# TREE REPORT CARD 2012


Casey Trees is a Washington, D.C.-based nonprofit committed
to restoring, enhancing and protecting the tree canopy of the nation's capital.

We pursue our mission through education, community action and research.

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# FROM EXECUTIVE DIRECTOR MARK BUSCAINO

Five years ago, one of our board members asked: "we're doing a lot of good work, but what are we trying to achieve and are we achieving it?"

From that simple question we developed the Tree Report Card to track the quantity and health of the District's trees, and efforts to protect existing trees and plant others to meet D.C.'s 40 percent canopy goal.

We've learned a lot along the way and while the Tree Report Card has drawn both accolades and criticism, it continues to be a force for advancement. This year's B- grade reflects both successes and continued challenges toward restoring, enhancing and protecting D.C.'s beloved trees.

Mayor Vincent Gray's groundbreaking Sustainable DC Plan affirmed and embraced a 40 percent tree canopy goal, but satellite imagery clearly shows that D.C.'s canopy is declining, primarily because of development.

The incidents of tree loss are stark and undeniable: 40 acres cut down for Ward 5's The Shops at Dakota Crossing, home to the Costco Wholesale; 39 acres at St. Elizabeth's Campus and five acres for the Townes at Sheridan Station, both in Ward 8; and others.

A list of last year's highs and lows for D.C.'s trees is as follows:

- Washington, D.C.'s tree canopy fell from 38 to 36 percent between 2006 and 2011. From its peak of 50 percent in 1950, D.C.'s tree canopy has dropped 1.3 percent every five years.

- Since 2010, the number of trees planted has exceeded targets, but the impact of these trees on the overall canopy will not be known until the trees reach maturity and future satellite images are assessed.


**RIGHT: ST. ELIZABETH'S CAMPUS IN WARD 8, PRE- AND POST-DEVELOPMENT. THE SITE LOST 39 ACRES OF TREES.**


**LEFT: THE SHOPS AT DAKOTA CROSSING IN WARD 5, PRE- AND POST-DEVELOPMENT. FORTY ACRES OF TREES WERE REMOVED.**

- Mayor Gray's Sustainable DC Plan strongly endorses D.C.'s 40 percent tree canopy goal, giving hope that additional financial resources and renewed efforts are on the horizon to help achieve it.

- Lack of coordination between and within local, federal and non-governmental organizations (NGOs) has significantly slowed progress toward attainment of D.C.'s tree canopy goal.

- D.C. has no plan in place to deal with imminent threats from pest and disease outbreaks such as Asian longhorned beetle that could lead to significant tree loss.

- Efforts by the D.C. Council and NGOs to strengthen the Urban Forestry Preservation Act of 2002 (UFPA) have failed and the Mayor's administration appears unwilling to support these efforts. The UFPA is not protecting trees as intended and we do not know if trees planted as replacements for those removed are surviving long term.

How can the City of Trees increase its tree cover in the face of such powerful forces? That is the key question the annual Tree Report Card examines — and we hope will serve as a catalyst for green.

Mark Buscaino
Executive Director

**LEFT: PRE- AND POST-DEVELOPMENT IMAGERY FROM WARD 8'S THE TOWNES AT SHERIDAN STATION. THE SITE LOST 5 ACRES OF TREES.**

# FRAMEWORK

**Most Washingtonians know that trees cool streets and homes, but energy savings is just the start. Trees slow stormwater, clean our air, increase property values and create a less stressful environment that benefits human health. In short, trees make cities more livable.**

It is perhaps easiest to understand urban tree benefits by imagining the National Mall devoid of its majestic American elms, Rock Creek Park without its forests or the Tidal Basin missing its world-famous cherry trees.

Unfortunately, that is where we're headed. Since the 1950s, D.C.'s canopy has fallen from 50 percent to 36 percent and development pressures are threatening to decrease it further.

However, when done right, new development and redevelopment incorporates trees and the necessary soil volume required for them to reach their full potential. Density does not have to mean urban desertification. Green technologies exist that can keep our city well shaded, sustainable, and most of all, habitable for residents and their families.

Casey Trees' Tree Report Card measures the quantity and condition of D.C.'s trees and the collective efforts of all groups and individuals working to achieve the District's 40 percent tree canopy goal. Our report is based on data from various sources, including federal, local and private groups. Casey Trees thanks everyone for their contributions.

Grades are given to four performance metrics: Tree Coverage, Tree Health, Tree Planting and Tree Protection. Tree Planting and Tree Protection are annual assessments; Tree Health and Tree Coverage are multiyear assessments done on a five-year basis.

*Past Tree Report Card grades: Incomplete (2011), C (2010), B- (2009) and B (2008).*

**ABOVE: ROCK CREEK PARK IS COMPRISED OF MORE THAN FOUR SQUARE MILES OF FOREST.**

# PERFORMANCE METRICS USED

**TREE COVERAGE** is a measure of the surface of a tree's crown viewed from above. These crowns, also referred to as canopies and are the workhorse of a tree, providing shade, reducing energy consumption, removing particulates, slowing stormwater and generating a host of other benefits. Existing tree canopy coverage is compared to D.C.'s 40 percent tree canopy goal.

**TREE HEALTH** is as it states — a measure of the overall health of trees that make up the tree canopy. While this rating has many implications, fundamentally, trees in "Poor" condition generally do not live as long as those in "Good" to "Excellent" condition.

**TREE PLANTING** measures the number of trees planted annually to what must be planted — 8,600 trees per year until 2035 — to achieve the 40 percent tree canopy goal.

**TREE PROTECTION** measures the effectiveness of the Urban Forestry Preservation Act (UFPA).

Each performance metric is given a letter grade A to F, with A representing excellence and F failure. The grade Incomplete is used to assign credit for efforts underway but not yet complete. Grades are then assigned a "+" or "-" to identify a range of performance within the letter grades. Individual grades are then combined into one final grade.

Trees planted as replacements for Special Trees removed under the UFPA are not included in the tree planting grade count. The intent of replacement trees is to maintain the existing canopy, not expand it.

The Tree Protection grade is based on the performance and administration of the UFPA in its current form. Details are described on pages 16 and 17. Subsequent Tree Report Cards may assess other tree protection mechanisms in force, such as fees/fines for removal of public space trees, tree and slope overlay district regulations and others.

# METRIC: TREE COVERAGE


A–

2012

Satellite images are used to estimate the increase or decrease in tree canopy over time. The University of Vermont Spatial Analysis Lab (UVM), affiliated with the U.S. Forest Service's Northern Research Station, provides this information.

Canopy assessments were conducted by UVM in 2006 and 2011 while canopy assessments for 1950 were derived from aerial photographs.

Assessing urban tree canopy using satellite images is a relatively new field and technology is constantly improving.

As a case in point, UVM initially reported that D.C.'s tree cover in 2006 and 2011 were both 35 percent. However, using refined techniques, UVM has determined that D.C.'s canopy was 38 and 36 percent respectively.

**ABOVE: A 1951 AERIAL PHOTOGRAPH (LEFT) SHOWING THE INTERSECTION OF FLORIDA AND RHODE ISLAND AVENUES NW, COMPARED TO 2011 SATELLITE IMAGERY (RIGHT) HIGHLIGHTING CANOPY DECLINE.**


Technology advancements will always challenge our assessments, but over time, the results will improve and our understanding of the fluxes in D.C.'s canopy will advance. We will continue to use the best methods available and maintain transparency about those methods and the results we find.

D.C.'s canopy has currently been assessed at 36 percent, which translates into an A- grade for Tree Coverage when weighed against D.C.'s 40 percent canopy goal.

*Past grades for Tree Coverage:*
*B+ (2011), B+ (2010), B+ (2009) and B (2008).*

# METRIC: TREE HEALTH

B–

2012

We measure tree health primarily to determine how long D.C.'s trees will live. However, this health measurement also examines the composition of D.C.'s trees, which, among other things, provides insights into the urban forest's ability to withstand pests and diseases.

Unlike estimating canopy cover remotely from satellite images, tree health is assessed from individual tree data collected from 200 permanent field plots located across the District. Data summarized using i-Tree software gives us an understanding of the number, type, size and condition of D.C.'s 2.5 million trees.

Data from our assessment show that 82.4 percent of D.C.'s tree canopy is in "Good" to "Excellent" condition, which gives D.C. a B- in Tree Health for the third straight year.

*Past grades for Tree Health:*
*B- (2011), B- (2010), B- (2009) and A+(2008).*

SPOTLIGHT

# ASIAN LONGHORNED BEETLE THREATENS A THIRD OF D.C.'S TREES

ABOVE: ALB LARVAE DAMAGE HOST TREES BY FEEDING ON THE SAPWOOD BENEATH THE BARK.

LEFT: ADULT ALBs ARE ¾ TO 1½ INCHES IN LENGTH.

Last year's Tree Report Card showcased emerald ash borer (EAB), an exotic beetle native to Asia that was found in D.C. in December 2012. EAB is responsible for the destruction of 30 million ash trees nationwide and the devastation continues.

Thankfully, EAB's impact upon D.C.'s urban forest will be less severe. Only 2 percent of our urban forest, or approximately 51,680 trees, is comprised of ash trees. The primary concern is that most of D.C.'s ash are on private residential property and their absence will significantly change the character of the neighborhoods where they are located.

On the horizon and possessing the potential to cause more devastation than EAB is the Asian longhorned beetle (ALB). States in the Midwest and Northeast such as Illinois, Massachusetts and New York have dealt with the pest since 1996, spending millions of dollars to quarantine, treat and remove tens of thousands of infected trees.

Feeding on maples, poplars, willows, elms and related species, an ALB infestation could eliminate up to 35 percent of D.C.'s trees, devastating the city's canopy in a matter of years. Once ALB infests a tree, it generally dies in one to two years.

ALB will reach D.C. and when it does we must be ready to limit its damage. Unfortunately, D.C. has no plan in place to deal with either ALB or EAB.

We strongly urge the District Department of the Environment (DDOE), District Department of Transportation - Urban Forestry Administration (DDOT-UFA) D.C. State Forester, U.S. National Parks Service (NPS), U.S. Forest Service (USFS), and the U.S. Department of Agriculture Animal and Plant Health Inspection Service to devise and fund a plan to deal with both of these pests before they potentially eliminate more than a third of the trees in the nation's capital.


**BARRACKS ROW**
**2003**


**TREES ENHANCE ECONOMIC DEVELOPMENT AND NEIGHBORHOOD STABILITY BY ATTRACTING RESIDENTS, BUSINESSES AND TOURISTS.**

**BARRACKS ROW**
**2008**

# METRIC: TREE PLANTING


2012

To achieve D.C.'s tree canopy goal of 40 percent by 2035, existing trees need to be preserved and new trees must be planted — 216,300 total or 8,600 trees annually — in areas where they can survive and reach maturity.

Since the Tree Report Card was first published in 2008, tree planting has increased significantly. But each planting location has its benefits and drawbacks in terms of probable long-term survival, planting costs, maintenance costs and related factors. This is where private lots, which have the most potential for tree canopy expansion in D.C., hold the greatest promise.

State programs in the 1800s supplied land owners low-cost seedlings to re-plant their cut-over forests and abandoned farms in an effort to provide clean drinking water for cities and towns. Similarly, D.C. has launched private property tree planting incentive programs that increase canopy and provide environmental benefits to the entire city.

These successful programs benefit property owners, who are able to plant trees at reduced rates. Neighborhood canopy expansion accelerates by encouraging others to re-tree their lots. City maintenance costs are reduced or eliminated because the trees are not located on D.C.-owned land. Local tree nurseries benefit from increased business and better connections to customers. Perhaps most important, tree planted on private lots have a greater chance of long-term survival than those planted on more challenging sites, such as streets or roadway medians.

**A NEW TREE IS ADDED TO THE GROUNDS OF D.C.'S FORT MCNAIR.**

In short, there are many places trees can be planted in D.C. to meet the tree canopy goal, each with its benefits and drawbacks. A balance must be struck among the options to keep costs low and impact high while ensuring trees are not located exclusively in one area or another.

Just like a park, garden or supermarket, trees are a "place-based" asset. They cannot provide benefits where they do not exist, and this is important to keep in mind as D.C. continues to develop and change over time.

For the third straight year, entities planted above the target of 8,600 trees — 10,404 total* — resulting in an A+ grade.

*Past grades for Tree Planting:*
*A+ (2011), A+ (2010), C- (2009) and B (2008).*

*A complete listing of entities that provided tree planting totals is listed in the Appendix on page 20.

**SPRINGTIME IN WARD 5: TREES LOCATED ON PRIVATE PROPERTY OFTEN HAVE MORE ROOTING SPACE, GIVING THEM BETTER CHANCES FOR LONG-TERM SURVIVAL.**

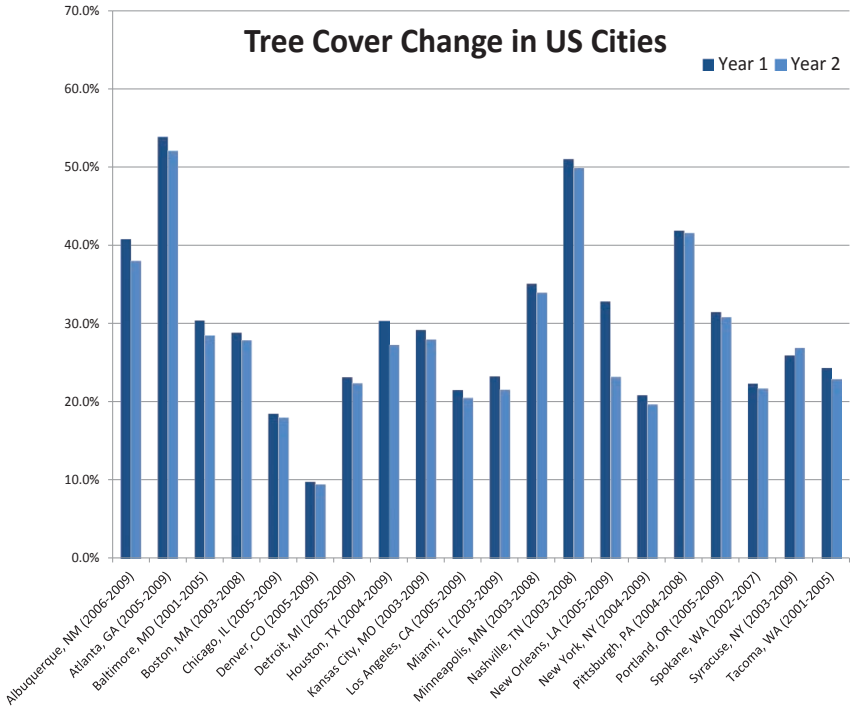
SPOTLIGHT

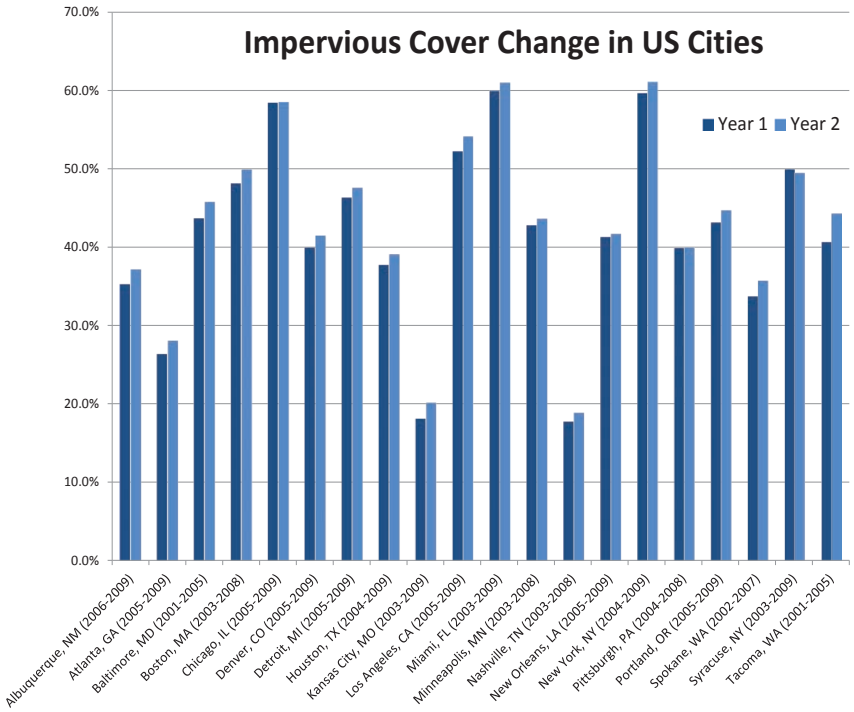
# TREES & IMPERVIOUS SURFACE COVER CHANGES IN U.S. CITIES

In 2012, U.S. Forest Service researchers David Nowak and Eric Greenfield published *Tree and impervious cover change in U.S. cities*, a landmark study showing tree canopy and impervious surface cover change in 20 major U.S. cities.

There was a marked decrease in tree canopy in all the included cities, with the exception of Syracuse. Most of the cities also experienced an increase in impervious surfaces — again with the exception of Syracuse.

Tree canopy cover measured at the end of the study period was highest in Atlanta (53.9 percent) and lowest in Denver (9.6 percent). Impervious cover was greatest in New York City (61.1 percent) and lowest in Nashville (17.7 percent).




Nowak, D.J., Greenfield, E.J., 2012. Tree and impervious cover change in U.S. cities. Urban Forestry & Urban Greening 11, 21-30.


**PRE- AND POST-DEVELOPMENT IMAGERY FROM A SITE IN THE PALISADES NEIGHBORHOOD OF WARD 3.**

In D.C., both canopy and impervious surface cover trends follow the national pattern. From 2006 to 2011, D.C.'s canopy decreased from 38 to 36 percent and impervious cover grew from 40 to 41 percent.

While Nowak and Greenfield's work did not speculate on the cause of the changes, our analyses show clear evidence of tree canopy decline from land clearing for development, as shown above.

This is not surprising, as the current and previous mayors have prioritized increasing urban density to accommodate future population growth.

In fact, a goal of the Sustainable DC Plan is to increase the District population by a net of 250,000 residents over the next 20 years.

While increasing density makes sense to promote energy savings, public transportation and other benefits, it can also make our city less livable by increasing the amount of asphalt and concrete and decreasing the amount of trees.

When do the benefits of one policy outweigh those of another? This is a difficult question, but one to keep in mind and track as densification continues to eliminate trees in cities nationwide and Washington, D.C. as well.

# METRIC: TREE PROTECTION

F
2012

Last year's Tree Report Card assigned an Incomplete to Tree Protection because D.C.'s elected leadership was in the process of reviewing the UFPA to improve its impact. Unfortunately no action was taken.

Given this new reality, we crafted a composite rating system based on three key measurements to gauge the UFPA's performance within its existing, albeit inadequate, framework.

**Measurement 1: Are property owners being disincentivized from removing Special Trees?**

One of the primary goals of the UFPA is to discourage the removal of Special Trees by charging a fee high enough to create a disincentive. We determined that if two out of every three people (66 percent) applying for a permit to remove a healthy Special Tree decided to leave it standing, then the UFPA was functioning as intended.

In 2012, 134 healthy Special Tree Permit requests were submitted; 79 applications were approved and 55 were denied. By our conservative benchmark, in 2012 the UFPA would have been 100 percent effective if 88 permit applications (66 percent) were denied. The data show that 55 applications were denied, producing final rating of 62 percent (55/88).

**Measurement 2: Is lost canopy really being replaced?**

The UFPA is also intended to ensure canopy lost from Special Tree removal is replaced.

However, The District does not track survival statistics on replacement trees because there is not a "legislative or regulatory mandate" to do so.

**ABOVE: A 140-YEAR-OLD GINKGO TREE WAS MISTAKENLY REMOVED FROM FARRAGUT SQUARE. THE LARGEST AMOUNT OF ECOSYSTEM SERVICES ARE PROVIDED BY LARGE CANOPY TREES.**

**LEFT AND RIGHT: LARGE TREES ARE REMOVED FROM A WOODED AREA OF THE FOXHALL CRESCENT NEIGHBORHOOD IN WARD 3.**

With no data to determine if replacement trees are surviving or in effect actually replacing lost canopy, we assigned a 0 percent rating.

**Measurement 3: Is Tree Fund money being spent effectively?**

In 2012, a total of $450,277 collected fees/fines were deposited into the Tree Fund. At the end of the calendar year, the Tree Fund had a balance of $117,448, meaning that $332,829 was spent. DDOT-UFA reported that 1,325 street trees were planted using Tree Fund dollars. This translates into a per-tree cost of $250 — a standard rate for most large planting contracts. Based on this information, we find that Tree Fund monies were used as intended, resulting in a 100 percent rating.

To summarize, while the UFPA and Tree Fund were administered well, the disincentive created by the fees now in place for the removal of healthy Special Trees was weak. Also, it is impossible to determine if replacement trees are replacing canopy lost when Special Trees are removed because no data on the survival of those replacement trees is being kept.

The overall grade for Tree Protection is 54 percent (62+0+100/3), or an F.

*Past grades for Tree Protection: Incomplete (2011), F (2010), C+ (2009) and C 2008).*

# SUMMARY AND RECOMMENDATIONS

B–
2012

The 2012 composite score for the District's tree canopy is 81.6 percent, or a grade of B-. This represents a moderate improvement over 2011's Incomplete grade, but D.C.'s canopy continues its decline and efforts must be ramped up to reverse this trend.

Despite this, there is some good news to celebrate:

- Mayor Gray's Sustainable DC Plan has provided a significant boost to D.C.'s tree issues and attainment of the city's 40 percent canopy goal.
- Collective tree planting in D.C. has increased and appears to have stabilized at 10,000 trees per year.
- We have better data on D.C.'s trees than most other jurisdictions.
- The District's 40 percent tree canopy goal has been endorsed by two successive administrations.
- There is sufficient land available to accommodate the number of trees that must be planted to reach D.C.'s 40 percent canopy goal.

- Private-lot tree planting programs are increasing canopy where trees have a better chance of long-term survival and where costs to the D.C. Government are far less than tree planting on public lands.

Nevertheless, there are still major gaps that must be bridged to ensure that D.C.'s trees remain abundant and healthy for future generations. First, we recommend that the UFPA be strengthened by:

- Mandating survival checks for all trees planted with Tree Fund dollars.
- Adjusting fees, now 10 years out of date, to sufficiently discourage the removal of healthy Special Trees.
- Redefining a Special Tree from 55 inches in circumference to 29 inches in circumference to protect more trees and slow D.C.'s tree canopy decline.
- Modifying mitigation alternatives to a fee-only system to reduce administrative costs and target replacement tree plantings to better ensure long-term survival.
- Ensuring Tree Fund monies are not used exclusively for street tree planting.

Second, D.C. is a tangle of local, federal and private land ownerships; local and federal governance; and NGO and community group involvement, all with overlapping responsibilities and goals. There are multiple challenges in this environment that could at least be partially eliminated if groups coordinated efforts and committed to some common goals and objectives.

We therefore recommend that the Mayor's Office, in the spirit of Mayor Gray's "One City" campaign, designate a lead agency to provide direction and coordinate all urban forestry efforts on all D.C. lands.

Finally, pressure to remove trees will intensify as D.C. continues to attract business and people from around the globe and construction accelerates to accommodate them. Given that reality, how do we replace these trees and will there even be space to plant them?

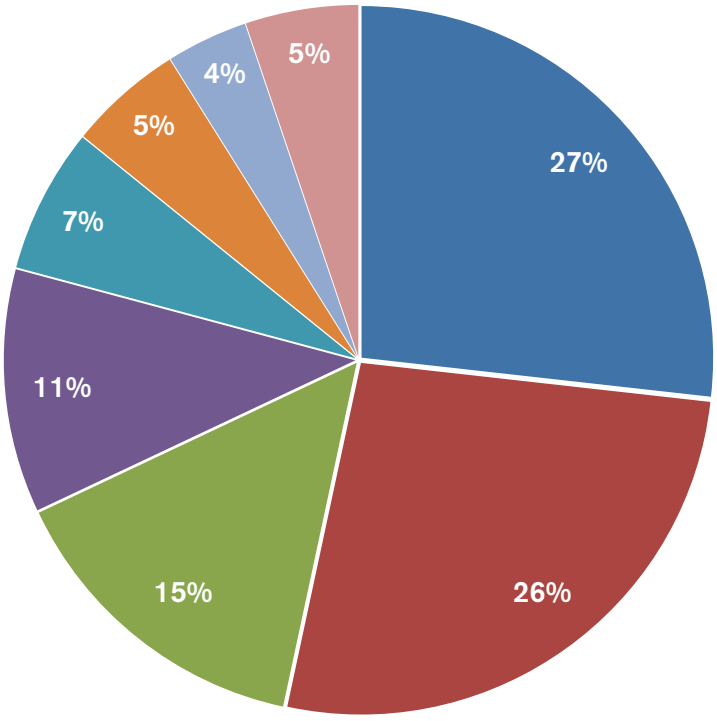
Without a plan in place to preserve space for tree establishment and growth throughout the city, we could be faced with urban desertification — cities such as New York and Chicago have more than 60 percent impervious cover — it could happen here too.

We recommend that D.C. adopt impervious surface maximums and tree canopy minimums for all zoning districts to ensure that every area in D.C. can support trees for the benefits they provide residents and businesses alike.

# APPENDIX

### Tree Planting Totals

Of the 139 groups Casey Trees contacted, 19 provided us with data on their tree-planting activities in 2012. They are listed below in the order of number of trees planted. When given, the program the trees were planted through is noted.




- NPS ..... 2,788
- DDOT-UFA* ..... 2,769
- Casey Trees (Community Tree Planting Program) ..... 1,523
- DDOE** ..... 1,165
- DDOE (RiverSmart Homes Shade Tree Program) ..... 693
- Washington Parks & People ..... 547
- DDOE (Tree Rebate Program) ..... 389
- The American University ..... 104
- U.S. National Arboretum ..... 100
- U.S. General Services Administration ..... 88
- District Department of Parks and Recreation ..... 64
- Wesley Theological Seminary ..... 50
- Trees for Georgetown ..... 46
- The George Washington University ..... 23
- The Catholic University of America ..... 22
- Trees for Capitol Hill ..... 11
- American Forests ..... 10
- Restore Mass Ave ..... 10
- DC Greenworks ..... 2

The RiverSmart Homes Shade Tree and Tree Rebate programs are funded by the District Department of the Environment and administered by Casey Trees.

* Figure excludes 1,325 trees planted as replacements for Special Trees. See “Notes on Grading” on page 5.

** Pepco funded tree plantings.

# ACKNOWLEDGEMENTS

Casey Trees' Tree Report Card is an assessment of the efforts of all individuals, groups and organizations — public and private — engaged in planting and caring for trees across the District. We wish to thank the following list of cooperators who continue to work, either directly or indirectly, to ensure that D.C. remains the City of Trees:

### Federal Government

U.S. Environmental Protection Agency
U.S. Forest Service
U.S. General Services Administration
U.S. National Arboretum
U.S. National Park Service

### District Government

Council of the District of Columbia
Executive Office of the Mayor of the District of Columbia
District Department of Transportation - Urban Forestry Administration
District Department of the Environment
District Department of Parks and Recreation

### Private

American Forests
The American University
Anacostia Riverkeeper
Anacostia Watershed Society
Audubon Naturalist Society
The Catholic University of America
Center for Biological Diversity
City Wildlife, Inc.
Clean Water Action
DC Environmental Network
DC Greenworks
DC Smart Schools
Earthjustice
The George Washington University
Global Bees
Global Green USA
Groundwork Anacostia
National Resources Defense Council
Restore Mass Ave
Rock Creek Conservancy
Safe Lawns for DC Kids and Critters
Sierra Club
Sustainable Community Initiative
TKF Foundation
Trees for Capitol Hill
Trees for Georgetown
Washington Parks & People
Wesley Theological Seminary

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