GUEST ESSAY

Scot Medbury is president of Brooklyn Botanic Garden. He has been involved in the curation, cultivation and interpretation of public gardens for 35 years, having held appointments at prominent institutions in California, Washington State, Hawaii, the UK and New Zealand. Scot currently serves as a member of the governing councils of Botanic Gardens Conservation International, the Center for Plant Conservation and the International Dendrology Society. He is a trustee of and chairs the Historic Landscape Committee of Brooklyn's Green-Wood Cemetery, and serves as an advisor to four American public gardens. He holds an MSc from the University of Washington's Center for Urban Horticulture and a BA from the University of Washington Jackson School of International Studies.

THE ULTRA-URBAN BOTANIC GARDEN

Scot Medbury[1]

Urban botanic gardens have a special role to play in the 21st century, as places of beauty and sanctuary but also as primary providers of environmental education programming for children and adults. The botanic garden in a *megacity*, defined as a continuous metropolitan area with more than ten million residents (Pearce, 2006), arguably has an even more important job to fulfil, one that is further increased if the garden is located within the densely populated urban core rather than on its suburban periphery.

Now that more than half of the world's population lives in cities, such ultra-urban gardens are essential in order to engage the next generation of environmental stewards. Caring about nature and the natural environment is most often rooted in childhood experience, and urban botanic gardens have both the responsibility and the opportunity to use plants to increase environmental awareness in our communities through the engagement of children and families. The story of our time, the story by which our lives on this planet will be judged by subsequent generations of human beings, is the story of the current loss of biodiversity and of climate change. Urban botanic gardens can help enhance the understanding of this crisis, and may even possibly affect our collective future, by incorporating tangible and memorable environmental experiences into our programmes.

Despite this responsibility, today the pressure is on botanic gardens to pay more attention to other priorities. While programming focused on arts and entertainment has certainly boosted visitation, revenue and institutional visibility at many botanic gardens,

1. Address: Brooklyn Botanic Garden, 1000 Washington Avenue, Brooklyn, NY 11225.
Email: ScotMedbury@bbg.org

these efforts can be perceived to overshadow our essential environmental-education role. Glitzy exhibitions of decorative glass or highly promoted performances by headlining rock bands can seem to diminish or even trivialise a botanic garden's unique mission and place in its community. Finding a balance among programmes that create a strong financial base while ensuring the primacy of environmental education and interpretation is one of the most important challenges that all botanic gardens face today, and none more so than ultra-urban gardens such as Brooklyn Botanic Garden (BBG).

At Brooklyn Botanic Garden, we have recently reaffirmed a founding commitment to putting plants at the centre of all we do, in part through a new emphasis on engaging visitors through informal, hands-on interactions with plants. Now, thanks to a major capital investment, the second most intensive period of site refinement in our century-old history is almost complete, and the Garden is poised to more fully capture its potential as an environmental education provider. Among other goals, the new capital improvements are strengthening BBG's ability to use the Garden as a living classroom, by enhancing visitor orientation through new entrances, visitor facilities and garden-wide interpretation, as well as by adding one and a half hectares of new garden features. Last year BBG opened an extension to its Native Flora Garden, presenting new meadow and pine barren habitat displays using nearly 100 per cent wild-collected plant material. Next year the ribbon will be cut on an immersive new Discovery Garden intended to engage children and families with drop-in programmes. Both of these new spaces, along with a new Herb Garden, Woodland Garden and Water Garden, provide venues for interacting with visitors and for sharing environmental messages in informal ways.

With nearly 20 million residents, the New York metropolitan area seems an almost overwhelmingly busy place. Brooklyn's population alone, as one of the five boroughs forming New York City, includes about 2.6 million people; if it were separated from the rest of New York City, Brooklyn would be the fourth largest city in the United States, and the second most densely populated county in the United States after Manhattan. Furthermore, New York City constitutes perhaps the most hyper-saturated cultural marketplace in the world; hundreds of museums and other cultural institutions call New York City home, which makes for intense competition for the leisure time of residents and visitors alike.

Within this cultural context, Brooklyn Botanic Garden has realised that its unique niche remains centred around plants. Rather than branching out into other arenas, as other gardens have done, in the coming years BBG will be defining further what it means to put plants first and to develop the programmes accordingly. We have set a vision for BBG to become North America's model for an urban botanic garden, and are excited to see where this will take our institution in the coming years. The first part of the BBG mission statement is: '*Brooklyn Botanic Garden is an urban botanic garden that connects people to the world of plants, fostering delight and curiosity while inspiring an appreciation and desire of stewardship of the environment*' (BBG, 2014).

Use patterns reveal the Garden's current role as well as providing a sense of its future. BBG currently attracts the highest single-day attendance of any North American botanic garden, with as many as 36,000 people visiting on a peak day, and regular visitor

counts of 20,000–25,000 in the busy spring season. Transport access definitely enables high attendance; BBG is easily the most accessible botanic garden in North America by public transport. Its three public entrances are served by seven subway lines and by numerous other transport options including the bus and Long Island Rail Road train (LIRR).

The Garden certainly provides essential green space, since Brooklyn has among the lowest ratios of green or open space acreage per capita of any American community. With little opportunity to add open space in the borough overall, BBG's role and importance is expected to continue to grow. More people are said to be moving into Brooklyn every week than they are in the State of Florida, with as many as half a million new residents expected in Brooklyn in the next 20 years. Garden visitation is currently increasing by about 4 per cent a year. While visitor surveys suggest that most people come to the Garden in search of beauty and to escape the city, demand for informal programming also seems to be growing. Last summer alone, participation in summer drop-in discovery programmes increased by 300 per cent, in part due to this programme being relocated to a more visible spot, but general visitor interest is also thought to have played a part.

In exploring both BBG's past and its future, we have concluded that redoubling our efforts in youth environmental education is a very wise choice. Children in modern urban societies are said to suffer from Nature Deficit Disorder, giving rise to programmes such as 'No Child Left Inside'. As public garden professionals, we regularly diagnose 'Plant Blindness' in our fellow citizens (Wandersee & Schussler, 1998). These factors, among many others, have encouraged us to forge ahead with planning new programmes, and particularly to include those targeting garden visitors.

Current efforts in youth environmental education at BBG are built on a unique and exceptionally strong foundation. When it opened in 1910, BBG created a new model for a botanic garden in the world by giving youth education the equivalent importance to that of horticultural display and scientific research. The Garden's founding director and visionary, Dr Charles Stuart Gager, was a botanist and also the product of Normal School training, the educational system by which teachers were trained in the United States in the 19th and early 20th centuries. Dr Gager appreciated that a botanic garden in Brooklyn, then in transition from a place of truck farms to the densely urban place it is today, could serve a special function. At the time of BBG's establishment, botanic gardens were principally scientific institutions that encouraged people to visit but did not go to great lengths to provide educational programming, particularly to local schools. Teachers were left to their own devices to determine how to use a class trip to a botanic garden to advance their curriculum goals.

Dr Gager changed all that. By 1912 he had hired a cadre of teacher trainers led by the legendary Ellen Eddy Shaw, a pioneer in an emerging youth gardening movement, and in 1914 opened what is understood to be the first children's garden in a botanic garden in the world. The Children's Garden, celebrating its centennial this year, functions as an urban farm for kids, and today operates much as it did in its founding year. Innumerable other youth programmes followed this pioneering effort, and today the Garden has an

enormous footprint in environmental education in Brooklyn. Staff reach more than 150,000 children through Garden visits, on-site workshops and classroom visits that prioritise Brooklyn's least-advantaged neighbourhoods and schools. Programmes for young children range from parent-child activities for children as young as two, through to all the many programmes which make use of the Children's Garden throughout the year. The Plant Investigator programme involves a select group of science-focused 10–12 year olds, who are nominated by their teachers to spend six weeks in the summer at the Garden performing science experiments and even going on a camping trip. This programme is particularly complicated, since these children, still too young to come to the Garden on their own, are picked up and brought home by bus each day.

Programmes for secondary students are similarly broad and deep. A four-year tiered internship programme for high school students – the Garden Apprentice Programme (GAP) – enrols up to eighty students for nine months of the year, and progresses to a paid internship in the latter two years. Several GAP classes have drawn students from all five boroughs in New York, leaving one in awe at these students' commitment, given the distances they travel. GAP students mentor younger children in the Children's Garden and help out with Discovery Garden drop-in programmes, create and staff mobile discovery carts deployed throughout the Garden to engage visitors in environmental topics and work together in such activities as the 'GAP Climate Change Summit' to strengthen their leadership skills and academic and professional preparation.

One of the most rewarding education investments BBG has made in recent years has been participating in the creation and ongoing operation of an environmental-science high school right across the street from the Garden, the Brooklyn Academy of Science and the Environment (BASE). BASE was founded in 2003 in partnership with the NYC Department of Education, and today has approximately 500 students. It is intended to serve as a true community school and therefore attract students at all levels of ability, which is appropriate since we believe there are career opportunities in science and the green industry for young people of all levels of ability. It is worth noting, however, the achievements of some of the academic stars of the school: BASE has graduated four seniors who have been awarded the Gates Millennial Scholarship. This scholarship provides full support all the way through doctoral study as long as the student remains in the sciences. One particularly bright BASE student is now a PhD student at Princeton University, well on her way to making a real difference in the world. The inspirational effect on BBG's staff of being partner to something as powerful as an environmental high school is inestimable. Everyone at the Garden, from trustees to staff to volunteers, is exceptionally proud of this partnership, which is now heading into its twelfth year.

The Garden also offers a highly competitive horticultural internship programme for college graduates. Interns rotate through different posts in the horticulture department over nine months, and study at night, ultimately earning a Certificate in Horticulture. In recent years more than 250 have applied for the 10 available positions, and virtually every recent graduate has gone on to full-time employment to places such as the High Line and Brooklyn Bridge Park. Adult horticultural education offerings at BBG also

include a partnership with the New York Department of Parks and Recreation in which BBG provides additional training for both entry-level and more senior park gardeners.

BBG has a long-standing, deep commitment to community greening and gardening, and manages an entire community horticulture department called GreenBridge. GreenBridge encompasses a broad suite of programmes, among them the celebrated 'Greenest Block in Brooklyn' residential block contest, which has helped re-green and beautify thousands of residential blocks in Brooklyn. As part of this programme, staff deliver workshops and clinics on vegetable gardening and composting, among other topics, and BBG hosts the Brooklyn branch of the New York City Compost Project. This is a programme of the NYC Department of Sanitation which is currently expanding efforts to increase residential green-waste collection and recycling. Other signature GreenBridge programmes include the Community Garden Alliance, a network of approximately 150 community gardens in Brooklyn who receive technical assistance and attend networking events at BBG; and the Brooklyn Urban Gardener (BUG) training programme, which offers intensive training and is placing knowledgeable citizens out in Brooklyn neighbourhoods to advise on school gardens, street tree care, bioswale creation and other important issues.

BBG has very deep roots in offering formal educational programmes, which usually follow a pre-determined workplan and require advance registration. It is now making a major commitment to complement these legacy programmes by expanding its informal educational offerings and targeting especially the more than 800,000 visitors to the Garden each year. Some visitors to the Garden indicate they are willing and interested to learn more about plants and the environment during a casual visit, and BBG is turning its attention to the strategies and techniques that might best capture the opportunity to educate them. A recent federal grant is providing support for further enhancing the Garden as a living collection, through volunteer and student training, but also by creating new discovery carts and drop-in programme locations.

Transforming BBG into North America's model for an urban botanic garden is a lofty goal, and there is still much to do. Last year, we closed the scientific research programme at BBG for three years while we reassessed the opportunity for research at the Garden to make substantive contributions to the community while at the same time strengthening the Garden's reputation and visibility. We are well along in that process, and envisage refocusing the Garden's research programmes on conservation sub-disciplines rather than in plant taxonomy as in the past. Other areas of strategic concentration include restructuring the horticulture department to lay the groundwork for taking the horticultural displays to an even higher level of presentation, and to align horticultural practice at the Garden with that promoted out in the neighbourhoods. Further upgrades to sustainable operations and to site accessibility also are high priorities. New areas to explore as BBG further defines what it means to be a model urban botanic garden include the expansion of programmes in horticultural therapy, something we believe to be beneficial to any group of people, young or old, able bodied or challenged in some way.

Setting a new vision for BBG, one that understands and embraces our place as an ultra-urban botanic garden, has had some immediate returns. We established metrics by which we could measure our progress towards our goals, and one such metric related to an awards programme. How would we know, we asked ourselves, if BBG was progressing towards becoming the model for an urban botanic garden? The answer was: we would win the National Medal for Museum and Library Service! In May 2013, I had the tremendous honour of representing our entire team, and all of our colleagues from decades past, in accepting this medal from First Lady Michelle Obama at a White House ceremony. BBG was one of five museums to receive the 2014 award, which is presented by the Institute of Museum and Library Services and recognises service to the community. The highlight of this experience was being able to bring two college students to the ceremony who had grown up at the Garden as participants in all of our youth programmes, from the Children's Garden through to BASE high school, and watching them enchant the people they encountered with their self-confidence and environmental knowledge.

Thirty-one megacities exist on Earth today, and many more can be expected to emerge. The botanic gardens in these communities, especially if they are situated in the heart of the city, are particularly important agents for environmental education. BBG offers one model for an ultra-urban botanic garden, a model we are committed to continue to develop to benefit the future of our planet.

REFERENCES

BROOKLYN BOTANIC GARDEN (2014). Available at: www.blog.org/about/mission (Accessed: October 2014).

PEARCE, F. (2006). 'Ecopolis – How big can cities get?' *New Scientist*: 2556: 36–42

WANDERSEE, J.H. & SCHUSSLER, E.E. (1998). A model of plant blindness. Poster and paper presented at the 3rd Annual Associates Meeting of the 15 Laboratory, Louisiana State University, Baton Rouge, LA.