

Madison Square Park
Tree Conservation Plan
A Canopy for the Future



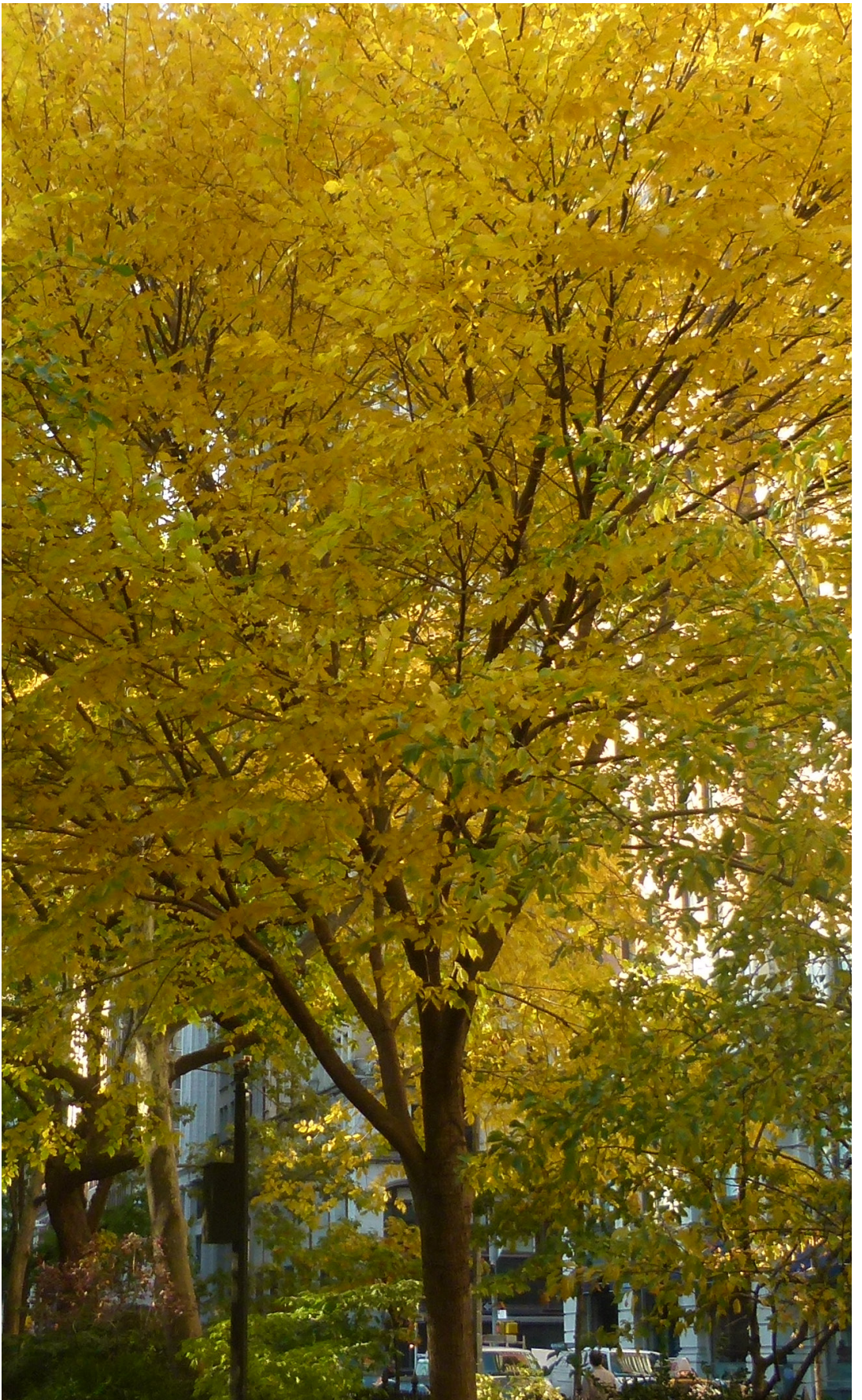
Madison Square Park Tree Conservation Plan A Canopy for the Future

Mad. Sq. Hort 2017

Madison Square Park, New York

Presented by

Madison Square Park Conservancy





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Foreword

Trees are essential elements of civil society. They serve as landmarks, sentries, and silent witnesses to history. They are used as resources for building, fuel for burning, filters of the air we breathe, shade, and shelter. Tree-lined streets often have lower crime rates. Throughout time, trees have been romanticized and imbued with all manner of personal meanings by people who cherish them; poems have been written; songs have been sung. And parks have been designed with trees as their cornerstones.



Figure 2
Having young trees established makes the removal of other trees less jarring.

Parks, however, create encounters with nature through landscapes that include more than trees. While there are many natural elements in a park, the guiding hand of humanity is the most significant. As planners, we know that beyond soil, sun, water, and air, trees need well-planned placement, nurturing, respect, and luck in order to survive in city parks. If we treated our parks like nature, they would return to forest—uncultivated

and wild—subject to the effects of weather, wildlife, and serendipity. In a forest, 40 years is a mere blip on a timeline; in a park, by contrast, 40 years of neglect would have destructive consequences.

And so we focus on assuring that a park's transition to the future is deliberate and gracious. Succession planting is a strategy of installing trees and other plants to balance collections and to prepare for the time when older trees fail or need to be removed for a myriad of managerial reasons, whether they be practical, ecological, aesthetic, or emotional. Succession planting is less patient than nature. Having younger plants and trees already established in the ground and growing in advance of the eventual removal of others makes transitions less jarring. Removing one tree will shift the focus to a younger tree coming up, changing the view in a thoughtful and prearranged way.

As stewards of parks, we analyze collections, weigh priorities, and establish criteria to guide decisions for succession planting. We inventory tree and plant collections by identifying species and genus, counting numbers, measuring sizes, and identifying as native or exotic, common or rare. We analyze structure, judge general health, and evaluate risk of failure in attempts to avoid loss of life or property from falling trees or branches. We rate trees on how much wildlife they support with food and shelter. We evaluate aesthetic beauty and variations of form in choosing what to plant. We calculate future size and spread and the length of a tree's viable life span. By overlapping these various criteria, we make difficult choices about what to maintain and what to remove, and we can plant years and decades in advance of the decline of senior trees.

New York City parks began taking shape in the mid-nineteenth century. But by the end of World War II, they had become neglected, shabby, and underappreciated. The very communities the parks were meant to serve—and the budgets needed to prioritize and

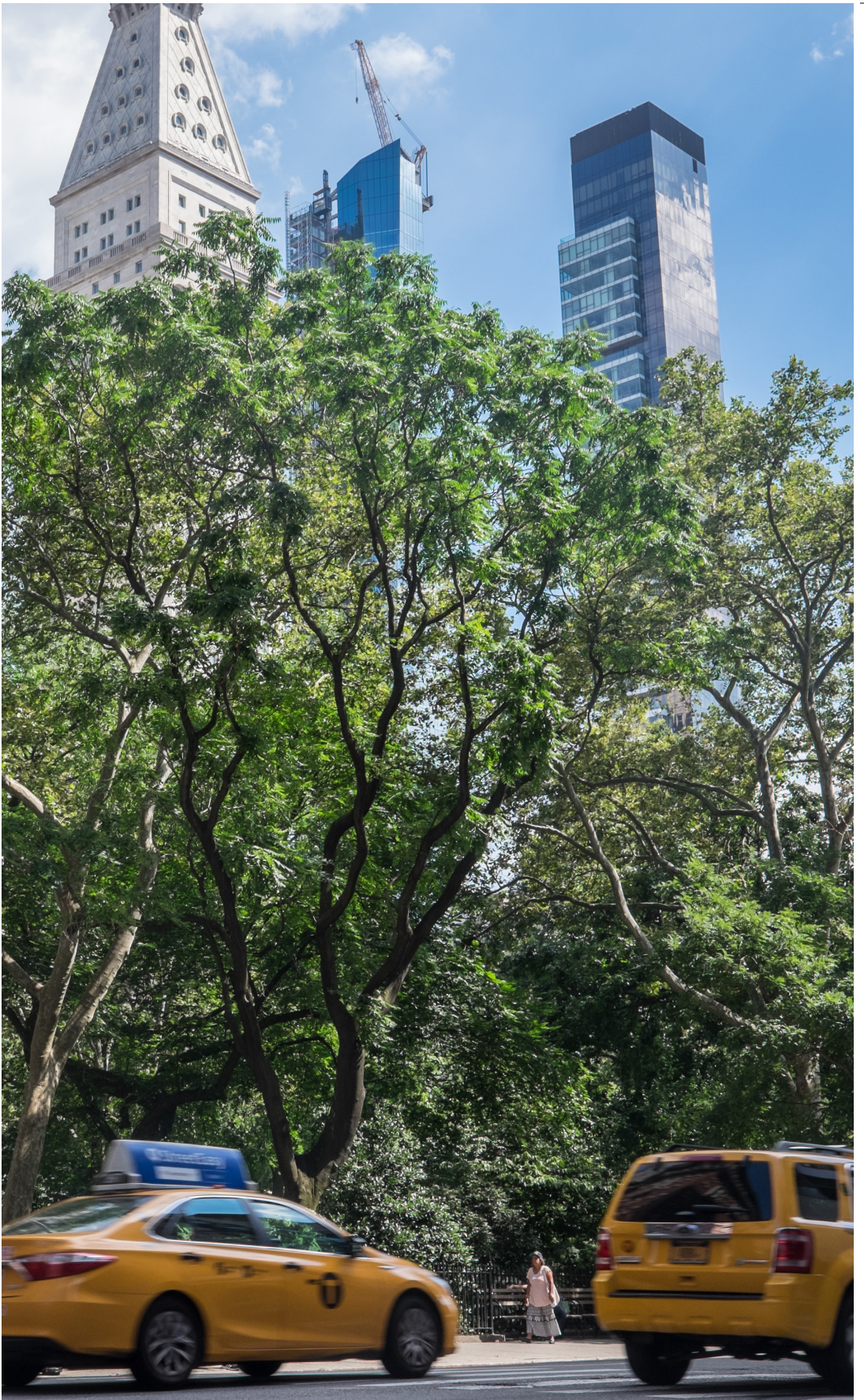
support them—turned away from their care. The parks remained in decline for decades—wild, dangerous, and overgrown, ideal sites for drug deals and illicit activities.

From the 1980s to the present, smaller city parks have temporarily closed, one by one, to allow for their successful restoration and revival, using the familiar recipe of clearing and pruning trees, replanting trees and understory plants, repairing green lawns, and reimagining and constructing paths and built features. The resurgence of the parks have made clear that their overall health has had repercussions beyond their borders. As the parks have re-opened, people have taken ownership of their newly improved green spaces. There has been an enhancement of civic pride, a heightening of popularity and use of the parks, and a renaissance of what had become crime-infested neighborhoods. And New York City's parks continue to thrive, largely because of increased maintenance, conservancy contributions, and public support. New Yorkers move into the future having clearly demonstrated that their city's parks are critical to their sense of community and pride of place.

As sanctuaries for both humans and animals, parks—and their trees—mark the seasons and the decades. But unlike forests, parks must be cared for over time with measured interventions of design composition, maintenance, and succession planting. We aspire to pass our city parks to the next generation of users and stewards with the confidence that they, too, will admire, respect, and nurture the parks as we have done. It is our compact with the future.

Art Presson
Vice President of Design and Landscape
Green-Wood Cemetery





Introduction

“Just like New Yorkers themselves, the trees in New York [City] work harder than any others in the world.”

— Andy Warhol

Even on my first visit to Madison Square Park, I noticed how special the trees were—framing the Park beautifully to create a forest of green in the middle of the concrete jungle. Upon closer examination, I noticed many of my favorite species; there was a beautiful and rare Japanese stewartia blooming on 23rd Street, a great black locust at 24th Street that could have easily served as inspiration for the apple trees in the movie *The Wizard of Oz*, and a large catalpa with its heart-shaped leaves and beautiful white and purple flowers. So you can imagine my concern when I first read this report from our arborist suggesting that half of the Park’s trees could be gone within the next twenty years.



Figure 4
This black locust tree, *Robinia pseudoacacia*, was removed in 2014.

Over the past six years, I’ve seen that reality firsthand, with many of the trees in the Park reaching the end of their lives. For example, we no longer have any catalpas, and the black locust that I once loved had to be removed for public safety in 2014. In researching the conservation plan published here, we have found that many of the beautiful and historic trees in Madison Square Park are reaching the end of their natural life spans. As trees age, it becomes more difficult for them to heal damage and fight off infections, such as heart rot, which destroys and hollows the interior heartwood and destabilizes the integrity of the tree. While some venerable trees decline from old age, having not been affected by pathogens, for many trees old age is only a secondary cause of death.



Figure 5
This old English elm stump now houses dozens of squirrels and is a popular meeting point for visitors.

In the early 1930s, Dutch elm disease (introduced and spread through the United States by the elm bark beetle) killed many of the elms across the country. Luckily, because of Madison Square Park’s urban

isolation, some of the few elderly American elms remaining in the United States still survive in the Park. It is also home to several other prominent elm varieties, including two large English elms—likely offsets from the famous Hangman’s Elm in Washington Square Park.

Robert Moses, who was Commissioner of the New York City Department of Parks & Recreation from 1934 to 1960, chose the London plane as the primary replacement for the declining American elms. In Madison Square Park, where London planes make up 23 percent of the overstory, we are again seeing some of the negative long-term effects of planting in monocultures—our London plane trees are now susceptible to anthracnose, a fungus that causes the trees to defoliate early.

This tree plan, which Bill Logan and I produced, not only comprises a history of trees that once stood in the Park and catalogues the trees currently standing, but also directs the succession and maintenance of the tree canopy that future generations of Park users will enjoy. As we plant for the future, the canopy will include a greater diversity of trees, increasing the overall health of our urban forest and making it less susceptible to disease. Species will be chosen as well for four-season interest, vibrant fall color, and a variety of barks, flowers, and shapes. The tree conservation plan commits Madison Square Park Conservancy to the stewardship required to maintain our beautiful stand of trees.

As I reflect on the changes that our urban forest has experienced over the years, I can think of no better legacy than to plant trees for the future, with each species adding a unique texture to the Park’s beloved canopy.

Stephanie Lucas
Deputy Director of Horticulture and Park Operations
Madison Square Park Conservancy



Figure 6
London plane tree,
Platanus x acerifolia
bark.

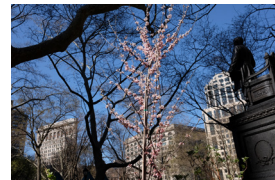


Figure 7
Newly planted Pauline
Lily Redbud will
provide future spring
flowers to Madison
Square Park.

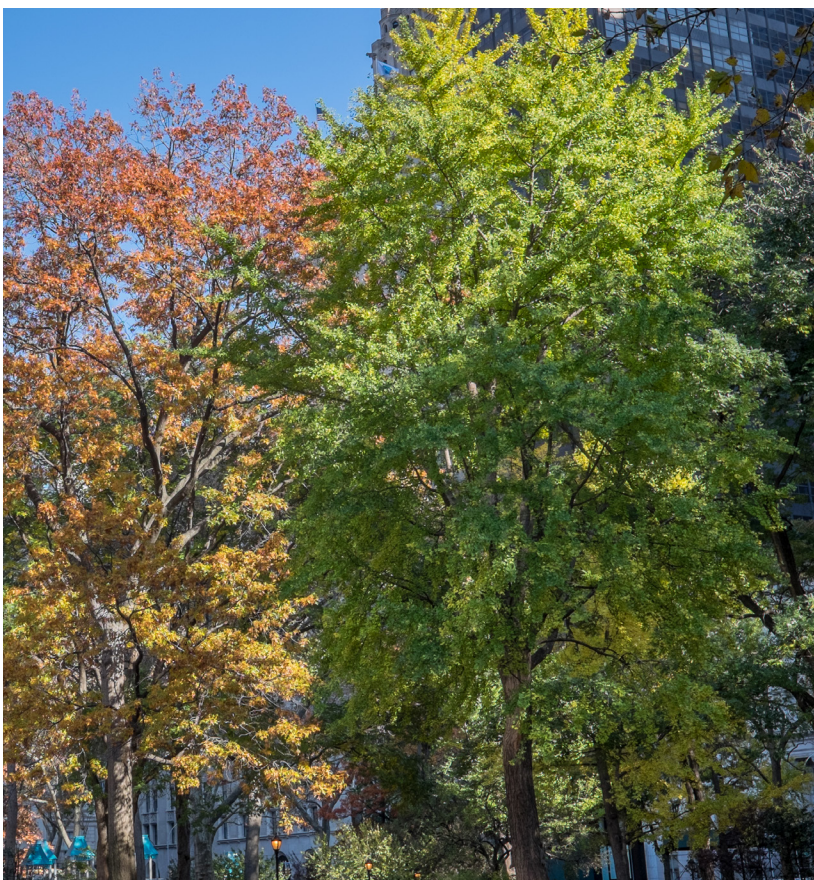
Spring



Summer



Fall



Winter



A Succession Plan for Madison Square Park

The trees in Madison Square Park represent waves of planting that began around 1850 and have continued ever since. As the cityscape around the Park has increasingly become a rectilinear grid that towers over the open space, the woodland within the Park's boundaries has grown larger and more various. Since the Park's renovation in 1997, it has become one of the world's premier small woodland city parks.

Madison Square Park is very strong in mature trees—the oldest being the two remaining English elms—and it has a delightful shrub and perennial understory, which has been built up since the renovation. When people enter the Park, for a moment they change worlds, from the grid to the ordered but various patterns of branches, leaves, flowers, and fruit. It is no wonder that so many thousands cross the Park every morning and evening on their way to and from work, and that the benches are so often full when people are free from work.



Figure 12
Park patrons are transported from the urban jungle to the urban forest.

Because of the way it has been planted, Madison Square Park actually mimes a woodland. Several principal mature species—elms, London planes, oaks, and ginkgoes—grow in groups or singly around the Park. Many of the London planes are planted in straight lines, but since they often mark the Park's edges, they still give

a woodland impression. They shelter the entry from the west, so that the visitor immediately passes under the forest canopy. The remainder of the overstory trees occur in smaller numbers, much as would happen in a natural northeastern forest. The understory has in the past featured principally crabapples, hawthorns, and cherries. Recently, that somewhat impoverished species group has been augmented with a number of redbuds, with Cornelian cherry, with a yellowwood, with fringetree, with Japanese plum, and with other understory flowering trees.



Figure 13
Elms and oaks create a shady woodland on the east side of the Park.

The current Succession Plan evaluates all the major trees in the Park and places them in succession classes. These classes give a rough expected longevity range for each tree. The plan on page 31 represents the Park from the air, with each tree coded for its succession class. This plan should at a glance give an idea of when and where there will be opportunities for new planting. The X symbol indicates trees that have already been removed. The complete inventory of major trees begins on page 34. Within that inventory, the succession class of each tree is listed.

It is my belief that the future for trees in Madison Square Park should maintain and enhance its woodland quality. The patterns of woven branches in this array are remarkable in both summer and winter. Alone among the major trees, some of the ginkgoes stand out like exclamation points in an otherwise sinuous mix. Arguably, a few of the ginkgoes should be removed, simply because they are unattractive beanpoles, but, in general, trees should remain until it becomes necessary to remove them for safety reasons.

There are three principal goals:

1. Increase the diversity of species in the Park overstory, choosing where possible natives such as might have occupied Manhattan before European occupation—when it was likely a forest of oak, tulip tree, and pine—and trees of any origin whose branching pattern enhances the woodland look and feel of the Park. There is an opportunity to put back species once found in the Park, which have disappeared over time. These include catalpa, scarlet oak, and both native and nonnative lindens. Black locusts, which were once prominent, are now being replanted.

2. Maintain a solid cadre of major species—the elms, oaks, and London planes at least—to constitute the principal overstory trees of the Park. This may require replanting some of these genera over time, though we will likely choose different species and cultivars. At present, the London planes that are in decline should be replaced by other species, since there is no shortage of any of the primary species.

3. Increase the diversity of the understory. This can involve many new species, as well as lovely species that once occupied the Park such as both native and nonnative fringetree. As a rule, the Park should move away from planting new crabapples and cherries, which are already in good supply. New cultivars of hawthorn might be used to replace those that are declining.





History

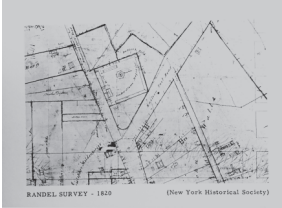


Figure 15
The Randel Survey of 1820 shows a roughly square parade ground with a potter's field on three sides. Note that the grid of streets and buildings is only beginning to arrive.

Before European occupation, the site of Madison Square Park was likely a forest with tulip trees, oaks, and pines as the principal species. When the Park area was first reserved for public use by Royal Governor Thomas Dongan in 1686, it was an agricultural site. It would be more than a century before New York was gridded—the plan was finished in 1811—and the rectilinear pattern of streets, buildings, flat roofs, windows, and doors would take over the eyescape of the city. In the meantime, the land that would become Madison Square Park, located in the crook between the Boston Post Road and Bloomingdale Road, was designated one of the city's potter's fields in 1794, one of a succession of potter's fields that moved north with the city's population.



Figure 16
The 1851 Dupps plan of Madison Square Park. Six boxes with X's run to their vertices. The oldest trees in the Park—the English elms—were likely laid out at nodes of this plan.

New York City was growing rapidly. The burying ground was supposed to be discontinued in 1797, although it is still indicated in the Randel Survey of 1820, where part of the land is a cemetery and part a military parade ground.

Madison Square was officially established in 1837, though land was still being acquired for it a decade later. It is first shown on a map of New York City in the Colton Map of 1841. The parks department was given control of the land in 1847.



Figure 17
A corner of the Park facing Fifth Avenue, showing X-shaped pathways in 1860.

The first actual plan for the new Park's design appears in the Dupp plan of 1851 (*Figure 16*). Interestingly, the plan defines a formal grid of six rectilinear paths, each crisscrossed with an additional X (*Figure 17*). A straight-lined grid of streets now surrounds the new park, but the blocks have yet to be filled with buildings. The formal design of the Park domesticates the space. It is likely that the English elms, including the two of which survive to this day, were planted at this time, at nodes along the formal plan.

By 1855, the grid was fully formed and buildings with all their right-angled parts were springing up around Madison Square. The 1855 Colton Map (see *Figure 18*)

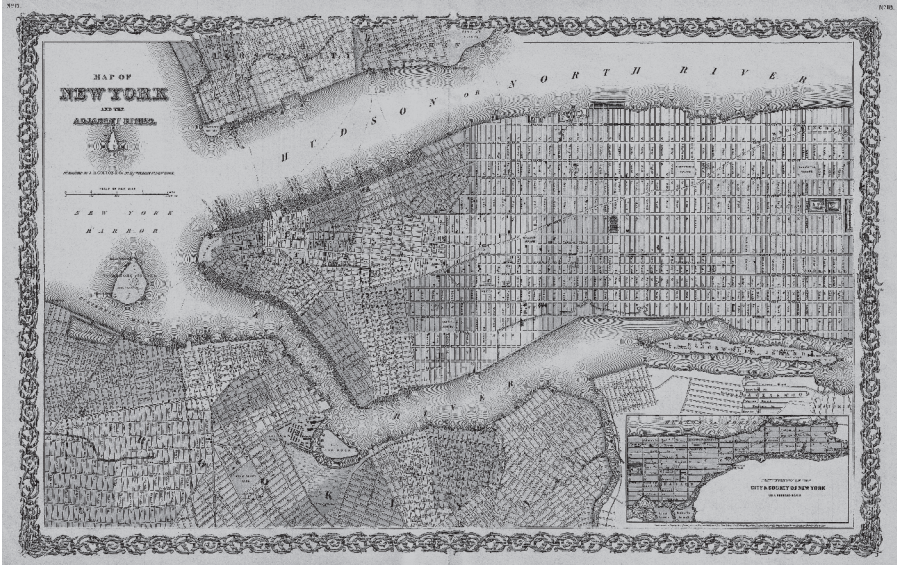


Figure 18
Detail of 1855 Colton
Map of New York City.
The parklands stand
out in the regular grid.

shows the fully formed grid around the Park. As the straight lines increased and public taste turned to the picturesque, the idea of a formal plan for the Park became less appealing.

By the turn of the twentieth century, the old elms were quite large, and the Park had been developed with a set of smooth-edged, curving beds, similar to what we see today. The trees were growing in as a woodland, not a formal planting.



Figure 19
View of Madison
Square Park, 1894.

In 1963, as part of an effort to design a subterranean parking garage on the east side of the Park, Skidmore, Owings & Merrill engaged P. P. Pirone of the New York Botanical Garden to make a complete census of the

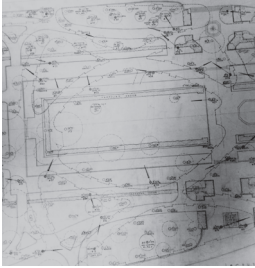


Figure 20
Plan to make a formal hedged lawn in the center of the Park (detail), 1935

existing trees and to locate them in the plan of the Park. Pirone counted a total of 229 trees in the Park, of which ten were very large mature English elms from the early planting. By now, large numbers of London planes, other elms, pin oaks, ginkgoes, and other trees had been added. A row of red, scarlet, and pin oaks had very recently been planted along the Madison Avenue edge of the Park.

Pirone noted the following major trees: 10 large ancient English elms, 54 London planes, 26 other elms, 26 ginkgoes, 19 black locusts, 16 red oaks (some quite young), and 14 pin oaks. In other words, by 1963, the Park was a planted woodland of many large-maturing trees.

Figures 21-23 indicate the condition of the Park in 1963, approximately half a century ago. Since that time, many more trees have been planted, and most of the existing trees have continued to grow larger. Seven of the largest English elms have been removed. The two remaining ancient English elms have had their crowns dramatically reduced in order to keep them safe, but their large girth and considerable branching grace the Park. Beginning in 1997, the Park underwent a renovation that created playgrounds, a dog run, and the Oval Lawn, without otherwise disturbing the overall plan or the maturing trees.

In all four seasons, Madison Square Park offers a variety and a density of branching that are both delightful and relaxing. This is not chaos, but it is an organic order that is beyond geometry. The now immense wych, English, and American elms raise their tall, slender vases throughout the Park or, as in the case of the big elm on the northwest corner, bend and wind through an entire section of the garden. The London planes demonstrate their amazing ability to hold out very long, thick horizontal branches that reach fifty feet or more to find the sun, matched with much smaller laterals on broad-spreading leaders above. Although the large pin oaks have lost the lower branches that bend downward like skirts, the horizontal branches in mid-stem and the upward-facing branches of the upper crown still give the impression of a dancer (a younger pin oak near the playground retains all three kinds of branches). The huge hackberry—one of the largest of its kind in



Manhattan—does not even begin to branch until thirty feet in the air, so we must look up to enjoy it. The young Chinese elm and yellowwood in the Oval Lawn look like very large birds' nests among their much larger peers. To the north and west of the Shake Shack are a large spreading red oak—so obviously oak, but so different in habit from the pin oaks—and a fine very upright littleleaf linden. Where they are successful, the ginkgoes project short laterals on long brushstroke leaders; where they are not successful, they look like unhappy bean poles. In the understory, older crabapples, hawthorns, and cherries snake their way

Figure 21
Schematic plan of the Park in 1963, showing the major trees. The large trees along the central axis are the ancient English elms, of which two (plus a stump) survive today. The edge trees on the west and north sides are mostly London planes.



Figure 22
Madison Square Park from the northeast in the winter of 1963. Most of the east edge of the Park is composed of very young trees, and the understory is generally sparse.



Figure 23
Artist's impression of leaf-out, from the northeast corner of the Park. The canopy covers the Park. The central Oval Lawn has not yet been created.

into the sunlight. A new styrax and several Cornelian cherries present low branches and spring flowers to the south side of the playground.

Paul Cornoyer's *After the Rain* (c. 1900; see Figure 24) shows the wonderful contrast between rectilinear structures and the natural architecture of the trees established already more than a century ago.



Figure 24
American impressionist Paul Cornoyer's *After the Rain* was painted around the early 1900s. Imagine what the same scene would look like today, with the tree branching thicker and more complex.

The succession plan for Madison Square Park should build on this legacy of branching in three ways:

1. By selecting trees that add new notes to the branching patterns, like the native tulip tree, and by selectively reintroducing trees that were once planted in the Park and have since disappeared, like the catalpa.
2. By maintaining a mixed cadre of the major genera that form the basis of the Park: elm, plane tree, and oak.
3. By adding more complexity and diversity to the understory trees, which in the past have been dominated by crabapple, hawthorn, and cherry.

In addition, two general matters should be addressed:

First, although some ginkgoes in the Park are lovely and fill a role in the overall pattern of branches, a number are thin and weak, because they have had little room to grow. It may be wise to remove these trees over time, planting other species that better fit the spaces.

Second, the plantings along the east side of the Park are comparatively weak. Many of these are red oaks. As can be seen in the data from 1963 and the photograph in Figure 22, the young oaks along the eastern edge were planted not long before 1963 (they are noted as four inches in diameter at breast height in Pirone's census). The young trees were therefore faced with shade not only from the tall building directly east of the Park, but also from the much more mature trees to the west. Although oaks appreciate some "nurse" shade when they are seedlings, they typically need to find the sun as they mature. Furthermore, in recent years there have been significant steam leaks along the western edge of Madison Avenue near the Park. It is not clear how long this has been going on, but it is indeed possible that the failure of the ground to cool normally in winter is contributing to the slow and comparatively weak growth of these trees. As the oaks decline, it would be wise to replace them with species that will better tolerate the difficult conditions. We have already begun to do so with the two black locusts—replanting a species that was once well represented in the Park—that flank the southeast entry on Madison Avenue.

Madison Square Park's Victorian Trees

The 1963 Pirone study, my inventory of 1999, and my current inventory provide an opportunity to look at how the composition of the major trees in the Park's woodland has changed over the last half century.

Pirone counted 229 trees in the Park in 1963. I counted 207 in 1998 and 178 in 2016. Many of the trees lost between 1963 and 1998 were elms. As previously mentioned, there were ten large English elms at the outset and only two (plus a stump) in 1998. Another species that declined considerably was black locust. A number of trees in the 1998 inventory were in steep decline; these were removed in the course of renovation. Since then, a number of trees in the southwest section of the Park have declined because of the severely compacted gravel in that area, and these too have had to be removed. There has also been attrition of some of the London planes in different parts of the Park, including all the large street London planes on the north side. It should be noted that the current inventory does not count the street trees around the Park.

There are 29 fewer trees in the Park today than there were in 1963. Thus, even without further attrition there is certainly room for new planting.





Victorian Trees

Species	1963	1999	2016
London plane	55	53	47
Oaks, all	37	34	33
Elms, all	31	19	16
Gingko	26	24	24
Black locust	19	5	2
Hawthorn, all	15	11	4
Catalpa, all	6	4	0
Cherry	0	11	7
Crabapple, all	5	20	22
Fringetree	5	0	0
Lindens, all	5	5	1
Cornelian cherry	4	0	3
Ash	4	2	2
Pagoda Tree	3	5	6
Ailanthus	1	1	1
Empress Tree	1	0	0
Hackberry	1	1	1
Horse chestnut	0	2	1
Kentucky coffee tree	0	1	0
Yellowwood	0	0	1
Redbud	0	0	4
Kousa dogwood	0	0	1
Red horse chestnut	0	0	1
Purple leaf plum	0	0	2
Parrotia	0	0	1
Styrax	0	0	3

Notes

Some of the surviving trees are in decline. We may decide to replace these with other species. We hope to maintain a minimum of 40 London planes.

The pin oaks and the swamp white oaks are in good condition. The red oaks along the eastern edge of the Park are in less good condition. The red oaks should gradually be replaced with more shade-tolerant species. New red oaks might be planted where the sun is better, and other oak species may be added as well.

Elms have been an important feature of the Park since its early days. They should be maintained. As Pirone noted, their mid-city location makes Dutch Elm Disease a less serious problem than it would be elsewhere. If we replace with the Princeton cultivar, we need to be careful of tree structure.

Some have a lovely punctuating look in the Park. Others are like beanpoles. Consider removing a few, if Parks will permit.

Many lost since 1963. We have recently planted two. More can be replaced using the Purple Robe cultivar. Their rough bark and variable branching add a distinct lovely texture in the mix.

These have gone mainly through attrition. Might replace one or two with newer cultivars, but better to make more diversity in understory.

These have all been lost. We should put back at least two or three. Their flower and fruit, along with their long, rising branches, make a contribution to the woodland.

All were planted since 1963. There are fewer now than there were in 1998, but still plenty. They have a rather chaotic branching structure, but good flowers. We should keep at least five cherries, perhaps using new cultivars – like Akebono – when planting new cherries.

There is no shortage of crabapples, including some that were recently planted. No more need to be planted. Let's increase the diversity of the understory.

A lovely plant. We should replace them using both native and exotic species. A good understory plant.

Only one linden remains near the Shake Shack. They have a lovely distinctive branch and bark pattern. We should put some back, including perhaps one or two of the native basswood.

Fine plant, but no need to plant more, as we have a good group of them now around the playground.

Two lovely mature plants are in the northeast quadrant of the Park. Ash have a wonderful upreaching branch structure. Unfortunately, they are likely to be affected by emerald ash borer. Because we are in the city and are able to monitor these plants closely, we may be able to add one more ash.

These have increased in numbers since 1963. They are invasive and somewhat unthrifty. No new ones should be planted.

This tree is a survivor. It is near the northwest corner and is in slow decline. When it is removed, we should look to see if new male clones of ailanthus are available. If so, perhaps we should replace the ailanthus with an ailanthus.

A common but lovely weed tree with nice flowers and fruit and good branch structure. We might consider putting back one specimen.

Another survivor. A very fine tree, whose branches now make a high upright part of the southeast canopy. Can have a problem with witch's brooms, so perhaps it is wise not to plant another while this one survives.

One is left, along with a new red horse chestnut. These plants often develop an unsightly leaf disease that defoliates them early.

A lovely plant. This one fell victim to compact soils. A very interesting and irregular branch structure. We should definitely have more of these.

New plant. This one in west side of the Oval Lawn. Lovely structure, flowers, and smooth grey bark.

This may be an undercount, since there are some new quite small ones that may have been missed. Lovely plants, good for part shade, but with a canker problem.

Good plant, though it can be a bit temperamental in highly urban settings.

See horse chestnut.

These often have serious scale infestations. Ours are pretty nice. Would not add more. If we want purple leaves, perhaps a schubert cherry.

New plant. Not yet established. Good choice.

A nice small tree with pretty white flowers. May plant more in the future.

Tree Inventory with Succession Class

The tree inventory can furnish a great deal of data that is useful in making decisions about the trees. Below is a key to help you to read the inventory and to interpret particular data points.

Each tree is assigned a unique number. This number leads its entry in the inventory, and the number appears on the Numbered Tree Plan, placing the tree in the landscape. Each tree is named with both its Latin binomial and its most frequently used common name.

Eight factors go into the calculation of the Condition Rating of the tree: root structure, root health, trunk structure, trunk health, branch structure, branch health, twigs, and foliage. Each factor refers to structure or health of a given part of the tree—roots, trunk, or scaffold branches—and to health and structure combined in the case of foliage and twigs. The Condition Rating is obtained by adding the eight individual factors and dividing by the highest possible score of 32.

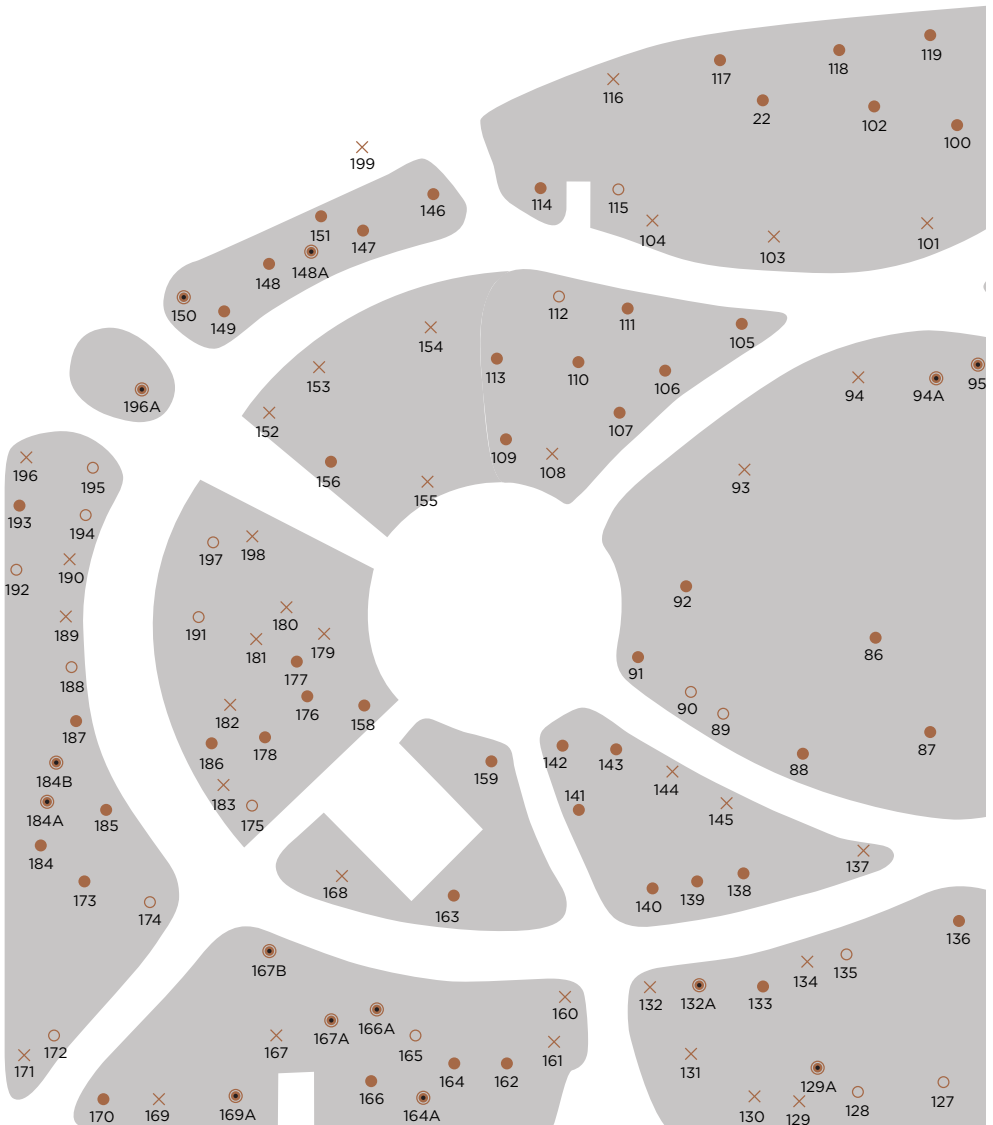
For each of the readings, the number rating refers to the following:

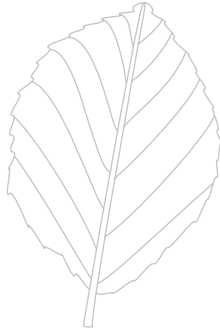
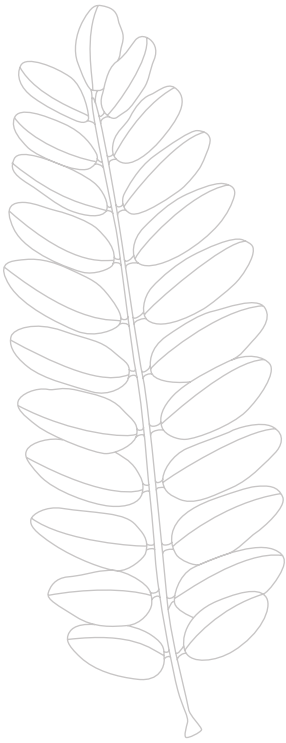
1. With very serious defects
2. With major defects
3. With minor defects
4. Without defects

Obviously, these are ordinal numbers, so to add them as though they were cardinal numbers is not an exact science. Still, the rating provides a good rough guide to the condition of the tree in question. A rating of 60 to 75 percent is acceptable for a mature tree. A rating of less than 60 percent signals a problematic tree.

Succession Class refers to a number that I have given to the tree according to my assessment of its rough longevity potential. This is only an approximation, particularly since longevity may be changed by retrenchment pruning and other proactive measures that enhance the ability to preserve a tree in spite of defects. This is especially true for ancient and historically important trees. It should be remembered that trees, unlike animals, have an indefinite rather than a definite pattern of growth. There are clonal groves of trees that are more than twenty thousand years old.

Succession Class numbers indicate longevity and are keyed on the numbered plan, as follows:



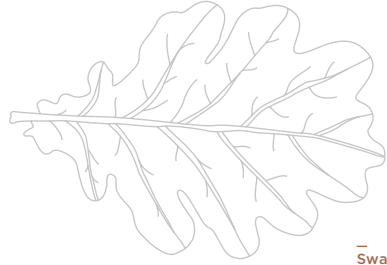


- London Plane



- Witch-hazel

- Black Locust



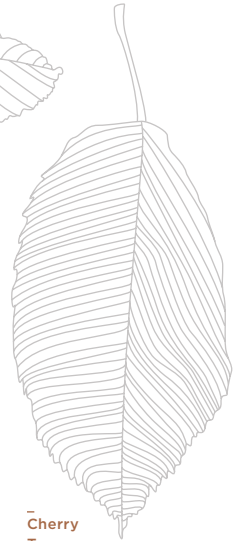
- Swamp White Oak



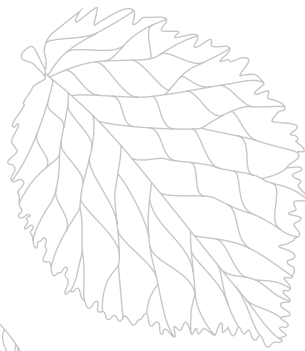
- Horse Chestnuts



- Pin Oak



- Cherry Tree



- Elm



- Redbud



- Gingko

The Tree Inventory

Nr	Latin Name	Common Name	Trunk Diameter (DBH") 1998	Trunk Diameter (DBH") 2016
1	<i>Ginkgo biloba</i>	Ginkgo	13.5	16.3
2	<i>Platanus X acerifolia</i>	London plane	14.5	18.8
3	<i>Ulmus americana</i>	American elm	22	28.8
4	<i>Ulmus americana</i>	American elm	14.5	22.2
5	<i>Platanus X acerifolia</i>	London plane	15	20.4
5a	<i>Cercodophyllum japonicum</i>	Katsura tree	Planted 2017*	Planted 2017*
6	<i>Ulmus americana</i>	American elm	3	N/A
6a	<i>Malus Sp.</i>	Crabapple	*	4.1
6b	<i>Malus Sp.</i>	Crabapple	*	5.1
7	<i>Platanus X acerifolia</i>	London plane	23.5	28.3
8	<i>Platanus X acerifolia</i>	London plane	25.3	29.9
9	<i>Platanus X acerifolia</i>	London plane	25.7	27.5
9a	<i>Ginkgo biloba</i>	Ginkgo	*	26.0
9b	<i>Cornus mas</i>	Cornelian cherry	Planted 2017*	Planted 2017*
10	<i>Platanus X acerifolia</i>	London plane	23.5	28.9
10a	<i>Cercis canadensis</i>	Redbud	*	3
10b	<i>Cercis canadensis</i> 'Vanilla Twist'	Redbud	Planted 2017*	Planted 2017*
10c	<i>Cercis canadensis</i> 'Pauline Lily'	Redbud	Planted 2017*	Planted 2017*
10d	<i>Cercis canadensis</i> 'Royal White'	Redbud	Planted 2017*	Planted 2017*
11	<i>Platanus X acerifolia</i>	London plane	31.1	36.5
12	<i>Ginkgo biloba</i>	Ginkgo	13	17.7
13	<i>Quercus palustris</i>	Pin oak	14.6	19.9
14	<i>Quercus palustris</i>	Pin oak	18.5	24.7
15	<i>Quercus palustris</i>	Pin oak	11	15.3
16	<i>Ginkgo biloba</i>	Ginkgo	15.5	19.2
16a	<i>Cercis canadensis</i> 'Alleycat'	Redbud	Planted 2017*	Planted 2017*
17	<i>Ginkgo biloba</i>	Ginkgo	17	N/A
18	<i>Quercus palustris</i>	Pin oak	19	23.8
19	<i>Ginkgo biloba</i>	Ginkgo	15.4	18.5
20	<i>Platanus X acerifolia</i>	London plane	26.3	30.4
21	<i>Platanus X acerifolia</i>	London plane	27.5	31.1
22	<i>Platanus X acerifolia</i>	London plane	26.2	30.5
22a	<i>Quercus rubra</i>	Red oak	*	7.8
23	<i>Platanus X acerifolia</i>	London plane	26.4	30.6
23a	<i>Quercus palustris</i>	Pin oak	*	16.7

* No data available

Height (')	Crown Height (')	Canopy Width (')	Live Crown Ratio	Condition Rating
52	4.5	29	91%	75%
57	26.5	54	54%	81%
64.5	5.8	22.5	91%	75%
49	17	72	65%	72%
61.5	22.5	45	63%	78%
Planted 2017*	Planted 2017*	Planted 2017*	Planted 2017*	Planted 2017*
N/A	N/A	N/A	N/A	Tree removed
12.5	4	15	68%	75%
14	4	20	71%	78%
65.5	16.5	59	75%	81%
65	18.5	57	72%	78%
62	32	48	48%	72%
71	28.5	32	60%	75%
Planted 2017*	Planted 2017*	Planted 2017*	Planted 2017*	Planted 2017*
76	24.5	75	68%	81%
10	4	8	60%	97%
Planted 2017*	Planted 2017*	Planted 2017*	Planted 2017*	Planted 2017*
Planted 2017*	Planted 2017*	Planted 2017*	Planted 2017*	Planted 2017*
Planted 2017*	Planted 2017*	Planted 2017*	Planted 2017*	Planted 2017*
66.5	18.5	75	72%	84%
64	18.5	27	71%	81%
52	18	36	65%	72%
60	20	50	67%	66%
40.5	18	30	56%	69%
59	8.5	24	86%	78%
Planted 2017*	Planted 2017*	Planted 2017*	Planted 2017*	Planted 2017*
N/A	N/A	N/A	N/A	Tree removed
54	21	63	61%	72%
62.5	22	24	65%	69%
66	26	78	61%	78%
65	14	75	78%	78%
72	22	72	69%	69%
39.5	9	30	77%	94%
66.5	16	75	76%	81%
55	16	45	71%	78%

Nr	Latin Name	Common Name	Trunk Diameter (DBH") 1998	Trunk Diameter (DBH") 2016
23b	<i>Styrax japonica</i>	Japanese snowbell	*	3.8
23c	<i>Cornus mas</i>	Cornelian cherry	*	3.7
23d	<i>Cornus mas</i>	Cornelian cherry	*	5.8
23e	<i>Prunus cerasifera</i>	Cherry plum	*	5.1
23f	<i>Cornus mas</i>	Cornelian cherry	*	6.1
23g	<i>Cercis canadensis</i> 'Carolina Sweetheart'	Redbud	Planted 2017*	Planted 2017*
24	<i>Pseudotsuga menziesii</i>	Douglas fir	4	N/A
25	<i>Platanus X acerifolia</i>	London plane	30	32
26	<i>Ulmus procera</i>	English elm	40	N/A
26a	<i>Parrotia persica</i>	Parrotia	*	3.1
27	<i>Malus Sp</i>	Crabapple	10	N/A
28	<i>Ulmus carpinifolia</i>	Smoothleaf elm	21.1	29.3
28a	<i>Malus Sp</i>	Crabapple	*	4.9
29	<i>Acer platanooides</i>	Norway maple	18	N/A
29a	<i>Cercis canadensis</i> 'Floating Cloud'	Redbud	*	3.5
30	<i>Malus Sp</i>	Crabapple	12	N/A
31	<i>Platanus X acerifolia</i>	London plane	24.7	26.0
32	<i>Catalpa bignonioides</i>	Southern catalpa	11.9	N/A
33	<i>Prunus serrulata</i> 'Kwanzan'	Kwanzan cherry	12.4	19.7
34	<i>Tilia cordata</i>	Littleleaf linden	18.3	N/A
35	<i>Platanus X acerifolia</i>	London plane	21.8	23.6
36	<i>Platanus X acerifolia</i>	London plane	26	27.3
37	<i>Quercus bicolor</i>	Swamp white oak	11.3	15.9
38	<i>Platanus X acerifolia</i>	London plane	26.6	29.8
39	<i>Malus Sp</i>	Crabapple	4.1	N/A
40	<i>Ulmus americana</i>	American elm	18.5	26.9
41	<i>Platanus X acerifolia</i>	London plane	25.4	28.1
41a	<i>Cercis canadensis</i> 'Hearts of Gold'	Redbud	Planted 2017*	Planted 2017*
42	<i>Ailanthus altissima</i>	Ailanthus	22.4	28.1
43	<i>Tilia cordata</i>	Littleleaf linden	21.1	N/A
44	<i>Styphnolobium japonicum</i>	Pagoda tree	12.1	15.8
45	<i>Platanus X acerifolia</i>	London plane	14.4	19.2
46	<i>Malus Sp</i>	Crabapple	12	17.2
47	<i>Malus Sp</i>	Crabapple	10.4	16.2

Height (')	Crown Height (')	Canopy Width (')	Live Crown Ratio	Condition Rating
12	3	19	75%	100%
12	3	19	75%	97%
16	3	24	81%	94%
17	4	18	76%	84%
17	5	24	71%	100%
Planted 2017*	Planted 2017*	Planted 2017*	Planted 2017*	Planted 2017*
N/A	N/A	N/A	N/A	Tree removed
73.5	20	75	73%	81%
N/A	N/A	N/A	N/A	Tree removed
8	2	6	75%	84%
N/A	N/A	N/A	N/A	Tree removed
72	20	28	72%	81%
15	3	20	80%	100%
N/A	N/A	N/A	N/A	Tree removed
15	3	20	80%	100%
N/A	N/A	N/A	N/A	Tree removed
56	18.5	42	67%	66%
N/A	N/A	N/A	N/A	Tree removed
27	4	60	85%	72%
N/A	N/A	N/A	N/A	Tree removed
65	20	48	69%	78%
55.5	15.5	60	72%	75%
53	15	46	72%	81%
63	20	75	68%	78%
N/A	N/A	N/A	N/A	Tree removed
55	15	90	73%	75%
62.5	20	78	68%	78%
Planted 2017*	Planted 2017*	Planted 2017*	Planted 2017*	Planted 2017*
68.5	15	72	78%	72%
N/A	N/A	N/A	N/A	Tree removed
71.5	37	60	48%	69%
72.5	25	51	66%	72%
31.5	8.5	36	73%	75%
33.5	8	39	76%	69%

Nr	Latin Name	Common Name	Trunk Diameter (DBH") 1998	Trunk Diameter (DBH") 2016
48	<i>Malus Sp</i>	Crabapple	12.2	16.2
49	<i>Malus Sp</i>	Crabapple	11.5	15
50	<i>Styphnolobium japonicum</i>	Pagoda tree	15.5	22
51	<i>Quercus rubra</i>	Red oak	3.5	12.3
51a	<i>Cercis canadensis</i> 'Traveler'	Redbud	Planted 2017*	Planted 2017*
52	<i>Ulmus procera</i>	English elm	53	57.1
53	<i>Ginkgo biloba</i>	Ginkgo	15.4	21.4
54	<i>Platanus X acerifolia</i>	London plane	17.5	22.4
55	<i>Acer saccharinum</i>	Silver maple. Possibly a named hybrid	3	12.5, 13.5 Tree has two trunks
56	<i>Styphnolobium japonicum</i>	Pagoda tree	18.5	21.1
57	<i>Prunus serrulata</i> 'Kwanzan'	Kwanzan cherry	6.9	11.5
58	<i>Ulmus carpinifolia</i>	Smoothleaf elm	17	24.2
59	<i>Platanus X acerifolia</i>	London plane	21.3	25.4
61	<i>Malus Sp</i>	Crabapple	11	15
62	<i>Pyrus calleryana</i>	Callery pear	2.8	N/A
63	<i>Quercus bicolor</i>	Swamp white oak	3	11.8
64	<i>Quercus palustris</i>	Pin oak	19	26.3
65	<i>Catalpa bignonioides</i>	Southern catalpa	17.3	N/A
65a	<i>Cercis canadensis</i> 'The Rising Sun'	Redbud	N/A	3.1
65b	<i>Cercis canadensis</i> 'Ruby Falls'	Redbud	Planted 2017*	Planted 2017*
66	<i>Platanus X acerifolia</i>	London plane	29.8	34.3
66a	<i>Cercis canadensis</i> 'Burgandy Hearts'	Redbud	Planted 2017*	Planted 2017*
67	<i>Platanus X acerifolia</i>	London plane	26.2	29.6
68	<i>Platanus X acerifolia</i>	London plane	28	29.6
68a	<i>Aesculus pavia</i>	Red horse chestnut	N/A	8.1
68b	<i>Cercis canadensis</i> 'Summers Tower'	Redbud	Planted 2017*	Planted 2017*
69	<i>Platanus X acerifolia</i>	London plane	20.7	23.8
70	<i>Fraxinus pensylvanica</i>	Green ash	17.5	20.8
71	<i>Fraxinus pensylvanica</i>	Green ash	17.6	18.8
71a	<i>Cercis canadensis</i> 'Alba'	Redbud	Planted 2017*	Planted 2017*
72	<i>Quercus palustris</i>	Pin oak	24.4	31.2

Height (')	Crown Height (')	Canopy Width (')	Live Crown Ratio	Condition Rating
36	5	28	86%	69%
25	14	27	44%	66%
54.5	19	60	65%	78%
59	20.5	18	65%	75%
Planted 2017*	Planted 2017*	Planted 2017*	Planted 2017*	Planted 2017*
75	12.5	60	83%	69%
75.5	22	30	71%	75%
68	15.5	68	77%	78%
69.5	17.5	42	75%	69%
67.5	31	66	54%	72%
22	5	57	77%	72%
80.5	16	46	80%	72%
70	19	57	73%	78%
28	8	73	71%	69%
N/A	N/A	N/A	N/A	Tree removed
55.5	8	45	86%	84%
62.5	20.5	57	67%	81%
N/A	N/A	N/A	N/A	Tree removed
15	4	18	73%	100%
Planted 2017*	Planted 2017*	Planted 2017*	Planted 2017*	Planted 2017*
70	21.5	60	69%	69%
Planted 2017*	Planted 2017*	Planted 2017*	Planted 2017*	Planted 2017*
72.5	20	57	72%	75%
51	2.5	60	95%	53%
31.5	4	27	87%	81%
Planted 2017*	Planted 2017*	Planted 2017*	Planted 2017*	Planted 2017*
61.5	16.5	61	73%	81%
63.5	36	51	43%	72%
62.5	29	60	54%	72%
Planted 2017*	Planted 2017*	Planted 2017*	Planted 2017*	Planted 2017*
83.5	39	78	53%	84%

Nr	Latin Name	Common Name	Trunk Diameter (DBH") 1998	Trunk Diameter (DBH") 2016
73	<i>Ginkgo biloba</i>	Ginkgo	14.7	N/A
74	<i>Ginkgo biloba</i>	Ginkgo	18.8	24
75	<i>Catalpa bignonioides</i>	Southern catalpa	18	N/A
76	<i>Malus Sp</i>	Crabapple	8.7	14
77	<i>Ginkgo biloba</i>	Ginkgo	18.8	23.1
78	<i>Ginkgo biloba</i>	Ginkgo	19.9	N/A
78a	<i>Prunus cerasifera</i>	Cherry Plum	N/A	N/A
79	<i>Ginkgo biloba</i>	Ginkgo	15.5	21.5
79a	<i>Cercis canadensis</i> 'Pink Heartbreaker'	Redbud	Planted 2017*	Planted 2017*
80	<i>Platanus X acerifolia</i>	London plane	32.7	36.5
81	<i>Ulmus procera</i>	English elm	52.2	56.7
82	<i>Aesculus hippocastanum</i>	Horse chestnut	19.9	22.3
83	<i>Styphnolobium japonicum</i>	Pagoda tree	19.3	26.0
84	<i>Quercus palustris</i>	Pin oak	22.1	29.8
85	<i>Ulmus procera</i>	English elm	44.8	N/A
86	<i>Ginkgo biloba</i>	Ginkgo	15.4	24.1
87	<i>Styphnolobium japonicum</i>	Pagoda tree	14.6	20.1
88	<i>Ulmus americana</i>	American elm	24.3	34.2
89	<i>Ginkgo biloba</i>	Ginkgo	16.5	18.8
90	<i>Malus sp</i>	Crabapple	9.9	14.1
91	<i>Ulmus americana</i>	American elm	30.1	39.5
92	<i>Malus sp</i>	Crabapple	14.1	19.3
93	<i>Aesculus hippocastanum</i>	Horse chestnut	24	N/A
94	<i>Quercus palustris</i>	Pin oak	22.3	N/A
94a	<i>Cladrastis kentukea</i>	Yellowwood	N/A	8.9
95	<i>Ulmus parvifolia</i>	Chinese elm	4	13.6
96	<i>Catalpa bignonioides</i>	Southern catalpa	15.7	N/A
97	<i>Malus sp</i>	Crabapple	11.8	12.8
98	<i>Platanus X acerifolia</i>	London plane	24.7	25.8
99	<i>Prunus serrulata</i> 'Kwanzan'	Kwanzan cherry	7	N/A
100	<i>Ginkgo biloba</i>	Ginkgo	18.8	20.6
101	<i>Acer platanoides</i>	Norway maple	18	N/A
102	<i>Platanus X acerifolia</i>	London plane	25.4	28.2
103	<i>Ginkgo biloba</i>	Ginkgo	12.5	N/A
104	<i>Tilia cordata</i>	Littleleaf linden	23.3	N/A
105	<i>Platanus X acerifolia</i>	London plane	34	38.1

Height (')	Crown Height (')	Canopy Width (')	Live Crown Ratio	Condition Rating
N/A	N/A	N/A	N/A	Tree removed
54.5	12	42	78%	78%
N/A	N/A	N/A	N/A	Tree removed
23	7	45	70%	72%
69	30	30	57%	78%
N/A	N/A	N/A	N/A	Tree removed
N/A	N/A	N/A	N/A	Tree removed
71	12	42	83%	75%
Planted 2017*	Planted 2017*	Planted 2017*	Planted 2017*	Planted 2017*
65	24	75	63%	78%
50	14	45	72%	69%
63.5	21	57	67%	75%
64.5	17	75	74%	81%
72.5	17.5	90	76%	84%
N/A	N/A	N/A	N/A	Tree removed
46	14	57	70%	78%
66	13	65	80%	72%
78.5	30	78	62%	84%
63	16	21	75%	72%
38	14	34	63%	66%
74	18	90	76%	72%
30	7	57	77%	81%
N/A	N/A	N/A	N/A	Tree removed
N/A	N/A	N/A	N/A	Tree removed
35	8	40	77%	100%
32.5	8	52	75%	84%
N/A	N/A	N/A	N/A	Tree removed
33.5	6	45	82%	78%
56.5	20.5	78	64%	81%
N/A	N/A	N/A	N/A	Tree removed
69.5	20	54	71%	81%
N/A	N/A	N/A	N/A	Tree removed
60	25	63	58%	78%
N/A	N/A	N/A	N/A	Tree removed
N/A	N/A	N/A	N/A	Tree removed
69.5	15.5	84	78%	75%

Nr	Latin Name	Common Name	Trunk Diameter (DBH") 1998	Trunk Diameter (DBH") 2016
106	<i>Ginkgo biloba</i>	Ginkgo	16.8	20.8
107	<i>Platanus X acerifolia</i>	London plane	32.1	34.9
108	<i>Quercus palustris</i>	Pin oak	22.8	N/A
109	<i>Platanus X acerifolia</i>	London plane	32.2	35
110	<i>Prunus serrulata</i> 'Kwanzan'	Kwanzan cherry	6.9	11.6
111	<i>Ginkgo biloba</i>	Ginkgo	21.2	24.4
112	<i>Ginkgo biloba</i>	Ginkgo	17	19.4
113	<i>Platanus X acerifolia</i>	London plane	32.7	37.9
114	<i>Prunus serrulata</i> 'Kwanzan'	Kwanzan cherry	15.8	23.2
115	<i>Malus sp</i>	Crabapple	25	22.5
116	<i>Prunus serrulata</i> 'Kwanzan'	Kwanzan cherry	N/A	N/A
116a	<i>Cercis canadensis</i> 'Merlot'	Redbud	Planted 2017*	Planted 2017*
117	<i>Platanus X acerifolia</i>	London plane	24	25.1
118	<i>Platanus X acerifolia</i>	London plane	21.8	26.1
119	<i>Platanus X acerifolia</i>	London plane	24	26.8
120	<i>Platanus X acerifolia</i>	London plane	24.5	30.1
121	<i>Platanus X acerifolia</i>	London plane	27.4	31.8
122	<i>Robinia pseudoacacia</i>	Black locust	14.3	24.4
122a	<i>Cercis canadensis</i> 'White Water'	Redbud	Planted 2017*	Planted 2017*
123	<i>Quercus palustris</i>	Pin oak	18.3	22.4
123a	<i>Cercis canadensis</i> 'Pink Pom Pom'	Redbud	Planted 2017*	Planted 2017*
124	<i>Quercus rubra</i>	Red oak	18.9	26.9
125	<i>Malus sp</i>	Crabapple	5.4	6.7
126	<i>Malus sp</i>	Crabapple	10.6	14.9
127	<i>Quercus rubra</i>	Red oak	15	18.2
128	<i>Quercus rubra</i>	Red oak	17.2	22
129	<i>Prunus serrulata</i> 'Kwanzan'	Kwanzan cherry	6.6	N/A
129a	<i>Cercis canadensis</i> 'Flame Red'	Redbud	Planted 2017*	Planted 2017*
130	<i>Quercus rubra</i>	Red oak	15.1	N/A
131	<i>Styrax japonica</i>	Japanese snowbell	N/A	N/A
132	<i>Robinia pseudoacacia</i>	Black locust	30.4	N/A
132a	<i>Robinia pseudoacacia</i> 'Purple Robe'	Black locust	Planted 2017*	Planted 2017*

Height (')	Crown Height (')	Canopy Width (')	Live Crown Ratio	Condition Rating
73.5	14	30	81%	78%
77.5	12	72	85%	84%
N/A	N/A	N/A	N/A	Tree removed
75	35	75	53%	72%
26	5	42	81%	75%
58.5	12	45	79%	81%
50	20	36	60%	69%
76	24.5	81	68%	78%
24	7	42	71%	75%
33	9	54	73%	59%
N/A	N/A	N/A	N/A	Tree removed
Planted 2017*	Planted 2017*	Planted 2017*	Planted 2017*	Planted 2017*
60	20	63	67%	75%
60.5	18	54	70%	81%
58.5	24	54	59%	78%
60.5	16	60	74%	78%
61	26	60	57%	78%
63	10.5	52	83%	72%
Planted 2017*	Planted 2017*	Planted 2017*	Planted 2017*	Planted 2017*
53.5	25	63	53%	75%
Planted 2017*	Planted 2017*	Planted 2017*	Planted 2017*	Planted 2017*
71.5	14.5	54	80%	81%
21.5	10	2	53%	66%
29.5	9	45	69%	75%
39	9	27	77%	63%
49	19.5	57	60%	69%
N/A	N/A	N/A	N/A	Tree removed
Planted 2017*	Planted 2017*	Planted 2017*	Planted 2017*	Planted 2017*
N/A	N/A	N/A	N/A	Tree removed
N/A	N/A	N/A	N/A	Tree removed
N/A	N/A	N/A	N/A	Tree removed
Planted 2017*	Planted 2017*	Planted 2017*	Planted 2017*	Planted 2017*

The Tree Inventory

Nr	Latin Name	Common Name	Trunk Diameter (DBH") 1998	Trunk Diameter (DBH") 2016
133	<i>Ulmus serotina</i>	September elm	27	36
134	<i>Quercus palustris</i>	Pin oak	7.7	N/A
135	<i>Quercus palustris</i>	Pin oak	21.2	24
136	<i>Quercus palustris</i>	Pin oak	27.9	34.7
137	<i>Robinia pseudoacacia</i>	Black locust	27.6	N/A
138	<i>Ulmus serotina</i>	September elm	24.9	32.4
139	<i>Ginkgo biloba</i>	Ginkgo	20.2	22.2
140	<i>Prunus serrulata</i> 'Kwanzan'	Kwanzan cherry	10	12
141	<i>Celtis occidentalis</i>	Hackberry	23.5	30.1
142	<i>Ulmus serotina</i>	September elm	27.4	35.2
143	<i>Quercus palustris</i>	Pin oak	16.7	19.8
144	<i>Malus sp</i>	Crabapple	2	N/A
145	<i>Malus sp</i>	Crabapple	11.8	N/A
146	<i>Platanus X acerifolia</i>	London plane	22.4	24.5
147	<i>Prunus serrulata</i> 'Kwanzan'	Kwanzan cherry	7	10.1
148	<i>Platanus X acerifolia</i>	London plane	25.5	29
148a	<i>Chionanthus retusus</i> 'China Snow'	Fringetree	Planted 2017*	Planted 2017*
149	<i>Platanus X acerifolia</i>	London plane	22.9	24
150	<i>Quercus alba</i>	White oak	16.9	21.5
151	<i>Crataegus spp</i>	Hawthorne	10	11.2
152	<i>Quercus rubra</i>	Red oak	14.8	N/A
153	<i>Acer pseudoplatanus</i>	Sycamore maple	36.8	N/A
154	<i>Platanus X acerifolia</i>	London plane	27.7	28.9
155	<i>Robinia pseudoacacia</i>	Black locust	22.7	N/A
156	<i>Quercus palustris</i>	Pin oak	23.7	27.1
157	<i>Ulmus procera</i>	English elm	53.2	N/A
158	<i>Tilia cordata</i>	Littleleaf linden	22.7	29.2
159	<i>Quercus rubra</i>	Red oak	21.5	25.8
160	<i>Robinia pseudoacacia</i>	Black locust	16.5	N/A
161	<i>Quercus rubra</i>	Red oak	15	N/A
162	<i>Quercus rubra</i>	Red oak	17	21.5
163	<i>Platanus X acerifolia</i>	London plane	33.4	36.8
164	<i>Quercus rubra</i>	Red oak	16.3	23.7
164a	<i>Cercis canadensis</i> 'Appalachian Red'	Redbud	Planted 2017*	Planted 2017*
165	<i>Ginkgo biloba</i>	Ginkgo	15.5	16.7

Height (')	Crown Height (')	Canopy Width (')	Live Crown Ratio	Condition Rating
71	22	84	69%	81%
N/A	N/A	N/A	N/A	Tree removed
57	24.5	30	57%	69%
74.5	23	75	69%	81%
N/A	N/A	N/A	N/A	Tree removed
80	31	81	61%	78%
72.5	20.5	36	72%	81%
20	7	36	65%	75%
80	20	78	75%	84%
80	25	96	69%	78%
58	20	60	66%	72%
N/A	N/A	N/A	N/A	Tree removed
N/A	N/A	N/A	N/A	Tree removed
55	20	78	64%	81%
20	5	30	75%	75%
72	21.5	54	70%	81%
Planted 2017*	Planted 2017*	Planted 2017*	Planted 2017*	Planted 2017*
64	25	45	61%	72%
52.5	17.5	54	67%	81%
24	10	24	58%	75%
N/A	N/A	N/A	N/A	Tree removed
N/A	N/A	N/A	N/A	Tree removed
74.5	45	60	40%	56%
N/A	N/A	N/A	N/A	Tree removed
73.5	36.5	63	50%	75%
N/A	N/A	N/A	N/A	Stump remains
63.5	18	70	72%	81%
50.5	20	36	60%	78%
N/A	N/A	N/A	N/A	Tree removed
N/A	N/A	N/A	N/A	Tree removed
52.5	19	32	64%	75%
67.5	15	85	78%	84%
60	21	45	65%	78%
Planted 2017*	Planted 2017*	Planted 2017*	Planted 2017*	Planted 2017*
67	20	26	70%	75%

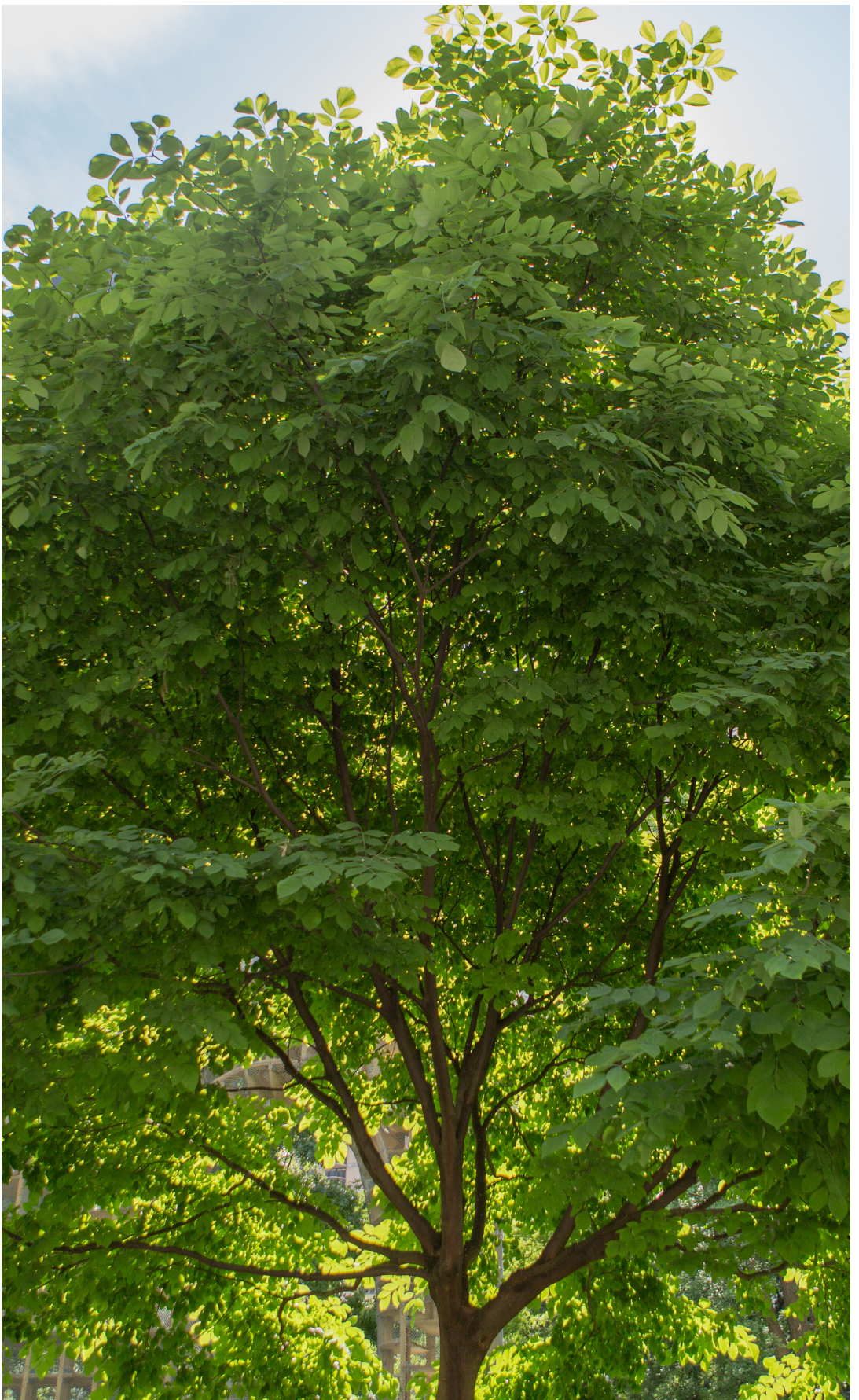
Nr	Latin Name	Common Name	Trunk Diameter (DBH") 1998	Trunk Diameter (DBH") 2016
166	<i>Quercus rubra</i>	Red oak	11.1	15.2
166a	<i>Davidia involucrata</i> 'Sonoma'	Dove tree	Planted 2017*	Planted 2017*
167	<i>Tilia cordata</i>	Littleleaf linden	25.6	N/A
167a	<i>Cercis canadensis</i> 'Cascading Hearts'	Redbud	Planted 2017*	Planted 2017*
167b	<i>Prunus mume</i> 'Peggy Clarke'	Japanese apricot	Planted 2017*	Planted 2017*
168	<i>Pinus nigra</i>	Black pine	8.5	N/A
169	<i>Quercus rubra</i>	Red oak	21.5	N/A
169a	<i>Cercis canadensis</i> 'Crosswicks Red'	Redbud	Planted 2017*	Planted 2017*
170	<i>Quercus rubra</i>	Red oak	18.5	24.6
171	<i>Crataegus spp</i>	Hawthorne	5.3	N/A
172	<i>Crataegus spp</i>	Hawthorne	N/A	12.5
173	<i>Malus floribunda</i>	Crabapple	5.7	9.2
174	<i>Ginkgo biloba</i>	Ginkgo	14	14.7
175	<i>Platanus x acerifolia</i>	London plane	27.8	29.5
176	<i>Crataegus spp</i>	Hawthorne	6.07	7.9
177	<i>Crataegus spp</i>	Hawthorne	6.3	8.7
178	<i>Crataegus spp</i>	Hawthorne	5.4	12.1
179	<i>Crataegus spp</i>	Hawthorne	5.7	N/A
180	<i>Crataegus spp</i>	Hawthorne	6.4	N/A
181	<i>Crataegus spp</i>	Hawthorne	6.6	N/A
182	<i>Crataegus spp</i>	Hawthorne	10.8	N/A
183	<i>Quercus palustris</i>	Pin oak	15.3	N/A
184	<i>Platanus x acerifolia</i>	London plane	25.7	29.0
184a	<i>Cercis canadensis</i> 'Lavender Twist'	Redbud	Planted 2017*	Planted 2017*
184b	<i>Cercis canadensis</i> 'Traveler'	Planted 2017*	Planted 2017*	Planted 2017*
185	<i>Platanus x acerifolia</i>	London plane	23.5	25.4
186	<i>Quercus palustris</i>	Pin oak	23.5	27.1
187	<i>Malus spp</i>	Crabapple	7	9.5
188	<i>Prunus serrulata</i> 'Kwanzan'	Kwanzan cherry	5.3	6.1
189	<i>Viburnum spp</i>	Viburnum	3	N/A
190	<i>Malus spp</i>	Crabapple	7	N/A
191	<i>Platanus x acerifolia</i>	London plane	33	31.9
192	<i>Quercus palustris</i>	Pin oak	15.7	20.0

Height (')	Crown Height (')	Canopy Width (')	Live Crown Ratio	Condition Rating
51	20	39	61%	78%
Planted 2017*	Planted 2017*	Planted 2017*	Planted 2017*	Planted 2017*
N/A	N/A	N/A	N/A	Tree removed
Planted 2017*	Planted 2017*	Planted 2017*	Planted 2017*	Planted 2017*
Planted 2017*	Planted 2017*	Planted 2017*	Planted 2017*	Planted 2017*
N/A	N/A	N/A	N/A	Tree removed
N/A	N/A	N/A	N/A	Tree removed
Planted 2017*	Planted 2017*	Planted 2017*	Planted 2017*	Planted 2017*
62.5	19.5	60	69%	84%
N/A	N/A	N/A	N/A	Tree removed
22	8	24	64%	70%
18	5	24	72%	75%
52	11.5	27	78%	78%
50.5	21.5	60	57%	63%
17	8	24	53%	72%
22.5	10	36	56%	75%
23.5	10	36	57%	72%
N/A	N/A	N/A	N/A	Tree removed
N/A	N/A	N/A	N/A	Tree removed
N/A	N/A	N/A	N/A	Tree removed
N/A	N/A	N/A	N/A	Tree removed
N/A	N/A	N/A	N/A	Tree removed
56.5	18	45	68%	78%
Planted 2017*	Planted 2017*	Planted 2017*	Planted 2017*	Planted 2017*
Planted 2017*	Planted 2017*	Planted 2017*	Planted 2017*	Planted 2017*
58	21	69	64%	81%
69.5	37	57	47%	66%
19	6	24	68%	75%
14	7	12	50%	69%
N/A	N/A	N/A	N/A	Tree removed
N/A	N/A	N/A	N/A	Tree removed
69	23	60	67%	63%
58	22	30	62%	72%

The Tree Inventory

Nr	Latin Name	Common Name	Trunk Diameter (DBH") 1998	Trunk Diameter (DBH") 2016
193	<i>Platanus x acerifolia</i>	London plane	23	26.6
194	<i>Ginkgo biloba</i>	Ginkgo	9.7	11.1
195	<i>Ginkgo biloba</i>	Ginkgo	12.5	16.1
196	<i>Crataegus spp</i>	Hawthorne	8.6	N/A
197	<i>Platanus x acerifolia</i>	London plane	18.2	19.8
198	<i>Gymnocladus dioicus</i>	Kentucky coffee tree	24.5	N/A
199	<i>Platanus x acerifolia</i>	London plane	22.1	N/A
200	<i>Platanus x acerifolia</i>	London plane	20	N/A
201	<i>Platanus x acerifolia</i>	London plane	23.2	N/A
202	<i>Platanus x acerifolia</i>	London plane	20	N/A
203	<i>Ginkgo biloba</i>	Ginkgo	19.7	N/A
204	<i>Malus spp</i>	Crabapple	8	N/A
205	<i>Prunus serrulata</i> 'Kwanzan'	Kwanzan cherry	4.4	N/A
206	<i>Ulmus serotina</i>	September elm	7	N/A
207	<i>Ulmus serotina</i>	September elm	18.3	N/A

Height (')	Crown Height (')	Canopy Width (')	Live Crown Ratio	Condition Rating
53	18	57	66%	81%
45	8	27	82%	63%
45	9	27	80%	63%
N/A	N/A	N/A	N/A	Tree removed
47.5	20	45	58%	56%
N/A	N/A	N/A	N/A	Tree removed
N/A	N/A	N/A	N/A	Tree removed
N/A	N/A	N/A	N/A	Tree removed
N/A	N/A	N/A	N/A	Tree removed
N/A	N/A	N/A	N/A	Tree removed
N/A	N/A	N/A	N/A	Tree removed
N/A	N/A	N/A	N/A	Tree removed
N/A	N/A	N/A	N/A	Tree removed
N/A	N/A	N/A	N/A	Tree removed
N/A	N/A	N/A	N/A	Tree removed



Suggested New Species for Replacements

I am seeking to increase the beauty of the branching patterns inside the Park, as well as the four-season interest of the plants. In some cases, as with catalpa and tilia, I am contemplating restoring to the Park plants that were there in the past, perhaps with different cultivars or species. I have also tried to supply contrasts of habit, some being very upright and some practically shrubby. With trees known for unruly habit, I have tried to choose cultivars that are shaped in a more uniform habit.

Each tree listed has a set of numbers that represents possible tree location points in the Park. The numbers correspond with the Numbered Tree Plan (on page 31) and can be used to graph where an existing tree must be replaced by one of the suggested trees in the corresponding area.

Stephanie Lucas and I worked on some of the suggested new species for replacement together. She contributed a list of trees that I have incorporated here. Sometimes, an area needs reworking before new planting can begin. In particular, the southwest area that is covered with crushed stone paving needs a new paving treatment before new plantings can be done there. This area includes trees 153-156, 179-182, 191, and 197-198.

Species	Cultivar	Virtues
<i>Catalpa bignonioides</i> Southern catalpa	'Aurea' and Species	Beautiful flowering. Large leaves. Species original to Park planting.
<i>Catalpa speciosa</i> Northern catalpa	'Heartland'	Beautiful flowering. Large leaves. Species original to park planting.
<i>Cercidiphyllum japonicum</i> Katsura tree	Species as well as 'Redfox', 'Pendulum,' 'Heronswood Globe'	Lovely branching habit. Leaves smell sweet in the fall.
<i>Corylus colurna</i> Turkish filbert		Interesting large and coarse leaves. Bark exfoliates when mature.
<i>Gymnocladus dioica</i> Kentucky coffee tree	'Espresso'	This upright fruitless cultivar. Lovely open branching habit.
<i>Liquidambar styraciflua</i> Sweetgum		Large upright tree with numerous large fruit. Lovely branching habit. Great fall color. Climate change adaptable.
<i>Liquidambar styraciflua</i> Sweetgum	'Slender Silhouette'	Tall and narrow version variety. Great fall color and few fruit. Climate change adaptable.
<i>Liriodendron tulipifera</i> Tulip tree	Species and 'Little Volunteer'	Magnificent stately large maturing tree with tulip-like flower. Need space and sun. Often has enormous erect trunk.
<i>Metasequoia glyptostroboides</i> Dawn redwood	Species and 'Ogon'	Beautiful upright conical habit. Delicate foliage. Deciduous evergreen. Bark exfoliates.
<i>Nyssa sylvatica</i> Black tupelo	'Wildfire' 'Zydeco Twist,' 'Autumn Cascade' 'Green Gable'	Best fall color of all native trees. Lovely habit consisting of numerous tiny twiglets attached at almost 90-degree angle to stems.
<i>Pinus bungeana</i> Lacebark pine		Beautiful silver bark, tall pine, open habit. Evergreen.
<i>Pinus flexilis</i> Limber pine	'Vanderwolf's Pyramid'	Deep green foliage, somewhat twisted. Dense pyramid in youth, flat-topped at maturity. Evergreen.
<i>Pinus parviflora</i> Japanese white pine		Evergreen.
<i>Pseudolarix amabilis</i> Golden larch		Oddball, slow growing. Golden fall color.
<i>Quercus imbricaria</i> Shingle oak		Interesting unlobed leaves. Climate change adaptable.
<i>Quercus macrocarpa</i> Burr oak		Interesting very lobed leaves. Wonderful acorns.

Species	Cultivar	Virtues
<i>Quercus rubra</i> Red oak	'Golden Dragon'	Golden foliage.
<i>Quercus phellos</i> Willow oak		Beautiful large trunk with age.
<i>Acer griseum</i> Paperbark maple	Species and 'Cinnamon'	Beautiful variegated exfoliated bark. Interesting trifoliolate leaves. Fine fall color.
<i>Acer japonicum</i> Japanese maple	'Full Moon'	Large leaves with many lobes. Orange to yellow fall color.
<i>Acer palmatum</i> Japanese maple	'Seiryu'	Upright vase-shaped dissectum with lovely dissected green leaves that turn orange and red in autumn.
<i>Aesculus x carnea</i> Red buckeye	'O'Neil Red'	Longer, redder flowers than standard.
<i>Aesculus flava</i> Yellow buckeye		Good fall color, beautiful yellow flowers, showy fruit.
<i>Amelanchier x grandiflora</i> Serviceberry	'Autumn Brilliance'	Good fall color. Their berries are enjoyed by birds.
<i>Asimina triloba</i> Pawpaw		Showy fruit, tolerates wet soil, cool flowers. Good fall color. Are native trees that look tropical. Climate change adaptable.
<i>Betula nigra</i> River birch	'Fox Valley'	Dwarf river birch.
<i>Carpinus betulus</i> European hornbeam		Pollution tolerant, good fall color, full tree.
<i>Carpinus caroliniana</i> American hornbeam	'Ball O Fire,' 'Fire Spire'	Good fall color, native tree.
<i>Catalpa x erudescens</i> Purple hybrid catalpa	'Purpurea'	Large white flowers and large leaves, starting purple and fading to green in the summer months.
<i>Chionanthus virginicus</i> White fringetree		Beautiful abundant white flowers on large shrub or small tree.
<i>Cladrastis kentukea</i> Yellowwood		Large shade tree with showy white flowers.
<i>Robinia pseudoacacia</i> Black locust	'Purple Robe'	Purple flowers. Species is original to the Park pallet.

Species	Cultivar	Virtues
<i>Tilia Americana</i> Basswood	'Redmond'	Large leaves. Reddish stems. Native American linden. Species is original to the Park palette.
<i>Tilia tomentosa</i> Silver linden	'Green Mountain' 'Sterling'	Shimmering leaves, dark green above and silvery beneath. Beautiful upright habit. Species is original to the Park palette.
<i>Ulmus 'Accolade'</i>	'Accolade'	Dark leaf and vases structure very like American elm but Dutch Elm Disease resistant. Species is original to the Park palette.
<i>Cornus alternifolia</i> Pagoda dogwood	'Argentea'	Fragrant flowers, horizontal habit, fruit, and variegated foliage.
<i>Cornus controversa</i> Giant dogwood	'Janine'	Yellow and green variegated pagoda-form dogwood.
<i>Cornus controversa</i> Giant dogwood	'Variegata'	Showy flowers and foliage, showy fall foliage, and summer fruit.
<i>Cornus florida</i> Mexican flowering dogwood	Subsp. <i>urbiniana</i>	Good fall color and unique white flowers.
<i>Cornus kousa</i> Kousa dogwood	'Satomi'	Good fall color, showy flowers and fruits. A pink flowering variety.
<i>Cotinus obovatus</i> American smoketree		Excellent fall color. Leaves in season are a dark blue green against smooth or scaly gray stems. Interesting stem pattern. "Smoky" flowering.
<i>Davidia involucrata</i> Dove tree	'Sonoma'	Beautiful white flowers. This cultivar blooms earlier.
<i>Diospyros virginiana</i> Persimmon		Native tree, pollution tolerant, interesting bark, and fruits.
<i>Euptelea pleiosperma</i> Chinese euptelea		Fall color, witch-hazel-like flowers.
<i>Halesia Carolina</i> Silver bell	'Uconn Wedding Bells'	A native cultivar. Beautiful white flowers and silver bark.
<i>Lagerstroemia fauriei</i> Crapemyrtle	'Townhouse'	Vase-shaped, colorful bark, white flowers, and a fast grower.
<i>Magnolia</i>	'Elizabeth'	Pale yellow flowering magnolia with upright habit. Lovely full form when mature.
<i>Magnolia</i>	'Galaxy'	Purple and white flower. Child of lilliflora, but single stem plant good for limited spaces.

Species	Cultivar	Virtues
<i>Magnolia</i>	'Black Tulip'	Tight dark purple flowers and a narrow form.
<i>Magnolia x booklynensis</i>	'Hattie Carthan'	Yellow flowers fused with pink veins.
<i>Magnolia x booklynensis</i>	'Woodsmen'	Purple-pink flowers.
<i>Magnolia x booklynensis</i>	'Yellow Bird'	Yellow flowers that are usually undamaged by frost.
<i>Magnolia stellata</i>	'Chrysanthemiflora'	Pink double-flowering.
<i>Magnolia macrophylla</i> Bigleaf magnolia		Very large-leafed magnolia. Loves to wander up among other plants. Good textural contrast.
<i>Magnolia macrophylla</i> Bigleaf magnolia	Var. 'Ashei'	Dwarf variety of <i>M. macrophylla</i> . Shrubby in habit but full-flowering.
<i>Parrotia persica</i> Persian ironwood		Great bark and fall color.
<i>Pinus thunbergii</i> Japanese black pine	'Thunderhead'	Compact and shrubby evergreen.
<i>Prunus Mume</i> Flowering apricot	'Matsubara Red'	Early bloom time, great red-pink flowers.
<i>Prunus serrulata</i> Japanese cherry	'Ukon'	Fall color, fruit, and yellow-white flowers.
<i>Salix gracilistyla</i> Willow	'Melanostachys'	Small shrub form. Pussy willow with purple black male catkins.
<i>Sciadopitys verticillata</i> Umbrella pine	'Wintergreen'	Does not bronze with cold temperatures.
<i>Sciadopitys verticillata</i> Umbrella pine	'Joe Kozey'	Narrow form.
<i>Styrax japonicus</i> Japanese snowbell	'Emerald Pagoda'	Larger flowers than usual, good upright form and excellent yellow fall color.

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Mayor, City of New York

Anthony Shorris,
First Deputy Mayor, City of New York

Hon. Mitchell J. Silver ,
*FAICP, PP, RTPI (hon.), FPIA (hon.), Commissioner,
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Madison Square Park Conservancy is the not-for-profit organization whose mission is to protect, nurture, and enhance Madison Square Park, a dynamic seven-acre public green space, creating an environment that fosters moments of inspiration. The Conservancy is committed to engaging the community through its beautiful gardens, inviting amenities, and world-class programming. Madison Square Park Conservancy is licensed by the New York City Department of Parks & Recreation to manage Madison Square Park and is responsible for raising 100 percent of the funds necessary to operate the Park, including the brilliant horticulture, park maintenance, sanitation, security, and free cultural programs for Park visitors of all ages.

For more information on Madison Square Park

Conservancy and its programs, please visit madisonsquarepark.org.



Madison Square Park Conservancy

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madisonsquarepark.org



Figure 1
Golden elm, 2014
Madison Square Park
Photo Rashmi Gill



Figure 2
Madison trees, 2017
Madison Square Park
Photo Eric Cova



Figure 3
Ailanthus altissima, 2017
Madison Square Park
Photo Rashmi Gill



Figure 4
Black locust tree, 2013
Madison Square Park
Photo Stephanie Lucas



Figure 5
Old English elm stump,
2017
Madison Square Park
Photo Rashmi Gill



Figure 6
London plane bark, 2017
Madison Square Park
Photo Rashmi Gill



Figure 7
Pauline lily redbud, 2017
Madison Square Park
Photo Stephanie Lucas



Figure 8
Kwanzan cherry, 2017
Madison Square Park
Photo Rashmi Gill



Figure 9
Summer, 2017
Madison Square Park
Photo Rashmi Gill



Figure 10
Fall, 2016
Madison Square Park
Photo Rashmi Gill



Figure 11
Winter, 2017
Madison Square Park
Photo Rashmi Gill



Figure 12
Park entryway, 2017
Madison Square Park
Photo Rashmi Gill



Figure 13
Woodland, 2017
Madison Square Park
Photo Rashmi Gill

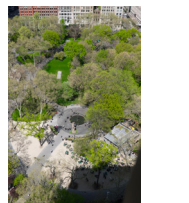
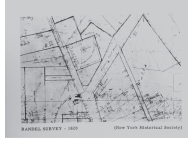


Figure 14
Aerial view of Madison
Square Park, 2017
Photo Rashmi Gill

Figure 15
John Randel Jr.
The Randel Survey, 1820



Courtesy New-York
Historical Society

Figure 16
Dupps plan of Madison
Square Park, 1851



Courtesy New-York
Historical Society

Figure 17
Manhattan: 5th Avenue
23rd Street, 1860
Courtesy New York
Public Library



Figure 18
J.H Colton
Map of New York and
the Adjacent Cities, 1855

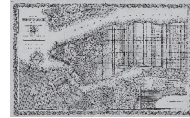


Figure 19
J.S. Johnston, Aerial
view of Madison Square,
1894. Albumen print,
Museum of the City
of New York. Photo
Archives X2010.11.2407
Courtesy Museum of the
City of New York



Figure 20
Plan to make a formal
hedged lawn in the
center of the Park
(detail), 1935
Courtesy New York City
Department of Parks
and Recreation Archives

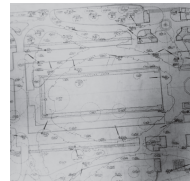


Figure 21
Skidmore, Owings &
Merrill. Schematic plan
of the Park, 1963
© Image Courtesy SOM

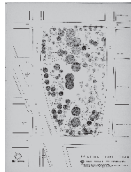


Figure 22
Skidmore, Owings &
Merrill. Madison Square
Park from the northeast
in the winter, 1963
© Image Courtesy SOM



Figure 23
Skidmore, Owings
& Merrill. Artist's
impression of leaf-out,
from the northeast
corner of the Park
© Image Courtesy SOM



Figure 24
Paul Cornoyer
(1864-1923)
After the Rain, c. 1900
Oil on Canvas



Figure 25
Spring tulips and trees
around the Park's
southern fountain, 2017
Madison Square Park
Photo Rashmi Gill

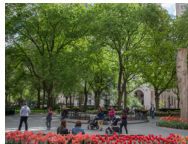


Figure 26
Yellowwood, 2017
Madison Square Park
Photo Rashmi Gill



Figure 27
First Signs of fall, 2017
Photo Eric Cova



