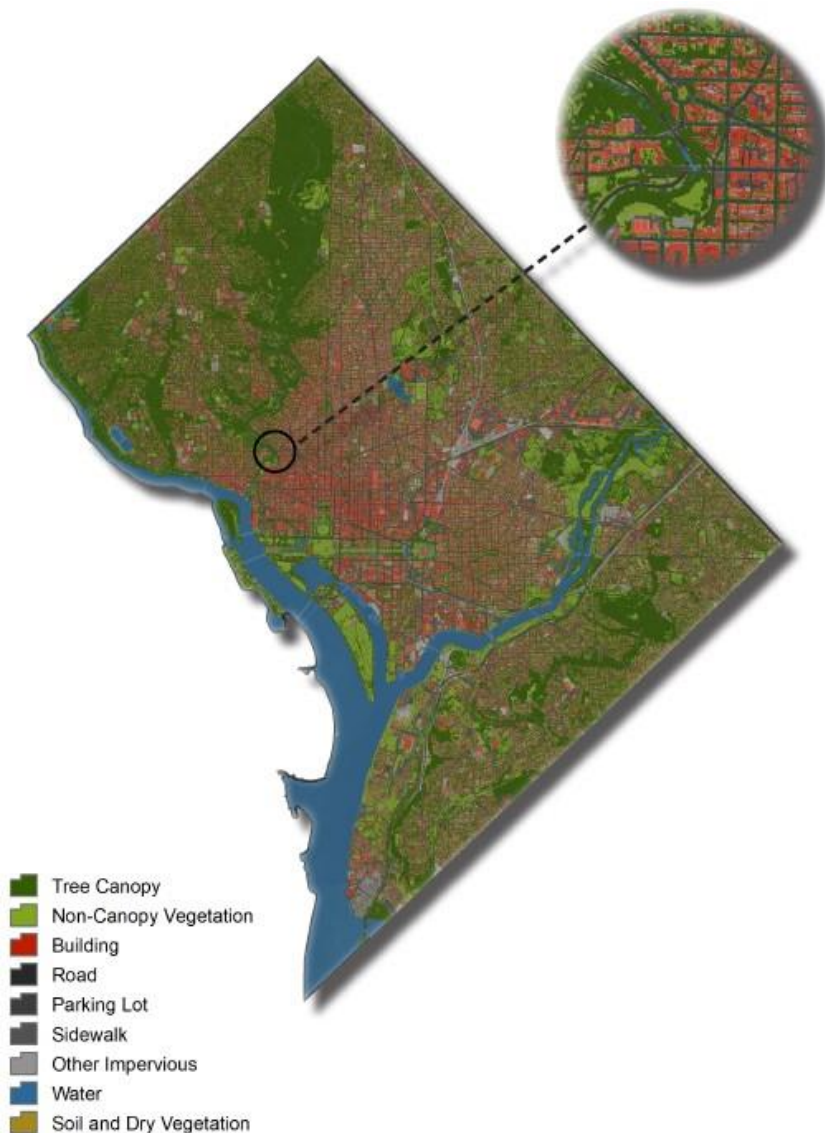


# Forest Health Highlights: District of Columbia

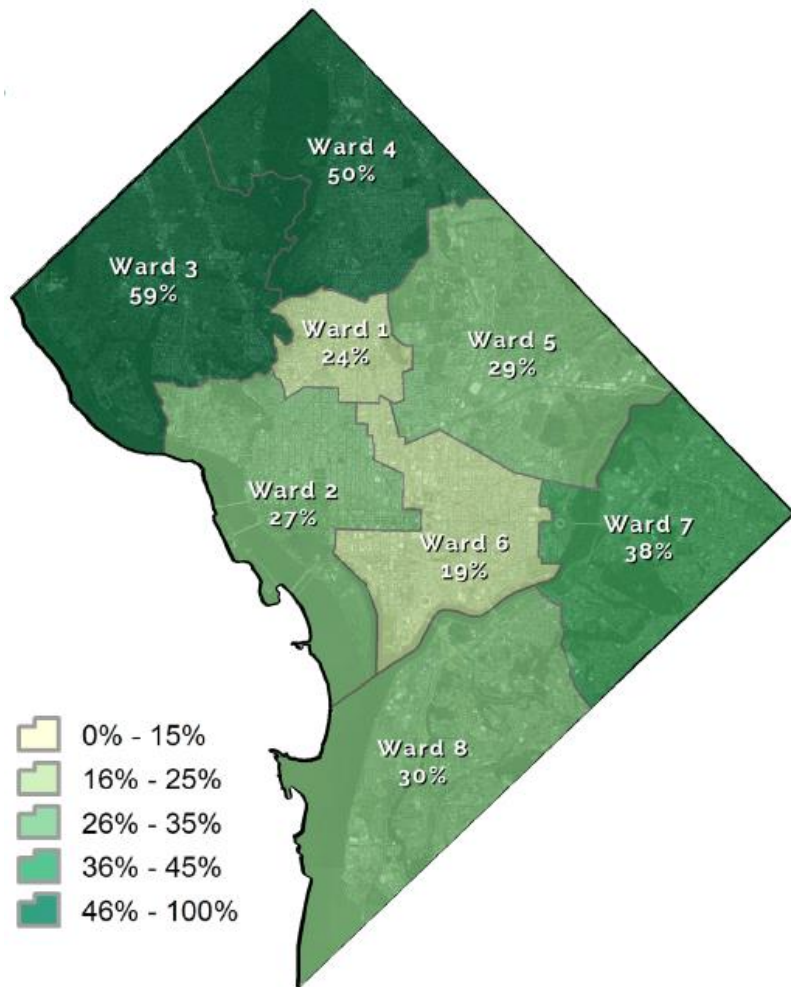
## Forest Resource Summary

The District of Columbia occupies a land area of 39,072 acres. The urban forest in Washington, D.C. consists of forested areas located on private, federal, and state land. These areas are managed by private landowners, federal agencies, and the District of Columbia. Multiple District agencies manage lands containing forested areas, such as Department of General Services, Department of Energy & Environment, and the Department of Transportation (DDOT). DDOT's Urban Forestry Division (UFD) owns and manages approximately 170,000 street trees. In addition, UFD also manages trees on District



public school and park property, which comprises an additional 10,000+ trees. UFD also administers the Urban Forest Preservation Act of 2002, which regulates the removal of trees greater than 44 inches in circumference from private property. The Urban Forest Preservation Act of 2002 was amended in 2016 to include further protections for trees with a circumference greater than 100 inches, deemed Heritage trees.

The District of Columbia is committed to reaching and maintaining an urban tree canopy (UTC) of 40% by the year 2032. This goal supports Sustainable DC, the District’s plan to achieve a healthy, green, and livable city in one generation, by the year 2032. As of 2020, the District of Columbia enjoys an overall urban tree canopy of 37% (PlanIt Geo, 2021). However, urban tree canopy varies spatially by ward and neighborhood. For example, Wards 1 and 6 have the lowest UTC at 24 and 19%, respectively. Wards 3 and 4 had the highest UTC at 59 and 50%, respectively. The UTC analysis is conducted every five years, using updated high-resolution imagery and LiDAR data.

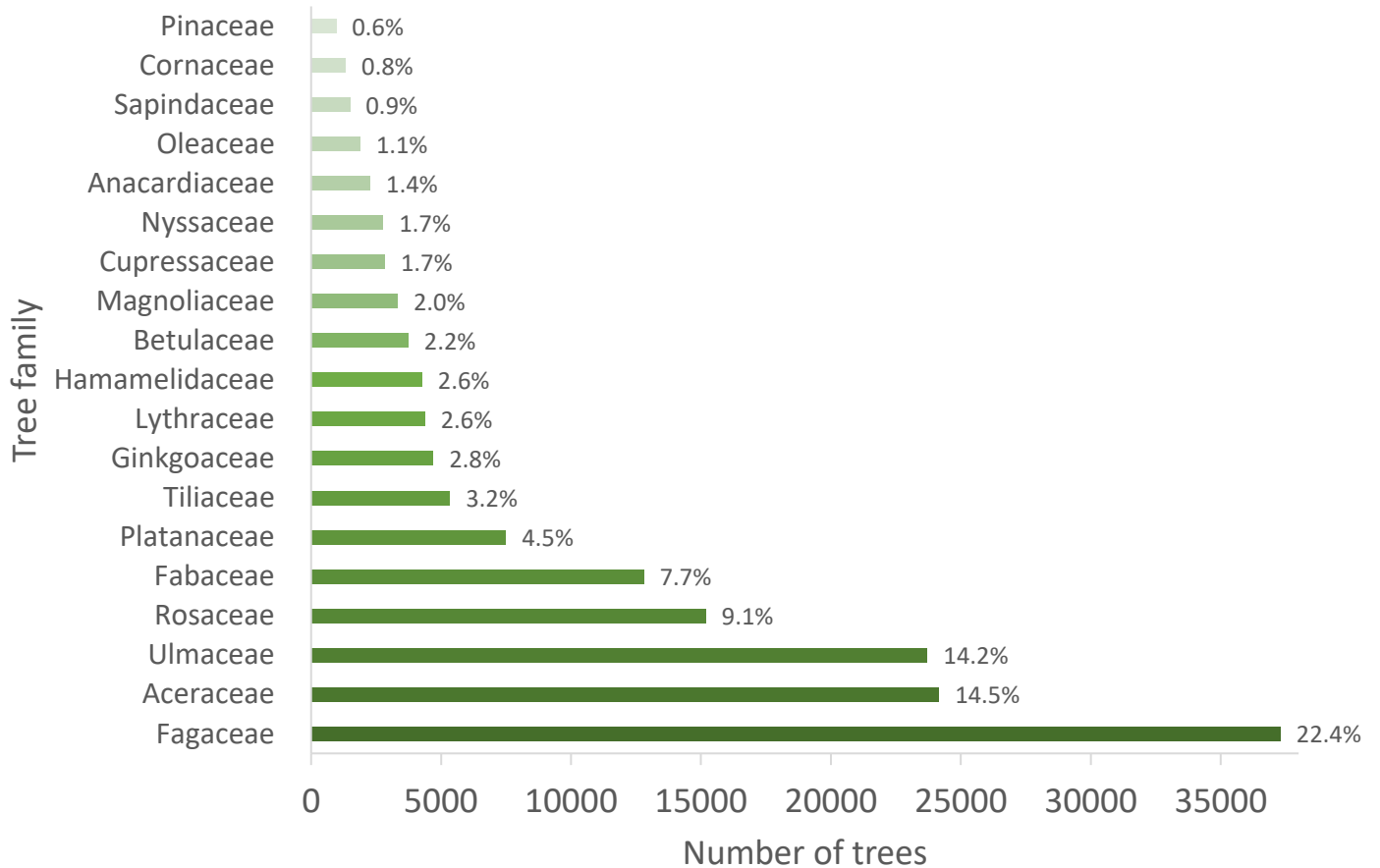


## Forest Inventory

### Street tree diversity by family

Each family shown below comprises a minimum of 0.5% of District-owned trees, amounting to 19 total families. For each family, the total number of trees is shown and their relative proportion within the

### Diversity of District-owned trees by family



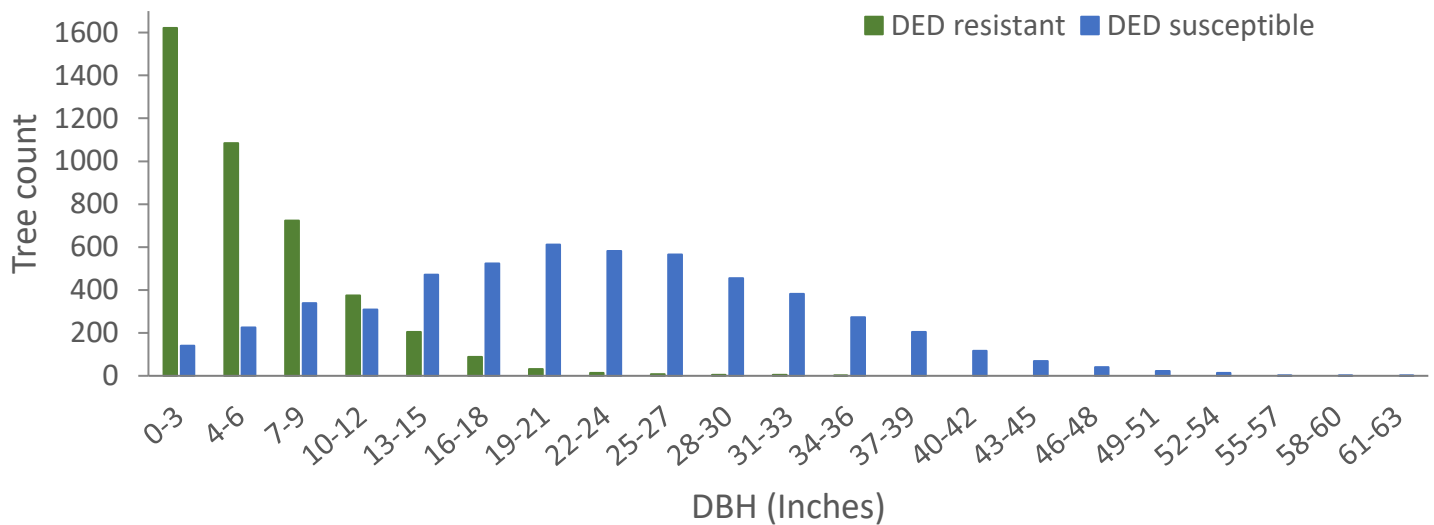
public tree inventory. Tree families with fewer than 900 records are not shown here and comprise 17 families. Across the District, no individual tree family makes up more than 25% of the total proportion of publicly-owned trees.

## Components of change

### Elm management

American elms are iconic trees in the District of Columbia. They line many prominent avenues and form a beautiful, closed canopy over the west-bound approach to the Capitol. Unfortunately, American elms in the District are subject to Dutch elm disease (DED). Urban Forestry Division continues to plant elms, though limited to DED resistant cultivars such as *Ulmus americana* 'Princeton', 'Jefferson', and 'New Harmony'. Consequently, the proportion of District elms resistant to DED continues to increase. In addition, UFD treats mature American elms for DED and expedites removal of elms that exhibit signs and symptoms of DED, see section 2 below.

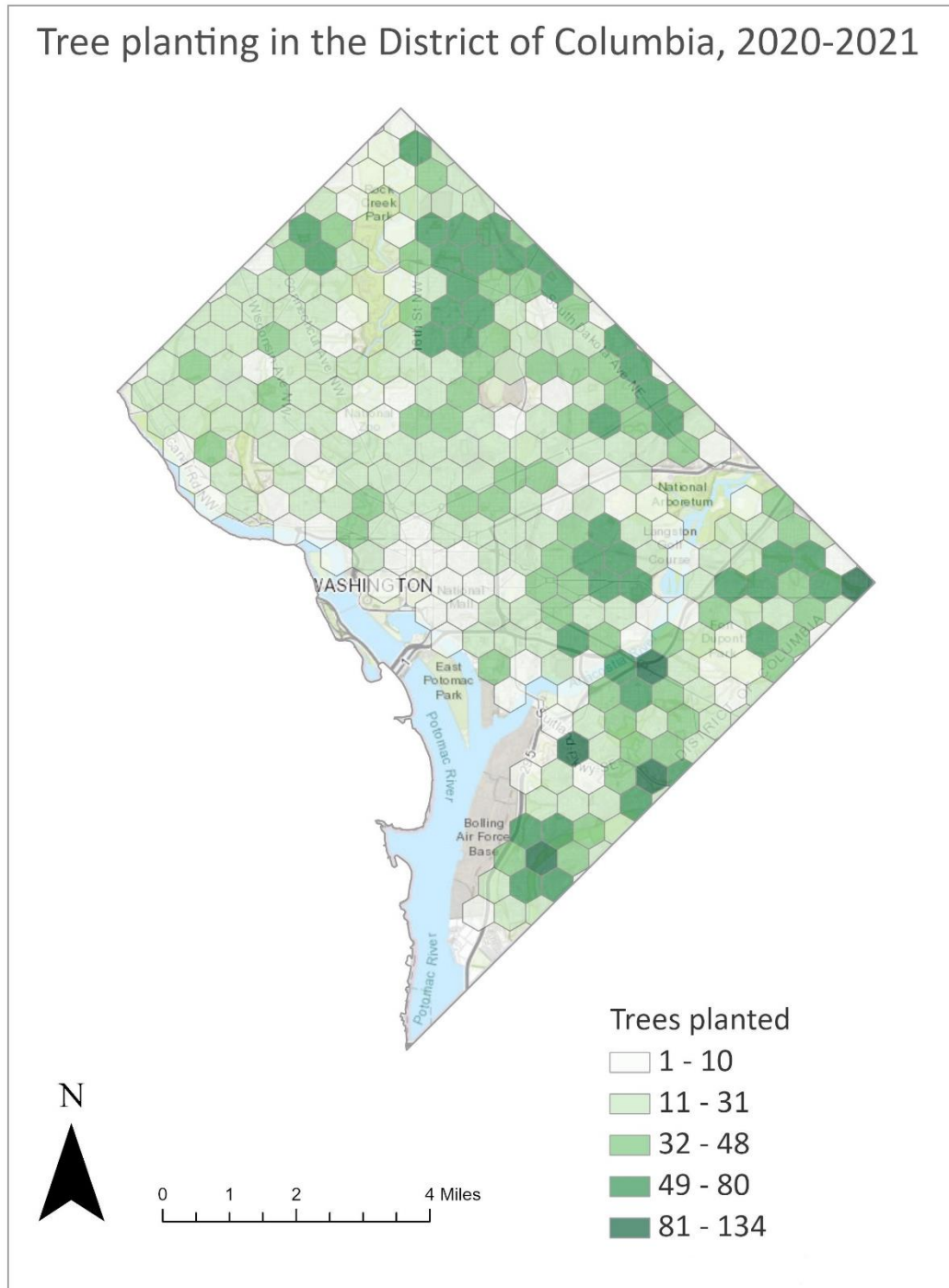
## Size-class distribution of American elms and cultivars, 2021



*Size-class distribution for American elms and elm cultivars known to be resistant to Dutch elm disease. Diameter of trees was measured to the nearest 0.1 inch at a height of 4.5 feet. Data accessed from [opendata.dc.gov](https://opendata.dc.gov) on 10/28/2021.*

## Planting

Each year, the Urban Forestry Division plants several thousand trees in the public right of way and on District-owned land in support of reaching the District of Columbia's tree canopy goal. In the 2020-2021 planting season, UFD planted approximately 8400 street trees and trees in public parks and schools throughout the District, as shown below.



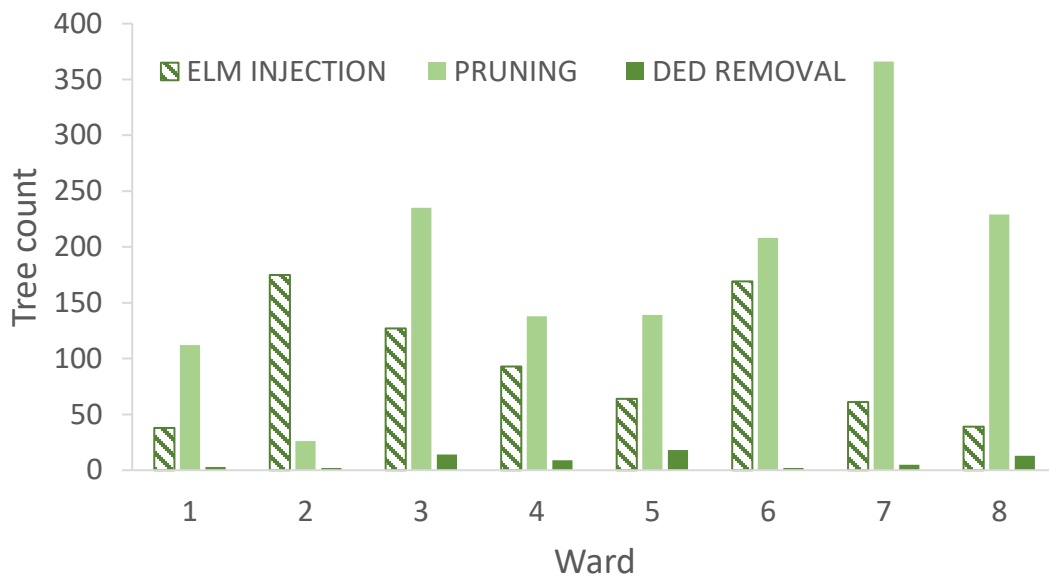
*Approximately 8400 trees were planted in the 2020-2021 planting season. Each hexagon covers an area of 0.5 square kilometers. Data accessed on November 4, 2021.*

## Ongoing efforts

### Dutch elm disease

Urban Forestry Division employs a diverse arsenal to manage Dutch elm disease (DED), including the use of fungicide injections, sanitation pruning, and expedited removal of specimens with DED. Each year UFD teams inspect elms for signs and symptoms of DED. Mature elms that are deemed healthy are treated with a fungicide every two years. To better capture elm management activities, data are reported for Fiscal Year 2021 (October 2020-September 2021).

### Management of American elms in the public right of way, FY2021



*Management of elms in the District includes pruning, expedited removals, and the use of fungicide injections. The data shown above are for Fiscal Year 2021 (October 1, 2020 – September 30, 2021).*

## Emerald ash borer

Emerald ash borer (EAB) was first observed in the District in 2013. Fortunately, the street tree inventory consists of very few ash trees, less than 1% of all trees in the public right-of-way. Following the discovery of EAB in 2014, UFD began tracking observations of EAB in street trees and ash trees located on other District-owned properties. To date, EAB has been observed in all eight District wards. UFD expedites the removal of any District-owned ash trees known to be infested with EAB.

The overall urban forest in the District contains a greater proportion of ash trees compared to the street tree population, particularly in riparian areas such as Kenilworth Park and Aquatic Gardens. In areas managed by the National Park Service in the National Capital Area (including parks in MD, VA, WV), the density of live ash trees has slowly but steadily declined since approximately 2014, with a corresponding increase in standing dead ash since 2014 (Matthews & Nortrup, 2018). In more recent years the density of standing dead ash trees has surpassed that of live ash in the National Capital Area, which also includes NPS parks in MD, VA, WV (E. Matthews, personal communication, November 3, 2020).



*Declining ash tree with emerald ash borer on a school campus in NE DC. (Photo by Urban Forestry Division, DDOT.)*

## Emerging forest health issues

### Rapid oak decline

In previous years, 2019 and 2020, District residents reported decline symptoms in white oaks (*Quercus alba*) that included: early leaf browning, canopy loss, and ambrosia beetle activity. These symptoms were often found in mature white oaks on private property. In nearby states, foresters and residents have reported rapid declines of white oaks in Virginia and Maryland (Borowy, 2020; Chamberlin, 2018; Rane, Gill, & Clement, 2019). As described by Rane et al. (2019), white oaks may decline quite quickly, in as little time as two weeks, and suddenly turn brown, though leaves often remain on the trees. There does not appear to be any single factor associated with this rapid decline. The presence of frass from ambrosia beetles is a frequent observation, though most consider this activity to be secondary (Rane, Gill, & Clement, 2019). Jurisdictions close to the District in Maryland and Northern Virginia have cited wet springtime weather and summer drought conditions as possible inciting factors for these declines (Verweij, 2019; Rane, Gill, & Clement, 2019; Virginia Tech, 2019).

In response to this threat to oak health, the Urban Forestry Division and the University of the District of Columbia (UDC) have collaborated on a survey of oak health to document symptoms of this rapid decline in white oaks. In 2021 UDC's College of Agriculture and Environmental Sciences recruited a graduate student to join the Professional Science Master's Program. The oak health survey will incorporate data from the UFD tree inventory, US Forest Service's Urban Forest Inventory and Analysis, and previous iTree analyses.



*Declining oaks in upper NW exhibiting symptoms such as canopy loss and browning leaves, inset photo showing signs of ambrosia beetle activity also associated with decline. (Photo by US Forest Service.)*



## Crape myrtle bark scale

The crape myrtle bark scale (CMBS) *Acanthococcus lagerstroemiae*, a non-native scale pest was observed in 2021. Since the first observation made by a UFD Urban Forester in May 2021, CMBS has been reported on *Lagerstroemia* street trees and on privately-owned trees as well. Symptoms observed include excessive honey dew, growth of sooty mold, and dieback in twigs and stems. Urban Forestry Division is developing a management program to address this new issue, including enhanced sanitation practices and outreach.



*Severe infestation of CMBS on street tree, inset photo showing scale and associated sooty mold (Photo by Urban Forestry Division, DDOT.)*

## Other forest health issues

There are a variety of additional insect pests observed on street trees in the District of Columbia. Scale insects are often observed, particularly on maple and oak street trees. Other insects and pathogens observed in 2021 include oak leaf galls (*Neuroterus* spp), woolly hackberry aphid (*Shivaphis celti*), bark and ambrosia beetles, and powdery mildew.



*Left) oak leaf galls (Neuroterus spp) in Capitol Hill, Right) tip dieback in oak with Neuroterus spp. galls (Photo by Urban Forestry Division, DDOT.)*

Anthracnose is present in the District and often observed in street trees such as sycamore, sweetgum, and London plane-trees in the late summer. Bacterial leaf scorch (BLS) has been observed in all eight District wards, though widespread testing was not conducted for BLS in 2021. Bacterial leaf scorch is most prevalent in such District street trees as red oak (*Quercus rubra*), pin oak (*Q. palustris*), American elm (*Ulmus americana*), and sycamore (*Platanus occidentalis*) (Harris et al. 2014).

Spotted lanternfly (*Lycorma delicatula*) is **not** known to occur in the District. However, spotted lanternfly infestations are known in an adjacent county in Maryland and a nearby counties in Virginia. In late summer, UFD received reports of spotted lanternfly sightings at a residence and in a community garden in NE Washington, DC. The Urban Forestry Division collaborated with the Department of Energy and Environment in responding to these early reports by conducting visual surveys, trapping, and community outreach activities. Both reports of spotted lanternfly in the District remained unconfirmed as of Fall 2021.

Brood X arrived in the District late in Spring 2021 and captured the attention of District residents and visitors alike. Brood X is one of the largest cohorts of *Magicalcada* spp. and emerges very 17 years across 13 states and the District of Columbia (Cooley, et al., 2009; Liebhold, Bohne, & Lilja, 2013). This cohort consists of three species, *Magicalcada septendecim*, *M. cassinii* and *M. septendecula*. Emergence of

Brood X nymphs in the District occurred in early May and the density of cicadas appeared to vary across the city. Trees experienced damage from oviposition behavior of females, sometimes leading to snapped branches with characteristic flagging (see photos below). The District's Urban Forestry Division planted ~8400 trees during the 2020-2021 planting season, many of which were subject to egg-laying from periodical cicadas. The U.S. Forest Service Morgantown Field Office assisted UFD in a survey of newly planted trees for egg-laying damage and symptoms in this newly planted cohort of street trees. The results of this survey will identify which tree genera were most impacted by cicadas and will allow for subsequent studies of long-term impacts of periodical cicadas on urban trees.





*Female Magicicada spp. ovipositing in twig of American elm (Photo by Urban Forestry Division, DDOT.)*

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