

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. Three District agencies manage lands that contain forested areas: Department of Energy and the Environment, Department of General Services, and Department of Transportation. The Urban Forestry Division (UFD) of the District Department of Transportation (DDOT) manages all public street trees and trees located in District parks and public schools. UFD also administers the Urban Forest Preservation Act of 2002, which regulates the removal of mature trees from private property. The Urban Forest Preservation Act of 2002 was amended in 2016 to include further protection of large trees with a circumference greater than 100 inches, deemed Heritage trees.

Urban Tree Canopy

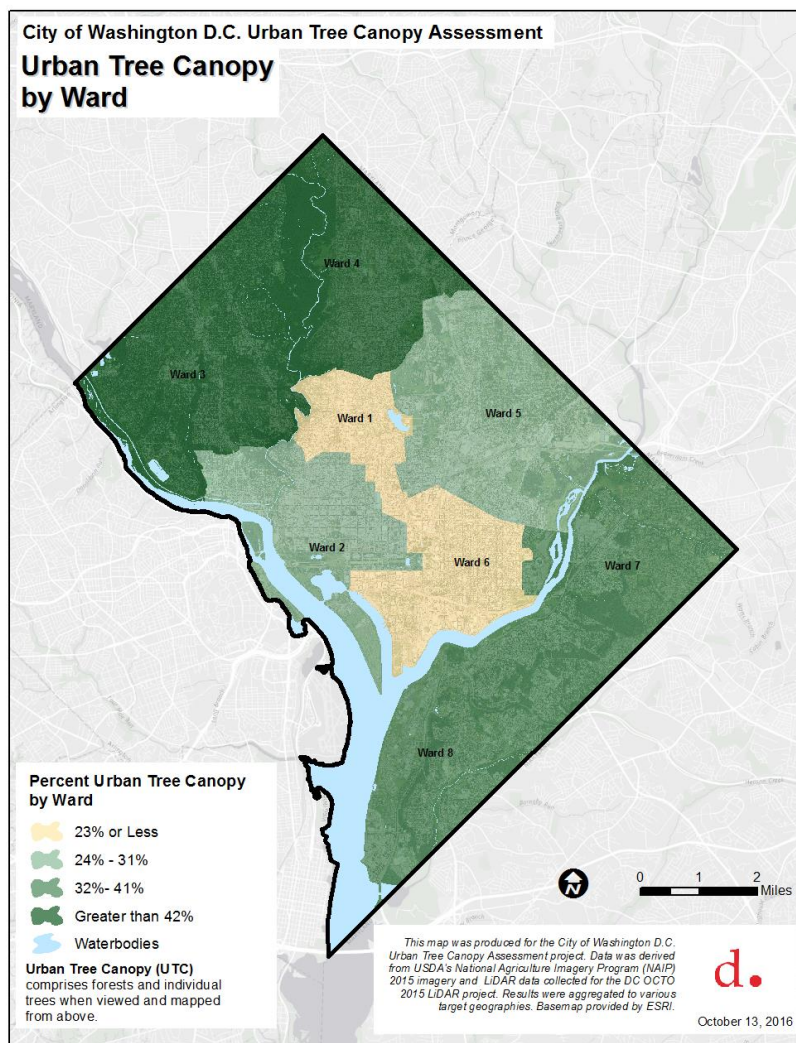


Figure 1. Percent urban tree canopy in Washington D.C. wards

The District of Columbia is committed to reaching and maintaining an urban tree canopy 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 2015, the District of Columbia enjoys an overall urban tree canopy of 38.7%. However, urban tree canopy varies spatially by ward and neighborhood. For example, Wards 1 and 6 have the lowest UTC at 23 and 21%, respectively. Wards 3 and 4 had the highest UTC at 60 and 49%, respectively. The UTC analysis is conducted every five years, using updated high-resolution imagery and LiDAR data and will be updated in 2020.

Urban Forest Ownership

The urban forest in Washington, D.C. extends across multiple landowners, which includes private property owners, institutions, federal parks, and District-owned parks, schools, and public space (O'Neil 2010; District of Columbia, 2010). With an urban tree canopy of 38.7%, the urban forest is distributed across three major landowners, federal, private, and the District of Columbia (DDOT Urban Forestry, 2020). Urban Forestry Division 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.

Forest Inventory

Street tree diversity by family

Each family shown below comprises a minimum of 0.5% of District-owned trees, this includes 19 families. For each family, the total number of trees is shown and their relative proportion. Tree families with fewer than 1000 records are not shown here and comprise 18 families. Across the District, no individual tree family makes up more than 25% of the total proportion of publicly owned trees.

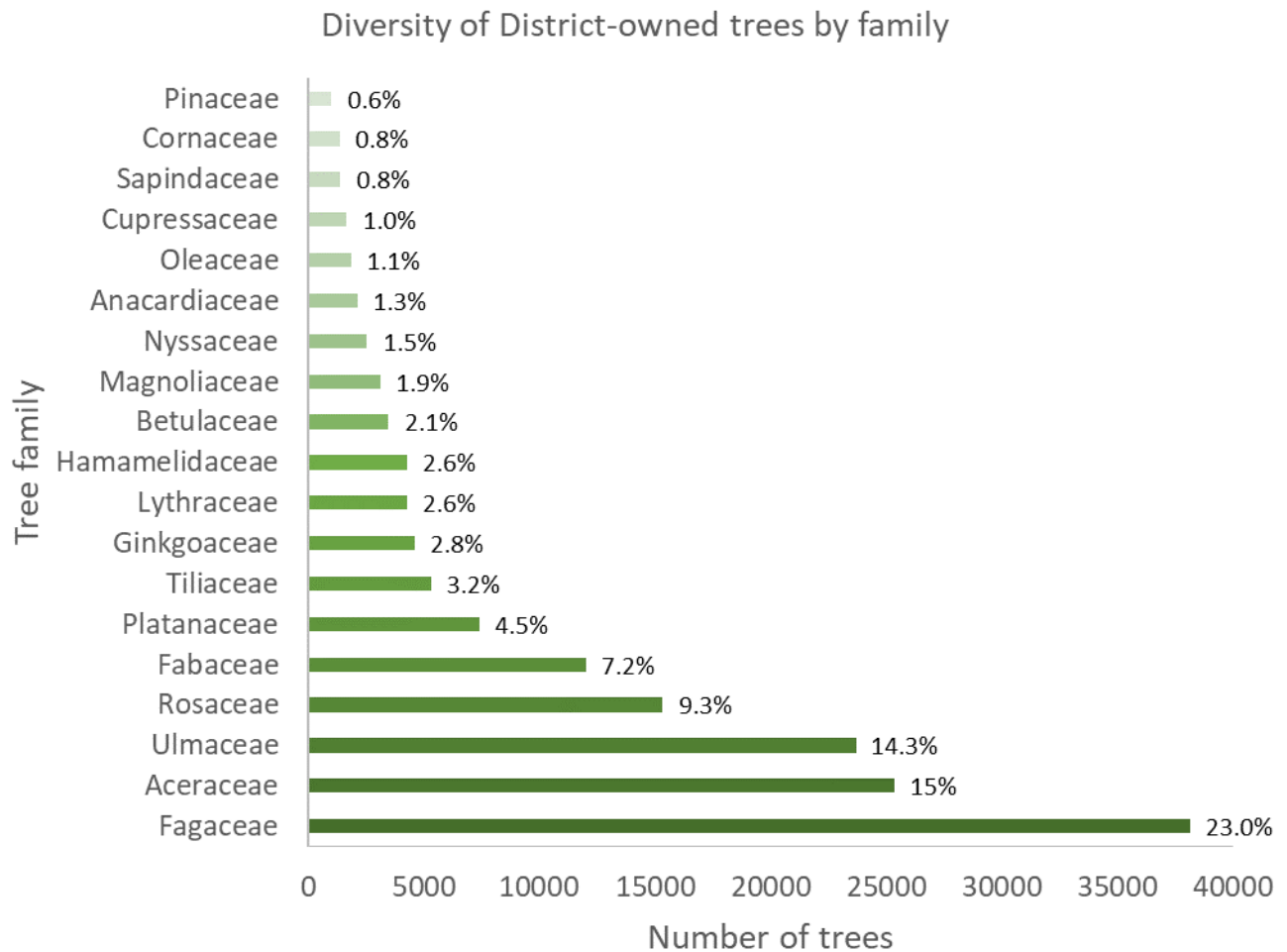


Figure 2. Tree diversity by family

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 also 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.

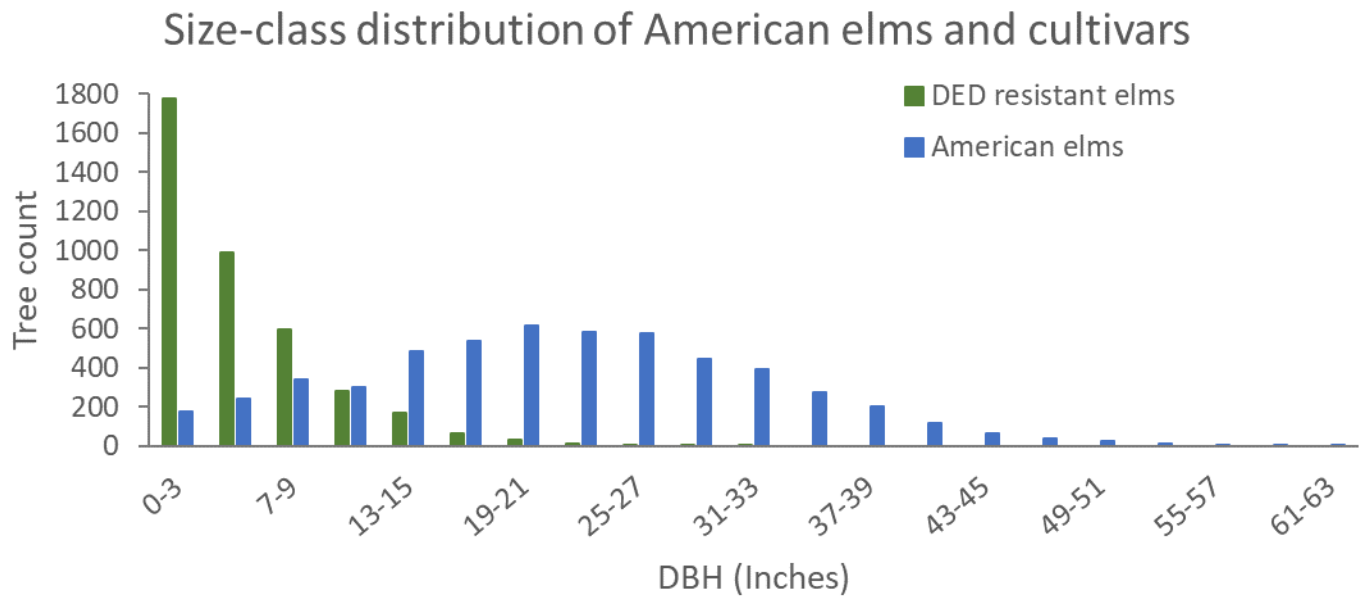


Figure 3. Figure 3. Size-class distribution for American elms and elm cultivars known to be resistant to Dutch elm disease. Diameter of trees was measured to the nearest 0.1 inch at a height of 4.5 feet.

Planting

Each year Urban Forestry Division plants several thousand trees in the public right of way and on District-owned land in support of reaching the 40% urban tree canopy goal by 2032. In the 2019-2020 planting season, UFD planted approximately 8640 street trees and trees in public parks and schools throughout the District, as shown below.

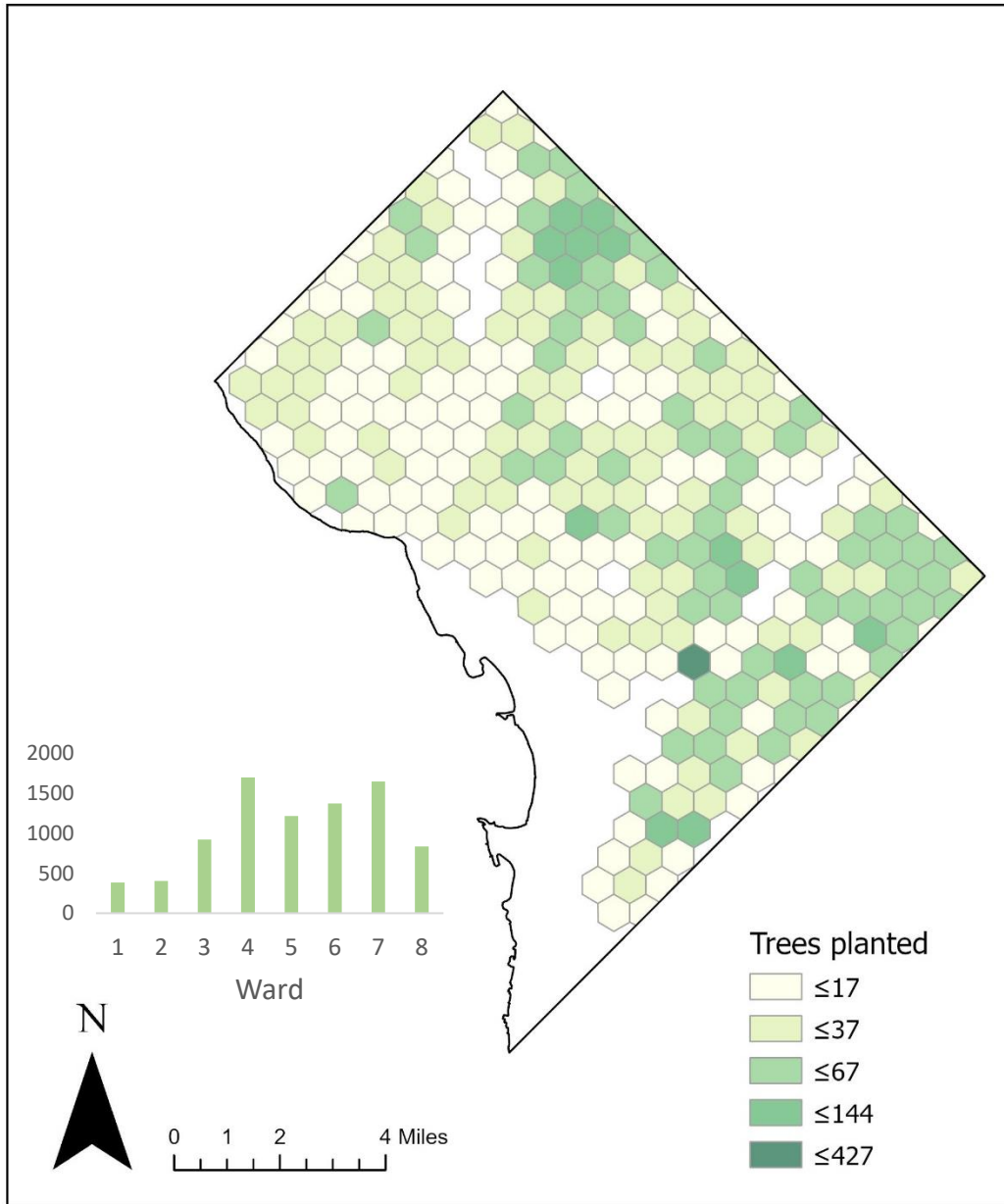


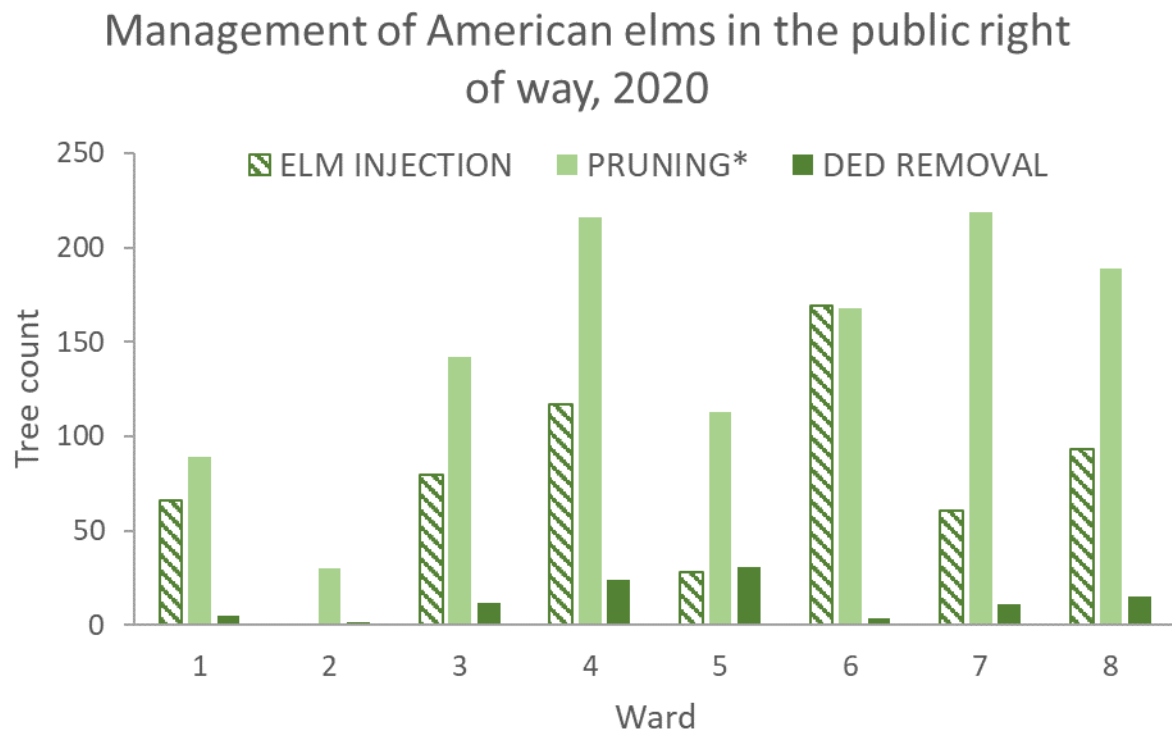
Figure 4. Distribution of newly planted street trees across the District, in 2019-2020 planting season (includes trees planted in public parks and schools).

Forest Health Issues

Ongoing efforts

Dutch elm disease

Urban Forestry Division employs a diverse arsenal to manage Dutch elm disease, 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.



*Figure 5. Management of elms in the District consists of fungicide injections, pruning, removals, and incorporation of Dutch elm disease resistant cultivars. Removal of elms with Dutch elm disease is expedited to avoid additional infestations. *Estimate of elms*

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 live emerald ash borer in 2014, UFD began tracking observations of emerald ash borer in street trees and ash trees located on other District-owned properties. To date, emerald ash borer has been observed in all eight District Wards. UFD expedites the removal of any District-owned ash trees known to be infested with EAB. Across DC, i-Tree analyses indicate that the urban forest is comprised of approximately 1.9% ash trees susceptible to EAB (Nowak and Hoehn 2010).

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).



*Figure 6. Dead ash tree in a District park showing exit holes of Emerald ash borers (adult EAB also observed on tree) and a live adult *Buprestes rufipes*. (Photo by Urban Forestry Division, DDOT.)*

Emerging forest health issues

Oak decline

In 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, more commonly occurring on private property. In nearby states, foresters and the public alike 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).



Figure 7. Declining oaks in upper NW exhibiting symptoms such as canopy loss and browning leaves. (Photo by US Forest Service.)

Additional pests and pathogens

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 2020 included Asian woolly hackberry aphid (*Shivaphis celti*), European elm flea weevil (*Orchestes alni*), bark and ambrosia beetles, and powdery mildew.



Figure 8. Asian woolly hackberry aphids on hackberry tree in Georgetown. (Photo by Urban Forestry Division, DDOT.)



Figure 9. Ambrosia beetle activity on sugar maple in Glover Park (Photo by Urban Forestry Division, DDOT.)

Anthraco-nose is present in the District and was 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 2020. 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 two counties each in both Virginia and Maryland. Given the proximity of these locations, UFD hosted a spotted lanternfly training webinar in the Fall of 2020 for UFD staff. Virginia Department of Agriculture and Consumer Services led the workshop, covered the latest research on spotted lanternfly, and provided training in the identification of the different life stages and vehicle inspections.

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