

# STATE OF THE FOREST

2022  
FISCAL YEAR

ANNUAL REPORT ON VIRGINIA'S FORESTS



VIRGINIA DEPARTMENT OF  
**FORESTRY**

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Find more on the  
VDOF  
website

This annual report provides state fiscal year (July 1, 2021 - June 30, 2022) information unless otherwise noted.



# FROM THE STATE FORESTER

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Virginia State Forester Rob Farrell

Making up approximately two thirds of the total land area in Virginia and a staggering one third of the total land area in the entire U.S., forests are an integral part of our world. Trees and forests filter our water, supply oxygen, clean our air, regulate temperature, provide habitats for a diverse array of animal and plant species, store atmospheric carbon, and are living settings for recreation and quiet retreats. Trees are critical to a healthy environment, a thriving nature-based economy, and to the health of Virginians everywhere, from the countryside to the inner city.

While there is increasing recognition of the benefits of trees and forests for our collective health, there are mounting threats to forests that put these benefits at risk.

The Virginia Department of Forestry (VDOP) has been working with our partners and other stakeholders to address challenging issues such as deforestation resulting from the construction of industrial scale solar facilities. Virginia's transition to solar and wind energy will continue, the goal is to limit the impact on farms and forestlands. Also on the energy front, we are concerned about how the phase out of woody biomass as a feedstock for electricity generation will impact landowners and the forest by eliminating a critical market for debris and low-value trees.

We are also collaborating with partners to increase tree planting in riparian forest buffers to meet the state's 2025 commitments for Chesapeake Bay restoration. Other challenges we are working to address include the spread of invasive plants, introduced insects such as spotted lanternfly, loss of ash trees to the emerald ash borer, and increasing mortality of mature oak trees.

Given all the challenges facing the forest, we have been fortunate to see unprecedented support for trees and forestry at the federal, state and local level. The FY23 state budget included funding for additional VDOP field staff and firefighting equipment, reopening the New Kent seedling nursery, recreational opportunities and access on state forests, and greatly increased funding for tree planting and logger best management practices (BMPs).

Beneficial legislation passed this past year by the General Assembly included creation of the Forest Sustainability Fund and a tax credit for landowners who implement beneficial hardwood management practices. VDOP staff and our stakeholders have been hard at work this year to ensure that these innovative solutions are put into practice as soon as possible.

Every day, the men and women of VDOP work to support and raise awareness of these diverse benefits we all enjoy from our sustainably managed forests. We also do everything possible to protect and conserve our forest resource. At times, that protection extends to our partner states.

In 2022, while dealing with a busy fire season in southwest Virginia, we were able to mobilize multiple crews to Texas to provide much-needed wildland fire suppression assistance. Virginia crews totaled approximately 18,000 hours during four two-week rotations to lend a hand to the Texas Forest Service.

The purpose of this State of the Forest report is to encapsulate our work over the past year and help focus our efforts and priorities for the year ahead. As always, feel free to reach out to me if you have any questions, feedback or comments... or would just like to "talk forests."

A handwritten signature in black ink that reads "Rob Farrell". The signature is written in a cursive, flowing style.

Rob Farrell, State Forester

# VIRGINIA FOREST TRENDS

## Virginia Forest Cover and Types

VDOF maintains an ongoing inventory program to ensure that our forests are being managed sustainably. VDOF, in cooperation with the USDA Forest Service, conducts a forest inventory analysis (commonly called FIA) which is a primary source of statistics for the forestland in Virginia. The inventory collects and analyzes information on forest growth, forestland area, land use changes, ownership trends, and natural and human impacts to the forest.

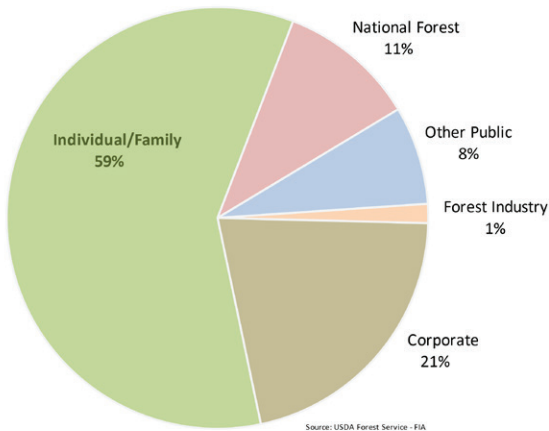
62% Forestland

16 million+ acres

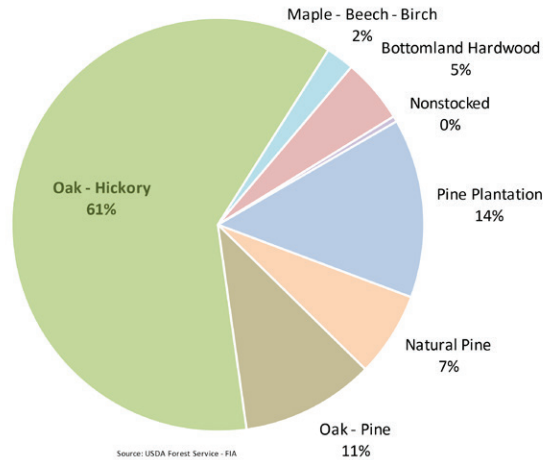
80% Hardwood/  
Hardwood-Pine

20% Pine

Forest Ownership in Virginia

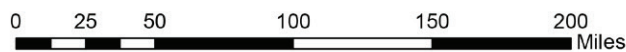
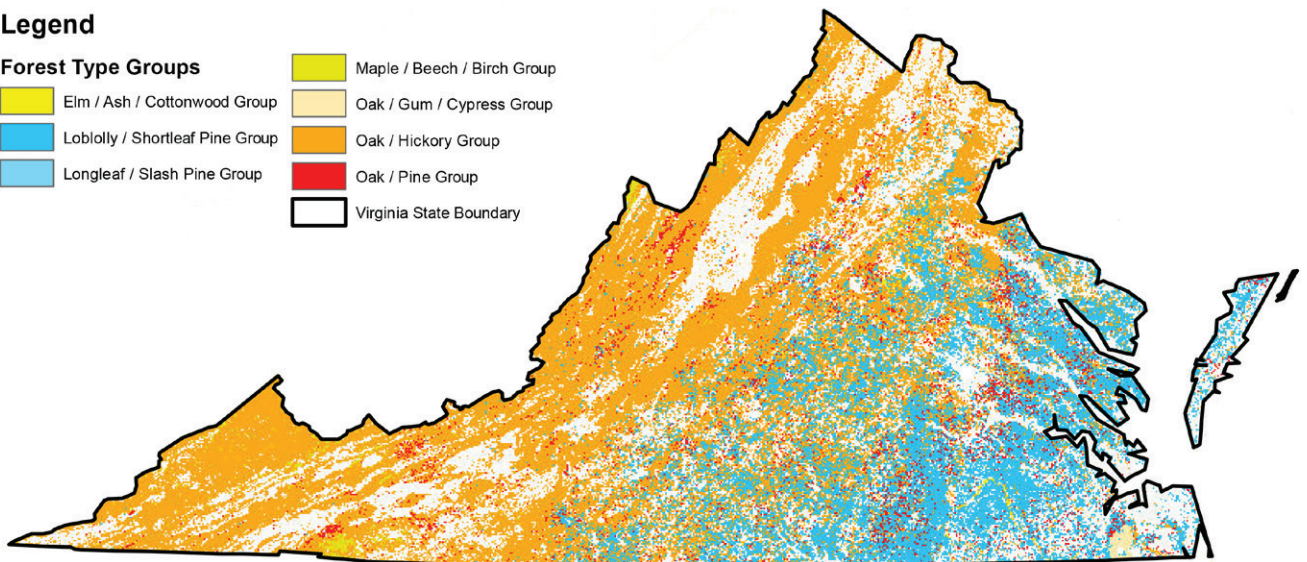
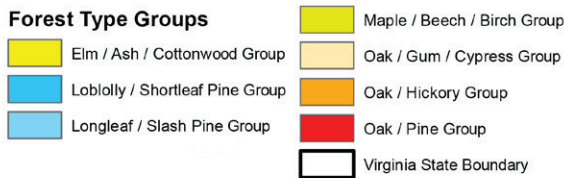


Forest Types in Virginia



**Legend**

**Forest Type Groups**



USDA Forest Service, FIA Program

# FOREST SUSTAINABILITY

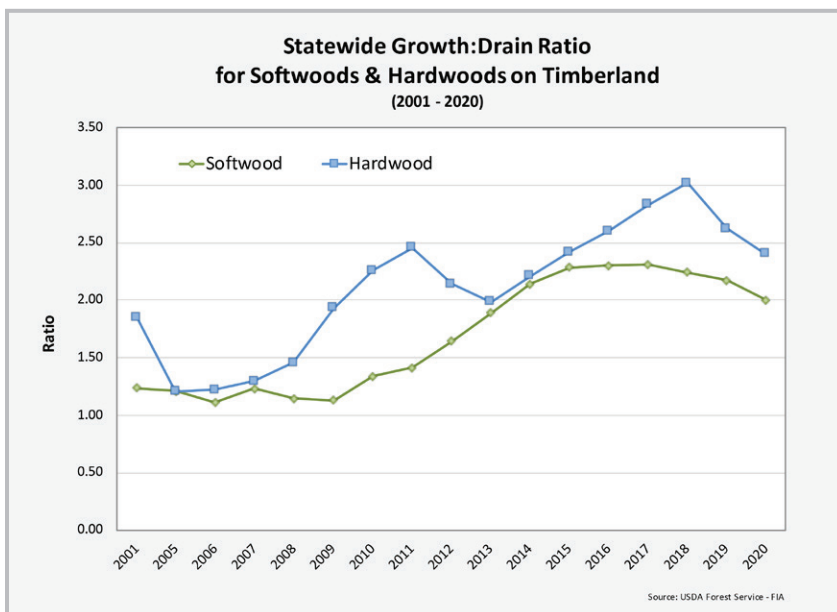
Virginia's forestry community has long demonstrated foresight and vision for the future of our forests. In the 1970s, we led the nation to invest in reforestation and protect water quality. Now, industry and landowners recognize how sustainable forest management is critical for carbon sequestration, water quality protection, habitat connectivity and coastal resiliency. Stakeholders from varied sectors recognize the key role of forests in our nation's climate change response.

While landowners have many reasons to own forestland – recreation, income, heritage – we know that economics significantly influence most management decisions. Providing landowners with multiple options for generating income from their forestland can ensure that forests remain intact to support our economy, the environment and public health.

VDOF recognizes that forest management goals and decisions are up to individual landowners, who own approximately 80% of Virginia's forestland. The agency provides the information landowners need to make decisions and helps them plan and implement strategies to meet their goals. Managed forests are more likely to remain forests because they meet the needs of their owners.

Sustainable forest management ensures that the many benefits of forests will continue to exist in the future, ultimately benefitting all Virginians.

VDOF monitors growth:drain ratios to gauge the balance of growth to utilization or loss of timber. Even with recent decreases, the chart indicates a long-term trend of growth in our forest resources where growth is double removals.



# FIRE & EMERGENCY RESPONSE



## Wildfire Suppression

Preventing and suppressing wildfires throughout Virginia is one of VDOF's founding principles. In Virginia, VDOF suppresses 578 fires that burn 7,962 acres annually (10-year average). Additionally, each year in Virginia, more than 60 homes and other structures are damaged or destroyed by wildland fire, although agency suppression efforts are also credited with directly protecting more than 460 homes and 280 other structures, collectively worth more than 60 million dollars (10-year average).

VDOF is unique in the fact that all agency responders serve as combination firefighters, public safety officers, and land management professionals. These unique skills working

in conjunction with local fire department resources, help to ensure an efficient and effective fire suppression organization here in the Commonwealth.

VDOF also provides assistance to other state forestry agencies through a well-established national compact agreement to share resources. These opportunities help VDOF responders gain invaluable experience managing large wildfire incidents and allow Virginia to pull in out-of-state resources in the event of a serious wildfire situation in the Commonwealth. Under the agreement, states are reimbursed for all related expenses. In the last 20 years, VDOF response personnel have assisted with wildfire suppression in 29 other states, coordinated hurricane response across the southeastern U.S.,



## By the Numbers

Fire Suppression	
<b>776 ↗</b> wildfires (418 FY21)	<b>11,490 ↗</b> acres burned (6,749 FY21)
<b>\$4.96 million ↗</b> timber damaged (\$4.2 million FY21)	
<b>115 ↗</b> homes/buildings damaged (53 FY21)	<b>\$4.3 million ↗</b> homes/buildings damaged (\$1.4 million FY21)
<b>1,629 ↗</b> homes/buildings protected (841 FY21)	<b>\$129 million ↗</b> homes/buildings protected (\$66 million FY21)
Historic Fire Statistics **	
<b>578</b> average fires per year ** (based on 10-year average)	<b>7,962</b> average acres burned per year ** (based on 10-year average)
<b>3,697</b> most fires in a single year – 1941 **	<b>333,023</b> most acres burned in a single year – 1930 **
<b>386</b> least fires in a single year – 2019 **	<b>2,508 ↗</b> least acres burned in a single year – 2019 **

\*\* Data based on calendar year (CY) January 1 - December 31.

Firefighter Training	
<b>764 ↗</b> firefighters trained (237 FY21)	<b>10,140 ↗</b> hours training (3,800 FY21)
Dry Hydrant Grant Program	
<b>14 ↘</b> new dry hydrants installed (28 FY21)	<b>8 ↘</b> dry hydrants repaired (15 FY21)
Volunteer Fire Assistance Grant Program	
<b>136 ↘</b> volunteer fire departments awarded grants (140 FY21)	<b>\$247,150 →</b> grant funding awarded (\$247,150 FY21)
Federal Firefighter Property Program	
<b>52 ↗</b> pieces of equipment on loan to volunteer fire departments (50 FY21)	
Suppression Resources	
<b>160</b> 4x4 engines (160 FY21)	<b>14</b> wildland brush trucks (14 FY21)
<b>89</b> bulldozer/wildland fire plow units (89 FY21)	<b>1,882</b> dry hydrants (1,868 FY21)

# FIRE & EMERGENCY RESPONSE

continued



assisted with flooding emergencies, downed aircraft incidents, and rescued lost and stranded citizens.

VDOF provides wildfire suppression and emergency incident management training to agency firefighters and collaborators to increase the Commonwealth's overall capacity for wildland fire suppression. The agency's success in this area is only possible through a coordinated approach that relies heavily on the resources of Virginia rural fire service. Swift and efficient initial attack of wildfires using a well-coordinated approach from multiple agency cooperators is a cornerstone of VDOF's success.

The dry hydrant program provides state-level funding available through the Virginia Fire Programs Fund, to install and repair dry fire hydrants throughout Virginia to aid firefighting activities. Dry hydrants draft water from adjacent water bodies, such as ponds and streams, in areas without conventional water mains and hydrants. VDOF uses 100% of the funding to either repair existing hydrants or install new hydrants based on requests from local fire departments. Virginia has 1,882 dry hydrants spread across the state, improving the available water supply, increasing the Insurance Services Office (known as ISO) rating of Virginia fire departments, and decreasing the rates insurance companies charge for homeowner's insurance throughout Virginia.

## Wildfire Prevention

VDOF has a long placed emphasis on wildfire prevention based on the proven theory that focusing resources on prevention up front lessens the need for many resources

for suppression later. The agency has a long history of prevention education, focused on helping citizens understand how to prevent a wildfire from starting and spreading. Wildfire prevention actions are typically focused on preventing unwanted debris-burning fire escapes... Virginia's leading cause of wildfires. VDOF supports careful outdoor burning completed in a safe and lawful manner.

Agency prevention efforts also focus on helping homeowners in wildland urban interface areas take steps to reduce potential wildfire damage to their homes. This program, "Firewise Virginia," works to target the agency's limited resources in the highest-risk woodland home communities in the Commonwealth. Through outreach and educational efforts for homeowners, VDOF empowers homeowners to take steps to limit wildfire damage in high-risk areas.

## Prescribed Burning

One of the most effective tools for the management of Virginia's forests, grasslands and endangered species is prescribed burning, which involves setting intentional, controlled fires with specific goals. VDOF completes prescribed burning services for Virginia landowners using its skill and expertise in fire management to maintain the use of fire as a tool for reducing the potential for wildfires and improving ecological benefits of fire. By removing dead and overgrown vegetation, prescribed fires (fighting bad fire with good fire) help prevent large, intense wildfires that claim lives, destroy communities, and cost billions of dollars in damage and firefighting costs.



## By the Numbers

### Prescribed Burning Program

<b>279</b> ↗	<b>6,649</b> ↗
prescribed burns conducted	acres prescribed burned
(272 FY21)	(4,736 FY21)

### Firewise USA Community Program

**37** ↘  
nationally-recognized  
Firewise USA communities  
(45 FY21)

### Firewise Virginia Community Hazard Mitigation Grant Program

<b>14</b> ↗	<b>\$253,325</b> ↗
grants provided for wildfire risk reduction in woodland home communities	grant funding awarded
(12 FY21)	(\$246,824 FY21)

# FOREST MANAGEMENT



VDOF's Forest Management program works to support landowners in meeting their specific goals and objectives. Approximately 80% of Virginia's forestland is privately owned by individuals, families and corporations.

VDOF employs a network of forestry professionals across the Commonwealth whose primary responsibilities include helping private landowners manage their forest resources. Assistance comes in many forms: preparing management plans, project oversight and certifying the completed work.

These hardworking foresters, technicians and other professionals work tirelessly to ensure that Virginia landowners have the information they need to make sound and sustainable decisions about managing their

forests. The Forest Management program can be divided into the following areas: forest management planning, practice implementation and reforestation.

Forest management planning includes determining landowner management goals and objectives; site examinations to identify the current quality and condition of the forest; determining options, opportunities and recommendations based on those objectives; and developing a clear, detailed management plan with action steps. In 2022, VDOF field staff developed 3,684 stewardship and management plans to assist landowners in managing 156,831 acres of forestland.



## By the Numbers

### Reforestation of Timberlands Program

<b>1,015</b> → ** landowners participated (1,023 FY21)	<b>47,531</b> ↗ acres improved (44,461 FY21)
<b>74,702</b> → ** practice acres implemented (73,718 FY21)	Note: A single stand may have multiple practices done on the same acres.

### Tree Planting

<b>77,796</b> ↗ acres planted (73,120 FY21)	<b>55,753</b> ↗ acres planted (VDOF involvement) (51,624 FY21)
<b>1,316</b> ↗ planting projects (VDOF involvement) (1,262 FY21)	

### Forest Stewardship Program

<b>216</b> ↘ forest stewardship plans written (247 FY21)	<b>30,851</b> ↘ acres included in plans (32,514 FY21)
<b>5</b> ↘ properties achieved stewardship certification * (20 federal FY21)	<b>1,118</b> ↘ acres certified * (3,951 federal FY21)

### Other Management Plans

<b>3,468</b> ↘ other management plans written (3,532 FY21)	<b>125,980</b> ↘ acres included in plans (130,271 FY21)
Note: Plans included are alternate management plans, cost-share plans, pre-harvest plans, prescribed burn plans, stand plans, tract plans (county land, land use, state lands, state lands (non-VDOF), and Tree Farm plans.)	

### Diminished Species Restoration

<b>22</b> ↘ shortleaf pine projects (27 FY21)	<b>634</b> ↘ acres shortleaf pine projects (670 FY21)
<b>30</b> ↗ longleaf pine projects (12 FY21)	<b>1,412</b> ↗ acres longleaf pine projects (220 FY21)

Note: In FY22, VDOF reported longleaf practices more thoroughly. FY21 figures are planting only, and FY22 figures include both planting acres and prescribed burning practices.

\* Data based on federal fiscal year October 1 - September 30.

\*\* Less than 1% change is considered as no change.



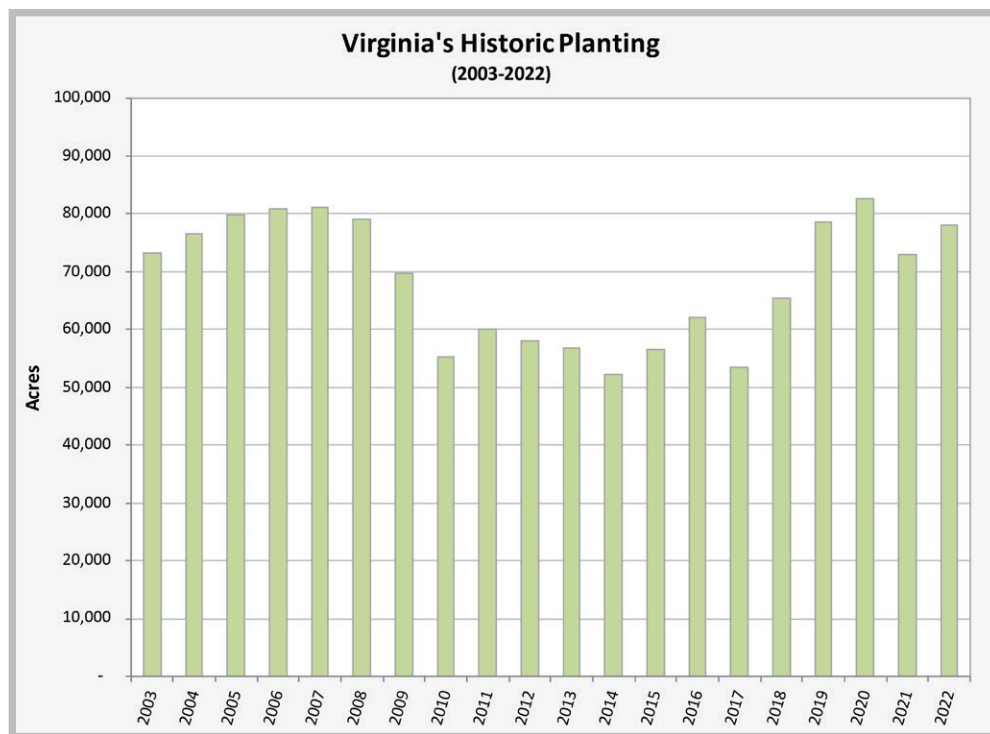
# FOREST MANAGEMENT

continued



Practice implementation is the process of taking the recommendations and making them happen on the ground. This begins with connecting land managers with a multitude of private contractors and foresters who can “get the work done.” In 2022, VDOF field staff assisted landowners in implementing 2,765 practices on 74,702 acres improving 47,531 acres of forestland, including 1,316 planting projects on 55,753 acres.

Funded by a forest products tax and Virginia general funding, Reforestation of Timberlands incentives help landowners by sharing reforestation costs for planting pine seedlings on harvested land. In 2022, this program assisted 1,015 landowners implement reforestation practices on 74,702 acres, improving 47,531 acres.



## By the Numbers

### Hardwood Management Program

**56**  
projects  
(new initiative, no data FY21)

**1,120**  
acres hardwood projects  
(new initiative, no data FY21)

**12**  
hardwood demonstration  
projects on state-owned  
lands  
(new initiative, no data FY21)

**34**  
VDOF staff trained in  
hardwood management  
(new initiative, no data FY21)

**13**  
consulting foresters  
trained in hardwood  
management  
(new initiative, no data FY21)

### Hardwood Incentive Program

**10**  
projects completed  
through the Hardwood  
Incentive Program  
(new initiative, no data FY21)

**213**  
acres hardwood projects  
completed through the  
Hardwood Incentive  
Program  
(new initiative, no data FY21)

# FOREST MANAGEMENT

continued



## Hardwood Initiative

As mentioned in last year's [State of the Forest](#), Virginia's Hardwood Initiative is focused on growing and sustaining healthy hardwood forests for future generations. Hardwoods make up 80% of Virginia's forests and are a critically important part of the resource. Agency foresters and consulting foresters work closely with landowners to discuss ownership goals (such as wildlife habitat, forest health and commercial harvesting), perform forest assessments, and then make management recommendations based on the data and desired outcomes.

## Hardwood Management Accomplishments

Hardwood management work began in earnest in 2021-2022 and efforts continue to expand. Forester training is a foundational step in delivering technical assistance to landowners. In 2022, 34 VDOF foresters and 13 private consulting foresters received hardwood training.

Demonstration areas provide places to showcase good work for landowners as well as a means to develop contractors. VDOF established 12 demonstration areas on state forests and other state lands, located across the state. The targeted practice to showcase on these sites was crop tree release, a practice done in younger hardwood stands. Trees of the best species and form are selected and freed for better growth by removing competing trees around them.

Training and demonstration are important elements of the initiative that lead to operational implementation of projects.

This year, contractors and landowners completed 56 hardwood management projects on approximately 1,120 acres. These projects included crop tree release, control of invasive species, prescribed burning and commercial thinning.

## Financial Incentives

The initiative has also led to expanded opportunities for landowner financial assistance. 2022 was an exciting year, as it was the first year of Virginia's hardwood incentive program. This is the first state-sponsored incentive program for the Hardwood Initiative and is delivered and managed by VDOF. The program reimburses landowners 60% of expenses to complete six eligible management practices.

In this inaugural year of the program, 10 projects were completed on 213 acres. Interest and participation in the program continues to increase. Additionally, a new state income tax credit for hardwood management up to \$1,000 will be available to implement hardwood management. Incentive programs continue to be available through the USDA Natural Resources Conservation Service as well. VDOF is prepared for a busy year ahead with the Hardwood Initiative, as interest, excitement and participation is already growing.



# FOREST HEALTH



Healthy, well-managed forests are essential to our people, wildlife and economy. VDOF’s Forest Health program works to support landowners in meeting their goals and monitors Virginia for major forest pests and other troubles.

VDOF protects and improves Virginia’s forest resource through prevention and detection of major forest pests, pathogens, invasive plants and other disturbances. Through surveys, monitoring and data collection, the agency makes sound recommendations to land managers based on unbiased scientific data. Forest Health staff and our partners provide technical assistance, training and outreach to the forestry community regarding pest identification and forest health concerns.

VDOF also monitors Virginia’s forests for large-scale forest disturbances. In 2022, program staff conducted aerial surveys to map forest damage caused by the spongy moth, forest tent caterpillar and saltwater intrusion along the coast. In total, 1,159,290 acres of forestland was surveyed for damage using national aerial survey standards.

The Forest Health program uses USDA Forest Service invasive species grants to fund the treatment of invasive plants on Virginia state forests and state-owned land. This year, 1,279 acres were treated on state lands. Tree-of-heaven (*Ailanthus*) was the main target, but other problem species include privet, mimosa, autumn olive and *Miscanthus*.

In 2022, VDOF’s Forest Health program documented the spread of a number of forest health pests.

## Emerald Ash Borer

The emerald ash borer (EAB) was detected in Gloucester County, bringing the total number of confirmed counties up to 84. EAB has now been discovered across most the Commonwealth (only counties in southeast Virginia remain unconfirmed).

In 2022, VDOF staff treated 94 ash trees on public land, including six different species of ash: white and green, which are common, and the more rare species of black, blue, pumpkin and Carolina.

VDOF’s ash treatment cost-share program provided financial assistance to landowners for the treatment of 130 ash trees. Outreach regarding EAB was conducted at two minor league baseball games where a total of 12,254 fans were present.

## Pine Bark Beetle

VDOF’s pine bark beetle prevention program offers cost-share assistance to landowners and loggers for thinning practices that reduce a pine stand’s susceptibility to pine bark beetles.



## By the Numbers

### Emerald Ash Borer Program

**130** ↘  
ash trees treated \*  
(150 federal FY21)

**33** ↘  
applicants awarded \*  
(34 federal FY21)

**94** ↗  
ash trees treated on  
state lands \*  
(68 federal FY21)

### Pine Bark Beetle Pre-Commercial Thinning Cost-Share Program

**4,240** ↗  
acres of pine thinned \*  
(2,180 federal FY21)

### Non-Native Invasive Plant Program

**1,279** ↘  
acres of invasive plant  
removal targeting tree-of-  
heaven and other invasive  
species \*  
(1,283 federal FY21)

**\$25,071** ↘  
spent on invasive plant  
removal \*  
(\$36,717 federal FY21)

### Aerial Forest Health Survey Program

**1,159,290** ↗  
acres surveyed \*  
(651,989 federal FY21)

\* Data based on federal fiscal year October 1 - September 30.

# FOREST HEALTH

continued



In 2022, a total of 4,240 acres of pine were thinned with financial assistance from VDOF's pre-commercial thinning cost-share program. Since the program's inception in 2004, more than 70,000 acres of pine have been thinned with cost-share assistance from this pine bark beetle prevention program, which is funded by a USDA Forest Service grant.

Each spring, VDOF staff deploy traps to monitor populations of southern pine beetle (SPB), a native pest of pines. In 2022, 25 traps were placed across 13 counties in high-risk locations in Virginia. The most SPB were found in traps located in Chesterfield, Gloucester and Cumberland counties, with outbreak probabilities of 14%, 13% and 9%, respectively. These probabilities are slightly higher than in previous years, but remain relatively low.

## Spongy Moth

Another invasive insect, the spongy moth, was confirmed via photos in May 2022. VDOF and the USDA Forest Service conducted aerial surveys of impacted areas and mapped 24,493 acres with heavy/moderate defoliation (12,984 of

heavy/moderate defoliation). This damage was observed in Frederick, Shenandoah, Warren, Rappahannock, Page, Madison, Greene, Albemarle, Rockbridge, Amherst, Botetourt, Craig, Giles, Bland and Washington counties.

## Beech Bark Disease

American beech trees in Virginia are threatened by two diseases: beech bark disease and beech leaf disease. In 2022, beech bark disease, which is caused by a scale insect and a fungal pathogen, was confirmed in Augusta County. To date, beech bark disease has been confirmed in Rappahannock, Page, Madison, Rockingham, Greene, Bath, Highland, Nelson, Giles and Augusta counties. The following counties are infested with the scale, but the fungal pathogen has not yet been detected: Grayson, Rockbridge, and Albemarle. Beech leaf disease, caused by a foliar nematode, was first detected in Prince William County in 2021. In 2022, it was also confirmed in Fairfax County.



Photo credit: Gretchen Gorecki, Virginia Department of Conservation and Recreation.

# URBAN & COMMUNITY FORESTRY



VDOF's Urban and Community Forestry program fosters partnerships between government agencies, businesses, academic institutions, non-profit organizations and localities to ensure trees in our communities receive necessary care, long into the future. VDOF provides assistance including education, community engagement, tree selection, and grants for tree planting and local program development to ensure canopy retention and management.

Trees are an important part of the ecosystem providing shelter, food and other benefits to communities. As populations in cities and towns continue to grow, creating and caring for our green infrastructure (like trees) is increasingly important. Trees help make cities livable – providing shade, clean air and water, and other useful benefits for human and environmental health.



## Historic Funding for Phase III Watershed Implementation Plan Goals

VDOF received \$2 million each year of the biennium budget for tree planting project implementation to meet the Chesapeake Bay Watershed Implementation Plan Phase III (WIP III) goals, an increase over the \$1 million provided in last year's biennium budget. This will enable VDOF to help communities plant trees and improving the benefits received from increased tree canopy.

## Collaboration for Full Circle Urban Forest Management

Urban and Community Forestry staff teamed up with the Virginia Urban Wood Group to host educational days on full circle urban forest management. Each program highlighted proper tree planting and care as well as ways to utilize trees as a resource at the end of its biological life. The first program was held in Harrisonburg in partnership with James Madison University and Eastern Mennonite University. Additional programs will be held across the state. This program focuses on using urban trees in manufacturing at multiple scales. Improved utilization prevents dead or dying trees from entering our landfills by providing markets for lumber to artisans, chips for energy production, firewood and mulch to improve our soils.



## By the Numbers

### Virginia Trees for Clean Water Program

**63** ↘ projects \*  
(68 FY21)

**\$1,045,977** ↗ awarded \*  
(\$355,570 FY21)

### Urban & Community Forestry Grant Program

**33** ↗ projects \*  
(31 FY21)

**\$411,438** ↗ awarded \*  
(\$380,453 FY21)

\* Data based on federal fiscal year October 1 - September 30.

### Tree City/Campus/Line USA Programs

**62** ↘ total Tree City USA Communities  
(63 FY21)

Note: Lost one community due to extensive storm damage.

**Fairfax Co.** Largest Tree City USA  
(pop. 1,147,532 FY21)

**Village of Bluemont** Smallest Tree City USA  
(pop. 250 FY21)

**8** → total Tree Campus USA Schools  
(8 FY21)

**5** → total Tree Line USA Utilities  
(5 FY21)

Note: Tree City, Campus and Utilities are awarded in the year following the calendar year of their accomplishments (e.g., Communities received awards in FY22 for calendar year 2021 accomplishments.)

# URBAN & COMMUNITY FORESTRY

continued



## Heat Island Work

Virginia completed the largest urban heat island campaign in the country to date in July 2021. Ten heat vulnerability maps were developed through collaborative partnerships across the Commonwealth to identify hotter and low-canopy cover areas. The Virginia Association of Independent Colleges (includes science, technology, engineering and mathematics professors, and environmental science students from 12 colleges and universities), the Science Museum of Virginia, and VDOF partnered on this effort. Federal program dollars supported the work and the federal investment was matched dollar for dollar with a private donation by Capital One. In the years to come, students at each college and university will be using this data to learn about heat islands and their impacts. There were 213 community volunteers who completed 70 routes and 490,423 measurements as part of this coordinated effort. VDOF will use this information to promote further tree-planting and outreach projects in more Virginia communities and neighborhoods.

## Urban Forest Strike Team

VDOF staff coordinated an Urban Forest Strike Team (UFST) mock disaster training and served as part of the training cadre in Arkansas with participants from six states. The UFST is trained to perform risk assessments on trees affected by storms and is deployed to areas impacted by natural disasters. This information is then submitted to the Federal Emergency Management Agency (commonly called FEMA) for the municipality to receive funding to help with mitigation costs to improve public safety.

## Laurel Wilt Training

Forest Health and Urban and Community Forestry programs hosted a joint laurel wilt training and deployment in Southwest Virginia. Laurel wilt is an invasive disease complex involving a fungal pathogen and ambrosia beetle. It attacks the vascular system of woody plants in the *Lauraceae* family including redbay, spicebush and sassafras. The training brought 26 participants from six agencies and three different states.



# FORESTLAND CONSERVATION



Virginia is fortunate to have abundant forestland that sustains the Commonwealth's economy, rural communities and overall environmental health. Unfortunately, rapid population growth, solar facilities and development put forests and their benefits at risk. Through conservation efforts, VDOF is committed to slowing the loss of valuable forestland and works diligently with landowners to help them keep their land in forest.

Conservation doesn't just happen, it takes planning to protect forests in perpetuity. VDOF and partners offer resources to help landowners take the first steps toward making long-term plans for their properties. VDOF's Generation NEXT, Century Forest and conservation easement programs represent three of the agency's strategies for keeping Virginia forested.

## Conservation Easements

Keeping "forests as forests" is important. One way to achieve this is through conservation easements.

A conservation easement is a voluntary agreement between a landowner and a qualified conservation organization or public entity that limits the development of a property, while allowing continued private ownership and rural use, such as farming or forestry. Conservation easements are typically perpetual. Created in 2004, VDOF's conservation easement program aims to prevent conversion and subdivision of Virginia's forestland, which protects water quality.

## Generation NEXT Program

The Generation NEXT program is a joint effort of VDOF and Virginia Cooperative Extension (VCE) to combat the loss of forestland and other rural



## By the Numbers

### Conservation Easement Program

**4** ↗  
easements added  
(3 FY21)

**2,211** ↘  
acres added in easements  
(2,599 FY21)

**3** ↗  
easements added in the Chesapeake Bay watershed  
(1 FY21)

**1,627** ↘  
acres added in easements in the Chesapeake Bay watershed  
(1,703 FY21)

**2,133** ↘  
forested acres added in easements  
(2,441 FY21)

**16** ↗  
miles of watercourses added in easements  
(13 FY21)

**10** ↗  
miles of watercourses added in easements in the Chesapeake Bay watershed  
(6 FY21)

### Legacy Estate Planning Workshops

**128** ↗  
participants trained in legacy planning  
(121 FY21)

### Century Forest Program

**56**  
properties with Century Forest designation  
(52 FY21)

**17,249**  
acres with Century Forest designation  
(16,879 FY21)

### Conservation Easement Portfolio

**199**  
conservation easements  
(195 FY21)

**63**  
counties/cities containing easements  
(63 FY21)

**90,704**  
acres in easements  
(87,863 FY21)

**82,377**  
forested acres in easements  
(80,244 FY21)

**120**  
easements within the Chesapeake Bay watershed  
(117 FY21)

**33,233**  
acres in easements within the Chesapeake Bay watershed  
(31,606 FY21)

**455**  
miles of watercourses in easements  
(439 FY21)

**169**  
miles of watercourses in easements in the Chesapeake Bay watershed  
(159 FY21)

# FORESTLAND CONSERVATION

continued



lands in Virginia. The goal of the program is to keep Virginia's family-owned forests intact, in forest, and in family ownership by encouraging and equipping forest landowners and their families to plan the intergenerational transfer and long-term future of their forests. Through training materials and workshops co-facilitated by natural resource professionals, attorneys and financial planners, the program educates landowners and their families about the conservation, legal and financial tools that are available to them, and helps them start the difficult yet rewarding process to complete an estate plan for their forestland (also known as a "legacy plan"). This year, VDOF and VCE welcomed 128 participants to legacy estate planning workshops held across the state.

## Century Forest Program

Established in 2016, the Virginia Century Forest program recognizes individuals and families who have made a long-term commitment to enhancing the environment and protecting the quality of life for their fellow Virginians through forestry. The program honors families with continuous property ownership for 100 years or more and includes at least 20 contiguous acres of managed forest.

As of FY22, 56 properties have received Century Forest designation, including 17,249 acres and 8,305 total years of continuous ownership.

## Forest Sustainability Fund

Passed by the 2022 General Assembly, the Forest Sustainability Fund is intended to assist localities that offer land use taxation to forest landowners. Land use taxation enables landowners to pay real estate taxes based on the productivity of their land for crop or timber production rather than on its real estate market value. This results in lower taxes each year and enables many landowners to keep their land as farms or forests.

This year, we began work on the Forest Sustainability Fund by working with a steering committee from across the state to develop guidelines and a clear process to allocate funds to localities. One million dollars will be distributed proportionately to 68 localities that will be able to use these funds for public education, outdoor recreation or forest conservation. Land use taxation is vital for our farmers and forest landowners to help keep their land in production.





# WATER QUALITY PROTECTION

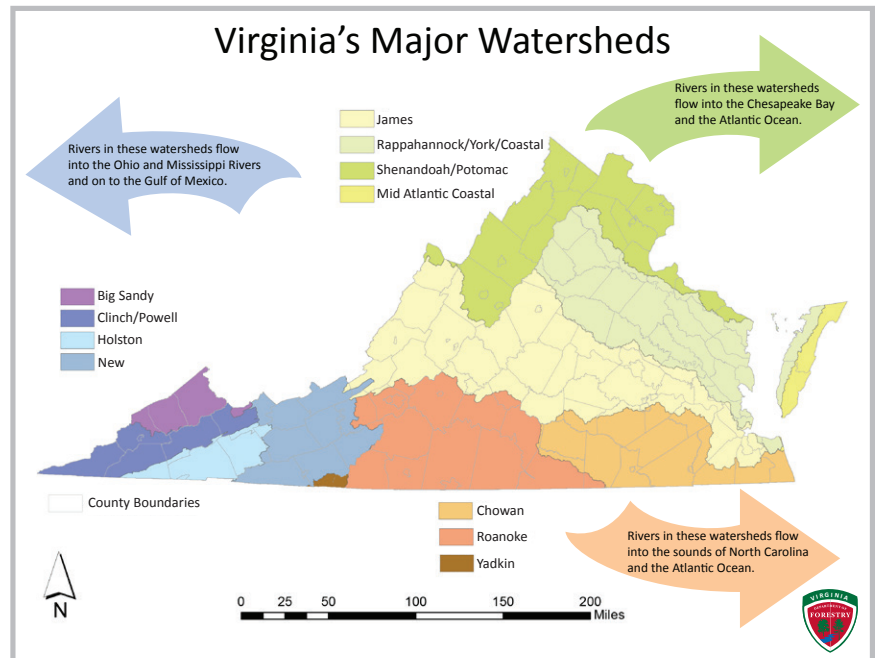


## Watershed Forestry

VDOF has always helped to protect and improve Virginia’s water quality through tree planting and sound forest management. In 2021, VDOF received new funding to create a dedicated Watershed program which now steers this important work.

The Watershed program kicked off its efforts with a focus on increasing riparian forest buffer coverage across the Commonwealth. Riparian forest buffers are simply trees growing near waterways. Planting trees near streams is one of the most effective and cost-efficient techniques to improve water quality. The trees capture and filter nitrogen, phosphorus and sediment before they reach the water. Riparian forest buffers also provide many other benefits, including mitigating erosion, providing wildlife habitat, reducing flooding and many more.

In addition to this work around riparian forest buffers, the Watershed program provides coordination of the agency’s WIP III response and the Albemarle-Pamlico estuary program. The team also leads the agency’s efforts around ensuring a safe and sustainable drinking water supply through landscape-scale restoration and forest management. The program also supports the Virginia Security Corridor Sentinel Landscape (VCSL) initiative.



The VCSL is a program that supports the Department of Defense’s installations training missions by providing a mechanism for enhanced funding opportunities and project coordination in, and around, installations with conservation practices. The goal for many installations in the corridor are to reduce encroachment, create dark skies initiatives, deal with sea level rise and improve coastal resiliency.



## By the Numbers

Riparian Buffer Establishment Program	
154 ↘ riparian buffer establishment projects (159 FY21)	607.6 ↗ acres established (551.5 FY21)
85 ↘ riparian buffer establishment projects in Chesapeake Bay watershed (91 FY21)	438.5 ↗ acres in Chesapeake Bay watershed (401.2 FY21)

James River Buffer Program	
32 ↗ riparian buffer establishment projects (18 FY21)	162 ↗ acres established (66.4 FY21)

# WATER QUALITY PROTECTION

continued



## Protection During Timber Harvesting

VDOF is responsible for promoting and enforcing the Virginia Silvicultural Water Quality Law (Code of Virginia §10.1-1181.1 through §10.1181.7). The agency develops best management practices (BMPs) for forest harvesting operations and works cooperatively with agencies and landowners throughout the Commonwealth to protect water quality.

VDOF has played an important role in the protection of our forested watersheds since the early 1970s when the first set of forestry BMPs for water quality were developed. We are fortunate in Virginia to have a logging community invested in protecting water quality, as evidenced by the statewide audit system. Results from calendar year 2021 data showed that the statewide BMP harvest median implementation rate on 240 randomly selected tracts

was 94.4% (harvest median score is the best judge of central tendency of the tract score). The audit results also showed that one site (0.42%) of the sites visited had active sedimentation present after operation close-out.

The information compiled using this audit process forms the basis of reporting for WIP III in response to the total maximum daily load (commonly called TMDL) for the Chesapeake Bay. The BMP implementation rate harvest median score for forest harvesting within the Bay watershed was 95.7% in calendar year 2021.

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 ground cover near the stream, provides shade for water and preserves wildlife corridors. Landowners can elect to receive a state tax credit for a portion



## By the Numbers

BMP Audit Implementation **	
<b>94.4%</b> ↘ BMP implementation rate ** (95% CY21)	<b>95.7%</b> ↗ BMP implementation rate in the Chesapeake Bay watershed ** (95.5% CY21)
** Data based on calendar year (CY) January 1 - December 31.	
Harvest Inspections	
<b>3,624</b> ↘ harvest sites (3,742 FY21)	<b>180,719</b> ↗ acres harvested (176,213 FY21)
<b>15,904</b> ↘ harvest inspections (16,667 FY21)	<b>4.4</b> ↘ average inspections per harvest (4.5 FY21)
Water Quality Law Enforcement	
<b>69</b> ↘ law enforcement actions (108 FY21)	<b>2</b> → special orders issued (2 FY21)
<b>1</b> ↗ emergency special order issued (0 FY21)	<b>27</b> ↗ Failure to Notify Violations (15 FY21)

Logger BMP Cost-Share Program	
<b>24</b> projects (26 FY21)	<b>\$110,483</b> awarded to loggers (\$140,895 FY21)
Sharp Logger Training	
<b>16</b> ↗ training sessions (6 FY21)	<b>454</b> ↗ loggers trained (372 FY21)
Riparian Buffer Tax Credit Program	
<b>73</b> ↘ tax credit applications *** (88 tax year 2020)	<b>1,292</b> ↘ acres of buffers retained during timber harvests *** (1,388 tax year 2020)
<b>\$462,596</b> ↘ tax benefits *** (\$488,042 tax year 2020)	<b>\$2,356,689</b> ↘ buffer value retained *** (\$2,628,839 tax year 2020)
*** Data based on tax year (TY).	

# WATER QUALITY PROTECTION

continued



of the value of the uncut trees retained in the buffer. By doing so, they agree to leave the buffer undisturbed for 15 years. The number of landowners participating in tax year 2021 was 73, protecting 1,292 acres of riparian forest. This watershed protection option provided a tax credit of \$462,596 on timber retained in the streamside riparian areas and valued at \$2,356,689.

## Harvest Inspections

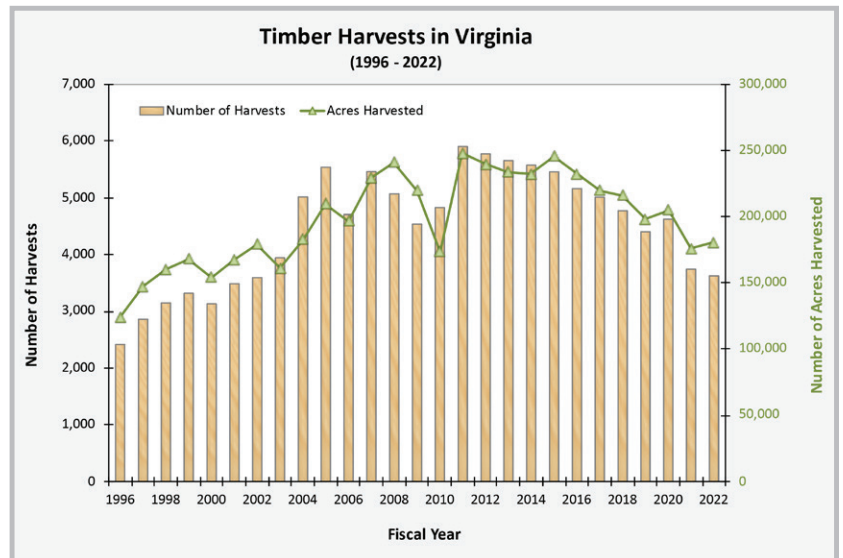
This program provides one-on-one contact between VDOF staff and the harvest operators offering unique opportunities to educate operators about BMPs and the latest techniques in water quality protection. During FY22, VDOF field personnel inspected 3,624 timber harvest sites across Virginia.

These inspections included 15,904 site visits (an average of 4.4 visits per site) on 180,719 acres. This is a decrease in the number of harvests but an increase in the total acres harvested from the previous year, likely due to economic factors affecting both staffing and fuel prices for the harvest operators.

## Public Education

Logger education is another key focus area of the VDOF Water Quality program. Since the development of the first BMP Manual for Virginia, VDOF staff have helped provide harvesting contractors with water quality protection training ranging from harvest planning and map reading, to using GPS units to implement forestry BMPs. This training is offered through agency-sponsored events and the agency's participation in the Sustainable Forestry Initiative SHARP (Sustainable Harvesting and Resource Professional) Logger training program.

Since 1997, VDOF has helped to train more than 11,000 harvest professionals through 371 programs featuring water quality protection education. During FY22, VDOF supported 16 training programs reaching a total of 454 participants. This is extraordinary given the constraints of working around the COVID-19 pandemic and the economic pressures on the forest industry.



## Water Quality Enforcement

In July 1993, the General Assembly, with the support of the forest industry, enacted the Virginia Silvicultural Water Quality Law, Va. Code §10-1-1181.1 et seq. The law authorizes the State Forester to assess civil penalties to those owners and operators who fail to protect water quality on their forestry operations.

Virginia is the only state in the southeastern U.S. that grants such enforcement authority to the state's forestry agency. During FY22, VDOF handled 69 water quality actions initiated under the law; a decrease of 36% from FY21.

Of these actions, two resulted in a Special Order being issued and one Emergency Special Order (Stop Work Order) was issued for violations of the law. There were also 27 Failure to Notify violations. A statewide audit system has been in place since 1993 to track trends in BMP implementation and effectiveness.



Read the full  
BMP  
Implementation  
Report

# FOREST PRODUCTS UTILIZATION & MARKETS



## Utilization & Markets

Virginia has 16 million acres of forested land and more than 400,000 landowners providing essential raw material to support forest industry. To enhance VDOF's ability to accomplish its mission of protecting and developing healthy, sustainable forest resources, the Forest Utilization and Marketing program takes a two-pronged approach. First, by promoting innovative wood-based economic development activities, the team encourages industries to use sustainably-managed forest resources for materials such as lumber, mass timber, bioenergy and pulp for paper. Secondly, they support ecosystem service markets that enable landowners to generate revenue from forest services, such as carbon, air quality and water.

## Market Data & Information

VDOF gathers, maintains and provides data on forest industry, forest inventory and resource availability by publishing technical reports, such as the Timber Product Output (TPO), Forest Inventory and Analysis (FIA), and Timber Supply Analysis. Since inception in 1997, VDOF's FIA program has measured 1.8 million trees on 21,000 forest inventory plots to provide data for 19 annual summaries of the condition of the Commonwealth's forests.

In the past, TPO survey data was collected once every five years. This process became more intensified and was moved to a two-year cycle within the last decade.

This data is now collected on an annual basis. The TPO survey response rate is trending down as compared to the previous years, as shown in the data below. One reason for the lower survey response rate could be due to the increased survey frequency.

This data, resource information and technical assistance are provided to all forest resource users in the Commonwealth. For example, Utilization and Marketing staff used this information to respond to several potential business investment inquiries. The inquiries are centered around using woody biomass, pulpwood, sawtimber and wood industry by-products like bark and sawdust.

VDOF responded to approximately 150 data, resource and technical assistance requests from many types of customers in 2022. Entities like landowners, loggers, foresters, investors, business owners, economic development agents, state agency partners, and educators have all received this beneficial information.

VDOF also collects information from the Forest Products Tax program. This data assists with determining how much cost-share funding is provided to a jurisdiction for the Reforestation of Timberlands program. The 2022 data shows an increase in collection as compared to the previous year.



## By the Numbers

### Forest Products Tax

**\$2,433,386\*** ↗  
forest products tax  
collected  
(\$2,399,527 FY21)

\*calendar year 2021

### Business Assistance

**150**  
assistance responses  
(new initiative, no data FY21)

### Timber Product Output Survey

<b>64</b> ↗ mills surveyed (63 FY21)	<b>57%</b> ↘ response rate to survey (71% FY21)
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### Forest Inventory Analysis Program

**771** ↗  
inventory plots evaluated  
(758 FY21)

# FOREST PRODUCTS UTILIZATION & MARKETS

continued



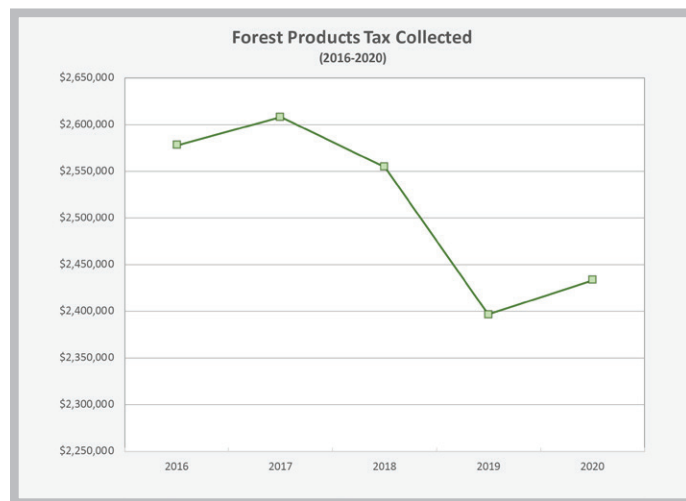
## Partner Collaboration

VDOF works with partner agencies to address industry challenges to help Virginia stay competitive in the market. Through these partnerships, the agency provides assistance in finding new market opportunities and product research and development by securing grants. Together with the Virginia Economic Development Partnership and the Virginia Department of Agriculture and Consumer Services, VDOF assisted approximately 10 business investment inquiries, and worked together with relevant agencies in promoting wood products from Virginia for both domestic and international markets. As part of this collaboration, VDOF assists in finding new markets and recruiting businesses to increase manufacturing and take advantage of improved utilization opportunities of emerging forest products. This enhances knowledge for Virginia landowners to make good management decisions as their raw forest materials have more marketable potential and revenue opportunities.

## Event Highlights

Secretary of Agriculture and Forestry Matthew Lohr and Deputy Secretary Beth Green joined State Forester Farrell and VDOF leadership at the Virginia Forest Products Association's 38<sup>th</sup> East Coast Sawmill and Logging Equipment Exposition held at the Richmond Raceway Complex – the largest forest products trade show in the country. VDOF highlighted water quality, forest health, utilization and marketing programs, and our urban wood utilization efforts. Several thousand attendees interacted with staff to promote a wide variety of agency priorities and initiatives, including cross-laminated timber, harvesting BMPs and spotted lanternfly interdiction.

More than 100 people attended Virginia's first "Forest to Carbon Symposium" hosted by VDOF, which included landowners, VDOF and consulting foresters, and other private and public landowners and managers. The expert panel of speakers from around the country delivered informative sessions on various topics related to forest carbon markets and how to take advantage of them. The overwhelmingly positive feedback (as well as the long waiting list for the event) confirms interest in this topic in Virginia is high...and growing.



# STATE LANDS



Along with VDOF's assistance to private landowners, the agency also plays an important role with forest management on state-owned lands. Approximately 15,000 to 20,000 acres exist in various forested areas across more than 110 properties across Virginia, such as those owned by other state agencies and academic institutions.

In 1980, the Virginia General Assembly created the State-Owned Lands program (Code of Virginia § 10.1-1120 – § 10.1-1123,) which provides for customized forest management plans to meet property objectives.

The State-Owned Lands Management Fund is applicable to both general-fund and special-fund properties. VDOF, with authorization from the Virginia Department of General Services, provides administration and oversight of timber sales from all properties covered by the program. Since 2018, more than \$1.1 million has been generated in timber sale revenue used to carry out various forest management projects on state properties.

Timber sale revenues from special-fund properties are deposited to the departments or institutions owning these properties net of forest management expenses. Monies from the fund help to offset desired practices and project costs, encourage long-term management investments, promote good conservation and production practices, and maintain the forest resource for a vibrant forest economy in Virginia.

Since creation, the total income generated to carry out forest management projects on state-owned properties has exceeded \$2,500,000. More than \$1,700,000 in forest management projects have been carried out or returned to a special fund (property owners). Since 2019, nearly \$260,000 has been generated in timber sales income to carry out various projects on various state-owned properties.

In the past two years, several projects on state-owned lands have been centered on hardwood initiative projects such as invasive species control, and various types of harvests to determine the best regeneration. These will support VDOF's Hardwood Initiative.



## By the Numbers

### Forest Management

<b>16</b> ↘ forest management plans completed (20 FY21)	<b>88</b> ↘ acres reforested (224 FY21)
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<b>\$188,204</b> ↘ timber sale revenue (\$220,925 FY21)	<b>\$13,877</b> ↘ revenue returned to special fund properties (\$17,563 FY21)
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**\$48,456** ↘  
spent on forest management projects  
(\$78,035 FY21)  
Note: Costs include contracted services and seedling costs; does not include VDOF time and expenses.

<b>3</b> hardwood demonstration projects (new initiative, no data FY21)	<b>100</b> acres hardwood demonstration projects (new initiative, no data FY21)
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### Forest Health

<b>76</b> ↗ acres treated for invasive species (30 FY21)	<b>\$31,908</b> ↗ spent on invasive species treatments (\$10,558 FY21) Note: Funding received from Forest Health grants and State-Owned Lands Fund.
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# STATE FORESTS



## Charlotte State Forest Acquisition

Starting in 2020, VDOF embarked upon the acquisition of lands formerly owned by Stanley Land and Lumber Corporation (former congressman and Governor of Virginia Thomas B. Stanley) through initial acquisition by The Conservation Fund. Acquisition of the property has occurred in phases, with the third being the acquisition approved by the 2022 General Assembly that will add another 360 acres, as well as 322 acres from the estate of former politician John H. Daniel.

The properties have been acquired using several funding sources: USDA Forest Service Forest Legacy Fund, Virginia Land and Conservation Fund, and the State Forest Mitigation and Acquisition Fund (SFMAF). The property will be managed to ensure long-term sustainability and protection of the forest resources, in a manner consistent with the Forest Legacy program. A fourth phase of Stanley Land and Lumber property (232 acres) is being sought for approval in 2023 with support from Forest Legacy and SFMAF funding. If approved, by the end of 2023, the total acreage for the Charlotte State Forest will be approximately 5,918 acres.

## State Forest Recreational Funding

Virginia's state forests have not historically received General Fund support for improving, maintaining and enhancing public recreational opportunities. Since the formation of Virginia's state forest system in 1919, the amount and types of passive public recreation has increased as has the size of our state forests. The recent pandemic saw double-digit increases in visitation.

In 2022, the Virginia General Assembly and Governor's administration agreed to assist with state forest recreational projects to the sum of \$400,000. Almost all of this funding will be used to replace a swinging bridge in the Cumberland State Forest.

Other envisioned projects to support outdoor recreation on state forests include trail improvements, developing or replacing stream crossings, and improving waterfowl impoundment dams.



## By the Numbers

<b>State Forests</b>		<b>7</b>	<b>170</b>
<b>26</b>	<b>74,286</b>	hardwood demonstration projects	acres hardwood demonstration projects
state forests	acres state forest land	(new initiative, no data FY21)	(new initiative, no data FY21)
(26 FY21)	(71,919 FY21)		
	<b>74,187</b>	<b>Forest Health</b>	
	acres state forests SFI-certified	<b>2,000 ↗</b>	<b>\$43,120 ↗</b>
	(71,819 FY21)	acres of state forest treated for invasive species	spent on invasive species treatments on state forests
		(18 FY21)	(\$6,564 FY21)
<b>Forest Management</b>		Note: Approximately 1,129 acres and \$30,000 of invasive species treatment was through the Forest Health Non-Native Invasive Plant Program.	
<b>\$1,925,727 ↗</b>	<b>\$332,726 ↗</b>		
timber sale revenue	paid to counties where revenues were generated		
(\$1,429,452 FY21)	(\$241,754 FY21)		
<b>325 ↘</b>			
acres site prepared for reforestation			
(399 FY21)			

# NURSERIES



VDOF has been growing seedlings for Virginia landowners for more than 100 years. When you put your money in the ground in the form of seedlings, you need to start with the best stock available, in other words, stock suited for Virginia soils and climate. The cultural practices used in growing seedlings in VDOF seedbeds are based on more than 60 years of quality production research and experience.

In addition to the wide selection of more than 40 species of bare-root seedlings, VDOF also offers specialty seedling packs suitable for various wildlife habitats, and now offer containerized longleaf and shortleaf pine. Bare-root seedlings are sold directly from the seedbed without replanting, and seedling age is indicated with 1-0, 2-0 and 3-0 (one-, two- and three-year-old). VDOF offers a variety of pine and spruce species, as well as dozens of hardwood varieties, used to establish timber stands, pulpwood crops, Christmas tree plantations, wildlife habitats,

stream bank stabilization, urban forests, biodiversity, and improvement of watersheds. Pine and hardwood seed are sown at our two nurseries and grown one to three years in the seedbeds before lifting.

Seedlings are lifted during winter dormancy, visually inspected, harvested, hand-graded, labeled, and packaged for delivery. Many of our hardwood species are grown from acorns and seeds collected by volunteers and donated to our nurseries. Virginia-grown seed generally produces trees that will grow well in our state.

## Future Growth

The Commonwealth continues to demonstrate support for the future of Virginia's sustainable working forests. With first-time nursery-specific funding made available by the 2022 General Assembly, planning has begun to reopen VDOF's New Kent seedling nursery.



## By the Numbers

### Sales

**26,365,349** ↘  
seedlings sold  
(30,205,369 FY21)

### Inventory

**40** ↘  
hardwood species grown  
(43 FY21)

**8** →  
conifer species grown  
(8 FY21)

For more information about services or programs in your area, contact your local VDOF office:

[www.dof.virginia.gov](http://www.dof.virginia.gov)



### Virginia Department of Forestry

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