

Carl E. Garrison III  
State Forester



# COMMONWEALTH of VIRGINIA

## DEPARTMENT OF FORESTRY

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January 31, 2011

The Honorable Robert F. McDonnell  
Governor of Virginia

Members, Virginia General Assembly

Pursuant to §10.1-1119, the State Forester shall develop an "annual report on the actions, conclusions and recommendations for conserving the Commonwealth's forest supply."

It is my pleasure to present the 2010 Annual Report on the Actions, Conclusions and Recommendations for Conserving the Commonwealth's Forest Supply.

Please feel free to let me know if you have any questions or if I may provide any further information to this regard. You may also contact my associate, John Campbell, director of public information, at [john.campbell@dof.virginia.gov](mailto:john.campbell@dof.virginia.gov) or (434) 220-9070.

Sincerely,

Handwritten signature of Carl E. Garrison III.

Carl E. Garrison III  
State Forester



# 2010 STATE OF THE FOREST



ANNUAL REPORT  
ON VIRGINIA'S FORESTS

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# FROM THE STATE FORESTER

As you read through the 2010 State of the Forest report, don't be concerned if you find yourself thinking that you're in an amusement park instead of reading about forestry's \$27.5 Billion impact in the Commonwealth. You see, with all the highs and lows and the twists and turns you will be reading about in the next few pages, you would be right to feel as if you are on a roller coaster ride that just won't end! Yes, Fiscal Year 2010 had its fair share of ups and downs.

While the state budget (and the national economy) continues to present us with many challenges, it hasn't stopped us from protecting the public; providing services to landowners, and working with private enterprises to create and maintain jobs while developing new markets for Virginia's forest products. It's certainly made it more difficult operationally, but our employees continue to perform at a high level so that no citizen is unprotected or left un-served.

In our public safety role, we protected 1,345 homes and other structures -- valued at more than \$136 Million -- from the ravages of 635 wildfires that burned 5,071 acres of land during this fiscal year. [Note: the record snowfall and soaking rains we had between December 2009 and May 2010 cut in half the average number of wildfires (1,200) and acreage burned (11,600).]

To ensure the quality of Virginia's waters, we inspected 4,828 timber harvest sites on more than 173,600 acres. Overall best management practices compliance was at 82.4 percent, and 97.1 percent of the sites inspected had no active sedimentation present following close-out of the harvest operation.

We added two State Forests (Moore's Creek and Big Woods) and more than doubled the size of another (Dragon Run). And we ensured the conservation of 13,304 acres of forestland through permanent easement agreements with a number of private landowners.

Other successes included the preparation of forest management plans on more than 142,000 acres and the implementation of more than 3,000 management practices that will help build healthy, valuable and productive forests across Virginia. Our partnerships with private companies, non-governmental organizations and other government agencies continue to grow so that the citizens of the Commonwealth receive top-notch products and services. And we relocated our Eastern Region office from Tappahannock to Providence Forge in New Kent County.

The forest health arena is one full of twists and turns. While traditional pests, such as gypsy moth and southern pine beetle, have been on the wane, several new ones -- emerald ash borer and thousand cankers disease -- are threatening the state's ash and black walnut trees, respectively. And these new pests have the potential to cost the Commonwealth hundreds of millions of dollars if they decimate those tree species. We will continue to monitor the situation and do all that we can to lessen the impact of these invasive pests.

To learn more about all that's happening within the more than 15.7 million acres of Virginia's forestland, I invite you to read on.

Sincerely,



Carl E. Garrison III  
State Forester

## VDOF COMPLETES COMPREHENSIVE ASSESSMENT AND STRATEGIC PLAN

One of the most significant and far-reaching projects undertaken this year was the development of the State Assessment and the associated Strategic Plan. Mandated by the 2008 Farm Bill, we conducted a comprehensive examination of the Commonwealth's forest resources and were able to identify the potential threats to those resources. This collaborative process engaged more than 400 citizens who represented more than 50 groups and organizations across the state.

The State Assessment identified three important changes facing forestry; eight current and potential threats, as well as five multi-state and 10 Virginia-specific issues that demand our attention. To address these changes, threats and issues, VDOF developed a Strategic Plan that will help mitigate projected losses and bolster areas of opportunity delineated in the State Assessment. To learn more about the State Assessment and the Strategic Plan, go to [www.dof.virginia.gov](http://www.dof.virginia.gov).

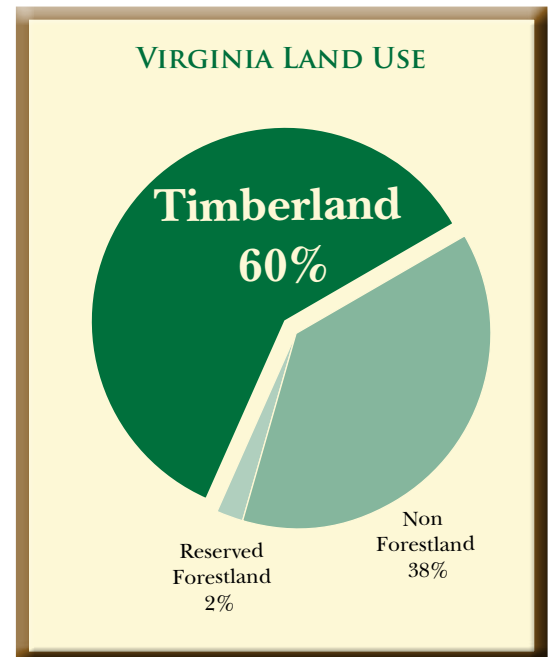
# VIRGINIA FOREST TRENDS

Information from nearly 5,000 plots measured during the past five years was analyzed and summarized by the USDA Forest Service and posted to the Internet in April 2009. In June 2010, Virginia Department of Forestry staff completed the third panel of the ninth inventory of Virginia's forest resources.

## FORESTED LAND

In 2008, more than 15.7 million acres – more than 62 percent of the Commonwealth – qualified as forestland. Of this forestland, 15.2 million acres are categorized as commercial timberland and 500,000 acres are categorized as reserved forestland. With an average plot re-measurement period of five years, the net loss of forestland was 27,000 acres per year, up from 20,000 acres per year during the seventh survey period. This translates to a rate of **one acre lost every 20 minutes**. If the long-term trend continues, Virginia could lose one million acres of forest within the next 25 years.

Interestingly, the loss of forestland to other land uses is dynamic – other land uses are reverting back to forestland simultaneously. During the 2001 to 2007 period, for every four acres diverted to non-forestland uses, three acres reverted back to forest within the state. The coastal plain experienced the highest ratio of diversions to reversions with almost two acres of forestland cleared for each acre reverted.



LAND-USE CHANGES 2001-2007  
(ACRES)

Region	Diversions from Forestland	Reversions to Forestland	Ratio
Coastal Plain	107,334	64,238	0.60
Southern Piedmont	86,164	76,381	0.89
Northern Piedmont	107,200	82,792	0.77
Northern Mountains	74,739	52,849	0.71
Southern Mountains	109,529	78,122	0.71
<b>Statewide</b>	<b>484,965</b>	<b>354,381</b>	<b>0.73</b>

## GLOSSARY OF FOREST INVENTORY TERMS

**Forestland** – Land at least 10 percent stocked by forest trees of any size, or formerly having such tree cover, and not currently developed for non-forest use. The minimum area considered for classification is one acre. Forested strips must be at least 120 feet wide.

**Timberland** – Forestland capable of producing 20 cubic feet of industrial wood per acre annually and not withdrawn from timber utilization.

**Reserved Forestland** – Forestland withdrawn from timber utilization by legislation or statute, e.g. National Park lands or designated Wilderness Areas.

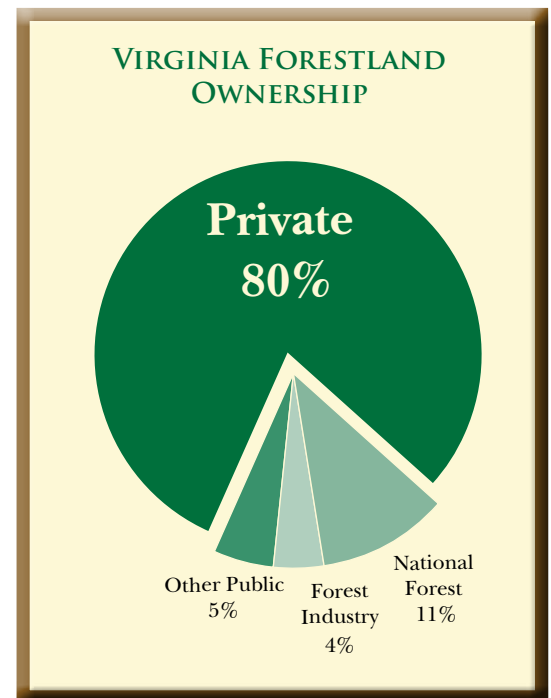
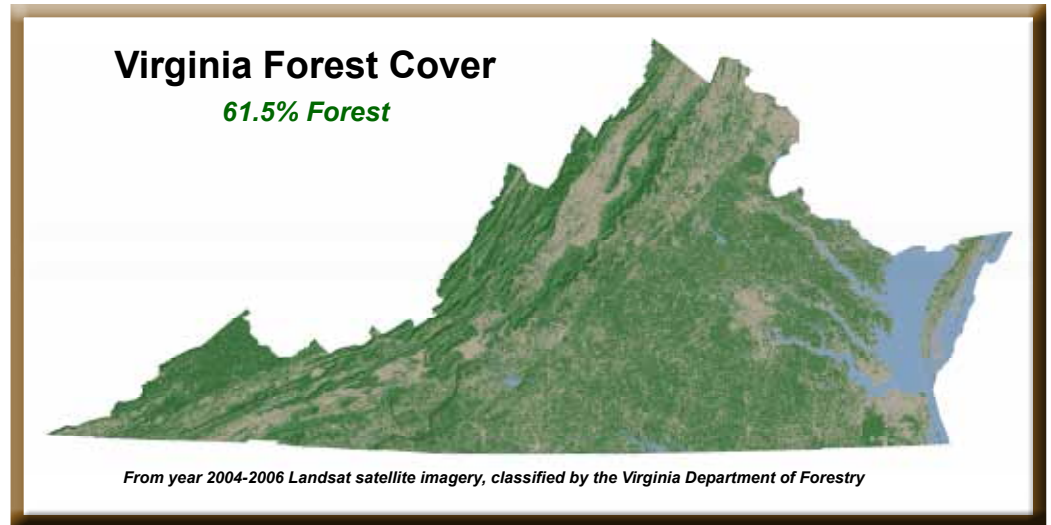
## FOREST OWNERSHIP

Most of Virginia's forestland (more than 12.9 million acres) is privately owned. More than 373,600 individuals and families hold a total of 10.1 million acres. These private holdings average less than 75 acres in size, but range from a few acres to thousands of acres.

By 2007, ownership of forestland by forest products firms had declined to less than four percent of the total (550,000 acres). This is a reduction from seven percent in 2001 and 11 percent in 1992. Timber investment management organizations (TIMOs) and real estate investment trusts (REITs) account for more than 300,000 acres of forestland divested by forest industry. These two categories of owners continue professional forest management on the properties in their holdings. However, the long-term trend is likely further subdivision and development of these lands.

The balance of Virginia's forestlands (16 percent) is owned by federal, state and local governments – the largest entity being the USDA Forest Service National Forest lands at 1.6 million acres.

The Virginia Department of Forestry – through its 21 state forests – holds 67,781 acres of forestland.



up more than 12 million acres of the Commonwealth's forest – more than 78 percent. The area of hardwood forest types has increased steadily since the first forest inventory in 1940, when 8.1 million acres existed. The hardwood forests of Virginia are maturing, with more than 6.6 million acres in stands 60 years old or older.

Concerns do exist with the hardwood resource. While five upland oak species are among the top 10 tree species for

## FOREST SUSTAINABILITY

When we address the issue of whether Virginia's private and public forests are healthy and are being managed sustainably, we can look at several indicators. One of these is the ratio of the net growth versus the removal of forest volume, due to harvesting and land conversion. A ratio of 1.00 or greater is an indication that more volume of timber is being grown than is being harvested or removed. A ratio less than 1.00 indicates inadequate growth for sustainability of the resource. Conditions can exist that cause a short-term ratio less than 1.00. For example, an event, such as a hurricane or insect outbreak, can cause a temporary spike in tree mortality, while there often is a concurrent increase in harvesting to salvage these dead trees.

The latest available forest inventory data indicate a net growth to removal ratio of 1.50 for hardwoods statewide. In other words, for every unit of hardwood removed, 1.50 units have grown to replace it. For softwoods (pine), the ratio is also positive: 1.12 statewide.

However, there are areas of Southside Virginia where the ratio for softwood has fallen below 1.00. Possible causes of this shortfall could be increased harvesting rates, due to recent transfer of ownership of a significant number of property parcels.

In terms of composition, the forests of Virginia continue to display good diversity. Hardwood and hardwood-pine forest types make

### NET GROWTH TO REMOVALS RATIO FOR VIRGINIA AND PHYSIOGRAPHIC UNITS

Area	Total	Softwood Only	Hardwood Only
Virginia	1.33	1.12	1.50
Coastal Plain	1.08	1.07	1.10
Southern Piedmont	1.31	1.10	1.54
Northern Piedmont	1.43	1.13	1.55
Southern Mountains	1.64	0.78 *	1.85
Northern Mountains	1.93	5.23 *	1.65

\* *Softwood Only figures in Southern and Northern Mountains have a relatively high sampling error due to the small sample size.*

*Ratio = Net Growth/Removals*

*Net Growth = Gross Growth - Mortality*

total volume in the state, only two – white oak and chestnut oak – occupy a top 10 position for number of individual trees. The exclusion of fire and presence of high-grading are significant factors in limiting oak regeneration. In its place, shade-tolerant regeneration – such as red maple and blackgum – is becoming more prevalent.

Pine forests represent approximately 3 million acres (more than 20 percent) of Virginia's forestland. This is a decline from the 6.2 million acres of pine found during

the 1940 inventory. Pine plantations now constitute more than 50 percent of the pine acreage. Plantations help offset the loss of natural pine acreage, due to their higher productivity when intensively managed. These productivity increases should continue in the future with the use of genetically improved seedlings from the Virginia Department of Forestry nurseries.

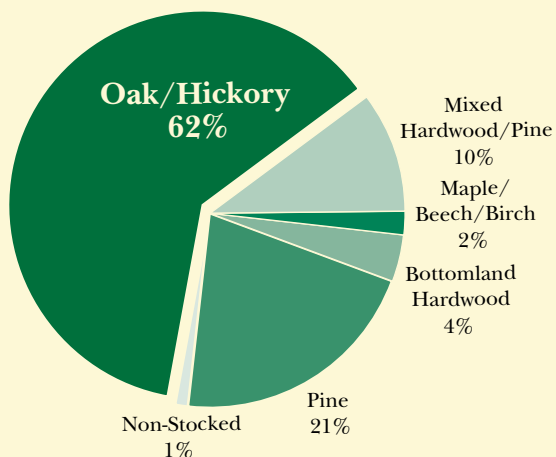
A number of tree species have suffered significant decline over the latest inventory period: table-mountain pine, pitch pine and shortleaf pine – due to southern pine beetle infestation, and eastern hemlock – due to hemlock woolly adelgid infestation.

In terms of overall volume harvested annually from Virginia’s forest resources, Virginia ranks 6<sup>th</sup> in the nation (behind GA, AL, NC, AR and SC). For softwood only production, we are 7<sup>th</sup> in the nation; while for hardwood only production, we are 2<sup>nd</sup> in the nation (behind NC).

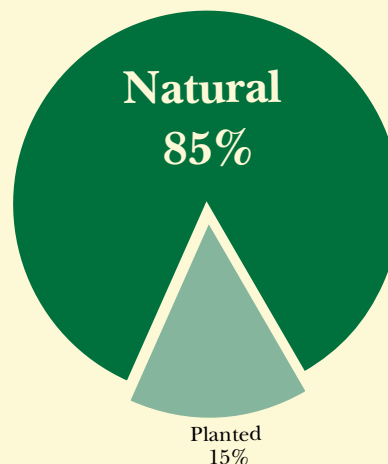
### TEN MOST COMMON TREE SPECIES IN VIRGINIA

Rank	By Total Volume	By Number of Trees
1	Yellow-Poplar	Red Maple
2	Loblolly Pine	Loblolly Pine
3	Chestnut Oak	Yellow-Poplar
4	White Oak	Sweetgum
5	Red Maple	Blackgum
6	Northern Red Oak	Virginia Pine
7	Virginia Pine	American Holly
8	Sweetgum	White Oak
9	Scarlet Oak	Chestnut Oak
10	Black Oak	Flowering Dogwood

### VIRGINIA FOREST TYPES



### VIRGINIA FOREST STAND ORIGIN





## FOREST BENEFITS

Each year, Virginia's forests provide more than \$27.5 Billion in economic benefits to the Commonwealth. These economic benefits include:

- ▲ More than \$23.4 Billion generated by the forest products industry and related activities;
- ▲ \$350 Million paid to forest landowners for the harvest of products;
- ▲ 144,380 jobs in the forest products industry, and
- ▲ Forest-related recreational spending in excess of \$2.4 Billion.

In addition to the direct economic benefits, the extensive cover of forestland in Virginia provides its citizens with many valuable ecological services, including:

- ▲ Protection of water quality;
- ▲ Protection of air quality;
- ▲ Aesthetic quality;
- ▲ Moderation of climate, including the offsetting of carbon emissions that contribute to global warming, and
- ▲ Provision of habitat for many plant and animal species.

These "non-market" services have been conservatively valued at more than \$1.7 Billion annually.

## ECOSYSTEM SERVICES

Virginia's forests provide many environmental benefits and services, such as carbon sequestration, biodiversity, pollination, recreation, aesthetics, reducing nutrient loads to streams and enhancing air quality. These regulating and cultural services are in addition to the traditional wood products our forests provide. Our forests are truly the natural infrastructure our quality of

life depends on.

Forest growth in Virginia annually sequesters, or captures, and stores about 6.42 million metric tons of carbon dioxide emissions. Carbon dioxide is considered by many to be a major greenhouse gas. The growth of Virginia's forests offsets about 14 percent of the total annual carbon dioxide emissions in the state. Voluntary markets are emerging to help forest landowners capture a value for this carbon sequestration service. However, each year, approximately one million metric tons of carbon dioxide are emitted into the atmosphere due to land-use changes, such as the loss of forest cover.

In Virginia's Nutrient Credit Trading Program, tree planting projects on open land are recognized as a management practice that generates saleable credits. Plantings reduce nitrogen and phosphorus loading and, therefore, enhance water quality. Forestry will have a role in reducing nutrient loading in the Chesapeake Bay and other Virginia waters.

Another innovative idea being piloted in Virginia is the Forests to Faucets (F2F) program. This initiative is designed to financially link urban water consumers to the rural landowners managing the watershed that provides the water supply. The specific project area is the South Fork Rivanna River reservoir watershed in Albemarle County. Landowners in this watershed can receive a financial incentive for tree planting, conservation easements, leaving riparian buffers, pre-harvest planning and stabilizing forest harvest sites. The objective is to demonstrate that good forestland management is an effective tool in reducing sediment and nutrient loads to the reservoir.

## CONSERVING VIRGINIA'S FORESTLAND

- ▲ **Acres Conserved** - In calendar year 2009, we conserved 15,806 acres through easements and acquisitions. In the last fiscal year, we conserved 13,304 acres. This is the most land protected by the VDOF since the big state forests were created back in the 1950s (and the federal government gave us those).

For the forestland conservation program, the previous year has been one of transition, from celebrating the accomplishment of one statewide conservation goal to facing the challenge of a new goal. The VDOF contributed more than 24,000 acres to accomplishing then-Governor Kaine's goal of permanently protecting 400,000 acres from development,

including the acquisition of several new state forests and a significant increase in our capacity to accept donated conservation easements. In the last fiscal year, VDOF accepted 12 conservation easements in 11 counties. These easements ranged from a 50-acre tract of hardwood forest adjacent to the George Washington/Jefferson National Forest, to 2,300 acres of managed pine plantation owned by a second-generation timber family. This past year, we also completed acquisition of the new Moore's Creek State Forest in Rockbridge County and a 5,300-acre expansion of the Dragon Run State Forest. Despite these accomplishments, conversion due to development remains a significant threat to open space in Virginia.

In recognition of the critical need to protect Virginia's open land, particularly working farms and forests, Governor McDonnell has committed to protecting another 400,000 acres during his term. Achieving this goal may pose an even greater challenge than the previous one for several reasons.

Federal tax benefits related to estate taxes and to land conservation donations expired in 2010 and have yet to be extended by Congress. Also, applications for Virginia's land preservation tax credits, which reimburse landowners for a portion of the value of donated land or conservation easements, exceeded the annual cap by August of this year. This means that all the landowners who make land conservation donations in the latter half of the year will be put on the waiting list to receive credits in 2011.

Given the lack of state funding dedicated to land conservation, voluntary donations of land or of conservation easements represent the bulk of land conservation that occurs in Virginia. Without the federal and state tax benefits available to landowners, the incentive for voluntary donations is greatly reduced. While, for most landowners, the protection of their land is their ultimate goal, few landowners are immune from the need to receive compensation for the land, which is often their most valuable asset.

Recognizing the challenges facing land conservation and the lack of state resources available, we continue to focus our efforts on conserving those forests that provide the greatest benefit and are most at risk of conversion from rural use to development. Because local government plays an integral role in the development process, which often results in forestland conversion, VDOF works closely with localities to promote land planning and the protection of working forests.

VDOF is also developing new partnerships and novel funding sources to increase our capacity for land conservation. This past year, VDOF joined the Virginia Outdoors Foundation and the Ward Burton Wildlife Foundation as partners in the Army Compatible Use Buffer (ACUB) program at Ft. Pickett in Southside Virginia. The ACUB program provides federal funding for military bases to conserve lands around the base to prevent excessive development that would limit the military's ability to operate there.

Any decision regarding land conversion or conservation ultimately rests with the landowner and VDOF has always been dedicated to providing sound and unbiased guidance to forest landowners. In the past year, we participated in dozens of discussions, meetings, conferences and property visits to promote forestland conservation and help landowners make educated decisions about the future of their land.



## FOREST MANAGEMENT



Forests provide a multitude of benefits to the Commonwealth and its citizens. These include: forest products; clean water; pure air; habitat for wildlife; outdoor recreation; natural classrooms; defense against environmental stresses, and settings for quality living. The value and quality of these benefits can be greatly enhanced through planning and implementation of good forest management practices. In 2010, the Department continues to emphasize planning and practice implementation in the agency's performance measures.

Forests are, by nature, long in development and duration. Because of this, long-term planning is essential to realize long-term benefits. Planned forest management practices, implemented over time, will ensure sustainable and continuous benefit from forest resources. All steps are critical in planning, beginning with determining landowner objectives. Department foresters, consulting foresters and industry foresters partner with other state agencies and private natural resource professionals, including game biologists as well as soil and water conservation specialists, to develop and encourage the implementation of these plans. In the 2010 fiscal year, foresters completed plans on 142,428 acres.



Planning provides the blueprint. Landowners, contractors, consulting foresters and Department staff cooperate to put the plans into action. Silviculture – the art and science of producing and tending forests – is the means to build these forests. There are many different types of forest management practices used: preparing sites and planting trees; thinning; controlling competing or invasive vegetation; crop tree management in hardwoods; fertilizing; partial or complete harvesting for natural forest regeneration, and prescribed burning. Throughout the state, 3,003 forest management projects were implemented – ranging from less than an acre to hundreds of acres, from rural to urban settings – all designed to build healthy, valuable and productive forests.

There are a number of programs designed to encourage and assist private landowners in implementation of these practices. In addition to planning assistance, state and federal programs help to offset landowner cost of doing the work. The flagship program for planting and improving pine forests is Virginia's Reforestation of Timberlands Program. In the past year, program funding and accomplishments remained at high levels, with RT providing assistance on more than 36,500 acres at 924 sites. Much of the support for the RT program comes from the industry through the forest products tax (more than \$1.4 million this year).



The VDOF has strong cooperative relationships with the Virginia Department of Conservation and Recreation; the USDA Natural Resources Conservation Service (NRCS), and the Farm Service Agency (FSA) to reach landowners and offer assistance. Private support for forest management is active as well, specifically in FY 2010 by Vaughan-Bassett Furniture Co.; the Glatfelter Pulpwood Company; Plow and Hearth

Catalog Company, and Belfort Furniture. Together, these firms funded the purchase of more than 500,000 seedlings for planting by private landowners.

## FOREST MANAGEMENT PLANNING

There is, perhaps, no more valuable document to a forest landowner than a comprehensive forest management plan prepared by a professional forester. It contains the owner's objectives; thorough description of the forest resources, and recommendations for active management to meet their goals. Plans have many benefits and are becoming increasingly important for landowners to meet requirements for participation in programs and incentives, and to enter into forest certification.

There are a number of options for landowners to get management plans. For nearly 20 years, the Forest Stewardship Program, initiated by the USDA Forest Service and implemented by VDOF has provided management plans for more than 8,600 Virginia landowners. Since 1941, the American Tree Farm System through the Virginia Tree Farm Committee (VTFC) has promoted the wise management of wood, water, wildlife and recreation. In 2009, the Tree Farm System received international approval of its forest certification program, which requires a forest management plan for private forest landowners. For the first time through the 2008 Farm Bill, the USDA Natural Resources Conservation Service (NRCS) is providing cost share for forest management plan preparation. In Virginia, these plans will be prepared by private technical service providers – consulting foresters.

Recognizing the need to coordinate efforts on forest management plans and programs, these three organizations (VDOF, VTFC and NRCS) developed and signed a memorandum of understanding that recognizes that plans developed under any of these programs were equivalent, and would meet the plan requirement of the other program. State Forester Carl Garrison, Tree Farm Committee Chairman Rob Wait and State Conservationist Jack Bricker signed this agreement July 7, 2010.

## COOPERATIVE FOREST RESEARCH AND EDUCATION

Virginia is fortunate to have two outstanding land grant universities – Virginia State and Virginia Tech. Both are skilled at teaching, research and outreach through their Extension programs. For many years, the

federal McIntire-Stennis Cooperative Forestry Research Act (M/S) Program has for many years funded forestry research for universities like Virginia Tech with forestry programs. The 2008 Farm Bill broadened the eligibility to include the 1890 land grant institutions, including Virginia State University (VSU). In January, VSU, Virginia Tech and VDOF signed a memorandum of understanding that outlined ways for the three entities to work cooperatively to further forest research. VSU and VDOF worked together to identify and begin their first research project – comparing performance of shortleaf pine from widely-varied geographic seed sources. The meeting also fostered discussions regarding broader forestry educational programs and outreach in Virginia.



Rob Wait, VA Tree Farm Committee Chair; Carl Garrison, State Forester, and Jack Bricker, NRCS State Conservationist, sign the Memorandum of Understanding.

## PROTECTING VIRGINIA'S FORESTS FROM WILDFIRE

The Virginia Department of Forestry responds to almost 1,200 wildland fires that burn more than 11,600 acres annually (based on a 10-year average, 1999 – 2008).

Although more than 60 homes and other structures are damaged or destroyed by wildland fire each year, on average, agency efforts protect more than 1,200 others at a value of more than \$178 million.

From July 1, 2009 through June 30, 2010:

- ▲ 635 fires burned 5,071 acres;
- ▲ more than \$4 million of timber was damaged;
- ▲ damage to homes and other buildings was just under \$1 million;
- ▲ 643 homes, worth more than \$123 million, were protected, and
- ▲ 702 other structures, worth an estimated \$13.3 million, were protected.

The Agency relies on highly-trained and experienced personnel operating a fleet of 190 4x4 engines; seven specially-equipped Hummers; five specially-equipped wildland brush trucks and 89 bulldozer/wildland fire plow suppression units for quick response to any reported wildland fire or other weather-related emergency. The assistance of Virginia's 765 fire departments and close working relationships with federal land management agencies and other public and private landholders in the Commonwealth ensure that wildland fire response in Virginia is both efficient and effective.

Virginia Department of Forestry personnel also volunteer to provide incident management expertise to support

other all-risk incidents when the need exists. The VDOF provided assistance to the City of Alexandria during the historic snowfall in February of this year, as well as responding to assist with the Gulf Coast oil well disaster. The practical experience gained during these events develops agency employees with a broad base of expertise to handle any emergency here in Virginia.

## TRAINING PROGRAM

The Virginia Department of Forestry is a recognized national leader in its delivery of wildfire suppression, incident management and personnel development training for emergency responders. In June of this year, VDOF held its 10<sup>th</sup> annual statewide Interagency Wildfire Academy. This academy, one of the four largest in the nation, provided training to more than 340 students, representing more than 9,000 hours of total training. The event hosted responders from various state and federal agencies throughout the Commonwealth; responders from three surrounding states, and representation from more than 70 Virginia volunteer fire departments. On a more local basis, VDOF personnel provide at least one regionally-based academy every year, as well as numerous county-based training opportunities, in an effort to further develop the expertise of Virginia's fire service.

## DRY HYDRANT PROGRAM

The Virginia Dry Hydrant Grant Program is funded by the General Assembly using money from the Virginia Fire Programs Fund. The program is administered by the Department of Fire Programs and the Department of Forestry and is assisted by an advisory committee.

The objectives of the program are to:

- ▲ Conserve energy by reducing losses from fire;
- ▲ Conserve energy by reducing miles traveled to shuttle water;
- ▲ Fund the installation of dry hydrants that otherwise would not be installed, and
- ▲ Conserve processed domestic water supplies in urban and urbanizing areas.

Those organizations eligible to apply for dry hydrant grants include the fire departments listed with the Department of Fire Programs. A total of 29 new dry hydrants were installed through the program last year.

# VOLUNTEER FIRE ASSISTANCE PROGRAM

The Volunteer Fire Assistance Program (VFA) continues to increase the fire protection capability in Virginia. This is accomplished by making financial assistance available to rural volunteer fire companies to provide additional training and the acquisition of small equipment and wildland personal protective equipment (PPE). Since the inception of this program in 1975, 4,949 grants have been made providing a total of \$2,622,196 in matching grant funds.

The grant program improves the capability and effectiveness of America's 26,000 Rural Volunteer Fire Departments – 585 of them in Virginia – to protect lives and other rural investments. In 2009, 158 rural volunteer fire departments in the Commonwealth received \$214,914 in Volunteer Fire Assistance funds made available to Virginia. Requests for support continue to greatly exceed the available funding.

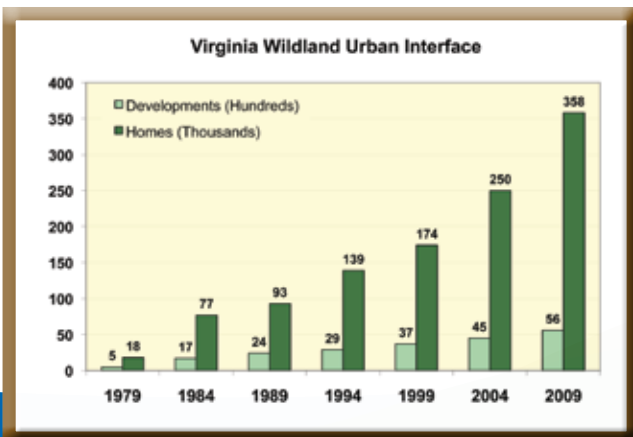
## FIREWISE

Firefighters in the wildland/urban interface (any area where wildland fuels threaten combustible structures) must overcome severe challenges. There just aren't enough resources to protect every home threatened by wildfire. Everyone in the vicinity of such a fire is at risk, and the risk is greatly increased in areas that aren't prepared. The main goal of FireWise is to educate homeowners in the wildland/urban interface on how to design, construct, landscape and maintain their homes and property to avoid destruction during a wildfire.

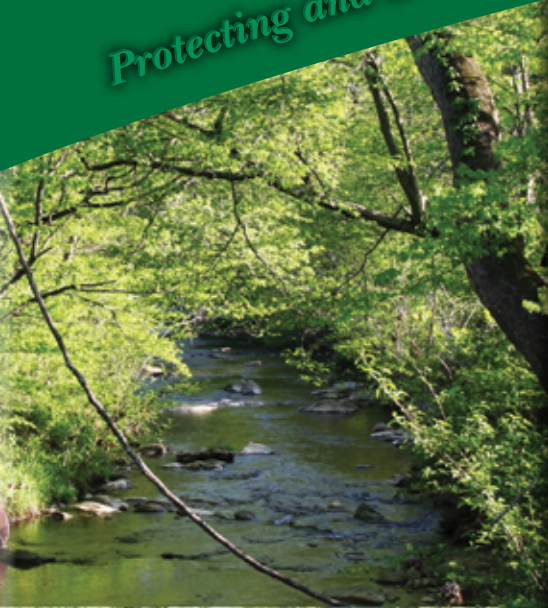
Virginia has an expanding wildland/urban interface and a significant wildfire problem. VDOF has been a leader nationally in the promotion and expansion of the FireWise Program. In an effort to track the problem, VDOF has conducted a woodland home survey every five years since 1979, see graph below.

Through "fuel modification," you will be creating a landscape that will make your home and other structures less vulnerable to wildfire. Clear dead wood and dense vegetation within 30 feet of any structure; move firewood away from your home; keep trees and shrubs pruned, and keep your gutters, eaves and roof clear of leaves and other debris. Remove tree branches that are less than six feet above the ground. Use less flammable plants, such as azalea, viburnum, crepe myrtle, spirea, hydrangea, annual and perennial flowers, ferns, dogwood, redbud, red maple and oak. Mow, maintain and water your lawn regularly.

There are also a number of FireWise construction tips that you can use to help protect yourself, your family and your property from the ravages of wildfire. To learn more, visit [www.firewisevirginia.org](http://www.firewisevirginia.org).



## PROTECTING VIRGINIA'S WATER QUALITY



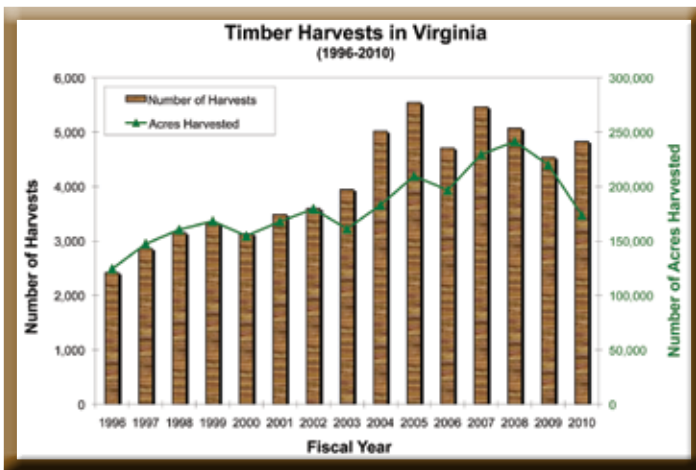
Water quality is important to all Virginians. Studies have shown that the cleanest water comes from forested watersheds. These watersheds are critical sources of pure drinking water; habitat for important fisheries, and areas that are treasured for their recreational value and purity of life. This is especially important when considering the impending Total Maximum Daily Load (TMDL) and Watershed Improvement Plan (WIP) being developed for the Chesapeake Bay. Two of the Department's important measures involve water quality. One focuses on Best Management Practices on forest harvesting operations and protecting streams from sediment. This will be one of the factors that is incorporated in the Bay Cleanup effort and Watershed Improvement Plan. The other focuses on improving and protecting watersheds through management and land conservation.

The backbone for the Department's water quality effort is the harvest inspection program, which began in the mid-'80s. In FY 2010, VDOF field personnel inspected 4,828 timber harvest sites across Virginia on 173,648 acres.

Another main focus of the VDOF water quality program is logger education. Since the development of the first BMP Manual for Virginia, the VDOF has been involved in the training of harvesting contractors in water quality protection techniques ranging from harvest planning, map reading and the use of GPS units to BMP implementation. For FY 2010, there were 10 training programs offered with 244 attendees present. Five of these courses were in the core area with 150 attendees, and the remaining five courses were for logger continuing education and had 94 attendees. In addition, for the first time there were two on-line courses offered on BMPs and Water Quality through the SHARP Logger Program, these courses were taken by 87 logging professionals during the program year.

In July 1993, the General Assembly of Virginia – with the support of the forest industry – enacted the Virginia Silvicultural Water Quality Law, §10-1-1181.1 through §10.1-1181.7. The law was created to provide Virginia with an enforcement mechanism to address water pollution originating from silvicultural activities. The law grants the authority to the State Forester to assess civil penalties to those owners and operators who fail to protect water quality on their operations. In FY 2010, the VDOF was involved with 281 water quality actions initiated under the Silvicultural Law. Of these actions, 15 resulted in Special Orders being issued for violations of the law.

A statewide audit system has been in place since 1993 to track trends in BMP implementation and effectiveness. This system was revised during fiscal year 2008 to include more tracts and will provide more specific information on areas to concentrate additional training for harvest operators. Results from the calendar year 2009 data show that overall BMP implementation on 240 randomly



selected tracts is 82.4 percent and that BMPs associated with stream crossings on those same tracts is 83.4 percent, an increase of two percentage points over the previous audit cycle. The significance is that stream crossings are the place where significant water quality impacts can occur, and BMPs will mitigate any possible water quality impacts. The audit results also show that 97.1 percent of the sites visited had no active sedimentation present after the close-out of the operation. The information compiled using this audit process will be the basis of reporting for the Watershed Implementation Plan (WIP) that is under development in response to the TMDL being developed for the Chesapeake Bay.

Beginning July 1, 2009, the VDOF began use of its enterprise database system – IFRIS (Integrated Forest Resource Information System) – for Water Quality. This involved a redesign of the entire Water Quality Program during FY 2009 to incorporate the use of hand-held data recorders and a GIS-based system for recording timber harvest inspection information. The information that has been collected during FY 2010 has been linked geographically by GPS coordinate to a specific watershed. In conjunction with this, timber harvest operators have all been assigned a unique Logger Identification Number that will make it easier for the logger to be able to notify their timber harvesting operations as well as enable the agency to be more efficient in communicating with loggers on important issues. A unique component of this system allows the timber operators to have access to maps and aerial photographs for harvest-planning purposes if they notify the agency of their operation using GPS coordinates. Additionally, the VDOF has teamed up with the SHARP Logger Program to offer GPS training to harvest operators and actually provide cost-share assistance towards the purchase of a recreational-grade GPS unit to those logging companies that have

participated in the training class.

The BMP Logger Cost-Share Program provides a 50 percent cost-share to timber harvesting contractors who implement appropriate BMPs on eligible stream crossings. The projects must be pre-approved by the VDOF, and harvesting contractors must be SHARP Logger certified to be able to participate. The program covers numerous items, such as culvert pipes, equipment time to construct water diversion structures as well as material to revegetate the site. But the one feature of the program that will have a lasting effect on water quality in the Commonwealth is that the program will provide cost-share for the purchase of portable timber bridges that will continue to provide water quality protection for sites beyond the original sites. In 2010, this program funded 29 BMP projects throughout the Commonwealth. Of those projects, 21 involved the purchase of portable bridges.

## WATERSHED PROTECTION

Forests provide the best protection for watersheds. Because of this, one of the Department’s goals is to increase the amount of forestland conserved, protected and established in Virginia’s watersheds. The concept here is to focus on tools and practices that will have a high benefit to water quality, specifically conserving land permanently; establishing and maintaining riparian buffer zones; planting trees on non-forested open land, and increasing urban forest canopy by planting trees. All of these activities are closely related to meeting water quality goals associated with the Chesapeake Bay restoration and watersheds for Virginia’s southern rivers.

New riparian forest buffers were established by planting trees on 1,638 acres. Many of these areas were agricultural or pasture land. Forested buffers provide significant water quality benefits through nutrient uptake; reduced runoff, and by livestock and cropping exclusion.

One of the most valuable BMPs for water quality is the uncut or partially cut streamside management zone. This voluntary measure assures an unbroken forest groundcover near the stream; shade for the water, and wildlife corridors. Landowners can elect to receive a state tax



credit for a portion of the value of the uncut trees in the buffer.

By doing so, they agree to leave the buffer undisturbed for 15 years. The number of landowners electing this option is increasing, and in FY 2010, landowners participated in this watershed protection option on 475 acres.

Forests provide superior watershed benefits over nearly every other land use. Because of this, the Department is encouraging planting of open land with trees. This is a particularly valuable option on marginally productive pasture or crop land and land that is no longer being farmed or managed for other purposes. In the 2010 season, trees were planted on 1,244 acres of open land.

## FOREST HEALTH

The year 2010 has been mixed concerning forest health news. Traditional pests, such as gypsy moth and southern pine beetle, have been on the wane, while new pests, such as the emerald ash borer and the recently discovered thousand cankers disease of black walnut, threaten to spread further destruction. It's also becoming increasingly apparent to foresters and other natural resource professionals that traditional forest management practices in many locations can no longer be carried out without considering the impacts of invasive weeds.

The weather was highly variable in 2010, with record snowfall during winter leading directly into record high spring temperatures. Spring began with relatively ample moisture but things began to dry out leading into summer. Combined with record high temperatures and multiple heat waves with temperatures exceeding 100 degrees, moderate drought conditions prevailed across much of the Commonwealth.

As predicted, gypsy moth populations were at a 10-year low, producing no visible defoliation during aerial detection

surveys. This was due in large measure to the excessively wet spring and summer of 2009, which allowed for the gypsy moth fungus, *Entomophaga maimaiga*, to wreak havoc on larval populations. Few caterpillars survived to adulthood to lay eggs for the 2010 season. The decline in gypsy moth populations will likely hold at least through 2011 or until sustained drought conditions during successive springs allow for resurgence in populations.

That said, the last wave of gypsy moth outbreaks beginning in 2005 and culminating in 114,000 acres of severe defoliation in 2008, has left a great deal of oak mortality in its wake. The hardest hit areas include parts of Shenandoah National Park on the northern end (much of which can be seen from Skyline Drive); parts of the George Washington and Jefferson National Forest in Augusta, Rockingham and Giles counties, and on private land near Poor and Bent Mountains to the southwest of Roanoke. Oak mortality and decline in these areas will lead to significant changes in forest composition, with pioneer species, such as poplar, maple and birch, replacing oak as the dominant species in many locations.

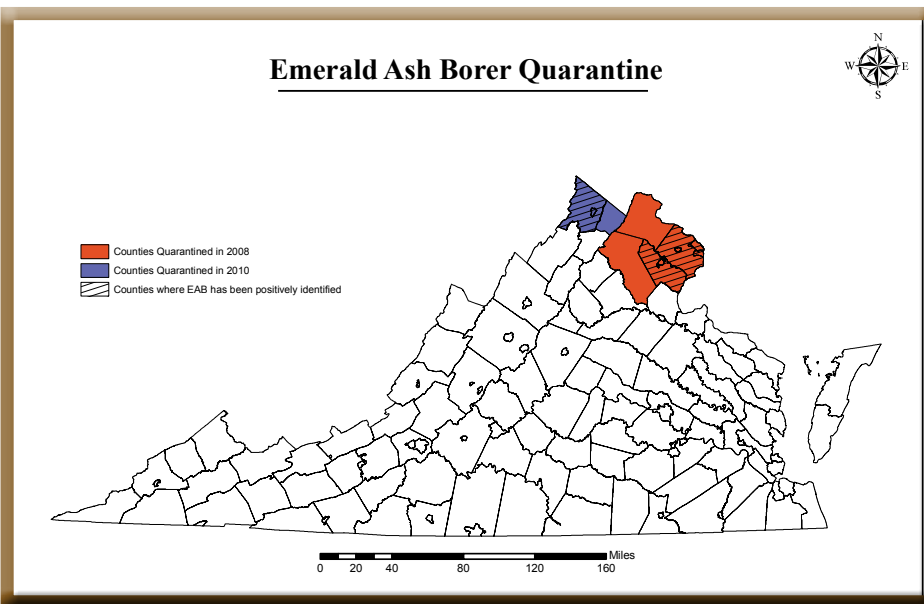
The pine resource in central and southeast Virginia remains healthy and productive. Federal funds from the USDA Forest Service, Forest Health Protection support our Southern Pine Beetle Prevention cost-share program with landowners for pre-commercial thinning of pine stands. To date, Virginia has pre-commercially thinned about 30,000 acres of loblolly pine out of approximately 130,000 acres estimated to be overstocked and in the appropriate pre-commercial age class. Overstocked pine stands are more vulnerable to bark beetle outbreaks, and thinning is the best method of reducing this threat. First commercial thinnings on small tracts are also being supported with a logger incentive program. Due to high moving costs, loggers often lose money visiting tracts smaller than 50 acres. Because of increasing rates of fragmentation and parcelization in Virginia, smaller tract sizes are becoming more common but are in no less need of thinning to maintain health. To date, more than 1,000 acres of small pine tracts have been commercially thinned under the logger incentive program, with almost \$200,000 going directly to logging companies for carrying out this work over the last year and a half.

Invasive species remain the most significant threat to forest health. The most recent being

the emerald ash borer (EAB). First discovered in Virginia during the summer of 2008 in Fairfax County, it has since spread to Arlington, Prince William and Frederick counties. Eradication is not being pursued – at this stage it would be too expensive and, more importantly, very unlikely to succeed. Virginia and the nation face the prospect of losing all ash species from natural and urban landscapes in the forthcoming decades, an impact that could eventually cost the Commonwealth hundreds of millions of dollars. Its primary means of spread is through the unrestricted movement of firewood across state lines by private citizens. A survey by the Virginia Department of Agriculture and Consumer Services (VDACS) also demonstrated that firewood is being brought into Virginia for sale from 15 states and three countries. At the very least, all out-of-state firewood for sale in Virginia should be kiln-dried to kill all possible pests living within the wood.

Increasingly, we are seeing natural resource agencies at all levels address the problem of firewood. These efforts include a combination of regulatory, outreach and voluntary efforts that states, industry and the public can take to limit this threat.

With the long list of invasive pest problems continuing to grow and economic resources to combat them continuing to dwindle, our best efforts should be put towards slowing the spread of these pests when practical and limiting effective pathways for these organisms to spread. Slowing the spread has value because it defers the cost of dealing with the pest and allows time for research to come up with remedies or protocols for management. Limiting pathways for pests by such means as heat treatment of all firewood moving across state lines is essential, but cannot be effectively accomplished without the willing cooperation and coordination among government agencies, industry and the public. We must recognize that this issue affects all citizens in a negative way, and if we do nothing, our forests will continue to lose economic, environmental and aesthetic value over time.



## FOREST RESEARCH

The Virginia Department of Forestry's Applied Research Program is in its 56<sup>th</sup> year of testing and demonstrating important new information and techniques to improve the sustainability and productivity of forestlands in the Commonwealth.

With all the changes that have occurred in forestry over the last half century and all those in the years to come, how does research fit into the long-term conservation of our forests and all the products and services we demand from them? This is the question we must ask ourselves almost daily to be sure the work we initiate now will provide the information the citizens of Virginia will need in the coming decades.

If anything, it seems that the emerging markets for bioenergy and carbon sequestration, combined with more stringent expectations for sustainable and certifiable production systems for traditional forest products, will tend to make forest research even more important in the years to come. We will need to learn to further increase yields from land devoted to production as forest biomass is removed more frequently and more completely, yet we will also need to better understand how to protect those sites from nutrient depletion and soil disturbance. We'll need to be able to predict tree growth and site responses to conditions and practices different from any we've studied in the past, and to translate those predictions into financial options a landowner can use to make decisions. If we are successful, conserving forestland will continue to be an attractive option financially, as well as philosophically. There is much work yet ahead of us.

Research projects are designed to provide information in support of VDOF's strategic plan goals, and address an array of subjects in one or more of six primary subject areas: pine genetics/tree improvement; pine silviculture; hardwood silviculture; diminished species restoration; invasive species control, and forest growth and yield modeling. Studies designed to address specific information needs or biological systems are installed and monitored across the state – often for periods of years or even decades.

### PINE GENETICS/TREE IMPROVEMENT

In spring 2009, we conducted a pilot-scale mass controlled pollination (MCP) test to determine optimal logistics, work flows and phenology for producing improved loblolly seed. Working on 123 individual trees of our 11 best selections, we installed 4,133 pollination bags. We estimate that the average productivity gain from a mix of the resulting seed will be 50 percent over unimproved seed as compared to 37 percent from the best offering VDOF has previously produced. Individual crosses will have gains as high as 60 percent.

If our efforts this spring are successful, we will have roughly one million MCP seedlings for our nursery crop in 2011.



The primary threat to the continuation of gain and increased profit to landowners is the likely reduction in support for, and effort by, tree improvement research programs. This might sound strange given the long history of breeding and the high rates of return on the investments in tree improvement. But, as the forest industry has transformed – with mergers and consolidations, forestland ownership has changed from the large, vertically integrated forest products companies that owned both land and mills to more institutional investors that often own land for only short periods of time – the number of tree improvement, seed orchard and nursery programs has decreased dramatically. Compared to just 20 years ago, the number of companies and state agencies actively involved in the NC State Cooperative’s breeding program has gone from 29 to 12. In Virginia, there is only one organization (VDOF) actively breeding trees for our landowners. In the 1990s, there were five.

## PINE SILVICULTURE

Ongoing work in pine silviculture includes studies of: combinations of thinning and nutrients for maintaining forest vigor and increasing productivity (in collaboration with the Virginia Tech/NC State Forest Nutrition Cooperative); two new insecticide products (PTM and SilvaShield) for tipmoth control; growth effects of biosolid applications to those of traditional inorganic fertilizers; effects of planting density and interplanting following mortality to maximize product yields; pre-commercial thinning; long-term growth and yield monitoring, and effects of various competition control methods and strategies.

## HARDWOOD SILVICULTURE

We continue to evaluate growth responses of Appalachian hardwoods following shelterwood harvests; crop tree release/fertilization; different establishment methods for hardwood planting (particularly in riparian areas under CREP), and planted hardwood seedling size. We are in the process of installing plots to evaluate the effects of deer browse on regenerating hardwoods.

## DIMINISHED SPECIES RESTORATION

Conservation and restoration of rare or at-risk species is among the most forward-looking of these subject areas. We maintain studies pertaining to three diminished species: shortleaf pine (establishment methods, geographic seed sources); American

chestnut (breeding for blight resistance, establishment methods), and longleaf pine (establishment methods, geographic seed source and grafting techniques).

## INVASIVE PLANT CONTROL

VDOF is continuing a series of tests to evaluate the effectiveness of basal bark herbicide treatments applied using a backpack sprayer at various times through the



year for control of tree-of-heaven.

## GROWTH AND YIELD

Early data from our internal, long-term growth and yield plots is being used to test the accuracy projections from published models. Our collaboration with the Virginia Tech/NC State Forest Nutrition Cooperative and the Virginia Tech Forest Modeling Cooperative helped develop the Loblolly Pine Decision Support System, which integrates a number of models to give foresters a user-friendly method of comparing the effects of different silvicultural options on forest structure and cash flow during the life of the stand. We continue to monitor long-term plots in conjunction with that project.

## FOREST MARKETS

Although the forest industry is the largest manufacturer in Virginia and our forests provide billions of dollars of additional benefits annually, the last year has seen the closing or reduction of many businesses, punctuated with the closing of the International Paper Mill in Franklin. There are also changes occurring within the forest community and industry. Forestlands are being modified as they come under new ownership. Forests markets are transforming as demands for different products increase. To keep Virginia's forests healthy and sustainable, private landowners, who own more than 80 percent of the forestland, depend on markets and other benefits to help maintain their forests. The Department of Forestry continues to be very active in improving markets and value for Virginia's forests.

To address these issues, VDOF is working to identify and promote emerging markets, as well as opportunities to enhance the traditional markets that have been the backbone of the industry. Maintaining diverse markets, cutting edge technology and a trained workforce are necessary for all forest-related businesses to remain prosperous.

To identify concerns of forest industry and discuss ways that the state could assist, VDOF, working with the Secretary of Agriculture and Forestry, held the first Forest Industry Roundtable in the spring of 2009. Representatives from all sectors of forest industry and numerous state agencies gathered for the facilitated session and developed working papers to begin addressing the issues that were identified. The first result from the Roundtable was a report of the forest industry that was prepared for the transition team for the new administration. Additional activities

included developing a priority list for agencies to focus on, including educational activities; technical assistance, and governmental issues that impact business growth.

VDOF continues to expand partnerships to focus on changes to forest markets and industry. These partnerships not only enable us to utilize the expertise of multiple sources, they also opened up opportunities for additional grants and funding to promote business and job creation. Working with state agencies, such as the Virginia Economic Development Partnership, we promote new and expanding forest-related business formation in Virginia. Other partners, including the Virginia Biomass Energy Group; 25x25 Initiative; Virginia Forest Products Association; Virginia Forestry Association; The Tobacco Commission; Virginia Association of RC&D Councils; Virginia Forest-Based Economic Development Council, and Virginia Tech, also work with the VDOF to promote sustainable forest markets.

To address the concerns of private forest landowners being able to participate in forest certification markets, VDOF was awarded a grant from the USDA Forest Service to identify barriers that prevent forest landowners from participating in forest certification programs and develop ways that state agencies and other organizations can increase involvement.

VDOF has been working closely with our partners to be a leader in the advancement of renewable energy opportunities for landowners and business. We are promoting biomass energy development to provide markets for low-value wood that is generated from forest management and health operations, disaster clean up, urban areas and manufacturing. A plan has been developed for the Matthews State Forest to have a focus on renewable energy with educational programs and demonstrations of various technologies. Other efforts include working with partners on a statewide biomass inventory report that will be published soon to assist in identifying resources for bio-energy production; working with institutions and private firms to convert to or expand the use of thermal and combined heat and power biomass energy systems, and developing a community wood energy program.

As forest landowner, industry and market demands increase and/or change, new forest operators and service providers are needed to address these demands. VDOF is

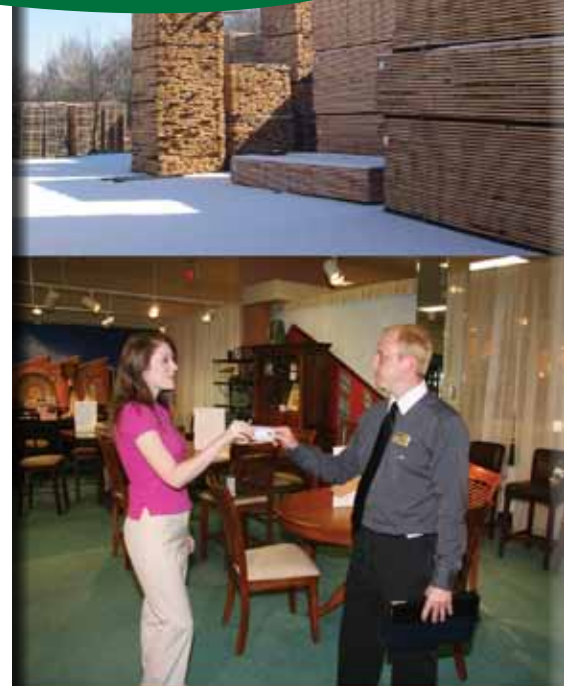
working with partners to identify these changes and develop programs to assist businesses, mostly through educational and outreach efforts, with these new opportunities and help in developing new businesses. Types of business opportunities include operations that focus on small woodlot or community forest activities; harvesting biomass for energy production; invasive species control; natural disaster mitigation, and ecosystem services assistance.

Associated with these efforts are projects to promote rural development activities through specialty forest products. Projects include VDOF's work with developing small-scale natural lump charcoal production from invasive species and other low-value woods and providing small-scale forestry and wood product companies support.

To improve conditions for local landowners and communities, the VDOF Resources Conservation and Development (RC&D) program focuses on local grassroots efforts to address issues within the seven RC&D Council Areas in the state. VDOF has had a cooperative agreement with the USDA Natural Resource Conservation Service (NRCS) for more than 20 years to help support an RC&D forester. Due to the excellent relationship and results over the years, we have received additional resources for two new RC&D foresters. This program has not only enabled us to meet locally-identified needs, it has also been able to attract many additional resources to Virginia.

To provide needed assistance on forest markets and other forest benefits that landowners, industry and other stakeholders require, VDOF maintains or has access to information on forest inventory and values; forest industries; new technologies; technical consultants; service providers; agencies and other organizations, and other technical support services.

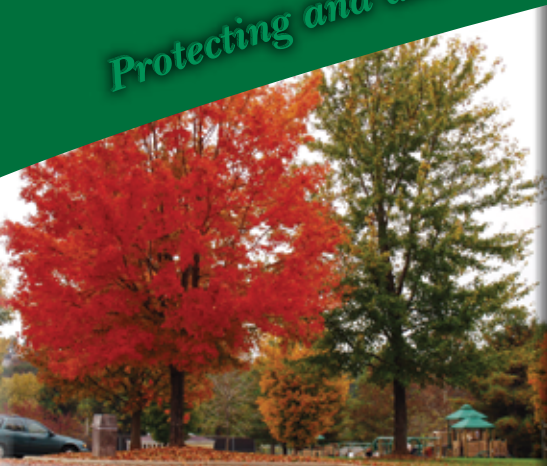
VDOF is working with partners to keep Virginia at the forefront of assisting our forest landowners, industry and other stakeholders in being able to take advantage of both traditional and emerging market opportunities.



## TOMORROW WOODS PROGRAM IN SOUTHEASTERN VIRGINIA

To address loss of forestland in this growing region of Virginia, VDOF has started an innovative program that combines land conservation and forest management. Through the program, landowners receive assistance with costs associated with getting into conservation easements. These start-up costs, such as appraisal, legal and recording fees, have been a hurdle to many landowners interested in easements. A good way to offset loss of woodland is by creating new forests by planting trees in open land, with a focus on unused or land that is marginal for crops or pasture. The program will assist landowners in planting costs and an additional incentive or annual payment for planting open land. Finally, boosting productivity in existing forests can help offset lost capacity in lands that are diverted to other uses. Tomorrow Woods provides incentives to landowners for practices that do just that, help trees grow better and bigger.

## URBAN AND COMMUNITY FORESTRY



Clean air, water quality, business district enhancement, viewshed protection, aesthetics, contact with nature, and community health and well being are all important benefits of Virginia's urban and community forests. Through its Urban & Community Forestry Program, the Department of Forestry helps Virginia communities maintain and enhance their community forests.

The Department of Forestry provides technical assistance to communities of all sizes. The Department provides expertise on tree selection and long-term tree maintenance through direct contact with communities as well as through a variety of workshops and conferences it organizes and/or supports. The Department administers the Tree City USA program that promotes standards for community forestry. Participation in this program continued to increase, reaching 55 communities and military installations with a combined population of more than 4.5 million during 2010.

Through its Urban and Community Forestry Assistance Program, the Department supports the capacity building efforts of municipalities, county governments, non-profit organizations and educational institutions. Since its inception in 1991, the program has funded an average of 45 projects annually and has assisted 64 cities and towns, 23 counties, 66 non-profit organizations, and a number of universities, colleges and community colleges. The program has funded 28 educational events, several of which continue to be offered on an annual basis. While cuts in federal funding have diminished our capacity to support grant projects, there are several new initiatives in Congress that may reverse this trend. The Department of Forestry also administers project funding with funds under the Water Quality Improvement Act (WQIA). Under the Regional Grant of WQIA, VDOF's Urban and Community Forestry Program supported 24 community water quality projects that involved tree planting and other habitat improvement in the 2009-2010 grant cycle. Projects include riparian buffers; rain gardens and bio swales, and stream bank stabilization. Many of the projects utilize volunteers to implement, consequently, they also learn about the benefits of trees in improving water quality.

The Urban and Community Forestry Program continues to maintain strong partnerships with Virginia Tech and the University of Virginia, as well as several community colleges. At Virginia Tech, the program supports the urban and community forestry curriculum in the School of Natural Resources and the Urban and Community Forestry Coordinator serves on college's advisory board. The program also is a major supporter of the Community Design Assistance Center (CDAC) that provides open space and landscape design planning to interested communities. CDAC's projects help underserved communities across the state and often include referrals by and involvement of VDOF field staff. VDOF continues to support research projects funded at Virginia Tech's Hampton Roads Agricultural Research & Extension Center. At the

University of Virginia, the program has a strong partnership with the Virginia Natural Resources Leadership Institute (VNRLI), providing both financial and training support. VNRLI focuses on critical natural resource issues; conflict resolution through collaborative effort, and leadership.

VDOF made significant progress in helping Virginia's municipalities establish urban tree canopy (UTC) goals. The Chesapeake Bay Agreement has identified the development, retention and enhancement of urban tree canopy as an effective strategy to improve the health of the Chesapeake Bay. The Chesapeake Bay Agreement bases this strategy on USDA Forest Service research that has shown that urban tree canopy makes a significant contribution to urban water quality and storm flow reduction.

In addition to water quality, urban tree canopy can also make a significant contribution to improving urban air quality. The Environmental Protection Agency (EPA) now allows tree planting as a voluntary measure in State Implementation Plans (SIPs) for air quality. The Northern Virginia SIP, adopted in 2007, was one of the first in the nation to include this voluntary measure. The Department is continuing to work with partners in this region to monitor the implementation of tree planting for air quality and to assess its contribution to air quality improvement in this high-profile "non-attainment" area. The VDOF has secured federal funding for a second year to support the work of its partners in this effort.

Many formerly rural areas are now in what is called the "wildland/urban interface." This is a landscape where urban and suburban influences intermingle with the rural landscape and present a whole host of environmental and forest management challenges. The Department, through its Urban and Community Forestry Program, has been promoting the "green infrastructure" approach to strategic forestland conservation. The Department is partnering with and/or financially supporting efforts in a number of Planning District Commissions (PDCs) to develop and conserve green infrastructure networks. Green infrastructure networks have already been mapped and presented to elected officials for inclusion in long-range comprehensive plans in several counties. VDOF has established a partnership with the Green Infrastructure Center (GIC) to continue and expand this work. VDOF is also supporting a green infrastructure curriculum for graduate planning students at the University of Virginia. VDOF also trained selected personnel from each of its three regions on green infrastructure principles during the year and has developed some on-line training materials.

## URBAN STORM RESPONSE

In 2010, VDOF continued its regional leadership in responding to urban storm events. Over the last decade, climate change has impacted the South with severe and destructive weather patterns. VDOF has trained 22 members of its staff who are ISA-certified arborists to become members of urban forest storm damage response teams. VDOF has more members of these response teams than any other southern state. Ten of its response team members are now qualified as team leaders and have assisted with the training of personnel from other southern states. These urban forest storm response teams are trained to assist storm-damaged communities by coordinating with FEMA and state emergency response agencies to provide estimates of tree debris as well as assess the condition and safety of the residual urban forest.

## GREENWAYS

The Department has been encouraging the development of greenway projects throughout the Commonwealth. Greenways are environmental corridors that often contain recreational amenities, such as trails and parks, and are important components of a community's green infrastructure. The Department is providing greenway planning funds for several communities; offering technical assistance, and supporting local greenway advocacy groups. The Department works closely with the Department of Conservation & Recreation (DCR) and the National Park Service (NPS) to assist interested communities. The Department's role in the greenway arena is to provide conceptual planning and see that projects gather grassroots support. The other agencies, DCR and NPS, implement detailed planning and construction of greenways on the ground. This partnership has resulted in the implementation of several successful projects, including greenway/trails planning in Front Royal (construction started in 2010) and Dante, and work on the Great Eastern Trail.

Through its partnership with Trees Virginia (the non-profit Virginia Urban Forest Council), the Department continued to host the quarterly Northern Virginia Urban Forestry Roundtable. Urban forestry professionals, tree



board members and non-profit representatives attend these educational and urban forestry policy forums from numerous northern Virginia jurisdictions. In late 2009, the roundtable planners hosted their third biennial conference featuring a speaker of national prominence on urban forestry issues. The conference, titled Community Forests Grow Community Benefits, drew the largest crowd to date for this conference series. Trees Virginia also sponsors other educational events and uses the profits from these efforts to support scholarships for students in forestry and horticulture. The Department and Trees Virginia worked to expand the number of volunteer tree steward groups across Virginia. These citizen volunteer groups assist municipalities in caring for public trees. A committee of tree steward volunteers produced a new version of the Tree Steward Training Manual that has already been distributed nationwide.

## CERTIFIED ARBORIST PROGRAM

The Department continues to support the training and professional development of ISA-certified arborists. The Department has 27 certified arborists on its staff, more than any other state forestry agency in the South. The Department hosts one certified arborist training in its headquarters facility each year. The Department also continues to work with Virginia's utility companies to promote the planting of utility-appropriate species in cities and towns to minimize tree/utility conflicts. While funding limitations have forced reduced activity in this program, the Department still supported the establishment and monitoring of utility arboreta in 2010 and sponsored two modest demonstration projects as well.



## EDUCATING THE PUBLIC

### CONSERVATION EDUCATION

Youth education is a key to building future stewards of Virginia's forests. At Holiday Lake Forestry Camp, nearly 60 middle and high school students participated in an intensive, week-long, natural resource field experience. 2010 saw further development of the forest education centers at New Kent Forestry Center and Matthews State Forest. More than 40 programs, including school field trips, were held this year. Foresters and technicians conducted 874 youth educational programs in their communities. Project Learning Tree, which forms the basis for many VDOF youth education efforts, an internationally recognized program that teaches students "how to think, not what to think," using the forest as a window into the wider environment. In 2010, volunteer facilitators provided PLT training to more than 1,200 educators, preparing them to use the activities with

their own youth groups.

Some of VDOF's adult education programs help landowners better manage their forestlands; others build awareness and appreciation of forests among the general public. Twenty-one State Forests are working demonstrations of sound forest management practices, as well as spaces for tours, self-guided learning and recreational experiences. VDOF partnered with other agencies and groups to hold 339 workshops, short courses and tours for adults. Department employees provided exhibits and staff presence at many events, and the agency is one of five co-sponsors of the Virginia Master Naturalist program, whose 800 volunteers provided more than 33,000 hours of education, stewardship and citizen science projects.

## EDUCATIONAL MATERIALS

A number of new pamphlets, brochures, activity sheets and reports were made available to citizens during the year, primarily through grant funding. VDOF has released a new revision of our Common Native Trees of Virginia identification book, which incorporates a section for identifying the most common invasives in Virginia. This revised version is available for sale and continues to be a valuable resource for teachers, scout leaders and the general public.

The first topic in our Forest Facts series, "How a Tree Grows," was published. Brochures about Cost-Share Programs for Forest Landowners; Landowner Options for Conservation; Matthews State Forest; Channels State Forest; Zoar State Forest, and Ecosystem Services are available. Additional publications included: the popular and educational VDOF calendar, Holiday Lake Forestry Camp Annual Report, Forest Health Review and Forest Research Review.

Grant funding has enabled the printing of some essential publications; however, budgetary reductions have shifted our focus to on-line publication of materials. Several publications have transitioned to on-line publication only, such as Forestry News and this State of the Forest report. A monthly electronic newsletter – emailed to anyone who chooses to subscribe through our website – entered its fourth year as an information resource.

A makeover of our firewise trailer exhibit into a water quality trailer exhibit at a minimal cost, brought opportunities for more use of this valuable resource with interchangeable panels.



# ACCOMPLISHMENT REPORT

JULY 2009 - JUNE 2010

Objectives	Goal/Target	Accomplished
<b>Goal 1: Protect the citizens, their property and the forest resource from wildfire.</b>		
Measure 1.1.1: Percentage of fires caused by humans.	94.7%	97.8%
Measure 1.1.2: Percentage of eligible rural volunteer fire departments receiving available state and federal financial assistance.	40%	38.6%
<b>Goal 2: Protect, promote and enhance forested watersheds.</b>		
Measure 2.1.1: Percentage of harvest sites with sediment not reaching streams.	97%	97.1%
Measure 2.1.2: Percentage of annual allowable harvests actually harvested.	80%	91%
Measure 2.1.3: Cost to conduct a forest harvest water quality inspection.	\$10.34	\$12.93
<b>Goal 3: Conserve the forestland base.</b>		
Measure 3.1.1: Number of acres of forestland conserved, established and/or protected in Virginia watersheds.	5,500 acres	16,361 acres
Measure 3.1.2: Proportion of protected properties that contain high conservation value forests.	75%	100%
<b>Goal 4: Improve the stewardship, health and diversity of the forest resources.</b>		
Measure 4.1.1: Percentage of eligible Reforestation of Timberlands incentive received by landowners.	92%	95.6%
Measure 4.1.2: Number of forestry management practices implemented on private land.	2,500 projects	3,003 projects
Measure 4.1.3: Number of acres of all forest management plan types achieved on private and public forestland.	32,500 acres	31,228 acres
Measure 4.1.4: Number of communities assisted with forest and/or tree resource management.	104	112
<b>Goal 5: Promote the development of ecosystem service markets for forest landowners.</b>		
Measure 5.1.1: Number of efforts made to promote market opportunities for landowners. This will include the number of committees served on, conferences, presentations, roundtables, etc., where promotion of ecosystem service initiatives presents itself.	TBD	21 efforts
Measure 5.1.2: Number of presentations/workshops/events promoting forest industry and markets.	TBD	12 events
<b>Goal 6: Collect, maintain and disseminate forest resource information.</b>		
Measure 6.1.1: Number of research reports issued annually.	6 reports	9 reports
Measure 6.1.2: Number of forest inventory count panels measured annually.	1 panel	1 panel
Measure 6.1.3: Percentage of State Forest Management Plans updated annually.	100%	100%
<b>Goal 7: Manage agency resources to effectively and efficiently accomplish the strategic initiatives.</b>		
Measure 7.1.1: Percentage of customers who rate the quality of VDOF's seedlings as satisfactory.	90%	88.6%
Measure 7.1.2: Revenues generated by State Nurseries will exceed expenses by 2.5%.	2.5%	37.1%
<b>Goal 8: Strengthen the culture of preparedness across state agencies, their employees and customers.</b>		
Measure 8.1.1: Agency Continuity of Operations Plan (COOP) Assessment Score.	74% min.	95%