

The Street Trees of Washington, DC:

Structure and Benefits of the Urban Forest



As of 2002, the District of Columbia had greater than 106,000 trees lining its streets. The purpose of this report is to highlight the characteristics and benefits of the district's modern urban forest. This information helps to raise awareness among Washington's residents as to the value of the trees in front of their homes and along their streets.

The results displayed and discussed in this report are based on data gathered in the full inventory of Washington, DC's trees led by Casey Trees in 2002.

Distribution and Condition

A healthy urban forest is populated by a wide variety of native and adaptive tree species. As you can see (Figure 1), Washington does not have a single species representing more than 13% of street tree plantings.

Overall the district's trees are in good condition. 72% are "Good", 22% are "Fair", 4% are "Poor" and only 2% are "Dead or Dying". The low mortality rate is in part due to a relatively young tree population. With diameter as a proxy measure for age, 40% are less than 12 inches.

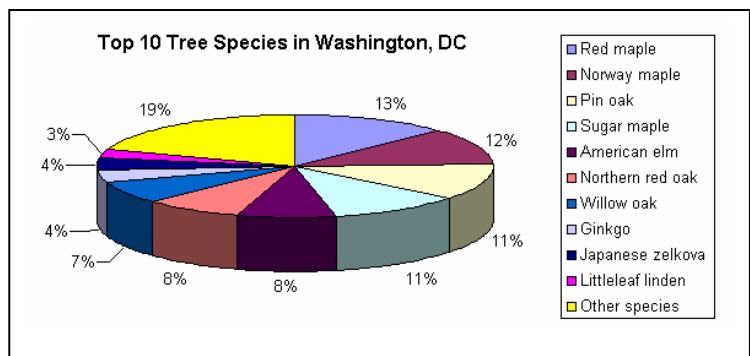


Figure 1: Top ten tree species planted along the district's streets.

Economic Benefits of Street Trees	
Energy	\$1,308,778
CO ₂	\$349,104
Air Quality	\$185,547
Stormwater	\$3,695,873
Aesthetic/Other	\$5,138,396
Total:	\$10,677,697

Figure 2: Annual benefits of Washington's street trees. Increases in property value due to the presence of trees accounts for much of the Aesthetic/Other benefit.

Benefits of Street Trees

The benefits of street trees can be quantified in order to better assess their importance in the urban environment (Figure 2). In Washington, large oaks and elms offer the greatest benefits per tree. The average annual benefit of an elm tree planted in the streetscape is \$154. Generally large deciduous trees are the most valuable in terms of their contribution to reducing stormwater runoff and energy costs (via shading) while increasing nearby property values. Trees reduce atmospheric CO₂ by incorporating it (as carbon) into their biomass and through reducing energy usage via cooling effects.

Spatial Distribution of Street Trees and Planting Spaces

Canopy cover over a city's streets varies as a function of tree number, species, and age. Figure 3 shows the variation in canopy cover by ward (numbers are low because only street trees are counted). In some cases the lower percentages come about due to dense development and pervasive hardscape. In other cases it may be socioeconomics driving the discrepancy. In Washington's wards 7 and 8 (5% and 2% canopy cover respectively) there are also the highest percentage of available planting spaces (28% and 27% of sites are open). The District's Urban Forestry Administration and Casey Trees have focused more recently on filling these tree boxes to lessen the discrepancy.

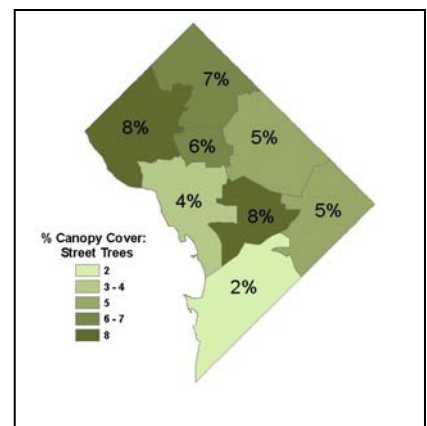


Figure 3: Varying tree canopy cover in Washington, DC's 8 wards (Street trees only).