

MillionTreesNYC

THE INTEGRATION OF RESEARCH AND PRACTICE



Cover Photo: Street tree view along Eastern Parkway Malls

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Central Park Reservoir image used
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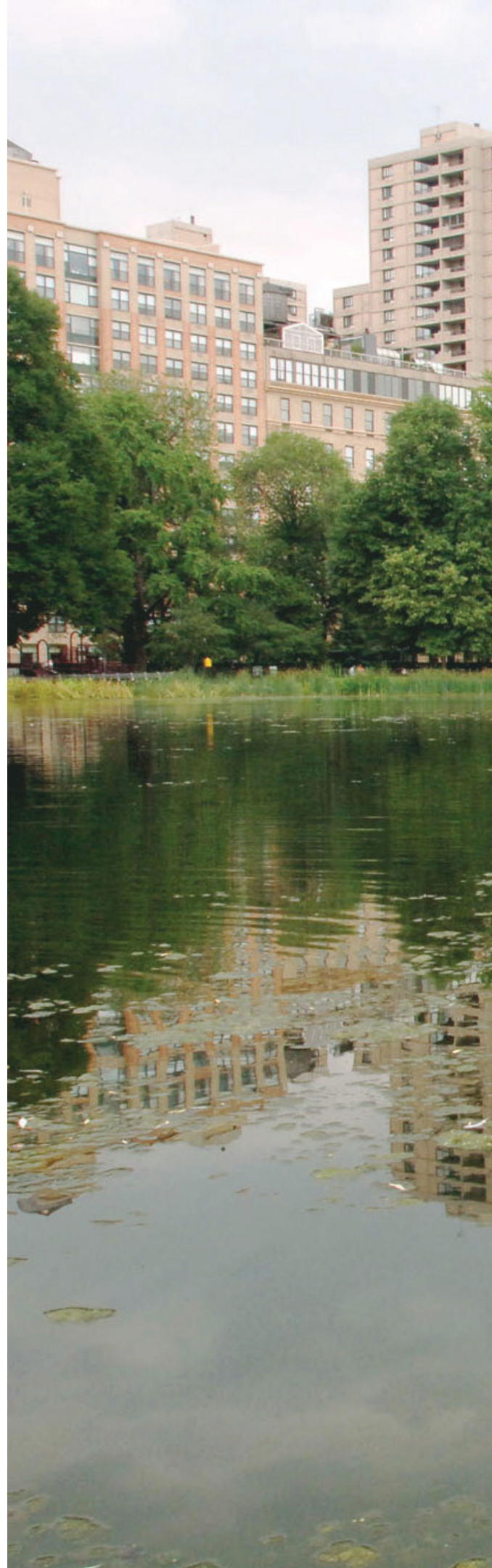


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Introduction

MillionTreesNYC is an ambitious campaign to plant and care for one million new trees in New York City. Implemented by the City of New York Department of Parks & Recreation and the nonprofit New York Restoration Project, this innovative, citywide effort crosses property jurisdictions and physical sites. The goal is to enhance the entire 'green matrix' of the urban forest across streets, recreational parks, natural areas, schools, public housing campuses, and private yards. A healthy urban forest helps make New York City 'greener and greater' and supports the goals of the city's sustainability plan, PlaNYC2030.





Trees along North
of Harlem Meer in
Central Park.

Research and practice have continually informed each other throughout the MillionTreesNYC campaign. Decades of scientific monitoring data and analysis by academics, federal scientists, and local managers have demonstrated the many social and environmental benefits of the urban forest.¹ For example, city trees have been shown to lower surface air temperatures by providing shade, which mitigates the urban heat island effect. Trees also absorb and retain stormwater, which helps improve water quality by diverting stormwater from the city's combined sewers. They enhance the aesthetics of neighborhoods, creating more desirable places to live, work, play, and shop. These and other research findings were used to help make the case to policy makers that PlaNYC2030 should include a substantial investment in tree planting.

Research has also been integrated throughout other aspects of the MillionTreesNYC initiative, including via the Advisory Committee. The research and evaluation subcommittee of the Advisory Committee helped to build connections between researchers and practitioners through a research workshop, a symposium, and a special issue of the journal *Cities and the Environment*. At the same time, the MillionTreesNYC campaign has inspired new lines of basic and applied research related to green jobs, air quality, stormwater retention, forest restoration practices, species selection, and environmental stewardship throughout its implementation. The campaign will also produce long-term scientific datasets that will be available for use by future researchers.

We continually invite the participation of additional partners, as there is plenty of opportunity for more research going forward. Finally, we hope that the knowledge that is produced from this campaign in the long-term will help inform future policies and programs both in and beyond New York City.

This document is structured to provide an overview of the MillionTreesNYC programs followed by the relevant research that helped to substantiate, inform, or measure them. Additional information about the programs or research projects can be found at www.milliontreesnyc.org or by following the links in the citations.



Trees in bloom in Central Park.

The MillionTreesNYC Partnership

MillionTreesNYC was created as a public/private partnership between the City of New York Department of Parks & Recreation (NYC Parks) and the non-profit New York Restoration Project (NYRP). Core elements of the initiative include tree planting and care; education and outreach; marketing and public relations; urban forestry research; and program evaluation.

NYC Parks was tasked with planting wherever possible on the public right-of-way (sidewalks and traffic medians), reforesting city parkland, and tracking tree planting by city, state, and federal government agencies within the five boroughs. A 2005/2006 street tree census conducted by NYC Parks revealed space to plant an additional 220,000 trees on the public right-of-way. Parks also planned to plant 380,000 trees through forest restoration efforts.

NYRP was responsible for tree planting on properties outside of NYC Parks' jurisdiction. NYRP's efforts include reaching out to individual homeowners, land owners and managers, residential and commercial developers, landscape

architects, and local community organizations for help with tree planting on public and private properties. NYRP has planted new trees on public and private housing developments, schoolyards, cemeteries, community centers, hospital grounds, properties owned by religious institutions, etc. NYRP hosts seasonal tree giveaway events through which New York City residents may receive free trees to plant in their yards. NYRP also meets with commercial and residential developers, architects, and landscape designers to set specific tree planting goals and collect data on trees planted within new developments.

Change over time: Initially, NYC Parks was responsible for 60% of the million tree goal and NYRP was responsible for the remaining 40%. In 2011, this distribution was adjusted to 70% Parks, 30% NYRP due to the challenges NYRP encountered to accord with updated estimates related to tree demand by private property owners. The original completion date was scheduled for 2017 but because the campaign is ahead of schedule we expect to finish by the end of 2015.



Volunteers at a NY Cares event.



Collaborative and Networked Governance

A campaign of this scope and complexity requires many partners operating at different scales with a high degree of trust, shared vision, and formalized collaboration. MillionTreesNYC was one of 127 initiatives in PlaNYC2030, New York City's long-term sustainability plan.² Thus, trees are part of the City's larger commitment to improving air quality, water quality, open space, and urban livability. PlaNYC also strengthened inter-agency collaboration (among the NYC Parks Department, NYC Dept. of Environmental Protection (DEP), NYC Dept. of Transportation (DOT), NYC Dept. of Education (DOE), and NYC Dept. of Buildings (DOB)) in the implementation of the MillionTreesNYC campaign. The campaign is a public-private partnership between a city government agency (NYC Parks Department) and a nonprofit organization (New York Restoration Project). Shared communication and decision-making between these two major partners helps build on the strengths of each and allows MillionTreesNYC to plant trees across a wide range of land jurisdictions. Finally, MillionTreesNYC has drawn upon the resources and expertise of public, private, and civic groups through its Advisory Board and subcommittees and, after the launch of PlaNYC2.0 in 2011, through efforts such as the 'Grow our Grassroots' conference and the 'Change by Us' online forum.



Parade Grounds at
Van Cortlandt Park.

The MillionTreesNYC Advisory Committee and Subcommittees

The MillionTreesNYC Advisory Board was set up to advise NYC Parks and NYRP staff on tree planting, education, stewardship, public policy, research/evaluation, and marketing. It brought together diverse stakeholders whose expertise continues to shape the initiative's programs. In order to be a truly citywide movement, MillionTreesNYC leveraged resources across city agencies and non-profit organizations that were already engaged in environmental literacy, advocacy, and community organizing in order to broaden the campaign's reach and impact.

The Advisory Board consisted of seven discreet Subcommittees focusing on tree planting, education, stewardship, public policy, research/evaluation, marketing, and green jobs. Each Subcommittee had three co-Chairs: one representative from NYC Parks, one from NYRP, and one from an outside organization or agency. Subcommittee members included representatives from government agencies, non-profit organizations, businesses, educators, researchers, and long time community stakeholders. Each Subcommittee met at least twice a year to create and then implement a strategic plan with short-term and long-term goals.³ A summary of accomplishments and efforts toward reaching these goals was presented to the larger Advisory Board during annual meetings. MillionTreesNYC tracked all progress and coordinated the implementation of plan goals for each Subcommittee; however, all major subcommittee activities and formal meetings ended in 2011.

MillionTreesNYC Subcommittees



Research and Evaluation



Tree Planting



Stewardship



Public Policy



Education



Marketing



Green Jobs

Research on Sustainability Planning and Implementation



As other global cities are creating large-scale tree planting campaigns, there is great interest in learning about the politics, governance, and discourses behind the policymaking and implementation of MillionTreesNYC.



Research across six major cities found that government agencies tend to dominate the visioning, planning, and management of large-scale urban tree-planting initiatives. Yet, in many places, these large scale green infrastructure initiatives have not been successfully institutionalized into long-term government agency missions, strategic plans, and policies. However, the research noted that New York City's tree planting initiative was integrated into the City's long-term sustainability plan and had an "exemplary" business plan that leveraged public and private resources.⁴



We need to understand how urban forestry compares or contrasts to other social movements and campaigns around the urban environment, in terms of how the public and the government work together or distinctly.



Current doctoral research is examining the MillionTreesNYC campaign in the context of PlaNYC and comparing it to urban agriculture practices in New York City in the same time period. This work will help us understand how tree planting campaigns compare and contrast with other urban environmental campaigns and social movements in terms of how the public and the government work together or separately.⁵

MillionTreesNYC Research and Evaluation Subcommittee

MillionTreesNYC is a compelling and timely topic: academics, students, program staff, practitioners and policymakers are all interested in the campaign, trees, restoration, urban ecology, and green infrastructure. The MillionTreesNYC campaign has served as an umbrella for a number of different research and evaluation efforts, promoting new research across the city and over time. From the beginning, the Research Subcommittee focused on and facilitated a range of academic research, applied research, and programmatic evaluation.



Research Workshop⁶ + Research Symposium + Journal Special Issue⁷

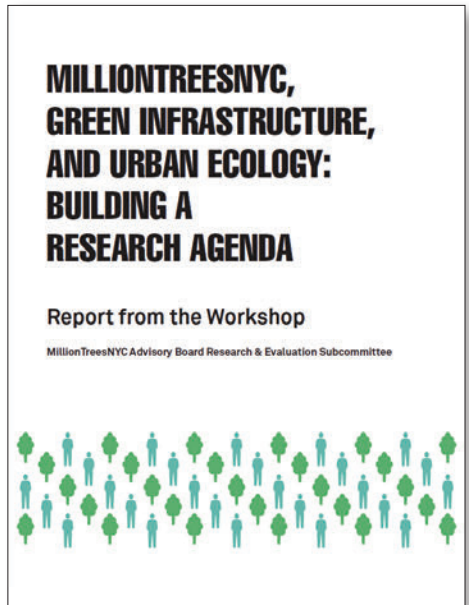
The Research and Evaluation Subcommittee:

- ✔ Organized a workshop, symposium, and special issue of the journal *Cities and the Environment* (Vol. 3, Issue 1, 2010). There were approximately 100 attendees at the workshop and more than 200 at the 2-day symposium.
- ✔ Activated an interdisciplinary network of researchers and practitioners from both the local area and around the world.
- ✔ Called for more research on urban tree planting, noting that researchers need access to data, study sites, and implementation timeliness.
- ✔ Published original, peer-reviewed research about MillionTreesNYC and applicable lessons for other cities.



Top: Grow Our Grassroots Stewardship Summit 2012 at Brooklyn Borough Hall.

Bottom: MillionTreesNYC Research Workshop Report 2009 cover page.





MillionTreesNYC Program Evaluation⁸

The people involved in the MillionTreesNYC campaign are committed to constantly evaluating the campaign's efforts and progress. They conducted a comprehensive evaluation at the midpoint of the campaign in order to understand its effectiveness and challenges. Key findings include:

- ✔ Partnership is a key component of the MillionTreesNYC program and this is reflected in the subcommittee structure. Even though the subcommittees functioned independently, there was often overlap in the topics they covered.
- ✔ The subcommittee structure and MillionTreesNYC campaign changed over time in response to external changes in the economy, changes among partners involved, and lessons learned along the way.
- ✔ During the second half of the campaign, there was an increased emphasis on environmental stewardship and fostering an emotional connection between residents and trees, in contrast to the earlier focus primarily on tree planting. This grew out of the realization that the biophysical and environmental benefits of tree planting hinge on the personal involvement of the people who plant and live with the trees. Although tree planting always was the necessary core of the MillionTreesNYC campaign, stewardship became its emotional heart.
- ✔ With over 740,000 trees already planted, the challenge for MillionTreesNYC is to ensure the survival and caretaking of these trees through public outreach, training and education.



Children caring for street trees in the Bronx.



Trees in autumn
along Prospect Lake
in Prospect Park.

Tree Planting

Trees are an important part of what makes a city sustainable and are part of the vision of what we want New York City to look like by the year 2030. Tree planting is at the core of the MillionTreesNYC campaign, which aims to plant 1 million trees in New York City across many different jurisdictions and land uses by 2015. MillionTreesNYC aims to create “ecological corridors” that connect the forest and the public right-of-way, with the added goal of helping people to notice, understand, and appreciate the urban forest.

Block-wide tree planting is one way to scale up from answering residents’ requests for single street trees to rapidly re-greening entire blocks and neighborhoods. Using this strategy, MillionTreesNYC’s “Trees for Public Health” program focused on six neighborhoods with few street trees and high asthma hospitalization rates for children. In addition to street tree planting, the citywide reforestation efforts aim to create healthy, multi-story forests with native trees, shrubs, and an herbaceous layer. Tree plantings on private and institutional property (such as NYC Housing Authority and City University of New York properties) complemented the City agencies’ planting efforts.



Why plant one million trees?

Key research by NYC Parks, the USDA Forest Service, other partners, and engaged volunteers provided baseline data for charting the course of the MillionTreesNYC campaign and helped to lay the groundwork for gaining support from policy makers. Existing studies affirmed the need for long-term urban forest data and analysis because managers need to know the number, health, and distribution of the trees they are responsible for in order to manage them effectively.



Volunteer reforestation
planting event at
Conference House Park.

Baseline Understanding of the Urban Forest

Tree Census⁹

- ✔ **In the past:** the 2005 Street Tree Census informed the MillionTreesNYC street tree planting strategy in communities across the city. NYC Parks used this baseline data to project forward what would be possible to plant in the public right of way. Before MillionTreesNYC, tree planting was driven by individual resident requests; MillionTreesNYC introduced the block planting approach which was based on low street tree stocking levels and on other criteria such as public health needs and water quality goals.
- ✔ The census proved that data collection can be a great civic engagement opportunity for volunteers.
 - The 1995 Tree Census involved 700 volunteers and 1,100 volunteers worked on the 2005 Census.
- ✔ **Going forward:** the 2015 Street Tree Census will provide an updated inventory from which the campaign can draw conclusions about the impacts of planting and stewardship efforts.

Street Tree Analysis Tool for Urban Managers (STRATUM)¹⁰ and Urban Forest Effects Model (UFORE)¹¹

- ✔ STRATUM and UFORE are two USDA Forest Service-developed methods that have been used to measure and analyze urban forests in dozens of cities including New York.
- ✔ STRATUM and UFORE helped make the case that trees are a sound investment by providing quantitative estimates and monetary values of ecosystem services supplied by trees. For example, street trees provide \$5.60 in benefits for every dollar spent on tree planting and care.
- ✔ The data from these studies set the stage for policy makers to commit PlaNYC capital funding to tree planting and initiate the City government half of MillionTreesNYC.

Urban Tree Canopy (UTC)

✔ UTC Analysis

- Another USDA Forest Service-led effort estimates how much tree canopy a city has (what's present) and how much it can have (what's possible).
- New York City had an estimated 24% tree canopy coverage as of 2001.¹² As of 2010, using cutting edge remote sensing technology, NYC's canopy cover was estimated to be 21% of the city's land area.¹³
- The analysis helped make the case for MillionTreesNYC by revealing the current composition of the urban forest as a baseline.
- **Replication:** NYC's request for research helped set the standard for UTC assessments being conducted across the country in 55 other cities (See <http://nrs.fs.fed.us/urban/utc/status>) and was repeated in 2011 for New York City.¹³
- The data from the 2nd UTC Analysis for NYC can be downloaded from NYC's Open Data website (See <http://nycopendata.socrata.com>).

✔ UTC Prioritization¹⁴

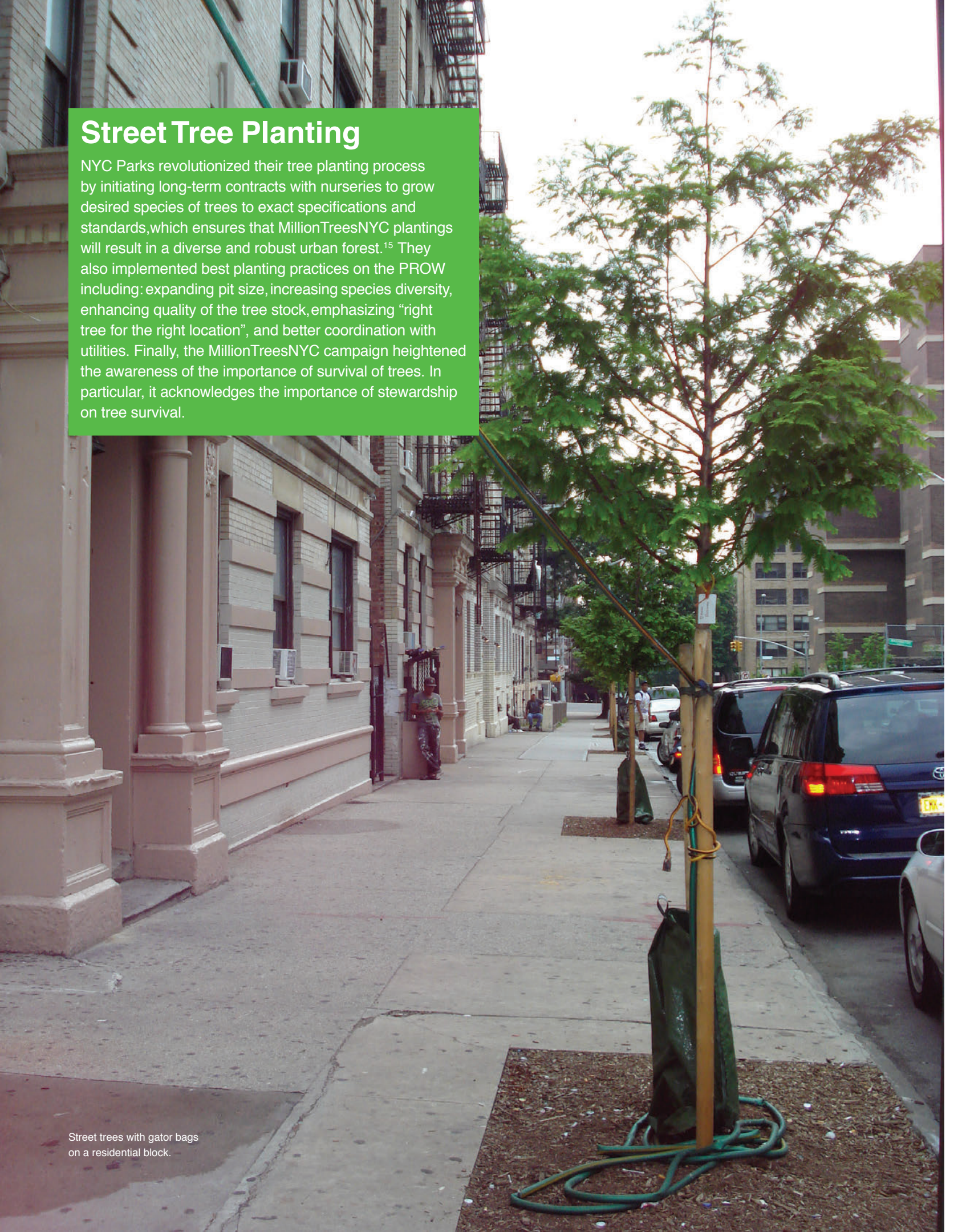
- Prioritization helps managers prioritize planting locations (what's preferable) based on criteria for suitability and needs.
- Such assessments can help highlight the need for block planting in different neighborhoods.
- NYC Parks used the 2012 UTC report and prioritization framework to identify street tree planting survey priorities for the second half of the MillionTreesNYC campaign.
- **Replication:** NYC's UTC prioritization was a proof of concept that helped develop a model that other cities are using (Baltimore, for example).



Street Tree Planting

NYC Parks revolutionized their tree planting process by initiating long-term contracts with nurseries to grow desired species of trees to exact specifications and standards, which ensures that MillionTreesNYC plantings will result in a diverse and robust urban forest.¹⁵ They also implemented best planting practices on the PROW including: expanding pit size, increasing species diversity, enhancing quality of the tree stock, emphasizing “right tree for the right location”, and better coordination with utilities. Finally, the MillionTreesNYC campaign heightened the awareness of the importance of survival of trees. In particular, it acknowledges the importance of stewardship on tree survival.

Street trees with gator bags on a residential block.



Young Street Tree Mortality


- ✔ Street tree mortality during the two-year guarantee period has decreased every year since the beginning of MillionTreesNYC to 6.7%, almost half of what it was in 2000 (12.5%).
- ✔ The study explored the factors that contribute to young street tree mortality, such as planting location, land use, and stewardship.¹⁶ Findings include:
 - Median trees have higher mortality rates than trees on the sides of streets.
 - Industrial areas have some of the highest tree mortality rates while residential areas have some of the lowest.
 - Stewarded trees have lower mortality rates than un stewarded trees.
 - Trees with tree guards have lower mortality rates than those without tree guards.
- ✔ The NYC Parks program manager built upon this initial research and incorporated ongoing data collection and analysis into the department's regular operations.¹⁷

TreeKIT¹⁸

- ✔ A nonprofit organization dedicated to using innovative mapping techniques to engage residents in monitoring and caring for the urban forest.
- ✔ TreeKit mapped portions of multiple neighborhoods in Western Queens, all of Prospect Heights in Brooklyn, and portions of Gowanus in Brooklyn and East Harlem in Manhattan. In total, they mapped more than 10,000 tree beds on more than 600 city blocks.
- ✔ TreeKit is another potential avenue for recruiting stewards that could inform methodologies for the 2015 street tree census



Young stewards watering new trees in Long Island City.



Trees in autumn in
Central Park.

Reforestation/ Natural Area Plantings

The MillionTreesNYC reforestation goal aimed to create healthy, multi-story forests citywide. In total, over 300,000 trees have been planted in NYC Parks' natural areas. Beginning in the 1990s, forest restoration practices by NYC Parks included removal of invasive plant species and dense planting of young native trees. Through MillionTreesNYC, the Natural Resources Group (NRG) division of NYC Parks introduced forest management contracts for site preparation and planting. In addition, MillionTreesNYC planned large-scale events where volunteers planted over 20,000 trees and shrubs across the city in a single day. The long-term impacts of these practices are only now being documented and researched to help inform future planting and forest restoration efforts.¹⁹

Reforestation Study Findings

- ✔ **Citywide plot study:** MillionTreesNYC reforestation can increase native vegetation cover.²⁰
- ✔ **Afforestation Project:** Soil quality, water and Carbon storage capacity is improving as a result of MillionTreesNYC reforestation.²¹
- ✔ **Survival in Citywide Plantings:** Tree survival has ranged between 84% and 93% for the 5 years that have been monitored.²²
- ✔ **Seasonal Variation:** Container trees had a higher survival rate when planted in the fall instead of the spring. This difference has also been observed in other reforestation projects on disturbed landscapes. Research has found that fall planting gives tree roots more time to establish themselves (throughout the fall and parts of winter) which enables them to withstand the heat and understory competition during the summer.²³
- ✔ Soil samples were collected from most of the research plots in 2011 and 2012. These data, along with weather data, will be used to further analyze variation in tree survival and health among planting sites throughout the city.
- ✔ **Longitudinal:** New research has laid the groundwork to understand long-term change in the urban forest, which will help us better understand ecosystem services.²⁴
- NYC Parks' restoration efforts that began in the 1990s have already significantly improved the health of the forest in terms of forest structure and composition (tree cover, canopy closure, complexity, and native species recruitment).²⁵

Restoration Impacts on Forest Fauna²⁶

- ✔ Examined salamanders as indicators of forest health.
- ✔ Study plots in Manhattan, Staten Island and the Bronx show that the salamanders found in forests where invasive species have taken hold are better adapted for warmer, drier conditions. However, the salamanders in the invaded forests are smaller and may be less successful at reproducing.



250,000th MillionTreesNYC Tree Planting event held in St. Alban's, Queens.

Planting on Private Lands

MillionTreesNYC aims to reach all properties of New York City and through a partnership with the non-profit New York Restoration Project (NYRP), the initiative has been able to expand its reach. NYRP augments the efforts of NYC Parks by planting trees with other governmental agencies and on private lands citywide. Below is a list of those various jurisdictions:

Commercial Properties

Cemeteries

Colleges and Universities

Community Centers

Community Gardens

City Parks

Mixed Income Residential Developments

Hospitals and Healthcare Centers

NYCHA Developments

Public/Private Libraries

Private Schools

State Parks

Street Trees

Specialized Schools

Faith-Based Institutions

Museums and Historic Homes

Private Backyards and Frontyards

DOE Schoolyards and Playgrounds

Cultural Institutions

MTA Bus Depot

MTA Bridges and Tunnels

NYS DOT Highways

NYRP has invested considerable resources in the design, development, and implementation of a geographic information system (GIS). These GIS technologies and tools provide a common mapping language among stakeholders and have greatly strengthened NYRP's ability to manage its greening programs. Using the extensive datasets made available through NYC's Open Data initiative (<http://nycopendata.socrata.com>), NYRP mapped and analyzed all of the Single- and Two-family residential parcels in New York City. This helped NYRP expand and better manage its extensive Tree Giveaway program, which aims to help residential land owners improve their local green space, cool their neighborhoods, and even gain access to edible harvests.

NYRP partners with over 100 organizations each fall and spring on a variety of programs such as Tree Giveaways, Gardens for the City, volunteer events, and educational workshops. By engaging community organizations throughout New York City, NYRP has planted:



OVER 11,700 TREES
on New York City Housing
Authority (NYCHA) properties



OVER 16,000 TREES
in private backyards
and front yards through
Tree Giveaways



OVER 4,300 TREES
at public and private schools





Tree watering press event
on a commercial street in
Astoria, Queens.

Stewardship

MillionTreesNYC's mission is not only to plant one million trees, but also to care for them. The MillionTreesNYC tree care goals are to:

1. Inspire a broad cross-section of New Yorkers to care about trees in order to ensure the survival of our growing urban forest, and
2. Support, organize, and track local groups who can commit to adopting street trees on a long-term basis.

Stewardship Of Street Trees

The Stewardship Corps program was a direct product of MillionTreesNYC Stewardship/Education/Outreach subcommittee and was formally launched in 2009 as a partnership between NYC Parks, NYRP, Brooklyn Botanic Garden, GreenThumb, New York Botanical Garden, Queens Botanical Garden, Trees New York, and the Greenbelt Conservancy.²⁷ This program and its partners have changed over time.

The current iteration, the **TreeLC program**, carries out the original program principles: to offer hands-on workshops tailored to various skill-levels and to offer free tree care toolkits to community members who agree to provide long-term tree maintenance. Today, MillionTreesNYC emphasizes programs that will engage, enable, and empower volunteers to care for trees in their communities.

MillionTreesNYC has steadily increased the number of people that it reaches each year. As of 2012, it had offered over 1,000 free tree care workshops, reached over 12,000 volunteers, and planted over 5,000 trees that are being cared for by committed volunteers. MillionTreesNYC has also continued to work with Trees New York to expand the reach of Citizen Pruners and in 2012 launched the Young Street Tree Pruning Program in the “Trees for Public Health” program neighborhoods.²⁸

Year	Number of Workshops	Number of Attendees	Number of Trees Adopted
2009	85	1070	220
2010	622	4843	1853
2011	181	3442	1344
2012	214	2717	1878
TOTAL	1102	12072	5295

Public Reactions to New Street Tree Plantings²⁹

- ✔ This study helps understand the concerns that people have about new street tree plantings in the public right-of-way. Conflicts occur due to the public-private nature of sidewalks and people’s territorial instincts. Although trees physically transform the grey infrastructure of the sidewalk into a green space, the sidewalk is a literal, figurative, and psychological grey zone.
- ✔ Some residents corresponded with the city in response to new street tree plantings. Specific complaints were related to planting locations, city planting policies, maintenance concerns, and sidewalk damage.
- ✔ Although two-thirds of the tree-related correspondence from 2007 to 2009 focused on complaints, one-third were requests for new street tree plantings or expressions of concern for existing street trees — in other words, positive responses to the MillionTreesNYC program.



A Family planting reforestation trees during a volunteer planting event at Van Cortlandt Park.

Street Tree Requester Survey³⁰

- ✔ Survey sample was composed of people who requested and received new street trees.
- ✔ NYC Parks managers included survey questions about willingness to engage in tree care in order to learn more about the requesters' motivations and stewardship interests.
- ✔ NYC Parks is building evaluation into program operations and in doing so can provide information for adaptive management and improve customer satisfaction.
- ✔ Preliminary results from two seasons of follow-up surveys for people who received trees in 2012 found that:
 - **Neighborhood beautification and environmental benefit** were the most common motivations for requesting a street tree.
 - The majority of respondents planned to take care of their new street tree.
 - **Lack of time and lack of a comprehensive online tree care workshop** were the primary barriers for the majority of respondents who said "no" to taking a tree care workshop.

Community-based Urban Tree Stewardship³¹

- ✔ Friends of Greenwich Street is one example of a neighborhood-based stewardship group that is hard at work stewarding the streets of Lower Manhattan.
- ✔ The founder of the group is an excellent example of the stewardship continuum (awareness, understanding, behavior). This person took a tree care training course, then founded a neighborhood stewardship group (in Tribeca), then linked that group to other neighborhoods (Chinatown, SoHo).
- ✔ The founder's citizen science research project found that civic stewardship improves street tree survival in a Manhattan neighborhood.

Report Your Care³²

- ✔ Graduate student capstone project examined how to bridge the gap between the number of MillionTreesNYC stewardship workshop participants (10,000) and the number of people reporting tree care activities through the Adopt a Tree website (214).
- ✔ Identifies barriers to reporting, including: perceived degree of commitment required, lack of easy internet access for reporting, and lack of awareness of MillionTreesNYC programs.
- ✔ Makes recommendations to improve the amount and quality of tree care reporting.

Natural Areas Volunteer Surveys³³

- ✔ One study from 2012 focused on the newly created Natural Areas Volunteers program, which recruits and trains volunteers to conduct ecological restoration and stewardship of NYC Parks' natural areas. The study makes recommendations for programmatic changes.
- ✔ Preliminary findings show:
 - There was a balanced distribution across several demographic groups.
 - Volunteers feel like they could recruit others, but have not done so consistently in the past.
 - Volunteers feel that the time expected of them is reasonable, and committed volunteers are willing to spend more time doing work for the program.

Stewardship of Natural Areas/ Reforestation Sites

MillionTreesNYC has used an unprecedented number of volunteers to plant new forests — thousands of New Yorkers have had the chance to plant a tree for the first time. NYC Parks sees tree planting as the “hook” for motivating more environmental stewardship and deepening residents’ commitment to tree care.

The campaign’s volunteer outreach has changed over time. By the campaign’s mid-point, the popularity of volunteer events had increased so dramatically that often, within 2 days of a new event being listed, more than the needed number of volunteers had signed up, indicating a high level of demand for these opportunities. MillionTreesNYC has consistently emphasized reaching out to diverse constituents and following best practices on the volunteer experience. NYC Parks has added volunteer maintenance and stewardship days, not just planting days, and has added a reforestation “train the trainer” program, which has empowered over 100 Natural Areas volunteers to lead their own tree care events.

Tree-planting Volunteers and Civic Engagement³⁴

Field-based interviews with reforestation volunteers found that:

- ✔ Tree planting goes hand-in-hand with civic engagement.
- ✔ People are mobilized to attend volunteer planting events through their personal networks, including workplace, civic groups, and family.
 - In particular, newcomer volunteers are mobilized this way
- ✔ People will travel across the city to volunteer

Examining Volunteer Motivations and Recruitment Strategies³⁵

Study found that

- ✔ Motivations vary for tree planting volunteers.
- ✔ Top motivations include:
 - environmental benefits of trees,
 - community service,
 - and benefits to youth.
- ✔ Even engaged volunteers have limited knowledge of benefits of urban forest, which points to the need for outreach and education programs.



Members of the Chelsea Garden Club (recipients of a 2012 MillionTreesNYC Mini-Grant) caring for street trees in Manhattan.



Volunteer tree planting
hosted by the New York
Restoration Project.

Stewardship on Private Lands

The range of organizations NYRP works with has expanded over time to include: for-profit businesses, religious institutions, community boards, council member-led organizations, neighborhood/block associations, and schools. NYRP staff reaches out to over 100 organizations each fall and spring to partner in tree giveaways, volunteer events, and hosting sites for workshops. The program aims to engage community organizations both within and outside NYRP's target neighborhoods (Northern Manhattan, South Bronx, and Central Brooklyn).

In order to ensure forest diversity and meet community needs, NYRP is working to maintain a mix of trees for giveaway each season that includes: 50% small, flowering trees (under 30' at maturity), 20% medium trees (30'-50' at maturity), 10% large trees (50'+ at maturity) and 20% fruit trees.

NYRP Tree Giveaway Survey³⁶

- ✔ 90% of respondents surveyed own their residence
- ✔ Strong majority of reactions to the giveaways were positive
- ✔ Other tree information respondents would like to know included pruning or composting workshops
- ✔ Larger trees are the most time consuming to give away. To mitigate this complication NYRP offers larger trees only at giveaways where larger staging spaces are available.

Stewardship Cross-site/Citywide

Change in Citywide Vegetation and Stewardship Groups³⁷

- ✔ Vegetation loss maps (1984-2002) helped make the case for MillionTreesNYC. This study is a more detailed drill down to understand the factors involved in that change from 2000–2010.
- ✔ Found that in shaping the distribution of vegetation citywide, civic stewardship matters, alongside government action and private development.
 - Even in the dense, built environment of NYC, there is change in vegetation over time.
 - Most neighborhoods lost vegetation from 2000–2010, but those that gained vegetation had more stewardship groups.

Education, Marketing, Awareness

There is a huge continuum of awareness of and attitudes toward trees across 8 million people. Education, marketing, and outreach have helped make MillionTreesNYC a 'household name' by helping people have a stronger, more positive relationship with trees.



Volunteer reforestation
planting event at
Highland Park.

Youth Education Programs³⁸

In order to successfully meet its long-term goals, MillionTreesNYC must educate people about trees, in particular young people who will be the stewards of tomorrow and will grow along with the trees. The original goal of the MillionTreesNYC Education Program was to educate all New York City students about MillionTreesNYC and the value of trees in the urban environment. The campaign also sought to be an umbrella for environmental literacy programs citywide.

- An **Educator Toolkit** was developed that shares environmental and tree-themed education programs among organizations.³⁹ Existing NYC Parks and NYRP programs were enhanced by the curricula and outreach strategies of several other longstanding environmental education organizations.

At the midpoint of the MillionTreesNYC campaign, the education mission changed its vision to expanding the capacity of environmental educators and providing support to the existing environmental literacy community. Similar to the change in strategy in the MillionTreesNYC stewardship program, this training of trainers allowed for a deeper reach and penetration into communities via existing organizations.

- Staff-based and virtual linkage created between MillionTreesNYC staff and Sustainability Coordinators from the Sustainability Initiative at the New York City Department of Education (DOE) has provided an effective way to continue to educate students as well as expand the capacity of environmental educators. This link enabled a tree curriculum to be integrated into DOE classes by teachers who chose to use it.

Marketing

- As a citywide campaign, MillionTreesNYC was tasked with elevating New Yorkers' general awareness about trees, the benefits of trees, and what people can do to get involved. MillionTreesNYC created 8 unique citywide PSA (public service announcement) campaigns via out-of-home media (ads in subways, buses, taxis, newspaper ads etc.), a merchandise line, a website, and social media.
- The marketing goals are to expand brand awareness and information about spring / fall tree planting seasons; engage stakeholders to take an active role in the initiative; develop creative marketing and public relations programs to sustain long-term public interest; and increase overall web traffic to the MillionTreesNYC website.
- Press events related to planting tree number 1, tree number 111,111, and tree number 250,000 served to raise awareness about the campaign and publicize planting progress.
- In 2011, MillionTreesNYC engaged in a strategic planning effort to develop a comprehensive messaging strategy to mark the 500,000th tree, the campaign's mid-point. This effort helped to personalize the initiative and create a connection with individuals.⁴⁰

MillionTreesNYC Website:

www.milliontreesnyc.org



58,856

Average number of unique visitors per year



253,853

Average pageviews per year



3,173

Current number of Facebook fans



3,516

Current number of Twitter followers



MillionTreesNYC Training
Program arboriculture
track trainees practicing
tree climbing.

Green Jobs And Training

The **MillionTreesNYC Training Program (MTTP)** was created to strengthen and diversify the workforce that would help to maintain the trees in the long-term. It focused on low-income 18-24 year olds who were previously disconnected from the workforce. As such, it had a dual program goal: to teach, educate, and motivate young adults to become more aware of and proactive toward the environment while they gained employment and life skills.⁴¹

Researchers and practitioners convened a **Green Jobs Roundtable**⁴² in 2010 to discuss the trainees' transition from the MillionTreesNYC training program to full-time paid employment. Based on lesson learned from the roundtable and from implementing the training program itself, several changes were subsequently made to the training program: a case worker was hired; a mentoring component was added; training included more focus on soft skills; additional trainings were included over time; and community projects were added in the trainees' own neighborhoods.

From Job Training to Green Jobs: A Case Study of MTTP⁴³

- ✔ This study used qualitative methods to examine trainees who had made the transition to full-time employment; in-depth semi-structured interviews with employees and supervisors provided insights into their experiences on-the-job.
- ✔ It found that there are common challenges associated with all job training and job placement programs serving 'at risk' young adults.
- ✔ Nonetheless, there are unique benefits to environmental work when compared to general employment, including: connecting to nature, helping the community, feeling of independence and self-worth, and sense of accomplishment.

Environmental Justice / Public Health / Air Quality

The MillionTreesNYC campaign took an explicit environmental justice approach. It sought to address the uneven urban forest that had developed because of differences in 311 tree requests by neighborhood. While individual tree requests continue, the campaign created a new block planting initiative starting with the six Trees for Public Health (TPH) neighborhoods: Morrissania and Hunt's Point in the Bronx, East Harlem in Manhattan, Far Rockaway in Queens, East New York in Brooklyn, and Stapleton in Staten Island. TPH neighborhoods were selected based on numbers of existing street trees, air quality, and childhood asthma incidence; researchers continue to further examine and explore this relationship.⁴⁴ Nonetheless, in these neighborhoods, there is a high correlation of poverty, lack of services, low air quality, and incidences of childhood diseases.

Selecting Tree Planting Locations to Enhance Air Pollution Removal⁴⁵

- ✔ This study creates a model for identifying high priority tree planting locations in New York City to improve air quality. The model also projects air quality and carbon storage benefits over time.
- ✔ It uses three indicators: pollution concentration, population density, and low canopy cover.

Coastal Forests, Green Infrastructure, and Storm Resiliency

Part of the impetus for PlaNYC has been to make New York City more resilient and better able to face challenges brought on by climate change. The plan called for integrated thinking about the city's aging infrastructure and what solutions could be brought forward to strengthen it in the future. For example, the DEP (NYC Dept. of Environmental Protection) Green Infrastructure Plan is part of a shift in thinking from over-reliance on grey infrastructure to the incorporation of green infrastructure into the urban matrix, such that the city can absorb and manage storm water on-site, in many dispersed locations. Since Superstorm Sandy struck New York City in October of 2012, the crucial importance of our natural resources and green infrastructure has been made more visible and acute.

MillionTreesNYC's reforestation efforts and tree plantings in the public right-of-way help contribute to that green matrix.

Coastal Forests

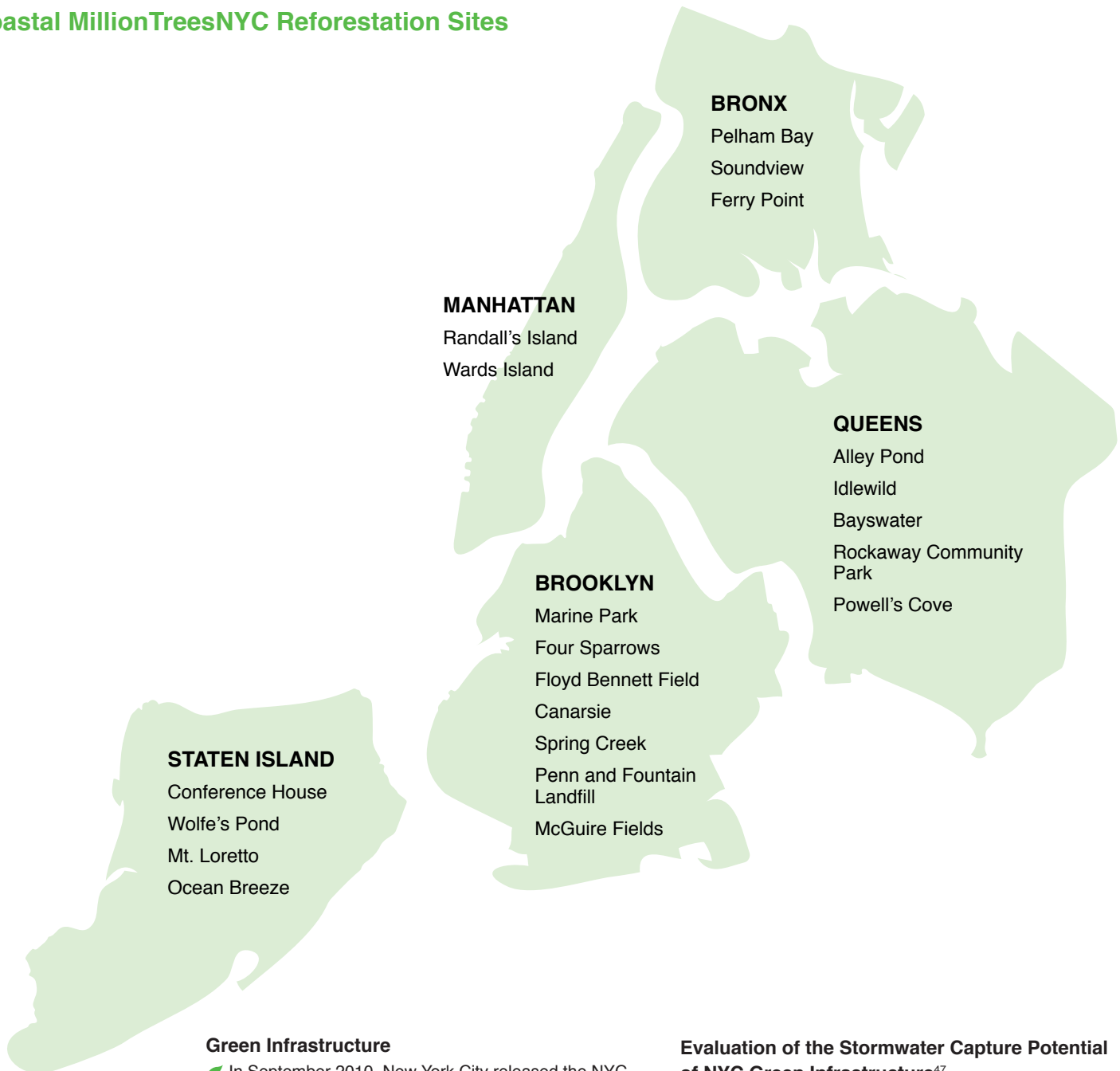
Through PlaNYC, New York City has invested more than \$20 million to restore native forests. New York City sits at the mouth of the Hudson River, and while upland forest that is common in the rest of the region does occur and thrive here, much of the landscape is shaped by the estuary and coastal forests along the waterfront.

Coastal and maritime forest communities are relatively rare in the region due to development but they are essential for linking habitats for bird migration. They also provide a variety of other valuable functions, including: food and seed sources, corridors for wildlife shoreline/land stabilization, aesthetic value, and some protection from climate change effects. These habitats are dynamic, and perpetually shifting in response to the winds and waves that act upon the adjacent beach and dune communities.



Greenstreet in autumn at Bruckner Boulevard and 138th Street in the Bronx.

Coastal MillionTreesNYC Reforestation Sites



Green Infrastructure

- ✔ In September 2010, New York City released the NYC Green Infrastructure (GI) Plan⁴⁶ which presents an alternative approach to improving water quality that integrates “green infrastructure,” such as swales and green roofs, with investments to optimize the existing system and to build targeted, cost-effective “grey” or traditional infrastructure.
- ✔ The GI Plan aims to capture rainfall from 10% of impervious surfaces in CSO (combined sewer overflow) areas through green infrastructure and other source controls.
- ✔ Because of PlaNYC and the GI Plan, city agencies like NYC Parks, DEP, and DOT are working more closely together toward common objectives and are no longer compartmentalized in their environmental missions.

Evaluation of the Stormwater Capture Potential of NYC Green Infrastructure⁴⁷

- ✔ This study aims to understand the ability of trees, shrubs, and green infrastructure to retain water during storm events and improve water quality.
- ✔ Drexel University researchers working with NYC Parks Green Infrastructure managers found that:
 - The design of the public right-of-way can influence stormwater capture. For example, a single greenstreet in Queens captured 39,000 gallons of stormwater during Hurricane Sandy.
 - Tree guards matter: tree pits with tree guards have higher stormwater infiltration rates than tree pits without guards.



Youth playing basketball
in a city park court.

Conclusion

As a partnership between government, civic groups, and residents, MillionTreesNYC hopes to continue to share information about our work with others in order to continue the conversation about urban environmental sustainability and collaborative governance. While we created new ground through this initiative, we worked with and learned from others and want to continue to share our knowledge with the public at large as part of an ongoing dialogue about urban forestry management best practices. We hope that others can learn from our experiences and work towards spreading knowledge about the benefits of trees and why we as a society should invest in planting and caring for them.

This document reflects current research that is published or in progress that MillionTreesNYC is aware of or engaged with in some way. It is by no means an exhaustive review, and the campaign invites further contribution and collaboration with researchers. If you are interested in conducting new research on any aspect of the campaign, please contact info@milliontreesnyc.org.

Thanks to all of the researchers who have contributed their time, thoughts, and resources to these endeavors. Particular thanks go to all of the members of the MillionTreesNYC Research and Evaluation Subcommittee and the attendees of the subcommittee's research workshop and symposium.



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