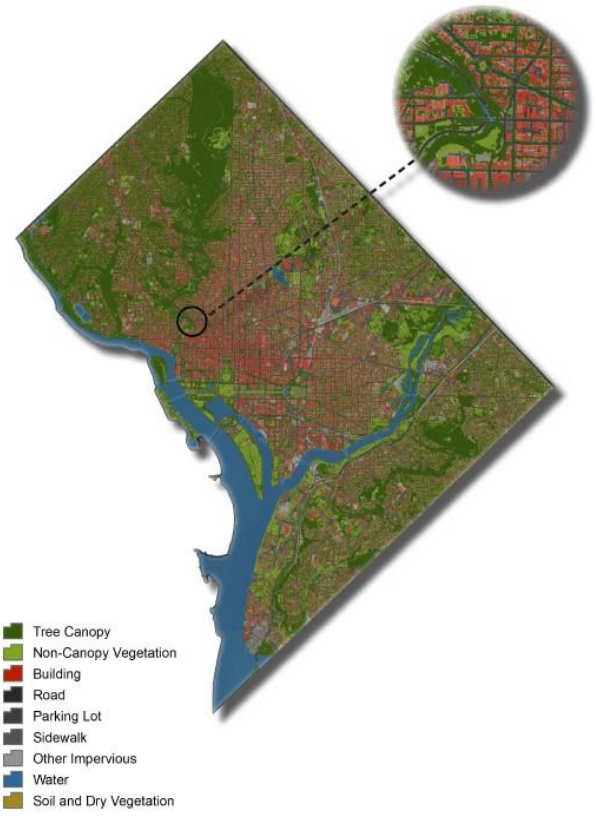
Forest Health Highlights: District of Columbia

1. Forest Resource Summary

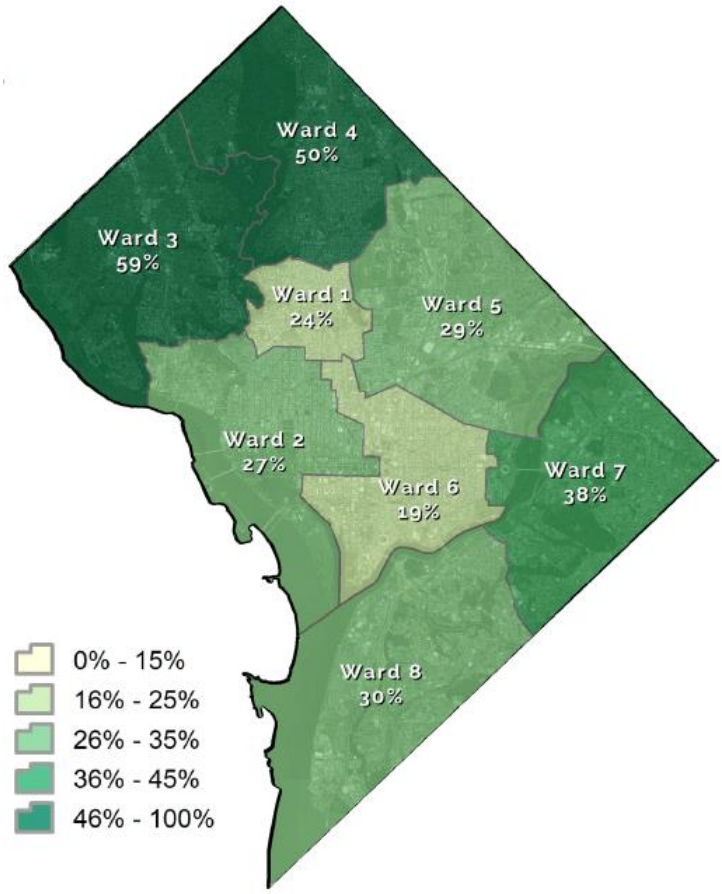
The District of Columbia occupies a land area of 39,072 acres. The urban forest in Washington, D.C. consists of forested areas located on private, federal, and state land comprised of approximately 2.01 million trees (USFS, 2018). These areas are managed by private landowners, federal agencies, and the District of Columbia. Three District agencies manage District-owned lands that contain forested areas: Department of Energy & Environment, Department of General Services, and Department of Transportation. 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 mature trees from private property. The Urban Forest Preservation Act of 2002 was amended in 2016 and 2022 to include further protection of large trees with a circumference greater than 100 inches (Heritage trees), lowered the minimum size of trees protected to 44-99.9 inches circumference (Special trees), allows UFD to issue Stop Work Orders for non-compliance, and ensures District government agencies also comply with tree removal restrictions.

The District of Columbia is unique in having much of the land within its boundaries owned by the federal government. Forested land owned by the federal government is divided between parks such as the National Mall, Rock Creek Park, Anacostia Park and Ft. Circle Parks. Overall, forest ownership in the District is comprised of 22% privately owned forested land and the remaining 78% of forested land is publicly-owned, a combination of federal and District-owned land (USFS, 2018).



Land cover assessment for Washington, D.C., based on 2020 Pleiades imagery and LiDAR (PlanIt Geo, 2021). *The inset highlights landcover at the neighborhood level.*

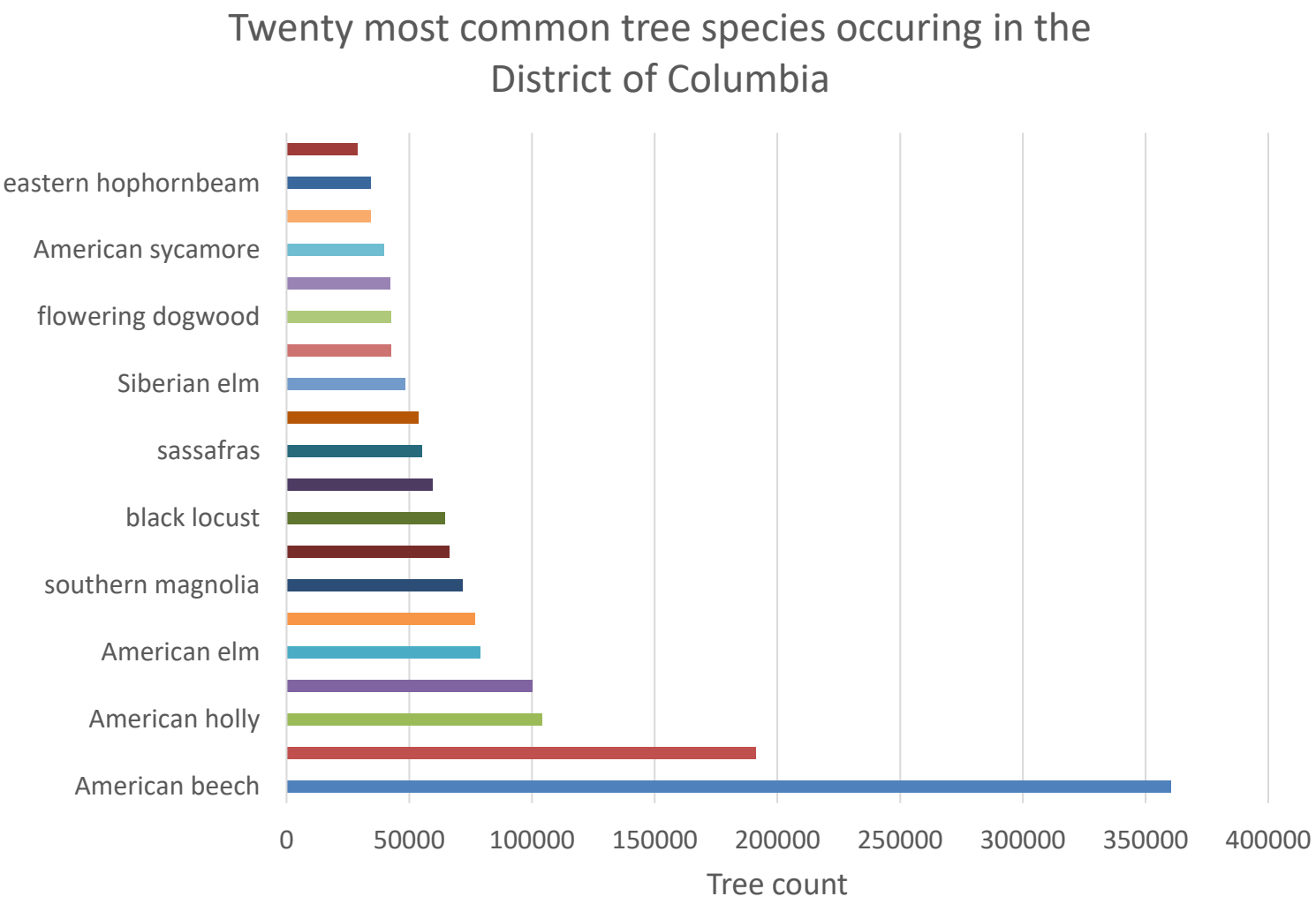
The District of Columbia is committed to reaching and maintaining an urban tree canopy of 40% by the year 2032. This goal supports Sustainable DC, the District's plan to achieve a healthy, green, and livable city in one generation, by the year 2032 (Sustainable DC 2019). As of 2020, the District of Columbia 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.



Urban tree canopy assessment by ward in Washington, D.C., based on 2020 Pleiades imagery and LiDAR (PlanIt Geo, 2021).

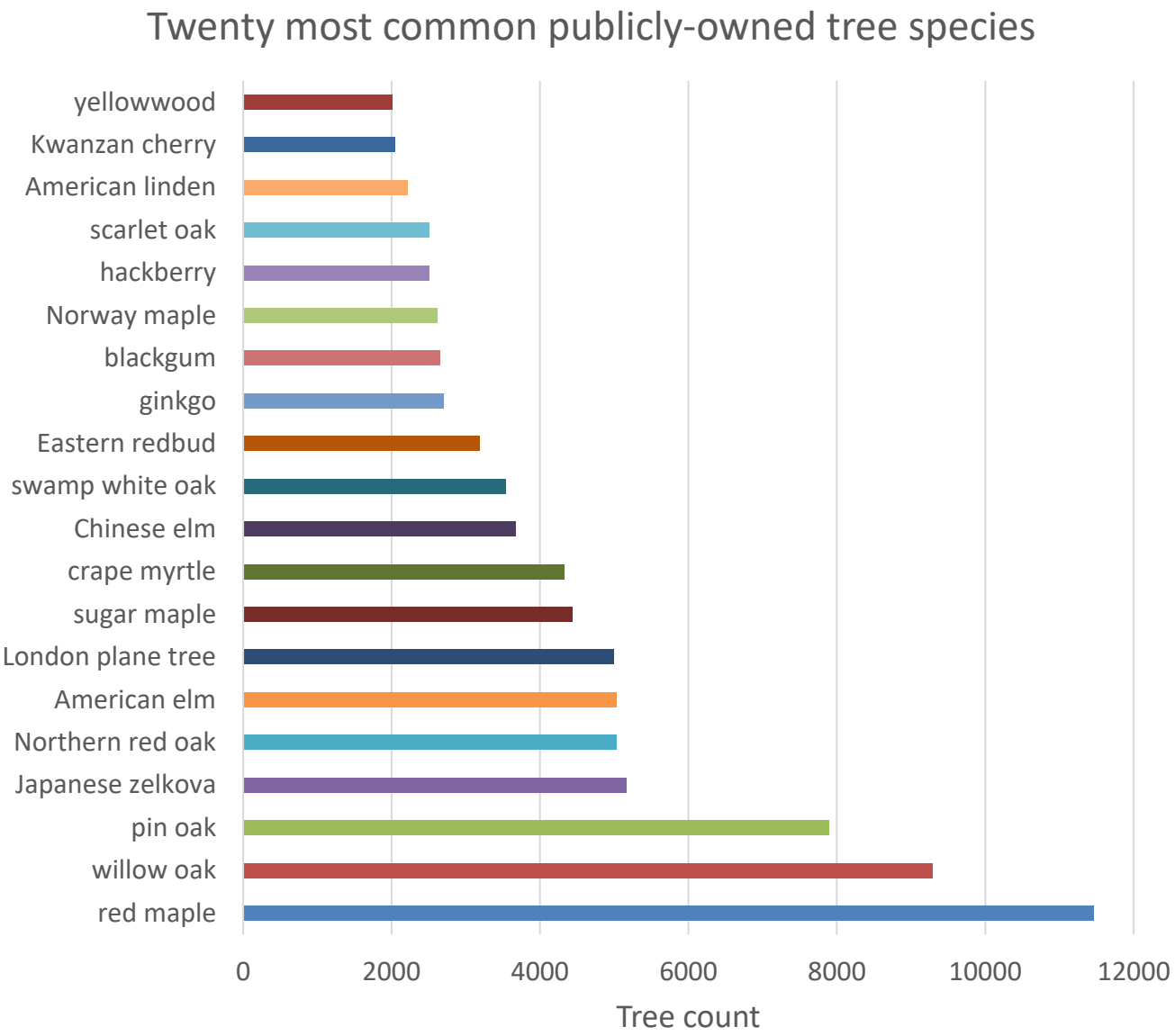
a. Forest Inventory
    i. Species diversity

The District's urban forest is comprised of a combination of deciduous forest typical of the Mid-Atlantic, as well as landscape trees chosen for their hardiness in the urban environment. Washington, DC occurs within two ecoregions, to the northwest is the Northern Piedmont while much of the District lies in the Southeast Plains. Across the District, the five most common trees are American beech, red maple, American holly, tulip poplar, and American elm (USFS, 2018).



The 2018 Urban Forest Inventory and Analysis reports 80 tree species observed across the District. Shown here are the twenty most commonly occurring tree species. The full species list can be accessed at My City's Trees (USFS, 2018).

Among street trees, the most commonly occurring species are red maple, willow oak, pin oak, Japanese zelkova, and American elm (https://opendata.dc.gov/ accessed on Nov 1, 2022). Data shown are for the twenty most commonly occurring tree species in the public tree inventory. These totals do not include cultivars, such as those comprising the American elm population which include *Ulmus americana* 'Princeton', ' Jefferson', and 'New Harmony'. The total tree count for American elms and American elm cultivars is approximately 9110 trees.

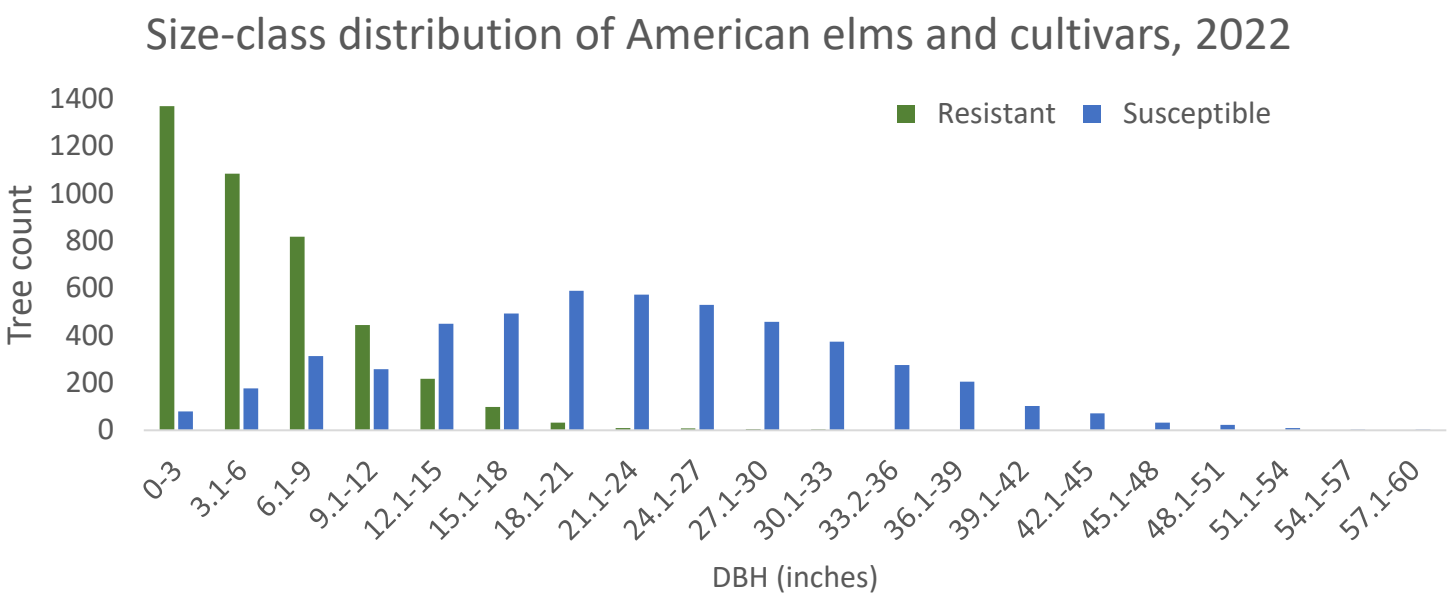


The District's publicly-owned tree inventory includes over 250 different species and cultivars. Reported here are the twenty most common species in the tree inventory. Only species are reported, not individual cultivars. Data accessed from https://opendata.dc.gov/ on 11/1/2022.

b. Components of change

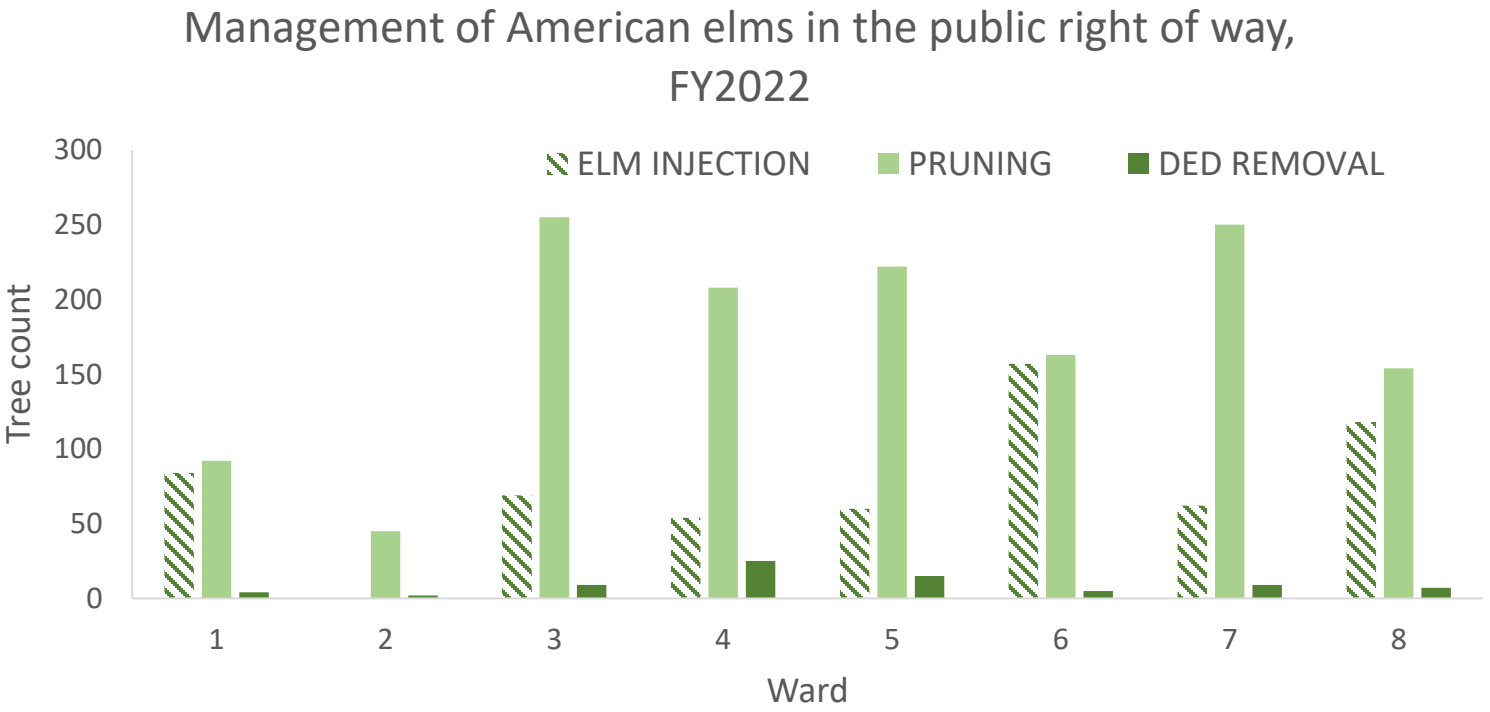
i. Elm management

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/tolerant 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.



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 on 11/1/2022.

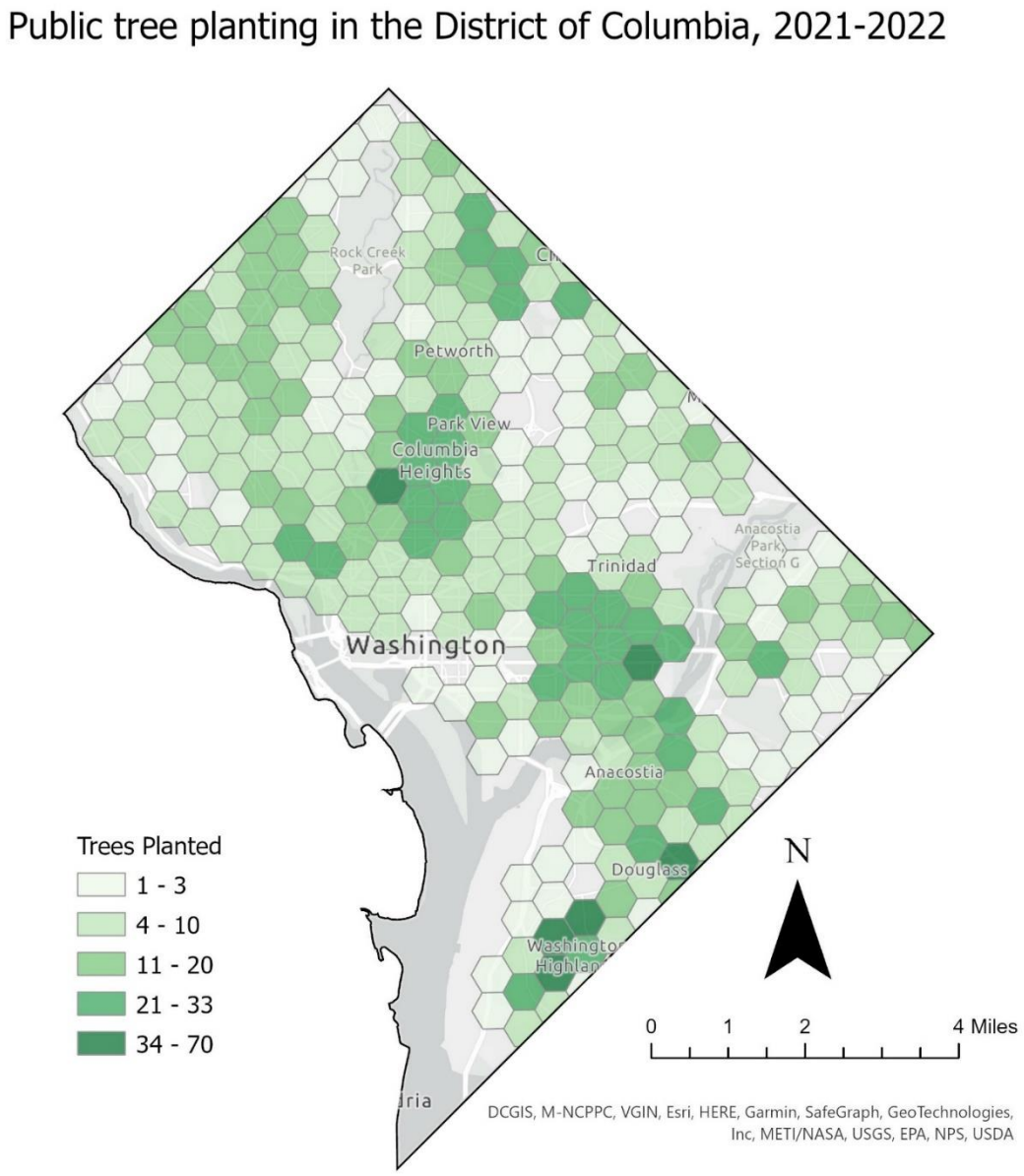
Urban Forestry Division employs a diverse arsenal to manage Dutch elm disease, including the use of fungicide injections, sanitation pruning, and expedited removal of specimens with DED. Each year UFD teams inspect elms for signs and symptoms of DED. Mature elms that are deemed healthy are treated with a fungicide every two years. To better capture elm management activities, data are reported for Fiscal Year 2022 (October 2021-September 2022).



Management of elms in the District includes pruning, expedited removals, and the use of fungicide injections. The data shown above are for Fiscal Year 2022 (October 1, 2021 – September 30, 2022).

ii. 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 2021-2022 planting season, UFD planted approximately 2800 street trees and trees in public parks and schools throughout the District, as shown below.



Approximately 2800 trees were planted in the 2021-2022 planting season. Each hexagon covers an area of 0.5 square kilometers. Data accessed on November 3, 2022.

2. Forest Health Issues

a. 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, making up approximately 0.09% of all publicly-owned trees. 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, Urban Forest Inventory and Analysis indicate that the urban forest is comprised of approximately 0.8% ash, *Fraxinus pennsylvanica*, (USFS, 2018).

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 (Chen, 2021).

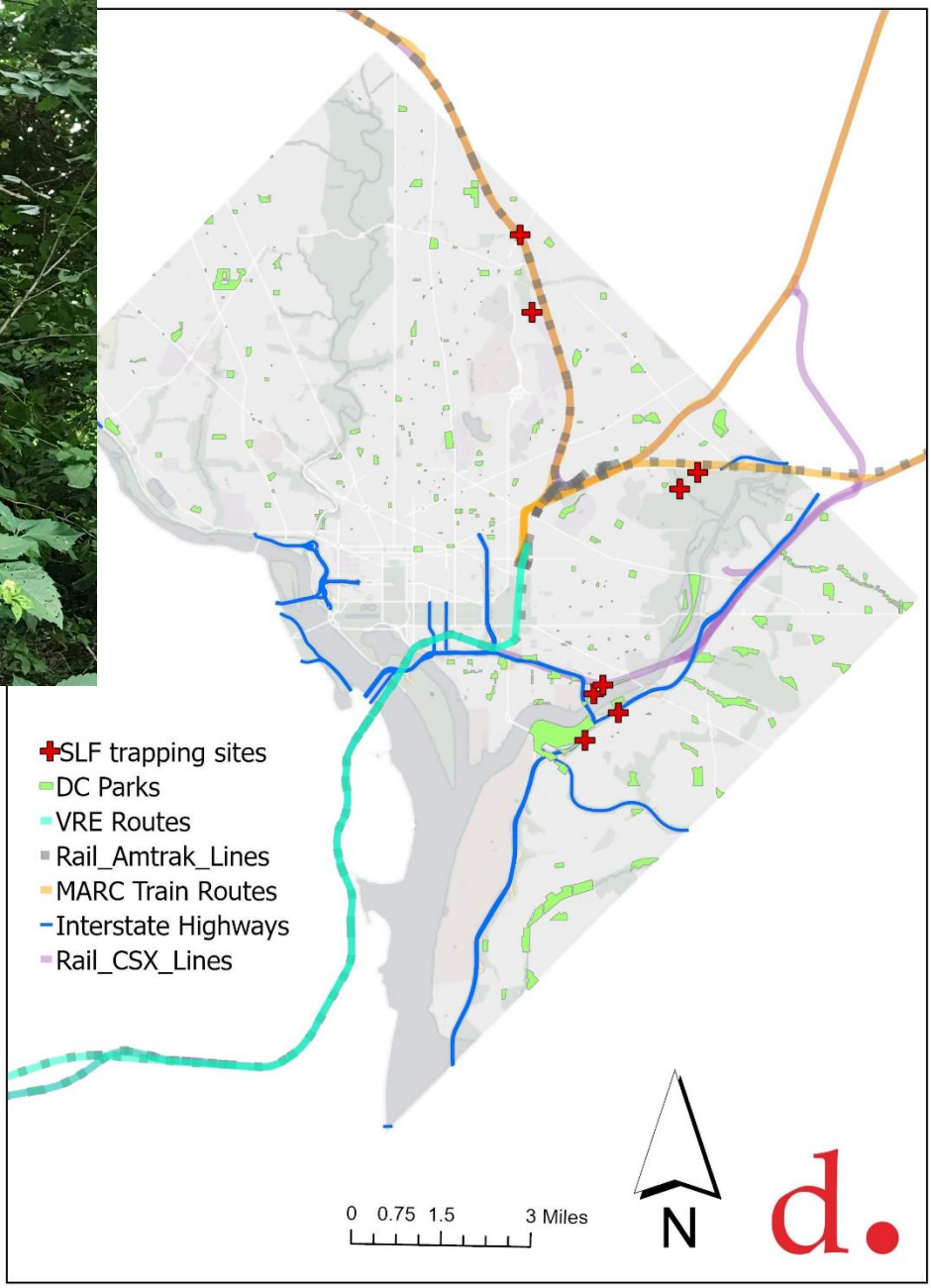
b. Emerging forest health issues

i. Spotted lanternfly

The first known confirmation of spotted lanternfly (*Lycorma delicatula*) in the District of Columbia was made on October 31, 2022 near the Deanwood neighborhood of NE DC. USDA APHIS was alerted and confirmed the identification. Subsequently, they conducted visual surveys in the area with Department of Energy & Environment staff.

Urban Forestry Division (UFD) continues trapping efforts with circle traps throughout the city, and added an additional trap in upper NE DC near a community garden, due to an unconfirmed sighting from the summer of 2021. Trapping in 2022 was conducted from May through October.

During fiscal year 2022 (October 2021 – September 2022), UFD received 27 reports of spotted lanternfly from the District's Survey 123 reporting website. Of the 27 reports, nine were reported for locations outside of the District, in Pennsylvania, Maryland, and New York. The remaining 18 reports for the District consisted of seven confirmed spotted lanternfly adults, six were identified as other insects, and five reports were inconclusive due to a lack of information. Online reports that included a photograph confirming the identification of spotted lanternfly were followed up with visual surveys and community outreach. Upon inspection at locations with confirmed spotted lanternfly sightings, no additional observations were made, nor were any other life stages observed.



Left) spotted lanternfly circle trap installed on tree of heaven, Right) map of 2022 trapping sites located near high-risk areas (Photo by Urban Forestry Division, DDOT.)

ii. 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 has developed a

management program to address this new issue, including a temporary moratorium on planting crape myrtles on public land, enhanced sanitation practices and outreach. Natural enemies such as lacewing larvae and coccinellid larvae have been observed on trees with moderate to advanced CMBS infestations.

Early infestation of crape myrtle bark scale on street tree. Interior branches show symptomatic sooty mold and scale (Photo by Urban Forestry Division, DDOT.)

iii. Rapid 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).

In 2020, Urban Forestry Division, University of the District of Columbia (UDC), and the US Forest Service collaborated on a survey of oak health to document symptoms of rapid decline in white oaks in the District. In the 2021-2022 academic year a UDC College of Agriculture and Environmental Sciences graduate student

compiled data for the oak health survey from the UFD tree inventory, Urban Forest Inventory and Analysis (USFS, 2018), previous iTree analyses, and National Park Service inventory data. During the summer of 2022, Urban Forestry Division deployed traps for detection of bark and ambrosia beetles on District property identified as having recent urban tree canopy loss and the presence of *Q. alba*. Data from trapping is forthcoming and will be combined with existing inventory data in a summary report.

Lindgren funnel trap with ethanol lure deployed in Pope Branch Park in SE Washington, DC (Photo by Urban Forestry Division, DDOT.)

iv. 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 2022 include cynipid oak galls, woolly hackberry aphid (*Shivaphis celti*), bark and ambrosia beetles, and powdery mildew. In late summer of 2022, another outbreak of oak leaf galls (*Neuroterus* spp) and blackened leaf margins was observed in two large, mature white oaks in Garfield Park in the Capitol Hill neighborhood (see photos below).

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

Anthracnose is present in the District and is 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 2022. 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).

3. Contact Info

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