HOW TO PLANT A MILLION TREES

A CASE STUDY ON THE MILLIONTREESNYC INITIATIVE

Columbia University M.S. Sustainability Management
Integrative Capstone Workshop Fall 2017

COLUMBIA UNIVERSITY
School of Professional Studies

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Acknowledgements

This Case Study was prepared for: The Nature Conservancy

Our capstone team would like to thank Emily Maxwell and Philip Silva of The Nature Conservancy for their support and guidance throughout the course of this project.

This work would not have been possible without our faculty advisor and mentor, George Sarrinikolaou. We thank him for his direction, patience, and encouragement.

Lastly but most importantly, we would like to thank our 23 interviewees for speaking, meeting and corresponding with us, providing their valuable insights, and sharing their experiences. They were the central pillars on which this case study rests, and we are truly grateful for their time and cooperation.

(Cover Image Source: Peregoy, 2016)

Interviewees

New York City Department of Parks and Recreation (NYC Parks)

Ellen Arnstein was involved in Million Trees NYC (MTNYC) from 2009 to 2011. She started as a Volunteer Coordinator and then became Volunteer Manager. She recruited and trained tree planting volunteers and tracked the performance of large scale volunteer tree planting events. She also developed a curriculum for street tree care programs, and coordinated with other organizations that contributed to tree planting, such as Trees New York, Queens Botanical Gardens, and New York Botanical Garden.

Jeremy Barrick started his work for MTNYC as an arborist for the Forestry department in 2008. He was promoted to Deputy Chief of Forestry Horticulture and Natural Resources, in charge of street trees, in 2011, where he oversaw MTNYC's street tree program until 2015.

Katerli Bounds was the Forest Restoration Crew Leader, working to plant trees on Staten Island, from 2008 to 2011. She was then named Director of Forest Restoration, a position she held until 2014. From 2014 until the end of the initiative she was the Director of Stewardship, where her main responsibilities were to manage the nature-based volunteer work and stewardship for the city.

Christine Dabrow was involved with MTNYC in its entirety, from 2007 to 2015, as the Director of Marketing for NYC Parks.

Susan Donoghue Through her role as Senior Advisor and Assistant Commissioner for Communications and Strategic Initiatives, Susan managed NYC Parks' implementation of New York City's sustainability plan (PlaNYC) initiatives, MTNYC being a central one.

Jennifer Greenfeld was involved in the MTNYC initiative in its entirety, from 2007 to 2015. During the first six months of the initiative, she served as the program's Acting Director. Subsequently, she was named Street Tree Planting Director, where her responsibilities included program management, tree selection, and training. She was then named Deputy Chief for Forestry Horticulture and Natural Resources, in charge of natural forested areas.

Bram Gunther was involved in MTNYC in its entirety, from 2007 to 2015, as Chief of the Horticulture and Natural Resources Division.

Liam Kavanagh was involved in MTNYC in its entirety, from 2007 to 2015, as first Deputy Commissioner of NYC Parks. His responsibilities included oversight of the Horticulture and Natural Resources Division.

Jackie Lu was involved in MTNYC in its entirety, from 2007 to 2015, as the Director of GIS and Analytics. Her responsibilities included data development and analysis to support the planning and execution of the initiative. She also coordinated the organization's shared research agenda with the US Forest Service.

Morgan Monaco served as Director of the MTNYC initiative from 2009 to 2013. Her responsibilities included oversight of all aspects of the program and ensuring accurate tree counts.

Andrew Newman was MTNYC's Communications Manager from 2008 to 2015. His responsibilities were to maintain official tree counts and to manage the MTNYC website, social media, and advisory board. He was also involved with volunteer planting and stewardship events.

Matthew Stephens served MTNYC as a forester, and later Director of Street Tree Planting. His main responsibilities were to ensure street trees were planted effectively.

Fiona Watt was involved in MTNYC from 2008 to 2010 as Chief of Forestry and Horticulture and subsequently Assistant Commissioner of Forestry, Horticulture and Natural Resources. Her responsibilities included conducting the analysis of the costs and benefits of tree planting in New York City.

New York Restoration Project (NYRP)

Drew Becher served as Executive Director from 2006 to 2010. He was responsible for initial planning and implementation procedures of MTNYC and oversaw NYRP's involvement in the initiative.

Amy Freitag served as Executive Director of NYRP from 2010 to 2014. Her key responsibilities were to plan, implement, and oversee the initiative.

Darin Johnson served as Vice President of Strategic Initiatives, Marketing and Policy from 2007 to 2010. He first Joined the initiative as a consultant to create a marketing campaign and change the program from just tree planting to a public engagement project.

Max Litt was involved in MTNYC from 2008 to 2012. From 2008 to 2010, he was a Project Coordinator and supported the design of tree planting plans for private lands, such as hospitals, residential campuses and highway reforestation projects. From 2010 to 2013 he was a Senior Project Manager, oversaw the execution of tree planting projects and documented project milestones.

Deborah Marton was the Senior Vice President of Programs from September 2011 to 2014, and subsequently became the Executive Director – a position she holds as of the publication of this case study.

David Moore served as a Forestry Manager from March 2008 to 2011. He was responsible for the day-to-day management of tree-planting operations, including managing contractors, organizing volunteer tree planting events, and the procurement of trees.

Sophie Plitt was as a Forestry Coordinator from 2011 to 2013. Her key responsibilities were oversight of contractors and volunteers who participated in tree planting, and communications. She also collaborated with city agencies (e.g. New York City Department of Transportation, New York City Housing Authority, libraries, schools) to plant trees on some city-owned properties. She also conducted outreach to private property owners to have trees planted on their land.

Claire Turner was involved in MTNYC from 2011 to 2015, she began working for NYRP as an AmeriCorps volunteer and later became Project Manager for Tree Giveaways.

Trees New York

Nelson Villarrubia is the Executive Director of Trees New York, a tree stewardship and advocacy organization in New York City. He was part of the early planning of the MTNYC initiative, and was later involved in the planting, maintenance, and stewardship of trees of land owned by the New York City Housing Authority.

Mayor's Office

Angela Sung Pinsky was the Deputy Chief of Staff to the Deputy Mayor for Economic Development at the time, Daniel Doctoroff. She was involved in the early research and planning for MTNYC from 2005 and 2009.

1. Introduction

The Million Trees New York City (MTNYC) initiative was a public private partnership between the New York City Department of Parks and Recreation (NYC Parks) and the New York Restoration Project (NYRP), a nonprofit organization. The purpose of the initiative was to plant one million trees in the city between 2007 and 2017. The initiative was formalized in April 2007 as part of PlaNYC, New York City's sustainability plan (Campbell, 2013).

The initiative kicked off on October 9, 2007, when Mayor Michael Bloomberg and Bette Midler, the actor and founder of NYRP, publicly announced MTNYC. The project, which was one of 127 PlaNYC initiatives to make New York City more sustainable by 2030, aimed to enhance the urban environment, improve property values, save energy, and improve New Yorkers' living standards by planting one million trees throughout the five boroughs. Trees in cities have been shown to provide a wide range of benefits, such as shade that lowers surface air temperatures, the absorption and retention of storm water, improvement of air quality, the sequestration of carbon dioxide, and enhancing the aesthetics of neighborhoods (Lu et al., 2014).

The partnership combined the strengths of its two members: NYC Parks' expertise in urban street tree planting and management, and NYRP's expertise in marketing and fundraising. As a private organization, NYRP also had the flexibility that was needed to pursue tree planting on private land. The responsibility for tree planting was initially split 60% and 40%, between NYC Parks and NYRP. NYC Parks was responsible for planting trees on public land, such as parks and sidewalks, and NYRP was responsible for tree planting on private land, such as school grounds, places of worship and residential properties. A memorandum of understanding (MOU), which both partners signed also indicated that NYRP was to raise $35 million for the project (Campbell, 2013).

The initiative was successful in reaching its tree planting goal. In October 2015, the one-millionth tree was planted in the Bronx, two years ahead of schedule. Of the million trees planted over the eight years of the campaign, 280,000 were in the Bronx, 185,000 in Brooklyn, 75,000 in Manhattan, 285,000 in Queens, and 175,000 in Staten Island. The project was also successful in engaging New Yorkers in caring about trees, and increasing awareness about the benefits of trees on the environment and on the city (Lu et al., 2014). Although the goal was reached, the final split of tree plantings between the two partner organizations changed throughout the program. Ultimately, NYC Parks planted approximately 75% of the million trees and NYRP's was responsible for roughly 25% of plantings (Foderaro, 2015).

Each of the organizations, and the partnership itself, encountered numerous problems throughout the program's implementation. These problems had to do with accountability, funding, communication, and capacity to plant and maintain trees. The problems stemmed

mainly from the differing missions, motivations, capacity, and expertise of NYC Parks and NYRP. NYC Parks was motivated by a sense of public service and accountability in spending public funds, and it brought technical expertise and economies of scale to urban forestry operations. On the other hand, NYRP was guided by the belief that "all New Yorkers deserve beautiful, high-quality public space within ready walking distance of their homes" (About NYRP, NYRP). As a private, nonprofit organization, NYRP had the ability to solicit donations, conduct marketing and public outreach, and hold innovative events such as tree giveaways (Campbell, 2014).

This case study examines the aspects of MTNYC that were successful and those that were not, focusing on the planning, management, and implementation of the project by NYC Parks and NYRP. The information presented is based on a literature review, as well as interviews with twenty-two former and current staff members of the two organizations, as well as the executive director of Trees New York, another organization that took part in the project. Some of the interviewees worked at the highest levels of their respective organizations, and others held lower level but essential positions in the implementation of MTNYC. We start by analyzing both NYC Parks' and NYRP's accomplishments and challenges with the project individually. Then we discuss the high and low points of the partnership. We conclude with a discussion of the interviewees' thoughts on how such a project could be better executed today. Lastly, we provide our own recommendations for carrying out large scale urban forestry initiatives, based on our observations about the strengths and weaknesses of MYNYC.

2. Before MTNYC

Before the Million Trees NYC initiative, NYC Parks had several tree-planting projects underway, informed by scientific research into the benefits to trees in urban areas. The agency had embarked on a program called Trees for Public Health (TPH) in 2005, which was a continuation of the 2001 Greening for Breathing project (Loquine & Greenfeld, 2008). The goal of TPH was to increase tree canopy cover in areas with high rates of child asthma, as some research suggested that trees could improve air quality (Campbell, 2013). One neighborhood from each borough was chosen, based on the criteria of street tree stocking level (the number of planted trees in the existing potential space for street trees) and child asthma rates (Loquine & Greenfeld, 2008). In 2006, NYC Parks commissioned the US Forest Service to conduct an analysis on the City's canopy cover and how the City could achieve a target of 30% canopy cover (Grove et al., 2006). This target was based on Lulely and Bond's study in 2002, which recommended that NYC increase its canopy cover to 30% to improve air quality. In April 2007, NYC Parks announced results from the 2005-2006 tree census, which documented 592,130 street trees in the city, a 19% increase over the census conducted 10 years earlier (2005 – 2006 Trees Count! Street Tree Census).

In 2006, around the same time that the US Forest Service was conducting its study of the canopy cover in NYC, Bette Midler announced during a fundraising event that she wanted to plant a million trees in the city. Her announcement was likely inspired by Los Angeles' million trees project, which had begun earlier that year. After the spring fundraiser, Midler initiated discussions with high-ranking city officials about planting a million trees in NYC, and calculations done by NYC Parks at the time showed that planting one million trees would get NYC close to a canopy cover of 30%. Parks also determined that a one million tree planting goal would be easier for the public to understand than a goal of increasing NYC's canopy cover (Campbell, 2013).

At the same time, Mayor Bloomberg's administration was developing a citywide plan for a "cleaner and greener" city (PlaNYC, 2007). PlaNYC brought together 25 different city agencies to address the issues that stemmed from the projected increase in the city's population (PlaNYC, 2011). The plan was organized into ten areas of interest, including "open space," which included a goal of ensuring that all residents lived within a 10-minute walk of a park and a goal to raise the street tree stocking level from 74% to 100% (PlaNYC, 2007).

To get support from high-level city officials for MTNYC, NYC Parks presented the environmental, social, and economic benefits of the project to City Hall officials. The agency cited the findings of i-Tree STRATUM, a USDA Forest Service urban and community forestry software program (Campbell, 2013), which estimated that the annual benefits of New York City's urban forest was $121.9 million per year, with an average of $209 per tree per year. Estimates also showed that for every dollar spent planting street trees, the benefits amounted to $5.60 (Peper et al., 2007). Adrian Benepe, the Former Commissioner of NYC Parks who proposed the project to top officials in City Hall, attributed City Hall's positive response to the U.S. Forest Service analysis, which showed that MTNYC would deliver a return on investment of over 500% measured on its environmental and social benefits. This analysis resonated with the Office of Management and Budget. That high-level city officials, such as Deputy Mayor Patti Harris, had an affinity for parks and greenery was also helpful for the realization of the project (Centre for Public Impact, 2016).

3. NYC Parks

Although NYC Parks had significant tree planting experience, MTNYC was its first foray in an urban forestry project of this magnitude. Many interviewees identified scale as the biggest challenge of MTNYC. According to Matthew Stephens, former Director of Street Tree Planting for NYC Parks, the agency was planting a daily average of approximately 750 trees at the peak of the project. It was the most trees that NYC Parks had ever planted in a day. The number translated to about 100 trees an hour during an eight-hour work day, and about one tree every 38 seconds. By comparison, Stephens said, most cities plant 400-700 trees in a year. The next largest street tree

planting programs, those of Chicago and Washington DC, planted approximately 10,000 – 12,000 trees per year. The large scale of MTNYC tested the management of the program.

3.1. Expertise & Capacity

NYC Parks' history of planting trees dated back to the 1890s. According to Stephens, the agency had the experience and expertise to plant street trees on a large scale, and had developed guidelines for street planting, including how to work with contractors on planting street trees. Many interviewees from NYC Parks said the organization had the scale and capacity to do its share of the project. Indeed, NYC Parks met its initial campaign goal of 600,000, and then exceeded it, planting over 750,000 trees two years ahead of schedule. Nevertheless, as the scale of MTNYC was larger than any tree planting project that NYC Parks had worked on before, the organization was forced to adapt and enhance its operations.

According to Jeremy Barrick, Deputy Chief of the Forestry Department, NYC Parks invested in its personnel to ensure the success of MTNYC. Before MTNYC, only 15 employees worked on planting and stewardship and a total of 1,200 volunteers worked on counting trees. By the end of MTNYC, there was a total of 50-60 employees and 30,000 volunteers working on the project. NYC Parks' investment in a larger team with greater expertise was one of the key reasons behind the accomplishments of MTNYC.

Over time, NYC Parks improved its capacity for tree planting by depending less on professional tree planting staff and contractors and relying more on volunteers. Volunteers became especially important as funding for the project decreased, the agency sought to recruit volunteers from communities both to plant and care for trees. Ellen Arnstein, Special Event and Volunteer Manager at NYC Parks, said that MTNYC initiative benefited from the volunteers because they shared a sense of ownership and were enthusiastic in maintaining trees in their own neighborhoods.

3.2. Tree Procurement

One of the first and most important steps that NYC Parks took to prepare for MTNYC was to transform the way the agency procured trees. Before MTNYC, NYC Parks hired landscape contractors on a seasonal basis to plant trees. The contractors were responsible for selecting and planting the trees (Campbell, 2013). According to Jennifer Greenfeld, the first Acting Director of MTNYC and later the Director of Street Tree Planting at NYC Parks, this approach limited the species types and quality of trees available to Parks. These limitations came to the surface as the number of trees needed for MTNYC grew exponentially.

To solve this problem, NYC Parks developed a new tree procurement program. The agency entered into long-term contracts with regional nurseries in the mid-Atlantic and the east coast, allowing for trees to be sourced and grown to the department's specifications and quality standards (Campbell, 2013). The new procurement process allowed NYC Parks to have access to higher quality trees, better prices and a broader diversity of trees, from 20 to 30 previously to 275 with the new procurement strategy, according to Stephens. Greenfeld said that these contracts accounted for one of MTNYC's greatest accomplishments, providing NYC Parks with much better plant material and representing a significant shift in how the agency operated.

3.3. Street Trees

NYC Parks was tasked with planting trees in the public right of way (PROW), also known as street trees. At the start of MTNYC, NYC Parks had a goal to plant 220,000 street trees. According to Greenfeld, the agency identified the location for these trees from a tree census conducted in 2005-2006. To allow for planting at this large scale, the agency changed its policies for street tree planting. Barrick commented that NYC Parks had traditionally planted street trees based on requests from property owners (renters were previously not permitted to make requests), and that when MTNYC started, NYC Parks independently identified potential space along the streets for planting trees, and began to implement "block planting," where entire blocks were lined with trees. The agency also began to allow renters' requests for street trees. Interviewees confirmed that the six neighborhoods previously identified in Trees for Public Health (TPH) program became the first targets for block planting.

(Image Source: @MillionTreesNYC, 2016)

NYC Parks continued to conduct street tree planting by request, as well as block planting in neighborhoods of need. Greenfeld explained that when planting in the first six TPH neighborhoods was completed, NYC Parks worked with partners at the US Forest Service to do an in-depth prioritization analysis to identify the next neighborhoods for block planting, based on a variety of socioeconomic and health indicators.

3.4. Natural Areas

According to the MTNYC Finale Highlight document provided by NYC Parks, over 600,000 of the million trees were in parks and other natural areas, such as woodlands, meadows, marshes and wetlands, through afforestation and reforestation practices. NYC Parks' Natural Resources Group (NRG), which later merger into the Forestry, Horticulture and Natural Resources division, managed these areas. When MTNYC started to expand its capacity in reforestation, NRG contracted with EDAW, the environmental design firm, to identify potential planting sites, design and implement three pilot reforestation sites and develop a guide for reforestation (McPhearson, 2010; Campbell, 2013).

The relationship between NRG and EDAW was marred by miscommunication, leadership problems and an unrealistic timeline (Campbell, 2013). According to Greenfeld, who was not part of the process at the time, but who heard testimonials from colleagues later, the consultants didn't know NYC well and identified impractical sites for tree planting. For example, the consultants designated Kissena Park in Queens as a planting site, but their design for the project was flawed and had to be changed midway through the project. Greenfeld said that this was an important learning process for NYC Parks.

Bram Gunther, Chief of Forestry, Horticulture, and Natural Resources at NYC Parks, stated that EDAW had completed the job it was asked to do, producing a wide list of planting sites throughout the city. EDAW also provided a broad analysis of what it would take to complete the plantings and potential obstacles could arise. Gunther said it became more complicated when EDAW tried to put together the "Guidelines for Urban Forest Restoration." He went on to say that EDAW wasn't producing the document the way NRG wanted primarily because EDAW had a landscape architecture background, whereas NRG emphasized forestry and ecology. Eventually, NRG wrote the guidelines themselves, as they were dissatisfied with EDAW's work.

3.5. Site Preparation

The scale of the MTNYC initiative also forced NYC Parks to reconsider how to prepare sites for tree planting. According to Greenfeld and Katerli Bounds, the former Director of Forest Restoration at NYC Parks, one of the biggest challenges the agency encountered in the beginning was to prepare planting sites sufficiently to meet the planting goal. Early on in MTNYC, it took 3 to 5 years to prepare a site in parkland if planting conditions weren't ideal, a pace that would have been unsuitable for large scale planting. As the initiative proceeded, NYC Parks improved its overall efficiency by changing the way it worked with contractors and by improving site selection. In addition, the agency learned to start the preparation process early enough so that it would have enough sites that had the ideal ecological conditions for trees. Bounds concluded

that if NYC Parks managed to streamline the site preparation process in the beginning of MTNYC, it might had been able to complete the entire project within 5 years.

Similarly, Gunther said that the size of trees could significantly affect the planting process. He explained that in the beginning of the initiative larger trees were procured, which were not only more expensive to plant but also made it more difficult for volunteers to carry out the job. As a result, smaller trees were procured directly from local nurseries to address this issue and improved the overall efficiency of both planting and stewardship.

3.6. Tree Care and Maintenance Practices

(Image Source: Dietrich, 2015)

NYC Parks knew it needed to think about the survival of newly planted trees, which entailed changing the existing tree maintenance practices, according to Stephens. In the first year of MTNYC, NYC Parks stopped the practice of paving around trees, as doing so restricted the amount of water reaching the roots. In addition, NYC Parks enforced a new policy that ensured that newly planted trees were watered every two weeks during the growing season. Initially, watering crews of 75 to 100 people were tracked through Excel sheets and phone calls. But as more trees were planted throughout the city, it became increasingly difficult to keep track of the watering process. Therefore, NYC Parks switched to a cloud-based system and placed tags with QR codes on trees, starting in 2011. The street tree watering team scanned the tags, which made it easier to track tree maintenance and store the data in the cloud-based system.

3.7. Community Resistance

When NYC Parks began block planting in TPH neighborhoods, the agency learned that residents had various reasons for not wanting trees on their blocks or near their homes, and that the new block planting strategy could lead to significant community resistance. As a result, NYC Parks was forced to reassess its street tree-planting strategy and undertake more rigorous community engagement, according to Greenfeld, Stephens and Andrew Newman, Project Manager at NYC Parks. To communicate with residents about upcoming tree-plantings, NYC Parks first tried sending postcards to residents in planting areas, but found this method to be ineffective. A better

strategy was to place sidewalk stickers at locations where trees would be planted in the coming season. The stickers gave people notice, taking away the element of surprise, which seemed to be what was most upsetting to residents. The strategy also saved NYC Parks the time it spent fielding complaints from residents who were opposed to tree-planting. The stickers elicited calls from people who were curious to learn more about tree planting, and who subsequently might tell others about MTNYC.

3.8. Volunteers and Stewardship

Although community engagement and stewardship were important aspects of the initiative from the beginning of MTNYC, the early years of the campaign placed greater emphasis on tree planting and counting. Many NYC Parks interviewees spoke about the increased emphasis that NYC Parks placed on long term tree care and how insufficient maintenance led to the loss of trees. The proper stewardship of trees, however, required additional funding, which was limited in part because of the financial crisis of 2008.

(Image Source: Kunzler, 2014)

Budgetary restrictions forced NYC Parks to rely more and more on volunteers both to plant and care for trees. Stewardship programs focused on training a committed group of volunteer leaders that would continue to support the campaign after a new mayor came into office (Campbell, 2013). These programs worked towards creating events for volunteers that would attract a variety of New Yorkers based on their level of commitment. The stewardship programs grew to play such a crucial role in the success of MTNYC that by 2013 NYC Parks created a new position, Director of Stewardship, to apply the expertise gained from MTNYC to other programs within NYC Parks (Campbell, 2016). Liam Kavanagh, Deputy Commissioner of NYC Parks, emphasized the importance of volunteers to the program, and said that “The volunteers were really an amazing array of people. They came from all over the city, they came from outside the city, and they would plant upwards of 10,000 trees in a day... it became a very successful and popular part of the program.” Ellen Arnstein from NYC Parks, who oversaw volunteers and stewardship programs, explained that knowing how to leverage the network of organizations in the different communities was important to the overall success of the initiative.

While these volunteer events allowed for greater community engagement and reduced financial costs to plant and maintain trees, they also created additional challenges. Greenfeld explained that preparing for volunteer events required extensive resources to execute. While the purpose of these events was for volunteers to help NYC Parks by planting trees, NYC Parks also had to ensure that volunteers were having a pleasant and enjoyable experience. This concern required providing volunteers with refreshments, ensuring that planting sites were clean, etc. One of the challenges NYC Parks faced was the difficulty in finding the balance between preparing the sites to meet volunteer expectations and preparing the sites for proper and successful tree planting. Greenfeld said that "over time we became more sophisticated in understanding what we needed to do to make successful events, and to learn about how we needed to prepare sites, which sites were most appropriate for which kind of work that we were doing… it took us awhile to sharpen our skills and target the right tools for the right kind of space that we were working in."

4. NYRP

4.1. Expertise and Capacity

NYRP is a non-profit organization, founded by Bette Midler, a celebrity actor and respected public figure in New York City. According to Kavanagh, NYC Parks' partnership with NYRP was "extremely important for the success of the program. They did a lot to keep the million trees idea fresh in people's minds… they have access to a lot of resources and people that you wouldn't come across in the Parks Department or city government... they bring a certain celebrity cache; Bette Midler was able to engage a group of people that we at the Parks Department would not normally interact with." NYRP also had extensive fundraising experience and capacity, which it used to obtain the funding and public support needed to carry out the project.

(Image Source: Bobey, 2011)

NYRP was responsible for tree planting on properties outside of NYC Parks' jurisdiction. The initial plan was to plant 100,000 trees on public housing campuses, schoolyards, playgrounds, cultural institutions and other properties that were accessible to the public, as well as 300,000 on private properties (Lu et al., 2009). However, NYRP

was unable to meet this initial goal because of insufficient expertise and capacity in tree planting, according to several interviewees.

NYRP had no prior large-scale tree planting experience and limited staff at the start of the project. According to Darin Johnson, the VP of Strategic Initiatives and Head of Marketing in NYRP, the organization had less experience in tree planting than NYC Parks, and, therefore, worked closely with the agency early in the campaign. During the first planting season, NYRP had only three project coordinators to manage tree planting sites for around 10,000 trees, which was insufficient, according to Max Litt, one of NYRP's first project coordinators. Former NYRP employees said that early in the program, staff was specialized by property type (i.e. schools, churches, hospitals, etc.), but that this was not an effective structure for large scale tree planting because it was very expensive and time consuming.

4.2. Planting on Private Land

To secure planting sites on private land, NYRP contacted individual homeowners, landowners and managers, residential and commercial developers, landscape architects, and local communities (Lu et al., 2014). NYRP also worked with the New York City Housing Authority (NYCHA) and Co-Op City in the Bronx, a privately managed housing development, with which it forged license agreements to plant trees.

Bounds cited logistical hurdles in running a planting campaign on private land. Working with private property owners and procuring trees were complicated tasks and there were few people to carry them out. (By contrast, NYC Parks had a more streamlined process, making it easier for the agency to plant trees.) Both Litt and Amy Freitag, Executive director of NYRP between 2011-2014, said that the process of coordinating approvals for each planting site was time-consuming and cumbersome. Each project coordinator was responsible for managing third party agreements and contracts to ensure property owners would uphold obligations to maintain trees. Many interviewees from NYRP cited these negotiations with land owners, which NYRP had no previous experience with, as one of the main obstacles of MTNYC.

NYRP also faced challenges in working with private property owners to secure long-term stewardship commitments to ensure tree survival. Property owners were hesitant to sign contracts that guaranteed their commitment to maintain newly planted trees on their properties, according to Litt. Property owners and managers were also unwilling to make a legal commitment to maintain trees, even if the trees were provided free of charge. Planting on private land also proved to be much more expensive than originally anticipated. According to Deborah Marton, who joined NYRP in 2011 as Senior Vice President of Programs, planting a single tree on a school or churchyard could cost up to $10,000 when considering staff time.

4.3. Choosing Planting Sites

Many interviewees from NYC Parks stated that the agency provided NYRP with tree planting prioritization data, but that NYRP did not use the data sufficiently. According to Greenfeld, as part of its prioritization process, Parks had identified potential planting sites not only on public land, but also on private land, such as backyards and private institutional property. Greenfeld voiced her disappointment that NYRP did not take advantage of this analysis and did not seem to have a long-term strategic approach to planting decisions. She said that NYRP's low staff retention meant that the information that Parks provided was picked up and dropped at different times based on who was leading NYRP.

According to Amy Freitag, NYRP inherited a formula of how to choose tree planting sites, but had to change this formula over time for various reasons. Other NYRP staff said that each coordinator decided on which tree species to plant based on "Recommended Urban Trees" (a case study from Cornell University on tree and site selection). Overall, it was difficult to discern from our interviews how NYRP selected planting sites.

Several interviewees said that the planting process for NYRP was quite different from that of NYC Parks because NYRP needed approval from private landowners before proceeding. First, an NYRP coordinator would meet with the landowner for a consultation to understand land use by its occupants. The coordinator then produced a proposed layout for tree planting for the property owner's review. The coordinator would then get feedback from the property owner and had to change the proposed planting plan to address any concerns. After the coordinator revised the plan, contracts for tree care and maintenance would be signed and NYRP would proceed with planting operations. This process resulted in significant differences between the initial spatial analysis of tree planting locations and actual tree planting.

NYRP was also tasked with planting on NYCHA properties, and worked together with NYCHA to decide where to plant trees. However, some NYC Parks interviewees said that they did not think the planting potential on NYCHA properties was maximized by NYRP.

4.4. Funding Difficulties and Strategy Change

NYRP set a $35 million fundraising goal for MTNYC in 2007. Two of the main donors to the campaign were Bloomberg Philanthropies and the David Rockefeller Foundation, who each pledged $5 million in 2008, and subsequently donated the money via the Mayor's Fund. This funding was essential in enabling NYRP to carry out its part of the initiative. Early in the campaign, NYRP also managed to secure three corporate sponsors: Toyota, BNP Paribas, and Home Depot. Over time, however, it became increasingly difficult for NYRP to raise the remaining funding.

Toward the latter part of the campaign, there was donor fatigue and the funding that NYRP received for the campaign decreased substantially (Campbell, 2013).

In 2011, when Marton joined NYRP as Senior Vice President of Programs, she conducted an in-depth financial analysis of future expenditures and concluded that NYRP would be unable to raise the funds required to complete its work. The time and labor intensity of NYRP's planting process made it expensive, and forced the organization to alter the way that it conducted its tree planting operations in three main areas:

NYRP started focusing more on reforestation as Marton came to see that planting on paved surfaces, such as schoolyards, required that the pavement be removed and that a tree pit had to be dug – tasks that required both time and money (up to $10,000 per tree, including labor). So-called reforestation plantings, however, allowed NYRP to plant more small trees at a lower cost.

NYRP also began to count trees sold by Home Depot stores around the city toward its tree planting goal. NYRP created a formula for counting these trees, where only trees of certain size and in certain locations were considered part of the MTNYC initiative. The formula also discounted the total count of these trees by about 25% to account for trees that would end up outside of New York City. NYRP worked with NYC Parks to determine acceptable species and tree size, and it obtained annual data from Home Depot on the number of trees sold per zip code.

In 2013, NYRP also began organizing tree giveaways, especially in low-income and low canopy-cover neighborhoods, which it identified through spatial analysis. NYRP also sought to connect with community organizations, such as churches and the Boy Scouts, which would be willing to host tree giveaway events. These trees were large enough to count toward the MTNYC initiative, but small enough to be carried away by residents. NYRP organized giveaways in areas with low-rise buildings, where more people might have access to front or back yards. NYRP's new giveaway strategy was also helpful in communicating with people about proper tree planting and stewardship. To ensure that the free trees were properly taken care of and maintained, NYRP also provided a link to the Cornell Fruit Tree Care Guide and a tree planting and care guide video on its website. NYRP subsequently evaluated the tree giveaway effort and found an 85% survival rate.

Tree giveaways allowed NYRP to procure smaller and less expensive trees, to transfer the labor of planting them to residents, and to spend little on advertising. The cost of staffing these events was relatively low as only two NYRP staff members were required to manage them. Claire Turner, who was the Project Manager for Tree Giveaways at NYRP, said that outreach efforts made the program possible. Part of the outreach simply entailed providing community organizations with flyers and advertising the tree giveaways on social media. NYRP also relied on these organizations to inform residents about the events.

(Image Source: NYRP, 2014)

5. Tree Planting Goal Change

The original goal to plant 40% trees on private land (400,000) was first reduced to 30%, and subsequently to 25%, according to numerous interviewees. In seeking to understand the reasons for the reduction, our interviews elicited various responses, which we discuss below.

Freitag said that the main reason NYRP was unable to meet its original planting goal was lack of money. It simply proved too expensive for NYRP to plant so many trees. Johnson, who left NYRP around the time that Freitag joined the organization, said that the reason was that NYRP had difficulty finding enough planting sites. Litt, who left NYRP in 2012, offered a different perspective. He asserted that the causes for the change in goals had to do with the difficulty of securing contracts and approvals for each site, as many property owners and managers were unwilling to make the two-year stewardship commitment, and that NYRP had too few staff members responsible for tree planting.

NYC Parks interviewees, too, expressed differing opinions about the reductions in the numbers of trees planted on private land. Greenfeld said that it was difficult to sustain fundraising for the same cause over the program's 8-year run, and that NYRP, itself, may have lost some interest in the initiative over the years. Morgan Monaco, director of MTNYC between 2009 and 2013, said that lack of sufficient staff and funding were the main reasons. Gunther stated that the goal was

reduced because of the inherent difficulty in planting on private land. Sue Donoghue, senior advisor and assistant commissioner for communications and strategic initiatives at NYC Parks, said that insufficient interest from private property owners and an underestimating the difficulty of planting on private land were the key reasons.

Bounds also cited logistical hurdles in running a planting campaign on private land. Working with private property owners and procuring trees were complicated tasks, especially compared with the streamlined tree planting process of NYC Parks. The lack of funding was also a contributing factor, according to Bounds. Stephens said that part of the problem was NYRP's site selection, which made tree planting more expensive than it expected.

6. Communications and Partnership

Numerous interviewees reported that the lack of communication between NYC Parks and NYRP presented a major hurdle in the implementation of MTNYC. The literature on the initiative indicates that one of the ways that the two partners planned to communicate was through the formation of an advisory board. The board comprised seven subcommittees, including Research and Evaluation, Tree Planting, Education, Stewardship, Public Policy, Marketing and Green Jobs. These subcommittees were to meet at least twice a year to update on their progress or goals (Lu et al., 2014). However, the two organizations largely worked independently, and the meetings had little value, and the board was disbanded in 2011 (Campbell, 2013).

According to Deborah Marton, there were many monthly meetings between NYRP and NYC Parks to report on the number of trees planted, and the communications between the two organizations "were good… but if a municipality is going to partner with a non-profit, there needs to be an understanding of the disparity in [financial] resources." It was stated that communications with NYRP started off well, in part because of the efforts of Johnson. When he left NYRP in 2011, communications between the two organizations became infrequent and ultimately ceased. Most interviewees from NYC Parks and NYRP spoke about the tension and lack of sufficient communication between the two organizations. Johnson said that the conflicting personalities of the leaders of the two organizations contributed to this breakdown.

Barrick called the partnership with NYRP a "cryptic relationship". He went on to say that NYRP "didn't have the experience, they learned it on-the-job, but for NYC Parks and the Forestry Department, we had done it before. NYRP learned from us about how to plant and mobilize funds and manage volunteers…" there were "bumpy rides in understanding who's doing what and gaining trust in working together." Some NYC Parks interviewees said that low employee retention and the inherent differences between the two organizations led to the communication

problems. Several NYRP interviewees said that the low retention had to do with the heavy workloads, inadequate staffing, and modest compensation.

7. Discussion: Future Tree Planting Projects

Asked how they would structure and manage such a project to avoid the problems that surfaced in the MTNYC initiative, interviewees offered a variety of answers. Their recommendations varied largely based on their experience with the project, and the challenges that they, themselves, faced. Interviewees from NYC Parks pointed to issues such as increased funding, including more money for tree stewardship, better communication with the public, and a more thorough investigation of prospective planting locations. NYRP interviewees focused more on improving the partnership; the need for more experienced salaried staff; and increased funding.

The roles of Parks employees often seemed to influence their responses. Newman, whose work on MTNYC largely focused on project management, said that better communication with the public about stewardship, from the beginning, would have benefited the project. Jackie Lu whose work on MTNYC largely revolved around Geographic Information Systems and Data Analytics stated that establishing data uniformity among the partners, and better understanding the data-related limitations of partners would have better served the initiative. More senior NYC Parks employees, such as Donoghue, whose position involved managing several initiatives related to PlaNYC, indicated that better communication with both stakeholders and partners would have made for faster problem solving.

NYRP interviewees also pointed to changes that NYRP could have made, such as collaborating with more organizations to plant trees. Johnson said that better coordination between NYRP and NYC Parks would have improved the project dramatically, and suggested that NYRP and NYC Parks employees could have shared office space as a way of getting them to work together.

Recommendations

Based on the information we gathered in the 22 interviews, as well as information from a literature review, we make several recommendations for improving the management and implementation of future large scale urban forestry projects. We categorize these recommendations according to municipal government, private organizations, and public private partnerships.

7.1. Municipal Government

For municipal agencies involved in large scale planting initiatives, even those that have extensive experience in tree planting and maintenance, it is important to assess the scale of the project

and to plan accordingly. The experience of MTNYC suggests that preparing communities for large scale tree planting is important in gaining residents' support, or at least avoiding resistance. The scale of such an initiative also magnifies tree maintenance needs. It is necessary, therefore, to put plan for stewardship differently from ordinary, low quantity tree planting. Planning, too, is necessary in involving volunteers at large tree planting events. Volunteers can reduce labor costs, but they also require hiring staff with experience in organizing such events and providing for volunteers' needs.

7.2. Private Organizations

NYRP involvement in the MTNYC initiative suggests that forestry expertise and tree planting capacity are important for organizations that undertake to plant hundreds of thousands of trees. Private organizations that lack this expertise and capacity must, therefore, hire the appropriate staff before the project launch. Similarly, MTNYC demonstrated the need for professionals with knowledge of marketing, communications, community engagement, and volunteer management.

It also seems paramount to study the feasibility of planting on private land in order to identify the concerns of private property owners before setting a tree planting goal. It is equally important that the cost of planting on private land inform the goal and to dictate the fundraising strategy. The larger the scale of the project, the more diverse the donor base ought to be to sustain the effort over time. NYRP's experience also suggests that a high-level executive, with responsibility for strategic planning, be given the responsibility of negotiating with property owners. NYRP assigned negotiations to several low-level staff, which made for an inefficient process.

7.3. Partnerships

The organizations that enter into a public/private organization ought to explicitly and deliberately plan for effective communication and collaboration. One way to achieve these goals is to assign at least one person from each organization, who has specific and clear communication responsibilities with the partner. The partnership must also develop a detailed communications plan that sets communication goals that are tracked and monitored.

Future projects should also ensure that partnering organizations plan for integrating aspects of their operations to better facilitate cooperation. For example, sharing office space, unifying tree procurement, and even holding joint tree planting events are some ways could improve the partnership.

8. References

@MillionTreesNYC. “Interested in trees for your community? Check out @NYCParks comprehensive street tree page! http://on.nyc.gov/2aAk7BE.” Twitter, 4 August 2016, 7:13 AM, https://twitter.com/MillionTreesNYC/status/761203519651282944

“2005 – 2006 Trees Count! Street Tree Census.” Trees Count! Street Tree Census: NYC Parks, www.nycgovparks.org/trees/tree-census/2005-2006.

“About NYRP.” New York Restoration Project, NYRP, www.nyrp.org/about.

Bobey, J. “Bette Midler's MillionTreesNYC Keeps the City Green.” *Gotham,* 6 Oct. 2011, https://gotham-magazine.com/bette-midlers-milliontreesnyc-keeps-the-city-green.

Campbell, Lindsay K. “City of forests, city of farms: constructing nature in New York City.” 2013.

Campbell, Lindsay K. Constructing New York City's urban forest. The politics and governance of the MillionTreesNYC campaign. US Forest Service, 2014, Constructing New York City's urban forest. The politics and governance of the MillionTreesNYC campaign, www.nrs.fs.fed.us/pubs/47243.

Campbell, Lindsay K., et al. “Knowledge Co-Production at the Research–Practice Interface: Embedded Case Studies from Urban Forestry.” Environmental Management, vol. 57, no. 6, 2016, pp. 1262–1280., doi:10.1007/s00267-016-0680-8.

Dietrich, C. “Million Trees NYC Being Tracked in the Cloud.” Nektar Data Systems. http://www.nektardata.com/million-trees-nyc-being-tracked-in-the-cloud/

Foderaro, Lisa W. “Bronx Planting Caps Off a Drive to Add a Million Trees.” The New York Times, The New York Times, 20 Oct. 2015, www.nytimes.com/2015/10/21/nyregion/new-york-city-prepares-to-plant-one-millionth-tree-fulfilling-a-promise.html.

Kunzler, C. “MillionTreesNYC Issues Report on the Campaign’s Research and Practice.” *Arbor Day Foundation,* 24 March 2014, https://actreesnews.org/newsroom/milliontreesnyc-issues-report-on-the-campaigns-research-and-practice/.

Loquine, Michelle and Greenfeld, Jennifer. Greening Far Rockaway a Community Forestry Management Plan. NYC Department of Parks and Recreation, 2008, Greening Far Rockaway a Community Forestry Management Plan, www.nycgovparks.org/sub_your_park/pdf/farrockawayfina.pdf.

Lu, Jacqueline W.T., et al. “MillionTreesNYC, Green infrastructure, and urban ecology: building a research agenda.” MillionTreesNYC, Green infrastructure, and urban ecology: building a research agenda. Report from the workshop. New York, NY. 44 p., 2009, www.fs.usda.gov/treesearch/pubs/36065.

Lu, Jacqueline, et al. MillionTreesNYC The Integration of Research and Practice. MillionTreesNYC, 2014, MillionTreesNYC The Integration of Research and Practice, www.milliontreesnyc.org/downloads/pdf/MTNYC_Research_Singles.pdf.

Maddox, David. Supporting Success: Making the Transition to Green Collar Jobs. MillionTreesNYC, 2010, Supporting Success: Making the Transition to Green Collar Jobs, www.milliontreesnyc.org/downloads/pdf/Supporting_Success_Green.pdf.

McPhearson, P.Timon, et al. “Assessing the Effects of the Urban Forest Restoration Effort of MillionTreesNYC on the Structure and Functioning of New York City Ecosystems .” Cities and Environment, vol. 3, no. 1, 2010, digitalcommons.lmu.edu/cgi/viewcontent.cgi?article=1079&context=cate.

“MillionTreesNYC: planting and tending the urban forest.” Centre for Public Impact, www.centreforpublicimpact.org/case-study/milliontreesnyc/.

NYRP. “Milliontreesnyc Giveaways, Country’s Largest Municipal Tree Giveaway Program, Gets Even Bigger.” February 2014. https://www.nyrp.org/about/who-we-are/in-the-news/press-releases/milliontreesnyc-giveaways-countrys-largest-municipal-tree-giveaway-program-/

Peper, Paula J., McPherson, E. Gregory, Simpson, James R., Gardner, Shelley L., Vargas, Kelaine E., and Qingfu Xiao. 2007. “New York City, New York Municipal Forest Resource Analysis.” Center for Urban Forest Research, USDA Forest Service, Pacific Southwest Research Station. March 2007, 65 pp.

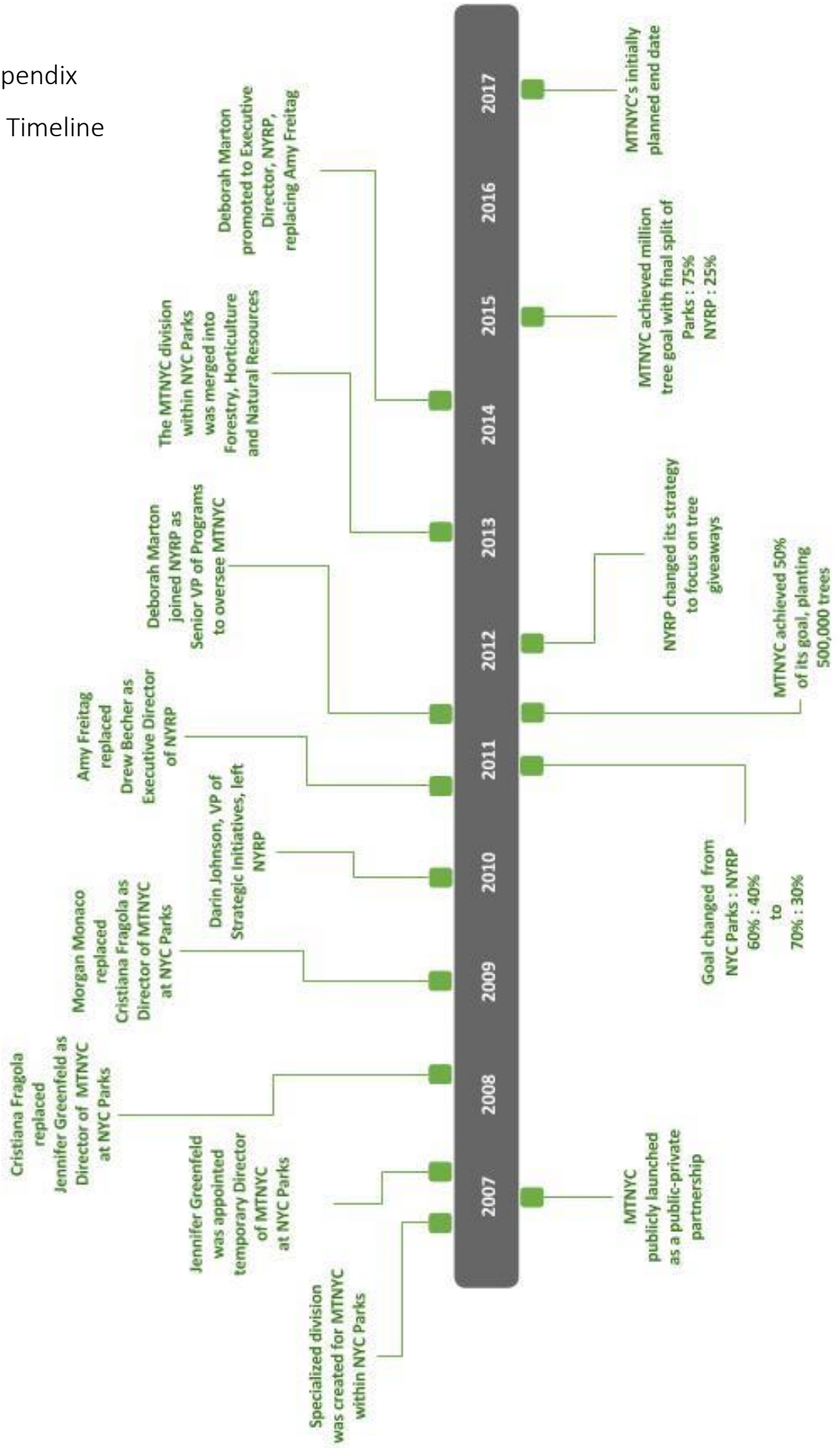
Peregoy, B. “Thanks to Bette Midler, New York Plants a Tremendous Number of Trees.” *Architectural Digest*, 21 Jan. 2016, https://www.architecturaldigest.com/story/million-trees-nyc.

PlaNYC 2007. The City of New York, PlaNYC 2007, www.nyc.gov/html/planyc/downloads/pdf/publications/full_report_2007.pdf.

PlaNYC 2011. The City of New York, PlaNYC 2011, www.nyc.gov/html/planyc/downloads/pdf/publications/planyc_2011_planyc_full_report.pdf.

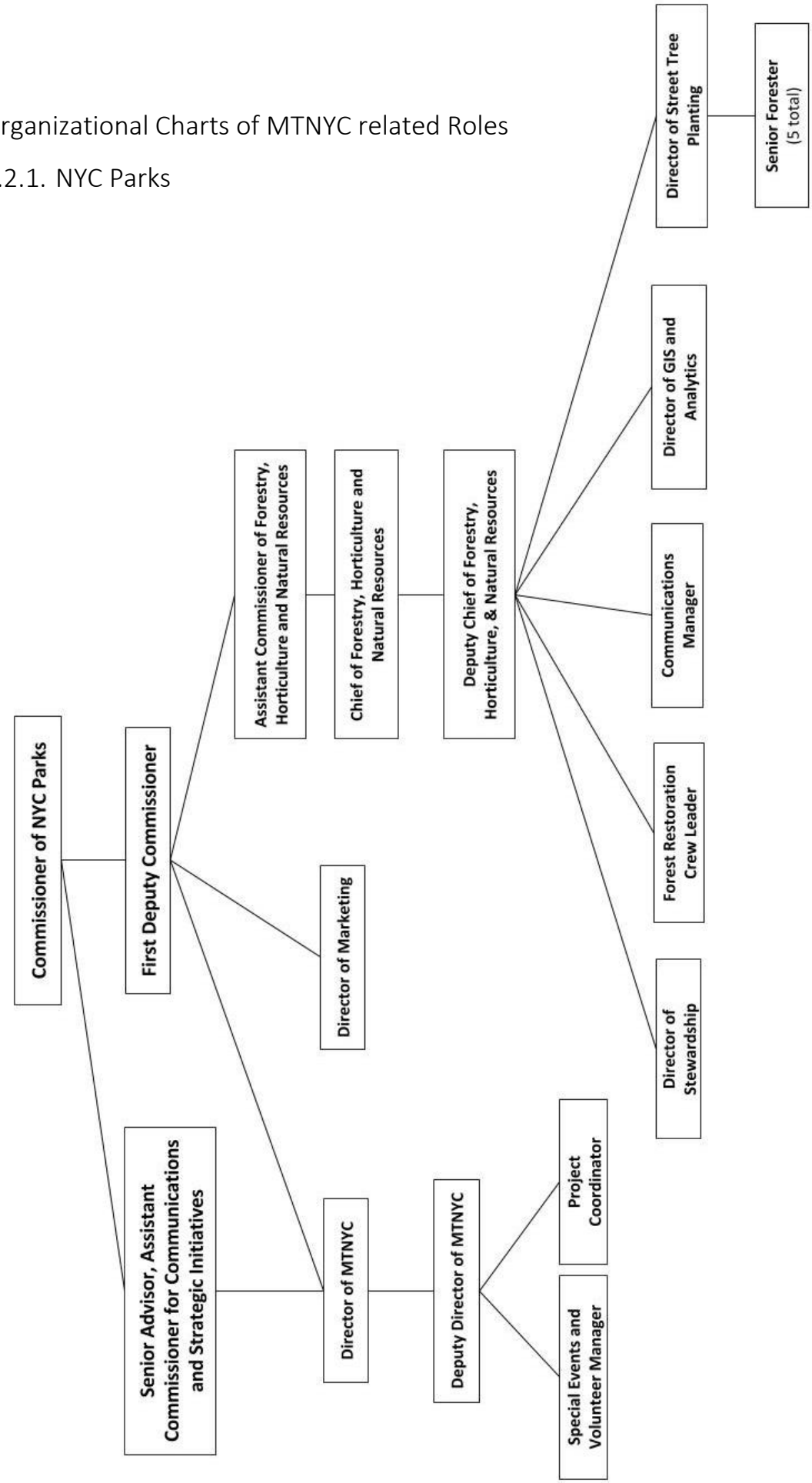
9. Appendix

9.1. Timeline

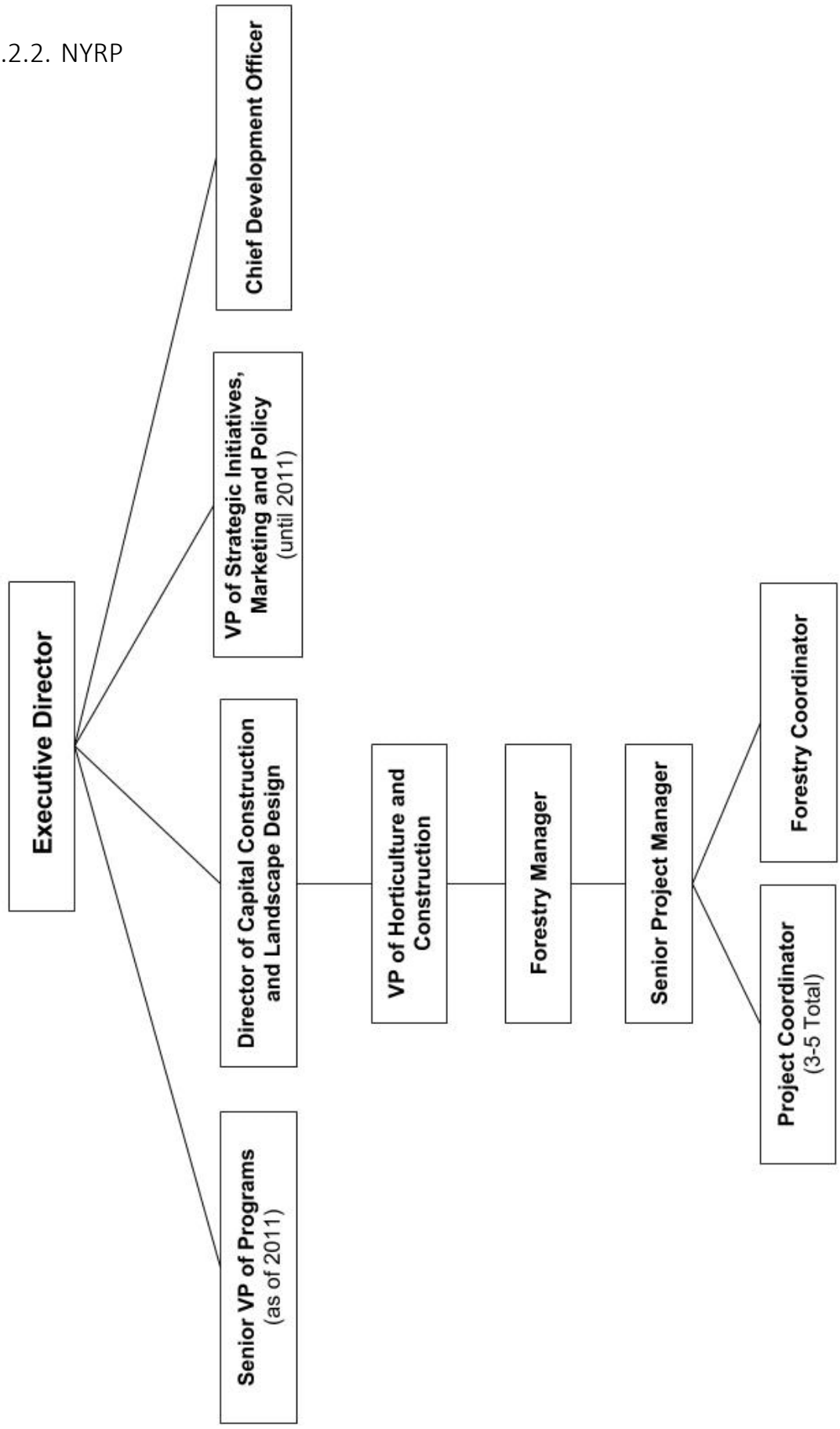


9.2. Organizational Charts of MTNYC related Roles

9.2.1. NYC Parks



9.2.2. NYRP


Executive Director
Chief Development Officer
VP of Strategic Initiatives, Marketing and Policy (until 2011)
Director of Capital Construction and Landscape Design
VP of Horticulture and Construction
Forestry Manager
Senior Project Manager
Forestry Coordinator
Project Coordinator (3-5 Total)
Senior VP of Programs (as of 2011)

9.3. Tree Planting Breakdown and Milestones

Number of Trees Planted by Year:

Fiscal Year 2008 – **122,577**

Fiscal Year 2009 – **161,962**

Fiscal Year 2010 – **139,325**

Fiscal Year 2011 – **125,110**

Fiscal Year 2012 – **112,557**

Fiscal Year 2013 – **108,018**

Fiscal Year 2014 – **136,837**

Fiscal Year 2015 – **90,498**

Fiscal Year 2016 – **3,117**

Number of Trees Planted by Borough:

Bronx – **276,600**

Brooklyn – **182,593**

Manhattan – **80,016**

Queens – **284,755**

Staten Island – **173,134**

(Borough unknown) – **2,902**

Number of Trees Planted by Type:

Street Trees (planted by NYC Parks) – **155,291**

Reforestation Trees (planted by NYC Parks) – **477,059**

Other Parks Tree Plantings (planted by NYC Parks) – **114,525**

City/State/Federal Agency Plantings – **21,918**

Private Property Trees (planted by NYRP and partners) – **231,207**

(Source: MTNYC Finale Highlight Document provided by NYC Parks)

9.4. Green-Collar Job Creation

The Million Trees NYC initiative had a positive impact in planting one million trees in New York City, but that was not the only positive to come from the campaign. The program expanded to engage young adults of low-income families and promote green-collar jobs through the MTNYC Training Program in 2009. The Department of Agriculture's U.S. Forest Service allocated $2 million to provide full-time employment for trainees upon completion of a 7-month program. The training course was designed to educate young adults to become skilled in tree care, while gaining employment opportunities. The fieldwork training program offered three tracks:

1. Million Trees Training Program Arboriculture Track: this track was managed by the Forestry Division of NYC Parks, Central Park Conservancy and the Prospect Park Alliance, and taught participants about stewardship, pruning and planting techniques.
2. MTTP Ecological Restoration Track: this track was offered jointly by the Natural Resources Group, NYC Parks, Central Park Conservancy, and the Prospect Park Alliance. It highlighted the protection, restoration and management of the natural areas of NYC, including erosion control, manual and chemical aquatic and terrestrial invasive plant removal, and green roof installation. This track also supported community-led or sponsored restoration, greening and cleanup projects.
3. MTTP Garden Restoration/Landscape Design Track: this track developed and executed landscape design best practices and planting standards (Maddox, 2010).

To facilitate the transition from the MTNYC Training Program to green collar job creation, the MTNYC initiative, with funding support from the USDA Forest Service Civil Rights Special Project Fund, hosted "Supporting Success: Making the Transition to Green Collar Jobs" symposium on June 30, 2010. The forum focused on how to improve the MTNYC Training Program to produce green jobs in the market (MillionTrees Training Program, 2010). MTNYC also collaborated with TREE Fund to promote green jobs through the launch of a 5-year training program for students, which engaged leaders in the arboriculture industry.