



2016 STATE OF THE FOREST



ANNUAL REPORT
ON VIRGINIA'S FORESTS

CONTENTS



| | |
|---|-----------|
| FROM THE STATE FORESTER | 3 |
| VIRGINIA FOREST TRENDS | 4 |
| FORESTED LAND | 4 |
| FOREST OWNERSHIP | 4 |
| FOREST TYPES | 5 |
| FOREST SUSTAINABILITY | 5 |
| ECOSYSTEM SERVICES | 6 |
| ENVIRONMENTAL FUNCTIONS AND VALUES PROVIDED BY FORESTS | 6 |
| FORESTLAND CONSERVATION | 7 |
| OUR STATE FORESTS | 8 |
| FOREST MANAGEMENT | 9 |
| SPECIAL PROJECT EMPHASIS | 9 |
| FOREST PROTECTION FROM WILDFIRE | 11 |
| FIRE | 11 |
| LAW ENFORCEMENT | 11 |
| TRAINING PROGRAM | 12 |
| DRY HYDRANT PROGRAM | 12 |
| VOLUNTEER FIRE ASSISTANCE PROGRAM (VFA) | 12 |
| WILDFIRE PREVENTION | 13 |
| FIREWISE | 13 |
| WATER QUALITY PROTECTION | 14 |
| WATERSHED PROTECTION | 15 |
| FOREST HEALTH | 16 |
| FOREST RESEARCH | 17 |
| FOREST INDUSTRY AND MARKETS | 19 |
| URBAN AND COMMUNITY FORESTRY | 22 |
| URBAN FOREST MANAGEMENT | 23 |
| PARTNERSHIPS WITH UNIVERSITIES | 23 |
| GREEN INFRASTRUCTURE | 24 |
| CLINCH RIVER VALLEY INITIATIVE (CRVI) | 24 |
| WORKING WITH THE INTERNATIONAL SOCIETY OF ARBORICULTURE | 25 |
| TREES VIRGINIA (VIRGINIA URBAN FOREST COUNCIL) | 25 |
| ACCOMPLISHMENT REPORT | 26 |

FROM THE STATE FORESTER



Welcome to the 2016 State of the Forest Report – my third as your State Forester. This report covers events and activities that occurred during the 2016 Fiscal Year (July 1, 2015 to June 30, 2016). As you will quickly ascertain when perusing the report, this year was another incredibly busy and successful one for the Virginia Department of Forestry. And all of us at the VDOF are very grateful for the many opportunities we experienced this year in our effort to protect and serve the citizens of the Commonwealth.

Virginia truly is a great place to practice forestry, and the landowners as well as the forest industry are major players in the economic, social and environmental health of the state. For example, on the economic front, forestry contributes \$17 billion to the Virginia economy each year (making it the third largest sector – behind agriculture and tourism – in the state) and provides employment for more than 103,000 Virginians. With new data from the U.S. Forest Service in hand, I can proudly share with you that 31,400 people have been added to the number of private landowners (who control 10.6 million acres of forestland) in the Commonwealth. For years, the number of private individuals and families who owned forestland stood at 373,600, but the new data shows that number to be 405,000. Contributing to this change are several factors, which include the addition of family partnerships, trusts and estates in the total, to more accurately represent the family forest ownerships that exist.



As you can see from our cover photo, 23 Virginia families were just inducted into the inaugural class of the new Century Forest Program, which Gov. Terry McAuliffe signed into law at a ceremony inside the Executive Mansion in March. This program honors those who have kept their land as working forestland – and in the family – for 100 years or more.

There were several other recognitions and honors that took place this year. In December, the U.S. Forest Service bestowed its Browning Award upon The Chrysler Museum of Art in Norfolk for its partnership with VDOF in the Smokey Bear art exhibition that took place as part of our 100th anniversary celebration a year earlier. In January, I presented the Crown Award to Rex Springston who, for more than 20 years, was the environmental reporter at the Richmond Times-Dispatch. (The Crown Award is the highest honor that the State Forester of Virginia can bestow.) In early February, Governor McAuliffe hosted a reception in the Executive Mansion to honor and thank the agency's wildland firefighters for the great work they do protecting life and property across the Commonwealth. And we were extremely fortunate to work with First Lady Dorothy McAuliffe to plant several longleaf pine trees – an important diminished species – directly behind the Executive Mansion during a ceremony on Arbor Day in April.

Other agency highlights for the year included: a special discount on the purchase of tree seedlings for veterans in early November; the announcement in April of a forest conservation easement on the 1,200-acre Ellis Mine tract in Culpeper County that helps protect the drinking water supply for the City of Fredericksburg; the Forestry Summit in April; the biennial Sawmill and Logging Expo in May; the 16th Virginia Interagency Wildfire Academy at Longwood University in May; the 70th annual Holiday Lake Forestry Camp for teens in June; numerous workshops, retreats and educational events for Virginia landowners, and several specialty tours for international forestry delegations, national nonprofit organizations and federal agency staff members.

While we had many, many highs last year, we did experience one big loss due to the passing of our dear friend and colleague Paul Revell in March. A 30-year employee of the VDOF, Paul led our urban and community forestry program for more than 12 years, and his efforts touched more people in more communities than probably anyone else in the agency. His work was recognized locally, regionally and nationally with numerous awards and honors, but he never stopped looking for ways to help people and communities succeed. His legacy lives on in the projects that span every corner of the Commonwealth.

It's my honor to serve as your State Forester and to work with such a dedicated group of people at the VDOF. And it's a real pleasure to interact with the many forest landowners, partner organizations, stakeholders and industry members with whom we work.

Please continue reading the 2016 State of the Forest Report, and let me know your thoughts about the topics presented. Thanks!

Sincerely,

Bettina K. Ring, State Forester

VIRGINIA FOREST TRENDS



FORESTED LAND

For 2016, more than 16 million acres – more than 62 percent of the Commonwealth (figure 1) – qualified as forestland. Of this forestland, 15.3 million acres are categorized as commercial timberland and more than 500,000 acres are categorized as reserved forestland, e.g., Shenandoah National Park, VA State Parks, etc.

Since 1977, an average of more than 16,000 acres of forestland has been converted to non-forest uses annually, a trend that is projected to continue.

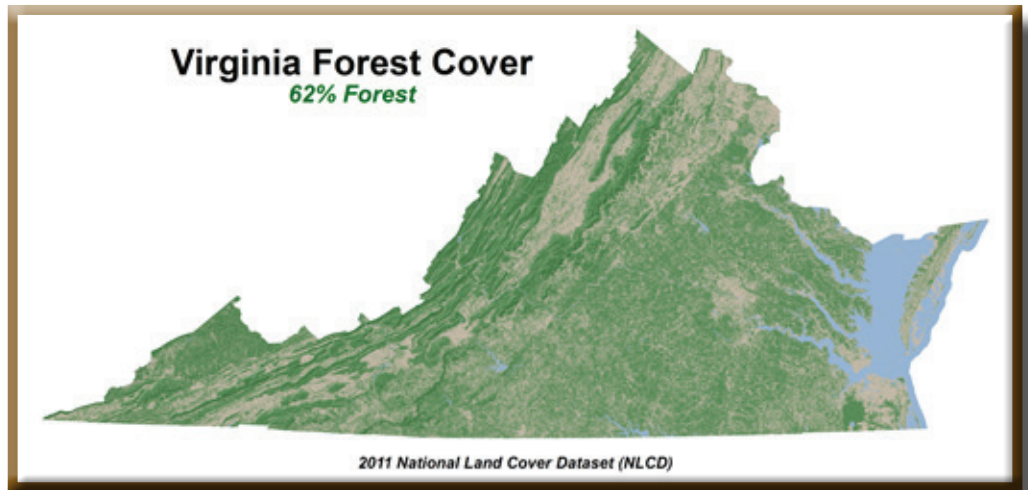


Figure 1 Virginia Forest Cover

FOREST OWNERSHIP

Most of Virginia's forestland is privately owned (more than 13 million acres), ranging from a few acres to thousands of acres in size. Approximately 405,000 individuals and families hold a total of 10.6 million acres; 95 percent of these family ownerships are less than 100 acres in size.

By 2013, ownership of forestland by forest products firms had declined to slightly more than 1 percent (188,400 acres) of the total forestland area. This is a reduction from seven percent in 2001 and down from 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 24 state forests – holds 68,607.5 acres of forestland.

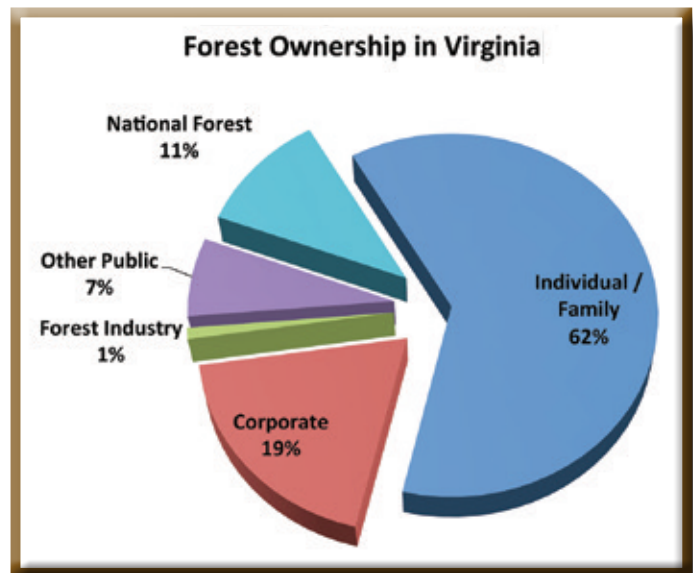


Figure 2 Forest Ownership in Virginia



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 3.2 million acres (21 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 65 percent of the pine acreage (Figure 3).

FOREST SUSTAINABILITY

For 2014, the ratio of the forest's annual growth compared to harvest volume (on private and state lands) was more than 2.1:1 for softwood species and 2.2:1 for hardwood species (figure 4). This amounts to an annual surplus of 8.4 million tons of softwood and 14 million tons of hardwood statewide.

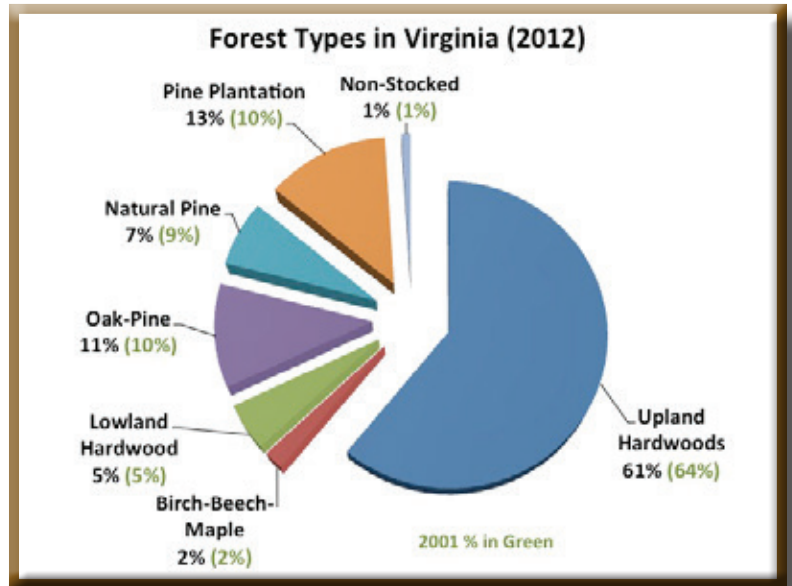


Figure 3 Forest Types in Virginia

CENTURY FOREST PROGRAM SIGNED INTO LAW

Gov. Terry McAuliffe signs Senate Bill 252 into law at a March 21st ceremony inside the Executive Mansion. The bill created the nation's first Century Forest Program, which recognizes those Virginia landowners who have owned their forestland for more than 100 years. The law went into effect on July 1st, and the first class of Century Forest landowners (as seen on the cover of this report) was inducted Nov. 21, 2016 at a special ceremony held at Montpelier – home of President James Madison.



ECOSYSTEM SERVICES



ENVIRONMENTAL FUNCTIONS AND VALUES PROVIDED BY FORESTS

Virginia's forests provide many environmental benefits and services, such as carbon sequestration, biodiversity, pollination, recreation, aesthetics, nutrient and sediment load reduction to streams and air quality enhancement. These regulating and cultural services are in addition to the provisioning services, like wood products, that we traditionally utilize. Forests on our landscapes are truly the best land cover that provides this multitude of environmental functions and values. VDOF 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 23.5 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. However, each year, approximately one million metric tons of carbon dioxide are emitted into the atmosphere due to land-use changes.

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. The VDOF played a key role in getting recognition for existing forest cover into the Chesapeake Bay Phase II Watershed Implementation Plan (WIP). VDOF is now working with partners (George Washington Regional Commission, Rappahannock River Basin Commission, The Nature Conservancy, EPA and the Virginia Department of Environmental Quality) on an EPA pilot project that demonstrates the positive gains to protecting water quality that forest conservation provides.

In addition to carbon sequestration and water quality, other forest ecosystem services, such as providing biodiversity and air quality, are extremely important. How we manage our forests and plan for the development of Virginia's landscape need to consider these values. Working with Virginia Tech and other State agencies, VDOF has developed and launched InFOREST, a web-based tool that will enhance our ability to include ecosystem service considerations in our land-use planning efforts. InFOREST can be used to quantify ecosystem services, such as carbon sequestration, biodiversity, air quality and water quality provided by forestland.

VDOF is becoming more involved in conducting environmental reviews and developing mitigation responses for projects that impact loss of forestland. Projects reviewed include power lines, transportation (roads, airports and rail) and pipelines. Mitigation responses that lessen the impacts caused by loss of forest functions and values are extremely important.

VDOF was instrumental in creating the Virginia Forest Conservation Partnership (VFCP). This partnership

was forged to better leverage agency and organization missions; forest conservation and forest mitigation initiatives, and available conservation financing. The VFCP provides a more collective, stronger voice for the need to conserve Virginia's forests.

VDOF HOSTS EAST ASIAN FORESTRY TOUR

VDOF Director of Agency Lands Harvey Darden leads a tour of the Augusta Forestry Center for a delegation of forestry professionals and landowners from several East Asian nations in July 2015. VDOF served as a host for this two-day tour that was sponsored by the U.S. Department of Commerce.



FORESTLAND CONSERVATION



The Virginia Department of Forestry (VDOF) Forestland Conservation Program encourages family forest landowners to keep their woodlands intact, in forest and, where desired, in family ownership. The program does so through a combination of conservation easements, intergenerational forestland transfer programming and the new Century Forests program.

The VDOF Conservation Easement Program enables forest landowners to make certain their lands are available for forest management in perpetuity, with a focus on forests that provide the greatest range of natural functions and values. Because larger blocks of working forest provide the greatest range of benefits, VDOF conservation easements emphasize keeping the forest land base intact and undivided, enabling landowners to manage their forestland for timber products and environmental values. In 2016, the VDOF permanently protected 3,225 acres of open space through 17 conservation easements and another 23 acres in one amendment; the agency now holds 131 easements covering 36,818 acres. VDOF easements continue to reflect the goal of conserving large blocks of forestland – protecting the sustainable flow of products, functions and values from our woodlands. The average VDOF easement property is 283 acres; 91 percent forested, and protects more than a mile and a half of streams. VDOF now holds easements in 50 counties and the City of Suffolk.

Most forestland conversion in Virginia is occurring on family-owned forestland – land that is most susceptible to fragmentation and conversion at the point of intergenerational transfer of the family property. Forestland owners 65 years and older own 41 percent of Virginia's 10.6 million acres of private forestland, placing more than four million acres at risk of conversion in the next decade. In response, VDOF and Virginia Cooperative Extension continued to offer the award-winning short course "Focusing on Land Transfer to Generation 'NEXT'", hosting the 2015 workshop in Natural Bridge, Va. This workshop uses a public-private collaboration of legal, financial and conservation professionals to focus on issues related to the transfer of forestland and its management from one generation to the next. The program was attended by 24 families that hold nearly 5,100 acres of farm and forestland. Following short course participation, landowners indicated the program would increase the likelihood of their property staying in the family (75 percent) and staying in woodland (74 percent). Follow-up surveys reveal that in the six months following the short course, more than 75 percent have begun succession planning. As these landowners continue executing their plans, approximately 51,972 acres of land is expected to remain open and family owned.

VDOF has launched the nation's first Century Forests Program. The new law, designed to honor and recognize those Virginians whose families have owned working forestlands for more than 100 years, went into effect July 1, 2016, enabling the agency to acknowledge those families who have made a long-term commitment to enhancing the environment and protecting the quality of life for their fellow Virginians through forestry. This continued commitment not only determines what Virginia's forests look like today, but plays a critical role in defining

their future. To qualify for Century Forests designation, the property must have been owned by the same family for at least 100 consecutive years; include at least 20 contiguous acres of managed forest; be lived on or managed by a descendant of the original owners, and have a history of timber harvests or forest management activities.

VDOF CELEBRATES THE ELLIS MINE EASEMENT

The Purcell family of Louisa County receives their Forestland Conservation Easement sign and their Forest Legacy sign from Virginia State Forester Bettina Ring and U.S. Forest Service's Scott Stewart, respectively, at a ceremony held in April to recognize the Ellis Mine Conservation Easement that was established on a 1,200-acre property the Purcell family owns in Culpeper County. The land helps protect the Rappahannock River and the drinking water for the City of Fredericksburg.



Virginia's forests look like today, but plays a critical role in defining

OUR STATE FORESTS



Virginia's 24 state forests, totaling 68,607.5 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 to 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.

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 a unique opportunity to enjoy the out-of-doors due to their large size, which provides for an outdoor experience far removed from many of the distractions found in more densely populated areas. State forest resources are limited, however, and recreational usage must be balanced with good forest management to protect the integrity of the state forest purpose.

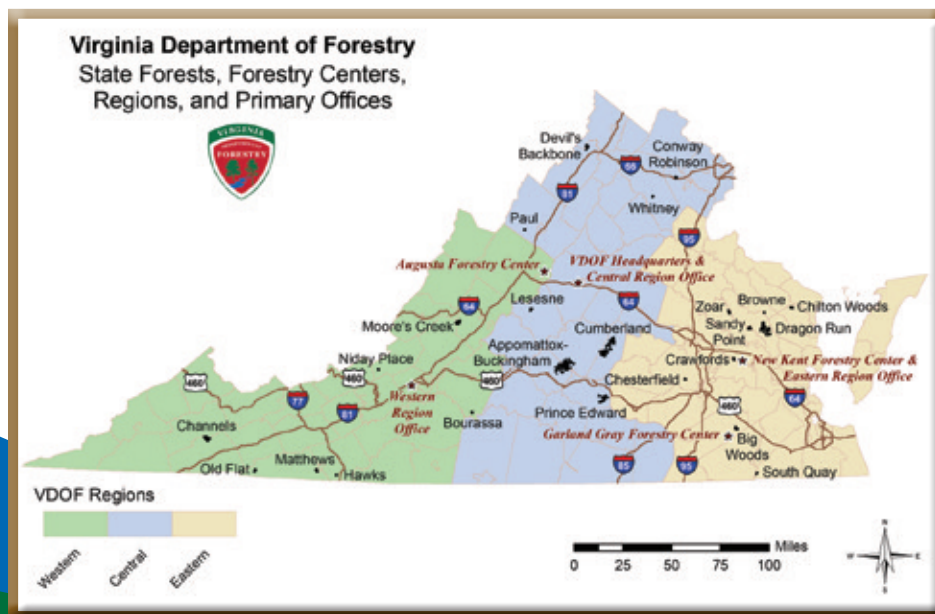
As the areas surrounding the state forests continue to grow in population, recreational uses of the land will change along with the expectations from the general public. The department will continue to be conscious of the changing expectations of the public and work towards providing recreational opportunities compatible with state forest timber management objectives while providing 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.

In recent years, forest users have become more diverse as have 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 popular uses.

State Forests are also increasingly used for educational efforts associated not only with landowner education but for youth education programs; soil and water conservation district programs; demonstrations and continuing education credits for loggers; ecotourism; outdoor laboratories by various college disciplines, and several Extension programs.

To address the increasing use of State Forests for such activities, VDOF embarked on the establishment of a second forest conservation and education center located at the Matthews State Forest in Grayson County. Construction on this second facility to supplement our Virginia Forest Education Center at New Kent is being primarily funded through a trust established by the late Judge Jack and Clare Matthews. Through partnerships, a 22-mile hiking trail with additional parking was created on the Channels State Forest in Washington County to help with education and ecotourism in that area.



FOREST MANAGEMENT



The value and quality of forest benefits can be greatly enhanced through planning and implementation of good forest management practices.

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. Department of Forestry, private consulting and industry foresters can develop these plans, and partner with state and federal conservation agencies and contractors to support and implement them. In FY2016, foresters completed plans on 161,871 acres.

Silvicultural practices – management activities that utilize the art and science of tending forests – are the means to build good 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 2016, we focused on tree planting. VDOF foresters reported tree planting on nearly 45,000 acres.

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 forest industry and state general funds. For the past year, the program assisted owners through incentive payments with 994 projects on 41,474 acres. Through the history of the program, planting or improvement projects have been completed on more than 1.6 million acres of Virginia forestland.

The Department is also partnering with other state and federal agencies to leverage the combined resources to implement good forest management practices on private lands. Through several programs available through the USDA Natural Resources Conservation Service (NRCS), Virginia landowners are able to receive incentive payments for forestry, conservation and wildlife practices. One of these programs, the Regional Conservation Partnership Program, brought funds specifically for the implementation of forestry practices.

SPECIAL PROJECT EMPHASIS

Special projects offer the opportunity to further develop and enhance Virginia's forest resources, and there were several such projects this year.

Forest/Wildlife Action Plan Integration

Forest and wildlife habitat are integrally related. The Department of Forestry, the Department of Game and Inland Fisheries (DGIF) and all states have developed comprehensive action plans that address forests and species of greatest conservation need. Virginia was one of only two states that took a comprehensive look at both plans and formulated actions to integrate the two. With funding support from the U. S. Endowment for Forests and Communities

WOMEN LANDOWNERS MEET

VDOF Area Forester Heather Dowling helps participants register for a Women and Land meeting held May 6 in Dinwiddie County. More than two dozen women landowners took part in the day-long meeting and discussion.



and assistance from the Commonwealth Management Institute at Virginia Tech, VDOF and DGIF did a side-by-side comparison to find common themes; held three interactive training sessions with field personnel, and collaborated on several on-the-ground demonstration projects in each region of the state. The process served to increase awareness, develop relationships and open the doors for greater cooperative work between the agencies to achieve allied goals.



Riparian Forest Buffer

Renewed emphasis. Establishing forest buffers along non-forested streams has long been recognized as a highly effective tool to reduce sediment and nutrients in streams and greatly improve water quality. For nearly 20 years, the USDA Conservation Reserve Enhancement Program (CREP) has assisted farmers and agricultural producers with buffer establishment. Through a cooperative program, led by the Farm Service Agency (FSA) with partners of the Natural Resources Conservation Service, the Department of Conservation and Recreation and VDOF, hundreds of miles and thousands of acres of buffers have been created. In 2015-16, the CREP program was again renewed, and tree establishment guidelines were revised. Several joint agency rallies were held to promote and announce the program. The Department of Forestry, with support from FSA and the U. S. Forest Service, was able to add several field employees in strategic locations to work with farmers and VDOF field staff to encourage the establishment of buffers.

Longleaf Pine Restoration

Longleaf pine was one of the most imperiled tree species in Virginia, plunging from a historical acreage of 1.5 million to just a few hundred trees. Over the past 15 years, steady progress has been made on several fronts to bring back this iconic ecosystem to southeast Virginia. Cones have been collected; seedlings produced; a seed orchard is being established, and reforestation and follow-up management (burning) is being done on private and public land. Virginia is the recipient of a grant from the Longleaf Stewardship Fund, administered by the National Fish and Wildlife Foundation. Led by VDOF, partners include the Nature Conservancy; the Virginia Department of Conservation and Recreation, Natural Heritage Division; the Department of Game and Inland Fisheries, and Meadowview Biological Research Station. The grant will support reforestation and prescribed burning on state land and protected land, outreach to landowners and additional emphasis on prescribed burning. VDOF has hired a longleaf/Southern Pine Beetle prevention forester and has formed a part-time prescribed burning crew. All of these efforts should boost restoration success.

HOLIDAY LAKE FORESTRY CAMP

The 70th Annual Holiday Lake Forestry Camp brought together more than 60 teenagers from across the Commonwealth for the week-long, residential camp. In addition to the academic components, campers tried their hand at tree seedling planting; use of a Biltmore stick; along with a two-person sawing competition. Virginia's forestry camp is the second oldest in the nation.



FOREST PROTECTION FROM WILDFIRE



FIRE

The Virginia Department of Forestry responds to nearly 1,000 wildland fires that burn a total of approximately 11,000 acres annually (based on a 10-year average, 2006 – 2015).

Although 74 homes and other structures are damaged or destroyed by wildland fire each year, on average, agency efforts protect more than 1,300 others at a value of more than \$140 Million.

From July 1, 2015 through June 30, 2016:

- ▲ 498 fires burned 8,618 acres;
- ▲ more than \$6.2 million dollars of timber was damaged;
- ▲ damage to homes and other buildings amounted to \$759,000, and
- ▲ a total of 875 homes, worth more than \$99 million, along with an additional 740 other structures, worth an estimated \$8.5 million, were protected thanks to VDOF efforts.

The Agency relies on highly-trained and experienced personnel operating a fleet of 160 4x4 engines; one specially equipped Hummer; 10 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 768 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 Alaska, California, Florida, North Carolina, Idaho, Utah and Washington 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.

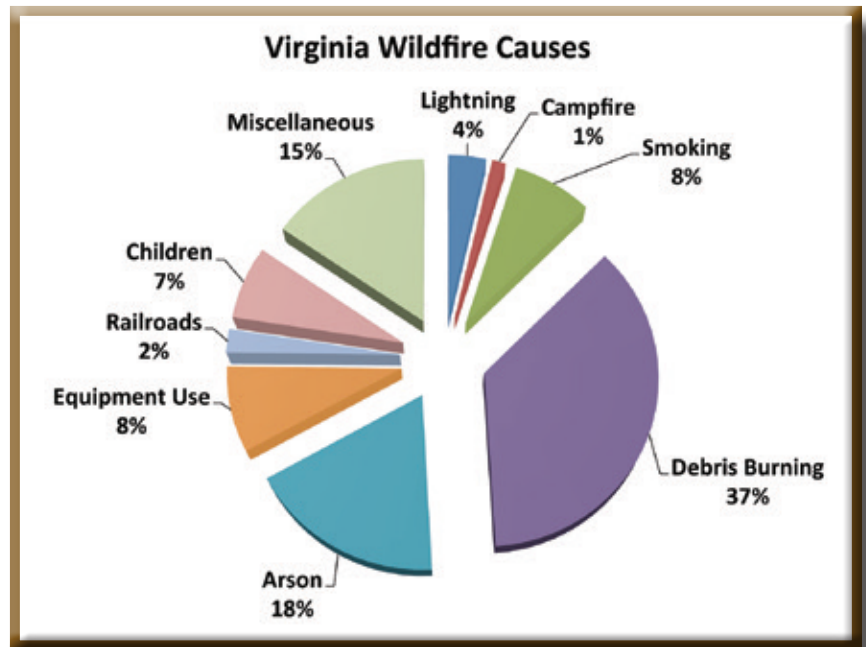


Figure 7 Virginia Wildfire Causes

LAW ENFORCEMENT

Virginia Department of Forestry personnel are unique in that they are the only responders' group in the Commonwealth who are both firefighters and law enforcement personnel. Agency law enforcement duties are focused on the enforcement of forestry and fire-related laws, wildfire arson investigations and fire suppression cost collections throughout the Commonwealth. In 2015, agency officers issued 79 summons/warrants and handled 87 court actions.

FOREST PROTECTION FROM WILDFIRE,

continued



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, the VDOF held its 16th annual statewide Interagency Wildfire Academy, which is one of the four largest in the nation. During the 2016 fiscal year, the VDOF provided training to 892 firefighter students representing more than 11,000 staff hours of total training. Agency training events hosted responders from various state and federal agencies across the Commonwealth, responders from three surrounding states and representation from more than 137 Virginia Volunteer Fire Departments.

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 28 new dry hydrants were installed through the program last year, in addition to making repairs to 14 others that were already in the program. The Virginia Dry Hydrant program has now installed a total of 1,711 dry hydrants throughout the Commonwealth.

VOLUNTEER FIRE ASSISTANCE PROGRAM (VFA)

The Volunteer Fire Assistance Program continues to increase the fire protection capability in Virginia. This is accomplished through 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, 5,555 grants have been made providing a total of \$3,984,449 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 – 580 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 2016, 103 rural

GOV. MCAULIFFE PARTICIPATES IN FIRST CAPITOL SQUARE FAIR

Gov. Terry McAuliffe stopped by the VDOF booth at the first-ever Capitol Square Fair and joined in on the fun by doing his own leaf rubbing.



FOREST PROTECTION FROM WILDFIRE,

continued



volunteer fire departments in the Commonwealth received \$208,944 in Volunteer Fire Assistance funds made available to Virginia. Requests for support continue to greatly exceed the available funding – last year’s assistance requests totaled \$800,000.

WILDFIRE PREVENTION

In Virginia, 96 percent of wildfires are human-caused; the most prevalent cause being debris burning. This makes fire prevention efforts in Virginia critical to the VDOF forest protection program. One such effort focuses on a national prevention program effort called "Firewise."

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 the Firewise program. Virginia has 63 nationally recognized Firewise USA communities, making Virginia one of the top 10 states nationally in terms of communities recognized under the program. There is little doubt that the problem of high-risk homes in a woodland environment is expanding, and the VDOF is aggressively working to reduce the total threat to Virginia’s communities.

To learn more, visit www.firewisevirginia.org.

BROWNING AWARD PRESENTED TO THE CHRYSLER MUSEUM OF ART

Key members of The Chrysler Museum of Art in Norfolk pose with Smokey Bear after receiving the Robert E. Browning Jr. Award on Dec. 1, 2015. The Browning Award is presented by the U.S. Forest Service to recognize excellence in wildfire prevention in the Southern USA. The Chrysler Museum hosted a six-month exhibition of Smokey Bear art by Rudy Wendelin as part of VDOF’s 100th anniversary celebration.



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 Implementation 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 Virginia Department of Forestry 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 fiscal year 2016, VDOF field personnel inspected 5,163 timber harvest sites across Virginia on 232,305.3 acres – a marginally slight decrease in the number of acres harvested over FY2015.

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 8,236 harvesting professionals in 268 programs relating to water quality protection.

For fiscal year 2016, there were 15 training programs

offered with a total of 536 people present. Seven of these courses were in the core area (235 attendees), and the remaining eight courses were for logger continuing education (301 attendees). The VDOF also promoted water quality protection and BMPs at the East Coast Logging and Sawmill Equipment Exposition in Richmond, Va. This Exposition is designed to exhibit the latest equipment and logging techniques to timber harvesters. Approximately 10,000+ attendees were present to get the BMP message and to hear about things, such as invasive species and forest certification messages, that will affect timber harvesting in the future. VDOF staff also testified before USEPA in Washington, D.C., on the effectiveness of a non-regulatory BMP Program, which helped that federal agency make the decision not to regulate forest roads.

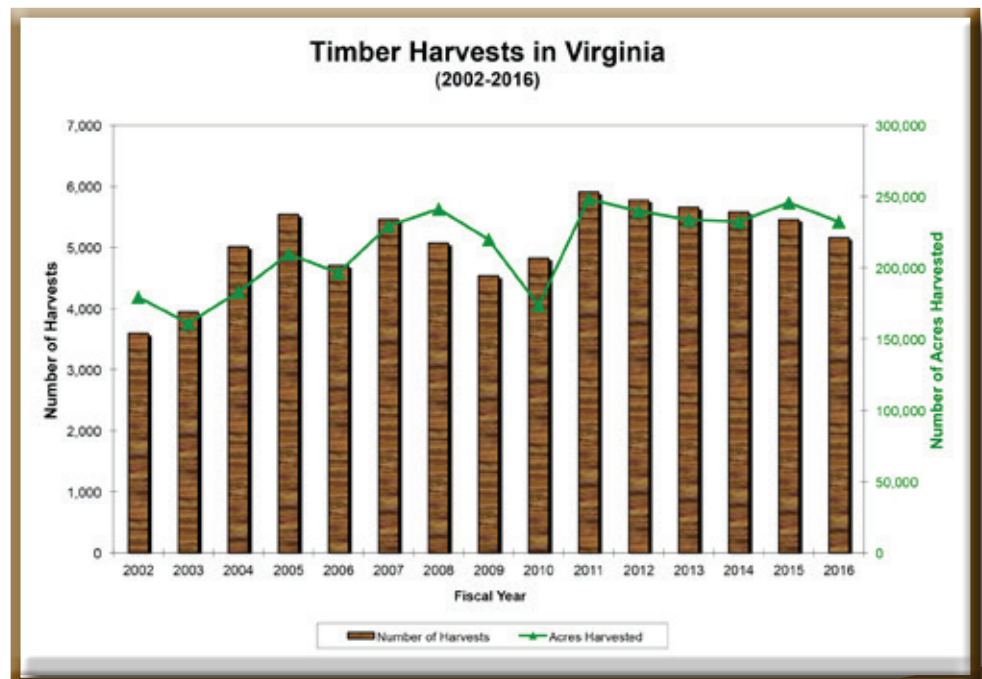


Figure 8 Timber Harvests in Virginia

WATER QUALITY PROTECTION,

continued



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 forestry 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 fiscal year 2016, the VDOF was involved with 261 water quality actions initiated under the Silvicultural Law. This is an increase of 34 percent from FY2015. Of these actions, six resulted in Special Orders being issued for violations of the law, and three involved the issuance of an Emergency Special Order (Stop Work Order). One of these proceeded to the issuance of a civil penalty.

A statewide audit system has been in place since 1993 to track trends in BMP implementation and effectiveness. Results from the calendar year 2015 data show that BMP harvest median implementation rate on 240 randomly selected tracts is 96.0 percent statewide – the harvest median score is the best judge of central tendency of the tract score. The audit results also showed that 99.17 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 2015, the BMP implementation rate harvest median score for forest harvesting within the Bay Watershed was 96.8 percent. This whole BMP Implementation Monitoring effort has been automated over the past several years to be compatible with VDOF’s enterprise database system known as IFRIS (Integrated Forest Resource Information System).

VDOF provides 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 program shares the cost of the installation of forestry BMPs on timber harvest sites by harvest contractors. This program was funded for FY15-16 with 30 stream protection projects having been funded that are incorporating the use of portable bridges that will provide stream crossing protection for not just the site for which they were funded but will continue to provide stream protection for years to come.

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 watersheds for Virginia’s southern rivers. FY16 proved to be one of the most active years in the young history of the VDOF easement program, as the year saw the agency bring to record 20 open space easements on 3,995 acres, 3,765 of which are forested, ensuring permanent riparian buffers on more than 21 miles of watercourses.

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 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 in Tax Year 2015 was 64, a slight increase in number of applications over the previous year. This watershed protection option provided a tax credit of \$387,248 on timber valued at \$1,691,011.54 that was retained in the streamside areas of their properties. This was an increase in both value of buffer retained and tax credit issued.

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.

FOREST HEALTH



Emerald ash borer mortality

Forest Health is an essential part of our livelihood and provides benefits to our economy, human health and wildlife. The VDOF Forest Health Program surveys and monitors for major forest pests, pathogens, non-native invasive plants and other disturbances. A variety of forest health threats were identified in 2016.

Outbreaks of gypsy moth in Virginia have historically been cyclical with years of heavy activity and severe defoliation followed by years with virtually no noticeable damage. After a recent period of little significant defoliation due to the gypsy moth in Virginia, there was a flurry of activity in Highland and Bath counties in 2015 when more than 8,000 acres of damage were mapped. This year marked an increase in gypsy moth activity, and defoliation was reported in Bland and Giles counties. Aerial surveys revealed approximately 29,000 acres of damage spread across more than 54,000 acres of land. In previous years, populations of gypsy moth have been controlled in part by the fungus *Entomophaga maimaiga*. This fungus kills the larval stage of gypsy moth and proliferates in wet weather, meaning that a spring season with abundant rainfall may lead to decreased gypsy moth populations and less defoliation. If gypsy moth populations remain high for another couple years, tree mortality is likely to increase – especially in mature oaks that may already be stressed. Oak decline, a disease complex associated with an aging cohort of oaks that results from a combination of abiotic and biotic factors, is one of the largest mortality factors for mature hardwoods in Virginia. Declining oaks are common and widespread throughout the state, and increased pressure by defoliators, such as the gypsy moth, will only exacerbate the issue.

Exotic pests continue to spread throughout the state. The emerald ash borer (EAB), first discovered in Virginia in 2008, has now been confirmed in 38 Virginia counties. This insect is one of the most destructive forest insects to invade Virginia, and is causing widespread ash mortality across the state. EAB attacks all species of ash and could greatly impact the approximately 187 million ash trees across the Commonwealth. Other invasive pests that continue to negatively affect forest health include the hemlock woolly adelgid, beech bark disease and thousand cankers disease. Thousand cankers disease is spread by the walnut twig beetle, a tiny bark beetle that attacks black walnut trees. The disease was discovered in multiple locations around Richmond in 2011 and also in Fairfax and Prince William counties in 2012. Quarantines are established in these areas to limit the spread of the disease, and trapping efforts the last few years have revealed no new areas of concern.

The most destructive insect pest of pines in Virginia is a native insect, the southern pine beetle (SPB). Despite causing millions of dollars' worth of damage throughout the Southeast since the 1980s, however, this insect has been relatively quiet the last 13 years. Only areas near the Eastern Shore of Virginia experienced significant southern pine beetle activity in 2016. Thinning has long been accepted as an effective strategy to reduce a stand's susceptibility to the SPB, and VDOF offers financial assistance to landowners who perform pre-commercial thinning on their pine stands and loggers who perform first commercial

thinning on small tracts of land. Federal funds from the USDA Forest Service, Forest Health Protection, Southern Pine Beetle Prevention Program support our cost-share programs for landowners and loggers. Through this program, we have cost-shared more than 48,000 acres of pre-commercial thinning since the program's inception in 2004.

Monitoring efforts continue for the Asian longhorned beetle and laurel wilt disease, an invasive insect and disease, respectively, that have the potential to cause detrimental effects to Virginia's forest if they become established. The jumping oak gall, variable oak leaf caterpillar and elm leaf beetle are seasonal native pests that rarely cause long-term widespread damage, but were reported in abundance in isolated parts of the state this year. Anthracnose was also common, especially among sycamores, due to the high amount of precipitation this spring. Non-native invasive plants continue to degrade forest values throughout the state by competing with native flora and reducing biodiversity. Combating invasive species will be a challenge on private and public lands for the foreseeable future.





For more than six decades, the Applied Forest Research Program has been installing controlled scientific studies across Virginia to provide new information that protects and sustains Virginia's forest resource. With a focus on partnerships, collaboration and outreach, the Program continues to ensure that important practical results are available to forest owners across the Commonwealth. Without this spirit of teamwork and technical support, valuable current practices – such as selecting and deploying the best-growing loblolly pine seedlings, controlling competing vegetation to accelerate pine reforestation, using crop tree release to sustain desirable hardwood regeneration or restoring longleaf pine using seedlings native to Virginia – might not have been fully developed or implemented here.

Program activities continue to focus on five broad subject areas:

Pine Forests – Decision support for the agency's pine resource sustainability strategy has become a top priority this year, with the development of a flow chart system for loblolly pine establishment that classifies sites according to landowner objectives and productive potential and then recommends appropriate management scenarios. This, in turn, will help us to maximize the level of production from Virginia's pine forests and help maintain consistency among our foresters. Also in support of that strategy, a new study was installed at two locations to compare the growth of loblolly pine when competing vegetation is controlled at different stand ages. The objective is to ensure that we are applying weed control at the most effective time to maximize growth. We've also installed plots to compare seedlings lifted using different equipment at our Garland Gray nursery to ensure that both systems are producing quality seedlings; early data show nearly 100 percent survival with both approaches.

Hardwood Forests – The sustainability of our hardwood resource has also been prioritized this year. Work is nearing completion on a strategy document, and, in support of that, we have added study plots to compare different harvest systems' effects on future forest composition and the effects of invasive species on hardwood regeneration. Our study investigating methods to remove dense understories of American holly is already paying off. Results show that hollies are relatively easily removed using controlled stem applications of a common herbicide product, and early indications are that the resulting increase in sunlight may be encouraging more desirable regeneration of oak species. And we have co-authored a chapter in a recently published textbook on managing oak forests in the East.

Pine Tree Improvement – Two new progeny tests were installed to support ongoing selections of the best pine families to plant in Virginia, bringing the total number of active test sites to 15. By measuring these trees and selecting those with the fastest growth, best form and most disease resistance, we are able to continually ensure that the trees included in our future seed production orchards are the very best for Virginia landowners. With the increasing demand for seedlings and the high concern for future pine productivity / sustainability,

ensuring the supply of nursery offerings – that grow as much as twice as fast as the average loblolly pine – is a critical effort.

Diminished Species Restoration – Additional studies investigating longleaf pine planting densities and longleaf pine planting dates have been installed, and two poster presentations to present our research data at the Biennial Longleaf Conference in Savannah, GA, were made. Our planting date study has shown that longleaf seedlings survive well whether planted in the fall or spring; mortality increases only if the seedlings are planted in the coldest days of winter or later than mid-April. With increasing help from the American Chestnut Foundation, work on breeding blight-resistant American chestnut continues as we try to complete controlled crossing of the current resistance lines. And this year, we will see the first data from our shortleaf pine planting density study.

Growth and Yield Modeling – Tree measurements were collected for seven of our 16 active study locations that contribute important data for updating models used to project growth and product yield of pine forests. Compiled by the Forest Modeling Cooperative at Virginia Tech, these tools help us to predict and compare the effects of different operations on the long-term development and value of our forests. These tools are becoming more and more important in helping us to compare different management options for pine forests by projecting their eventual growth and value.

More details and results from all of VDOF's Applied Forest Research Program activities can be found on our website at <http://dof.virginia.gov/infopubs/index-research.htm>.



CHESTNUT PROPAGATION

Each year in early June at the Lesesne State Forest (Nelson County), we place bags over flowers on select hybrid chestnuts to prevent random pollen from fertilizing them. These parent trees are selected for superior blight resistance and American chestnut appearance and traits. Pollen from surviving pure American chestnuts in central Virginia is then collected and applied to the “bagged” flowers to create a new hybrid, and the nuts are left to develop until mature in late September. In this series of photos, you see the pollination bags and chestnut burs after they were removed from one of the parent trees this autumn along with the hybrid nuts that we removed from the burs. After spending six months in cold stratification, the nuts will be planted at the Matthews State Forest’s hybrid chestnut orchard near Galax.



FOREST INDUSTRY AND MARKETS



Virginia's forest industry is continuing to adapt and grow as both the domestic and international economies continue to recover from the "great recession." This is good news for the Commonwealth as we are seeing industry expansion and improving markets that are increasing the more than \$17 billion of annual economic output and several billion more in other benefits, such as recreational activities, wildlife habitat and environmental and other services. Employment is also increasing beyond the more than 103,000 jobs reported in the 2013 Economic Impacts of Agriculture and Forest Industries in Virginia Study. As the economy continues to improve and we see both domestic and international markets for Virginia's forest products grow, we still need to be aware of challenges and issues that impact our forests and forest industries. While some international markets are improving, the strong U.S. dollar and weak economies in other countries continue to change product demands and where they go. On the domestic side, housing (a key indicator of wood demand) is still recovering more slowly than expected; at the same time, changes in demographics and forestland ownership, forestland loss and fragmentation and changing product demands are increasing concerns on forest resource sustainability.

The latest timber harvest information shows that we continue to harvest near-record amounts of pine saw timber and pulpwood and that hardwood saw timber is also recovering to pre-recession levels. While these harvest levels are very positive to Virginia's private forestland owners and the economy, we need to be sure that we continue to actively monitor our resource availability and sustainability to ensure that we can continue to receive all the benefits that we depend on from our forests into the future. VDOF continues to work with forest industry, Virginia Tech, Southern Group of State Foresters' (SGSF) Services, Utilization and Marketing (SUM) Committee and other partners (in-state and regionally) as well as private landowners, who own more than 80 percent of Virginia's forests, to monitor the resource and improve opportunities to expand and maximize working forests and improve markets and value for everyone. These efforts include our continuous analysis of the forest inventory in Virginia; working with Virginia Tech through the newly established Center for Natural Resources Assessment and Decision Support (CeNRADS); addressing domestic and international utilization and marketing issues through SGSF's SUM Committee; continuing research and working with landowners to better manage their forests to meet future needs, and producing better seedlings to develop more productive forests in the future.

The recent number of forest industry changes and consolidations has declined. Much of the consolidation was with hardwood mills to improve the availability of grade hardwoods to both international and domestic customers. These included Baillie Lumber buying American Hardwood Industries, which included Augusta Lumber's operations, and Northwest Hardwoods buying Fitzgerald's and Shenandoah Hardwood mills. The slowing of the world economy and reduced buying of wood products from China has caused a reduction in hardwood products exports over the last year. Also, with the merger of Mead-Westvaco and Rock-Tenn into WestRock, half of the pulp



and paper mills in VA are now under one company.

The bioenergy sector continues to be a strong growth area in Virginia and includes 10 wood pellet mills for both domestic and foreign markets, five biomass and one hybrid coal/biomass electrical generation plants and several biomass energy plants providing both heat and energy to industrial, commercial and public operations. However, while the large industrial export pellet plants continue to expand markets, low fossil-fuel prices are impacting producers of residential wood pellets and biomass energy.

The VDOF continues to work to obtain new resources 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 and relevant in today's world. Working with VDACS' International Marketing Division, we are increasing our efforts to promote Virginia's forest industry and products around the world to maximize opportunities to participate with and

FOREST INDUSTRY AND MARKETS,

continued



improve access to international customers. We continue our efforts to expand the Virginia Grown Forest Products program to increase demand for local forest products and to try to increase other Virginians' awareness to the important role that forest products have in their lives. We continue to work with counties, companies and agencies to utilize state programs – like the Agriculture and Forestry Industries Development (AFID) Fund – to improve opportunities for new or expanding business.

Working with various agencies, partners and stakeholders, VDOF continues to seek and leverage resources for programs and activities to ensure that forest landowners and industry continue to have markets for their products now and in the future. As part of our efforts to maintain sustainable working forests, we continue to work with partners to improve landowner access to forest certification programs and certified wood markets. Virginia is also working with regional and national partners to educate other countries on the health and sustainability of our forests through articles, meetings and tours. As demands for documenting the sustainability of forest products increases, it is important that our landowners and industry can provide those assurances.

VDOF has worked with the Center for Natural Capital and other partners on the community wood energy program in Virginia. The goal of the program is to help local schools, communities and industry reduce energy costs and improve job and economic opportunities by converting to biomass energy systems that use local resources and producers, while developing markets for low-quality and waste wood that can improve forest management and health and waste reduction. Several resources, including the website <http://www.woodenergyva.org/>, education materials, project ranking and evaluation tools and technical assistance have been developed. As this initial grant-funded project is completed, the efforts will continue and expand through a USDA Forest Service grant awarded to the Center for Natural Capital to develop a State Wood Energy Team.

As part of VDOF efforts to improve forests and identify new market opportunities, work is continuing on developing uses for urban wood and increasing service providers that can provide management assistance on small forestland acres and forests in more populated areas. With around 30 percent of Virginia's forestland now considered to be in small acreage or in urban/suburban areas, care of this growing part of our resource is becoming more critical. Surveys of forest operators, municipalities and arborists along with analysis of the information are completed. The results are being used to design educational programs, workshops and demos to help municipalities, new forest operators and service providers focus on better small woodlot or community forest management, increasing urban wood use and on controlling impacts of invasive species control and natural disasters.

VDOF is working with VA Tech, Southern VA Higher Education Center and partners to increase the use of VA wood in buildings. One project is looking at using various softwood and hardwood species

DEATON RECOGNIZED FOR EXCELLENCE IN SCIENCE EDUCATION

State Forester Bettina Ring, left, with Lisa Deaton at the Virginia Museum of Natural History's awards ceremony, which was held March 24 in Waynesboro. Lisa was honored for her work as VDOF's Project Learning Tree Coordinator and Educational Specialist and received the 29th Annual Thomas Jefferson Award for Science Education.



FOREST INDUSTRY AND MARKETS,

continued



to construct Cross-Laminated Timber (CLT) panels to be used in tall building construction. As part of this effort, Charlie Becker was selected to attend an education tour of mass timber and tall wood buildings through the American Wood Council at the University of British Columbia in Vancouver, Canada, in August 2016.

VDOF and Department of Taxation worked with Virginia's forest industry, associations and stakeholders on changes to the Virginia Forest Products Tax to better reflect current timber harvesting and processing activities. The revenue-neutral changes that took effect in July 2015 should lead to better efficiency and compliance of tax collections that are used to protect, care and sustain our forests through programs like the Virginia Reforestation of Timberlands (RT) Program. The results of the first-year collections under the new changes will be analyzed later this year.

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. The VDOF Utilization and Marketing Program continues working with partners and other VDOF offices to keep Virginia at the forefront of assisting our forest landowners, industry and other stakeholders in being able to take advantage of both the traditional and emerging market opportunities and other forest values. This is because, to have healthy, sustainable forests, we need healthy, sustainable forest industries and markets.

2ND ANNUAL ECOLOGY INSTITUTE

High school teachers gathered at Sandy Point State Forest (King William County) for a day of experiential learning as part of the 2nd Annual Ecology Institute, which is hosted by VDOF and sponsored by the Virginia Department of Education. The Institute is a week-long, residential program based at VDOF's New Kent Conference Center near Providence Forge, Va.



URBAN AND COMMUNITY FORESTRY



Community forests provide multiple benefits to Virginia's cities and towns. The Urban and Community Forestry (U&CF) Program helps Virginia communities maintain and enhance their community forests and raise citizen awareness as to the multiple benefits these forests provide: clean air, clean water, storm water management, community revitalization, community health and wellbeing, business district enhancement, aesthetics and the all-important contact with nature.

The Urban and Community Forestry Program works with communities of all sizes, providing project coordination and networking, technical assistance, educational opportunities, professional development, academic program support and grants for specific projects. Technical assistance, such as tree selection and maintenance, riparian planting and restoration, tree/utility issues, urban tree-canopy assessment and green infrastructure planning, is provided across the Commonwealth. Educational opportunities include workshops around the state as well professional forums in Northern Virginia and Tidewater. The program also provides scholarship opportunities to statewide, regional and national educational events, such as the Mid-Atlantic Horticulture Short Course, the Municipal Foresters Institute and the Arbor Day Foundation Partner's Conference. VDOF continues to oversee the Tree City USA® program in which 55 communities are certified. There are now four college campuses in the Tree Campus USA® program as well as three utility companies in the Tree Line USA® program. Through its Urban and Community Forestry Assistance Program, the Virginia Department of Forestry has supported projects in 127 cities and towns, 57 counties, with 112 non-profit organizations and multiple educational institutions, Planning District Commissions and Soil and Water Conservation Districts participating since the program's inception. Funding for the program continues to be modest, supported by Federal funds, but the program is very popular and shows positive results.

The **Virginia Trees for Clean Water (VTCW) grant program** continues to gain popularity. Through funds from the USFS Chesapeake Watershed Forestry Program and Virginia Department of Conservation and Recreation Water Quality Improvement Funds, VDOF has developed the Virginia Trees for Clean Water program, which is designed to improve water quality across the Commonwealth through on-the-ground efforts to plant trees where they are needed most.

Projects include tree-planting activities of all types: riparian buffer tree planting, community and neighborhood tree plantings, etc. Grants are awarded through this program to encourage local government and citizen involvement in creating and supporting **long-term and sustained canopy** cover. There have been 101 active projects with \$439,492 being awarded. To date, this has resulted in more than 27,250 trees being planted and more than 7,500 volunteer hours logged across the state.

The **Richmond Urban Tree Canopy Initiative (RUTCI)** was developed in 2015 by VDOF in close cooperation with the **Alliance for the Chesapeake**

Bay with funds from Altria Corporation supplemented by the VTCW grant funds. The funds are targeted for tree planting in the Richmond Planning District Commission localities on public or private lands. In its first granting cycle, there were 10 projects funded. This is a great example of leveraging federal, state, private and local community funding to increase tree canopy in the Richmond metropolitan area. From these projects, 646 trees have been planted, and the \$25,000 provided in grant funds leveraged \$ 158,038 of matching support from the partners and grant recipients.

FIRST LADY MCAULIFFE CELEBRATES ARBOR DAY

First Lady Dorothy McAuliffe delivered a rousing speech as part of the Commonwealth's 2016 Arbor Day celebration in Richmond in April.



URBAN AND COMMUNITY FORESTRY,

continued



URBAN FOREST MANAGEMENT

Utilization of urban trees removed due to development, storm damage, landscape renewal or any other reason has traditionally been restricted to firewood, mulch or the landfill. This is a major source of woody material that could often be utilized in a more sustainable manner. We have been working with marketing & utilization staff to promote the use of this resource. Some communities have made the effort to develop contracts for the wood to be chipped and sent for biofuel. We are working on the development of a Virginia Urban Wood Utilization Group that will spearhead the high use of some of the wood. Potential products include boards, custom-made furniture, turned items or crafted items, such as bowls, spoons and cutting boards. The resource is there waiting to be more sustainably used, and we are working to develop the interests and markets for urban wood.

With USFS funds for an Urban Wood Utilization project where North Carolina Forestry Service was the lead agency, Forestry FastBreak videos were developed, and Virginia was able to have them customized with the Virginia Department of Forestry logo and information.

The three Forest FastBreak videos can be accessed via www.youtube.com/ForestryTV or via the following links: Posted on the VDOF website under Publications

<http://www.dof.virginia.gov/print/index.htm>

And under the Urban Forestry page

<http://www.dof.virginia.gov/forestry/community/index.htm>

With funding from a USFS competitive grant, we have developed a new resource for Virginia's communities: the Urban Forest Emergency Management Planning workbook and template. Communities may use the resource to develop plans to better manage their urban forest to reduce damage from storms and how to deal with the potentially huge volumes of wood should a major natural disaster hit their communities. The workbook and template will be available in hardcopy to the current Tree City USA communities and also available to download online from our website.

The Urban Forest Strike Teams (UFST) are comprised of specially-trained ISA-Certified arborists who assist communities with the classification of damaged urban trees based on FEMA 325 guidelines for the purpose of reimbursement under Public Assistance during the recovery phase of a federally declared disaster. At the same time, they provide on-site rapid individual evaluation of trees damaged during a natural disaster that pose a risk to the community. UFSTs are stand-alone resources that use an incident command system (ICS) structure with the UFST Team Leader and UFST Team Leader Assistant directly supervising UFST Task Specialists. Arborists can provide disaster planning assistance, risk assessment and FEMA Public Assistance (PA) information to communities following natural disasters to develop in-

state and regional capacity to respond to disasters by providing effective, practical and comprehensive urban tree assessment training to state agency arborists. Virginia has seven personnel trained as UFST Leaders and 11 as UFST Task Specialists. Personnel have been deployed to assist communities in Oklahoma, Arkansas and Kentucky after ice storms; to Louisiana after a hurricane, as well as in-state after a tornado.

PARTNERSHIPS WITH UNIVERSITIES

Our partnership with Virginia Tech supports the urban and community forestry curriculum in the School of Forest Resources and Environmental Conservation (FREC), and VDOF continues to have representation on the FREC Advisory Board. VDOF also continued its long and productive partnership with the Community Design Assistance Center (CDAC). CDAC continues to provide landscape and environmental planning assistance to communities statewide. One of these projects was cited as an outstanding project by the National Association of State Foresters (NASF) and was featured on that organization's website. With the help of federal funding, VDOF helped expand CDAC activities into western North Carolina where six projects were completed. At the University of Virginia, the program continues to provide support to the Virginia Natural Resources Leadership Institute (VNRLI), which focuses on critical natural resource issues. The Department also continues to provide assistance to an evolving urban forestry program at Virginia State University.

URBAN AND COMMUNITY FORESTRY,

continued



GREEN INFRASTRUCTURE

VDOF continued a strong partnership with the Green Infrastructure Center (GIC) in 2016. A GIC publication, *Evaluating Conserving Green Infrastructure Across the Landscape*, originally supported by VDOF, was published for national distribution by Island Press in February. VDOF continues to network GIC with state forestry agencies in other states, resulting in green infrastructure initiatives in both the South and Northeast. VDOF received federal Landscape Scale Restoration (LSR) grant funding, and these funds are supporting green infrastructure planning in 11 selected cities, towns and/or counties. Selected communities include: the towns of Buchanan, Woodstock, South Boston and Tappahannock; the cities of Charlottesville, Radford, Suffolk and Hampton, and the counties of Albemarle, Essex and Grayson. VDOF has provided support for the development of these plans, and these communities are benefiting not only by receiving these plans but also up-to-date urban tree canopy or land-cover analyses; comprehensive GIS data to use for planning purposes, and comprehensive planning strategies to help conserve natural assets.

CLINCH RIVER VALLEY INITIATIVE (CRVI)

VDOF, as the initial funder of the Clinch River Valley Initiative (CRVI), remains a long-term partner in this collaborative, grassroots initiative working to make the Clinch River Valley a global destination based on its biodiversity, natural beauty and outdoor recreation opportunities. In 2016, the CRVI Action Plan was revised highlighting the vision, goals, action items and next steps for the five action groups of the Initiative that include:

- ▲ Exploring a Clinch River State Park;
- ▲ Develop and Integrate Access Points, Trails and Campgrounds;
- ▲ Enhancing Water Quality;
- ▲ Develop and Enhance Environmental Education Opportunities for all Community Members, and
- ▲ Connect Downtown Revitalization and Outdoor Recreation Efforts along the Clinch River, and Expand Entrepreneurship and Marketing Opportunities.

CRVI also completed an infographic to highlight some of the accomplishments of the five action groups. The Virginia General Assembly approved an appropriation to begin development of the proposed state park. Several river clean ups were held; a new boat launch was completed; two kiosks were put up, and three communities joined the Hometowns of the Clinch program. In 2016, VDOF also received federal Landscape Scale Restoration (LSR) grant funding to support the initiatives of CRVI, including facilitation from the Institute of Environmental Negotiation (IEN), two Youth Summits and a Save Our Streams coordinator position dedicated to training volunteers to help

FIRST LADY MCAULIFFE CELEBRATES WITH LONGLEAF PINE PLANTING

First Lady Dorothy McAuliffe and Rob Farrell plant one of three longleaf pine trees just behind the Executive Mansion as part of Arbor Day 2016.



First Lady Dorothy McAuliffe and State Forester Bettina Ring pose for a photo after the planting of the three longleaf pine trees.





monitor the health of the Clinch River. More detail about CRVI is provided at: <https://clinchriverva.wordpress.com>

WORKING WITH THE INTERNATIONAL SOCIETY OF ARBORICULTURE

VDOF has had a long partnership with the Mid-Atlantic Chapter of the International Society of Arboriculture (MAC-ISA) in promoting the Certified Arborist Program. VDOF has more ISA-certified arborists than any other state forestry agency in the nation. In addition, VDOF hosts an annual training at its headquarters for prospective certified arborists. This training has resulted in more than 500 individuals passing the certified arborist exam since the training was first offered in 2000. VDOF also provides continuing education units (CEUs) for ISA-certified arborists at all of its education events. VDOF provides scholarship funding to MAC-ISA for the ISA-certification study course and the Tree Risk Assessment Qualification course.

Each year MAC-ISA presents its Gold Leaf Award to deserving landscape beautification and Arbor Day projects. In 2016, two VDOF-assisted projects were recipients of the award:

- ▲ Charlottesville Area Tree Stewards for their community outreach and education and the planting of trees along the entrance to Charlottesville from Rt. 20 South.
- ▲ Edith J. Carrier Arboretum at James Madison University for its stream restoration and volunteer tree planting activities with JMU and Eastern Mennonite University students and members of the Mid-Atlantic Chapter of the American Rhododendron Society and the Central Master Naturalist groups.

TREES VIRGINIA (VIRGINIA URBAN FOREST COUNCIL)

VDOF continues its strong and longstanding partnership with Trees Virginia (the non-profit Virginia Urban Forest Council). Together with Trees Virginia, the Department hosts quarterly forums in Northern Virginia and bi-annual forums in Hampton Roads attended by local urban forestry professionals from municipalities as well as interested citizens. These forums have been tremendously successful and continue to draw a sizable audience for both education and networking. Again in 2016, Trees Virginia and VDOF made major contributions to the Mid-Atlantic Horticulture Short Course (Virginia's major conference for green industry professionals), providing both speaker contacts and numerous scholarships for participants. The partnership with Trees Virginia also continued with the very successful and long-running Waynesboro and Roanoke workshops.

The Waynesboro Workshop recorded an audience of more than

240 participants. Proceeds from these workshops are used to fund scholarships in both urban forestry and horticulture programs, and \$4,000 was awarded in 2016. Trees Virginia also continued its practice of offering a scholarship to the national Municipal Forest Institute by sending a representative from Fairfax County. The volunteer Tree Steward component of Trees Virginia continued to grow with several groups seeing significant increases in membership. The Richmond Tree Stewards hosted a bi-annual Tree Steward Symposium that drew enthusiastic representatives from across the state for an excellent program. Trees Virginia also sent several representatives from local Tree Steward groups to the Arbor Day Foundation Partners Conference in Denver, Colo.

Continued partnership with the Flora of Virginia Project has made possible the advancement of the Flora App, a K-12 program with the goal of teaching children botany and ecology outdoors and made possible four train-the-trainer workshops in the use of the 13 lesson plans that were developed based on the Flora.

ACCOMPLISHMENT REPORT

July 2015 - June 2016



| Objectives | Target Goal | Accomplished |
|--|--------------------------|--------------------------|
| Goal 1: Protect the citizens, their property and the forest resource from wildfire. | | |
| Measure 1.1.1: Percentage of wildfire responses that are 30 minutes or less. | 86% | 78.5% |
| Measure 1.2.1: Percentage of eligible rural volunteer fire departments receiving available state and federal financial assistance. | 27% | 29.0% |
| Goal 2: Protect, promote and enhance forested watersheds, non-tidal wetlands and riparian areas. | | |
| Measure 2.1.2: Percentage of harvest sites with sediment not reaching streams. | 95% | 99.2% |
| Measure 2.2.1: Cost to conduct a forest harvest water quality inspection. | \$4.50/acre | \$5.67/acre |
| Measure 2.2.2: Percentage of Best Management Practices properly installed on timber harvesting operations statewide. | 90% | 96% |
| Goal 3: Improve the stewardship, health and diversity of the forest resource. | | |
| Measure 3.1.1: Number of acres of trees planted in Virginia. | 44,500 acres | 44,991 acres |
| Measure 3.1.2: Number of acres funded by Reforestation of Timberlands Act financial incentives. | 50,000 acres | 41,476 acres |
| Measure 3.3.1: Number of acres of all forest management plan types achieved on private and appropriate public forestland. | 193,764 acres | 161,871 acres |
| Measure 3.2.1: Number of communities assisted with forest and/or tree resource management. | 120 communities | 119 communities |
| Goal 4: Conserve the forest land base. | | |
| Measure 4.1.1: Number of acres protected from conversion to development. | 5,250 acres | 3,248 acres |
| Goal 5: Promote forest industry and diversified markets for forest landowners including ecosystem service markets. | | |
| Measure 5.1.1: Number of new and/or expanding forest-related businesses or markets. | 4 markets/ businesses | 2 markets/ businesses |
| Measure 5.3.1: Percentage of customers who rate the quality of VDOF's seedlings as satisfactory. | 96% | 90% |



Virginia Department of Forestry
 900 Natural Resources Drive, Suite 800
 Charlottesville, Virginia 22903
 Phone: (434) 977-6555
www.dof.virginia.gov

VDOF P00129; 12/2016

This institution is an equal opportunity provider.