The Role of Public Gardens in
Sustainable Community Development

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Cover Photo: The Bonsai Exhibition Garden at the North Carolina Arboretum is home to one of the country's finest bonsai collections, featuring over 100 specimens in various stages of development. Photo courtesy of the North Carolina Arboretum.

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American Public Garden Association Foreword

Public gardens have always enjoyed the respect of the communities in which they are located. They are resources for recreation, as well as education and research opportunities. In many communities, public gardens are an oasis and refuge from the hustle and bustle of the city, but this characteristic has also meant inherently that one has get to a garden in order to benefit from it. Today, public gardens must reach out to spread their benefits and address the recognized need and opportunity for their communities – merely maintaining their refuge will not suffice.

Public gardens can play very significant roles in sustainable community development. Gardens across the country are employing a "Mission without Walls" practice of actively taking their expertise out into the community, addressing issues and concerns. But what makes a community program not only successful but sustainable? What are the important elements that successful community partnerships have in common? When should program groundwork be laid, what modifications should be considered along the way, and how does an institution measure and evaluate its success?

APGA partnered with Virginia Commonwealth University (VCU) to document and analyze the programs and contributions of eight APGA member gardens to their communities. With the goal of helping all public gardens dramatically expand their contributions to society, VCU has recorded the successful ways these public gardens have partnered with community organizations, including collaborations between municipal officials and not-for-profit organizations. The barriers and pitfalls arising from such partnerships have also been detailed. The completed study provides evidence of how many of these programs are sustainable and enduring.

APGA is grateful to VCU researchers Dr. Meghan Gough and Dr. John Accordino for conducting the interviews at the case study gardens and assembling the document you have before you. VCU Team members Jay Lindsey and Jordan Snelling also provided invaluable assistance in assembling all this information. APGA Staff Members Pam Allenstein (2001-), Kathy Salisbury (2010–2011), Dan Stark (2003–2011), and Vivian Lovingood (2010-) also assisted along the way. This study could not have been conducted without Institute of Museum and Library Services (IMLS) planning grant funding.

We would especially like to thank the case study gardens and their generous communities for sharing their time, experiences and expertise: Lewis Ginter Botanical Garden of Richmond, VA; Brooklyn Botanic Garden and Queens Botanical Garden of their Boroughs and New York City, NY; The Missouri Botanical Garden of St. Louis, MO; Water Conservation Garden of El Cajon, CA; The North Carolina Arboretum of Asheville, NC; The Rio Grande Botanic Garden of Albuquerque, NM; and Franklin Park Conservatory and Botanical Gardens of Columbus, OH. This research and the impact it will have would not have been possible without the inspiration, leadership, and staff of the eight case study gardens and the important work they are doing in their communities.

APGA's vision is "A World Where Public Gardens Are Indispensable" as botanical, community, and cultural resources. The research presented here addresses a gap in literature that exists between a public garden's desire to collaborate more meaningfully in the community, and the knowledge of how to embed its unique expertise into the broader agenda of sustainable community development. The result is a Process Model for public gardens that illustrates the components of successful sustainable community programming. It will have broad applicability for gardens, cultural institutions, and communities alike.

Casey Sclar, Ph.D.
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American Public Gardens Association

Public gardens are institutions known for their contributions in advancing knowledge and appreciation of plant life by offering opportunities for research, education, and leisure activities. The purpose of this collaborative research project between the American Public Gardens Association (APGA) and Virginia Commonwealth University (VCU) is to help public gardens dramatically expand their contributions to society by using their expertise to actively engage in the development of sustainable communities. The project carefully documents the contributions that leading public gardens are already making in their communities, the ways that they partner with community organizations to make these efforts work, and the barriers and pitfalls that arise in such work. Through case study analysis a model of recommendations is provided to help guide public gardens as they navigate the terrain of initiating or expanding community outreach programming.

The growing concern with environmental stewardship and sustainability has already begun to change life in American communities, as new recycling practices, bio-degradable building and packaging materials, farmers' markets, community gardens, green roofs, and other practices multiply, and as people develop a new appreciation for outdoor recreation. Notwithstanding this flurry of activity, communities have only begun to scratch the surface in devising and integrating sustainable practices into every aspect of life.

Public gardens are already playing a significant role in helping cities and towns develop sustainable practices, and the potential to multiply this contribution is evident. The application of the gardens' expertise in sustainable community development may also help to build valuable human and social capital in the form of leadership skills and networking capacities, and to create opportunities for entrepreneurship that improves the local economy as well. However, this powerful partnership between public gardens and both local government and non-profit organizations remains an untapped resource in many communities.

A number of public gardens are developing specific programs that focus on supporting sustainable community development agendas. A partial list of contributions that an engaged public garden could make to a community includes helping to organize, fund or provide assistance to community gardens, educating communities about the value of greening initiatives, training community residents in growing food and other horticulture products, as well as in developing new, horticulture-based businesses that can contribute to community economic development, and broadening community outdoor recreational opportunities. A preliminary review of public garden websites shows that many have mission statements and agendas that include closer work with the community on one or several of the dimensions noted above.

This evolution of outreach comes at an appropriate time as public gardens consider their future audiences. Public gardens are working to define the relevance of the botanical garden for the 21st century; from what botanical gardens were 100–200 years ago – focused solely on botanists and horticulturalists – to what they have the potential to become. Today many public gardens are asking, "What does the community want from you and how can that be financially supported?" So it is no longer just about research, but opening doors to the broader community.

Although many gardens have had success with outreach efforts and profess its importance when asked, the vast majority of these efforts have been modest in scope and many have also been short-lived. Surveys and conversations with public gardens and community development actors indicate that this may be due to barriers in the way of collaboration between public gardens and communities to tackle ambitious projects. These barriers may include lack of knowledge about how to adopt a more assertive role in the community or what forms such involvement should take, differences of opinion within the staff or board of the garden as to what role it should play in the community, as well as barriers to communication between the garden and community development organizations, local governments, or others.

Methods: Case Study Approach

This project directly addresses that gap in the public gardens' knowledge of how to embed their unique expertise into the broader agenda of sustainable community development. It carefully records the choices confronting gardens and communities from the perspectives of the gardens, as well as community-development actors and other relevant parties, such as local governments.

The public gardens chosen for the case studies were selected based on variables such as their geographic location, their size and capacity, and their involvement in sustainable community development activities, to ensure an adequate cross-section of the types of gardens that can be represented in the construction of model approaches. An Advisory Board comprised of representatives from Lewis Ginter Botanical Garden, Missouri Botanical Garden, and Brooklyn Botanic Garden led the process of selecting the case studies. Eight public gardens located in different cities across the United States were selected (See Table 1).

Table 1: Case Studies

Gardens	Garden Locations
Brooklyn Botanic Garden	Brooklyn, New York
Franklin Park Conservatory and Botanical Gardens	Columbus, Ohio
Lewis Ginter Botanical Gardens	Richmond, Virginia
Missouri Botanical Garden	St. Louis, Missouri
North Carolina Arboretum	Asheville, North Carolina
Queens Botanical Garden	Queens, New York
Rio Grande Botanic Garden	Albuquerque, New Mexico
Water Conservation Garden	El Cajon, California

Prior to the scheduling and travel to selected public gardens, extensive research was conducted to assemble comprehensive profiles of each garden and the community in which it is located. Details integrated in this profile included background research on the public garden, its staff and appropriate contacts, the existing community outreach initiatives, community history, and socio-economic data.

On-site visits and phone interviews were conducted with garden staff and their community partners and stakeholders. Interviews focused on issues such as challenges and responses to challenges in leading community outreach programs and the important partnerships that make these initiatives successful. In addition, document analysis was conducted utilizing documents provided by gardens or community partners relating to meetings, initiatives, or publications.

Throughout the case study process, we maintained a close partnership with the public garden Advisory Board to ensure a quality research process. This included in-person meetings and regular conference calls, as well as other communication. The feedback received during these meetings helped to ensure the validly of the findings presented here. Each of the eight gardens reviewed a draft of the chapter concerning its work for accuracy.

Case Studies

Brooklyn Botanic Garden

Snapshot of Brooklyn, New York

Located on the western tip of Long Island, New York, Brooklyn is a dense urban community, shaped economically, physically, and culturally by manufacturing and immigration. With a population of 2.5 million, the borough is New York City's most populous.[1] Kings County, whose boundaries coincide with Brooklyn's, is the second-most densely populated county in the country. Although it is often overshadowed by its neighbor across the East River, Brooklyn was an independent city until 1898, and still retains a character and culture distinct from Manhattan's.

As a result of Brooklyn's density and industrial history, the landscape is decidedly urban. While Brooklyn is home to some of the nation's most famous parks, many of its neighborhoods lack access to quality open space. As a result, the City has made a priority of setting aside urban spaces for beautification and recreation.[2]

As part of the 2007 PlaNYC initiative, Mayor Bloomberg has set goals for improving quality of life in New York through greening and sustainability efforts, including the addition of one million trees by 2017. Key among the plan's goals is having a park within a ten-minute walk of every city resident. To accomplish this, the City plans to acquire or upgrade 4,700 acres of parkland and public space by 2030.[3] As the city's population continues to grow, the demand for open spaces and parks will intensify, as they are prized assets in the city. It is within this context that the Brooklyn Botanic Garden operates.

Ethnic Neighborhoods

Approximately one million of Brooklyn's residents are foreign-born.[4] As a result, one of Brooklyn's defining characteristics is its ethnic enclaves. Although demographics in a place as complex as Brooklyn are constantly shifting, many neighborhoods retain a distinct, dominant ethnic culture. Examples of this dynamic include the concentration of Italian-Americans in Bensonhurst, Russians and Ukrainians in Brighton Beach and Sheepshead Bay, African-Americans in Bedford-Stuyvesant and Brownsville, and Chassidic Jews in Crown Heights and Flatbush. Brooklyn is also home to one of the largest populations of West Indians outside of the Caribbean.[5] While these culturally distinct areas enrich the community in a number of ways, cultural insularity and complexity present challenges to organizations looking to gain access to these cultural groups in order to achieve widespread community engagement.

An iconic brownstone block in the Bedford-Stuyvesant neighborhood of Brooklyn. Photo courtesy of the Brooklyn Botanic Garden.

[1] http://factfinder2.census.gov/

[2] http://www.nycgovparks.org/parks/X102/pressrelease/19785

[3] http://www.nyc.gov/html/planyc2030/html/theplan/public-spaces.shtml

[4] http://factfinder.census.gov/

[5] http://www.walkingaround.com/borough.html

Gentrification

Brooklyn's demographic makeup is still shifting. Since 2000, the proportion of White residents has increased greatly while, during the same period, proportions of groups such as African-American and Hispanics have decreased. This, coupled with an influx of higher-income groups, influences urban market conditions such as rent and food prices, triggering another shift in Brooklyn's culture.[6] Neighborhoods like Williamsburg look very different now than they did even ten years ago, with coffee shops replacing bodegas, organic produce replacing less expensive options, and a streetscape increasingly dominated by young, affluent urbanites. Within the borough, the result is that some groups are being pushed out of neighborhoods with access to open spaces and into areas that lack greenery.

The Brooklyn Botanic Garden

Brooklyn Botanic Garden and its famed neighbor, Prospect Park, form a large swath of green in the middle of Brooklyn's densely urban landscape. The Garden is accessible by transit and is within walking distance for literally millions of people. Bordered by culturally and historically rich neighborhoods such as Park Slope, Crown Heights, East Flatbush, and Prospect Heights, the Garden is in an excellent position to interact with and have a positive impact on a number of communities.

Brooklyn Botanic Garden

Founded: 1910
Staff: 132 full-time, 46 part-time
Volunteers: 615
Volunteer Hours: 51,115 hours in 2010
Visitors: 725,000
Membership: 16,000

The Garden's Mission

The mission of Brooklyn Botanic Garden is to serve all the people in its community and throughout the world by:

- Displaying plants and practicing the high art of horticulture to provide a beautiful and hospitable setting for the delight and inspiration of the public;
- Engaging in research in plant sciences to expand human knowledge of plants, and disseminating the results to science professionals and the general public;
- Teaching children and adults about plants at a popular level, as well as making available instruction in the exacting skills required to grow plants and make beautiful gardens;
- Reaching out to help the people of all diverse urban neighborhoods to enhance the quality of their surroundings and their daily lives through the cultivation and enjoyment of plants;
- Seeking to arouse public awareness of the fragility of our natural environment, both local and global, and providing information about ways to conserve and protect it.

The Garden's History

At the beginning of the 20th Century, the site which is now home to the Brooklyn Botanic Garden was a municipal ash heap. Founded in 1910, the Garden began as a way to beautify the borough using 39 acres of land donated by the New York State Legislature in 1897.[7]

[6] http://www.wnyc.org/articles/wnyc-news/2007/mar/08/gentrification-in-brooklyn-one-bodega-at-a-time/
[7] http://nymag.com/listings/attraction/brooklyn-botanic-garden/

Gardens and Collections

Brooklyn Botanic Garden is home to a variety of displays and collections, all of which cannot be explained here. The Cherry Esplanade began after World War I as a gift from the Japanese government, and is considered one of the best of such displays outside of Japan. The annual blossoming of these trees every spring is the center of the Garden's huge festival, Sakura Matsuri.

Illustrating the Garden's commitment to being a universally accessible attraction, the Fragrance Garden was created in 1955 as the country's first garden designed for the visually impaired. The Fragrance Garden is small and intimate, and visitors are encouraged to experience the exhibit through smell and touch. The exhibited flora is arranged at a height appropriate for interaction with people in wheelchairs, and Braille signs accompany the exhibits.

The Garden's collections also focus on education of children, through the immensely popular and participatory Children's Garden. Education is also a priority at the glass-domed Steinhardt Conservatory, which simulates ecosystems, such as wetlands, deserts, and tropical Africa, Asia, and South America.

Educational Aspects

Brooklyn Botanic Garden is also a center of learning for professionals and casual enthusiasts throughout the community. Classes are available for adults on a wide range of topics, such as composting techniques, community gardening, birding, landscape painting, poetry, tai chi, raising chickens, soil management, and local edibles. Classes and activities have been available for children since 1914, and participants not only learn gardening techniques, they are exposed to nature in ways which would not otherwise be possible in a dense urban landscape.[8]

In 2003, the Garden, the New York City Department of Education, and the Prospect Park Alliance co-founded the Brooklyn Academy of Science and the Environment, a small high school that specializes in teaching science, environmental studies, and urban ecology. In addition to learning on the main campus, students are able to use Prospect Park and the Garden as laboratories and classrooms.[9]

Brooklyn residents work to improve soil composition at a street tree bed workshop, hosted by GreenBridge. Photo courtesy of the Brooklyn Botanic Garden.

Select Outreach Initiatives

Defining Outreach

Brooklyn Botanic Garden views outreach as an essential piece of its purpose and a key to its survival. Three of the five core goals expressed by its mission are focused on outreach, including "reaching out to help the people of all our diverse urban neighborhoods," "teaching children and adults about plants," and "seeking actively to arouse public awareness." The Garden is able to accomplish much by providing excellent and inviting facilities and exhibits on site, but education and outreach in the communities of Brooklyn have facilitated a greater mission of community

[8] http://www.bbg.org/learn/children/#/tabs-3

[9] http://www.bbg.org/get_involved/base/

improvement. Partnering with community groups is a key characteristic common to the Garden's external efforts. The commitment to inclusiveness is highlighted by the Garden's three separate entrances, which allow each neighboring community to have a unique and convenient entrance.

The Outreach Umbrella

GreenBridge

In its mission, the Brooklyn Botanic Garden highlights the importance of teaching people about plants, ecological awareness, and community beautification. The GreenBridge program, with its self-defined role as "the community environmental horticulture program" of the Garden, has become emblematic of that effort by promoting urban greening and conservation while facilitating creative and productive partnerships.

The Garden initiated the program in 1993 and since its inception the program has continually gained popularity and influence. By 2006, the program's growth necessitated a strategic plan for its future, giving rise to "Greening Brooklyn Together." This refocusing coincided with the City's PlaNYC 2030 initiative, which predicts significant population growth while making community greening and sustainability top priorities. In addition to acting as the Garden's outreach arm, GreenBridge sees itself as an essential partner in PlaNYC's efforts to green New York City.[10]

Children enjoy making cider at Making Brooklyn Bloom, an annual spring event at the Garden. Photo courtesy of the Brooklyn Botanic Garden.

Its 2007 strategic plan, "Greening Brooklyn Together," outlines three strategic priorities:

- Preserve, protect, and expand green space and demonstrate new opportunities for greening in Brooklyn.
- Encourage participation in sustainable gardening practices that improve soil, water and air, and increase biodiversity.
- Expand community leadership and the base of support for Brooklyn GreenBridge and Brooklyn Botanic Garden programs.

These strategic priorities are supported by GreenBridge's new projects: Brooklyn Urban Gardener, Community Gardening Alliance, and the Street Tree Stewardship Initiative. The strategic priorities also guide GreenBridge's ongoing efforts with the Greenest Block in Brooklyn and Making Brooklyn Bloom.

The strategic plan is implemented through the efforts and resources of the Garden. This is apparent in the NYC Compost Project in Brooklyn, funded by the NYC Department of Sanitation, which promotes and facilitates composting to improve Brooklyn's soil quality while reducing municipal waste.To achieve this, the Garden's horticultural department is involved in researching and implementing best management practices from other gardens and organizations, and Garden staff performs composting garden site visits and Spanish-language outreach for the program.

In addition to solidifying the Garden's outreach focus, the Plan served to legitimize its efforts to sponsors. The Garden was able to approach potential donors with a document which clearly outlined its goals, capacity,

[10] http://www.bbg.org/pdf/GreenBridgeStrategicPlan.pdf

and partnerships, in order to market itself. The approach proved successful, resulting in assistance from the Institute of Museum and Library Services and the Brooklyn Community Foundation.[11]

In addition to its own resources, the Garden relies on collaborative partnerships to maximize the benefits of their efforts. Through its Street Tree Stewardship Initiative, GreenBridge offers free workshops for street tree gardening, with the City Parks Department providing material and financial assistance. PlaNYC's MillionTreesNYC Initiative guides the ongoing development of the Street Tree Stewardship Initiative. This type of sharing of knowledge and resources allows the Garden to make a greater impact on the community than its resources alone could accomplish. It is the collaboration between these two groups that empowers members of the community to care for street trees, while ensuring that a greater portion of the city's trees thrives.[12]

Garden as Catalyst

The Greenest Block in Brooklyn

Started in 1994, the Greenest Block in Brooklyn is one of GreenBridge's oldest and most successful programs. Like the rest of GreenBridge's efforts, the Greenest Block in Brooklyn addresses its goals at the block level, and the success and popularity of the effort demonstrate the efficiency of this outreach model.

The project creates incentives for Brooklyn residents to take an active part in urban horticulture and the beautification of their blocks. The program emphasizes streetscape gardening and street tree stewardship in Brooklyn. The Garden reaches out to block associations and merchants' organizations to act as block leaders. Blocks compete, within the categories of commercial and residential, for the honor of being Brooklyn's Greenest Block. Prizes (cash and gardening supplies) are given to the winners, and all participants receive certificates. There are also prizes for other accomplishments, such as Greenest Storefront, Best Street Tree Beds, Best Window Box, and Best Community Garden Streetscape.[13]

The contest offers valuable support for GreenBridge's strategic priorities by incorporating best practices and new techniques into contest criteria. This introduces blocks and residents to the newest and most effective urban horticulture and sustainability techniques in an engaging and exciting way. The contest also serves to promote other GreenBridge efforts and services, GreenBridge efforts and services, such as its street clinics and Street Tree Stewardship Initiative.

In addition to strengthening the sustainability and aesthetics of the blocks involved, the Greenest Block in Brooklyn contest helps build unity and efficacy across the groups and neighborhoods of the borough. Prior to entering the contest, block associations are encouraged to attend free workshops to learn urban gardening skills and best practices. These workshops are tailored for the needs of the individual block in order to maximize relevance to and benefits for that block. The result, in addition to the immediate benefits yielded for the contest, is that Brooklyn has gained the most valuable asset one can hope for in community engagement: a mass of citizens who have the skill, organization, and motivation to improve their community.

Final judges assess a streetscape for the Greenest Block In Brooklyn contest. Photo courtesy of the Brooklyn Botanic Garden.

[11] Simmen, Robin. Personal Interview. 01/27/11.

[12] http://www.bbg.org/pdf/GreenBridgeStrategicPlan.pdf

[13] http://www.bbg.org/greenbridge/greenestblock/

The contest has had as powerful an effect on community organization as it has on community greening. The contest is judged at the block level, so unrepresented blocks have to organize to participate. Anyone who wants to start a block association can do so, and the desire to compete in the contest has been the impetus behind establishing at least 15 new block associations, including one in the Redhook district and another on Sterling Place.[14] While this organizing effect is valuable on its own, the competition and accompanying educational component serve to galvanize the block associations into cohesive, cooperative units.

Garden as Trainer

Brooklyn Urban Gardener

The Brooklyn Urban Gardener (BUG) program is an example of the "train the trainer" approach to capacity-building. Through BUG, the Garden's skills and resources are invested in giving urban gardeners the knowledge and skills necessary for sustainable urban horticulture, project leadership, and advocating for urban green space.[15] Every person who completes the BUG program is a potential community leader, with organizational and horticultural skills. By training community members, the Garden indirectly extends the benefits of its technical knowledge throughout the Brooklyn community on a scale that it could never achieve directly. The program is promoted, like most GreenBridge efforts, through the block associations, and the Greenest Block in Brooklyn competition. This is an example of the Garden utilizing and strengthening community organization in order to stretch its resources further.

Winners from the MacDonough Street residential block pose with their award plaque at the annual August press conference for the Greenest Block in Brooklyn. Photo courtesy of the Brooklyn Botanic Garden.

Taking place every fall, the free BUG course includes ten sessions covering soils, composting, growing food, water-wise gardening, streetscape gardening, native plants, community building, and conflict resolution. The program places a high priority on diversity in its enrollment, hoping to include people representative of all of Brooklyn's neighborhoods and cultures. BUG candidates work in groups of four to five, and work on projects with organizations in the community. By the time they graduate and receive BUG certification, candidates have completed 35 hours of class time and 30 hours of service projects. Once certified, these urban gardening volunteers provide assistance on community greening projects throughout the borough, and the network they comprise is a powerful urban greening resource.[16]

Apart from their direct role in community greening, graduates of the program tend to be outspoken advocates for sustainable practices in the community. In this way, the Garden is able to spread its knowledge and values throughout the borough. At the same time, many BUG certificate recipients have strong ties to local schools, and have been instrumental in establishing school gardens. These projects, collaborations, and networking opportunities have an additional benefit – the individuals involved become closer to one another and to their communities.[17]

[14] Simmen, Robin. Personal Interview. 01/27/11.

[15] http://www.foodsystemsnyc.org/announcements/bug-course-bbg

[16] http://www.foodsystemsnyc.org/announcements/bug-course-bbg

[17] Myrie, Sharon. Personal Interview. 01/26/11.

Planning for the BUG program was funded by a grant from the Institute of Museum and Library Services. Without this assistance, the program might not have been feasible. When BUG received funding, the Garden seized the opportunity by making the program a high priority.

Gardener Spotlight: Ena McPherson

Ena McPherson is a strong believer in the power of plants and gardens to help people communicate across boundaries. She has demonstrated this belief in her years of service to her community as the primary force behind two gardens in Bedford-Stuyvesant. A board member of the Brooklyn Queens Land Trust and the Parks, Arts, & Culture Committee at Community Board 3 in Brooklyn, Ena has actively pursued, planted in, and protected her neighborhood plots and reenergized her neighbors' excitement about these once thriving, then dormant gardens. Working with a dedicated group of neighborhood kids, Ena looks to grow a new generation of plant loving, community advocates. (Photo courtesy of the Brooklyn Botanic Gardens.)

Garden as Horticultural Expert

The Urban Forest

All of the trees and plants in a city comprise its urban forest.[18] Thinking of New York City's trees as an extensive ecosystem (as opposed to a catalog of separate units) is important because each tree has a net benefit to the community as a whole.[19] Similarly, the loss of trees anywhere in the city is a net loss for the community.

The benefits provided by the trees of the urban forest are tangible. They provide beauty, absorb noise, impart a sense of community, and have demonstrably positive effects on our mood and health.[20] In addition to these aesthetic benefits, urban trees improve air quality by trapping harmful particulates, absorbing carbon dioxide, and producing oxygen. Trees enhance cities' stormwater capacity by reducing runoff from storms, which provides real savings for sewage treatment and flood prevention. The shade provided by a canopy of trees can offer energy savings by keeping streets and homes cool. This is particularly important in dense urban areas, which are often subject to the "heat island" effect, wherein urban areas can be up to ten degrees warmer than their rural counterparts. The presence of trees increases property values, rental demand, and commercial activity. [21]

In New York City, the savings attributed to street trees are estimated at almost $28 million in energy costs, almost $755,000 in air pollution reduction costs, and $35.6 million in stormwater management costs. MillionTreesNYC estimates that, in all, the City's trees provide a benefit of

[18] http://treesny.org/FAQ.html

[19] http://journalism.nyu.edu/publishing/archives/livewire/new_york_city/tree_pruners/

[20] http://www.state.sc.us/forest/urbben.htm

[21] http://www.dnr.state.md.us/forests/publications/urban8.html

almost $122 million. After accounting for the costs associated with the trees, they still provide more than $100 million in benefits to the City – a net benefit of $171.55 per tree.[22]

Urban forests have tremendous value as aesthetic, economic, and ecological resources, making their growth and care an excellent investment for communities. It should come as no surprise, then, that urban forestry is prominent in the City's and Garden's agendas.

MillionTreesNYC

Included in the city-wide PlaNYC 2030 initiative, MillionTreesNYC calls for planting and caring for one million new trees across New York City's boroughs.[23] The resulting partnership between public and private actors is noteworthy for both the broad scope of the effort and the enthusiasm of the actors.[24]

Citizen Pruner Program

While the City is capable of planting a million new trees, it lacks the resources to care for them once they are planted: planting contractors are only responsible for watering trees for two years.[25] . As a result, the City depends on citizen volunteers to keep the new trees alive. TreesNY was founded in the 1970s by private citizens to supplement the cash-strapped City's efforts to care for its trees. The group has since worked to enhance and preserve the city's tree canopy through advocacy, education, and active volunteering.[26]

The group is responsible for the Citizen Pruner program, which trains citizens in tree care, biology, and pruning. The course costs $100, and involves eight hours of class time and four hours of in-field experience, followed by a certification exam. Citizens are only allowed to prune street trees after receiving certification.[27] To date, over 11,000 New Yorkers have completed certification.[28]

Street Tree Stewardship

The MillionTreesNYC Initiative dovetails with the Garden's agenda in promoting city beautification, clean air, and open space. In 2008, the City's Parks Department received funding for its Street Tree Stewardship Program, and began seeking key partners in the boroughs. The Garden

[22] http://www.milliontreesnyc.org/downloads/pdf/nyc_mfra.pdf
[23] http://www.milliontreesnyc.org/html/about/about.shtml
[24] http://www.nyrp.org/Greening_Sustainability/MillionTreesNYC
[25] http://treesny.org/FAQ.html
[26] http://treesny.org/about.html?#history
[27] http://treesny.org/programs.html?#citizenpruner
[28] http://treesny.org/programs.html?#citizenpruner

was quickly identified as such a partner, due to its stature within the borough, training background, and excellent facilities. The partnership between the Parks Department and the Garden has been essential in enhancing New York's urban forest. The Garden holds workshops to train Street Tree Stewards, and is responsible for promotion of the program. The Parks Department provides funding and material resources.[29] Unlike the Citizen Pruners, Street Tree Stewards are only permitted to water street trees and care for the tree beds, and training is free.[30]

Volunteers prune trees in Brooklyn as part of the Citizen Pruner Program. Photo courtesy of the Brooklyn Botanic Garden.

Keys to Success

Strategic Plan

The strategic plan has benefited the Garden in two essential ways. The plan helped legitimize Garden programs and efforts to potential sponsors. Given the Garden's limited resources, this funding has allowed Brooklyn Botanic Garden to spread its benefits far beyond what would have otherwise been possible. The plan also helped the Garden to articulate its priorities and focus its actions in the areas most likely to succeed.

Grassroots Engagement

The Garden has wisely chosen to engage Brooklyn's communities at the block level for many of its efforts. This allows its efforts to be flexible and adaptable among the various cultures in the borough, and allowed the citizens of those blocks to feel true ownership of their efforts. At the same time, the Garden is able to extend its benefits beyond its resources by utilizing the existing organizational structure of the block associations. Finally, the Garden has encouraged previously unorganized blocks to associate through its Greenest Block competition.

Prioritizing Inclusiveness

Community engagement, particularly in a community as diverse and sometimes insular as Brooklyn, can be difficult. One of the great challenges of outreach is making the various stakeholders feel they are welcomed and that their voices will be heard. The Garden accomplishes this by reaching out to block groups, offering real training and empowerment opportunities, and through vital gestures, such as having entrances to the Garden from three different communities.

[29] Kavanaugh, Liam. Personal Interview. 01/26/11.

[30] http://www.milliontreesnyc.org/html/programs/stewardship_corps.shtml

Franklin Park Conservatory and Botanical Gardens

Snapshot of Columbus, Ohio

Columbus, with a population of 733,203, is the largest city in Ohio and the third-largest city in the Midwest.[31] Over the past decade, Columbus' population has grown only grown 3 percent – less than a third of national rate over the same period. [32] However, Columbus' rate of growth is more than triple that of the State as a whole.

Columbus' economy has historically been more diverse than that of most "rust-belt" cities. As a result, the city has not suffered as deeply from economic fluctuations and the decline of manufacturing as other Northern and Midwestern cities. In 2008, the city, which is home to five Fortune 500 companies, was named the "number one up and coming tech city" in the nation. [33,34]

The Franklin Park Conservatory and Botanical Gardens

The Conservatory's History

The Franklin Park Conservatory and Botanical Gardens was built in 1895 and over forty years the Franklin County Agriculture Society acquired the 88 acre site for the County (and eventually State) Fair. In 1974, the Conservatory's famous Palm House was listed on the National Register of Historic Places.[35]

Ameriflora

In 1986, the Conservatory was selected to host *AmeriFlora 92*, an international horticultural exhibition. The event was a catalyst for expansion and improvement of the Conservatory – 58,000 square feet were added at a cost of $14 million. The expansion included several ecosystem exhibits, classrooms, a library, gift shop, café, and administrative buildings.

During the years in which the Conservatory was being overhauled for *AmeriFlora 92*, Franklin Park was almost inaccessible to the public. The result was that communities who had traditionally relied on the Park for outdoor recreation and even felt a sense of community ownership for the site, now felt "locked out of their own park."[36] After the four years of construction, the park was significantly changed. In addition to new features, the Park now included a nine-foot fence between the grounds and surrounding neighborhoods. Viewing this development in conjunction with the previous years' closures, citizens felt that they were being

The Scotts Miracle-Gro Community Garden Campus at the the Conservatory serves as a national model and local resource for community gardening and education. Photo courtesy of Virginia Commonwealth University.

[31] http://quickfacts.census.gov/qfd/states/39/3918000.html
[32] http://quickfacts.census.gov/qfd/states/00000.html
[33] http://money.cnn.com/magazines/fortune/fortune500/2011/states/OH.html
[34] http://www.forbes.com/2008/03/10/columbus-milwaukee-houston-ent-tech-cx_wp_0310smallbizoutlooktechcity.html
[35] http://www.fpconservatory.org/history.htm
[36] Dawson, Bill. Personal Interview. 04/20/2011.

deprived of a community resource they had traditionally enjoyed. However, this would soon change, as Franklin Park Conservatory and Botanical Gardens developed into a leader in public outreach.

The 1992 exhibition brought in over one million visitors and expanded the Conservatory's profile, giving it the momentum to expand and make improvements that the Conservatory still benefits from today. The same year, the Conservatory hired an Executive Director and, two years later, became the first conservatory in the country to host a seasonal butterfly exhibition: *Blooms and Butterflies*. This seasonal butterfly event was and remains incredibly popular. Also in 1993, the Franklin Park Recreation District, a private not-for-profit organization, reopened with a new 10 member board of trustees.

In 2003, the Conservatory presented an exhibit of glass sculpture by renowned artist Dale Chihuly. The following year, Friends of the Conservatory, a private non-profit organization that supports the Conservatory, purchased 3000 of the exhibit's pieces. The exhibit has become a signature part of the Conservatory.

Glass sculptures by Dale Chihuly complement the Conservatory's plant collections in a unique, artistic way. Photo courtesy of Virginia Commonwealth University.

The Conservatory's Mission

The Conservatory's Mission has evolved over time to reflect its commitment to community outreach. Until recently, the Conservatory's Mission was: *Franklin Park Conservatory and Botanical Gardens nurtures plants and people. We promote environmental appreciation and ecological awareness for everyone. Our unique botanical collections provide lifelong learning opportunities in a friendly and accessible setting, which preserves tradition and provides a refuge for the soul.*[37]

As part of the evolution of the Conservatory's relationship with the community, its board approved a new Mission in November 2010: *Inspired by horticulture, Franklin Park Conservatory and Botanical Gardens elevate quality of life and connects the community through educational, cultural and social experiences.*[38]

The new statement emphasizes the Conservatory's commitment to beautify and empower the community beyond its own grounds. Accordingly, the Conservatory sees itself as a one-stop resource for the community.[39] It addresses long-term sustainability by establishing itself as a vital community resource, because providing essential benefits to the community can be a promising survival technique for publicly funded institutions.

[37] http://www.foodandwineaffair.com/FoodWineAffair/tabid/2765/smid/5664/ArticleID/654/reftab/2749/t/Franklin-Park-Conservatory/Default.aspx

[38] http://www.bizjournals.com/columbus/print-edition/2010/12/24/franklin-park-conservatory-mulling.html

[39] http://www.fpconservatory.org/faq.html

By 2006, the Conservatory's operational budget had reached $4 million and by 2010 the budget exceeded $6 million. This impressive growth has been shaped by the Conservatory's vision of financial sustainability.[40]

Select Outreach Initiatives

Defining Outreach

Growing to Green

The Conservatory's *Growing to Green* program, started in the spring of 2000, serves as its outreach arm to the community. Its purpose is to provide the knowledge and resources needed for community gardening and beautification.[41] The program has helped start or renovate over 200 gardens since its inception. These community gardens were able to donate 15,000 pounds of fresh produce to local pantries and soup kitchens in 2010. In addition to community gardens, *Growing to Green* has assisted in the construction of school and memorial gardens, as well as other aesthetic projects. [42]

The program's vision recognizes the multiple benefits associated with community gardening. Because of the grass-roots nature and relatively low startup costs of community gardening, investing in community gardens and gardening training is a cost-effective way to build a community's aesthetic, economic, and social assets.

Seeing the success of the Conservatory's *Growing to Green* program, the City of Columbus began the *Get Green Columbus* program. Educational resources include a demonstration garden, instruction and training, and the "Columbus Community Garden Resource Guide," which is published by the Conservatory. The Conservatory sees the program as a community resource which:

- *Revitalizes abandoned unsightly spaces, turning them into attractive, productive gardens or green spaces*
- *Enhances neighborhood safety and beauty*
- *Increases food security*
- *Teaches about health, wellness, and nutrition*
- *Unites culturally diverse and intergenerational groups*[43]

The program embraces the efficiency of a "train the trainer" model of community improvement by offering a free eight week course on community gardening and leadership. Once proficient, each student becomes a community resource, extending the benefits of the program throughout the community at little cost to the Conservatory. Additionally, the program acts as a resource to land available for gardening through the City's land bank. In essence, the Program links potential gardeners who

Growing to Green is the primary community outreach program for the Franklin Park Conservatory and Botanical Gardens. Photo courtesy of Virginia Commonwealth University.

[40] http://www.fpconservatory.org/history.htm

[41] http://www.epa.state.oh.us/portals/30/Brownfield_Conference/docs/Bruce%20Harkey.pdf

[42] http://www.fpconservatory.org/g2gabout.htm

[43] http://www.epa.state.oh.us/portals/30/Brownfield_Conference/docs/Bruce%20Harkey.pdf

have no workable land with lots that would otherwise be neglected. The result is a community with better food options, social interaction, pride of place, and less blight. Adding to the Program's benefits, much of the resulting produce is donated to local food pantries.[44]

Growing to Green also includes recognition of community gardeners through its award program. There are awards for community, educational, and youth leadership, and neighborhood gardens, although the most prestigious award goes to the *Community Gardener of the Year*.[45] By rewarding citizens for their hard work, these awards encourage further beautification efforts and instill neighborhood pride. In 2011, the Conservatory also added a Sustainability Award to the award program, which is presented by the American Community Garden Association.

Visitors learn about tropical butterflies from a Franklin Park Conservatory interpreter. Photo courtesy of Virginia Commonwealth University.

Conservatory as Community Partner

Get Green Columbus

In January 2005, Mayor Coleman started the *Get Green Columbus* initiative, which included goals and strategies for Columbus' economic development and environmental sustainability. The program includes an interdepartmental effort to empower citizens to establish community gardens.[47] Community gardens are attractive to citizens and localities because their numerous benefits outweigh the costs of establishing gardens. Community gardening is relatively easy and many types of people are interested in becoming involved. As a result, community gardening can spread quickly, enhancing the character and quality of life for many neighborhoods with minimal investment.

> *"By partnering with the County, we have leveraged our respective resources to create new gardens and strengthen existing ones. Community gardens benefit our health, our community and our environment, and they give neighbors a reason and a place to come together. These gardens are beautifying our community while simultaneously providing access to fresh, local foods."* [46]

While establishing community gardens is relatively cost-effective, their operation requires resources and skills. Even dedicated gardeners benefit from guidance, collaboration, encouragement, and growing pains are inevitable. Franklin Park Conservatory and Botanical Gardens and its affiliates work to empower citizens and groups to establish and maintain these gardens. The resources available for community gardening are cataloged by the City in its *Community Garden Resource Manual*. The Land Redevelopment Office procures lots for the gardens. The Department of Development facilitates zoning for the gardens and offers a free mobile tool library for gardeners. The Division of Sewerage and

[44] http://www.epa.state.oh.us/portals/30/Brownfield_Conference/docs/Bruce%20Harkey.pdf

[45] http://columbus.gov/uploadedFiles/Area_of_Interest/Get_Green/Programs/CGR%20Guide.pdf

[46] http://columbus.gov/getgreen/

[47] http://columbus.gov/getgreen/

Drainage operates Com-Til, a composting program that provides and delivers nutrient-rich compost to community gardens. Finally, through its Keep Columbus Beautiful program, the Division of Refuse Collection assists citizens with beautification projects and offers material assistance to community gardeners.

Conservatory as Technical Expert

Scotts Miracle-Gro Urban Garden Academy

In September 2009, the Franklin Park Conservatory and Botanical Gardens opened its Scotts Miracle-Gro Company Community Garden Campus. MSI Design Firm designed the firm as part of the Conservatory Master Plan's second phase. During the creation of the Master Plan in 2000, public input contributed to a decision to "repurpose" an underused section of the Park, including the Caretaker's Cottage, which, while historically significant, had fallen into disrepair.[48]

> *"The vision of the Campus is to provide a central place for education, communal gardening, and celebration through artfully designed gardens, terraces, and structures. Designed to provide inspiration for home landscape projects, the various gardens exhibit custom details, and unique materials. In addition, all of the gardens and construction materials conform to organic and sustainable principals."* [49]

Through the *Growing to Green* program, the Scotts Miracle-Gro Community Garden Campus at Franklin Park Conservatory and Botanical Gardens provides "lower-income communities exposure to gardening and inspiration to make healthier choices."[50]

The four-acre Campus is open to the public, and is intended to serve as both a national model and local resource for community gardeners. The Campus offers "programs and activities that promote community, environmental awareness, nutrition, and wellness."[51]

The Campus also hosts the *Chase Community Gardener Training Program,* which offers coursework in horticulture, nutrition and wellness, sustainability, community and garden leadership, and school gardens.[52]

The Scotts Miracle-Gro Community Garden Campus serves as a living classroom for garden and landscape education at the Conservatory. Photo courtesy of Virginia Commonwealth University.

[48] http://msidesign.com/blog/index.php/franklin-park-conservatory-community-garden-showcases-beauty-and-benefits-of-locally-grown-produce

[49] http://msidesign.com/blog/index.php/franklin-park-conservatory-community-garden-showcases-beauty-and-benefits-of-locally-grown-produce

[50] http://www.epa.state.oh.us/portals/30/Brownfield_Conference/docs/Bruce%20Harkey.pdf

[51] http://scotts.mediaroom.com/index.php?s=43&item=159

[52] http://www.cityfarmer.info/2009/09/08/campus-to-serve-as-national-model-for-community-gardening-and-environmental-education/

American Community Garden Association

The Campus is also the national headquarters for the American Community Garden Association, complementing their goal of becoming a national one-stop shop for community gardening resources. The Association is a nonprofit dedicated to promoting, organizing, facilitating, and advocating for community gardens in the United States and Canada. The Association provides gardening workshops and publications, hosts meetings and conferences to disseminate gardening knowledge, and facilitates networking among gardens.[53] The presence of the Association represents a wealth of additional resources for the Conservatory and the region's community gardens.

Conservatory as Community Organizer

Easing Transitions for Immigrants

Columbus has a large population of Somali refugees, including a rural subgroup known as Bantus. The Bantu have a rich agricultural tradition, and acclimating to life in Columbus, Ohio was understandably challenging.

A beautiful mural located the Ama Vera Garden in the Linden neighborhood. Photo courtesy of Virginia Commonwealth University.

Franklin County initiated dialogue with the Bantu community and, as a result, it became apparent that they missed being able to grow food. Through cooperation between the Conservatory and County, a 55-acre former orphanage site was selected for conversion to garden space, and a section was dedicated for Somali gardening. [54]

In response to the unique watering style of Somali gardening, which requires the site to be flooded early in the growing period, the County installed a $12,000 rain catchment system. It can be transplanted if necessary, and was funded by the County. After a successful first year, the Somali Garden expanded to a second lot. The Somalis utilize a communal style of gardening which involves coordination and bartering between families, which has helped strengthen their community ties and sense of "being home." At the same time, everyone else benefits from getting to see a working garden from another part of the world.

Conservatory as Supporter of the Arts

New Harvest Urban Café and Urban Arts Center[55]

Relative to Columbus as a whole, the Linden neighborhood is densely populated, and struggles with many of the issues associated with central city neighborhoods, including poor access to nutritious foods, low property values and household income, and a high crime rate.[56] These factors also indicate a neighborhood which could benefit from the transformative effects of community gardening. Through the combined efforts of a responsive local government and active citizens, and with guidance and help from the Conservatory, community gardening is indeed transforming the Linden neighborhood.

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[53] http://www.fpconservatory.org/media.htm

[54] Matheny, Kate. Personal Interview. 07/21/2011.

[55] http://newharvestuac.com/

[56] http://www.city-data.com/neighborhood/South-Linden-Columbus-OH.html

When it opened in 2003, New Harvest was primarily a space for performing arts and cultural events. Two years later, realizing that it needed income in order to operate, New Harvest began offering food for sale. To augment its menu, the organization began gardening on an adjacent lot. In 2004, New Harvest received a grant through Scotts Miracle-Gro Urban Garden Academy, which served as a catalyst for continued growth.[57]

New Harvest has since expanded into another additional lot containing an abandoned building, which the City demolished for them. The process of developing these lots into working gardens was demanding, but Conservatory staff provided assistance throughout the project. This assistance included technical expertise, physical labor, supplies, and educational materials.[58] In addition, the Fiskars Company transformed abandoned lots through their Project Orange Thumb, which worked on the Ama Vera Garden.[59] More than 70 volunteers from the community came out to help build the garden at its new site, which demonstrates the community support for the organization. New Harvest repurposed many of the hundreds of tires previously illegally dumped on their lots – painting them and using them as raised flower beds.[60]

A welcoming mural adorns an exterior wall of the New Harvest Urban Arts Complex. Photo courtesy of Virginia Commonwealth University.

Highlighting the connection between community gardening and the hope for a peaceful and cooperative community, the new garden was named Ama Vera, for a neighborhood resident who was killed by gun violence. Her death served as a wake-up call to residents, motivating them to join together to actively improve their community. New Harvest also sees an opportunity to bring together neighborhood residents for positive interactions and cooperation through their various gardening programs, which provide a stimulating, positive and inclusive gathering place where residents can build new relationships.

New Harvest also reaches out to the community by holding various events, including plays and concerts, intended to bring residents together, and build connections between diverse residents. As an example, New Harvest hosted a reggae event to improve relations between the city's Ethiopian and Eritrean immigrant populations. The two groups are from the same region of eastern Africa and share a similar culture, but do not frequently interact in the Columbus community.

By offering a space for fun and a neutral community resource, New Harvest facilitates interaction and relationship building. These relationships are enhanced by the effort put into the gardens and the rewards shared by gardeners that involved. More tangibly, cooperation and shared efforts lead to informal community networks, which, in turn, help create a more cohesive community.

[57] http://www.columbuscityscene.org/going_green.html
[58] Ababio, Kwodwo. Personal Interview. 07/21/2011.
[59] http://www2.fiskars.com/Activities/Project-Orange-Thumb/Gardens/Linden-Neighborhood
[60] http://newharvestuac.com/wp-content/uploads/2010/09/Garden-Aids-community1.pdf

Conservatory as Capacity Builder

Grass Roots Organizer

Franklin Park Conservatory and Botanical Gardens, surrounded by neighborhoods in need of community gardens, has succeeded in meeting more of this demand than its resources alone could permit. Conservatory staff goes into communities to guide potential gardeners through the steps of creating a garden, from outreach and recruitment to technical garden training. The Conservatory is active in sharing whatever resources (physical, organizational, and educational) the community gardeners may require. These gardeners, in turn become resources themselves.

The winners of *Growing to Green* awards represent only a fraction of the diversity to be found among Columbus' 200 community gardens.[61] Common to all of these gardens is a desire to improve the surrounding communities, with assistance from Growing to Green. Some of the ways in which the Conservatory enables these gardens include advocacy on their behalf, gardening materials, and technical instruction. Further expanding the Conservatory's capacity to effect change, twelve community gardens are designated as 'hub gardens,' meaning that they assist newer gardens with technical and material support.

Conservatory as Trainer

Franklinton Gardens

The neighborhood of Franklinton is sometimes called "The Bottoms." Originally, this referred to the neighborhood's placement in the floodplain of the Scioto River. More recently, "The Bottoms" has been used as a pejorative reference to the neighborhood's problems: low income and homeownership, high crime, and a deteriorated physical environment.[62]

A faith-based community called Landing Place started Franklinton Gardens, originally for their own use. Their objectives quickly expanded to include enhancing access to fresh foods for other residents, beautifying the community, and helping unite a fractured community.[63]

Founded in 2007, Franklinton Gardens is an initiative responsible for six garden lots in Columbus. Their produce is distributed in part through the Franklinton Market, which provides organic food purchasable with food stamps (up to 75% of the Market's sales come from food stamps). In a community lacking in nutritious options, this is an invaluable service.[64] To supplement their fresh produce initiative, Franklinton offers nutrition and cooking classes, including food preservation (canning) and understanding nutrition labels.

Landing Place also offers gardening instruction and provides material support to residents, with assistance from the Conservatory. Like many of Columbus' community gardens, Franklinton also rents plots to residents, many of whom had never previously gardened.[65] The impact that Franklinton Gardens have had on the community demonstrates their effort to build relationships between neighbors.

One of the six community gardens started by Franklinton Gardens. Photo courtesy of Virginia Commonwealth University.

[61] Dawson, Bill. Personal Interview. 07/20/2011

[62] http://massmoga.wordpress.com/category/the-bottoms/franklinton/

[63] Kauffman, Patrick. Personal Interview. 07/21/2011.

[64] http://www.franklintongardens.org/

[65] Kauffman, Patrick. Personal Interview. 07/21/2011.

Four Seasons City Farm

Four Seasons City Farm began in 2004 as an effort by a local congregation to beautify and renew urban neighborhoods in Columbus, while building relationships within the community.[66] The nonprofit now encompasses 14 sites, and one third of their produce is donated to local pantries, while the rest goes to the farm workers or is sold.

Four Seasons' workforce is augmented by trainees paid by Franklin County's Job and Family Service Department. This is an example of the positive collaboration between the City of Columbus, Franklin County, and the community gardens.[67]

Like Franklinton Gardens, Four Seasons is motivated by a desire to build positive connections in their community. While the process of building trust in the community is a work in progress, there is evidence that Four Seasons has already seen some success: The organization holds potluck events, members of the community participate in gardening efforts in their gardens, and neighborhood children like to spend time in the garden or talk to the gardeners.

A hoop house was constructed at a Four Seasons City Farm community garden to extend the growing season. Photo courtesy of Virginia Commonwealth University.

Keys to Success

Empowering Others

Each gardener trained has the potential to train others gardens and to physically assist other gardens. This is how community networks are built, and as a result of these efforts, amount of assistance and education in which the Conservatory is involved increases exponentially.

Actively Assessing Community Needs

Organizations hoping to address community needs often discover that accurately identifying those needs can be a challenge in itself. The Conservatory's staff identifies the specific needs of neighborhoods through open dialogue with residents. Establishing trust and mutual communication has been a long process, but the results have been remarkably positive. By encouraging input from citizens, the Conservatory and its affiliates have encouraged a sense of ownership among community members.

Being a Community Resource

In the wake of *AmeriFlora 92*, the Franklin Park Conservatory and Botanical Gardens felt that it needed a new identity and a new purpose within the community. The Conservatory was fortunate that their resources could address the physical needs of the surrounding neighborhoods. This was no coincidence, as Conservatory staff actively sought out residents to learn what their needs were. The result has clearly benefited the community, but in becoming such a valued part of that community, the Conservatory has also gained the new identity and purpose that they had were wanted.

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[66] http://www.fourseasonscityfarm.org/aboutus

[67] http://ourohio.org/index.php?page=growing-green-communities-2

Lewis Ginter Botanical Garden

Snapshot of Richmond, Virginia

Richmond was founded at the falls of the James River, a location that made it a center for trade and manufacturing, the location of the state capital and the capital of the Confederacy. Today it lies at the center of a bustling region of 1 million people, with a diverse economy featuring government, manufacturing and services. Because of its economic health, the region is able to support numerous cultural activities, such as the Lewis Ginter Botanical Garden.

The central city, while comprising only a small portion of the metro area's land, has about one fifth of its population, down from its peak in 1960. The central city boasts many beautiful, historic neighborhoods, but it also houses close to one half of the metro area's population with incomes below the poverty level, and resulting vacant lot challenges.

The City of Richmond is home to unique residential neighborhoods, such as the Museum District seen here. Photo by Jordan Snelling.

This poses a continuous challenge for the Richmond government, but with the assistance and support of non-profits and community-development organizations, the City is addressing the issues.

Richmond Sustainability Initiative

In recent years, neighborhoods in and around the city have increasingly included "greening initiatives," such as community gardens and farmers markets, among their revitalization initiatives.

The City of Richmond has created an Office of Sustainability, which currently is undertaking a sustainability planning process for the entire city. The City has also passed a Community Garden Ordinance which allows city-owned vacant properties to be used as community gardens.

Prioritizing Outdoor Recreation

The quantity of parks and open spaces in a city is indicative of the extent to which that community has made outdoor recreation a priority. Cities with a high ratio of per-capita parks and open spaces have deliberately set aside land for outdoor recreation.[68] Richmond has 1,706 acres of parks and natural areas, amounting to 388 sq. ft per resident[69] – a ratio comparable to that of Boston (331). For comparison, this is significantly smaller than Raleigh, North Carolina's parkland per capita (1,332), but exceeds those of New York City (197) and Chicago (182).[70] Following in the city's history of prioritizing outdoor recreation opportunities, an opportunity exists for Richmond to add to its parkland from its abundance of vacant lots.

[68] http://www.mnplan.state.mn.us/mm/indicator.html?Id=69

[69] Data Source: City of Richmond GIS, 2010

[70] http://persquaremile.files.wordpress.com/2011/01/parkland-per-person-us.png

Lewis Ginter Botanical Garden

Founded: 1984
Staff: 55
Budget: $5.1 million
Membership: 13,000 households
Visitors: 292,477
Volunteers: 510
Volunteer Hours: 31,759 hours

Education: Adult programs range from "how-to" sessions to lectures by renowned garden experts. Children's programs are age-specific and meet Virginia Standards of Learning requirements.

Research: The Garden collects and cultivates plants from all over the world and maintains a botanical library and herbarium.

Special Events: Lewis Ginter Botanical Garden hosts numerous events throughout the year. Popular examples include a winter lights festival, a butterfly exhibit, and "Groovin in the Garden," a concert series on the grounds.

(Photo courtesy of Lewis Ginter Botanical Garden.)

The Lewis Ginter Botanical Garden

Having celebrated its 25th anniversary in 2009, Lewis Ginter Botanical Garden ("Lewis Ginter") is relatively young. Sited in a primarily residential neighborhood at the end of a commercial corridor on Lakeside Avenue, the Garden sits just to the north of the city in Henrico County.

The Garden is a private, non-profit organization governed by a 43-member volunteer Board of Directors. Since its founding in 1984, it has focused on building an impressive physical campus and developing a sound financial plan. With the recent completion of a capital campaign and the achievement of a strong reputation in the region, the Garden is now seeking to more actively reach out to the surrounding community.

Laying Ground for Outreach

Challenges of the First Step

Lewis Ginter Botanical Garden exemplifies public gardens that are just starting to consider outreach as part of their mission. In 2009, the Garden created a strategic plan, *Getting to Great*, which outlines seven goals and implementation strategies. One of those goals calls for outreach: expand the Garden's influence and impact into the community. While the Garden is already engaged in community activities, this goal acknowledges an increased emphasis on outreach. The implementation strategy for outreach recognizes the limitations of the Garden's financial and human

resources while still desiring that the Garden will "become a catalyst for and connector between enterprising initiatives that use horticulture as a tool for fostering the stewardship, beautification, and humanization of our built environments, improving our community and <the Richmond> region."[71]

Because of its limited resources, the Garden realizes that productive partnerships can increase the reach of the Garden and its mission. The Garden is also aware, however, that partnering with organizations who do not share its values can dilute its impact and mission. With this balance in mind, Lewis Ginter chooses a selective approach in entering partnerships. In its plan, "Getting to Great," the Garden calls for the development of a vetting process to determine whether current and potential partners are operationally and philosophically aligned with the Garden. Partnerships are evaluated on the extent to which they carry out the Garden's mission, vision, and goals and are economically beneficial to both partners.

Additionally, the plan calls for enhancing existing partnerships before entering new ones. Nevertheless, the Garden recognizes that in order to expand its influence in a cost-effective way, it must be open to new partnerships. In order to make sure that these partnerships are favorable for the Garden, ten criteria have been established for their evaluation. These standards ensure that such partnerships be "apolitical in nature, financially prudent . . . and focused on education and innovation." The criteria can be viewed as elaborations on the requirements outlined in the previously mentioned vetting process.

Lewis Ginter looks to these criteria when considering partnerships for outreach efforts. As part of its evolution in outreach, the Garden plans to integrate these criteria as formal decision points in its process for outreach partnerships. Such a process would ensure the Garden stays on mission and invests in partnerships that advance its strategic goals.

Partnership Evaluation Criteria

1. The Garden and its partners' core missions, visions, and values are compatible.
2. The partnership is flexible and sustainable, and recognizes the values of multiple assets, not just financial.
3. The partnership offers opportunities to educate the public.
4. The partnership builds on the Garden's existing relationships.
5. New partnerships are developed where there exist local desire and willingness to work for change and a shared commitment to sustain the project.
6. The partnership is cost effective by making sound use of resources, with both tangible and intangible returns on investments.
7. The partnership offers diverse and compelling fundraising opportunities, with the probability of early success that helps establish momentum and attracts further investment.
8. The partnership offers opportunities for volunteer engagement.
9. The partnership provides visibility for both the Garden and its partner.
10. The Garden maintains its independence and autonomy and refrains from alliances and partnerships that have the potential to be politically charged.

[71] *Getting to Great.* Lewis Ginter Botanical Garden Strategic Plan. 2009.

Select Outreach Initiatives

The Garden has shown an interest in interacting with the community beyond its own grounds, but the efforts are recent. Establishing a network and reputation necessary for community outreach is a long and incremental process. Lewis Ginter sees its next steps in evolving outreach initiatives as an exciting but sometimes daunting endeavor due to inexperience, absence of appropriate models for a garden in its early stages of outreach, and limited resources to undertake new initiatives.

The Garden's efforts thus far have focused on helping increase access to fresh foods for those in need and providing technical assistance to an emerging community organization that converts vacant lots into functional, aesthetically pleasing community gardens. However, while the following initiatives are currently in place, continued investments in these outreach efforts are decided annually – if adequate funds to support the initiatives are not present, they cannot continue because they are not part of the on-site visitor experience.

Moreover, uncertainty in future leadership development and the need for Board-driven commitments to outreach investments truly makes this review of Lewis Ginter Botanical Garden a "snapshot" in time. It is very possible that the Garden and others like it will have to loosen their investments in outreach and pull in their commitments until they realize more fruitful models for funding outreach initiatives.

Garden as Catalyzer

Improving Access to Fresh Food

The Garden's most successful community partnership has been with FeedMore, the umbrella organization for the Central Virginia Food Bank, Community Kitchen and Meals on Wheels. FeedMore began in 2008 through a merger of these three organizations, and set up operations in a jointly funded, LEED-certified building. Rather than competing for limited funds, the groups combined efforts towards their common goal of providing "hot, home-cooked meals for at-risk youth and homebound adults."[72] The partnership is a natural fit for the Garden, as one tenet of its mission is to show how plants are essential to human life.

FeedMore serves between five and six thousand meals each day to the area's homebound elderly and at-risk youth populations. Homebound adults are provided with meals that were made from scratch and flash-frozen, while youth are served hot, nutritious meals through the organization's *Kid's Café*. FeedMore also plays a valuable role as an emergency food provider: as a Red Cross emergency feeding station, FeedMore can produce up to 25,000 meals per day if needed.

A volunteer collects vegetables from the Community Kitchen Garden . Photo courtesy of the Lewis Ginter Botanical Garden.

[72] Lohr, Fay. Personal Interview. 11/09/2010.

The partnership between Lewis Ginter and FeedMore was initiated by Frank Robinson, the Executive Director of Lewis Ginter, whose idea was to establish the Garden as a fresh-food producer directly for FeedMore. Called the "Community Kitchen Garden at Lewis Ginter," this partnership program covers one fifth of an acre on the Garden grounds, and has established a goal of collecting more than 10,000 pounds of fresh produce each season to be distributed to recipients who would otherwise not have access to locally grown vegetables. The Garden engages volunteers to plant, care for, harvest, and deliver produce to FeedMore. Over the past two years the partnership has worked through operational details and the management of volunteers. In one case, FeedMore helped train volunteers at the Garden about when to harvest specific vegetables so they are at their peak.

One of the main motivations driving the Garden to assist FeedMore was to serve as a catalyst for other organizations to do the same. Two years into the initiative, the Garden's role as a community catalyst has been a success. The Science Museum of Virginia and Tricycle Gardens completed construction of a community garden in 2010, with the intention of providing FeedMore with fresh, locally grown produce. Another group, Shalom Farms, has begun distributing produce to areas of need within Richmond. FeedMore has seen a positive shift in the quality of fresh food they are able to provide in their meals.

Lewis Ginter benefits from the relationship- working with community organizations allows the Garden to advance its position as a community benefactor. More tangibly, community partnerships allow the Garden to reach out to and interact with segments of the community with which it has historically not been involved. In addition to increasing overall support and popularity, this exposure has also been instrumental in enhancing demographic diversity among volunteers and visitors.[73]

Both the Garden and FeedMore remain optimistic that the partnership will continue to grow. One potential opportunity for both organizations is the sharing of resources, such as volunteers.

Members of the community construct plots at the Humphrey Calder Community Garden. Photo courtesy of the Tricycle Gardens.

Garden as Technical Expert

Supporting Community Gardens

Tricycle Gardens, another partner of Lewis Ginter Botanical Garden, has helped drive the community garden movement within the City of Richmond for several years. Tricycle Gardens' partnership with the Garden began when Lewis Ginter agreed to serve as the fiscal agent for the newly created organization. Lewis Ginter saw Tricycle Gardens as an ideal partner through which community gardening in Richmond could be advanced.[74] In addition to providing financial management, the Garden helped Tricycle Gardens establish itself organizationally and operationally, offering technical advice, capacity-building strategies, and management assistance.

[73] Monroe, Beth. Personal Interview. 11/09/2010.

[74] Zatcoff, Alicia. Personal Interview. 11/11/2010.

Community events give children in Richmond an opportunity to learn gardening techniques at a young age. Photo courtesy of the Lewis Ginter Botanical Garden.

Tricycle Gardens describes itself as "a grassroots environmental nonprofit organization focused on bringing agriculture, nutrition education and healthy food access to the urban core of Richmond, Virginia."[75] This broad purpose is met through efforts such as converting vacant lots into food-producing community gardens, training adults and children in sustainable agriculture, creating demonstration gardens promoting sustainable production and permaculture, and producing food for those in need. Recently, Tricycle Gardens partnered with Bon Secours Hospitals of Richmond to establish healing gardens which serve the dual purposes of providing beautiful places for patients and their families, and producing healthy food for patients.[76]

It is evident that Lewis Ginter invests in Tricycle Gardens due to the overlapping missions of the public garden and community gardens, including increasing social interaction, beautifying neighborhoods, enhancing nutrition and preserving green and open space in cities.[78] Tricycle Gardens' goal is "to transform abandoned, overgrown urban lots into sources of food and opportunities for economic development in low-income neighborhoods."[79] Richmond's abandoned lots provide numerous opportunities for this type of transformation.

Both Lewis Ginter Botanical Garden and Tricycle Gardens were instrumental in building support for the City of Richmond's 2011 Community Garden Ordinance, which facilitates (through a new permitting process) the development of urban community gardens on City-owned vacant lots.[80] ,[81] As a respected cultural institution in Richmond, Lewis Ginter was called upon to provide expert opinion to Richmond City Council while they considered a new Community Garden Ordinance. On two separate occasions, Lewis Ginter presented evidence on how community gardens often stimulate greater civic engagement, build social cohesiveness, and help neighbors make connections between their food choices and personal well-being. In order to assuage fears about negative impacts of community gardens, Lewis Ginter discussed models of successful community gardens throughout the country, showing that most of the concerns and anxieties typically raised about gardens are rarely realized.[82]

The Jefferson Avenue Community Garden was the first garden site established by Tricycle Gardens. Photo courtesy of the Tricycle Gardens.

[75] http://tricyclegardens.org/about/
[76] http://tricyclegardens.org/vision/edible-forests/
[77] Taranto, Lisa. Personal Interview. 09/10/2010.
[78] http://www.communitygarden.org/learn/
[79] http://tricyclegardens.org/about/
[80] http://growninthecity.com/2011/03/city-owned-real-estate-in-richmond-va-to-be-used-for-community-gardens/
[81] http://www.nbc12.com/story/13480032/mayor-urges-creation-of-more-community-gardens?redirected=true
[82] Robinson, Frank and Randee Humphrey. Personal Communication. 05/23/2011.

Community Garden Ordinance

In tandem with Lewis Ginter, Tricycle Gardens was able to further the Community Garden Ordinance in three distinct ways:[10]

1. Advocacy and promotion through social media, presence at meetings, and direct contact with City leaders.
2. Assistance in writing the ordinance and the provision of a list of potential sites for conversion.
3. Setting a positive and tangible example of the benefits of community gardens through the Garden's own efforts and accomplishments.

The City of Richmond Office of Sustainability is hopeful that Lewis Ginter and Tricycle Gardens will lend their experience and credibility in their role as technical expert to the resulting Richmond Grows Gardens Program.[83] Both organizations are listed on the Program's website as local supporting organizations that may be contacted for advice.[84] As Tricycle Gardens has grown and matured, taking charge of its finances and management, the relationship between the two organizations has become more independent, but they continue to advocate for similar goals.[85] However, there is potential opportunity for the partnership to grow again as both organizations could provide technical expertise to the City of Richmond as it introduces its new Community Garden Ordinance.

Keys to Success

Introducing Outreach

Lewis Ginter's history is not rich with outreach, but its new strategic plan makes it clear that community engagement and outreach are important to the Garden's mission and future. By thoughtfully examining community needs (beautification, food security, nutrition, and education) and examining how its assets can meet these needs, Lewis Ginter has positioned itself to be an essential partner in future greening efforts in Richmond.

Partnership Vetting

The Garden is still relatively inexperienced when it comes to outreach. Fortunately, Lewis Ginter's leadership is aware of the potential missteps inherent in mission-based partnerships. With this in mind, the Garden has safeguarded itself against negative or unproductive partnerships by establishing criteria that require partnering organizations be positive and complementary to the Garden's mission.

Leadership

The Garden's Board has shown itself to be flexible and eager to adapt to community needs. The Board has expressed support for establishing partnerships in which it shares power with other organizations. This ability to work with and relate to the efforts of other groups has allowed the Garden to maximize its resources and its benefits to the community.

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[83] Zatcoff, Alicia. Personal Interview. 11/11/10.

[84] http://www.richmondgov.com/content/CommunityGarden/index.aspx

[85] Woodfin, Charlotte. Personal Interview. 11/11/10; Taranto, Lisa. Personal Interview. 09/10/10.

Missouri Botanical Garden

Snapshot of St. Louis, Missouri

St. Louis is located on the Mississippi River, just over 300 miles southwest of Chicago and 150 miles north of the confluence of the Ohio and Mississippi Rivers.[86] St. Louis County is bordered to the north by the confluence of the Missouri and Mississippi Rivers. Thanks to this excellent location, St. Louis has played important economic roles throughout its history – first in trade, then in manufacturing, and now in the service industry.

Today, the St. Louis Metropolitan Statistical Area (MSA) spans parts of Missouri and Illinois and is the 17th largest MSA in the United States. With a combined 2.6 million residents in 2000, the MSA comprises 7 counties and the City of St. Louis in Missouri and 8 counties in Illinois.[87] Although the city and county of St. Louis lost population in recent decades, the county still has almost 1 million person as of 2010, while the city has almost 320,000[88]

To counter population loss and stimulate downtown revitalization over the years, the City initiated a number of ambitious and successful projects, such as the famous Gateway Arch and the Busch Memorial Stadium.

Since the turn of the century, the pace of revitalization has picked up. Vacant buildings are being renovated into loft apartments, a full-service urban grocery has opened, the Metrolink light rail now connects communities on the east and west side of the city and a beautifully landscaped park has been opened in the center of town.

St. Louis boasts a high quality of life, overall, and numerous world-class institutions, such as the Missouri Botanical Garden in large measure due to the unique Zoo Museum District (ZMD). The ZMD was established in the late 1960s by a group of public-spirited citizens who sought to create a cultural district, funded by property taxes from both the City and the County of St. Louis. Strong community-building traditions continue to this day to counter forces of decline with new energy and initiatives.

The St. Louis skyline along the Mississippi Rive, is highlighted by the iconic Gateway Arch. Photo by Daniel Schwen.

[86] Source: Google Maps.

[87] http://www.stlrcga.org/x1832.xml

[88] http://mcdc.missouri.edu/articles/1104kcstltrends.shtml

Greening St. Louis

St. Louis has a long tradition of greening public spaces to enhance citizens' quality of life and preserve the community's connection to the natural environment. Early in its history, the City designated public space for the recreation of its citizens. La Place Publique existed as early as 1811. In the 1830's the subdivision of the city commons resulted in several parcels being designed as perpetual parks, including still-used Mount Pleasant, Gravois and Benton Parks. The city's first large park was Washington Square, established in 1840. Tower Grove Park, proposed and donated in 1868 by Henry Shaw, opened in 1870. The following year, the City acquired Lyon Park from the War Department, and later that decade acquired three more large parks, Forest, O'Fallon, and Carondelet, and Forest Park, which is larger than New York's Central Park. More recently, in July 2009, the City of St. Louis installed Citygarden, a three acre park within walking distance to the Gateway Arch. Citygarden boasts lush plants (design in part by the Missouri Botanical Garden) and internationally renowned sculptures.

The Missouri Botanical Garden

Once known informally as Shaw's Garden after its founder, Henry Shaw, the Missouri Botanical Garden is the nation's oldest continuously operating botanical garden. Founded in 1859, the Garden is a National Historic Landmark and serves as a center for global botanical research, premier horticultural display, exemplary science education and highly popular community events.

The Garden's Mission:

The Missouri Botanical Garden's mission – "To discover and share knowledge about plants and their environment in order to preserve and enrich life" – is at once both simple and profound and it has allowed the garden to define an ambitious role for itself in the community and worldwide.

Research

The Garden's Science and Conservation division employs over 50 Ph.D. researchers who seek to help preserve biodiversity in developing countries and is home to TROPICOS, the world's largest database of plant information and a herbarium containing over six million plant specimens from around the world. A key initiative within the division is the Center for Conservation and Sustainable Development (CCSD) which provides residents in biodiversity-rich countries with the skills and economic tools to better manage their natural resources. Other Garden research efforts include the William L. Brown Center (for economic botany) and the Center for Biodiversity Informatics. The Center for Plant Conservation and the Botanical Society of America are close affiliates and are based at the Missouri Botanical Garden.

Horticulture

The Garden is home to 79 acres of world-class horticultural display, Henry Shaw's original 1850 estate home, and one of the world's largest collections of rare and endangered orchids. In 2009, the Missouri Botanical Garden was dedicated as an ASHA Horticultural Landmark by the American Society for Horticultural Science and in 2010 the Garden was named one of CNN's top 12 places to see beautiful blooms.

Educational Aspects

The Garden's Education Division is dedicated to developing a scientifically literate public, and it strives to educate children and adults about plants and ecology, improve science education in the St. Louis Metro area, and create learning opportunities for visitors to the Garden. Classes are offered year-round in gardening and landscaping, arts and crafts, food and cooking, green living, outdoor skills, and therapeutic horticulture.

The Missouri Botanical Garden's Plastic Pot Recycling Program has grown from a small operation in the parking lot to over 12 collection centers citywide. Photo courtesy of the Missouri Botanical Garden.

The Garden's Kemper Center for Home Gardening offers a horticultural answer service, an innovative Master Gardener training program and a renowned on-line PlantFinder data base containing information on over 5000 herbaceous perennials, shrubs, vines and trees currently growing or have been grown in the 23 demonstration gardens at the Missouri Botanical Garden. In 1998, Kemper Center staff initiated a plastic pot recycling program by establishing collection sites for horticultural plastic. To date, over 400 tons of plastic have been diverted from landfills.

Shaw Nature Reserve, a division of the Garden located forty miles west of the main campus, is a 2400 acre reserve representing a wide array of Missouri ecosystems including woodlands, glades, rivers, wetlands and prairies. SNR is home to the Whitmire Wildflower Garden, the Garden's center for educating the community about native plant horticulture.

The Sophia M. Sachs Butterfly House became another off-site location of the Garden in 2001 with the goal of educating people on the value of plant and animal interactions. At the Butterfly House visitors can enjoy a tropical conservatory containing over 100 different species of butterflies and an outdoor garden which attracts hundreds of native butterflies.

The Garden also hosts a great number of community events. Many are directly related to horticulture and environmental sustainability while others include cultural exhibitions, a summer music festival, and a market for Missouri-made products.

Organizational and Financial Aspects

The Garden and its family of attractions has a staff of over 450, it receives nearly one million visitors annually and has over 37,000 members. Almost 100,000 students participate in the Garden's programs annually. The Garden received $19.3 million in 2009 from public support, including contributions, memberships, and bequests. Public support includes funds from St. Louis' Metropolitan Zoological Park and Museum District (ZMD), which distributes an allotment of property taxes to the Botanical Garden Sub-district, which in turn supports the Garden.

The Garden's 2010 income totaled $35.8 million. This includes $17 million in public support, and almost $19 million in revenue including admission, grants, sales, and rentals. The Garden's expenditures totaled over $36 million, resulting in a positive flow of $2.9 million. As of 2010, the Garden's total assets exceed $169.5 million.[89]

[89] http://www.mobot.org/about/annualreport/MOBOT_AR_2010.pdf

Select Outreach Initiatives

Of interest for this report, the Garden has undertaken an impressive number of meaningful community-development initiatives. Here a few of the more significant ones are profiled.

Garden as Sustainability Advocate

EarthWays Center

Over ten years ago the Missouri Botanical Garden established a new division, the EarthWays Center. Devoted to increasing sustainability through environmental education and improving the built environment by working directly with the general public, the EarthWays Center offers programs and projects available to audiences of all ages. By teaching people about the impacts on plants and the environment by an individual's daily behaviors – such as the food they eat, the homes they build and the transportation they choose – the Center's efforts support the Garden's mission.

Bob Herleth, Executive Vice President of the Missouri Botanical Garden and Emily Andrews, USGBC-Missouri Gateway Chapter Executive Director at an event honoring the garden for its support of the chapter. Photo courtesy of the Missouri Botanical Garden.

The EarthWays Center actively works with educators and students on integrating sustainability messaging into their curriculum. They also provide professional-level training and certification for contractors and then promote and coordinate residential energy audit programs for homeowners. Local businesses looking to adopt green practices continually seek the consultation of EarthWays Center staff.

In 2010 the EarthWays Center relocated its operations from an off-site facility to the campus of the Missouri Botanical Garden. This move, coinciding with expansion of sustainability-oriented demonstrations on Missouri Botanical Garden grounds, brings the EarthWays Center greatly increased exposure to Garden visitors and emphasizes the Garden's efforts to advocate sustainable life style choices.

Garden as Host of Sustainability Organizations

U.S. Green Building Council

One of the most prominent initiatives of the EarthWays Center is its hosting and coordination of the U.S. Green Building Council's Missouri Gateway Chapter. The U.S. Green Building Council(USGBC) is a non-profit organization with 80 chapters nationwide. Its mission is to "initiate, develop, and accelerate implementation of green building concepts, technologies, and principles that promote environmentally responsible, profitable, and healthy places to live and work." The work of the USGBC helps to bridge the gap in popular understanding between the natural and built environments. By supporting the USGBC, the Garden demonstrates environmental stewardship can be expressed by making strategic decisions when designing and constructing buildings.

The USGBC is best known as the developer of LEED, the preeminent green building criteria. In 1999, the U.S. Green Building Council first presented its new green building standards, and St. Louis was home to a number of early adopters of these standards. It was this initial enthusiasm, which put St. Louis in position to become one of the USGBC's most prominent chapters.

The Missouri Gateway Chapter of the USGBC is housed in a building at the Missouri Botanical Garden, which greatly reduces operating expenses for the chapter and has allowed it to grow quickly. Thanks to its close association with the Garden, the chapter enjoys increased exposure and access to physical amenities such as meeting spaces. Its staff receives

health insurance through the Garden; a benefit that small non-profit organizations can rarely provide to their employees. In return the Garden benefits by cultivating relationships and good will within local design and construction businesses and organizations,

Although it continues to develop and monitor the LEED building standards, the USGBC has expanded its mission to focus on education and advocacy, working to get citizens and governments to embrace green building codes and practices. The educational function expands into the realm of professional training and certification. Together with the EarthWays Center, local colleges and design professionals, the Gateway Chapter was a key player in the establishment of the St. Louis Regional Higher Education Sustainability Consortium. Through this one-of-a-kind consortium, local colleges and universities are increasingly integrating sustainability educational programs into their course offerings as well as receiving support for incorporating green practices into their institutional operations.

Garden as Partnership Facilitator

Deer Creek Watershed Alliance

The Deer Creek Watershed Alliance is a project of Missouri Botanical Garden, in collaboration with many entities, specifically, the Metropolitan St. Louis Sewer District, Washington University, East-West Gateway Council of Governments (COG), the American Society of Civil Engineers, Great Rivers Greenway, the Missouri Department of Conservation, the Missouri Department of Natural Resources, Missouri Stream Teams, River Des Peres Watershed Coalition, the US Army Corps of Engineers, St. Louis County, local garden clubs, municipalities, and the Deer Creek Watershed Friends, which is a "citizen-led Missouri Botanical Garden Committee."[90] The EPA funds the alliance under a program pursuant to the Clean Water Act.

The Deer Creek Watershed Alliance's mission is "to assess and improve the Deer Creek Watershed, with a focus on plant-based solutions."[91] Specifically, the group is addressing watershed quality issues such as pollution from storm water and other sources entering streams and rivers. The Deer Creek Watershed Alliance's strategies for improving watershed quality include citizen-led public engagement activities, the development of a watershed plan, and installing and monitoring bio-retention demonstration projects.

Members of the Deer Creek Watershed Alliance prepare to break ground on a water garden. Photo courtesy of the Missouri Botanical Garden.

These tasks, and other region-wide initiatives, are made significantly more challenging by the St. Louis region's political and organizational fragmentation. The region consists of eight counties and hundreds of governmental agencies. In St. Louis County alone there are over 90 independent cities. The Deer Creek watershed spans 20 political jurisdictions, each with its own political control and regulations. Due to the area's decentralized authority, voluntary partnerships are often a critical ingredient in implementing effective change at the watershed or regional level.

[90] http://deercreekalliance.org/documents/plan/Executive_Summary.pdf

[91] http://deercreekalliance.org/documents/plan/Deer_Creek_Watershed_Plan.pdf

Here the Missouri Botanical Garden has been able to make a vital contribution, bringing the various parties together to form the Deer Creek Watershed Alliance. The garden has no jurisdictional authority but it does have experience, expertise, and community respect. The Garden's lack of jurisdictional authority allows it to act as a neutral facilitator for the Alliance. Second, the Garden's expertise in native plants and landscaping techniques allows the Garden to play a leadership role in recommending bioretention techniques for managing stormwater and improving water quality. Demonstrations of plant based stormwater management strategies installed on garden grounds contribute to that expertise and experience. Third, the Garden's prestige within the community is the result of the popularity of its grounds, its world-renowned research, and its history of involvement in community issues. Indeed, the Garden's reputation has allowed the Deer Creek Watershed Alliance to bring in partners, compete for grants, and have its initiatives well-received in the community.

Peter Raven, President emeritus of the Missouri Botanical Garden, celebrates the groundbreaking for Botanical Heights with state and local dignitaries. Photo courtesy of the Missouri Botanical Garden.

Garden as Catalyst

Garden District Commission

When Henry Shaw founded the Missouri Botanical Garden, he mandated that its board of trustees keep the neighborhoods surrounding it "pleasant and attractive to visitors."[92] Located just outside downtown St. Louis and bordered by Interstate 44, Vandeventer Avenue and railroad tracks, the 25-acre neighborhood formerly known as McRee Town contained 300 historic properties neighboring the Garden to the east. The neighborhood was planned by Henry Shaw, but over time experienced economic decline and resultant blight.

To address this blight, the Garden District Commission (GDC), a non-profit organization, was created in 1998. The GDC exists to promote revitalization in the neighborhoods of Botanical Heights (formerly McRee Town), Shaw, Tiffany, and Southwest Garden, with representatives from those neighborhoods.

Under the leadership of the Missouri Botanical Garden, GDC undertook community-based planning projects which resulted in the McRee Town Redevelopment Plan. The plan was adopted by the City of St. Louis in September 2001, and the McRee Town Redevelopment Corporation, an affiliate of the GDC, was granted redevelopment rights to implement the plan.

In 2000 the Garden District Commission began to purchase property in the McRee Town neighborhood for the purpose of redevelopment. The approved plan relocated residents and built 150 single-family residences. McRee's name was changed to Botanical Heights.

The good will and community trust enjoyed by the Garden was essential in allowing the project to move forward. Many citizens voiced concern about

[92] http://www.stlcommercemagazine.com/archives/november2004/heights.html

the proposed redevelopment, and the Garden played a role in ensuring that residents of the concerned neighborhood were included in dialog regarding the efforts. Neighborhood surveys sought public opinion on the project. Planning sessions invited public participation, and as many as 200 citizens attended.[93]

This was an improvement over earlier unsuccessful efforts to develop the McCree Town neighborhood. These efforts are thought to have failed because they did not involve sufficient engagement with the affected communities, The partnership between the Missouri Botanical Garden and the GDC has been praised as more open and inclusive than its predecessors. Another improvement is the flexible nature of the current plan, which can be modified to preserve viable housing and infrastructure, while previous plans placed more emphasis on wholesale rebuilding.[94]

The Garden's most significant contribution to the effort has been to lend its reputation and connections to organizational and fundraising efforts for the project. Participants in the process stated that without the Garden's organizational and fundraising capacity, the redevelopment of McRee Town into Botanical Heights would have been impossible.

Presently, a $20 million plan to remake eight blocks comprises a westward expansion of the Botanical Heights. This project will emphasize a mix of rehabbed homes and construction of contemporary design houses. Unlike earlier revitalization efforts, no residents will be required to move. The development's green features – an entire block of 36 homes to be heated and cooled on one geothermal system – will be a first for St. Louis. The project also includes the adaptive reuse of several historical structures in the neighborhood.

Keys to Success

Community Support

The Missouri Botanical Garden has benefited from its history as a beloved community resource. This stature has helped ensure a broad base of public support, both fiscally and socially. Without the good will of the community, the Garden may not have succeeded in its efforts to revitalize McRee Town. Similarly bringing divergent parties together to form the Deer Creek Alliance was only possible because the Garden is respected and valued in the community.

Community Dialogue

The Garden recognizes, however, that good will is a finite resource. Facilitating dialogue, engaging community and public stakeholders and responding with customized resources such as what is available through EarthWays Center is what ultimately results in sustainable solutions.

Partnerships

The Garden's willingness to work with other organizations and collaboratives has been essential in extending its influence, as in the cases of the U.S. Green Building Council and the St. Louis Regional Higher Education Sustainability Consortium. This allows the Garden to make itself relevant to a much broader base than would be possible without such associations.

[93] http://www.stlcommercemagazine.com/archives/november2004/heights.html

[94] http://www.riverfronttimes.com/1999-08-04/news/tearing-down-the-garden-wall/8/

North Carolina Arboretum

Snapshot of Asheville, North Carolina

Located in the heart of the scenic Blue Ridge Mountains, Asheville is the most populous city in western North Carolina and the seat of Buncombe County.

Community History[95]

Asheville is part of the land historically occupied by the Cherokee and it was used as hunting grounds until European contact decimated the population. The development of Asheville began in 1784 and by 1790 the area had a non-Indian population of around 1,000. Buncombe County was officially founded in 1792 and Asheville, called Morristown until 1797, was designated as the county seat.

The development of a road into Tennessee in the 1820s established the city as a vital trade center for agricultural products from the west. While the city was untouched during the Civil War, it was an important military center for the Confederates. Asheville benefitted greatly from the development of railroads in the latter part of the century and from the construction of the Biltmore Estate and resulting tourism.

This boom continued until the crash of the late 1920s, which hit Asheville especially hard, resulting in the highest per-capita debt of any American city. Ironically, the constraints brought on by such massive debt are a key reason why the city's architecture has retained its original splendor: the urban renewal movement of the '50s and '60s was never a financial possibility for the indebted city. The last of these debts was paid in 1977, and missing out on urban renewal has created a unique opportunity to preserve the city's historic buildings.

Natural History

The Southern Appalachian region is one of the most bio-diverse areas in the world: the number of tree species in all of Europe is dwarfed by the variety found along the Tennessee—North Carolina border. As glaciers moved south, they brought colder climates in which typically northern species could thrive. As the glaciers receded, these northern species retreated to the higher altitudes offered by the Appalachian mountain range. At lower altitudes, species more typically found in the Southeast returned. As a result, a single mountain slope may contain the entire spectrum of forest types found between Tennessee and Nova Scotia. This is significant because it helps to explain the region's bio-diversity, which offers a tremendous research opportunity for medicinal botany.

Autumn colors are ablaze along Greenhouse Way at the Arboretum.
Photo courtesy of the North Carolina Arboretum.

[95] http://www.exploreasheville.com/press-room/press-kit/asheville-nc-history-ranges-from-early-settlements-to-downtown-skyscrapers/index.aspx

Community Demographics

According to the U.S. Census Bureau, Asheville's 2010 population was 83,383 – an increase of 21 percent from 2000 (the state's population increased by 18.5 percent over the same period). The proportion of elderly residents is almost 4 points higher in Asheville than statewide, while the percentage of children under 18 is slightly lower than the state average. These numbers can potentially be explained by the Western North Carolina – Eastern Tennessee region's surge in popularity as a retirement destination. [96]

Thanks to its mild climate, natural beauty and recreational amenities (such as golf courses, the Blue Ridge and Great Smoky Mountains, and wealth of rivers and streams), cultural offerings (such as highland craft and music, old estates, and wineries), and senior-friendly services (such as the University of North Carolina Center for Creative Retirement and College for Seniors, and more doctors per capita than anywhere else in the world) [97], the region rivals Southern Florida as a preferred retirement spot.

The signature Quilt Garden is a floral representation of the art and craft of traditional quilt making. Photo courtesy of Michael Oppenheim.

The North Carolina Arboretum

Located in the Bent Creek Experimental Forest in Pisgah National Park, the Arboretum's grounds span 434 acres. The park is sited among ideal surroundings – it abuts the Blue Ridge Parkway amid scenic, uniquely bio-diverse Southern Appalachia. The Arboretum is an affiliate of the University of North Carolina System, and because of its location within a national forest, it is permitted by and falls under federal jurisdiction.[98]

The North Carolina Arboretum offers varied permanent and traveling gardens and exhibits, including the indoor Baker Exhibition Center, a production greenhouse, outdoor classrooms, low-impact development demonstrations, seasonal landscapes, a Bonsai gallery, and folk art and craft. The Arboretum's operating center is itself an example of green building, featuring cisterns, solar panels, designs which utilize natural air flow and light, geothermal heating and cooling, water-conserving landscaping, a green roof, and permeable-paved parking.[99]

The Arboretum serves a more directly educational (academic) function through its affiliation with UNC, embracing the university's UNC Tomorrow program[100]. The program's mission – to "discover, create, transmit, and apply knowledge to address the needs of individuals and society" – is addressed by the Arboretum's targeted partner initiatives: *Innovations in Exhibition, the Learning Institute,* and *Science Literacy for Educators,* as well as the Arboretum's wealth of open-to-the-public classes on a variety of horticultural, ecological, and cultural topics.[101]

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[96] http://factfinder2.census.gov/

[97] http://www.bestretirementspots.com/asheville.nc.htm

[98] http://www.ncarboretum.org/about-us/

[99] http://www.ncarboretum.org/exhibits/outdoors/outdoor-exhibits-classrooms/green-buildings-sites/

[100] http://www.northcarolina.edu/nctomorrow/index.htm

[101] http://www.ncarboretum.org/assets/File/PDFs/Education/Growing%20in%20Mind%20Summer%2010.pdf

The Arboretum engages in a variety of outreach efforts. Heritage Craft Day is a showcase for craft and plant vendors, with an emphasis on the region's traditions and the relationship between regional plant life and craft. The event helps bring attention to the Arboretum's Heritage Garden.

The North Carolina Arboretum offers adult education programs loosely related to the region's natural and cultural features, including tree identification, day hiking, watercolor, photography, tai chi, birding, gardening, and more. A more intensive education experience is offered through the Arboretum's Blue Ridge Naturalist program, which includes classes, field studies, and workshops on natural and cultural aspects of the region, and even the opportunity to earn a certificate.

The Arboretum offers professional development classes in collaboration with organizations such as North Carolina State University's French Broad River Watershed Education and Training Center, local master gardener groups, and the US Green Building Council. The Arboretum's educational and outreach programs for children include discovery camps and an Ecolab, and offerings for teens include leadership and camp-counselor training programs. In addition to its activities and website, the Arboretum promotes itself through its blog.[102]

The Garden's History[103]

After completing the landscape of the Biltmore Estate at the end of the 19th century, Frederick Law Olmsted passed away – leaving unfulfilled his desire to establish an arboretum at the site- "one finer and more instructive than any other in the world".[104] This unfinished business would serve as an inspiration to a later generation and in 1983 the Western North Carolina Development Association began a feasibility study for an arboretum serving the mountain region. The following year, the Western North Carolina Arboretum Corporation formed as a nonprofit and, soon after, the North Carolina General Assembly approved funding to plan the arboretum.

The Bonsai Exhibition Garden is home to one of the country's finest bonsai collections. Photo courtesy of the North Carolina Arboretum.

In 1986 a 425-acre site was selected in the Bent Creek Experimental Forest, within Pisgah National Forest, through cooperation between the US Forest Service and the State of North Carolina. The Arboretum was designated an affiliated facility of the University of North Carolina System. The initial operating budget of $250,000 was provided by the General Assembly and $2.5 million in capital funds were dedicated to construction of an education center.

By 1990, construction had begun on the North Carolina Arboretum and the staff had tripled in size to 24. Subsequent years saw the establishment of the various gardens and natural areas that populate the Arboretum. By 1996, construction of the Core Garden was completed; this includes the iconic Quilt Garden and the Spring and Stream Gardens.

In 1998, the Arboretum received a grant from the EPA for its proposed Heritage Garden, which displays plants used in Western North Carolina

[102] http://ncarboretum.blogspot.com/

[103] http://www.ncarboretum.org/about-us/history/

[104] Messer, Pamela Lynn. Biltmore Estate: Frederick Law, Olmsted's Landscape Masterpiece. WorldComm Press. 1993.

craft. The same year saw a major restructuring of the Arboretum staff, including the establishment of the Horticulture, Public Programs, Development, and General Services divisions within the Arboretum structure. Since then, the Arboretum's infrastructure has grown and developed, as has its public profile.

Community Context

The Arboretum's broad mission and robust outreach have resulted in a network of diverse affiliates. In varying proportions, these affiliates share an interest in the educational, economic, and ecological resources offered by the region's unique bio-diversity and climate.

University of North Carolina

The Arboretum is an affiliate of the University System. Steven Leath, Vice President for Research in the UNC system, sits on the North Carolina Arboretum and Bent Creek Institute boards and is engaged heavily in the Arboretum's climate work.

Biltmore Farms

Inspired by its founder, George W. Vanderbilt, the Biltmore Farms Corporation provides a variety of services at the community and corporate levels – including development and project management, property management, and sustainable planning, as well as building hotels and houses. Biltmore's community development vision emphasizes the following principles: education, economic development, arts and culture, and environment / quality of life. The company seeks to aid the economic and social development of Western North Carolina through advances in these areas of focus. Olmstead's landscape and Arboretum vision at the Biltmore Estate served as inspiration for the development of the Arboretum. Biltmore Farms is both a partner and benefactor of the Arboretum. [105]

Garden Mission and Goals

The mission and goals of the Arboretum reflect its distinctive setting, as well as its dual purpose as a facility that is dedicated to serving the community and as a catalyzer of important research and development partnerships.

The Garden's Mission

Located in the inspirational Southern Appalachian Mountains, The North Carolina Arboretum cultivates connections between people and plants through creative expressions of landscape stewardship, including:

- Conservation
- Education
- Garden Demonstration
- Research
- Economic Development

The Garden's Values

- **Insight:** We are knowledgeable about plants and work to teach others about their importance.
- **Authenticity:** We plan and work thoughtfully and carefully with respect to our regional landscape and culture.
- **Responsibility:** We develop, communicate, interpret and support the importance of plants to our world.[106]

[105] http://www.biltmorefarms.com/

[106] http://www.ncarboretum.org/about-us/mission/

The Garden's Vision

The North Carolina Arboretum promotes the stewardship and enjoyment of the wealth of plant life within the Southern Appalachians through world-renowned gardens demonstrating cultivated and natural landscapes. A dedicated professional and volunteer staff creates innovative experiences, fosters regional and global partnerships, and stimulates economic opportunities. The Arboretum honors and preserves the unique cultural and natural heritage of the region.

Defining Outreach

The Arboretum's creation was, in large part, the work of the Western North Carolina Development Association, which was founded in the 1940s to further agricultural economic and community development in the region. The Arboretum was created to add to the region's tourism and agricultural industries. It is natural, given these origins, that the Arboretum's top outreach priority is regional economic development.

The Arboretum's outreach is shaped by a pragmatic philosophy in which the most important actions are the ones that make the Arboretum indispensable to the community and region. In addition to providing natural beauty and attracting tourists, the Arboretum works with a number of public and private actors to build economic and social prosperity in the region. This undertaking is largely asset-driven; it focuses on the region's natural and economic resources to allow Western North Carolina to offer a unique and valuable set of services.

Select Outreach Initiatives

The strategy behind the Arboretum's economic development efforts is place-based: it seeks to utilize the region's unique assets to build elite research clusters. The Bent Creek Institute works to leverage the region's unique biodiversity, while the National Oceanic and Atmospheric Administration's National Climatic Data Center has the potential to anchor Asheville as the center of the country's climatic research operations. Both efforts are young and the full extent of their economic impact on the region will not be apparent for some time. However, by building an infrastructure through which the region can leverage its assets, the Arboretum is taking an active role in setting Southern Appalachia's economic course.

Large container gardens at the Education Center are part of the seasonal landscape exhibits. Photo courtesy of the North Carolina Arboretum.

Garden as Catalyst for Economic Development

Bent Creek Institute

Located on site at the Arboretum, Bent Creek Institute, Inc. is a nonprofit affiliate of the Arboretum working in tandem with the Arboretum's Bent Creek Germplasm Repository. Bent Creek is dedicated to the economic development of the western North Carolina region, through the creation of complementary partnerships (clusters) to share knowledge and resources

that utilize the region's unique plant biodiversity for the advancement of biotechnology.[107]

Bent Creek Institute began as a project of the Arboretum and it essentially serves as the Arboretum's economic development outreach arm, forming cooperative partnerships with public and private actors at the local, state, national and global levels for the purpose of "leveraging the resources of the Arboretum toward economic and societal benefits" for the region and state.[108]

Bent Creek regards the region's collection of resources as a unique opportunity "to take the advancement in life science, biotechnology, and other sciences in North Carolina and beyond and build a scientifically validated commercial sector around botanical medicines and what we refer to as "natural biotechnology." "[109]

To facilitate the region's growth into a research hub with the prestige and draw of Silicon Valley or the State's own Research Triangle, Bent Creek acts as a business incubator for researchers and producers of botanical resources, and actively markets the area and its industry.

Parallel to the desire to utilize the region's natural resources is the responsibility to protect them. Bent Creek recognizes this balance in its philosophy of "natural biotechnology": harnessing natural plant resources without genetic modification. This strict adherence to the genetic integrity of botanical resources is the basis around which the Institute seeks to brand the region's research industry.[110]

Protecting natural resources in the context of industrial growth requires considerations that exceed pure ecology. Bent Creek approaches conservation from a unique perspective: addressing the economic and social issues in which the need for conservation is rooted. Specifically, people facing economic and material hardship tend to see plant conservation as a restriction on their ability to provide for themselves using available resources, and this opposition can undermine conservation. Bent Creek resolves this dilemma by pursuing conservation *as* an economic development effort. Conserving natural resources becomes more economically and politically feasible when those resources are the base on which the region's prosperity is built.[111]

Fall in the Quilt Garden showcases autumn chrysanthemums, mustard, kale and dianthus. Photo courtesy of the North Carolina Arboretum.

[107] http://www.bentcreekinstitute.org/about-bci/

[108] http://www.ncarboretum.org/assets/File/PDFs/Press_Room/Cumberford%20BCI%20Release%2012012010.pdf

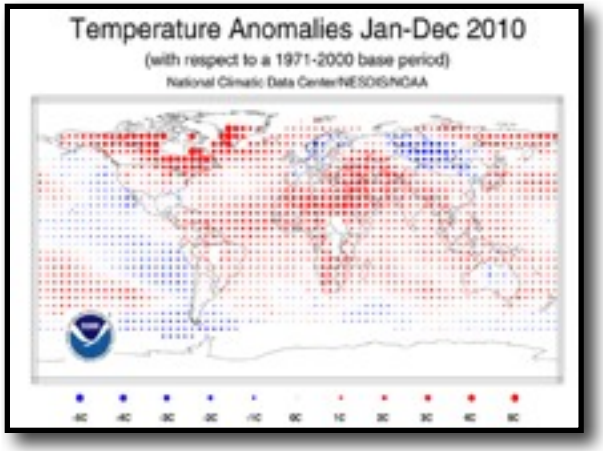
[109] http://www.unctv.org/ncnow/video/features/ncn_ncrising2_bentcreek_112910.html

[110] http://www.ncarboretum.org/assets/File/PDFs/Press_Room/Cumberford%20BCI%20Release%2012012010.pdf

[111] Briggs, George. Personal Interview. 04/12/11.

Bent Creek's tactics for achieving this strategy are to:

- Develop new tools and therapeutic protocols to help understand the health benefits and drug interaction risks of botanical medicines;
- Validate botanically-based approaches to complementary and alternative medicine . . . through clinical trial design and development assistance;
- Serve the nation as an international repository and clearinghouse for the study, protection, and careful commercial use of medicinal plants and endophytes;
- Create unique research and work-study opportunities for graduate students as well as undergraduate and K-12 students;
- Discover knowledge and create economic incentives to drive informed environmental public policy that will protect Western North Carolina's unique biodiversity assets.[112]



A blended map illustrates global temperature anomalies in 2010. Map courtesy of the National Climatic Data Center.

Garden as Expert on Climate Change

National Climatic Data Center

Climate change's impact has become more prominent in the public discourse and, more tangibly, in public spending and investment. Thanks to its location, biodiversity and burgeoning plant-based industries, Southern Appalachia is especially sensitive to climatic shifts, both biologically and economically. Through innovative partnerships with government actors and research institutions, the Arboretum hopes to facilitate a better understanding of climate change's effects, while establishing Asheville as a climate research and commerce center of national importance. In support of this goal, the Arboretum has made climate research and business development top priorities.

Part of the National Oceanic and Atmospheric Administration (NOAA), the National Climatic Data Center contains the archives for six decades of US weather data. The Center employs 300 people and has been in Asheville since 1951 – a true community institution. The Center hosts the North Carolina-based Cooperative Institute for Climate and Satellites, while the Arboretum's executive director leads the partnering non-profit Centers for Environmental and Climatic Interaction (CECI).[113]

While judicious planning and extensive network building are often at the heart of economic development, there are times when opportunities are created by pure chance. Until the 1950s, atmospheric data was stored in a number of regional offices, including Asheville, New Orleans and Washington, DC. When financial pressures forced a consolidation of these facilities, Asheville's repository was selected because it was the largest.[114]

[112] http://www.bentcreekinstitute.org/bci-inc/

[113] http://www.cicsnc.org/about.html

[114] Karl, Tom. Personal Interview. 04/01/11.

Centers for Environmental and Climatic Interaction

The Center works closely with the Centers for Environmental and Climatic Interaction (CECI), Inc., led by the Arboretum, and hosts the recently-formed North Carolina component of the NOAA Cooperative Institute for Climate and Satellites that has been responsible for adding over 20 scientific positions to the Asheville economy.

The North Carolina Arboretum and CECI share leadership as well as space – the president of CECI is also the executive director of the Arboretum. Studying the relationship between climate change and plant-based industries, such as the budding botanical-biotechnology cluster, is a focus of the Arboretum.[115]

The Arboretum has worked to build the relationship between NOAA and the University of North Carolina system, resulting in the cooperative research now taking place. Through CECI, the Arboretum offers its resources and knowledge for climate research that utilizes the Southern Appalachian region's unique bio-diversity as a natural laboratory for climate change impact research related to plant life. CECI coordinates research and the sharing of research from university, public, private, and non-government organizations. CECI also works with community and state leaders to recruit climate-research actors to further develop the research cluster. **[116]**

Cooperative Institute for Climate and Satellites

The Cooperative Institute for Climate and Satellites (CICS) is the product of cooperation from the University of Maryland, North Carolina State University, and UNC. CICS seeks to facilitate cooperative research in support of NOAA's mission and goals related to climate and satellite data: to "understand and predict changes in Earth's environment and conserve and manage coastal and marine resources to meet the nation's economic, social, and environmental needs." In pursuit of these goals, CICS reaches out to institutions which possess expertise and resources beyond its own capacity. It values the Arboretum as a partner for its focus on "regional impacts of climate change on flora, plant adaptation to climate variations, a medicinal germplasm collection, outreach to the K-20 communities, and with the *Bent Creek Institute*, a focus on translating research into sustainable economic investments."*[117]*

Working towards an overarching goal of "enhancing . . . collective interdisciplinary understanding of the state and evolution of the Full Earth System," CICS works to bring together various research bodies to better understand and predict climate change in ways that can enhance economic decisions.[118] One example of this is related to plant hardiness zones: a mapped depiction of the various regions in North America in which different plants can thrive. As the climate continues to shift, these zones will shift, affecting planting strategies and corresponding investments. Changes in hydrology can similarly be predicted through research and simulation, and the implications for businesses sensitive to

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[115] http://www.ncarboretum.org/assets/File/PDFs/Press_Room/BOG2a.pdf

[116] http://www.ncarboretum.org/economic-development/ceci/

[117] http://cicsnc.org/

[118] http://cicsnc.org/

flooding can be massive.[119] By adding high-level analysis to the innovative climate research, CICS hopes to become an essential source of information.

Garden as Facilitator of Community Planning

Pack Square Park[120]

Located in the center of Downtown Asheville, the area that is now the 6.5 acre Pack Square Park has been a vital piece of the city's public life since the early 19th century, when it was a center for the livestock trade. By the 1980s, the City had put a street and parking places in the area – a "spaghetti bowl" as one person called it. But deteriorating infrastructure and the advice of a European public-space planning expert led to the formation of an initial citizen's task force in 1999 that subsequently became the Pack Square Park Conservancy, a nonprofit corporation to develop a new vision for the area, and now, to ensure that the park that resulted from the effort is maintained.[121]

But 12 years would elapse from the time of the formation of the task force to the completion of the planning and development of the park. The Conservancy had to compete with other projects for the City's attention, and the planning process itself was challenging, as various interests and competing visions had to be heard and addressed before a final plan could emerge.

Beginning in 1999 with the formation of the Pack Square Renaissance Task Force, the Arboretum, and especially its Executive Director, George Briggs, played vital roles in the planning process. The Arboretum's horticultural expertise was frequently solicited to help the task force

Pack Square Park Mission [122]

To fulfill the vision of Pack Square and City-County Plaza as a vibrant town square and public park, providing citizens and visitors to the region with a social, economic and cultural center that celebrates the area's unique character.

The Conservancy works to carry out its mission in a way that will allow Pack Square Park to realize the vision of the community in terms of:

- *Service to people of all ages and backgrounds*
- *Creation of new educational opportunities for people of the region*
- *Celebration of the history and culture of the region*
- *Celebration of our beautiful mountain environment and native flora*
- *Celebration and nurturing of our sense of community*

Pack Square Park plays host to hundreds of events each year, including festivals, art exhibitions, and concert performances, such as the one seen here. Photo by Jeff Miller.

[119] Karl, Tom. Personal Interview. 04/01/11.

[120] http://www.packsquarepark.org/content/view/21/35/

[121] http://www.packsquarepark.org/index.php?option=com_content&task=view&id=62&Itemid=85

[122] http://www.packsquarepark.org/content/view/21/35/

choose low-maintenance grasses, trees and plants. Indeed, leaders of the task force regarded (and continue to regard) the park as a sort of satellite for the Arboretum, which is located several miles from Downtown Asheville.

The Executive Director used the technical expertise of the Arboretum and his considerable facilitation skills to guide the planning process and help the Pack Square Conservancy reach decisions.

It is no accident that the missions of the Conservancy and the Arboretum share many common elements, specifically:

- Increasing awareness and appreciation of the region's unique botanical and cultural character
- Providing quality outdoor recreational space to Asheville's citizens
- Economic development
- Education

The Arboretum continues to be represented on the Conservancy's board by its Executive Director, George Briggs. Leaders of the Arboretum and the Conservancy plan to deepen and expand the Arboretum's presence in the Downtown in the future.

An aerial photo of Pack Square Park, in the heart of downtown Asheville. Photo by Jeff Miller.

Keys to Success

Expanding Upon Local Assets

The North Carolina Arboretum's work shows the importance of building upon distinctive local history and characteristics, as well as natural and institutional assets. This includes both programming and choosing community outreach initiatives.

Careful Spadework for Lasting Partnerships

The Arboretum's work also shows the importance of conducting research, dialogue, careful planning, and incremental, step-by-step project execution to establish a strong basis for lasting partnerships.

Long-Term View

Another important lesson from this case is that, as a garden plans community outreach, it must take a thoughtful, long-term view of its evolution and of the evolution of the community, and find places where the two can help each other grow.

Keeping Core Operations Strong

Finally, the Arboretum demonstrates a sound approach to running the day-to-day business of a garden while engaging in community outreach. The Executive Director develops relationships with potential partners and does not necessarily involve staff beyond their advice and counsel, until the relationships and roles are clear to all parties. This ensures that a garden's core work is never put at risk as community partnerships are developed.

Queens Botanical Garden

Snapshot of Queens, New York

Sitting to the northeast of Brooklyn and southeast of Manhattan, Queens is the largest of New York City's boroughs, with almost five times the area of Manhattan. Queens is also the second most populous of the boroughs, with a population of 2,306,712.[123]

Queens began as a rural, agrarian community, but experienced a population boom as manufacturing became dominant in the 18th century. At the end of the 19th century, Queens was incorporated into New York City. Its primary neighborhoods are Flushing, Corona Park, Astoria, Long Island City, Hunter's Point, Jamaica, Ridgewood, and Southern Queens.[124]

Though sometimes overshadowed by Brooklyn and Manhattan, Queens is itself a massive and robust urban community; it is home to both JFK International and LaGuardia airports, Citi Field, and the US Open.

Density

The borough of Queens is completely contained within Queens County, which is the fourth most densely populated in the country – behind only Brooklyn, Manhattan, and the Bronx. Queens' easternmost neighborhoods have the suburban composition of Long Island, but its western and central neighborhoods, like Flushing, are undeniably urban. As is often the case in densely urban communities, open space and parkland are immensely important to and treasured by Queens residents.

Diversity

Queens County has the nation's second largest proportion of foreign-born residents (45%). The total population of foreign-born residents increased from 1990 to 2000 by 36%, with Asian and Hispanic populations accounting for the majority of the growth. Queens' growing diversity can be explained, in part, by the presence of JFK International Airport, the only international airport in New York City, which makes Queens the first place that many immigrants to New York or the United States set foot. Meanwhile, the availability of affordable housing in middle-class neighborhoods allows many immigrants to stay. Existing ethnic enclaves attract immigrants eager to remain connected with aspects of their culture and background.[125] These enclaves shift over time, reflecting the successive waves of migration which created the New York City that we know today. Ethnic enclaves found in Queens include Greeks and Egyptians in Astoria, Indians and South Americans in Jackson Heights, Chinese, Taiwanese, and Koreans in Flushing, West Indians in Jamaica, Eastern Europeans in Ridgewood, and Irish in Breezy Point, Roxbury, and Rockaway (sometimes called the "Irish Riviera").[126]

The Queens Botanical Garden's Rose Garden is sustainably managed and showcases pest-resistant rose cultivars. Photo courtesy of the Queens Botanic Garden.

[123] http://quickfacts.census.gov/qfd/states/36/36081.html

[124] http://www.ny.com/histfacts/geography.html#queens).

[125] http://www.queenstribune.com/weekly/122503/Immigrant%20Guide/01%20Census.htm

[126] http://www.walkingaround.com/borough.html

Ethnic enclaves are not unique to Queens, but Queens' neighborhoods are distinct in that no groups truly dominate them. For example, Flushing has a very large Asian population, which is comprised of many distinct nationalities, none constituting a significant majority.[127]

Queens' diverse population is one of the most vibrant and colorful communities in America, but it presents a unique set of challenges, such as cultural and linguistic differences. These differences can act as barriers to serving (and even counting) the population of Queens.

The Queens Botanical Garden

The Garden's History

Built for the 1939 World's Fair as the "Gardens on Parade" exhibit, the Queens Botanical Garden was originally located in Flushing Meadows Park.[128] In 1948, City Parks Department Director Robert Moses granted land to the Queens Botanical Garden Society and development began on the 39 acre site, which was completed in 1963 before the 1964 World's Fair.[129] Nearly half of the site is devoted to public gathering spaces[130]. The relocation from Flushing Meadows Park to its current location in the Kissena Park Corridor made the Garden more accessible to Queens residents.

The Parking Garden is designed to manage stormwater onsite with permeable pavers, bioswales and planted sections. Photo courtesy of the Queens Botanic Garden.

The Garden

Since then, the Garden has occupied a remarkably large place in the lives of Queens' residents. The Garden is thought of as the community's "back yard," and also as a public institution with the status and inclusivity of libraries and parks.[131,132]

In the evolution of the Garden's relationship with community residents, a shift occurred when limited funding prompted the Garden to begin charging a $4 admission fee. In making this decision, Garden staff felt that rather than deterring visitors, encouraging individuals to more actively support the Garden would enrich the relationship. Their optimism appears to have been well-placed: in the year following the introduction of a fee, membership at the Garden quadrupled.

Collections

The Garden displays a broad variety of themes. The common threads among the diverse collections are horticultural expertise, environmental education, and inspiring aesthetics. Demonstration displays include backyard gardens tailored to the demands of the small yards common in Queens, bioswales, a bee garden, native trees and shrubs, composting, a

[127] http://www.queenstribune.com/archives/featurearchive/feature2002/0606/feature_story.html

[128] QBG Master Plan, 2002

[129] http://www.nynjctbotany.org/lgtofc/qbg.html

[130] http://longislandex.blogspot.com/2006/04/queens-botanical-garden-qbg.html

[131] http://greensource.construction.com/projects/0804_Queensbotanicalgarden.asp

[132] Fu, Fred. Personal Interview. 01/28/11.

"cleansing biotope" (which demonstrates the filtration benefits of wetlands species), a green roof, and a woodland garden (which simulates urban woodland space and high tree canopies). The scenic Wedding Garden is immensely popular, as are the sustainably-managed Rose Garden, the Cherry Circle, and the Fragrance Walk. Also notable is the Children's Garden.[133]

Defining Outreach

Queens Botanical Garden emphasizes reaching out and engaging neighbors, knocking on doors and attending neighborhood meetings to stay abreast of current events. Relying upon the "universal language of nature," the Garden has enjoyed success in reaching out to the diverse residents of the borough.

In order to reach the various cultures of Queens, the Garden started an Ambassador Program, finding community leaders from the various ethnic enclaves to act as liaisons between the Garden and their respective communities. The program promotes communication and mutual engagement between the Garden and Queens residents.

Educational Aspects

The Garden is a committed educator within the community, working with community schoolchildren and educators to advance botanical and ecological knowledge. The Garden offers environmental tours and workshops that train educators to teach in a way that will help their students meet the New York educational standards for science. The Garden is also active in educating the public about the values and techniques of composting.[134]

The Garden participates in the City's Urban Advantage program, which pairs institutions such as zoos, museums, and gardens with middle-school classes to foster scientific understanding in a stimulating real-world setting. In 2005, the program reached 18,000 children, with a focus on schools serving large populations of new English speakers.[135]

Select Outreach Initiatives

Garden as Community Host

Connecting Culture with Nature

The Garden has internalized the diversity of Queens in both its identity and outlook. In 1997, the Garden retrofitted its vision to more directly prioritize diversity, in part by presenting plants "as unique expressions of cultural traditions."[136] This is not an intuitive process; it requires intensive dialogue between the Garden and community members through many programs including its Ambassador Program, which itself is an example of the Garden's commitment to representing the cultures of Queens.

[133] http://www.queensbotanical.org/gardens_collections/gardens

[134] http://www.queensbotanical.org/2630/education

[135] http://www.queensbotanical.org/2630/education/urban

[136] http://www.queensbotanical.org/2630/56902

In a community as diverse as Queens, the demand for cultural outreach can easily exceed available resources. The Garden addresses this obstacle by focusing its efforts on a few key groups for each outreach method, rather than a more scattershot approach, or trying to "be everything to everyone." [137] As a result, the Garden is deeply meaningful to a significant cross-section of the community.

The Korean, Chinese, South Asian, and Latino communities were identified for this focused outreach. The Garden appointed community members to act as cultural liaisons, helping the Garden identify ways to capture the interests and uniqueness of these varied cultures. Together, these actors identified plants that are culturally important, compiled and promoted cultural resources, and helped incorporate cultural holidays and events into the Garden's calendar.

The Queens Botanical Garden's research department studied Queens' "pan-ethnic Latino" community's relationship with botany. The Garden released a publication entitled "Traditional Caribbean Healing in Queens," which examines the medicinal and cultural importance of plants such as ginger, aloe, and brazilwood. The publication stands as a useful and interesting resource, but it is also important as evidence of the Garden's commitment to "build and share a body of knowledge about plants, landscape elements, and associated traditions from around the world that evoke cultural connections." [138]

A compelling example of the Garden's importance to the Chinese community can be seen every morning on the Garden's lawn: the Queens Botanical Garden Tai Chi Group. Weekday attendance of Tai Chi can reach 200 people, and as many as 300 on nice weekends. The group even participates in competitions under a Queens Botanical Garden Tai Chi banner. [139]

The vision for Queens Botanical Garden is to be a botanical garden noted for presentation of plants as unique expressions of cultural traditions. Photo courtesy of Virginia Commonwealth University.

For Lunar New Year, the Garden participates in the celebrations with traditional dancing, Kung Fu, and food. During the summer, the Garden hosts a parade for the Moon Festival, which is based on the Chinese Harvest Moon Celebration.[140] As a harvest festival, the celebration has a natural tie-in to the Garden's botanical functions. In addition to the parade, festival events held at the Garden include multicultural performances, hot air balloons, a cake-eating contest, and occasional display of fireworks. Thousands of people attend these festivals every year.[141]

Due to its large South Asian population, Flushing is home to a Hindu temple, located in close proximity to the Garden. This is a significant opportunity for both parties: the Temple is able to utilize the Garden's facilities to reinforce the religion's celebration of nature, and the Garden is

[137] Lacerte, Susan. Personal Interview. 01/27/11.

[138] http://www.queensbotanical.org/media/file/Traditional_Caribbean_Healing.pdf

[139] Lacerte, Susan. Personal Interview. 01/27/11.

[140] Fu, Fred. Personal Interview. 01/28/11.

[141] http://www.queensbotanical.org/article/164530?tid=8105

able to increase its community presence by making itself relevant to a growing segment of the community. The Garden also collaborates with the Hindu Temple Society of North America in offering a Diwali festival, featuring dancing, food, and displays of lights.[142]

Garden as Technical Expert

NYC Compost Project

New York City's NYC Compost Project "teaches and promotes composting to adults, families, gardeners, and teachers through public workshops, teacher training, exhibitions, tabling at community events, answering helpline calls, sustaining a compost demonstration garden, and selling compost bins." The Project also reaches out to landscapers and other professionals to promote composting in commercial settings.[143]

Urban composting benefits the community and individual alike: nutrient-filled city soils, lower sanitation costs, reduced quantities of solid waste, and a more sustainable community are all possible through composting efforts. In 1993, the Department of Sanitation initiated the NYC Compost Project with the goal of providing "compost education and outreach to NYC residents, nonprofit organizations, and businesses."[144] A survey conducted by the Department of Sanitation indicated that residents who gardened were the most likely to compost. Given this, and the visibility of public gardens, the Department of Sanitation then turned to the public gardens of the city to coordinate and lend credibility to the resulting composting project.[145]

Since 1993, the Garden's Education Department has served as a host to the Queens arm of the Composting Project, and facilitates its educational activities. The project has always communicated to residents the value of composting and solid waste reduction, and has it evolved to include backyard and worm composting (vermiculture) techniques and a Master Composter Certificate program. The Master Composter Certificate provides recognition to citizens who have gained composting skills and, more importantly, trains community volunteers to promote waste reduction through education and community outreach. This is an example of the efficiency of a "train the trainer" style of advocacy, which allows a training effort to expand its influence beyond the limits of its resources.

A less intensive course, Composting 101, is available for residents who wish to compost their own waste. To better facilitate private composting, the Garden has a Compost Demonstration Garden for visitors, and it sells a variety of affordable composting bins.

Among the challenges facing the Compost Project, the diversity of languages spoken in Queens is an issue because the educational materials are primarily in English, and therefore reaching all segments of the community is difficult. The costs associated with giving out affordable bins have represented a challenge as well: while bins were at one point subsidized, budget cuts have necessitated charging full price for the bins, which has caused a reduction in sales.[146]

Summer street care workshops help teach volunteers how to care for newly planted trees. Photo courtesy of Virginia Commonwealth University.

[142] http://www.nymetroparents.com/2011neweventinfo.cfm?id=43798

[143] http://www.queensbotanical.org/2630/education/compost

[144] http://www.nyc.gov/html/nycwasteless/html/compost/compostproj.shtml

[145] Kleinberg, Patty. Personal Interview. 01/27/11.

[146] Tainow, Dan. Personal Interview. 01/27/11.

Garden as Educator

Visitor and Administration Building

In 2001, Queens Botanical Garden released its Master Plan, which included the Sustainable Landscapes and Buildings Project. The Master Plan encompasses four connected themes, which the Garden views as facets of its overarching vision:

- Water Synthesis
- The Cultural Connection
- The Green Connection
- Plants in Community

Completed in 2007, the Garden's Visitor and Administrative Building was part of the first phase realization of the adopted Master Plan. It received LEED (the US Green Building Council's Leadership in Energy and Environmental Design) Platinum certification, the highest possible certification.[147] The 16,000 square foot building is the first publicly funded building in New York City to receive the highest LEED certification, and it has brought considerable attention to the Garden.[148]

The Green Roof at QBG is a valuable method of managing stormwater and reducing heat island effect, while providing important habitat for birds and insects. Photo courtesy of the Queens Botanical Garden.

In 2008, the Garden's Visitor and Administration Center achieved LEED® Platinum Certification from the U.S. Green Building Council. Photo courtesy of Virginia Commonwealth University.

In planning the design of the new building, the Queens Botanical Garden adroitly sought input from community residents through public meetings. Through this process, Garden staff identified water as a common theme desired by residents. The Garden views the connection between people and water as the basic unit of the relationship between people and the environment, making water the ideal forum for engaging varied cultures in a discussion about the environment.[149] Aesthetics and culture appeal to residents, and hydrological themes provide an opportunity for the Garden to further its goal of promoting sustainability and stewardshp.[150]

In order to promote visitor appreciation of conservation, the Garden uses techniques that make conservation both stimulating and easy to understand. Additionally, rain water is collected to use in the on-site fountain, which symbolizes a celebration of water. Rainwater collection likewise helps prevent stormwater on the the site from entering the city's filtration system, thereby reducing the load on water infrastructure.

The Cleansing Biotope, a simulation of Flushing's predevelopment hydrology, is a centerpiece of the building's conservation theme. Water is

[147] http://www.greendesignetc.net/Buildings_08_(pdf)/Phanit_Nalat-Queens_Botanical_Garden_(paper).pdf

[148] http://greensource.construction.com/projects/0804_Queensbotanicalgarden.asp

[149] http://www.queensbotanical.org/media/file/masterplan_complete_web.pdf

[150] http://greensource.construction.com/projects/0804_Queensbotanicalgarden.asp

collected from a colorful canopy at the front of the building, falling into a channel where native plants act as a filter before the water enters an underground cistern which feeds the "Fountain of Life," before recirculating into the Biotope for reuse. In addition to providing an elegant solution for processing stormwater, the Biotope's transparent process and tactile display create a striking demonstration for visitors.[151]

Education knows no borders in the Visitor and Administrative Building: signs outside of the restrooms explain to visitors the water saving features, such as low-flow fixtures, waterless toilets, and biofiltration, which allow the building to use significantly less water than other buildings of its size and function.[152] Beyond conserving water, the building saves energy with a rooftop photovoltaic (solar) array, open design, geothermal climate control, and brise-soleil, an architectural feature borrowed from warm climates in which wooden slats adjusted for latitude keep sun out in the summer but allow solar heat to enter in the winter.[153]

The building is important not just for its innovations, but because these innovations are presented in a way that visitors can understand and appreciate. The building itself is the sustainability lesson for visitors.

Keys to Success

Commitment to Diversity

For the Garden, diversity is not an abstract concept: it is located in what may be the world's most diverse community. While this diversity can make it difficult to effectively reach everyone, the Garden is committed not only to overcoming these differences, but to celebrating them as the center of its identity. The reward has been an amazingly broad and loyal constituency.

Mutual Learning

Since culture and language can create obstacles to communication and the mutual exchange of values, bridging these gaps becomes essential for community outreach. The Garden's Ambassador Program has allowed it to learn from individuals within Queens' diverse community while demonstrating a commitment to embracing those communities.

The tree sculpture gate at the Garden's entrance on Main Street represents the American Hornbeam, a tree known for its toughness and hard wood, and it was "planted" between two Blue Atlas Cedars that have been part of the Garden since its birth at the 1939-1940 New York World's Fair. Photo courtesy of Virginia Commonwealth University.

[151] http://www.greendesignetc.net/Buildings_08_(pdf)/Phanit_Nalat-Queens_Botanical_Garden_(paper).pdf

[152] Gonchar, Joann. "Setting Down Roots." GreenSource Magazine April 2008.

[153] http://www.queensbotanical.org/103498/sustainable

Rio Grande Botanic Garden

Snapshot of Albuquerque, New Mexico

Albuquerque, bisected by the Rio Grande, is the largest city in the state of New Mexico. It is one of the fastest-growing cities, and with a population of 545,852, it is the 32nd largest city in the United States.[154]

Community History

The Spanish settled the area that is now Albuquerque in the 17th Century for agricultural and military purposes. By the end of the 19th Century, Albuquerque's location along the railways helped it become a hub for economic activity in the West. The establishment of the University of New Mexico and Albuquerque's place along fabled Route 66 contributed to continued growth through the 20th century.

Since the 1950s, the City of Albuquerque has experienced the same population decline and economic difficulty felt by most major cities at this time. However, the region surrounding Albuquerque has continued to grow, and almost half of New Mexico's residents now live within this metropolitan area.

New Mexico has a unique cultural history, and its Spanish, Pueblo, Pre-Columbian; Moorish, and Anglo influences extend into local architectural styles, language, traditional foods, and agricultural techniques. This unique confluence of cultures is central to the identity of Albuquerque's BioPark.

Albuquerque Biological Park

Situated alongside the Rio Grande, Albuquerque BioPark is a recreational complex owned and operated by the City of Albuquerque. It contains the 64-acre zoo, a large recreational area called Tingley Beach, a large aquarium featuring a various aquatic ecosystems and a 36-acre Botanic Garden.[155]

The BioPark's History

Founded in 1927, the Rio Grande Zoo was in operation long before the ABQ BioPark was conceptualized. In 1994, the Zoo initiated the BioVan program, which is now a signature outreach effort for the BioPark. In 1988, the citizens of Albuquerque approved a "Quality of Life" Tax, intended to fund the construction of a City Aquarium and Botanic Garden, which opened in 1996. These projects joined the existing Rio Grande Zoo to create the ABQ BioPark. Created by a citizen mandate, the BioPark is keenly aware that it exists to serve the community.

The Railroad Garden features a G-scale model train that travels through a miniature landscape. Photo courtesy of ABQ BioPark.

[154] http://quickfacts.census.gov/qfd/states/35/3502000.html

[155] http://www.cabq.gov/biopark

Organizational Structure

The ABQ BioPark is part of the City's Cultural Services Department, which also controls Albuquerque's libraries, museums, and special events. As a result, the BioPark's funding comes almost completely from the City's General Operating Fund.[156]

The Rio Grande Botanic Garden

The 36-acre Botanic Garden includes gardens such as the Sasebo Japanese Garden, the Children's Fantasy Garden, the Pollinator Garden, the New Mexico Habitat Garden, and the Railroad Garden, with narrow-scale railroads connecting many of the exhibits at the Garden.

The Garden also features conservatories, which highlight the plant life of specific ecosystems and celebrate New Mexico's unique botanical and cultural landscape.[157] The Desert Conservatory features a climate-controlled environment in which desert plants of the American Southwest thrive year-round. Featuring examples from the Sonoran and Chihuahan (of which Albuquerque is the northern border) Deserts, the exhibit doubles its value by showing examples of xeric (water-conserving) landscaping.[158]

The Old World Walled Gardens demonstrate the unique confluence of influences found in Southwestern architecture. The Spanish-Moorish Garden utilizes cooling and shading techniques developed in the heat of North Africa and transplanted by the Spanish. Its Mediterranean influences are typical of the Southwestern garden style.[159]

The region's Pre-Columbian and Pueblo roots are on display in the *El Jardin de la Curandera* (Curandera Garden), which features traditional medicinal plants. Even in non-regionally themed exhibits, iconic, indigenous plants, such as cottonwood, make an appearance.

The *bas relief* sculpture by Diego "Sonny" Rivera is a highlight of the Curandera Garden. Photo courtesy of ABQ BioPark.

The Garden's Mission

A creation by and for the citizens of Albuquerque, the ABQ BioPark's focus is decidedly local. Its top priority is to serve as a recreational resource for Albuquerque's citizens, but its educational and outreach goals focus on local conservation, culture, and agriculture. The mission statement reflects the BioPark's focus on the experience of its visitors:

> *"To provide the public with exciting recreational opportunities and to foster environmental awareness, education and stewardship."* [160]

[156] Hubbard, Catherine. Personal Interview. 04/12/2011.

[157] http://www.cabq.gov/biopark/garden/exhibits

[158] http://www.cabq.gov/biopark/garden/exhibits/desert-conservatory

[159] http://www.cabq.gov/biopark/garden/exhibits/old-world-walled-gardens

[160] http://www.cabq.gov/biopark

Select Outreach Initiatives

Defining Outreach

Preceding the creation of the BioPark, the Zoo's outreach efforts were intended to "introduce the community to conservation in <its> own back yard." With the development of the Botanic Garden, these educational efforts grew to include plant life as well. This localized focus informs the BioPark's other outreach efforts, and light of their desire to "conserve what we have here," the *Farm to Table* concept of preserving local agricultural traditions is a logical development for the BioPark's outreach. [161]

Garden as Educator

BioVan and the Rio Rangers

The BioVan program has been in operation longer than the Botanic Garden, and was originally developed to generate enthusiasm and support for the new facilities, as well as to educate both children and adults. The BioVan itself is a large trailer containing live (and otherwise) specimens that demonstrate the ecosystems of the Rio Grande. These biological artifacts trace the progression of the Rio Grande from its headwaters in the San Juan Mountains in Colorado to its discharge into the Gulf of Mexico.

The BioVan embraces, as its theme, the most vital and emblematic aspect of Albuquerque's landscape – the Rio Grande and its unique ecosystems, such as the *Bosque* (riparian forest), Chihuahan Desert, San Juan Mountains, and Gulf estuary. Using the examples from each ecosystem, the program provides experiential knowledge of ecology and the life sciences to elementary school children. The program also seeks to promote stewardship to young children and through them, their parents.[162]

Many of the students that participate in the BioVan program are Spanish-speaking, and a large number are children of Spanish-speaking parents. To ensure that this audience, too, is reached, BioVan has created bilingual presentations and print materials for student use.

Trained volunteers called BioVan Rangers supplement the BioVan experience, by leading the children in science and art projects related to the ecosystem and conservation. To further reinforce the learning experience, teachers and school staff are provided with a BioBox – a

The BioVan contains plant and animal specimens that demonstrate the ecosystems of the Rio Grande Photo courtesy of ABQ BioPark.

BioBoxes filled with BioVan educational materials are given to schools that participate in the BioVan program. Photo courtesy of ABQ BioPark.

[161] Janser, Rick. Personal Interview. 04/13/2011.

[162] Riviera, Beatriz. Personal Interview. 04/15/2011.

packet of entertaining preparatory and follow-up educational materials.[163] The Rio Rangers program builds on the learning of the BioVan by bringing classes to the Botanic Garden and nearby Bosque for a nature hike. The hike provides many children (and adults) with their first interaction with local ecosystems. Activities include plant identification and discussions of the value of local plants, and conservation issues. Rio Rangers is only available to classes who have completed the BioVan experience, thus builds on knowledge acquired in the previous program.

Funded by the BioPark's support organization, the BioPark Society, and P&M, a local utility provider, BioVan is a free service to area schools.[164] The Albuquerque school system is one of the nation's largest, and reaching every class is currently impracticable, especially since the BioVan can only make two visits per week. In order to maximize its impact despite limited funding, the program tries to reach different classes each year. The programs' capacity is indebted to a robust volunteer program. Volunteers receive training and act as interpreters and guides, both on the hikes and during school visits.

Staff at Heritage Farm conduct a demonstration for visiting Boy Scouts. Photo courtesy of ABQ BioPark.

Garden as a Catalyst

Heritage Farm

One of the most influential exhibits of the Botanic Garden is the 10-acre Heritage Farm. Programs for this exhibit and working farm include interpretive presentations, hands-on demonstrations and farm activities. The intention of the year-round Heritage Farm is to recreate the American historical connection to farms and growing food.

Heritage Farm, northeast of the Garden conservatories, is a working recreation of a 1930s-era new Mexico Valley farm. Heritage Farm includes orchards and vineyards, crop fields, and a kitchen garden. Produce includes apples and grapes, squash, lettuce, tomatoes, onions, and green chili peppers, a regional favorite. Most of the agricultural activities which take place there, including canning and cider pressing, create produce and serve as cultural demonstrations for visitors.[165]

Featuring music, games, food, and demonstrations, Heritage Farm's annual Harvest Festival simultaneously promotes the Farm and the sustainable practices it exhorts.[166] To further promote the concept and practice of buying sustainable food, the BioPark publishes a free *New Mexico Sustainable Food Guide*.[167]

In order to support its message extolling the virtues of a local diet, Heritage Farm produce is served in locally, to ensure better flavor, lower costs, and a smaller ecological footprint than modern diets that rely on imported produce, and processed foods. ABQ BioPark has an exclusive

[163] Trainor, Kate. Personal Interview. 04/13/2011.

[164] http://www.cabq.gov/biopark/education/outreach%20

[165] http://www.cabq.gov/biopark/garden/exhibits/rio-grande-heritage-farm

[166] http://www.cabq.gov/biopark/garden/annual-events/harvest-festival

[167] http://www.cabq.gov/biopark/documents/sustainable_food_guide_2011.pdf

contract with a foodservice concessionaire to provide onsite food services. This relationship has developed beyond traditional vending: Heritage Farm produce is processed for use in on-site restaurants, and is used for preserves for winter consumption.[168]

The program carries the immediate benefits of providing BioPark visitors with fresh, local foods, but the broader goal is to act as a catalyst for increased consumption of local produce. It also represents the agricultural aspect of the BioPark's efforts to promote awareness of the regional landscape: the culinary equivalent of hiking the Bosque.

The project hopes to incorporate partnerships with other vendors and producers, as part of the *Farm to Table* movement, which prioritizes supporting local agricultural economies, enjoying fresh produce, and reducing the impact of consumption of the environment.

Families harvest strawberries at Heritage Farm for personal consumption. Photo courtesy of ABQ BioPark.

Garden as Facilitator

Community Connection

The Botanic Garden at the BioPark places a constant emphasis on building its relationship with the community that it serves. This may have been inspired by its origins as a municipal creation and its resulting dependence on publicly approved bonds. By making this connection to the community such a high priority, the Garden has given itself a central theme around which to develop.

Each year, the Botanic Garden hosts numerous school groups for educational field-trips. Photo courtesy of ABQ BioPark.

Garden visitors can see this commitment reflected in the aesthetics of exhibits and conservatories, but the Garden's efforts to include the community in its development go much deeper. A number of the Garden's displays have Spanish names – a salute to its large Hispanic constituency. The Garden is active in teaching conservation, and focuses these efforts on indigenous plants, such as beardtongue, which is an essential plant for the rare Sacramento Mountain Checkerspot Butterfly, and the Sacramento Prickly-Poppy, for which the Garden is a state-wide seed source.[169]

The Summer Wings Festival, held each August, introduces visitors to the world of dragonflies, butterflies, bees, and hummingbirds. Photo courtesy of ABQ BioPark.

[168] Hubbard, Catherine. Personal Interview. 04/12/2011.

[169] Hubbard, Catherine. Email Communication. 05/10/2011.

When building relationships between institutions and communities, the process can be as important as the results. It is more expedient to make assumptions about what a community wants than it is to seek meaningful input from that community. This often results in things being done fast as opposed to being done right. Assumptions about community needs can lead to opposition, obstruction, and long-term distrust or, at the least, community apathy. The Garden actively avoids this, by seeking community input through two main sources:[170]

Zuni Pueblo children build a traditional waffle garden in the Heritage Demonstration Garden. Photo courtesy of ABQ BioPark.

Surveys

A March 2011 survey asked: "what are suggested ways to increase overall satisfaction?" Fourteen percent of respondents said, "More hands-on/ interactive exhibits," and thirteen percent said, "More exhibits." The Garden addresses the respondents' desire for interaction through its educational programming, which includes "hands on" activities, and through interactive additions to the exhibits and facilities, such as controllable trains and a calf which can be petted. Even the flower displays now incorporate hands-on demonstrations and workshops. Not surprisingly, the surveys also reveal incredibly high rates of visitor satisfaction with the Garden (98%).

Volunteers

The Garden describes its volunteers as its "true connection to the community," and actively seeks their input in improving the Garden. With hundreds of volunteers, this is a tremendous informational source. The inverse is also true, as volunteers are the "face of the garden" at community outreach events such as the State Fair, Solar Fest, Children's Water Festival, and others. The volunteers share with the Garden the feedback they hear in this capacity. At monthly meetings with volunteers, and a standing agenda item is "Comments," during which dialogue about the Garden's performance and reception is encouraged. Similarly, the Garden solicits feedback received by the BioPark Society from its thousands of members.

The reward for all of this effort is widespread public support, reflected by purchased bonds, that recently collected $6 million. In attendance numbers, these figures make the BioPark the most popular attraction in the New Mexico.

The Rotary Club sponsors an annual Children's Seed Festival in the Children's Fantasy Garden incoordination with Earth Day. Photo courtesy of ABQ BioPark.

[170] Hubbard, Catherine. Email Communication. 05/10/2011.

Keys to Success

Community-Driven Development

The Garden has a demonstrated history of responding to public input, from its creation by the community, through the development of its regional themes. Presently, it enjoys immense popularity and has aspirations to grow further into its role as a community resource.

Outreach Focused on Local Resources

One way the Garden has successfully developed as a valued community institution is by adopting the New Mexican landscape, history, and culture as its central themes. By allowing this identity to permeate its exhibits and outreach efforts, the Garden has created a unique "sense of place," which is inclusive of and inviting to the citizens of New Mexico. At the same time, it has allowed the Garden to make tangible contributions to local needs, such as preserving the Bosque ecosystem, promoting local agriculture, furthering knowledge and passion for the sciences in children.

Emphasis on Experiential Learning

The Garden emphasizes hands-on learning and interaction in its exhibits and programming. Interactivity increases the popularity of attractions, but it is also an ideal teaching strategy. Finally, it is a way to demonstrate that the garden is truly a community resource. It is this type of openness that gives visitors a sense of ownership of their garden.

Water Conservation Garden

Snapshot of El Cajon, California

El Cajon, located in San Diego County, has a semi-arid Mediterranean climate characterized by warm, dry summer and cool, wet winters. Given this climate and location, water conservation is a key priority for the San Diego region. Therefore, adherence to water monitoring and actively redirecting consumer behaviors to more consciously use water is essential to sustainable community development.

El Cajon Community Facts:[171]

Area: 14 square miles
Density: 7,106 persons per square mile
2010 Population: 99, 478
Population Trends: 4.9% increase 2000-2010
Median Age: 33.7 years

Helix Water District

Attention to water conservation is not new for the San Diego region, which is managed through multiple water districts. El Cajon is part of the Helix Water District, which spans three watersheds and has two resevoirs – Lake Jennings and Lake Cuyamaca. Lake Jennings stores water from the Sierras and from the Colorado River.[172] Lake Cuyamaca collects local mountain water, which is about 10 percent of the District's annual water supply.

Helix District's 60 gallon per capita per day decrease in water usage from 1988 to 2011 is a result of its conservation and education programs, including the implementation of low-flow showers and toilets[173]. A multi-county conservation effort led by Helix, the Landscape Ordinance requires new development projects to follow a *Maximum Allowed Water Allowance*, which is based on calculations of area and microclimate aspects of the landscape. The Ordinance also requires smart irrigation systems, separate indoor and landscaping water meters, water budgets for commercial and government sites, and provides irrigation surveys/ technical assistance from Helix to businesses and homeowners.[174]

While interventions in infrastructure (low-flow shower heads and toilets) of residential, commercial and industrial uses have been successful in lowering water usage, there was little intervention in the *behaviors* of water consumers. People could still take showers, for example, with little to no compromise in their behavior and still save water. However, a growing population and the 1990–1991 drought placed higher demands on water, and it was evident that new approaches to behavior change were needed. In response to this community need, the Water Conservation Garden was founded in 1999 to provide leadership and education on how to manage landscapes sustainability in southern California.

A turf exhibit compares seven different kinds of turf and their varying water requirements. Photo courtesy of the Water Conservation Garden.

[171] http://quickfacts.census.gov/qfd/states/06/0621712.html
[172] http://www.hwd.com/news/watershed2011.pdf
[173] http://www.hwd.com/conserve/index.htm
[174] http://www.hwd.com/pubs/LandscapeOrdinance.pdf

The Water Conservation Garden

The Water Conservation Garden is the product of cooperation between the Helix and Otay water districts, the Sweetwater Authority, Grossmont-Cuyamaca Community College District, and the City of San Diego and San Diego County water authority. Referred to as the Joint Powers Authority, these representatives originally operated the Garden's board. More recently, responsibility for the Garden's management and operation shifted from the JPA to a 501(c)3 nonprofit – the Friends of the Water Conservation Garden.

The Garden's History

Built and opened in 1999 through a partnership between Grossmont-Cuyamaca Community College District and the water districts in order to demonstrate conservation techniques to the public, the Water Conservation Garden addresses the need to educate the public about water conservation needs. Its creation was a response to Southern California's chronic water shortages during the drought years of the late 1980s and early 1990s. The water authorities needed a way to promote and demonstrate water conservation techniques, which could be fulfilled by a garden whose mission was dedicated to water conservation. The water authorities partnered with Grossmont-Cuyamaca Community College District, who loans out the 5-acre land occupied by the Garden.

The Garden's Mission

The Water Conservation Garden's mission is to "educate and inspire through excellent exhibits and programs that promote water conservation and the sustainable use of related natural resources." [175]

The Garden

The Water Conservation Garden contains themed gardens for education on varied subjects such as native plants, food production, meadows, turf types, ground cover, container-growing techniques, composting, fire safety, irrigation, and wildlife. Employing these demonstration gardens well, the Water Conservation Garden is the "go-to" resource for water conservation techniques in the San Diego region. Both on-site and off-site education on water conservation helps the Garden achieve its mission of inspiring the public to conserve water and change their usage behaviors.

Because the Garden is supported by water district dues, membership fees, donations, grants, facility rentals, and gift shop sales, the Garden offers free admission. In a small space of only five acres, the Garden offers a plethora of opportunities for demonstration and engagement. A Children's Discovery Trail encourages exercise, exploring, and education. Programming includes gardening and landscaping classes, professional-level water conservation training, school tours, adult group tours, special events, and outreach efforts.

Children enjoy their time exploring the demonstration gardens. Photo courtesy of the Water Conservation Garden.

[175] http://www.thegarden.org/aboutus/index.html

Organizational and Financial Aspects

The Water Conservation Garden's organizational structure is in flux – the Joint Powers Authority (JPA), which traditionally governed the Garden and was responsible for its creation, no longer the Garden's board. Responsibility has been transferred, as of January 1, 2011, to a nonprofit board, with the intent to enhance the Garden's operational flexibility and fundraising potential. Additionally, the move ensures increased structural stability since, as elected officials, JPA representatives have no guarantee of positional permanence. This move was part of a larger organizational shift from public agency to nonprofit.[176]

The public authorities of the JPA still provide funding to the Garden, although the amounts are expected to decrease as the transition progresses. The Garden raised $939,338 in revenue and support for the year 2009–2010, the majority of which came from agency funding. Donations, class fees, and in-kind contributions account for just over a fourth of the remainder, with the rest from gift shop sales and net assets released from restrictions. Additionally, the Garden received 7,200 volunteer hours. The Garden spent $868,563 in the same period of time, the majority of which went to program expenses. Other expenses include management, fundraising, and in kind expenses.

Pam Meisner entertains and educates children as "Ms. Smarty Plants." Photo courtesy of the Water Conservation Garden.

Select Outreach Initiatives

Defining Outreach:

The Garden views outreach efforts as its primary function – specifically, the Garden sees itself as existing to inspire people to make a shift in their landscaping behaviors, and to provide the information needed to make that shift. If the extent to which the Garden succeeds in altering landscaping perceptions and behaviors is a measure of its overall effectiveness, then there is reason for optimism: a recent survey by the Otay Water District reveals that half of all residents of the district have visited the Garden, and 61 percent of those visitors claim to have made changes in their landscaping practices as a result.[177] The following sections examine the initiatives leading to that success.

Garden as Educator

Miss Smarty Plants

One of the primary challenges to addressing the Garden's mission is the fact that infrastructural and systemic changes to water consumption will not suffice. In order to achieve sustainable water use at the regional level, the individual households and businesses in the region must be willing to alter their personal water habits. This is best achieved through a public who understands and embraces the need for water conservation.

Easily the most charismatic aspect of the Garden's outreach efforts, Miss Smarty Plants puts on an entertaining program, entitled "The Magic of

[176] Ebehardt, Marty. "2009-2010 Annual Report." *The Water Conservation Garden in Bloom*, 2010,

[177] Ebehardt, Marty. "2009-2010 Annual Report." *The Water Conservation Garden in Bloom*, 2010,

Water." Created in 2009, the program is intended to inspire children to appreciate and actively conserve water. The program is primarily offered to groups visiting the Garden, including schools and other organizations. In order to increase access to Miss Smarty Plants for school who do not have resources to visit the Garden, funding is made available through Sempra Energy to take Miss Smarty Plants to schools. In 2010, the Garden's message was delivered to 25,000 children, on-site and through field trips. School assemblies to attend programs often hold as many as 800 students, and Miss Smarty Plants often does several such programs in a given week.

The Miss Smarty Plants program satisfies state educational standards, including lessons on plant adaptation and other science topics. The program's message extends beyond water conservation, encouraging other ecologically friendly practices, such as recycling. This program presaged the expansion of the Garden's mission to include "the sustainable use of related natural resources."

Miss Smarty Plants also uses children's influence as a driver to modify the activities of parents – both in terms of encouraging water conservation in landscaping and in getting adults to come visit the Garden. Once the parents are there, it becomes possible to show them the potential of water-smart gardening.

An important partner and funder of Miss Smarty Plants is Sempra Energy of San Diego. One of the motivations of the relationship between Sempra and the Water Conservation Garden stems from a study distributed by the Public Utilities Commission that found that 25% of the energy used in California is used for importing and treating water.[178] In response to this significant nexus between water and energy, Sempra Energy adopted the slogan, "Saving Water Saves Energy", and has since been an important partner in helping to fund outreach initiatives. In this instance, the Water Conservation Garden responds directly to their community and helps to satisfy a regional sustainability goal to reduce water and energy resources.

Garden as Technical Expert

Demonstrations

The inspirational aspect of conservation outreach is vital – without it, very few people would be willing to modify their landscaping behaviors. However, without information and technical assistance, few people would be able to make such behavioral shifts, regardless of how willing they are. Due to the number of easterners who relocate in the San Diego region, education and demonstration on how to landscape in the southwest is essential. "Eastern yards", the grass-filled lawns that represent "Americana" to many easterners and demand daily watering, are difficult norms to break.[179]

The demonstration gardens exist to show homeowners, landscapers and developers how to be more water-friendly in their landscaping practices. Through interesting and attractive demonstration gardens, the process of embracing water-friendly landscaping practices and materials becomes less intimidating to the lay-gardener, as well as to those more experienced in traditional gardening. Techniques and strategies shared at the Garden

A ground cover exhibit demonstrates attractive ground cover and hardscape alternatives to turf. Photo courtesy of the Water Conservation Garden.

[178] http://www.sandiego.gov/water/pdf/press/040326.pdf

[179] Schulz, Don. Personal Interview. 02/17/2011.

include fire-wise landscaping, water conservation, gardening in containers, proper irrigation, composting, water-friendly food production, the value of succulents, and turf selection. In this sense, the physical garden acts as a repository of gardening and landscaping for the Southwestern landscape – a living gardening manual.

The standing demonstration gardens are augmented by a variety of classes on subjects including raw food preparation, selecting a landscaper, Do-It-Yourself equipment construction, and several others. Some of these classes are free thanks to grants from San Diego's Public Utilities Department. Other events include Homeowner Association tours, which have been quite popular, and Spanish language tours. In 2009, the Garden had 50,000 on-site visitors.

Garden as Credibility Lender

Seasonal Festivals

Through its efforts and resources, the Garden has established itself as a regional expert in water conservation. By lending its credibility to the latest and best in water conservation techniques and products, the Garden gives citizens the means to confidently make decisions regarding their water use. At the same time, by bringing the community together for the common purpose of water conservation, the Garden helps to promote water conservation as a mainstream interest.

The Spring Festival attracts hundreds of visitors to the Water Conservation Garden each year. Photo courtesy of the Water Conservation Garden.

The third selected community outreach initiative is the Water Conservation Garden's organization of seasonal festivals in the spring and fall. These events bring in large numbers of people – approximately 7,000 people attend the *Spring Garden Festival*, and around 2,500 attend the fall's *Water Smart Gardening Festival*.

These events increase the Garden's profile within the community, while educating and inspiring visitors through lectures, exhibits of techniques and products by outside vendors as well as the Garden, inexpensive landscape design consultations (which were free until recent increases in demand outpaced capacity), and family-friendly entertainment including a "bug zone" – a collaboration with the San Diego Museum of Natural History. The festivals also provide an opportunity for citizens to purchase drought-tolerant plants at inexpensive prices. Augmenting the 2011 *Spring Garden Festival*, *March Plant Madness* is a four-weekend program offering special classes and sales on plants.

When asked why funders and partners look to the Water Conservation Garden as a leader in water conservation outreach, common responses further illuminate the Garden as a change agent and credibility lender. For example, Sempra Energy feels confident partnering with the Garden because of the positive reputation they have earned in the region over the last decade. The Garden has technical expertise beyond others in the region and is publicly connected. Further, the Garden acts as a politically neutral advocate for water and conservation with a clear and obvious mission.[180]

Apart from their educational benefit and ability to bring awareness and revenue to the Garden, the festivals serve to enhance regional awareness and acceptance of drought-tolerant landscaping: when people see other people getting involved in water-wise landscaping, they are more likely to consider it to be a viable alternative to traditional methods. More

[180] Baron, Risa, and Brandi Turner. Personal Interview. 02/17/2011.

importantly, it furthers the perception that these changes are taking place across the community. This can create a self-reinforcing cycle by which appropriate landscaping strategies do, in fact, become the regional norm.

Keys to Success

Purpose Driven

Because the Garden was established to educate citizens on water conservation, its development has been guided by an unusually specific mission. The Garden chooses to "do one thing and do it well." It views *itself* as an outreach and education entity, rather than a multipurpose institution with an outreach arm. This clarity of purpose has contributed to the Garden's position of trust within the community: by remaining faithful to a specific mission, it is perceived as a politically neutral source of essential information. By focusing on a narrow set of goals, the Garden has been able to avoid the centrifugal forces which can afflict organizations with a broader focus, such as the overextension of resources and involvement in contentious community issues.

Youth-focused Outreach

While it is not unusual for public gardens to incorporate themes, activities, and displays for children, the Water Conservation Garden is noteworthy for the extent to which the Miss Smarty Plants program has engaged and inspired children. By offering the program on- and off-site, the Garden's water conservation reaches over 25,000 children annually. This is important for inspiring changes in water-use habits in children, who then share these values with parents and family. Just as importantly, the children inspired by the program are instrumental in getting their parents to come to the Garden, where the demonstration gardens and festivals can influence water consumption.

Partnerships

Public gardens whose themes and objectives highlight the unique character of their community (regional climate, ethnic diversity, history) are creating a bridge between themselves and the citizens they hope to serve. Making a garden relevant to people on a personal level results in visitors, contributors, and a general acceptance of the garden as a vital piece of the community. The Water Conservation Garden has become such an institution because it provides resources (information and supplies) relevant to every citizen of the region. Further, if a garden is seen as serving the public good beyond its own walls, opportunities for political and financial support become available. The Water Conservation Garden, by all measures, has played an essential role in reducing water waste in the San Diego region. Its reward has been support and relative autonomy.

Ms. Smarty Plants teaches children about the amount of water used in everyday activities Photo courtesy of the Water Conservation Garden.

Recommendations

Recommendations

Through the research and analysis conducted for this study, we identified key steps that a public garden should consider taking in order to conduct community engagement successfully. Taken together, these steps constitute a "best practices" model of public-garden outreach. The following account describes each factor and its importance in the community engagement process.

Take a Strategic Approach to Garden Planning and Management that Includes Community Engagement as an Important Component

Strategic planning (and strategic management in general) is a process that is well-suited to an organization that must take its environment seriously and balance that with internal characteristics. Through strategic planning, an organization looks carefully and comprehensively at trends in its environment – specifically, at opportunities that the organization can seize and at threats to the organization, and at internal factors – specifically, the organization's strengths and weaknesses. Strategic planning generally encompasses a period of five years, with plan updates every two or three years and annual monitoring of plan performance.

Although community engagement is but one aspect of a strategic approach to garden planning and management, here we concentrate only on the community engagement aspect. Also, we focus here on the opportunities in the environment and on the strengths of the organization, but a good strategic planning process will consider weaknesses and threats as well.

A good strategic planning process is managed professionally; at least key aspects such as guidance of the process, some research, and facilitation of key planning meetings are done professionally. A good strategic planning process also includes very thorough research of internal organizational characteristics and external factors and key stakeholders, and the active participation of staff and board members. An important outcome of a good strategic planning process is a clear organizational mission statement and clear goals, objectives and strategies for achieving the mission. If the process has been well-managed and inclusive, it will have achieved strong commitment to the organization's mission, including its community engagement component.

An important aspect of this commitment is a decision-making protocol for the types of community projects the garden will take on, the types of organizations with whom the garden will collaborate or whom it will assist. It is helpful for the garden to make these criteria official, include them in its strategic plan, and adopt them in practice. Examples may include developing partnerships with collaborators who share the same mission, or partnerships that offer opportunities for volunteers. As discussed below, a thorough analysis of the community will help the garden to determine where it can have the greatest impact.

Looking Inside: Build Upon Assets & Strengths of Board and Staff

A strategic approach to management in general, and an essential requirement for successful community engagement, is to engage in activities that draw upon the garden's unique assets and strengths – the contributions that it can make without stretching the organization too far, and which others in the community

cannot make. The cases profiled in this report have identified several types of roles that gardens play in their communities. These include:

- **Garden as Trainer** of horticultural techniques and in skills for growing food.
- **Garden as Facilitator** of community conversations about plant-based solutions to community challenges, and about sustainable development generally.
- **Garden as Educator** of youth and the general public about the importance of greening initiatives.
- **Garden as Technical Expert** including demonstrations or techniques of conservation.
- **Garden as Credibility Lender** to agencies and organizations that need to engage more established institutions to accomplish sustainability goals.
- **Garden as Community Host** for meetings and events that promote accessibility to public garden space.
- **Garden as Catalyst** for community change or promotion of sustainable community development.

While not all roles fit naturally for all public gardens, it is likely that each garden can find one or more areas where it can efficiently offer skills that would contribute to community development. Gardens find they are most effective when they offer services that are closely related to their core areas of expertise and to the interests of their staff and board of directors. In cases where public gardens extend beyond their core areas of strength, the partnerships tend to take unsustainable resources and time from the gardens.

Gardens should maintain and actively communicate to others a list of general activity roles that they perceive they can most fruitfully play in the community. This helps garden boards and staff understand the nature and extent of potential partnerships and the justification for engaging in them, and it lets potential community partners know what the garden is capable of doing. Many such partners are not aware of the contributions that a public garden can make in a community. Unless partnerships have already been sought out, local governments and practicing planners – who oversee and implement many sustainable community development initiatives – are unaware of the valuable knowledge, skill and networks that may be offered by a public garden. If a public garden wants to seek out potential community partners, letting others know its capabilities is essential.

Understand and Engage Board and Staff

In a strong organization, staff and board members find that at least some of their most strongly held values, goals and aspirations are met through their work with the organization. It is the task of organization management to understand staff and board member motivations, and to organize the work so that they are met. To some extent, this acts as a constraint on organizational behavior, since an organization cannot pursue goals that are at odds with the values of most members. Over time, however, management can educate current members so that they come to appreciate and support new organization activities, and it can also recruit new members whose goals align better with the work of the organization.

This is particularly relevant to community engagement work, since for most gardens, community engagement is not the core mission of the organization. However, in some cases profiled in this report, community-engagement activities are being driven by management and staff members who are personally committed to such work. Nevertheless, some staff and board members may not initially perceive this work to be important, and they may even think that it detracts from the garden's core mission, especially when resources are scarce. Several of the gardens profiled in this report have found ways to win support from their boards for community engagement. The most successful cases include finding projects that do not require financial resources from the garden and which generate positive press. Public gardens that do not spend core operating funds on community work – but rather use money from grants and contracts for this purpose – are frequently successful in getting support from their boards. Finding ways to balance outreach advocacy with a clear understanding that it is not the core function of the public garden is of paramount importance.

When considering initiatives in the community, the garden director should share information learned about the community (see below) with the board members. In some cases reviewed for this project, it was evident that the board was not always aware of community needs and areas of possible contribution by the garden. Including board members in community conversations and opportunities for education about the community in which the garden is located can go a long way toward establishing a strong internal consensus on the desirability of engaging in community engagement.

Looking Outside: Understand Your Community

Understanding the community in which the public garden is located is an essential starting point for the development of a strategic plan and community engagement agenda. A common dilemma shared by public gardens who responded to an April 2010 APGA survey is the failure to know what the community needs or how the public garden may assist the community through community engagement work. Using data from the case studies profiled in this report, we learned that "best practice" public gardens are finding strategic means to understand the community and identify activities and geographic areas where they may have a significant impact on sustainable community development.

Public gardens utilize secondary data, such as information compiled by the United States Census, to understand the socioeconomic characteristics of a neighborhood, city, or region – the people, employment trends, housing conditions, and other regional characteristics. This information is used as a first scan of the environment to locate the trends, needs, and existing assets of the community. But such secondary data alone are just a starting point. It is also important for a garden to understand what the community values and what it perceives to be its most important challenges. To gain this understanding, successful gardens engage in both formal and informal conversations with neighborhood and community organizations, public agencies, private organizations and individual stakeholders, convening them as part of strategic planning focus groups, and meeting with them in one-on-one settings to learn their goals and aspirations for the community.

Through such conversations, gardens come to identify the challenges that might yield to plant-based solutions, and community members come to understand the capacity of the garden to play useful roles. As one garden suggested, understanding the community from the resident level helps the public garden build social and political capital, which are essential for successful and long-term community engagement.

Best-practice gardens are constantly doing reconnaissance in the community, staying abreast of major issues and identifying new needs or areas in which the garden might collaborate. In at least some best-practice gardens, this activity is viewed as part of the executive director's job. Staff persons are not asked to become involved in community activities until solid relationships have been established between the partner organizations and the garden. This takes time, but it is worth the effort. If the executive director or that person's representative has carefully laid the groundwork, then a successful community partnership is much more likely to take shape.

Partnerships and Projects: Make a Unique Contribution, and Establish Clear Goals with an Exit Strategy, or with a Strategy to Formalize Relationships

A sound strategic planning process that includes careful study of the community will help a garden determine where it can offer plant-based responses to community challenges and opportunities. The garden should strive to make contributions that other entities cannot make; they should be, if possible, unique. The purpose and extent of the garden's contribution – its role – should be carefully thought out. Is the purpose to catalyze an effort that, once launched, can proceed without further garden involvement? If so, then the garden should begin with clear goals for the initiative, a means of assessing the impacts of its work, a clear indicator of when the goals have been achieved, and, most importantly perhaps, a clear exit strategy that allows the garden to reduce or cease its involvement with the initiative in a manner that does not weaken the garden or the community.

Other initiatives may be longer-lasting or even ongoing. In such cases, it may be appropriate for the garden to create formal relationships with community partners with formal committee structures as soon as is practicable, as this will stabilize the initiatives and ensure that they are not weakened in times of organization stress or resource scarcity. In addition, gardens and their community partners should consider cross-pollination of their boards, since this not only helps to institutionalize collaboration, but also leads to more innovative initiatives that strengthen the collaborative effort.

It is important to understand that in many communities, potential partners, such as practicing planners and local governments, chambers of commerce, building and landscaping contractors, neighborhood associations and schools, are not aware of the potential roles and contributions of public gardens in devising plant-based solutions to public policy issues. Thus it may fall to the garden to realize and to suggest, a collaborative relationship with one or more community entities. In one instance, a public garden proposed the formation of a city-wide sustainability committee that included board members from local government, community organizations and funders, as well as the public garden. Quickly the public garden staff became a co-chair of a city committee, broadcasting the credibility and skill of the public garden.

No less important is the fact that through such committees, current and potential community partners can understand the financial realities of the public garden. Dispelling the belief that all public gardens have large operating budgets fueled by endless contributions of wealthy donors is important for partnership evolution. Public gardens must be seen for the skills and volunteers that they can bring to an outreach program, rather than as financial supporters of initiatives.

Maximize Your Impact by Leveraging Your Efforts

A common challenge for community initiatives is the lack of capacity to staff and carry out the demands of new initiatives, especially when many gardens are not dedicating a full staff person to such efforts. However, public gardens are finding successful ways to build their capacity and reputation in the community through training programs. By activating and teaching community volunteers to carry out various responsibilities that fall within the mission of the public garden's community engagement program, the impact of a single garden staff person multiplies.

How are public gardens building such a skilled and effective cadre of volunteers? They are committing up-front time to do comprehensive and multi-day training. For example, one garden is providing training on community gardening, but also teaching ways to include the community in the garden – how to reach out to neighbors and make gardening relevant to them. In doing so, the training is at once facilitating the burgeoning of community gardening and building community connections. In other cases, public gardens are training volunteers to be certified urban gardeners or tree pruners, and these volunteers work in the field, spreading enthusiasm for this community greening initiative. Because of the footprint the outreach program has in the community with its scores of well-trained volunteers, the credibility and achievement of the initiative is boosted. It is obvious that this train-the-trainer approach works well for the public garden, but it also sends volunteers into the community who have certificates in urban horticulture, composting, and other areas in which the public garden has training ability. This builds capacity among the public while simultaneously building the capacity of residents to value and contribute to sustainable community development.

Seek External Funding for Community-Engagement Activities

As a garden considers potential community engagement activities and partners, it should include financial considerations as one of its criteria for choosing one project or partner over another. Best-practice gardens make a point of separating the financing of their core functions from the financing of community outreach activities, and they do not use core operating or capital funds to support community engagement work. They engage only in the projects for which external grant funds can be raised. Although they may donate some core staff time to community work, the bulk of the effort must be financed from external sources.

This approach actually helps to stabilize the community engagement function within the garden, since it makes clear to both supporters and skeptics, both inside (staff and board) and outside the garden, the limits of garden involvement in community activities. Of course, community engagement is not entirely separate from the core function, nor should it be. Indeed, gardens are engaging in community outreach now precisely because their core functions are changing. They recognize that they need to play a different role in the community than heretofore. But having clear financial criteria helps to ensure that gardens enter this new

era with their eyes open and in a way that does not undermine their core identity or primary base of support.

Note that such an approach need not unduly constrain the garden in its community work. If the garden deems a certain project particularly important, it can work to convince funders of its importance. But if it cannot do so, then it can focus on other initiatives that have external support.

Measure, Monitor and Adjust

A good plan has clear goals, objectives and strategies, the attainment of which can be easily assessed, and sometimes quantitatively measured (although quantitative measurement is not always appropriate). More ambitious gardens may also wish to calculate economic and social impacts of their engagement activities for use with boards of directors and funding bodies, but this is not essential. What is essential is that the garden measure its activities and assess performance regularly against the goals and objectives in its strategic plan, and then make adjustments as necessary.

Take a Long-Term View of Community Engagement

Some public gardens may become discouraged from partnering if the first interaction with another organization does not go smoothly. However, any new endeavor brings the possibility of mistakes and glitches. The old adage that anything worth doing is worth doing wrong the first time is particularly appropriate here.

However, problems and glitches can be minimized through careful strategic planning, especially community assessment and dialogue with key stakeholders and potential partners about expectations and goals of the partnership. Agreement must be found on the purpose of the partnership to bolster potential for a successful joint initiative. In addition, the roles and expectations of the individual partners should be outlined early in the partnership formation process and occasionally revisited. What resources will each partner bring to the initiative? Is there expectation of commitment of financial resources or can these be substituted with resources in the form of skills, time or access to social networks? Mapping the assets that each partner can bring to the table to satisfy the goals of the partnership will help to enhance success. In the best-practice cases, this important groundwork is typically laid by the executive director, before other managerial or line staff persons are brought into the effort.

Over time, the garden should also consider ways to invest in the partner organization to help it to grow stronger and play its partnership role better and perhaps to take on tasks initially performed by the garden. Remember that it is important that the garden seek to leverage its efforts as best as possible, and training a partner to carry out community engagement activities is one way to do so.

Finally, it is important for the garden to develop a long-term view of the development of the community and of its role in that development process. This perspective will help the garden to choose initiatives, and it will also help the garden to be patient as partnerships form and begin to operate.

Conclusion

The role of the botanic garden in American society is changing from that of a respected, but sometimes aloof institution that studies, creates new knowledge about, and conserves plants, to one that also utilizes its special knowledge and expertise to provide plant-based solutions to some of society's most pressing challenges. The new roles have the potential to dramatically increase the importance of, and support for, gardens. But the way forward is not yet entirely clear and it can be tricky for gardens that must continue to play their traditional roles well in a world of scarce resources.

Through its sponsorship of this report, the American Public Garden Association (APGA) is working to develop a best-practice model that will serve as a guide to botanic gardens as they make their way in these exciting, but challenging times. But this report is only a beginning. As gardens continue to experiment and expand their community engagement work, the APGA will seek to record and disseminate these experiences in various media, so that all gardens may be able to learn from these experiences and assume even more significant roles in shaping American society.