



# Bay region losing ground in effort to increase urban tree canopy

**Development taking trees down faster than they can be replaced**

**By Timothy B. Wheeler & Jeremy Cox**

Looking at the skinny elm sapling reaching for the sky in his backyard, James Bryant said that he hopes he lives long enough to be able to sit under its canopy and read a book in summer.

Bryant's neighborhood in Charlottesville, VA, has the dubious distinction of being the hottest in town. Walking the blocks around the intersection of 10th and Page streets, it's easy to see why — trees that could offer some shady relief from the broiling summer sun are few and far between.

"We couldn't sit out until late evening to have cookouts because it was so hot," he said.

Like many communities across the Chesapeake Bay watershed, Charlottesville and its nonprofit partners are trying to change that. Bryant has a new crape myrtle in his tiny front yard and a pair of nascent shade trees out back, courtesy of volunteers with the Charlottesville Area Tree Stewards. This fall, the city's Tree Commission is going door to door in the neighborhood looking for at least 20 more homeowners willing to have trees planted in their yards.

Despite such efforts, the city is losing mature trees faster than it can plant new ones. Across town, pink and orange surveyor's tape hangs

from dozens of large trees in an 8-acre woods that a developer plans to clear to build 47 new homes. Another 12-acre woodland nearby was rezoned earlier this year, also for housing development.

"Rather than robust and flourishing, Charlottesville's overall tree canopy continues to decline at an accelerating rate," the Tree Commission warned last year. From 2014 to 2018, the city lost nearly 80 acres of leafy canopy, a 3% reduction, a new set of data show.

Charlottesville is far from alone. The new figures, compiled by scientists working as part of the state-federal Chesapeake Bay cleanup effort, show that communities in the Bay watershed cumulatively suffered a net loss of more than 29,000 acres in urban tree canopy during that time span.

Those losses come despite a pledge made in 2014 by all of the Bay watershed states — Maryland, Virginia, Pennsylvania, Delaware, New York and West Virginia, plus the District of Columbia — to increase their overall urban tree canopy by 2,400 acres by 2025.

Evidence that urban tree canopy is going in the wrong direction comes from aerial surveys conducted in 2013–14 and 2017–18, which were analyzed by the Chesapeake Bay Program and the nonprofit Chesapeake Conservancy. Two-thirds of the watershed's communities — cities, towns and villages, but also unincorporated clusters of homes recognized as "places" in the U.S. Census — lost tree cover. The rest held steady or registered mostly small gains.

Those losses are part of a broader canopy decline that extends into rural areas, the survey data found. But urban tree cover declines are of particular concern, experts say, because trees in developed areas not only prevent polluted runoff but reduce extreme heat and fight air pollution. They also reduce flooding, lower energy bills, raise property values and dampen noise, among other benefits.

## Development takes a toll

The reasons for the decline are manifold. Diseases and pests, such as the emerald ash borer, are killing many mature trees. Ice and wind from storms fell others. Property owners take down other trees because they're seen as hazards to property or safety, or they're just inconvenient.

"There are so many different forces that are whittling away at the canopy," said Julie Mawhorter, Mid-Atlantic Urban and Community Forestry Coordinator for the U.S. Forest Service.

Some losses have even occurred, ironically enough, in an effort to improve the Bay's water quality. Stream restoration projects undertaken to reduce bank erosion and nutrient and sediment pollution often require sacrificing mature trees overhanging the water.

But the major cause of canopy declines is development, the aerial surveys showed. Woodland oases next to or surrounded by concrete and asphalt are cleared for new homes, warehouses and other buildings, while trees also come down for roads, power lines and pipelines.

When grouped by state, Maryland communities suffered the biggest declines in tree cover, losing a total of 14,592 acres for a 2.2% decrease in cumulative canopy, according to a *Bay Journal* analysis of Bay Program data. Virginia's communities collectively lost 9,955 acres, for a 1.3% decrease. Pennsylvania lost 3,256 acres or 0.7%.

The community with the biggest loss was Virginia Beach, that state's most populous city. It lost more than 1,700 acres — more than three times the next biggest decline, which occurred in Brandywine, a growing unincorporated area of Prince George's County, MD.

"When you have older trees, they do fail during storms, and they do die," said Brooke Costanza, Virginia Beach's city arborist. "And we think private property owners are cutting trees on their property because they're scared of storm damage."

The biggest gain, with a 268-acre increase in canopy, was in tiny Mount Vernon, an unincorporated village in Somerset County, MD, whose census-drawn boundaries encompass broad swaths of timberland.

Overall, large cities lost 1.9% of their canopy in just four years,

*Photo: Malcolm Wilson of Blue Water Baltimore uses a concrete saw nicknamed "Big Baby" to cut out sections of sidewalk where trees will be planted on a nearly treeless block of North Smallwood Street. (Dave Harp)*



Peggy Van Yahres, chair of Charlottesville's Tree Commission, talks with James Bryant about the trees planted in his backyard by volunteers with the Charlottesville Area Tree Stewards. His neighborhood is one of the hottest residential areas in the city. (Dave Harp)

nearly three times the decline seen in small towns, though there were small gains in the watershed's two largest municipalities, Baltimore and Washington, DC.

The new figures also seem to underscore longstanding racial inequities in urban landscapes. The percentage of tree cover in the 112 communities where Black residents make up 50% or more of the population declined on average 11 times more than other places. Baltimore as a whole was an exception, increasing its overall canopy by about 100 acres.

Such findings are significant because many predominantly Black neighborhoods already had a tree deficit, a legacy of historic housing segregation that often consigned them to cramped, relatively treeless environs.

Baltimore and Richmond, for example, were among more than 200 U.S. cities subjected for much of the 1900s to "redlining," the federally promoted practice of withholding home loan approvals from racially and ethnically diverse neighborhoods.

### Tree-starved neighborhoods

Though outlawed in 1968, redlining's legacy lives on in many places, including Richmond's Southside area. The most glaring evidence of the decades of disinvestment can be seen in the predominately Black community's lack of trees. Research led by the Science Museum of Virginia has found that the resulting "heat islands" can be up to 16 degrees hotter than leafier parts of the city, putting Southside residents at far greater risk of heat-related illnesses and death.

Sheri Shannon wants to change that. She is one of the founders of Southside ReLeaf, a nonprofit that seeks to promote environmental justice by adding and improving green spaces.

"Planting trees is not going to solve environmental racism," Shannon said. "It's not going to solve the climate crisis, but it is one part of mitigation of lowering the temperature in neighborhoods that are disproportionately impacted by extreme heat."

The centerpiece of the effort is the Greening Southside Richmond Project, a partnership with other environmental groups to plant hundreds of trees while training local youths in green industries.

"We're focused on making sure we're improving the green infrastructure, which will eventually improve the social infrastructure of neighborhoods," Shannon said of the initiative, which received a \$230,000 grant from the National Fish and Wildlife Foundation to support the work into early 2023.

But it's an uphill battle, she admitted. Developers are bulldozing tracts of trees, and she contends that they are not required to adequately compensate for the losses.

"Essentially, what we're seeing is a lot of multifamily housing going up, which is needed, but we're not seeing trees being planted and mature trees being preserved — and in an area that is already experiencing extreme heat and floods because of poor infrastructure," Shannon said.

### Money for planting trees

Amid growing recognition of trees' value in restoring the Bay and battling climate change, nonprofit groups and governments at all levels are stepping up efforts to get more roots in the ground. Many are also trying to address historic inequities in the distribution of trees throughout their communities.

In Maryland, lawmakers last year passed the Tree Solutions Now Act, which calls for 5 million trees to be planted statewide by 2031. The legislation specified that at least 500,000 of those trees go in "underserved areas."

In June, the state's Board of Public Works gave \$10 million to the Chesapeake Bay Trust to fund the first year of plantings in relatively treeless communities. The trust promptly handed out \$7.7 million of that to nearly three dozen state and local agencies, nonprofits and community groups. Grants ranged from \$9,000 to \$1.9 million. Those funds should pay for planting 40,000 trees by next spring, said trust director Jana Davis. They'll have to pick up the pace in future years, though, to reach the state's 2031 goal.

Federal money is also on the way to boost urban tree plantings in the watershed. The Inflation Reduction Act will provide \$1.5 billion nationwide over the next 10 years for the U.S. Department of Agriculture's urban forestry program — a fivefold increase from its current funding level.

But the overall rate of tree losses has been so great that even doubling or tripling plantings won't close the gap by itself, experts say.

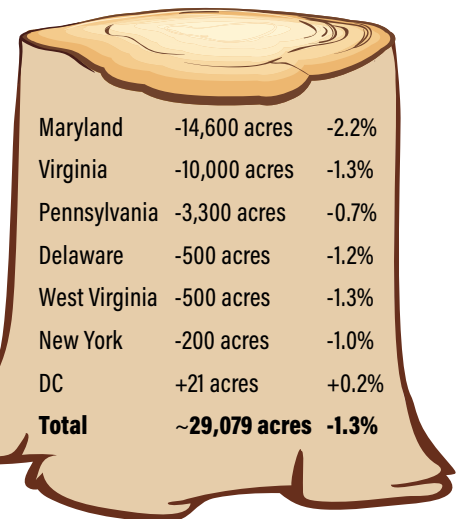
"You can't plant your way out of it," said the Forest Service's Mawhorter, who coordinates the Bay Program's urban tree canopy effort. "If you want to use trees for climate resilience and these Bay goals, you also need to be paying attention to your existing canopy and how you maintain it."

Money alone won't fill in holes in urban tree cover, either. It's no simple matter finding suitable spots for planting in some densely built neighborhoods. Houses around 10th and Page streets in Charlottesville hug the street on lots that are much smaller than average. Front yards aren't

## Net Loss of Urban Tree Canopy in the Chesapeake Bay Watershed

Regionwide goal:  
Add 2,400 acres  
between 2013–25

Already lost:  
29,000 acres  
between 2013–18



Data source: Chesapeake Bay Program. Analysis by the Chesapeake Bay Journal. All numbers, with the exception of DC, are rounded to the nearest 100.

big enough to accommodate big shade trees, so backyards often offer the only alternatives.

### 'Fill in the gaps'

James Bryant's neighborhood in Charlottesville is one of those urban "heat islands," where the tree canopy is less than half the citywide average of 40%. The historically Black neighborhood has one of the city's highest rates of heart attacks, heat stroke and asthma, according to Peggy Van Yahres, chair of the city's Tree Commission. Most families there pay up to 20% of their income for heating and cooling.

The commission helped launch ReLeaf Cville, a project aimed at improving health and living conditions in neighborhoods with skimpy canopy, starting with 10th and Page. They have already planted about 30 trees there and helped train a group of teens to canvass the area for more homeowners.

"We're going to fill in the gaps," Van Yahres said.

In Baltimore, you first need to make some gaps. The only way to plug trees in some treeless neighborhoods is to carve holes in the concrete. Just 28% of the city is shaded by trees, with as little as 4% canopy in some blocks.

Wearing headphones to dampen the deafening noise, Malcolm Wilson, restoration crew leader for Blue Water Baltimore, guided a wheeled rotary saw nicknamed "Big Baby" as it carved through the concrete walk on North Smallwood Street in West Baltimore.

Crew member Corbin Sulton then climbed into a skid loader fitted with a big steel punch to break up the cut-out patch. His next step was to grab the slabs with an excavator and hoist them into a nearby dump truck.

Next spring, Blue Water Baltimore plans to plant cherry, redbud and other hardy saplings in the newly created sidewalk pits. With limited exposed ground to soak up rainfall, the young trees face challenges getting established, so the

See **TREE CANOPY**, page 18





Arthur Ashe Boulevard in Richmond, shown here in 2019, experiences the urban "heat island" effect, with fewer trees and more impervious surface. (Will Parson/Chesapeake Bay Program)



Amputated tree trunks and mounds of shredded wood are all that's left of a patch of woods off Aris T. Allen Boulevard in Annapolis that was recently cleared for development. (Dave Harp)

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group plans to water and check on them for two years.

"If we could plant this block top to bottom and have only two or three trees die, then we're winning," said Wilson, who called blocks like this one "hidden gems."

"In the long run," he added, "it's going to create shade [and] draw enough [pollution] out of the air. It's going to draw some of these people out so they're actually sitting on their steps."

Reggie Parker, one of the few sitting out to watch the crew work, can hardly wait.

"We need some type of shade here," he said as he perched with his cats on the sill of his open front door. He said he hoped the trees would also "bring some more birds into the area."

Baltimore is one of the bright spots, along with Washington, DC, that has bucked the statistical trend of large and more diverse communities losing canopy. Baltimore's tree cover grew by about 1%, or more than 100 acres, according to the Bay Program data.

The city and its nonprofit partners have planted about 13,000 trees since 2016, according to Sam Seo, director of Tree-Baltimore, a city-run umbrella group. It has also begun to perform proactive pruning of mature trees to improve their chances of surviving storms.

The nonprofit Baltimore Tree Trust has been planting about 3,000 trees a year and intends to double its pace in 2023, according to CEO Bryant Smith. Within a few years, he said he hopes to be planting 10,000 trees annually.

But Baltimore's goal is to get 40% of the city shaded by trees by 2037, so there's a long way to go.

"If we're only doing 10,000 [a year], we're not going to get there," said Erik Dihle, who retired earlier this year after a decade as the city's arborist. To reach the goal in time would require boosting that rate by 2.5 times, he estimated.

Besides pests and storms, some of the biggest threats to Baltimore's tree canopy have come from infrastructure projects, including a new natural gas pipeline cutting through the forested wilderness of the city's Gwynns Falls/Leakin Park. Several stream restorations and sewer rehabilitation work have mowed down swaths of trees as well.

### Weak tree protections

In many, if not most, communities, the vast majority of trees are on private property. That, experts say, is the Achilles' heel of the effort to expand the urban canopy.

"In general, the local policies to prevent loss are pretty weak across the watershed," Mawhorter said. "Maryland has the strongest laws, but in Maryland we've also had a lot of losses."

Maryland's Forest Conservation Act, first passed in 1991, requires developers to spare large "specimen" trees and those bordering streams and wetlands. They're also obligated to replace at least some of what they cut down.

But the law only applies when about an acre or more is to be cleared, and it allows developers to pay to preserve trees elsewhere rather than plant replacements. Several Maryland counties and Baltimore city have in recent years imposed stricter limits, but it's too soon to gauge their effectiveness.

Virginia has a pair of laws that aim to conserve and replace trees, but until recently they only applied in the suburbs near DC. The tree replacement law, which

has expanded statewide, actually limits how much localities may require developers to replant, according to Peggy Sanner, Virginia director of the Chesapeake Bay Foundation.

"We don't have very strong private [tree] regulations, other than what's given to us by the state," said Matt Alfele, a Charlottesville city planner.

In Pennsylvania, municipalities can form shade tree commissions. They also can regulate tree removal along streets and even in some development situations. But relatively few have gone that far, said Harry Campbell, advocacy director in the Bay Foundation's Harrisburg office.

The emphasis there, as in other states, is on appealing to private landowners to voluntarily keep trees and replace those that get taken down.

Takoma Park, a small Maryland city in the DC suburbs, has perhaps the strongest



Formerly a stretch of bare concrete, this sidewalk in West Baltimore was planted with shrubs and trees in 2019. (Will Parson/Chesapeake Bay Program)

### Top 5 tree canopy losses

1. Virginia Beach, VA: 1,722 acres
2. Brandywine, MD: 502 acres
3. Waldorf, MD: 493 acres
4. Accokeek, MD: 483 acres
5. Potomac, MD: 472 acres

### Top 5 tree canopy gains

1. Mount Vernon, MD: 268 acres
2. Eden, MD: 242 acres
3. Cambridge, MD: 180 acres
4. Salisbury, MD: 130 acres
5. Lexington Park, MD: 124 acres

Source: Chesapeake Bay Program

legal protections for trees on private property in the Bay watershed. A permit is required to cut down any tree with a trunk that measures more than 24 inches around, and only dead or hazardous trees can be taken down without being required to plant replacements or pay a hefty fee.

Marty Frye, Takoma Park's urban forester, said five permit applications were denied last year. Even so, because of widespread die-off from extreme weather and pests, he said he has approved 500–600 removals each of the last two years. And with small young trees replacing big old ones, the city's leafy canopy continues to shrink.

With the tree canopy declining faster than new trees can take their place, the Forest Service's Mawhorter said she doubts Bay watershed states can dig themselves out of the hole they're in and increase total tree cover by 2,400 acres by 2025.

"We're going to have to reassess," she said. "Is this the right goal? And if it is, what's it going to take to get there?" ■