VIRGINIA DEPARTMENT OF FORESTRY

2012 State of the Forest

Annual Report
on Virginia's Forests

Contents

From the State Forester

I'm pleased to present to you my eighth annual State of the Forest Report. As I reflect over the just-ended fiscal year and the seven previous years I've served as your State Forester, several things have remained constant during this time: the dedication and professionalism of the VDOF staff who protect and serve the citizens of Virginia; budgetary challenges, and, ironically, change.

As you read this report, you'll note a number of successes: from the South's 1 Millionth acre of forestland protected from Southern Pine Beetle and the launch of the Virginia Grown Forest Products program to another Agency reorganization (from counties to areas) and our Going Mobile service delivery model. These achievements have or will have significant impacts on the way we do business and on our mission to protect and develop healthy, sustainable forest resources.

For every success, however, it feels as if another roadblock pops up: from the 22 percent in budget cuts ($18 million operating budget to $14 million) to a loss of 40 positions and the accompanying hiring freeze (going from 280 employees to 240) to a large outbreak of the dreaded invasive pest Emerald Ash Borer. As the population of the state continues to increase, more and more people are moving into forested areas (called the wildland-urban interface) and need our protection from the ravages of wildfire and the pollution of our drinking water. Yet, our firefighting equipment grows older and less reliable, and we have fewer employees to help prevent and suppress these wildfires and to ensure the quality of our water from forested watersheds. Of course, we'll continue to "fight the good fight" in spite of the many challenges we face.

In the pages that follow, be sure to take notice of the work we're doing in forest management, resource protection, nursery operations, our state forests, urban and community forestry, water quality, forest health, land conservation, forest research and conservation education. I'm sure you'll be pleased with the quality and quantity of the work we're performing on your behalf.

Thank you for your interest in and support of the Virginia Department of Forestry.

Sincerely,

Carl E. Garrison III
State Forester

Virginia Forest Trends

Forested Land

For 2012, more than 15.9 million acres – more than 62 percent of the Commonwealth (figure 1) – qualified as forestland. Of this forestland, 15.4 million acres are categorized as commercial timberland and 500,000 acres are categorized as reserved forestland, e.g., Shenandoah National Park, VA state parks, etc.

While the Commonwealth had been losing an average of 16,000 acres of forestland annually in recent years, the amount of forestland has stabilized in the past year. This may be a reflection of the economic downturn.

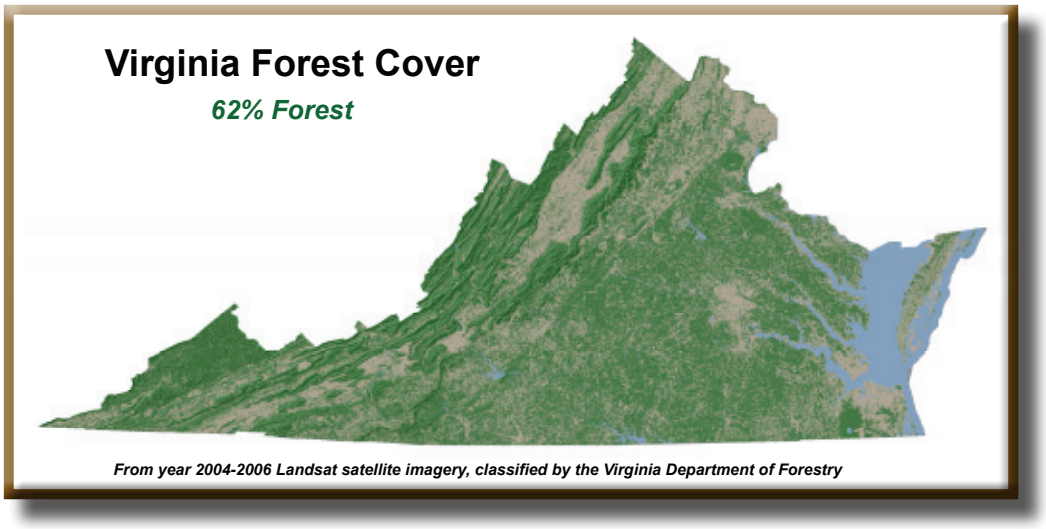


Figure 1 Virginia Forest Cover

Forest Ownership

Most of Virginia's forestland is privately owned (more than 12.8 million acres). More than 373,600 individuals and families hold a total of 10 million acres. These private holdings average less than 75 acres in size, but range from a few acres to thousands of acres.

By 2011, ownership of forestland by forest products firms had declined to slightly more than 1 percent (195,800 acres) of the total forestland area. This is a reduction from seven percent in 2001 and 11 percent in 1992.

The balance of Virginia's forestlands (18 percent) is owned by federal, state and local governments – the largest entity being the USDA Forest Service National Forest System lands at 1.7 million acres. (Figure 2)

The Virginia Department of Forestry – through its 22 state forests - holds 67,920 acres of forestland.

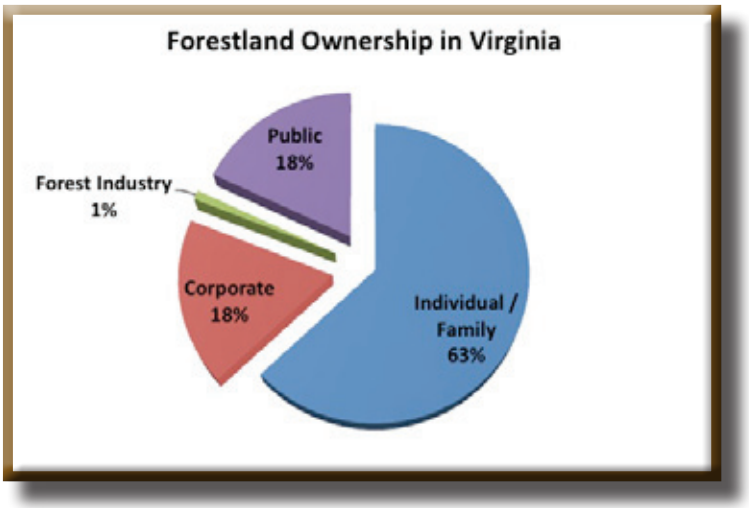


Figure 2 Forestland Ownership in Virginia

Forest Types

In terms of composition, the forests of Virginia continue to display good diversity. Hardwood and hardwood-pine forest types make up more than 12.6 million acres of the Commonwealth's forest – more than 79 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 half the hardwood acreage in stands 60 years old or older.

Pine forests represent approximately 3 million acres (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 63 percent of the pine acreage. (Figure 3)

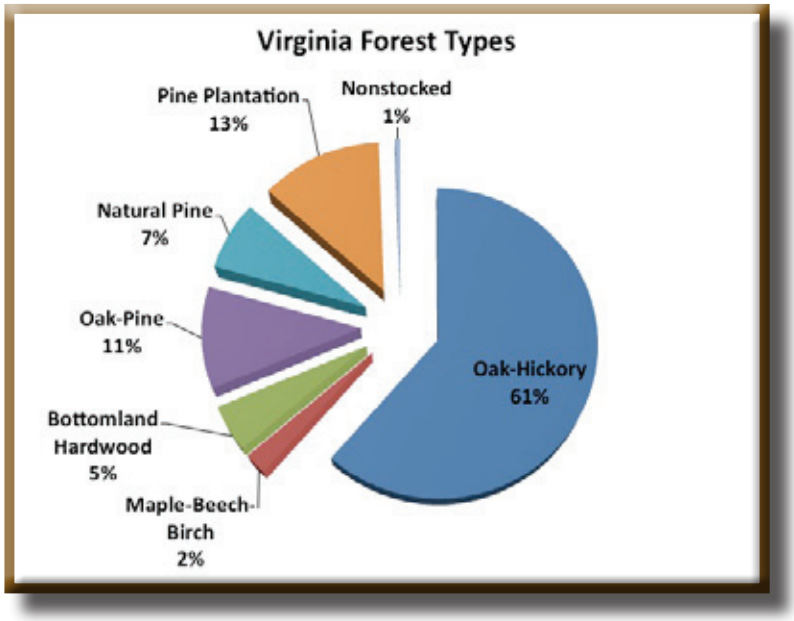


Figure 3 Virginia Forest Types

Forest Sustainability

There are several indicators that are reviewed to determine whether Virginia's private and public forests are healthy and are being managed sustainably. One of these is the relationship of the net growth versus the removal of forest volume, due to harvesting and land conversion.

Since 2007, the ratio of net growth to removals has improved. (Figure 4) Most of the change is due to the decline in removals, as related to the economic downturn. One exception to this is Southside Virginia, where the volume of removals has remained stable, in spite of the poor economy. This raises a concern for the long-term sustainability in this area of the state.

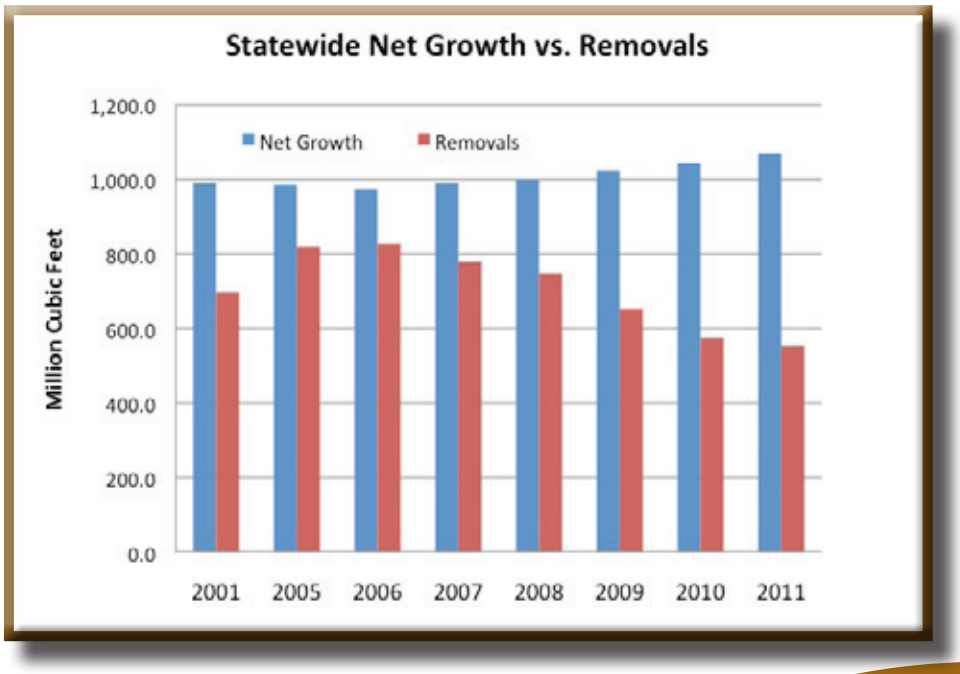


Figure 4 Statewide Net Growth vs. Removals

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 on which our quality of life depends. The Department of Forestry is committed to increasing awareness of these vital services and finding solutions that keep working forests on Virginia's landscape sustainably providing ecosystem services.

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 beginning to emerge to help forest landowners capture a value for the carbon sequestration service. The ability of forest growth to sequester carbon dioxide emissions and help provide solutions to climate change is a positive story to tell. 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.

Other emerging market opportunities include planting trees to enhance water quality. For example, in Virginia's Nutrient Credit Trading Program, tree planting projects on open land are recognized as a management practice that generates saleable credits. The plantings reduce nitrogen and phosphorus loading and, therefore, enhance water quality. Forestry will have a role to play in reducing nutrient loading in the Chesapeake Bay and other Virginia waters. The Department of Forestry was successful in incorporating a key element into the Phase II Watershed Implementation Plan (WIP). This element is focused on identifying strategies that reduce the rate of forest conversion. This effort is an important step in gaining recognition for the water quality values of existing forestland.

Another innovative idea being piloted in Virginia is the Forests to Faucets (F2F) program. This national level initiative, funded by the U.S. Endowment for Forestry and Communities and the Natural Resources Conservation Service, is designed to financially link urban water consumers to the rural landowners managing the watershed that provides the water supply. The specific project area has been expanded to the entire Rivanna River Basin. This includes much of Albemarle, Greene and Fluvanna counties. Landowners in this basin can receive a financial incentive for tree planting, donated conservation easements, riparian buffers, forest stewardship plans 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.

Other ecosystem services, such as providing for and enhancing biodiversity, are extremely important. How we manage our forests and plan for the development of Virginia's landscape need to consider biodiversity values. The Department of Forestry is working with Virginia Tech and other State agencies to further develop InFOREST, a web-based tool that enhances our ability to include ecosystem service considerations in our land-use planning efforts. InFOREST is being used to quantify ecosystem services, such as carbon sequestration and water quality, provided by forestland. InFOREST was publicly launched in April of this year. Work is now underway to include calculators for quantifying air quality benefits and how land cover changes impact biodiversity.

Forestland Conservation

Forest inventory data indicate that Virginia loses approximately 16,000 acres of forestland annually based on a rolling 10-year average. The rate of forest loss has slowed in recent years in response to the decline in the economy and the related pressures of land development. While the economic downturn may be reducing the current rate of forest conversion, it is also having an impact on land conservation efforts. The reduction in property values means that landowners who donate land or conservation easements on their land see the value of their donation reduced. Their donation then generates fewer of the tax benefits that provide the financial incentive for land conservation. While most landowners conserve their land out of a desire to protect their land from development, the financial incentives are critical for helping landowners to justify the surrender of a significant portion of their property's value.

In spite of all this, the VDOF continues to see tremendous demand from landowners to donate conservation easements on their forested properties. In calendar year 2011, VDOF accepted 24 conservation easements in 15 counties, protecting 8,019 acres from development.

One of the easements recorded last year was partially purchased using Forest Legacy funds. This 48-acre easement, while not a large acreage, adds to more than 1,000 acres of private land previously conserved along the beautiful New River in Grayson County. VDOF utilizes the Forest Legacy Program, administered by the USDA Forest Service, to conserve important forested properties, many of which provide a buffer along waterways that are sources of public drinking water. This competitive Federal grant program is intended to fund the purchase of conservation easements or fee acquisitions of land for conservation purposes. The program's purpose is to conserve environmentally-important forested areas that are threatened by conversion to non-forest uses.

The VDOF has developed two local sources of funding to provide incentives for landowners who donate conservation easements. The Tomorrow Woods program utilizes forest mitigation funds to reimburse landowners for the expenses associated with donating a conservation easement. These funds are available to landowners in the counties of Dinwiddie, Isle of Wight, Prince George, Southampton, Surry, Sussex, and the City of Suffolk. Forests to Faucets is an innovative program that was developed to link urban water users with the landowners who manage the land within the Rivanna River Basin. This watershed provides drinking water to thousands of consumers. One element of this program is an incentive payment to landowners who have donated a conservation easement that contains enhanced protections for water quality such as wider riparian buffers.

Recognizing that conservation easements are only one tool in our effort to preserve Virginia's legacy of working forests, the VDOF and Virginia Cooperative extension have developed an outreach and education program for forest landowners. These highly popular seminars focus on issues related to the transfer of forestland and its management from one generation to the next. The goal of these programs is to help landowners begin to make plans for the inevitable transfer of not just the family land but also the family's land management legacy. Several of these programs have been held and more are planned. We also continue to work with our conservation partners both within the state and the private organizations to encourage sustainable forest management on conserved lands.

VDOF's Mike Santucci, far right, and his colleagues celebrate the team's 2012 Changing Roles Leadership Award, which they won for developing and delivering an educational program called Generation Next. The program is designed to help forest landowners as they plan the transfer of their lands to a new generation of family members.

Our State Forests

We added one State Forest, Old Flat, in Grayson County. VDOF now has 22 State Forests totaling 67,920 acres. This year, these forests generated $205,009 in payments to their counties from timber sales and use permits.

Virginia's 22 State Forests – totaling 67,920 acres – are unique in their purpose, funding and use by the public. State forestlands have multiple objectives and are managed to provide the greatest range of benefits to the citizens of Virginia while remaining self-supporting and protecting or improving the forest ecosystem.

The purpose of management is for the demonstration of scientific forest management; applied forest research; development of diverse wildlife habitat; watershed protection; forest management to develop diverse timber stands that support biological diversity, and provide for passive outdoor recreation.

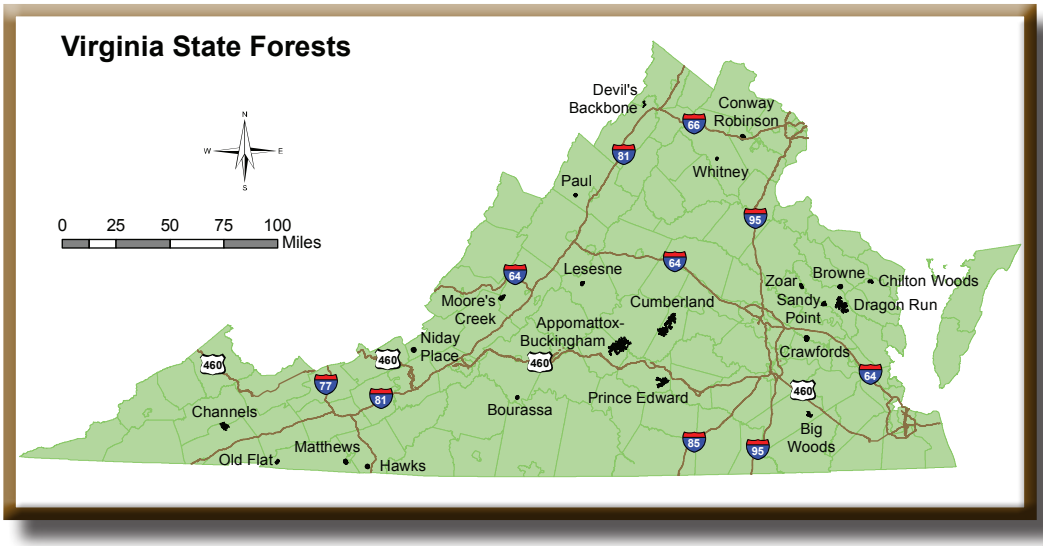
The State Forests are well distributed around the Commonwealth and vary in size from 121 acres to 19,808 acres. The large State Forests in central Virginia and southeastern Virginia are the core of the working forest concept and provide the majority of the income to fund the forest system. The smaller forests have developed uses that meet the needs of local users.

Recreational opportunities on these lands are focused on self-directed activities that are not available on many other state lands. These activities include hiking, bike riding, horse riding, orienteering, hunting, fishing and wildlife viewing. The central Virginia State Forests provide for an especially unique opportunity to enjoy the out-of-doors due to their large size, which offers an outdoor experience far removed from many of the distractions found in more densely populated areas. State Forest resources are finite, however, and usage will be judicious to protect the integrity of the State Forest purpose.

As the areas surrounding the State Forests continue to grow in population, recreational uses of the land will change along with the expectations from the general public.

The department will continue to be conscious of the changing expectations of the public and work towards providing recreational opportunities compatible with State Forest timber management objectives while delivering a rewarding outdoor recreation experience for the public. A signage program is being expanded within the State Forests to help educate the public about silvicultural operations that are required to maintain a healthy forest.

Over the past few years, forest users have become more diverse as have as their expectations of forest accessibility and usage. Traditional uses, such as hunting and fishing, remain popular uses of the forest, while new interests, such as hiking, horseback riding, mountain biking, adventure races, orienteering, bird watching, and as a place where people come just for the solitude, are becoming more popular uses in recent years.



Forest Management

The value and quality of forest benefits can be greatly enhanced through planning and implementation of good forest management practices. In 2012, the Department continued to emphasize planning and practice implementation.

Forests, by nature, require time to grow and develop. 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, private consulting and industry foresters develop these plans, and partner with state and federal conservation agencies and contractors to support and implement them. In FY2012, foresters completed plans on 95,921 acres.

Planning is the foundation upon which good forest management work is built. Forest landowners, contractors, consulting foresters and Department staff cooperate to put the plans into action. Silvicultural practices, things that utilize the art and science of tending forests, are the means to build these forests. There are many different types of forest management practices: preparing sites and planting trees; thinning; controlling competing or invasive vegetation; crop tree management; partial or complete harvesting for natural forest regeneration, and prescribed burning. In FY2012, 3,728 forest management projects were implemented throughout the state, and all were designed to build healthy, valuable and productive forests.

There are a number of programs designed to encourage and assist private landowners in implementing forestry practices. The Virginia Reforestation of Timberlands Program provides assistance for planting and improving pine forests. The program is funded by the wood-using industry and state general funds. For the past year, the program assisted owners with 966 projects on 38,040 acres. Through the history of the program, more than 1.5 million acres have been planted or improved. There are also a number of programs available through the USDA Natural Resources Conservation Service (NRCS); Department of Conservation and Recreation (DCR), and the USDA Farm Service Agency (FSA) that provide funding for forestry, conservation and wildlife practices.

Conservation Assistance: Effective Delivery is the Key

Forest resource management in Virginia is a cooperative effort, with assistance to owners delivered by professionals from many agencies and groups. Effective delivery is the key to effective accomplishments. Recognizing this, VDOF partnered with the NRCS to provide training to multiple levels of agency staff in leadership and effective service. Additionally several dozen private forestry technical service providers were certified in forest management plan development.

Regional Emphasis

In addition to the well-established statewide programs to emphasize and encourage forest management, the Department of Forestry is working on several special regional initiatives that are improving the resource and helping landowners meet objectives.

The Tomorrow Woods Program continues in Southeast Virginia, providing assistance for open land tree planting, conservation easements and enhanced forest management.

The Forests for Southwest Virginia program is focusing on appropriate open lands in the Roanoke Area.

The Forest to Faucets Program in the Rivanna River watershed in Central Virginia focuses on implementing practices and protecting lands that have a high water-quality benefit.

In southwest Virginia, VDOF is working to promote and demonstrate methods to restore productive mixed hardwood forests on previously mined lands. All of these projects will help in enhancing Virginia's forests adding to the benefits they provide to our landowners and citizens.

Forest Foundations: Chesapeake Bay Restoration Through Forestry continued in 2012. The program provides assistance to owners in the York River and Rappahannock River watersheds for management planning; forestry practices that protect water quality, and retention of land in forests. Funding is through the NRCS Cooperative Conservation Partnership Initiative program.

Forest Protection from Wildfire

The Virginia Department of Forestry responds to just more than 1,000 wildland fires that burn nearly 11,000 acres annually (based on a 10-year average, 2002 – 2011).

Although more than 60 homes and other structures are damaged or destroyed by wildland fire each year, on average, agency efforts protect more than 1,100 others at a value of more than $121 Million.

From July 1, 2011 through June 30, 2012:

- 633 fires burned 8,033 acres;
- almost $2 Million of timber was damaged;
- damage to homes and other buildings amounted to $1.9 million, and
- 640 homes, worth almost $86 Million, were protected thanks to VDOF efforts, along with the protection of an additional 481 other structures, worth an estimated $15 Million.

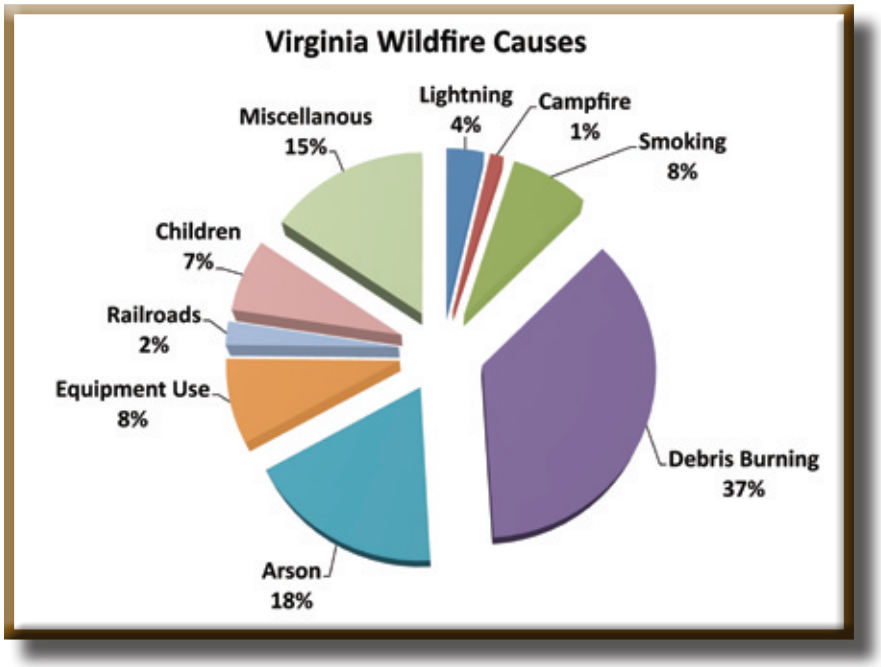


Figure 5 Virginia Wildland Urban Interface

The Agency relies on highly-trained and experienced personnel operating a fleet of 170 4x4 engines; six 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. VDOF responded to incidents in Arizona, California, Colorado and Idaho within the last 12 months. The practical experience gained during these events develops agency employees with a broad base of expertise to handle any emergency in Virginia.

Training Program

The Virginia Department of Forestry is a nationally recognized leader in its delivery of wildfire suppression, incident management and personnel development training for emergency responders. In June of this year, the VDOF held its 12th annual statewide Interagency Wildfire Academy. This academy, one of the four largest in the nation, provided training to more than 350 students representing more than 11,000 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 65 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.

Forest Protection from Wildfire,

continued

Dry Hydrant Program

The Virginia Dry Hydrant Grant Program is funded by the General Assembly using money from the Virginia Fire Programs Fund and administered by the VDOF. 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 32 new dry hydrants were installed through the program last year.

Volunteer Fire Assistance Program (VFA)

The Volunteer Fire Assistance Program continues to increase the fire protection capability in Virginia. This is accomplished by making available financial assistance to rural volunteer fire companies to provide additional training and the acquisition of small equipment and wildland personal protective equipment (PPE). Since the 1975 inception of this program, 5,129 grants have been made providing a total of $3,094,089 in matching grant funds.

The VDOF program is part of a grant that 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. The purpose of this program is to provide financial, technical and other assistance to State Foresters and other appropriate officials to organize, train and equip fire departments in rural communities. In 2011, 72 rural volunteer fire departments in the Commonwealth received $228,704 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 to ignite combustible homes and 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. The VDOF has been a leader nationally in the promotion and expansion of Firewise Program. In an effort to track the problem, the VDOF has conducted a woodland home survey every five years since 1979. There is little doubt that the problem of high-risk homes in a woodland environment is expanding.

To learn more, visit www.firewisevirginia.org.

Water Quality Protection

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 Total Maximum Daily Load (TMDL) and Watershed Improvement Plan (WIP) that has been 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. The other focuses on improving and protecting watersheds through management and land conservation.

The VDOF has been involved with the protection of our forested watersheds since the early 1970s with the development of our first set of Forestry Best Management Practices (BMPs) for Water Quality. The Department utilizes the fifth edition of those guidelines, which came out in 2011. The backbone for the Department's water quality effort is the harvest inspection program, which began in the mid-'80s. This program has provided for one-on-one contact between VDOF and the harvest operators and a welcomed opportunity to educate the operators on BMPs and the latest in water quality protection techniques. In FY2012, VDOF field personnel inspected 5,777 timber harvest sites across Virginia on 239,827 acres – a slight decrease in the number of acres harvested over FY2011. (Figure 6)

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. This occurred through training that the agency sponsored and, more recently, through VDOF participation in the SFI® SHARP (Sustainable Harvesting and Resource Professional) Logger Training Program. Since 1997, this program has enabled VDOF to assist in training 6,902 harvesting professionals in 221 programs relating to water quality protection. For FY2012, there were six training programs offered with a total of 95 people present. Three of these courses were in the core area (67 attendees), and the remaining three courses were for logger continuing education (28 attendees). In addition, the VDOF conducted two Gravel Road Workshops to educate 90 professionals from across the state on proper construction and maintenance techniques for gravel logging roads to reduce the impact of these roads on water quality. In addition, the VDOF promoted water quality protection and BMPs at the East Coast Sawmill and Logging Equipment Exposition in Richmond, Virginia. This biennial Exposition caters to sawmill operators and loggers, and it is estimated that 10,000+ people attended. The VDOF also "rolled out" a new program

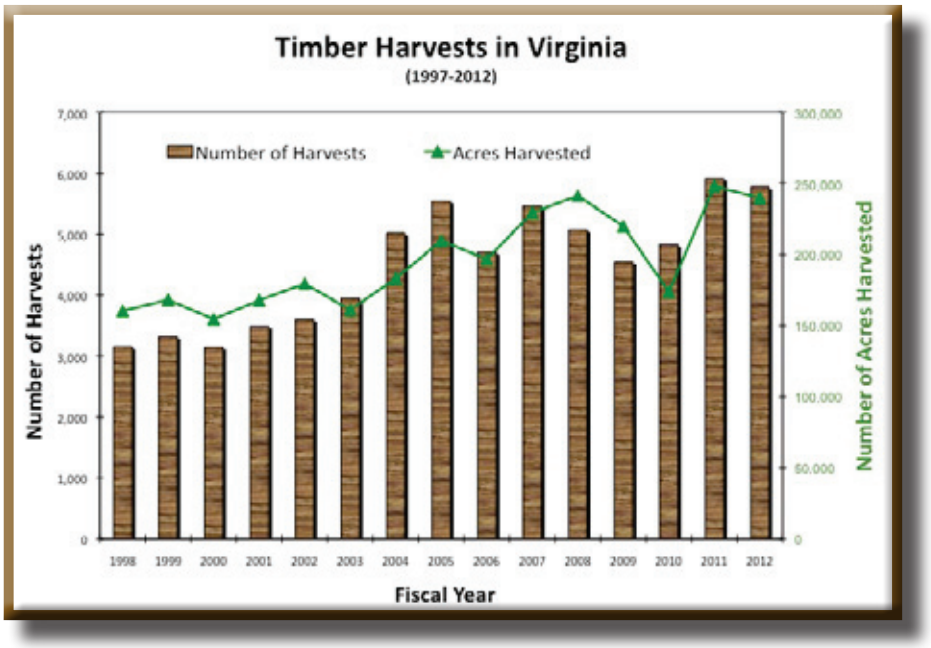


Figure 6 Timber Harvests in Virginia

Water Quality Protection,

continued

promoting Virginia's Forest Products under the "Virginia Grown" program of the Department of Agriculture and Consumer Services at the Expo.

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 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. Virginia continues to be the only state in the southeastern United States that grants enforcement authority under such a law to the state's forestry agency. In FY2012, the VDOF was involved with 201 water quality actions initiated under the Silvicultural Law – a reduction of 19 percent from FY2011. Of these actions, four resulted in Special Orders being issued for violations of the law, and one involved the issuance of Emergency Special Orders (Stop Work Orders). None of these proceeded to the issuance of civil penalties, however any penalties collected under this law are placed in the Water Quality Penalty Fund, which is a non-reverting fund to be used for education, demonstration and research.

A statewide audit system has been in place since 1993 to track trends in BMP implementation and effectiveness. Calendar year 2011 data show that overall BMP implementation on 240 randomly selected tracts is 85.5 percent – an increase of one percent over the previous audit cycle. The audit results also show that 98.3 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 in response to the TMDL for the Chesapeake Bay. Since the information is captured through GIS technology, this information can be compiled spatially for reporting on those forestry operations that occur within the boundaries of the Bay watershed. For calendar year 2011, the BMP implementation rate tract average for forest harvesting within the Bay Watershed was 90.7 percent, and the average of all BMPs across all tracts within the Bay Watershed was 89.8 percent. This BMP Implementation Monitoring effort has been automated over the past year to be compatible with VDOF's enterprise database system known as IFRIS (Integrated Forest Resource Information System).

VDOF offers cost-share assistance to timber harvest operators through a unique program offered through the utilization of funding from the Commonwealth's Water Quality Improvement Fund. This unique program shares the cost of the installation of forestry BMPs on timber harvest sites by harvest contractors. Unfortunately, the program was unfunded for FY2012.

Watershed Protection

Because forests provide the best protection for watersheds, one of the Department's goals is to increase the amount of forestland conserved, protected and established in Virginia's watersheds. The focus is on 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 protecting Virginia watersheds.

Virginia's Forestry BMPs that address harvesting have been highly successful. 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 may 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 in FY2012 was 28. This watershed protection option provided a tax credit of $168,677.36 on timber valued at $745,804.19 that was retained in the streamside areas.

Forests provide superior watershed benefits over nearly every other land use. Because of this, the Department is encouraging planting of open land with trees; establishing new riparian forested buffers where none previously existed, and providing protection of existing riparian forests through a tax credit. In the 2012 season, trees were established or protected on 3,743 acres of land.

Forest Health

The year 2012 has been mixed concerning forest health news in Virginia. 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.

While gypsy moth populations have remained low since 2010, native defoliators were quite active this spring. In particular, a massive **cankerworm outbreak** materialized around Richmond in late March, causing scattered, heavy defoliation over an area that spanned millions of acres from Petersburg up to the Northern Neck. Due to the record-warm winter and spring, this mass emergence occurred almost a month earlier than normal. Wet weather in May helped most trees re-foliate relatively quickly. However, for some areas this was the second year in a row of cankerworm infestation. Therefore, some trees, primarily oaks, could suffer long-term health impacts if they were severely defoliated during both years.

The **southern pine beetle** has been relatively quiet during the past 10 years. The last significant outbreak was during the late 1990s and had a major impact on pine in the mountains, particularly in southwest Virginia. As a result, many isolated areas once dominated by pine will revert to hardwood cover. However, 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 and loggers for thinning of pine stands. To date, Virginia has thinned about 40,000 acres of loblolly pine out of approximately 130,000 acres estimated to be overstocked. Overstocked pine stands are more vulnerable to bark beetle outbreaks, and thinning is the best method of reducing this threat.

A more recent threat is the **emerald ash borer (EAB)**. First discovered in Virginia during 2004 in Fairfax County, it has since spread to at least 17 counties across the Commonwealth and has also been found this year to be causing widespread ash mortality in several forested areas throughout Virginia. Virginia and the nation face the prospect of losing all ash species from natural and urban landscapes in the forthcoming decades. In Virginia, the impact may include the loss of the approximately 187 million ash trees in her forests and could eventually cost the Commonwealth many millions of dollars. The primary means of spread for EAB is through the unrestricted movement of firewood across state lines by private citizens.

The newest threat to Virginia's forests is **thousand cankers disease (TCD) of black walnut**, which, in 2011, was discovered in and around the Richmond area at multiple locations and in Fairfax and Prince William counties this year. TCD is spread by a tiny bark beetle called the walnut twig beetle. Quarantines established for this pest in the above-mentioned locations aim to limit the spread of this pest complex. TCD threatens black walnut trees in urban and forested settings and there are no effective controls currently available to protect trees.

US Forest Service Deputy Regional Forester Ken Arney (left) and Miles Johnston, a New Kent County forest landowner, unveil the sign designating Johnston's property as the site of the One Millionth acre of land protected from the Southern Pine Beetle. The ceremony was held Oct. 28, 2011 and included officials from the US Department of Agriculture, the US Forest Service, the Virginia Department of Forestry, New Kent County and the timber harvester who conducted the thinning operation.

Forest Research

If we are to make wise decisions based on information relevant to today's conditions – and the conditions of the future - then applied research remains critical to the Department's mission. The research program works to develop the new answers and information that will help us to protect and develop healthy, sustainable forest resources for Virginians today and in the future.

Forest research has been conducted by the Department of Forestry for more than 57 years, and many universities, industries and other state and federal agencies have been studying forests from one perspective or another for much longer than that. Certainly, we know more today than ever before about our forest ecosystems. So don't we already know everything there is to know about forests? Not even close…

With so many different species of trees growing together in varying mixtures on a wide array of soils and sites, and with the many different values and expectations stakeholders have for their properties, Virginia's forests and their sustainability are complicated subjects. And then we humans introduce change. If forest products, ownership patterns, markets, invasive species, and maybe even the climate continue to change, then all the answers we once may have had will be different under the "new" conditions. To magnify the challenge, the research staff and budget has diminished over the last several years, so we are prioritizing carefully to ensure that we devote our efforts to only the most important and forward-looking topics.

To accomplish this, the program staff (one research program manager, one tree improvement manager and one technician) maintains a network of more than 50 active studies located across the Commonwealth. These projects are targeted in four subject areas: tree improvement; diminished species restoration; pine silviculture, and hardwood silviculture. In 2012, in addition to installing four new studies and protecting / re-measuring many of the existing studies, we have distributed new results and recommendations in nine written reports and 10 oral presentations and responded to dozens of requests for information or advice.

One location of the PineMap (Pine Integrated Network: Education, Mitigation and Adaptation Project) study was installed at Appomattox-Buckingham State Forest during the winter of 2011-2012.

Tree Improvement Program

The tree improvement program develops the loblolly pine seedlings grown at our Garland Gray Forestry Center and distributed to the landowners of the Commonwealth for reforestation efforts. Primarily as a result of our long affiliation with the North Carolina State University Cooperative Tree Improvement Program, we continue to identify valuable seedling families and mixes that range from 25 percent to more than 60 percent greater productivity (growth rate) than those available before selection and breeding efforts. As seed production in our Third-cycle orchards continues to increase as the trees mature, we will transition to even more productive seedling crops over the next 10 years. And we are not resting on those laurels; this winter will see the establishment of test sites from which we will be selecting parent families to be included in our Fourth-generation orchards.

Forest Research,

continued

Diminished Species

In the area of diminished species, the Department actively supports efforts to study and restore American chestnut, longleaf pine, and shortleaf pine. In 2012, we provided more than 100,000 native Virginia longleaf pine seedlings for planting in southeast Virginia. In collaboration with the US Forest Service, we have been able to further demonstrate that northern source seedlings have unique genetic and physiologic attributes worthy of preservation. A similar test of shortleaf pine sources also shows the value of preserving and planting local source seedlings of diminished species.

Pine Silviculture

Like our tree improvement research, much of the study of pine silviculture is leveraged by our memberships in research cooperatives. Our active studies include: 1) combinations of thinning and nutrients for maintaining forest vigor and increasing productivity; 2) growth effects of biosolid applications compared to traditional inorganic fertilizers; 3) varied planting densities and interplanting following mortality to maximize product yields; 4) effects of various competition control methods and strategies, and 5) harnessing productivity to mitigate atmospheric carbon dioxide, more efficiently utilize nitrogen and other fertilizer inputs, and adapt forest management approaches to increase resilience in the face of changing climate. Our test of product-specific planting spacing and genotypes for loblolly pine is just ending its first growing season at three locations (Cumberland, Appomattox-Buckingham and Dragon Run State Forests), and we look forward to early data to help landowners better utilize both seedlings and space in the changing product marketplace.

Protection treatments being compared in the 2011 northern red oak study in Appomattox County include: 1) tubex standard; 2) tubex combitube; 3) acorn shelterguard; 4) acorn bio; 5) woven wire cages, and 6) Unprotected.

Hardwood Research Program

The hardwood research program continues to evaluate: 1) growth responses of Appalachian hardwoods following shelterwood harvests; 2) crop tree release/fertilization; 3) establishment methods for hardwood planting in riparian areas; 4) planted hardwood seedling size, and 5) impacts of different tree shelters on the growth of hardwoods in riparian plantings. During 2012, we collaborated with Virginia Tech and NC State University to establish trials looking for promising hybrid poplar or eucalyptus families for short-rotation planting in central Virginia.

Forest Industry and Markets

Virginia's forest industry and forests provide billions of dollars of economic output and other benefits annually. Although there is a long way to go for many of the markets to return to pre-recession levels, the last year has seen some positive signs. Ongoing challenges include changing forest markets; slowly recovering economy; changing demographics and forestland ownership; loss of forestland, and concerns on the sustainability of the resource. With more than 80 percent of Virginia's forests owned by private landowners, the future of the industry and available markets will depend on ensuring that the values and benefits they seek for owning forestlands complement each other. The VDOF continues to be very active in looking for solutions to improving markets and value for Virginia's Forest.

Industries and markets that are becoming more active include bio-energy, forest products exports and utilization of new technology and advanced manufacturing. Several biomass energy plants have come online or will soon be operating in Virginia, including three coal to biomass conversions by Dominion Power; the NOVI Energy biomass plant; Ferrum College biomass plant, and updates and expansions of systems by MeadWestvaco and Longwood University. There have also been several wood pellet mill announcements along with the opening of the Enviva pellet export facility in Chesapeake. In addition, Piedmont BioProducts hopes to soon start commercial production of bio-oil. While these plants have been very welcome, as with any new major market expansion, there are concerns with volatility, resource availability and sustainability and competition with existing markets and industry.

More Virginia forest industries are expanding into exporting their products, thus opening new market opportunities. This has been critical to many businesses' survival as domestic demand decreased. The low value of the dollar, export-related programs and excellent port facilities should continue to expand these opportunities.

The VDOF continues to work 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.

The VDOF continues to address issues identified by the Forest Industry Roundtable in 2009. Working with partners, we are analyzing barriers that are preventing more landowners from participating in forest certification programs. We are also looking at how the barriers affect timber harvesters and primary industry. As demands for documenting the sustainability of forest products increases, it is important that our landowners and industry can provide those assurances.

Working with state agencies, such as the Virginia Economic Development Partnership (VEDP) and Virginia Department of Agriculture and Consumer Services

VIRGINIA GROWN

Virginia Grown Forest Products Program

The Virginia Grown Forest Products program was developed this year in partnership with the Virginia Department of Agriculture and Consumer Services to make citizens aware of the value of purchasing and using wood products made from trees grown in the Commonwealth. By increasing the recognition of and the demand for Virginia forest products, we are supporting an industry that accounts for 144,000 Virginia jobs, contributes $27.5 Billion to the state's economy and ensures the sustainability of our forest resources.

Forest Industry and Markets,

continued

(VDACS), we promote new and expanding forest-related business formation in Virginia. An example of this is the new Virginia Grown Forest Products program that was started this year.

The 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. The VDOF has been awarded a grant to begin a community wood energy program in VA. A plan is being implemented on the Matthews State Forest to have a focus on renewable energy with educational programs and demonstrations of various technologies.

As forest landowner, industry and market demands increase and/or change, new forest operators and service providers are needed to address these demands. Types of business opportunities include operations that focus on small woodlot or community forest activities; utilizing urban wood; harvesting biomass for energy production, invasive species control and natural disaster mitigation, and ecosystem services assistance.

The VDOF has had a cooperative agreement with the USDA Natural Resource Conservation Service (NRCS) for more than 20 years to help support a Resource Conservation & Development (RC&D) forester. With defunding of the RC&D program, new ways will be needed for this partnership to continue the long history of meeting locally identified needs and attracting additional resources to Virginia. A related activity has been the NRCS Technical Service Provider (TSP) program that has promoted cost-share and management activities for forest landowners and worked to develop more service providers.

To be able to provide the needed assistance on forest markets and other forest benefits that landowners, industry and other stakeholders require, the 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.

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Urban Forestry Achievement Award

The National Association of State Foresters presented its Stewart Pequignot Current Achievement Award for Urban Forestry to VDOF's Paul Revell during the association's annual meeting in September 2012. Revell, who is VDOF's urban & community forestry coordinator, travelled to Cheyenne, WY, for the presentation. NASF honored Paul for his leadership and contributions on the state, regional and national level that have helped educate decision makers about the value of urban and community forestry and how it improves the overall health of a community.

Urban and Community Forestry

The Urban and Community Forestry (U & CF) Program helps Virginia communities maintain and enhance their community forests, and has raised awareness that these community forests provide multiple benefits: clean air, clean water, storm water management, community revitalization, community health and well-being, business district enhancement, viewshed protection, aethetics and contact with nature.

Technical assistance, such as tree selection and long-term tree maintenance through a variety of workshops and conferences, is provided to communities of all sizes. We oversee the Tree City USA® program of the Arbor Day Foundation, and have 51 communities in the program. Virginia also has two electric utilities participating in the Tree Line USA® program.

Through its Urban and Community Forestry Assistance Program, VDOF supports the capacity building efforts of 68 cities and towns, 26 counties, 70 non-profit organizations and several educational institutions. While this federal grant funding has been diminishing in recent years, the program is still very active and showing positive results.

Our partnership with Virginia Tech supports the urban and community forestry curriculum in the School of Forest Resources and Environmental Conservation (FREC); the Community Design Assistance Center (CDAC), and the U&CF coordinator serves on the the FREC advisory board. VDOF has helped expand CDAC's outreach into the coal counties of southeastern Kentucky. At the University of Virginia, the program continues to provide financial and training support to the Virginia Natural Resources Leadership Institute (VNRLI), which focuses on critical natural resource issues. VDOF also provided assistance to an evolving urban forestry program at Virginia State University.

Green Infrastructure

VDOF mapped green infrastructure networks in Nelson County and in the PDCs of Northern Virginia, Rappahannock-Rapidan and New River. We secured federal funding for the development of a green infrastructure process manual as well as four workshops that were held in strategic locations around the state. In addition, we assist the Urban Planning program at U.Va. by funding a semester-long class focusing on the green infrastructure approach to land planning.

Greenways and Recreation

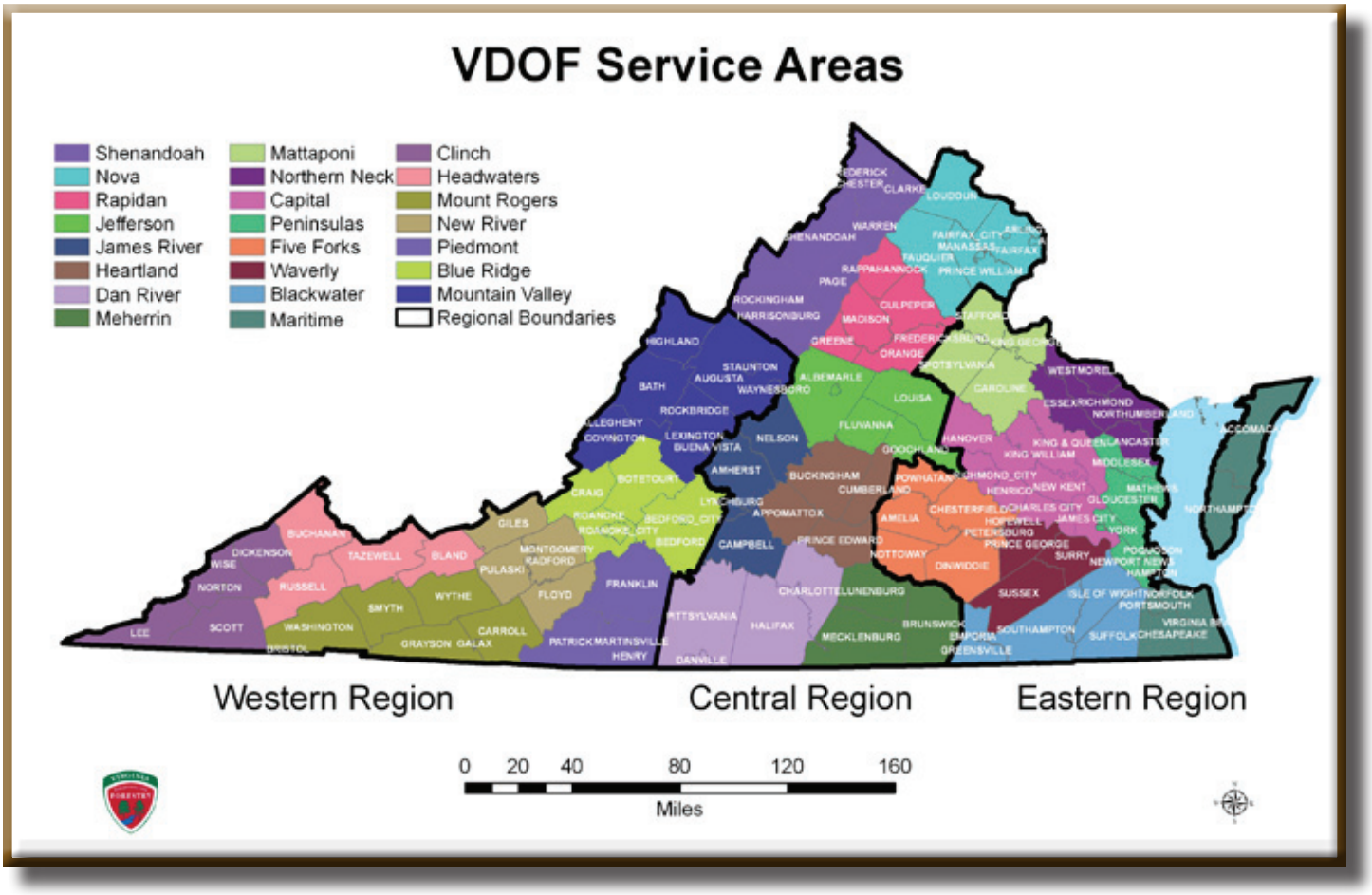
VDOF hosted the executive committee meeting of the 5-year Virginia Outdoor Plan being developed by DCR, and developed a greenway project in Spotsylvania County. In June, we hosted a tour for federal Office of Management and Budget and senior USDA Forest Service officials to showcase a successful greenway project in Luray. We support The Clinch River Valley Initiative – an important cooperative effort with U.Va., the Department of Housing and Community Development, and Virginia Tourism – to mobilize a number of Southwest Virginia communities, local governments, and organizations to unite in an effort to promote the outdoor resources of the Clinch River Valley.

Virginia Urban Forest Council

VDOF continues its strong and long-standing partnership with Trees Virginia (the non-profit Virginia Urban Forest Council) by hosting quarterly Urban Forestry Roundtable forums in Northern Virginia and has helped develop a similar roundtable series in the Hampton Roads area. Together, we've provided program assistance for the Mid-Atlantic Horticulture Short Course (Virginia's largest green industry gathering), and continued the very successful annual workshops in Waynesboro and Roanoke. The Tree Steward program – citizen volunteer groups that help cities and towns care for public trees -- has expanded to nine localities.

Agency Reorganization

With the loss of 40 people due to the state budget cuts and the need to continue to protect and serve the citizens of the Commonwealth, the VDOF reorganized this summer moving from the time-honored county-based service model to an area-based service model that includes the integration of new technology to better serve the landowners on their property. VDOF now has 23 service areas across the state with staff to provide wildfire suppression, landowner services and water quality inspections.



Accomplishment Report

July 2011 - June 2012

Objectives	Target Goal	Accomplished
Goal 1: Protect the citizens, their property and the forest resource from wildfire.		
Measure 1.1.1: Percentage of human-caused fires.	94.7%	88.1%
Measure 1.1.2: Percentage of eligible rural volunteer fire departments receiving available state and federal financial assistance.	40%	54%
Measure 1.1.3: Agency preparedness assessment score	75%	100%
Goal 2: Protect, promote and enhance forested watersheds, non-tidal wetlands and riparian areas.		
Measure 2.1.1: Cost to conduct a forest harvest water quality inspection.	$10.34/acre	$11.69/acre
Measure 2.1.2: Percentage of Best Management Practices implemented on timber harvesting operations.	85%	85.5%
Measure 2.1.3: Percentage of annual allowable harvests actually harvested.	80%	87.8%
Goal 3: Improve the stewardship, health and diversity of the forest resources.		
Measure 3.1.1: Percentage of eligible Reforestation of Timberlands incentive received by landowners.	92%	98%
Measure 3.1.2: Number of forestry management projects implemented on private land.	2,600 projects	3,725 projects
Measure 3.1.3: Number of acres of all forest management plan types achieved on private and appropriate public forestland.	135,000 acres	95,921 acres
Measure 3.1.4: Number of communities assisted with forest and/or tree resource management.	110 communities	114 communities
Goal 4: Conserve the forestland base.		
Measure 4.1.1: Number of acres of forestland established and/or protected in Virginia watersheds.	3,500 acres	3,744 acres
Measure 4.1.2: Number of acres protected from conversion	3,800 acres	8,466 acres
Goal 5: Promote forest industry and diversified markets for forest landowners including ecosystem service markets.		
Measure 5.1.1: Number of presentations/workshops/events promoting forest industry and markets.	6 events	19 events
Measure 5.1.2: Number of presentations/workshops/conferences and projects developed to promote market opportunities for landowners.	10 events	29 events
Goal 6: Collect, maintain and disseminate forest resource inventory and applied research information.		
Measure 6.1.1: Number of research reports issued annually.	8 reports	9 reports
Measure 6.1.2: Number of forest inventory count panels measured annually.	1 panel	1 panel
Goal 7: Manage agency resources to effectively and efficiently accomplish the strategic initiatives.		
Measure 7.1.1: Percentage of customers who rate the quality of VDOF's seedlings as satisfactory.	90%	92%
Measure 7.1.2: Percentage increase in net revenue generated by the state nurseries.	5%	0%

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