costs.

Tax benefits can also encourage the use of sustainable management. For example, additional property tax breaks could be given to landowners who have a management plan in place and implement its provisions. The benefits could be targeted in priority forest areas to maximize ecological services, promote healthy forest conditions, support timber production, and serve other purposes.

Strategy 4: Protect large tracts of forestland by enhancing the viability of the forest products industry.

The changing economics of the forest products industry has resulted in large transfers of forestland to investment organizations, developers, and other groups. These transfers greatly increase the risk that large areas of forestland will be developed for homes or other uses. A system of “forest economic resource areas” can be established by state and local governments in economic priority areas to protect the working land base and reduce operation costs. Forest economic resource areas can receive targeted incentives to increase use of low-value wood and biomass as well as bolster sawmills and other declining industry infrastructure and to protect working forests threatened by development. In these areas, support through designation of industries as a “growth industry” by state economic development agencies can bring additional investment.

States and local governments can also explore “right to practice forestry” legal protections to ensure that legitimate and sustainable forestry practices are not prohibited by local ordinances or regulations, especially in rural low-income communities vulnerable to development. The State of New York enacted “right to practice forestry” legislation in 2003 to promote sustainable forestry and appropriate forest management practices. Low-income rural counties that contain forests with high economic value include Garrett County, Maryland; Sullivan County, Pennsylvania; Nottoway County, Virginia; Buckingham County, Virginia; Prince Edward County, Virginia; and Somerset County, Maryland.^{7,8}

To protect the long-term economic and ecological value of forest economic resource areas, states and other organizations can encourage the certification of sustainable management on public forestland and partnerships with corporations and university extension programs to develop third party certification on private forestland.

Many new structures are being built as “green buildings” using standards set by the United States Green Building Council, called Leadership in Energy and Environmental Design (LEED). The certification system established by the Forest Stewardship Council is currently the only accepted system within the LEED standard and is an important demand driver for certified wood today. The Forest Stewardship Council system has been limited to large forest land holders who can afford the high cost of certification. Acceptance of other certification systems within the LEED system could provide greater demand for sustainable forestry.

Also, past land use and management have created large areas of forestland that are overcrowded with small-diameter trees that are not traditionally valuable to the forest products industry. Establishing commercial markets for these trees can help bolster local economies while improving forest health. Low quality hardwoods and other biomass present an opportunity for a cleaner and renewable fuel source as oil and gas prices rise. Non-timber products such as berries, mushrooms, and ginseng also provide opportunities to provide income to some forest landowners.

FOREST CERTIFICATION IN PENNSYLVANIA

Forest certification is an independent scientific review process that determines whether a forest is being managed in an environmentally responsible manner while considering timber resource sustainability, forest ecosystem maintenance, and financial and socioeconomic factors. The Forest Stewardship Council, American Tree Farm, and Sustainable Forestry Initiative are prominent third-party certification systems in the United States. Pennsylvania’s 2.1 million acres of state forestland is the largest tract of forest in North America to be certified by the Forest Stewardship Council.⁹ Other Chesapeake states can follow Pennsylvania’s example to ensure sustainable management on all state lands. For more information, visit <http://www.dcnr.state.pa.us/forestry/certification.aspx>



Photo: Broderbund



GOAL 2: IMPROVE AND SUSTAIN THE HEALTH AND HIGH DIVERSITY OF CHESAPEAKE FORESTS.

Strategy 5: Sustain the naturally high diversity of Chesapeake forests by managing for a variety of habitats and balanced deer populations.

To sustain the naturally high diversity of Chesapeake forests, more active forest management is necessary. Building on the conservation priorities identified in landscape assessments, a network of “protection forests” can be established to specifically identify lands for habitat enhancement, protection, or other specific management strategies. This system could consist of existing public lands and other forests that are managed to promote a variety of forest ecosystems, such as late-

successional native forests, and to protect unique forest ecosystems and rare species.

Healthy forests include uneven stand ages, layered canopies, downed woody debris, and other characteristics that greatly improve forest habitat. Management options can include allowing or mimicking natural disturbances, establishing and managing landscape corridors, and controlling invasive plants and pests and human activities. Active

management of larger “protection forests” would maximize the ability of forestland to withstand extreme storms or other disturbances while also maintaining breeding habitat for species that require protection from the effects of forest edges. Smaller areas would be appropriate in developed or agricultural landscapes and serve as refuges for migrating birds, pollutant filters for streams, and parks for local communities.

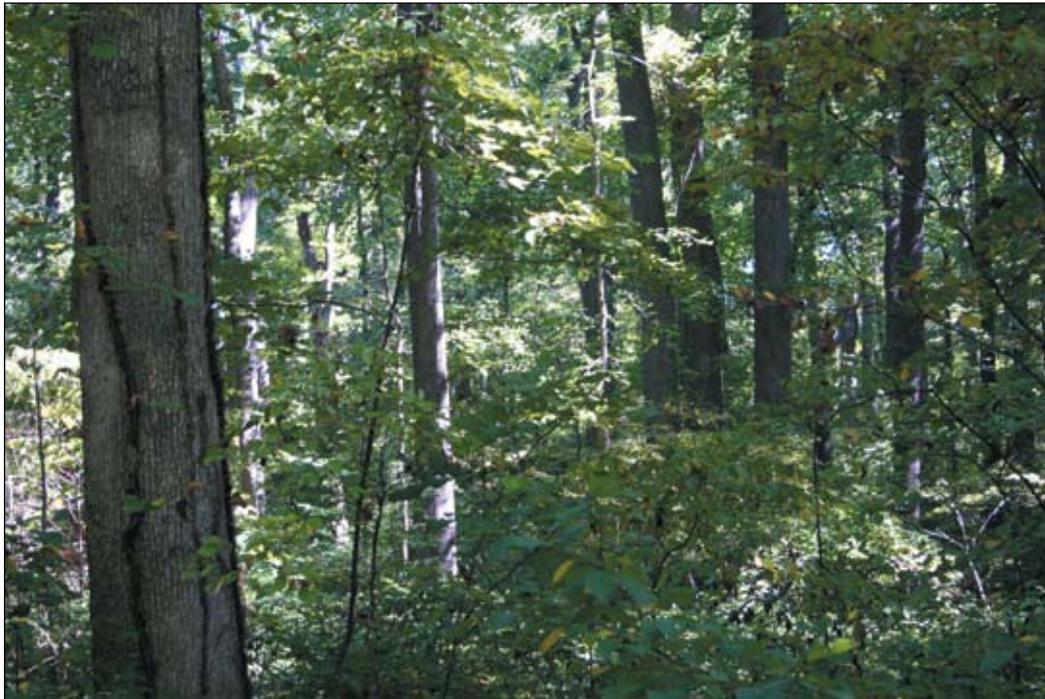


Photo: Eric Sprague

In many areas of the Bay watershed, particularly in Pennsylvania, browsing by overabundant deer populations is destroying tree seedlings, shrubs, and wildflowers. An adaptive management approach should experiment with varying techniques to lowering deer populations. Hunting currently appears to be the only practical solution to managing deer. In addition to increasing harvest limits, geographically targeted hunts such as “Harvest for the Hungry” or those implemented for water supply protection are options. Control via contraception has proven both ineffective and costly. In addition, venison from deer that have been exposed to contraceptives is not approved for human consumption. Trap and transfer methods have been unsuccessful because deer frequently do not survive the traps, and other communities do not necessarily want more deer.¹¹

Strategy 6: Protect Chesapeake forests from widespread damage by preventing new introductions of invasive plants, pests, and pathogens; curbing the sale of highly invasive species; and focusing control efforts on high priority forests.

Without more effective restrictions or preventative measures, exotic forest pests and associated diseases will continue to alter forest conditions in the Bay watershed. Preventing entry is paramount: once exotic pests establish populations in the United States, it is nearly impossible to eradicate them because they reproduce rapidly, disperse easily, and lack natural predators. Governments can control particularly egregious pests by prioritizing threats and likely points of entry. To be most effective, organizations can target eradication efforts towards forests with high habitat and water quality value. It is also important

to establish emergency response plans to control newly discovered or persistent threats that present significant danger to forest ecosystems.

Tree and plant nurseries have unique opportunities to educate homeowners about the invasive plants threatening forest health and regrowth. Therefore, working with nurseries to slow the use of aggressive invasive plants in gardens and landscaping across the Bay watershed can be an effective strategy. Nurseries should phase out the sale of invasive forest plants.



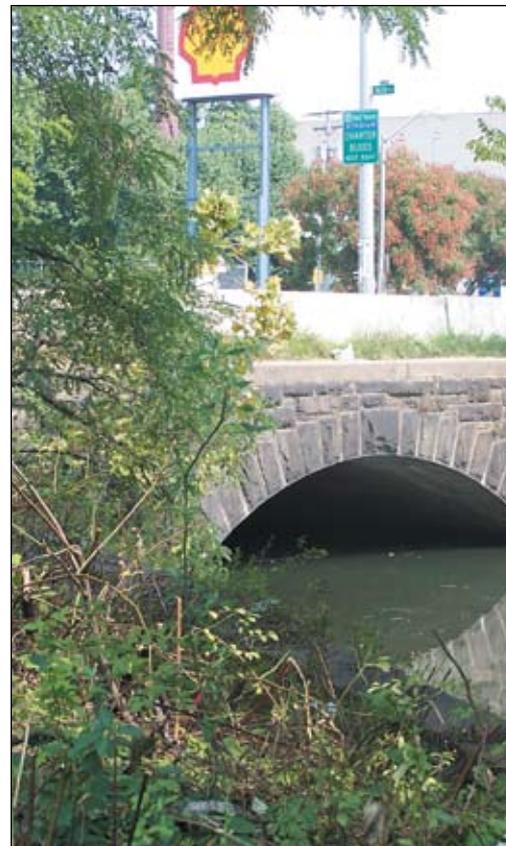
GOAL 3: MANAGE FORESTS TO ENHANCE ECOLOGICAL SERVICES AND PUBLIC HEALTH BENEFITS.

Strategy 7: Recognize the public benefits of private forestland by compensating landowners with funding and other incentives to sustainably manage their forests to benefit the Bay watershed.

Despite the multiple economic, societal, and ecological benefits that private forestland owners provide the rest of the Bay watershed and its residents, adequate incentives to manage forests for the greatest good do not exist. Governments can provide funding and other incentives to offset the cost of developing, maintaining, and acting on management plans. Incentives could be tied to the type and amount of management as well as forest location to maximize investments and efficiently distribute scarce resources. Incentives to forest landowners could be commiserate to that of agriculture.

Strategy 8: Make forest conservation and restoration a primary tool for improving stormwater management by accounting for the superior ability of forestland to remove pollutants, improve stream health, and moderate runoff.

As required by the Clean Water Act, local governments with populations between 50,000 and 100,000 must submit a stormwater management plan in order to receive state permission to discharge stormwater. These communities (known as MS4s) can incorporate forest conservation and restoration as an attainment strategy for controlling stormwater especially during construction projects. Forests and tree canopies provide an efficient and cost-effective way to control a portion of stormwater runoff, but do not receive any credit in current accounting systems.



VIRGINIA'S CONSERVATION TAX CREDIT POOL

Every Virginia landowner who donates land or an easement for conservation has been entitled to a state income tax credit equal to 50% of the value of the donation. In some cases, donors did not pay enough state income tax to get the full benefit of the tax credit. For land-rich families not in high tax brackets the credit was not very helpful. Virginia has improved the program by allowing easement donors to sell their credits to another taxpayer thus increasing their return on the land donation. The Conservation Credit Pool, LLC helps carry out the transfer of credits from conservation donors to high-income taxpayers who can use the state income tax credits and want to help conserve land.¹²

Strategy 9: Sustain the ability of forestland to improve water quality by restoring and managing forest cover in areas with high nitrogen air deposition rates.

Forest conservation, restoration, and management all have great potential to influence the future health of the Bay. The retention of existing forests, the expansion of forests in critical areas, and the management of forests to improve their growth and nitrogen absorption is an essential part of nutrient reduction strategies for the Bay. Forest restoration would be particularly effective in regions of the Bay watershed that receive high rates of nitrogen deposition from the air, such as Maryland, Pennsylvania, and New York. Integration of forestry practices in nutrient trading schemes is a promising approach.

Strategy 10: Use tree canopies to protect public health by incorporating forest benefits in air quality attainment strategies.

Forty-four percent of Bay watershed residents live in counties that are violating federal air quality standards for ozone and fine particulate matter that is 2.5 micrometers or smaller.¹³ The American Lung Association has graded air quality for 64% of Bay watershed residents with a D or F.¹⁴ Increasing urban tree canopy cover in these regions can improve air quality and public health for people in the Bay watershed.

Currently, states can use tree canopy restoration and conservation as a credit under “Emerging and Voluntary Measures” with State Implementation Plans (SIPs) of the Clean Air Act.¹⁵ In the future, urban tree canopies (or urban forests) could be fully accredited in SIPs.

Strategy 11: Maximize watershed benefits by ensuring that forests buffer greater than 70% of riparian areas in a watershed through a combination of incentives and regulations.

Establishing riparian buffers is one of the most cost-effective techniques to reducing pollution to streams. However, more than 7 out of 10 subwatersheds in the Bay watershed have less than 70% stream buffer coverage—the desired threshold to maximize good water quality. The primary program supporting riparian buffer projects, the Conservation Reserve Enhancement Program, will not support even half of the more than 30,000 additional miles as outlined by the Chesapeake Bay Program. To increase the coverage of riparian buffers, private landowners must have access to more technical assistance from states and other organizations.

Incentives and assistance can be targeted to watersheds with the highest potential to remove nutrients. In addition, the cost efficiency of establishing new riparian buffers can be improved through improving site preparation and planting techniques and regional coordination of plant material production, acquisition, and planting. Because of the importance of riparian buffers to water quality, local governments should encourage the use of regulations requiring the planting and conservation of forest buffers during construction projects. To ensure a net gain in buffers, states can develop a tracking system to identify the rate of riparian forest buffer loss in the Bay watershed.



Photo: USDA Forest Service

Strategy 12: Ensure a long-term drinking water supply and reduce treatment costs by protecting and restoring forests in high priority areas.

Forest conservation, restoration, and management in high priority areas can be a valuable tool for protecting drinking water supplies from increasing development pressure. The need to integrate source water protection in local growth management strategies by municipal, county, and regional planning authorities is critical and, in some places, urgent.

Chesapeake communities can reduce the need for costly water treatment infrastructure by conserving and managing watershed forestland for drinking water protection. A recent U.S. Environmental Protection Agency report forecasted a need for capital spending of more than \$150 billion over the next 20 years to ensure the continued provision of safe drinking water.¹⁶ The majority of this estimate was derived from the need to build water treatment, storage, and distribution infrastructure.

Water suppliers and treatment facilities can often lower costs by increasing the amount of forest in watersheds that supply drinking water and through improved management of forests for water quality protection. Organizations could educate water suppliers on the benefits of private forest conservation and encourage the use of incentives to enhance management on private forestland.

Developing specific technical information and providing education, training, and technical tools to foresters will help ensure that water resource protection is a primary objective for forestry professions, particularly in watersheds that supply drinking water. Upgrading professional forestry knowledge demands increased communication and partnerships between foresters, water supply providers, public agencies, and private sector firms.

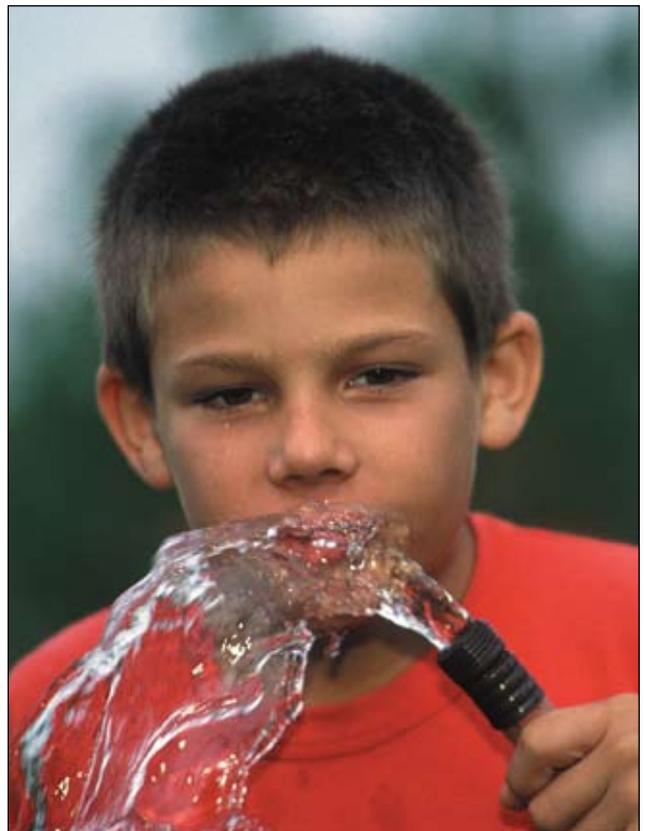


Photo: Charlie Rahm

Strategy 13: Expand existing urban tree canopies to enhance environmental benefits, public health, and quality of life by assessing tree cover, setting local goals, and adopting implementation plans.

Local governments can ensure the continued provision of urban forest benefits by using a combination of regulations and incentives to limit tree removal, protect significant trees, and reforest open land. American Forests recommends a minimum 40% tree cover for most metropolitan areas in the eastern United States. The average urban tree canopy coverage for the Bay watershed is 35%. Goals should take into consideration current forest cover, current and planned development patterns and regulations, and resources available for restoration efforts. Once goals are established, they should be tested against environmental quality to see if the goals are properly set. If not, they should be adjusted to meet or exceed regulations for clean air and water. Urban tree planting can be focused in areas that have the largest potential to

improve local conditions. Priority planting sites can be identified using variables such as population density, tree cover per capita, and air quality.

To protect and improve urban tree canopies, communities can consider establishing an urban forest public utility. The utility would allow for assessing fees on businesses and residents based on the value of the public health, safety, and quality of life benefits provided by city trees. Funding could then be used to plan, manage, and enhance the canopy cover of public right-of-ways, parks, urban residential properties, and institutional and city-owned land. User fees, urban tree banks, incorporation of green credits in stormwater fees, and other in-lieu fee payments also offer potential funding sources.

Strategy 14: Bring ecological services into the marketplace by establishing forest mitigation and trading systems and a registry to facilitate transactions.

Forests provide numerous ecological services or ecoservices that watershed residents depend on for daily needs such as water filtration, flood protection, and temperature moderation. When forests are lost to other land uses, so too are the services they provide, forcing communities to spend large sums of money to mimic the original forest functions. A number of these goods, such as food and wood fiber, are bought and sold, but many ecoservices are viewed as free to the public. Lacking a formal market, these natural assets are traditionally absent from society's balance sheet; as a result, their critical contributions are too often ignored by public, corporate, and individual decision makers. For example, Chesapeake forests accounted for 11% of the carbon dioxide storage in the entire United States in the 1990s on just 3% of the land base.² However, there is no functioning market to account for this ecoservice and, therefore, the majority of forests in the Bay watershed are not currently being managed to mitigate climate change.

Governments and other organizations can help incorporate ecoservices in land use decisions that impact forests by developing markets

that allow forestland owners to seek returns on their land in addition to those associated with traditional forest products. Using a combination of regulations and incentives, a forest mitigation and trading system could be formed to encourage businesses that must disrupt ecological services at one site (such as during land development) by investing in comparable forest services at another location. Businesses that restore more forestland than required could sell or trade these unused "credits" to other corporations to gain revenue. To encourage the restoration of high priority forests, the trading value of credits could be tied to the ecological value of the forest.

Fulfilling requirements to mitigate forest losses through on-site or off-site restoration or management efforts is often problematic due to the difficulties of finding suitable sites. A forest registry can be developed to address this issue. The registry would contain a list of property owners that are interested in managing forests for ecological and other services. Businesses could then invest in management plans, restoration, or other activities that increase the ecological

REGIONAL GREENHOUSE GAS INITIATIVE

In 2006, the governor of Maryland signed legislation that requires the state to consider joining New York, Delaware, and northeastern states in the Regional Greenhouse Gas Initiative. The Regional Greenhouse Gas Initiative is a cooperative effort between Northeast and Mid-Atlantic states to develop cap-and-trade and emissions trading systems to lower regional carbon dioxide emissions and their contribution to global climate change at the lowest possible cost. From the start of the initiative in 2009 through the beginning of 2015, emissions will be held at current levels. By 2018, the partner states aim to reduce carbon dioxide emissions by 10%.¹⁷ This offers a significant opportunity to bring ecological services into the marketplace and expand forestland across the Bay watershed. The initiative has a provision for obtaining mitigation credit for carbon sequestration attained by reforestation, and efforts are underway to include urban tree canopies as well.

value of the property. A forest registry can also be used to facilitate developing carbon and biodiversity credit trading programs. It also has potential to serve as a marketing tool for private forestland owners that offer fee-based recreational opportunities like hunting or wildlife viewing. If landowners are receiving income from their forest, they may be less inclined to sell to developers or other organizations.



Photo: Jeff Vanuga



GOAL 4: INCREASE PUBLIC APPRECIATION OF FOREST VALUES AND TRACK THEIR CONDITION OVER TIME.

Strategy 15: Communicate the public's dependency on forests for daily needs such as high quality drinking water, clean air, jobs, and recreational opportunities, and articulate the need for sustainable management.

While forest cover dramatically increased over the past century, the capacity of forests to provide the economic, social, and environmental benefits that Bay watershed residents depend on declined. Increases in population and consumption of forest services like water, wood, and recreation outpaced the impressive growth of forests. As a result, the area of forest per person declined by 40%. Additionally, many people have become disconnected from forests and are unaware of the importance forests play in their everyday lives. Fewer than 40% of Americans know what a watershed is, much less the role of the forestland in protecting the water they drink.

Organizations can develop a marketing campaign using television, radio, public transportation advertisements, and other outlets to increase awareness about public dependency on forest benefits and the importance of sustainable forest management. Furthermore, state departments of education should integrate environmental education with a local focus into primary and secondary curriculums. Without a full understanding of the economic, social, and environmental value of forestland, current and future voters are less likely to support stable sources of funding for forest protection that is on par with other local investments like transportation and telecommunication.

The real estate industry and homeowners associations can be key allies in the communication of tree and forest benefits to those purchasing homes and businesses since trees are important to the value of many properties. Communities with economically important forestland could extend outreach to new homeowners, explaining the types

of forest industry activities may take place, how those activities can help improve forest health, and the importance of forestry to the local quality of life. Also, state demonstration forests across the Bay watershed could be used to educate various audiences on the need for sustainable management and techniques that do not affect a local sense of place.



Photo: Keith Weller

Strategy 16: Measure changes in the state of the Chesapeake's forests through a set of condition indicators.

For forest conservation and restoration programs to ultimately succeed, they must be flexible enough to adapt to changing threats, successes, and other future conditions. Establishing a set of environmental indicators that provide an on-going report card of trends in forest conditions and progress in addressing them is a critical component in protecting and restoring Chesapeake forests. The Montreal Process (www.fs.fed.us/research/sustain) provides one set of consistent indicators that the United States and numerous communities have adapted for local use. Potential indicators have been highlighted at the end of each chapter.