The plants, design and use of modern parks and gardens in New York City, and the challenges of managing them.

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Contents.

Cover page

Chanced-upon public planting at the Brooklyn Army Terminal.

Above

Echinacea purpurea 'Vintage Wine' in the High Line's Washington Grasslands.

Introduction.

In June 2019 I spent two weeks in New York as part of a travel scholarship to study the city's public parks and botanic gardens. Leave to make this trip was granted by the Royal Botanic Gardens, Kew, where from September 2018 to 2019 I had been undertaking a year's specialism in Ornamental Horticulture.

Prior to turning to horticulture, I studied history at university. Consequently, I am eager to find ways of integrating my love of history with that of gardening. After a chance glimpse of an alluringly titled spine in the School of Horticulture library, reading *Gardens of the High Line: Elevating the Nature of Modern Landscapes*, I was inspired to visit this very unique park as an example of a public garden that honours its past whilst seamlessly bringing together plants, wildlife and people within the modern urban environment. Being hugely excited by garden design, I was also very keen to study the work of landscape designer Piet Oudolf.

As a result, I organised to spend the majority of my travel scholarship volunteering at the High Line. This allowed me to gain experience working in a range of varied garden zones, taking note of US native flora, arresting plant combinations and the unique challenges associated with maintaining a public park upon an elevated structure within a cityscape.

Moreover, given that so much of my horticultural experience has been based at Kew (first as a volunteer, then as a student and now as a Botanical Horticulturist), this trip to New York presented an opportunity to not only visit two other botanic gardens (Brooklyn and New York Botanic Gardens) but also a number of other modern public parks, and so broaden my understanding of what and who parks and gardens are for.

Overall, the primary aims of my trip were:

> To develop knowledge of and asses the design potential of North American flora, particularly grasses and herbaceous perennials, through visiting parks/gardens that place significant emphasis on growing species and cultivars of native plants.
>
> To observe and practice new plant cultivation techniques and garden maintenance strategies, such as those necessitated by the challenges that the site and layout of the High Line present.
>
> To explore ideas of what and who parks / gardens are for, and how hard and soft landscaping may be used to facilitate and compliment their functions.

This report, after providing a brief summary of each of the parks and gardens I visited, as well as an itinerary of my trip, will then look to discuss each of these aims in turn. I feel that a thematic, as opposed to chronological review, will allow me to highlight the broader themes and comparisons that can be drawn between many of the sites that I visited. All of the photos used are my own.

Locations visited / itinerary.

The High Line

The High Line is a public park located on a stretch of elevated freight track that was built during the 1930s to service the food industry of Manhattan's West Side. After falling into disuse in the 80s, some called for its demolition, whilst others came to cherish the self-seeded wilderness that had sprung up in the absence of trains. In the early 2000s calls were made to repurpose the structure as a public park. Plans were eventually authorised, with Piet Oudolf commissioned as planting designer, and three sections of the park were completed and opened between 2009 and 2014. Further works are ongoing. At present, the High Line stands as a 1.45-mile-long greenway that is home to over 500 species of plants.

Domino Park

A six-acre waterfront park in North Williamsburg, Brooklyn that opened in June 2018, designed by James Corner Field Operations, the landscape architecture firm behind the High Line. It offers views out over the East River to Manhattan and a succession of amenity areas, including a dog run, sports fields, playground, pinetum, elevated walkway and tacocina. Through displaying over 30 salvaged artefacts relating to the site's past as a former sugar refinery, including syrup tanks, screw conveyers and mooring bollards, Domino Park is a further example of how plants and industrial infrastructure can be brought together to create green public spaces that pay homage to their past.

Sat 08

Travel from London to New York, check-in at hostel.

Sun 09

Rest day exploring NYC.

Mon 10

Day 1 on the High Line – planting and weeding in the Ganesvoort Woodland & Washington Grasslands.

Tue 11

Day 2 on the High Line – maintaining beds around the Whitney Museum and on the Sundeck, with tour of bog plants.

Wed 12

Day 3 on the High Line – caring for *Acer trifolium* at 10th Av. Square. Visit BBG, with tour by Director of Living Collections, Rowan Blaik.

Thu 13

Day 4 on the High Line – cutting back asters and editing in the Chelsea Grasslands.

Fri 14

Day 5 on the High Line – replacing *Carex laxiculmis* suffering cockchafer damage and weeding in the Chelsea Thicket.

Sat 15

Rest day, including trip to Central Park.

Left

Knautia macedonia and railings (just seen) on the High Line.

Brooklyn Bridge Park / BBP

Another post-industrial waterfront site, running for 1.3 miles along Brooklyn's East River edge and designed by Michael Van Valkenburgh Associates. Totalling 85 acres, a narrow greenway links a range of planted areas, lawns, sports courts and playgrounds located both at the water's edge and on six reclaimed piers that project out into the East River, opened in stages from 2010. Plantings at BBP aim to support seven ecosystem types, including ornamental and freshwater gardens, native woodland, meadows, salt marshes, lawns and green roofs.

Battery Park City Parks / BPCP

BPCP encompasses a mile-long succession of discrete parks and gardens in Lower Manhattan linked by a pedestrian esplanade that runs along the Hudson River, to total 36 acres of public space. Notable is the Irish Hunger Memorial, opened in 2002, to commemorate the Great Irish Hunger and Migration of 1845-52, and to remind visitors of continuing world hunger today. The garden includes an abandoned Irish cottage and walls using stones from each of Ireland's 32 counties, and uses flora from the north Connacht wetlands to represent fallow potato fields.

<u>Sun 16</u>

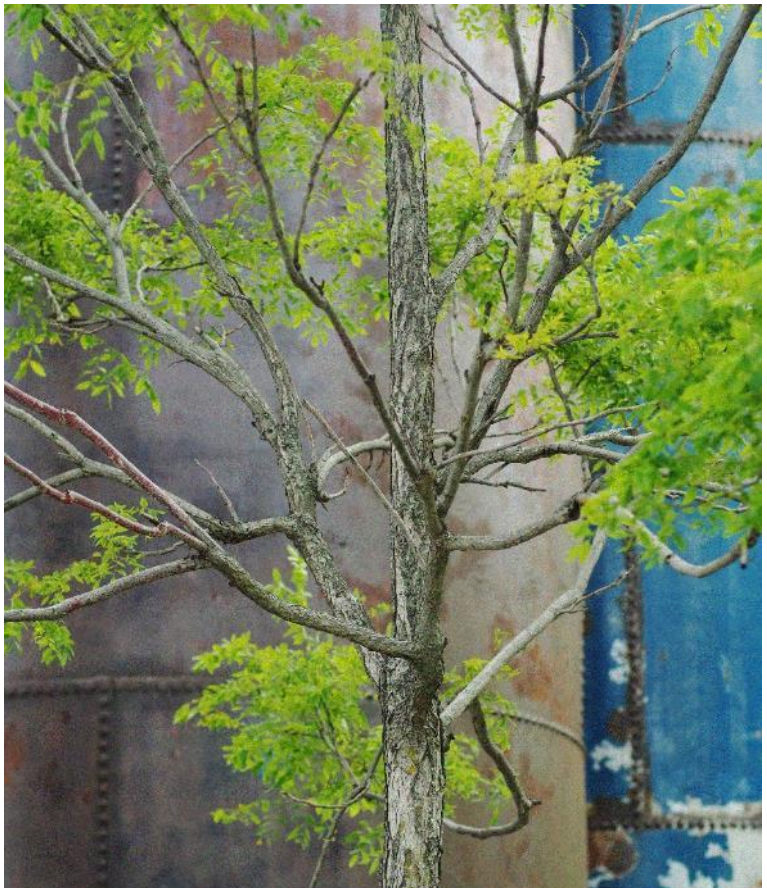
Self-guided tour of Domino Park & Brooklyn Bridge Park.

<u>Mon 17</u>

Day 6 on the High Line – thinning out *Heuchera villosa* 'Autumn Bride' around the 23rd Street Lawn as well as *Calamagrostis brachytricha* and *Nepeta racemosa* 'Walker's Low' from the Meadow Walk.

<u>Tue 18</u>

Field trip with NYBG students, including tours led by Anne O'Neill, Director of Horticulture, Sustainability & Landscape Design at BPCP and by Gabriela Marin, Chief Horticulturist at The Battery.



The Battery

25-acres of public parkland and gardens set around the Castle Clinton National Monument at the southern tip of Manhattan. The foundation of The Battery Conservancy (TBC) in 1994 began a process of regeneration of the park, which had become dilapidated and overlooked over the course of the late 20th Century. Piet Oudolf was commissioned as planting designer, with his Gardens of Remembrance opening in December 2001 to pay tribute to those who died on and survived 9/11. He has collaborated with TBC on three occasions since to establish The Bosque (2005), Woodland Garden (2015) and Bikeway Gardens (2017).

Brooklyn Botanic Garden / BBG

Founded in 1910, with the original site plan laid out by the Olmsted Brothers, BBG currently comprises 52 acres. It is renowned for its Japanese Hill-and-Pond Garden, one of the first public Japanese gardens to be established in the US, in 1915, alongside its collection of flowering cherries and annual cherry blossom festival. Cultivars have historically made up a high percentage of its collections, and the first yellow magnolia, *Magnolia* x 'Elizabeth' was bred there. BBG established one of the first native flora gardens in the US, which was expanded in 2013, although this was sadly closed during the time of my visit to accommodate construction of the new Overlook and Woodland Garden.

New York Botanic Garden / NYBG

Established in 1891, NYBG was born after botanist couple Elizabeth and Nathanial Lord Britton visited the Royal Botanic Gardens, Kew. It was sited in the northern half of Bronx Park to include sections of the Bronx river (the only freshwater river found in NYC) and gorge, dramatic outcrops of metamorphic rock and 50 acres of old-growth forest, which remains as the largest uncut expanse of New York's original woodland. Of particular interest to me was the Native Plant Garden, designed by Sheila Brady of the landscape architecture firm Oehme van Sweden. This 3.5-acre garden, opened in 2013, includes nearly 700 species and cultivars of native trees, shrubs, wildflowers and ferns set around a 230-foot-long contemporary pool that is fed by recycled storm water and filtered by aquatic plants.

Wed 19

Day 7 on the High Line – weeding & editing in the Wildflower Field.

Thu 20

Hosted at NYBG by Charles Yurgalevitch, Director of the School of Professional Horticulture, with tour given by Michael Hagen, Curator of the Native Plant Garden & Rock Garden.

Fri 21

Day 8 on the High Line – heavy rain limits possible work to that which can be accessed from the paths, e.g. dead-heading *Phlox divaricata* 'Blue Moon'.

Sat 22

Travel from New York to London.

Previous page, left

One of the six reclaimed piers at Brooklyn Bridge Park frames a view of Lower Manhattan, as seen from the park's greenway.

Previous page, right

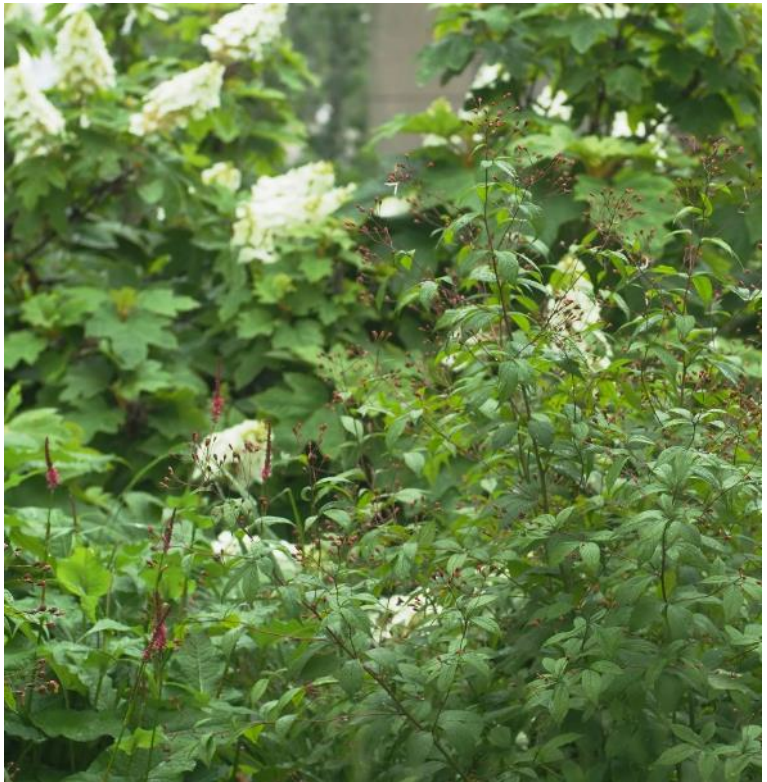
Gymnocladus dioicus 'Espresso' / Kentucky coffeetree set against a salvaged syrup tank at Domino Park.

Native flora.

New York's public parks have the potential to be fertile but also tricky ground for acquainting oneself with North American plants; natives are certainly in abundance, although identifying them as such is not always entirely straightforward.

Of the parks that I visited, all state a commitment to using natives in their plantings. Nearly half of the 500 species used on the High Line are native to the US, whilst Anne O'Neill, Director of Horticulture, Sustainability and Landscape Design at Battery Park City Parks, specified the aim that natives should account for 85% of their newly-designed areas. Within existing plantings, horticultural staff are in the process of replacing non-US species with appropriate native alternatives, swapping out Asian grasses for species or cultivars of the North American *Panicum virgatum* / switchgrass, for example. Following the damage caused by a 14-foot tidal surge produced by Hurricane Sandy in 2012, The Battery has committed to planting native trees only, as well as half an acre of native plants in its edible forest farm.

On an aesthetic level, it is easy to see why the designers of parks might be so willing to embrace the native palette. The bluestars *Amsonia hubrichtii* and *A. tabernaemontana* var. *salicifolia* were called upon again and again to furnish beds with great hummocks (to 90cm in height and spread) of alluring texture in a way that clipped mounds of evergreen box or yew might often be used. *Hydrangea quercifolia* / oak-leaved hydrangea was similarly employed near the backs of borders to deliver height and drama in the form of its large leaves and conical panicles of cream flowers. In the case of the High Line, given that herbaceous material is not cut back until March, Oudolf's designs seemed willing to rely on the structure that deciduous grasses and perennials could provide for much of the year. A case in point is the Northern Spur Preserve, which is dominated by sturdy clumps of *Chasmanthium latifolium* / Northern sea oats and two species of *Porteranthus* (*stipulatus* & *trifoliatus*) that are peppered with star-like white flowers in May. All sport stunning autumn foliage in hues of copper and gold. The relative emptiness of the beds on the High Line post-cutback then presents an opportunity to appreciate emerging bulbs, the process of re-growth and of course the railway tracks that the park is named after.



Top right

Amsonia hubritchii at Hudson River Park.

Bottom right

Porteranthus trifoliatus / bowman's root seen in the foreground, set against *Hydrangea quercifolia* at The Battery.

Whether in flower or not, grasses were certainly making their presence felt during the time of my visit. Airy and delicate, the bead-like flowers of *Deschampsia flexuosa* / crinkled hair grass tickled the chins of taller perennial neighbours on the High Line. Of the many *Carex* species I encountered, *C. bromoides* / brome-like sedge stood out as a favourite when planted as a carpet in the Chelsea Thicket (alongside *C. eburnea* / bristleleaf sedge and *C. laxiculmis* 'Hobb' / bunny blue sedge); the colour and form of low-growing perennials such as Heuchera 'Amethyst Mist' and *Tellima grandiflora* / fringe cups were picked out wonderfully as they nestled within its limey tresses. Yet, I also welcomed the very subtle contrast in texture that came with planting more fine-leaved perennials next to grasses. The feathery foliage of *Liatris spicata* / blazing star covertly mingled with that of grasses and *Amsonia hubrichtii* for example, before throwing up a throng of pink-purple terminal spikes that contrasted so well against any adjacent soft lines.

But my favourite personal discovery came in the form *Amorpha canescens* / lead plant, a legume naturally found in the open woodlands, glades and prairies of the Great Plains and central North America. On the High Line it graced (perhaps not the right word) a number of grassland zones with a scraggy, tousled charm. Before flowering, the spike-like inflorescences had the appearance of curiously unassuming grey caterpillars. By the end of my stay however, these had begun to transform, the flowers opening up a vivid purple-blue to reveal bright orange anthers.

Below left

Amorpha canescens partnered with the likes of asters and coneflowers in the High Line's Wildflower Field.

Below right

A lead plant inflorescence.

The difficulty arises however when attempting to identify US natives within park environments. In an interview with Mother Nature Network, former Director of Horticulture at the High Line, Andi Pettis, commented on how Piet Oudolf's mingling of US natives with Asian and European garden varieties in a style that often evokes Midwestern landscapes, means many visitors assume the park's plantings are more native than they are actually are. And whilst some parks display name labels with specimen trees, provenance isn't noted, and herbaceous material is unlikely to be identified. It is probable that labelling on a large scale is more trouble than it's worth in the case of public parks; The High Line has experimented with using labels in the past, but discovered that this encouraged visitors to maraud over beds more than they are already wont to do. It would appear then that the aim of parks in including natives within their designs is not to make this provenance explicit to every visitor who passes through. Yet, it was encouraging to find that for those wishing to learn more about the plants used in park designs, this information was often made readily available, either in the form of talks and tours, or on-line. Nearly all of the parks I visited either published a full plant list and/or more user-friendly seasonal bloom lists. In the cases of Brooklyn Bridge Park and The Battery, these also noted whether a plant was native or not.

It is perhaps not surprising that public parks do not aim to educate visitors about natives to quite the same degree as botanic gardens, for which education is counted as one their central roles. Michael Heegan, curator of The Native Plant Garden (and the Rock Garden) at NYBG claimed that a goal of the recently renovated NPG was to help mitigate people's conception of native plants (in this case, native being defined as belonging to north-eastern North America) as weeds. To this effect, the entrance of the garden is fronted by an English-style mixed border which looks to demonstrate to visitors from the off that you can achieve a highly-cultivated finish with obtainable north-eastern native species and garden cultivars, such as ***Penstemon*** and ***Echinacea***. Within the garden itself, visitors encounter a range of native plant communities as they weave through a series of more naturalistic environments, from dry woodland to wetlands and open meadow. Yet, providing effective interpretation is no easy task for botanic gardens either; Heegan noted that working out how to best educate visitors about the plants included in the meadow, which can either by viewed as a monolithic whole from the boardwalk or via the path meandering through, is something of a work in progress, potentially involving the use of plaques or an app.

Interpretation aside, for public parks and the New York and Brooklyn Botanic Gardens alike, the use of native plants does very much contribute to a shared ethos and goal: sustainability. Through combination with storm water and organic garden management, the use of native plants is cited as playing a significant role in park and garden sustainability.

Below

Asclepias purpurascens / purple milkweed on the High Line.

Including natives that are locally-adapted to particular conditions means these can often be sourced more locally, and the chance of plant failure is reduced. Making use of drought-tolerant species typically founded in prairie environments also moderates the need for supplementary watering.

Moreover, growing natives helps to support biodiversity within parks and gardens, through providing forage and shelter for a diverse range of birds, insects and animal life. *Asclepias* sp., such as *A. tuberosa* / butterfly milkweed and *A. incarnata* / swamp milkweed are grown in many of the parks I visited, as they serve as the exclusive hosts of the monarch caterpillar. Adult butterflies foraging on nectar-rich plants from late summer and autumn are also catered for, with native species and gardens cultivars of *Eutrochium* / Joe pye weed, *Symphotrichum* / aster, *Monarda fistulosa* / wild bergamot and *Cephalanthus occidentalis* / buttonbush, the latter seen grown as an aquatic in the Lily Pool of Rockerfeller Park at Battery Park City Parks.

Over 30 species of bee have been recorded on the High Line, including Masked bees in the genus *Hylaeus*, which lay eggs into plant stems such as those of *Dalea purpurea* / purple prairie clover. As a result, the old stems of this potential host are left uncut during the High Line's herbaceous cutback. Ruby-throated hummingbirds are attracted to the nectar contained in the tubular flower structures of *Aquilegia canadensis* / red columbine, grown at Battery Park City Parks and Brooklyn Bridge Park as well as in the Native Plant Garden at NYBG. As red columbine starts to go over in the Native Plant Garden, *Spigelia marilandica* / Indian pink, with its strikingly similar flower structure and colouring, is next to step up as hummingbird forage. Only on one occasion did I see gardeners *not* want to make it too easy for local wildlife to get its fill, with a little healthy competition being fought between the resident birds and staff on the High Line. And I couldn't help but be pleased, when sitting down to servings of home-made Juneberry pie on two occasions during my time there, that occasionally it was people who were able to make it to the *Amelanchier laevis* berries first.

Top right

Dalea purpurea / purple prairie clover just coming into flower on the High Line.

Bottom right

Michael Heegan demonstrating the similarities between red columbine and Indian pink flowers in the Native Plant Garden at NYBG.

Horticulture on the High Line.

Shrewd plant choice makes gardening on the High Line possible. The drought-tolerance and hardiness of many of the plants used, often natives, enables them to cope with the challenging conditions experienced on an elevated structure, from high wind speeds to rapidly fluctuating temperatures (more so than would be experienced on the ground). Thin soil layers are another factor to consider, typically reaching no deeper than 18 inches, and in some locations only nine. A fault with the irrigation system at 10th Avenue Square has meant that hand-watering a grove of ***Acer triflorum*** / three-flowered maple has become a time-intensive task in summer months for Horticulture Supervisor Yuki. Planted in little more than bathtubs inset into the decking, these trees can require watering every day in very hot weather. As we applied potash and a thin layer of compost to each of the tree pits, Yuki explained that as many of the plants used on the High Line would naturally be found in prairie environments, they don't require a hummus-rich soil. Keeping the soil lean means they can produce much of the compost needed on-site using a Rocket composter and 2:1 ratio of dry to wet material, the latter coming in the form of nitrogen-rich coffee grounds collected from the nearby High Line Hotel.

With the High Line celebrating the ten-year anniversary of the opening of its first section (from Ganesvoort to 20th street) during the time of my visit, it is not surprising that the trees in areas such as the Ganesvoort Woodland have matured to cast deeper and deeper shade over the course of the decade. ***Betula populifolia*** 'Whitespire' / gray birch dominates in the thicket here, and for good reason, given its capacity to tolerate hot, dry conditions better than many white-barked birches and resist bronze birch borer. Horticulture Supervisor John explained that many gray birch stems had been removed over the years in order to help rejuvenate this often-short-lived tree, as well as open up parts of the canopy. But an overall increase in woodland density has also provided the opportunity to introduce plants better suited to deeper shade, such as ***Athyrium filix-femina*** 'Minutissima'.

Top right

Aruncus 'Horatio' planted with *Heuchera villosa* 'Brownies' in the High Line's Woodland Edge.

Bottom right

Astilbe 'Visions in Pink' also planted with *H. villosa* 'Brownies' on the High Line.

Vis-à-vis pest and disease management, the High Line, like all of the public parks I visited, prides itself on a non-chemical approach, turning to integrated pest management / IPM rather than pesticides. Cedar rust affecting *Amelanchier* sp. was hardly seen as cause for concern, resulting in little more than aesthetic damage (or potentially 'interest') to the fruit, which took on a pompom-like appearance with the development of whisker-like structures containing rust-coloured spores. Maryanne, who maintains the Chelsea Thicket, was similarly unphased by the unrelenting attack of cockchafer grubs on her *Carex laxiculmis*. As well-established plants didn't seem to be bothered by the pest, she was reconciled to the task of replacing damaged plants until the grubs lost interest.

Whilst weeding in the Thicket with Maryanne, she asked me to leave any *Tellima grandiflora* seedlings that I should come across. To leave certain things be was a common request when working with gardeners on the line. By not dead-heading and leaving flowers to stand over winter until the Spring Cutback, there is ample opportunity for the distribution of seeds. Provided the integrity of Oudolf's design is maintained, many species are left to self-sow into suitable locations.

Whilst there are trials to gardening on the structure of the High Line itself, new challenges are posed all the time by the rapidly-changing built environment on either side. Since the High Line's first sections opened 10 years ago, West Chelsea has experienced a boom in high end real estate, perhaps best expressed in the form of Hudson Yards, which officially opened in March this year. The northern end of the High Line wraps around this 28-acre site, billed as the US's largest private real estate project. The gardens of the High Line therefore appear intimately liked with the architectural development of this part of the city, but plantings have had to evolve as buildings have sprung up alongside areas originally designed with sun-loving plants in mind. The northern end of the Washington Grasslands has been re-imagined as the Woodland Edge for example, with *Koeleria macrantha* / prairie June grass and *Schizachyrium scoparium* / little bluestem being phased out as a result of shade cast by new construction to the east of line. This has created an environment in which combinations of *Aruncus* 'Horatio', *Astilbe* 'Visions in Pink' and *Heuchera villosa* 'Brownies' now thrive. Not that a large-scale re-design is always necessary, however. Moving a single *Indigofera amblyantha* to a sunnier spot around 10th Avenue Square has been enough to give this plant a whole new lease of life.

Top right

A small clump of *Tellima grandiflora* growing amongst *Carex bromoides* in the Chelsea Thicket.

Bottom right

Indigofera amblyantha in flower on the High Line.

Whilst changing conditions offer an opportunity for gardeners and Oudolf to see how plantings respond, and actively alter aspects of the park's design, there is nothing that can be done about those areas that are temporarily caught in the no-man's lands adjacent to ongoing construction. During the time of my visit, several areas were netted off and sheds constructed over pathways to protect staff and visitors from any material that could potentially fall from overlooking building sites. With half of the Chelsea Grasslands made inaccessible since the start of the year, and likely to be uncover for another, seasonal gardener Giselle thought it likely that the whole area would have to be re-planted once construction was complete.

Yet, sitting in on the weekly horticulture meeting, I was impressed by the attitude of the gardeners to the challenges met when trying to maintain a park amid New York's ever-changing skyline. The team was looking to trial a number of sensors, either positioned in parts of the park or worn by the gardeners themselves, to collect data on environmental conditions such as sun-glare, sound pollution and particulate matter exposure. Not only would such information prove useful in determining conditions for the most opportune placement of plants, but it could also be used to alert staff members being exposed to excessive levels of noise or pollution to move to a safer area. Whilst my own love of horticulture is in many ways based on its capacity to deliver me to nature and away from many aspects of modern life, here was an eye-opening reminder of the serious benefits that technology has the potential to offer the industry and those working within it.

Above

An area of the High Line closed off to the public, near to the recently opened Hudson Yards complex.

Public parks & the city.

I had assumed, before visiting New York, that much of the appeal of a city park would lie in an offer of escape; from the hustle of people and traffic, noise, the towering buildings. Yet, I felt largely mistaken in this after experiencing the parks I had chosen to visit on my trip. These modern parks didn't shut New York out. Rather, they seemed to attempt three things with regard to the city: they looked to frame it, to draw one's attention to its past and present, and to facilitate movement through it.

If any park were made for movement it is unsurprisingly the High Line, a product of both its original design and popularity. At the time of my visit, opportunities to seek rest, quiet or solitude were fairly limited. Whilst it has been designed to include corners and cubbies that have the potential to serve as pockets of calm, one has to be there early, within the first couple of hours of the park opening (at 7am) to experience it in such a way. After that, the structure functions as it was originally intended: to enable a flow. Once of goods, now of people. As such, it was rare not to see the park serving as a thoroughfare. Its success (receiving more than seven million visitors in 2016) has only helped to exacerbate this, as has the fact that it conveniently links a number of other popular tourist destinations, such as the Whitney Museum of Modern Art, Chelsea Market and Hudson Yards. In short, the High Line can be a difficult place in which to find space to linger.

Whilst the other parks that I visited were able to include more areas off the beaten track to sit or enjoy a quiet moment, they too often seemed geared towards encouraging a flow of movement through them. Domino Park, Brooklyn Bridge Park and Battery Park City Parks are all set out as a progression of waterfront garden areas and amenity spaces, linked by a range of direct or meandering paths. This was made especially explicit at Domino Park. Within the simple, rectangular site, running as a narrow strip along the East River's edge, one moved between three main zones (The Active Rec Park, Water Square and Passive Rec Park), all split into smaller rectangular compartments. From dog run to volleyball court, herbaceous displays set around a central water feature to a Japanese pinetum, the park felt optimally configured to offer a flow of activity and serve as a place for all, young and old, lively or sedate, to find a place to play.

It was not just movement within parks that felt encouraged. Parks even linked to other parks. The southern reaches of Battery Park City led directly to The Battery, for example, whilst the latter opened a Bikeway garden in 2017, planted with trees and shrubs, to link Hudson River Park with the East River Esplanade, as part of the 31-mile Manhattan Waterfront Greenway wrapping around the island.

Below

Spaces compartmentalised by function at Domino Park: a lawn with specimen trees is separated from a children's play area by paths, mooring bollards and raised beds. Movement along the long axis of the park is enabled by a waterfront esplanade and elevated walkway, from which this photo was taken.

It would appear then that many modern parks have been designed to feel part of a larger green landscape within the city than just themselves.

This is not to say that these parks *only* felt linked to the other green and planted parts of the city. For they very much felt connected with the very buildings and skyline of New York itself, through offering up so many opportunities to view it. On the High Line for example, as bewitching as I found the plants, whilst moving along it I also felt positively encouraged to look up, down and around at the urban environment unfolding on all sides. Aside from the vistas garnered as the structure crosses over 20 streets, more explicit viewing opportunities were provided in the form of The Hudson River Overlook (the High Line's largest water-view balcony) and a tiered seating area overlooking 10th Avenue. In some areas, plants and buildings seemed to blend, with the dusky pink flower puffs of ***Cotinus*** **'Grace' / grace smokebush** almost perfectly camouflaged against adjacent red brick in the Woodland Edge or the silver blush of ***Rosa glauca*** foliage picked out against a whitewashed wall.

Yet, it was the Flyover – an area of dense woodland where the pathway has been elevated eight feet above the plantings and original structure – which I felt most encouraged an appreciation of both the natural and built environment. Here, one was thrust into a canopy of brick and leaves upon entering a forest of trees native to eastern North America, including ***Magnolia macrophylla*** / **bigleaf magnolia**, ***M. macrophylla*** **var. *ashei* / Ashe's magnolia**, ***M. tripetala*** / **umbrella magnolia**, ***Cercis canadensis*** **/ Eastern redbud** and ***Sassafras albidum*** / **sassafras**, flanked on both sides by tall warehouses. One then descends and emerges into the openness of the Wildflower Field. Here, the westward curve of the line around the newly opened Hudson Yards is hidden from view for some time. So, as one walks uninterrupted along a two-block walkway towards the monumental edifice that is 10 Hudson Yards, one really has the feeling of being delivered *to* the city.

It was certainly not only on the High Line which presented visitors with a foreground of nature and a background of glass, concrete or brick. Other parks also offered stunning views of the city. The waterfront aspects of Domino Park, Brooklyn Bridge Park, Battery Park City Parks and The Battery all presented panoramas of those parts of New York that lay on opposite banks, including some of the city's most iconic landmarks, such as the Statue of Liberty.

Top right

Heleopsis helianthoides var. *scabra* / dwarf oxeye sunflower blooming en masse in the Pier 6 Flower Field at Brooklyn Bridge Park.

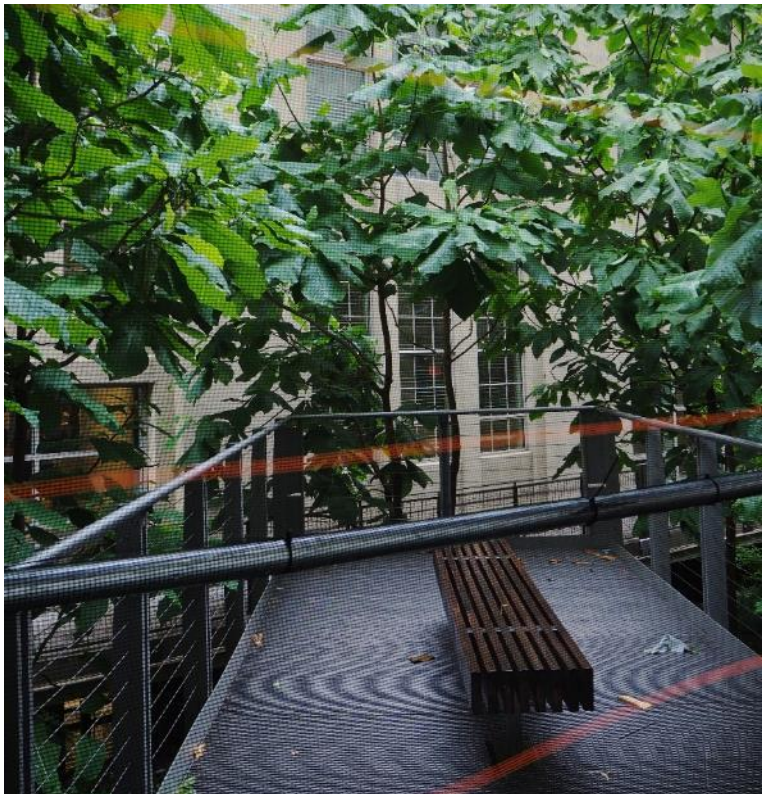
Bottom right

Cotinus 'Grace' complements a red brick building on the High Line.

Yet, more than just presenting the city, these parks also seemed be embedded right within it. Domino Park represents just one part, for example, of the site's overall redevelopment master plan, which will include reuse of the refinery building itself along with the construction of four new mixed-used residential buildings. Brooklyn Bridge Park similarly helps to reconnect neighbourhood communities to an environmentally diverse and sustainable waterfront environment, which previously served as a cargo shipping and storage complex hemmed in by the Brooklyn Queens Expressway.

This regard for the people who live around and use public parks was voiced by one horticulturist at Battery Park City Parks when she said that she often felt like an estate gardener; her motivation for creating arresting and theatrical plant displays came from wanting to make Rockerfeller park as nice as possible for people of the local neighbourhood. This want to benefit and grace the surrounding cityscape also came across when I helped John Gunderson to plant another *Schizophragma hydrangeoides* 'Moonlight' in the Ganesvoort Woodland. These Japanese hydrangea vines had initially been concentrated on the eastern edge of the woodland, tumbling over the side of the line to hang as tapestries over the businesses, bars and restaurants of Washington Street below. But construction to the west, between this southernmost tip of the High Line and the nearby Hudson River means that John wants to even out the display on both sides of the structure. The message one receives after visiting these parks then is that access to high-quality planted and functional public areas should very much form a part of modern-day city life.

Yet, the parks I visited not only give thought to the present. They also often harked back to the past, whether to celebrate and preserve aspects of an area or site's local heritage, or to encourage visitors to reflect on some of the city's past tragedies. The structure of the High Line and many of the buildings lying along its route remind visitors of the industrial infrastructure once used to provision West Manhattan. Garden zones have also been designed to echo the self-seeded landscape that sprung up on the railway once it had fallen into disuse. The Flyover was inspired by a grove of *Ailanthus* and *Morus* spp. that had established in the moist and sheltered protection of two tall buildings. Sumacs such as *R. glabra* / smooth sumac and *R. typhina* / staghorn sumac, resembling ailanthus with their pinnately compound leaves, have been used in several garden zones as smaller, more manageable native alternatives.



Top right

The silver hue of *Rosa glauca* foliage is accentuated by placement near to a whitewashed wall.

Bottom right

A bench set amongst the canopy of bigleaf magnolias on the Flyover.

Similarly, machinery once used at the Domino Sugar Factory has been salvaged and displayed at Domino Park, to recall the site's former function in a fun and theatrical way, and link planted areas back to the industrial architecture of surrounding buildings and Williamsburg Bridge. In the Water Square section of the park, fenced openings have been left in the floor to reveal the river below, from which banks of mist pour at regular intervals to envelop the nearby syrup tanks and raised beds. It is a park that plays with its past and encourages visitors to play within it.

Unsurprisingly however, some parks have been designed to nurture a more sober reflection on the city's past. The Gardens of Remembrance at The Battery run for 1500 feet along the edge of New York harbour and were named to pay tribute to those who died in the September 11 attacks and those who fled south Manhattan by boarding ferries departing from The Battery. Close to the water, it is a garden that represents resilience by gesture and necessity, with many of the plants chosen being drought-tolerant. These include species and cultivars of *Baptisia, Hylotelephium* and *Perovskia,* alongside *Crambe maritima* / sea kale, *Eryngium yuccifolium* / rattlesnake master, *Panicum virgatum* / switchgrass and *Phlomis tuberosa* / Jerusalem sage.

The Irish Hunger Memorial at Battery Park City serves as one final example of how gardens can be used to forge links, not only through time, but also across space. It remembers the Great Famine that struck Ireland in the 1840s and which amplified an existing trend for mass emigration to other parts of the world such as the United States. This harrowing subject is softened and transformed into something beautiful, through the reproduction of a fallow potato field with the flora of the north Connacht wetlands, surrounding an abandoned Irish cottage. Weaving through a meadow of *Matricaria recutita* / Chamomile as well as *Papaver* / poppy, *Trifolium* / clover and Viola / violet spp. it was hard not to feel quieted, even though the activity of North End Avenue and Vesey Street was clear to hear and see. I was very much still standing in the New York of today, whilst simultaneously being hushed back into a pocket of Ireland long ago. Here was a park that could put you in touch with the city, its past and its present, even when parts of that past had begun somewhere else.

Top right

Poppies, clover and violets look onto Vesey Street at the Irish Hunger Memorial.

Bottom right

Sedums such as *S. reflexum* top the walls of the memorial, made using stones brought from each of Ireland's 32 counties.

Conclusions / budget breakdown.

My trip to study the public parks and botanic gardens of New York City was extremely rewarding and without doubt inspirational. The focus of so many parks and gardens on using US natives in their planting schemes meant that I was introduced to a great number of new species and cultivars. Having seen many of these grown in a range of plant combinations and environments across the sites that I visited, I am very excited by their potential to be used in any garden and border re-designs that I might one day be involved in. I will now be looking into which US natives are available within the UK nursery trade and the degree to which they are being used in parks and gardens here. This considered, it was unfortunate that the Native Flora Garden was closed during my visit to BBG, and I should have liked to have had more time to explore the Native Plant Garden at NYBG. I hope one day that I will have the opportunity to study them both further, perhaps within the remit of researching the development of the native plant movement in the US.

As a result of seeing the work of designers and firms such as Piet Oudolf and Oehme van Sweden, I am convinced that I would love garden design to play an important role in my work as a horticulturist. This feeling was only enhanced by my time spent volunteering on the High Line; the responsive approach to horticulture practiced there, with the idea that the gardens should be allowed to gradually evolve in response to shifting city conditions, has shown me that gardens never stay still and no design is perfect or complete. As a gardener I want to ensure that I am constantly assessing how a planted area is changing, which plants are thriving or struggling, and how plantings can be tweaked or augmented to better accommodate shifts in environmental conditions or amongst relationships within plant communities. Moreover, I am sure that this sort of flexible approach to gardening will prove very important in the face of ongoing climate change over the coming years.

I was also hugely impressed by the environmentally sustainable approach to gardening championed by all of the public parks that I visited, through their refusal to turn to chemical controls and their drive to minimise water use. I found it astonishing that these parks, considering the diversity of their plant displays and very high quality of care and finish, were completely free to access, year-round. They were sites of world-class horticulture and recreational function. I would be interested to look further into the management and budgeting strategies that can make such accomplished public spaces a reality. More inspiring still was the fact that many of these parks re-purposed existing infrastructure and space, to put visitors and local communities back in touch with a green landscape, yet also preserve the legacy of an area's past usage.

As such, I will be closely following the progress of other infrastructure reuse projects, such as those that make up the High Line Network across the US. Many of these are still in the advocacy and design or construction phases, but as more open to the public in the coming years, I very much hope that they could form the basis of a future study trip. Finally, I wish to research whether the drive transform underused space and infrastructure into innovative urban landscapes is currently most evident in the US, or also gaining traction in the UK and other parts of the world.

Air fare

Predicted — £375
Actual — £375

Travel (bus / train)

Predicted — £64
Actual — £70

Accommodation

Predicted — £940
Actual — £991

The cost of my stay at the hostel had risen slightly by the time of booking.

Food / stores

Predicted — £300 (£20 / day for 15 days)
Actual — £367 (£24.50 / day for 15 days)

Daily sustenance costs in a wealthy part of NYC were higher still than I had anticipated.

Acknowledgements / budget breakdown.

This work experience and travel trip would not have been made possible without the generous financial support of the RHS Coke Trust Bursary Fund and HPS Kenneth Black Bursary Scheme.

With thanks also to Tim Hughes, Lara Jewitt and Tom Freeth at RBG, Kew for authorising my travel proposal.

I would like to pay special thanks to Charles Yurgalevitch at NYBG. First, for putting me with in touch Andi Pettis on the High Line, second for so generously inviting me to join the School of Professional Horticulture's field trip to several of New York's public parks and third for hosting and organising such a rewarding visit to the botanic gardens. I would not have gained nearly as much as I did from my trip to New York without your help.

Thank you also to all those who gave up their time to lead such insightful tours of the parks and gardens that I visited, with special mention to Rowan Blaik at BBG, alongside Jeanne Lapsker, Annie Novak and Michael Hagen at NYBG.

Last but certainly not least I would like to express my gratitude to everyone I worked with on the High Line and to Eric Rodriguez for co-ordinating my placements there. I was hugely inspired by the beauty of your hard work, and the time and expertise you were so willing to share with me. The experience was, without doubt, one of the highlights of my horticultural career so far.

E.S.T.A. Visa Waiver

Predicted — £11
Actual — £11

Insurance

Predicted — £0 (provided by Kew)
Actual — £0

Garden admissions

Predicted — £32.50 (NYBG and BBG)
Actual — £0

Free admission was arranged by those who were kind enough to give me tours of the botanic gardens.

Total costs

Predicted — £1722.50
Actual — £1814

Grants awarded

HPS Kenneth Black Bursary Scheme — £500
RHS Coke Trust Bursary Fund — £1000

Personal contribution

Predicted — £222.50
Actual — £314

Certain costs of the trip turned out to be slightly higher than I had estimated. Yet, considering all that I gained in terms of horticultural development and the fact that I got to explore NYC, which is not somewhere that I may have otherwise had opportunity to visit, I was happy to cover these costs with my own personal contribution.

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