Forest Health Review

2022 Report on the Health of Virginia's Forests

Southern pine beetle spot in Cumberland State Forest.

In this Issue...

VIRGINIA DEPARTMENT OF FORESTRY

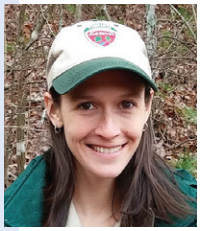
Forest Health by the Numbers

Introduction

VDOF's Forest Health program surveys and monitors Virginia for major forest pests, pathogens, non-native invasive plants and other forest disturbances. These data are shared with and used by partners, stakeholders and other interested parties to guide forest management activities. The Forest Health Review summarizes significant forest health issues and program activities each year in Virginia.

1,410,550 acres of aerial survey with digital mobile sketch mapping
39,681 acres of forest tent caterpillar damage near the Dismal Swamp
21,323 acres with spongy moth defoliation mapped by Virginia Department of Forestry (VDOF)
8,737 southern pine beetles (SPB) caught in funnel traps
6,648 acres of ghost forests mapped along the coast
4,240 acres of pine thinned with SPB prevention funds
1,163 attendees present during forest health presentations
800 parasitoids released for emerald ash borer (EAB) control
500 predator beetles released for hemlock woolly adelgid (HWA) control
130 ash trees treated via EAB cost-share program
118 eastern hemlock trees treated for HWA
99 forest health ground observations reported by VDOF staff
73 spotted lanternfly egg mass surveys
20 forest health presentations
8 spotted lanternfly traps
6 species of ash treated

Forest Health Staff



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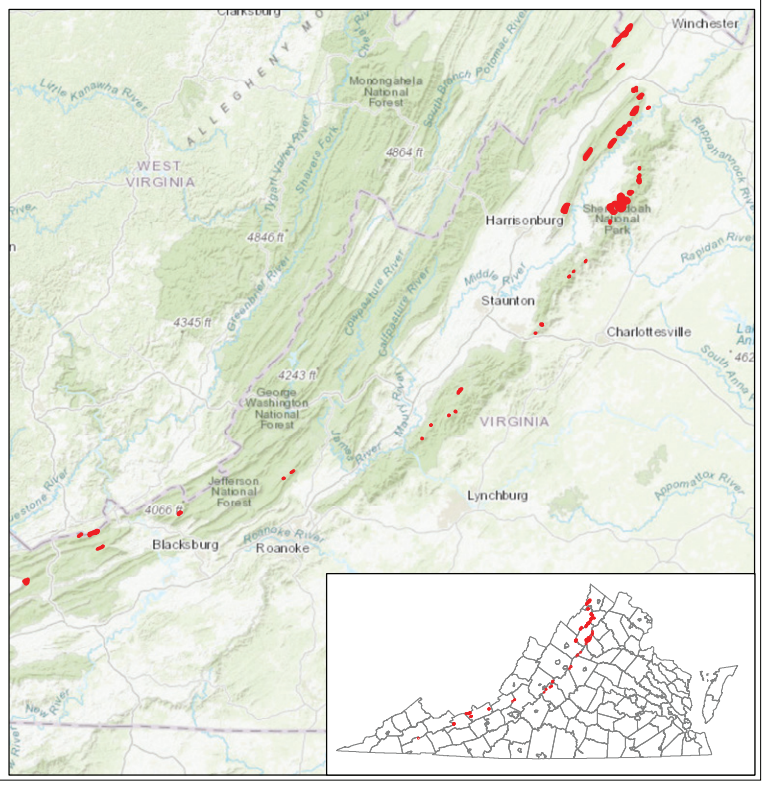
Spongy Moth Aerial Survey 2022



*Data collected from aerial surveys conducted by VDOF and USFS

Spongy Moth

Since the late 1800s, when the spongy moth was introduced to the United States, this pest has spread throughout much of New England and as far south as Virginia. Spongy moth is an early season defoliator, meaning that the caterpillars feed as soon as buds break and leaves emerge in early spring. Spongy moth feeding is considered a significant stressor for impacted trees, as losing foliage in the early season reduces their ability to photosynthesize. It also means the tree must expend energy to put out more leaves, depleting stored reserves and further stressing the tree. Spongy moth has a large host list, feeding on more than 300 species of plants, with a strong preference for oak species.

In 2022, the Entomological Society of America officially changed the common name of Lymantria dispar (previously known as the gypsy moth) to spongy moth.

In late May, the VDOF forest health program began receiving reports of spongy moth defoliation in Winchester, Frederick and Page counties, and Strasburg. This also included a report from Shenandoah National Park within Page County. Pockets of scattered defoliation were reported from these locations and photos confirmed spongy moth. When outbreaks like this are reported, VDOF's forest health program conducts aerial surveys to spatially catalog damage. Forest health staff performed a defoliation flight on June 28, 2022. The most striking damage was observed in Shenandoah National Park at the Franklin Cliffs Overlook (Milepost 49), but patchy defoliation was also observed along the Massanutten mountain range and southeast of Strasburg. Additional pockets of defoliation were mapped along the West Virginia state line, west of Winchester. The USDA Forest Service also conducted an aerial survey for spongy moth, flying over the national forests in southwestern Virginia in early June. They mapped small pockets of defoliation scattered throughout the area. In total, VDOF and USFS mapped 24,493 acres *with* moderate/heavy defoliation (12,984 acres *of* moderate/heavy defoliation) in Virginia.

Photo credit: Rolf Gubler, National Park Service

Defoliated mountainside in Shenandoah National Park.

Spongy moth damage in Shenandoah National Park observed from aerial survey.

Healthy trees should be able to survive a single defoliation event. However, multiple, consecutive years of defoliation severely stress trees and can cause mortality. Natural population control of caterpillars does exist, but can only be found in specific conditions. *Entomophaga maimaiga* is a soil-borne fungal pathogen of spongy moth and proliferates in cool, wet springs. *Nucleopolyhedrosis* virus (NPV) specifically targets spongy moth during high population density events. Shenandoah National Park biologists noticed evidence of both *E. maimaiga* and NPV killing caterpillars in the park, and their fall surveys revealed egg masses in only a couple locations. This indicates that NPV and *E. maimaiga*, along with other natural enemies, suppressed spongy moth reproduction, hopefully limiting damage in 2023.

Southern Pine Beetle

The southern pine beetle (SPB) is the most destructive native pest in the southeastern United States. This small beetle lives within the inner bark of southern yellow pines and can cause significant tree mortality during outbreaks. Historically, SPB outbreaks have occurred about once a decade, lasting an average of two to three years. However, Virginia has seen little southern pine beetle activity since the early 2000s, a trend that is reflected across much of the Southeast. This can be attributed, among other factors, to silvicultural practices such as pre-commercial thinning that improve forest health and decrease a stand's susceptibility to bark beetles. In 2022, VDOF's Pine Bark Beetle Prevention Program cost-shared pre-commercial thinning projects on 4,240 acres, totaling more than 70,000 acres since the program began in 2004.

Monitoring pine bark beetle populations is important to better predict when and where outbreaks may occur. The VDOF forest health program participates in an annual, south-wide SPB survey, coordinated by the USDA Forest Service. This program monitors populations of southern pine beetles using pheromone traps that are deployed each spring. This year, 25 traps were placed in high-risk areas in the counties shown in Table 1. VDOF foresters and DCR staff helped collect samples for four weeks, and VDOF forest health program staff sorted and identified beetles. All results were entered into a south-wide Pine Beetle Prediction ArcGIS Online application, and data were sent to a Pine Beetle Prediction Portal (https://www.spbpredict.com/) which models the potential for an SPB outbreak within certain counties. These predictions are summarized in Table 1. The most SPB activity is expected in Chesterfield, Cumberland and Gloucester counties.

As predicted, Cumberland saw increased southern pine beetle activity in 2022, and a few significant beetle spots were identified within Cumberland State Forest in the fall. Forest health staff worked with State Forest Manager Shannon Lewis to confirm and map damage with drone and aerial surveys. Some of the stands will be harvested, and the remaining beetle spots will be closely monitored this winter and spring.

Photo credit: Forest Manager Mike Womack, VDOF

Small southern pine beetle spot viewed from aerial survey over Cumberland State Forest.

Table 1: 2022 Southern Pine Beetle Predictions*

County	Probability of any Spots	Probability of an Outbreak
Accomack	6%	1%
Chesterfield	43%	14%
Cumberland	33%	9%
Franklin	8%	1%
Gloucester	40%	13%
Hanover	4%	0%
Henry	4%	0%
Lunenburg	4%	0%
New Kent	13%	2%
Prince Edward	12%	2%
Sussex	6%	1%

*Predictions are based on a zero-inflated Poisson model fit to historical data from 1988-2009 (Aoki 2017). The most important drivers of the model predictions are SPB trap captures in the current spring and SPB spots im the previous year. The SPB prediction project is supported by the USDA Forest Service: Science and Technology Development Program (STDP).

Spotted Lanternfly

Stomp it, swat it, squish it! Since the spotted lanternfly's (SLF) arrival in Virginia four years ago, VDOF has encouraged folks to locate and extinguish new populations of this invasive insect. However, despite the continued effort to stop the SLF from spreading, it has become established in many Virginia counties, leading to the expansion of the Virginia Spotted Lanternfly Quarantine.

The spotted lanternfly is native to Asia, was first discovered in North America in 2014, and first discovered in Virginia in 2018. It has a wide host range with a strong preference for tree-of-heaven, which is an invasive species itself. Other common preferred plants include grapevine, maple and walnut. It is not yet known how much direct damage SLF will cause to trees, but feeding certainly weakens a tree and makes it more susceptible to other insect pests and diseases. On fruit crops, feeding may reduce yield, especially on grapevines. As lanternflies feed, they excrete a sticky sugary substance called honeydew, on which sooty mold develops.

The SLF is a regulated pest through the Virginia Department of Agriculture and Consumer Services (VDACS), meaning there is a spotted lanternfly quarantine in Virginia. The quarantine expanded in July 2022 to include 18 additional counties/cities.

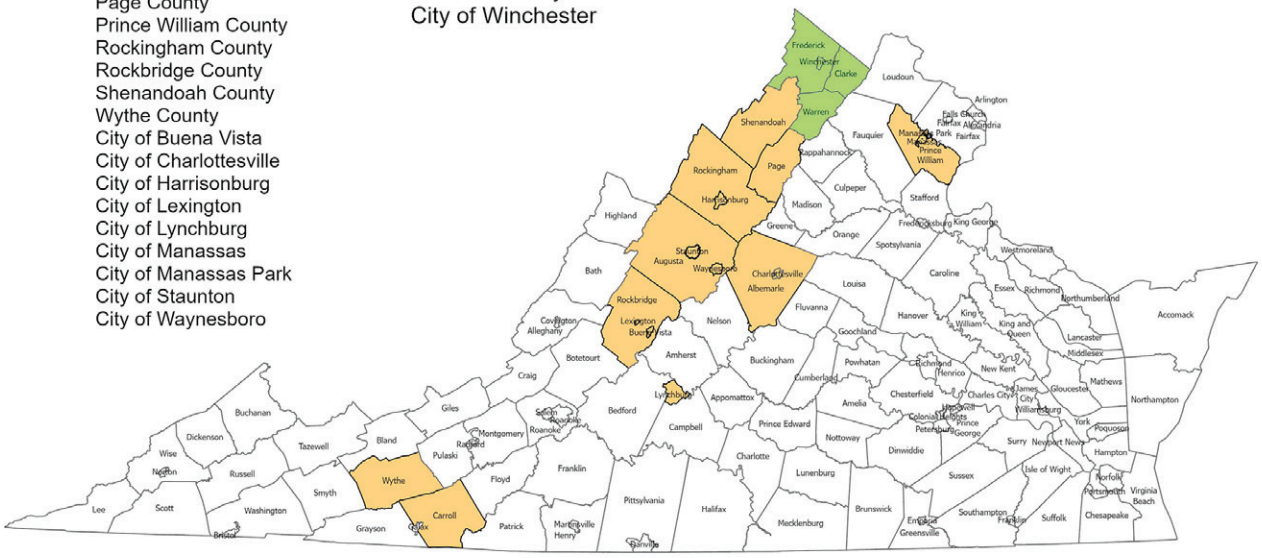
The quarantine regulates movement of articles that may act as a means of conveyance of spotted lanternflies, including but not limited to the following: all plants; construction material and equipment; packing materials; outdoor household articles; equipment, trucks or vehicles not stored inside; and any personal vehicles and trailers. Adult lanternflies lay their eggs on a wide variety of objects, so just about anything kept or stored outside could be a potential egg mass site, and therefore, a means of conveyance of the spotted lanternfly.

The SLF quarantine states that residents moving items out of the quarantine area should inspect those items for spotted lanternflies. Businesses that move items outside of the quarantine must obtain a permit from VDACS. VDOF has completed online training and has a Spotted Lanternfly Permit. All VDOF staff that work in the quarantine area should complete self-inspections on vehicles before leaving the quarantined area. Let's all do our part to slow the spread of this incredibly invasive pest!

Spotted Lanternfly Quarantine

2022 Additions
Albemarle County
Augusta County
Carroll County
Page County
Prince William County
Rockingham County
Rockbridge County
Shenandoah County
Wythe County
City of Buena Vista
City of Charlottesville
City of Harrisonburg
City of Lexington
City of Lynchburg
City of Manassas
City of Manassas Park
City of Staunton
City of Waynesboro

Original Quarantine
Clarke County
Frederick County
Warren County
City of Winchester



Virginia Department of Agriculture and Consumer Services
Office of Plant Industry Services

July 2022

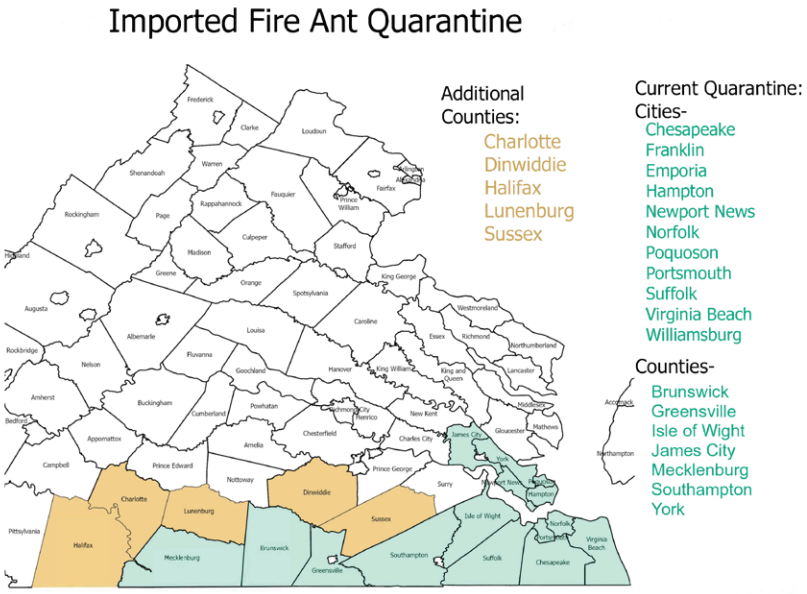
Red Imported Fire Ant

The red imported fire ant (RIFA) is native to central South America and was first detected in Virginia in 1989. To date, all infestations have been introduced through nursery or plant stock from infested areas or through natural spread from nearby colonies. There is only one queen per colony with thousands of workers that feed and protect her. The ants are not very active in the winter, but become more active as spring approaches. Once temperatures are above 73 degrees, flight activity begins as new queens move to establish their colonies. Rapid growth in colony size occurs throughout the summer months.

Red imported fire ant mound in a cutover.

The Virginia Department of Agriculture and Consumer Services established an imported fire ant quarantine in Virginia, which will likely expand in December 2022. Under this quarantine, regulated articles are prohibited from moving out of the quarantined area unless they are certified as free of imported fire ants. Regulated articles include any life stage of this fire ant and anything that could move soil containing RIFAs, including logs and pulpwood with soil attached. If logs and pulpwood are moved out of the quarantine area, they must first be certified as free of imported fire ants.

Expanding RIFA populations in Virginia are concerning for many reasons, one being the painful sting they issue when disturbed. Unlike other fire ants that sting with formic acid, RIFA sting with venom while using powerful mandibles to latch onto prey. Farm and forestry workers in RIFA sites could unknowingly step on a mound and be in for a bad day! Another concern is that fire ants can be easily transported on equipment (such as skidders) that pick up loose soil. This may introduce fire ants to new locations as equipment moves from one job to another. Cutovers, logging decks and roadsides are ideal sites for ant colonies because RIFA tend to prefer areas that will not flood and have plenty of sunlight.



Forestry professionals and loggers can comply by inspecting logs, vehicles and logging equipment for loose soil, and blowing or sweeping off any loose soil before leaving the quarantine area. Any goods being shipped from a quarantine area must be inspected by VDACS prior to departure. Since this process is time intensive, this is best for businesses that only move a few loads per year. Another option is to request a compliance agreement with VDACS where permit holders agree to self-inspect goods and equipment, and remove any loose soil found. This option is best for businesses that ship regularly out of the quarantine area. Good sanitation practices and vigilant inspections can help to ensure that these ants stay out of new locations and away from our forestry professionals!

Oak Decline

Oak decline continues to be a significant forest health issue in Virginia. Oaks are iconic trees with numerous benefits, and it is frustrating to watch more die each year. While we have yet to identify a single causal agent capable of widespread decline, we continue to learn more about the many factors that contribute to the oak decline complex in Virginia.

Oak decline is the gradual failure in the health of an oak tree caused by the interaction of many stress factors. Poor site conditions and advanced age are examples of *predisposing* factors that weaken a tree over time and allow it to become more susceptible to future disturbances. *Inciting* factors, such as drought, frost and defoliation, may then initiate decline by reducing growth, depleting the tree's stored food reserves, and/or causing dieback. Finally, secondary pests and pathogens are *contributing* factors that attack stressed trees and ultimately cause tree mortality. *Armillaria* root rot, the two-lined chestnut borer and *Biscogniauxia* canker are a few contributing factors commonly observed in the field.

In July 2022, VDOF invited VDACS Plant Pathologist Devin Bily to visit and examine declining stands of oaks in Frederick and Shenandoah counties. Two sites with significant oak decline were assessed and samples were taken from symptomatic trees. The first thing Devin looked for was signs of oak wilt. Oak wilt is caused by an aggressive fungal pathogen resulting in rapid tree mortality. While oak wilt was detected in western Virginia in the 1950s, it has not been confirmed in Virginia since surveys in the 1970s. Although oak wilt was not detected from either of the sites, a *Diplodia* species was isolated from bole cankers, pockets of necrotic sapwood, and discolored vascular tissue from several symptomatic trees. *Diplodia* is an emerging fungal pathogen in Europe and the U.S. associated with oak decline. Three species have been identified from declining red and white oaks in the mid-Atlantic region: *D. corticola*, *D. quercivora* and *D. sapinea* (Ferreira et al., 2021). Molecular sequencing is planned to identify which *Diplodia* sp. is responsible for decline in the Shenandoah and Frederick County sites.

Diplodia is an opportunistic pathogen, meaning it attacks stressed and/or wounded trees subject to drought conditions, flooding or damage by other biotic and abiotic factors. It can cause acute wilt, blighted leaves, severe dieback, external cankers and sooty lesions on oak trees. The fungus is dispersed by wind and rain, and enters the tree through wounds and/or natural openings. It is likely very common in our oak forests, infecting trees that are already in advanced states of decline. *Diplodia* appears to be another contributing factor of oak decline, complimentary to poor site conditions, advanced age and environmental stress. There are no management strategies for this pathogen, just as there is no way to reverse oak decline. You can read more about common pests and pathogens of oak trees in our publication: https://dof.virginia.gov/wp-content/uploads/FT0059_Common-Pests-of-Oaks-in-VA.pdf

Photo credit: Devin Bily, VDACS

Sapwood discoloration from Diplodia sp.

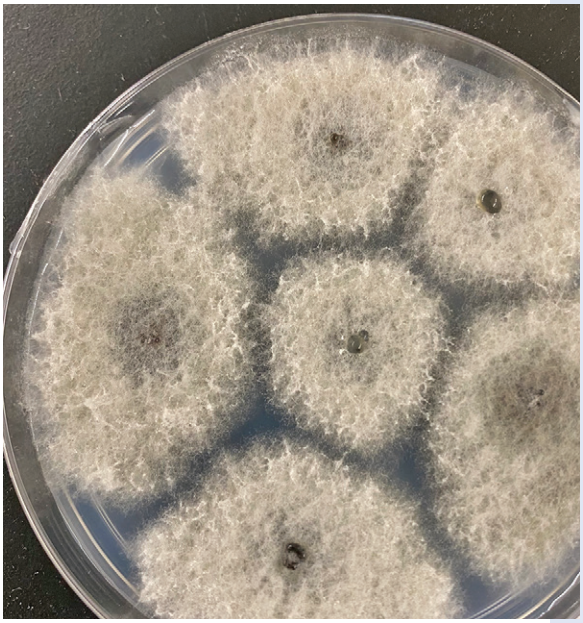


Photo credit: Devin Bily, VDACS

Diplodia sp. on agar plate.

Ferreira, S., Stauder, C., Martin, D., and Kasson, M. Morphological and Phylogenetic Resolution of *Diplodia corticola* and *D. quercivora*, Emerging Canker Pathogens of Oak (*Quercus* spp.), in the United States. Plant Disease 105:5, 2021. https://doi.org/10.1094/PDIS-05-20-0977-RE.

Rare Ash Treatment

VDOF and DCR staff treat blue ash at Natural Tunnel State Park.

Photo credit: Gretchen Gorecki, DCR

Variable pockets of climate and geography make Virginia a unique ecological location. From the chilly mountains in the west, to the hot and humid swamps of the east, Virginia has the ability to support a wide variety of plant and animal species. For example, out of the nine species of ash found nationally, Virginia is home to six. This past summer, the forest health along with the urban and community forestry staff traveled to state lands across Virginia treating common and rare ash tree species to protect them from damage by the invasive emerald ash borer (EAB).

Fraxinus quadrangulata, or blue ash, is mostly found in alkaline soils of the midwestern United States, as well as some regions of Kentucky and Tennessee, and a few locations in southwest Virginia. Blue ash appears to be naturally more resistant to EAB than other North American ash species, although the exact mechanisms of that resistance are still being studied. Natural Tunnel State Park in Scott County is home to a population of blue ash that VDOF first assessed in 2018. The trees were in surprisingly good condition for not having been treated, so VDOF and Department of Conservation and Recreation (DCR) staff developed a plan to keep them healthy. Forest health staff uses tree injections of emamectin benzoate to protect against the emerald ash borer, and treatments are generally effective for two years. Although not officially confirmed, the suspected champion blue ash was identified and treated at Natural Tunnel in 2022, as well as 18 other trees.

Pumpkin ash, *Fraxinus profunda*, is found in areas with high moisture soils, such as riparian areas and swamps. Increased water availability and uptake can sometimes cause flared buttresses at the base of the tree resembling a pumpkin, hence its namesake. The Langley Air Force Base owns a tract of wetland in York County with a population of pumpkin ash. Forest health and local VDOF staff demonstrated injection treatments to Langley representatives unfamiliar with the procedure. Through this demonstration day, 18 trees were treated, including the Virginia State Champion pumpkin ash.

While pumpkin ash will grow in areas with seasonal water, Carolina ash (*Fraxinus caroliniana*) requires deeper swamp conditions and higher volumes of water. Its preferred habitats are coastal swamps and subtropical lowlands. The northernmost range of the Carolina ash is southeast Virginia. Cypress Bridge Swamp Nature Preserve in Southampton County is home to one of the few known populations of Carolina ash in Virginia, including the state champion tree. The treatment of these trees is dependent on water levels of the swamp; if the water levels are too high, the trees become inaccessible and go untreated. Water levels were monitored all summer, but the area only became accessible at the very end of the season when five trees were treated.

Black ash (*Fraxinus nigra*) is most typically found in colder climates, such as eastern Canada and the northeastern United States. However, its range extends southward through higher-elevation areas such as the Alleghany and

Laurel Wilt Disease

Since discovering laurel wilt disease (LWD) in Scott County in 2021, VDOF forest health program staff have been working to learn more about this disease and share that information with other professionals in the industry. This past summer, forest health along with urban and community forestry staff held a laurel wilt identification and monitoring program at a LWD-confirmed site just across the state line in Sullivan County, Tennessee. This event united seven state agencies from Virginia, North Carolina and Tennessee to learn about a relatively new tree disease. Attendees were shown a live example of externally observable wilt symptoms on sassafras and spicebush, such as discolored and wilting foliage and "toothpick" frass tubes. A symptomatic tree was then bark scraped to reveal the characteristic vascular streaking which is highly indicative of LWD. Definitive fungal presence of LWD must be confirmed by a lab sample of the suspected plant tissue. The event concluded with practical application of learned material in the form of field surveys. Teams traveled to pre-designated Virginia public lands where they surveyed for field indicators and collected samples of symptomatic trees. The samples collected were then sent to Virginia Tech Plant Disease Clinic for testing; all sampled trees came back negative for LWD.

Events like this are crucial to foster multi-state and multi-agency cooperation, as well as information sharing on forest threats that know no state boundaries. By learning how to effectively identify and monitor pests and diseases, forest health agencies can improve their programs to better serve organizations and landowners. VDOF will continue to monitor for LWD and work with other agencies who are doing the same. If you suspect a tree has LWD, please reach out to the VDOF forest health staff for more information on how to collect a sample.

Laurel wilt disease training attendees with infected sassafras trees in the background.

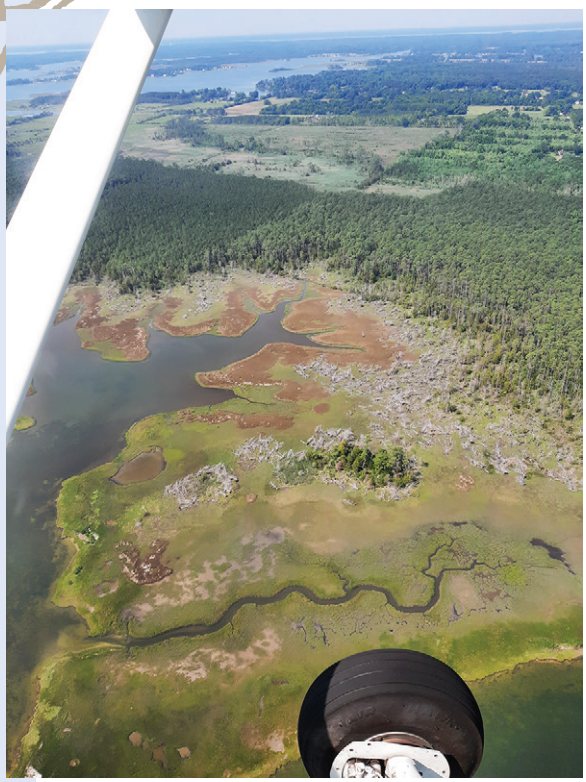
Rare Ash Treatment, continued

Blue Ridge mountains. Department of Wildlife Resources' G. Richard Thompson Wildlife Management Area in Fauquier County has black ash trees scattered around the 4,000-acre property. Black ash prefer moist soils of wooded slopes and bottomlands, and grow best in well-draining soil. VDOF forest health staff and Fairfax County urban foresters treated 10 trees this past summer; more black ash are on site, and plans are in place to revisit next summer for additional treatments.

The majority of ash treatments are focused on green and white ash, simply because they are so plentiful. However, areas of Virginia are home to limited populations of rare ash species that can only be found in certain growing conditions. With a pest as destructive as the emerald ash borer, these rare and champion trees need proactive management to remain healthy and a part of Virginia's varied landscape.

Molly O'Liddy treats pumpkin ash in York County.

Ghost Forests



Ghost forest at Page Creek.

Ken Sterner surveying from plane.

Coastal resiliency is a topic of great importance in Virginia. Areas along the coast are highly populated, an important source of revenue for the economy, and of high ecological importance to the Commonwealth. Ghost forests along the coast are becoming more common, showing direct impacts of saltwater intrusion from sea level rise and storms of increasing frequency and severity. By definition, a coastal ghost forest is an area of standing dead trees that were once forest, but can no longer function as such because of frequent or prolonged saltwater intrusion. Southern coastal states are very concerned about the impacts of this mortality and loss of forest land along their shores. In an effort to understand where saltwater intrusion is causing such damage, these states are doing aerial surveys using Digital Mobile Sketch Mapper software to map the severity and extent of tree mortality.

In early June, Forest Health Specialist Katlin DeWitt and District Forester Ken Sterner conducted a flight along the shoreline of mainland Virginia to map where mortality from saltwater intrusion has occurred. Prior to the flight, locations of confirmed tree mortality were gathered, which helped direct the survey and served as a baseline of ground-truthed points. The flight started at the mouth of the Potomac where it meets the Chesapeake Bay, and all inlets and river openings were flown down to the Plum Tree Island National Wildlife Refuge. In total, 6,648 acres of damage were mapped along the shoreline of Virginia. Most of the damage was in areas with known saltwater intrusion, where elevation was lowest and land was most heavily impacted by storm surge events.

The data from this aerial survey are important baseline records for continued monitoring of these coastal forests in the future. The survey completed this year was just the beginning; more surveys will help capture this damage along the Eastern Shore and the rest of Virginia's coast. Revisiting areas already mapped will also help to understand the rate of change in these locations as more storm events come along and the impacts of saltwater intrusion are felt by those along the coast. This phenomenon is currently being studied by members of academia, along with the U.S. Forest Service and other state and federal agencies. A handful of other state forest health programs are conducting similar surveys in the South with the hope of creating a region-wide dataset that will be used to track coastal forest change in the future.

January

Photo: Robert L. Anderson, USDA Forest Service, Bugwood.org

- Vole activity/damage may increase under the protection of snow
- Begin to survey for fall cankerworm egg masses

February

Photo: Richard Gardner, Bugwood.org

- Survey for spotted lanternfly egg masses in winter
- Survey for eastern and forest tent caterpillar egg masses
- Spring Fire Season: Feb. 15 – Apr. 30

March

Photo: David Cappaert, Bugwood.org

- Eastern tent caterpillar eggs hatch around bud break
- Fall cankerworm eggs hatch in spring

April

Photo: USDA Forest Service - Region 8 - Southern , Bugwood.org

- Fusiform rust fruiting bodies are evident
- Place southern pine beetle (SPB) pheromone traps

May

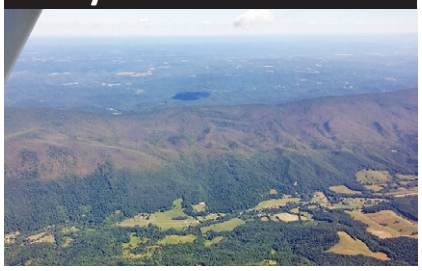


Photo: VDOF

- Defoliation by fall cankerworm and spongy moth evident
- Spotted lanternfly eggs hatch
- Anthracnose symptoms may appear on sycamore
- Ideal time for spongy moth treatment

June

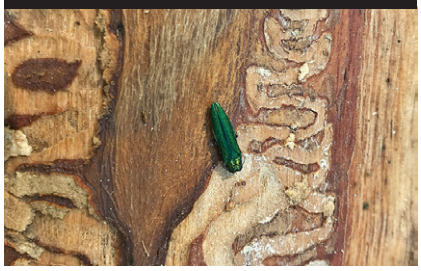


Photo: VDOF

- Peak adult emerald ash borer activity, ideal month for treatment
- Locust leafminer larvae start feeding
- Monitor sassafras and redbay for laurel wilt disease

July

Photo: VDOF

- Spongy moth adults present, females begin to lay eggs
- Adult yellow-poplar weevil present and active
- Bacterial leaf scorch symptoms present on leaves

August

Photo: Linda Haugen, USDA Forest Service, Bugwood.org

- Fall webworm visible on trees
- Late season native defoliators, such as orange-striped oakworm, walnut caterpillar, and oak skeletonizer are present

September

Photo: VDOF

- Survey underside of beech canopy for beech leaf disease
- Emerald ash borer larvae feed under ash bark through fall and winter

October

Photo: VDOF

- Spotted lanternfly adults lay egg masses
- Fall fire season Oct. 15 - Nov. 30
- Survey for spongy moth egg masses through January

November

Photo: VDOF

- Hemlock woolly adelgid (HWA) evident
- Rake fallen leaves to prevent the spread of anthracnose and other foliar diseases

December

Photo: William A. Carothers, USDA Forest Service, Bugwood.org

- Place fall cankerworm bands-remove in February
- Scout for heterobasidion conks in fall and winter

Snowstorm Damage

In early January of 2022, a fast and heavy snowstorm impacted forests in north central Virginia, with 6-15 inches of snow reported. Areas most impacted were Louisa, Fluvanna, Spotsylvania, eastern Albemarle, and western portions of Hanover and Caroline counties. Pine stands in the later pre-merchantable stages (8-10 years old) were impacted the most. The VDOF Forest Management Branch designed a survey to determine if storm damage was of significant level to warrant forest management practices in order to meet landowner management goals.

Damage observed after snowstorm in January 2022.

VDOF field staff conducted surveys on a sample of tracts planted in 2012-2014 within counties that received at least 8 inches of snow. Previous studies (Pickens, 2015) have shown that trees with >30-40 degree lean are unlikely to recover, so the surveyor determined damage ranking by estimating how much of the stand was occupied by trees unlikely to recover. Survey data were recorded on a Survey123 form on mobile phones, and several stands were assessed using drones. A total of 25 surveys were completed in May-June, 2022. Most of the surveyed stands had light/moderate damage; only four tracts were determined to have severe damage and need further assessment.

Management recommendations are based on the level and distribution of damage. If the damage is evenly distributed across the stand and more than 50% of the stand contains adequate stocking, then it is advisable to leave the stand to grow. If damage is unevenly distributed, sub-stands of manageable size (minimum of 20 acres) should be identified to assess separately. The VDOF Research Program has demonstrated that densities as low as 200 viable residual stems per acre will develop into an acceptable stand. Stands in the 8-10 year range have little to no salvage value. Liquidation now would be costly and return no value, whereas waiting even five years would allow trees to become of merchantable size. Since none of the tracts surveyed in this project were completely destroyed, the recommendation for all tracts is to leave the stands to grow until the trees have reached merchantable size.

Pickens, B. Managing Storm Damage to Southern Yellow Pines, TRB-002. North Carolina Forest Service. August 2015.

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

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