

BOTANIC GARDEN PROFILE:
THE UNITED STATES BOTANIC GARDEN IN WASHINGTON, DC

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ABSTRACT

The United States Botanic Garden (USBG) was initially established in 1820, though a tumultuous beginning did not allow it to become a permanent institution until 1850. Nevertheless, it is one of the oldest botanic gardens in North America and one of the most visited. This article provides a brief history of the USBG and an overview of its operations and collections. With its central location in a major US metropolitan region and free entry to visitors, the USBG has a strong focus on visitor services, experience and education. Approaching its 200th year, the Garden is well poised to play a leading role in exciting the American public about the importance of plants to humankind.

HISTORY²

Welcoming over 1.2 million visitors per year, the United States Botanic Garden (USBG) is one of the most visited and oldest botanic gardens in North America. Its early history is almost as tumultuous as the early history of the United States itself. The idea of a national botanic garden was first proposed by George Washington, general of the colonial army that defeated the British in the American Revolutionary War (1775–1783) and the first president of the United States (1789–1797). President Washington is remembered primarily for his military and political achievements, but he was first and foremost a talented and enterprising farmer, who had a deep appreciation for the plant kingdom and the benefits plants provide to human well-being. In 1796, he wrote a letter to the Commissioners of the US Federal City, which would eventually be named Washington, DC. In it President Washington endorsed the creation of a botanic garden in the nation's capital, which he envisaged as eventually forming part of a national university. Dying shortly afterwards, in 1799, Washington would never live to see the founding of a national botanic garden, though it is fitting that the 'father of the United States' planted the seed for the construction of a botanic garden that would eventually be a part of the United States Capitol campus.

Several other prominent early political leaders of the United States were strong proponents of botanical and other natural sciences. Among them, Presidents John Quincy Adams, James Monroe and Thomas Jefferson all played a role in advancing

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2. The 'History' section of this article is a general summary of the United States Botanic Garden's history, drawn from the following sources: Allen, 2001; Fallen, 2007; Solit, 1993, as well as multiple maps, images and other primary historical documents contained in the US National Archive, US Library of Congress Collections, US Architect of the Capitol Archive, US Botanic Garden records and the Washingtoniana Collection of the Washington, DC public library.

one of the first scholarly societies of Washington, DC, the Columbian Institute for the Arts and Sciences. The Columbian Institute was formed in 1816 and received a Congressional Charter in 1818. In 1820, Congress passed a law, signed by President Monroe, granting the Institute the use of 5 acres (2.02ha) on the west of the US Capitol for the establishment of a botanic garden. From 1820 to 1838, the Columbian Institute operated a small botanic garden on the site of what would later officially become the US Botanic Garden. Although never formally named, since the early US government had officially sanctioned the Columbian Institute's Garden, it is often colloquially referred to as the 'First US Botanic Garden'. The Institute's botanic garden never thrived but it did manage, primarily through government diplomatic envoys, to receive and distribute a broad variety of garden and other interesting plants from all over the world. An important mission of the Institute was to acquire plants from other countries that might be useful to the burgeoning United States and distribute them, often through Members of the US Congress, to climatically appropriate regions of the US. The Columbian Institute also operated a small herbarium, whose collections were eventually incorporated into the US National Herbarium, now housed at the Smithsonian Institution in Washington, DC. In large part due to lack of financial support, the Columbian Institute disbanded in 1837 and was formally dissolved in 1841. Therefore the 'First US Botanic Garden' ceased operating in 1838 but was fortunately resurrected shortly thereafter.

Also in 1838, the US Exploring Expedition, commanded by Lieutenant Charles Wilkes, began a four-year mission to circumnavigate the globe and conduct extensive surveys of the Pacific with a six-ship squadron. This expedition included three naturalists who, by the time the expedition returned to the US in 1842, had collected more than 10,000 herbarium and seed specimens and over 250 live plants. These 254 species of live plants would be the collection that gave birth to the permanent US Botanic Garden.

Immediately upon their return to the US, Congress recognised the importance of these plants, many of which had never been seen before in North America. A 50-foot (15.2m) temporary greenhouse was constructed at the US Patent Office building, now the National Portrait Gallery, while a more permanent home for these collections could be constructed. By 1850, Congress had completed a new permanent facility for the plants brought by Wilkes on the same site as the original Columbian Institute's botanic garden just west of the US Capitol Building. In 1856, the facility was formally named the US Botanic Garden and was legally defined as an independent government agency of the legislative branch under the jurisdiction of the Joint Committee on the Library of Congress, with the annual appropriation of an operating budget provided by Congress. In 1853, William R. Smith, a 22-year-old Scotsman who was trained at the English Royal Botanic Gardens at Kew, was hired as a gardener at the US Botanic Garden based on the recommendation of Sir Joseph Hooker. In 1863, at 32 years of age, Smith became the Superintendent of the Garden, a post he held until 1912.

The Smith years saw tremendous growth of the USBG. By the late 1860s, the original glasshouse had been expanded to a 300-foot (91.4m) long conservatory, designed by the then Architect of the US Capitol Edward Clark, with a central dome



Fig. 1 View of the incomplete US Capitol Building in 1860. The first permanent conservatory of the USBG is visible in the foreground next to the no longer existing Washington, DC canal. Image courtesy of the US Library of Congress.

and two wings. In addition, there were ten smaller glasshouses that contained a lecture hall and more plant collections plus four further glasshouses for propagating plants to be distributed to Members of Congress. The plant collections flourished. Plants were received initially through the Wilkes Expedition and then from the Perry Expeditions to Japan (1852–1855), as well as through exchange with institutions and agents throughout the world. The main collections were organised broadly by geography. The rotunda was a palm house with plants from the new and old world tropics. The east wing was mainly devoted to tropical and subtropical plants of the southern hemisphere: Brazil, South Africa, Oceania and Australia. The west wing contained tropical and subtropical plants from the northern hemisphere: China, Japan and the East and West Indies. By 1875, the glasshouses and exterior gardens comprised 10 acres (4.05ha), surrounded by a low brick wall. The exterior gardens consisted of walks, lawns and flower beds, as well as numerous woody tree species appropriate to the US mid-Atlantic temperate climate. Public access to the garden was from 9 a.m. to 6 p.m. Other than the main conservatory, the most important historical structure at the Garden in the late 19th century was the Fountain of Water and Light, designed for the Philadelphia Centennial Exposition of 1876 by French sculptor Frédéric Auguste Bartholdi, who also designed the Statue of

Liberty in New York Harbour. The fountain was purchased by the US government and placed at the USBG in 1877. Interestingly, the Bartholdi Fountain was one of the first electrified public structures in Washington, DC, having been converted from gas to electric lighting in 1881, which made it a major attraction at that time. Unfortunately, the advancement of the US Botanic Garden from 1842 to the turn of the century would run into a major barrier as the dawn of the 20th century saw the leaders of Washington, DC seek to reinvigorate the overall plan for the city.

The plan for Washington, DC was originally entrusted to the French architect Pierre L'Enfant by George Washington in the late 18th century. However, by the late 19th century, many elements of the original L'Enfant plan had not been realised or had badly degraded, resulting in a capital city that in the eyes of its leaders did not live up



Fig. 2 The expanded USBG conservatory in 1887 in front of the completed US Capitol Building. Image courtesy of the US Architect of the Capitol.

to the stature of an emerging world power. As such, the US Congress completed the McMillian Commission Plan in 1902 to revitalise the monumental core of Washington, DC. This plan essentially set out the layout for the central core of Washington, DC's massive Mall, which was to be flanked by the main institutions of the government, including public museums and monuments. The plan called for an unobstructed view from the US Capitol Building west to the Washington Monument as well as a memorial to the civil war general Ulysses S. Grant. The USBG was simply in the way. Despite the protestations of the Garden's long-time Superintendent, Mr Smith, that the new plan would require uprooting many magnificent trees on the property of the Garden, the plan was eventually approved after a protracted 21-year battle. One of these trees was an oak supposedly grown from an acorn taken from the tree shading Confucius' grave. Smith died in 1912 while the battle was ongoing. He was succeeded as Superintendent of the Garden in 1913 by George W. Hess. Hess proved to be ahead of his time in terms of public outreach and visitor services. While the battle for the future of the Garden raged on, Hess placed focus on increasing public visitation, education, exhibitions and plant distribution, a focus which continues to the present day. He instituted Sunday openings in the Garden in 1915, inaugurated the still-current tradition of holiday displays in 1916 and took great pleasure in personally taking schoolchildren and teachers through the Garden to demonstrate the wonders and usefulness of the plant kingdom. However, despite the Garden's tremendous public popularity in the early 20th century, Congress moved forward with its plans to dismantle it at its original location and relocated it one block south across Maryland Avenue. Construction of the new conservatory began in 1931 and was completed in 1933. The consulting architects were Bennet, Parsons and Frost of Chicago with the US office of Lord & Burnham Co. of Irvington, New York as designers of the glasshouse. When completed, the new conservatory consisted of over 45,000 sq. ft (4,180 sq. m), including a palm house, semi-tropical high house and six low houses, plus two courtyards and a French-style limestone orangerie. Nine production greenhouses were built just west of the conservatory. The Bartholdi Fountain was moved one block south of the conservatory to a triangular park built as part of the Garden. In its new location, the collections of the Garden have generally been linked to the main eight houses of the conservatory. Today, those collections include cacti and succulents, Mediterranean climate plants, orchids, economic plants, medicinal plants, plants of Hawaii, non-flowering plants and an eclectic representation of a tropical rainforest. In 1960, the on-site production greenhouses were razed and relocated to the Anacostia section of Washington, DC. The off-site facility was relocated again, still within Anacostia, in 1993 and currently features an additional 80,000 sq. ft (7,432 sq. m) of growing space, where the majority of the collections are housed and rotated to the publicly accessible facility on Capitol Hill. From 1997 to 2001, the main conservatory was closed for a complete rehabilitation of all metal and glass. In 2006, the open parkland area west of the conservatory was reimagined as a walled garden named the National Garden, which contains the national Rose Garden, a Butterfly Garden, the First Ladies Water Garden (a fountain monument to the spouses

of American Presidents), Amphitheatre and the Regional Garden (which showcases the native flora of the mid-Atlantic United States). The Bartholdi Park is currently undergoing a renovation to transform it into an educational resource and will showcase examples of home gardening which are both sustainable and accessible.

From the conception of the USBG by President George Washington in 1796 to its first incarnation in 1820, the establishment of its current plant collection in 1842 and first permanent greenhouse in 1850, the only constant at the institution has been change. Like any other institution, it has had its ups and downs but it has distinguished itself during an almost 200-year history through its dedication to providing an attractive space where



Fig. 3 The current configuration of the USBG with its three main elements: the Conservatory, National Garden and Bartholdi Park. This location is one block south of the original location of both the 1820 and 1850 gardens. Image courtesy of the USBG.

people can experience the magic and utility of plants. Approaching its bicentennial in 2020, the Garden is well positioned to continue to play a leading role in educating the American public about plants while incorporating the great challenges of the 21st century: sustaining both ourselves and a biodiverse world in the face of ever-increasing challenges to the biosphere and growing human populations.

MISSION AND GOVERNANCE

The mission of the US Botanic Garden is to “demonstrat[e] the aesthetic, cultural, economic, therapeutic and ecological importance of plants to the well-being of humankind” (United States Botanic Garden, 2016). The Garden is an independent federal agency of the legislative branch of the US government. It is administered by the US Architect of the Capitol. This is a federal agency responsible to the United States Congress and the Supreme Court for the maintenance, operation, development and preservation of 17.4 million sq. ft (1.6 million sq. m) of buildings and more than 553 acres (224ha) of federal land throughout Washington, DC. The Garden is overseen by the US Congress Joint Committee on the Library of Congress. It is unique among botanic gardens in the United States as being wholly an institution of the federal government whose operational budget is completely provided through Congressional appropriations. While under different governance, the USBG is strongly allied with the Smithsonian Institution (the US national museum system), which contains the National Museum of Natural History and National Herbarium, and the US National Arboretum, which is a part of the US Department of Agriculture.

LOCATION AND CLIMATE

The USBG is located in the heart of Washington, DC, immediately south-west of the US Capitol Building. Its physical street address is 100 Maryland Ave. SW. The Conservatory is located at approximately 38°53'17"N 77°00'47"W. July is the hottest month in Washington, DC with an average temperature of 80°F (27°C), and the coldest is January at 38°F (4°C). The city averages 39.7in. (1,009mm) of rain per year. Mean monthly sunshine hours range from a low of 133 in December to a high of 283.2 in June. Winters are relatively mild with an average of nine days below freezing. Summers are hot and humid, partially owing to the low-lying nature of Washington, DC at the confluence of two rivers, the Potomac and the Anacostia.

STAFF

The Garden averages 68 permanent positions, though the exact number fluctuates seasonally as interns and students are brought on board in summer months to assist during the hot and busy season. Approximately half of the employees are within the horticulture department. There is a Head Curator, Horticulture Manager and dedicated Landscape Architect, as

well as a full-time Botanist and Plant Record Keeper. While the Garden has no permanent research staff, two employees are currently research associates of the US National Museum of Natural History, Department of Botany. The horticulture staff is divided into three teams: Gardens & Grounds; Collections; and Displays. Fifteen employees are dedicated to the maintenance and continual improvements to the facilities, including greenhouses, mechanical systems, fountains and other infrastructure. There are also nine employees dedicated to education and visitor services as well as four administrative employees. Most administrative functions such as human resources, contracting, legal and IT are provided by the US Architect of the Capitol. The Garden could not operate without a dedicated core of over 150 volunteers who are evenly split between visitor services and horticulture.

GARDEN FEATURES

Conservatory gardens

The US Botanic Garden Conservatory is divided into ten indoor greenhouses, two main courtyards, two display galleries and one classroom. The indoor greenhouses are

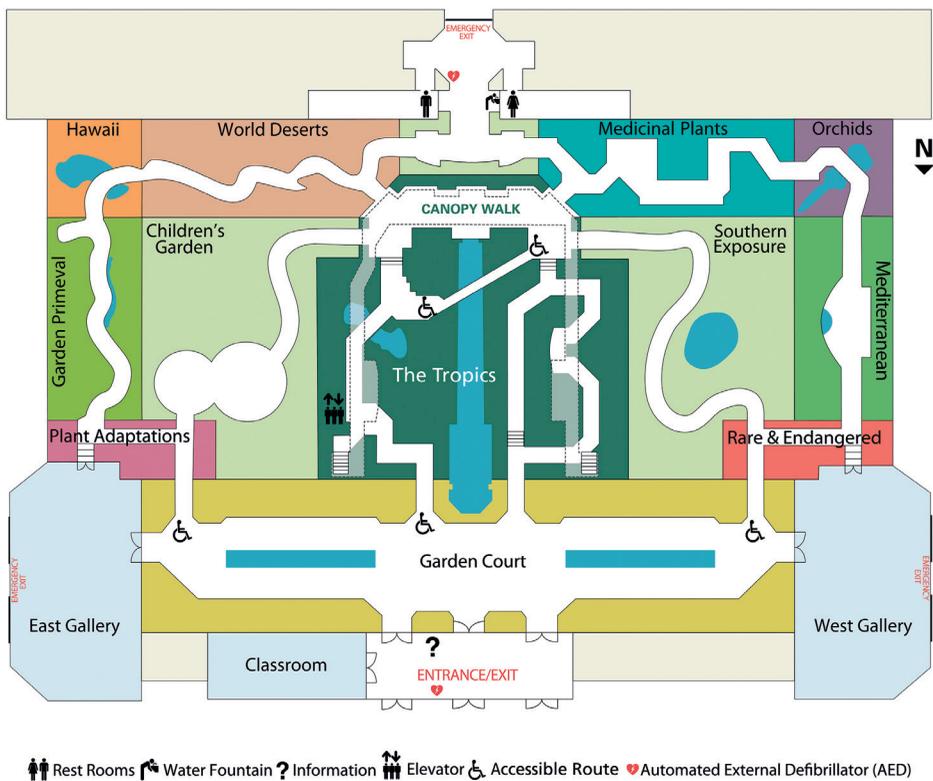


Fig. 4 The current configuration of the USBG Conservatory. Image courtesy of the USBG.

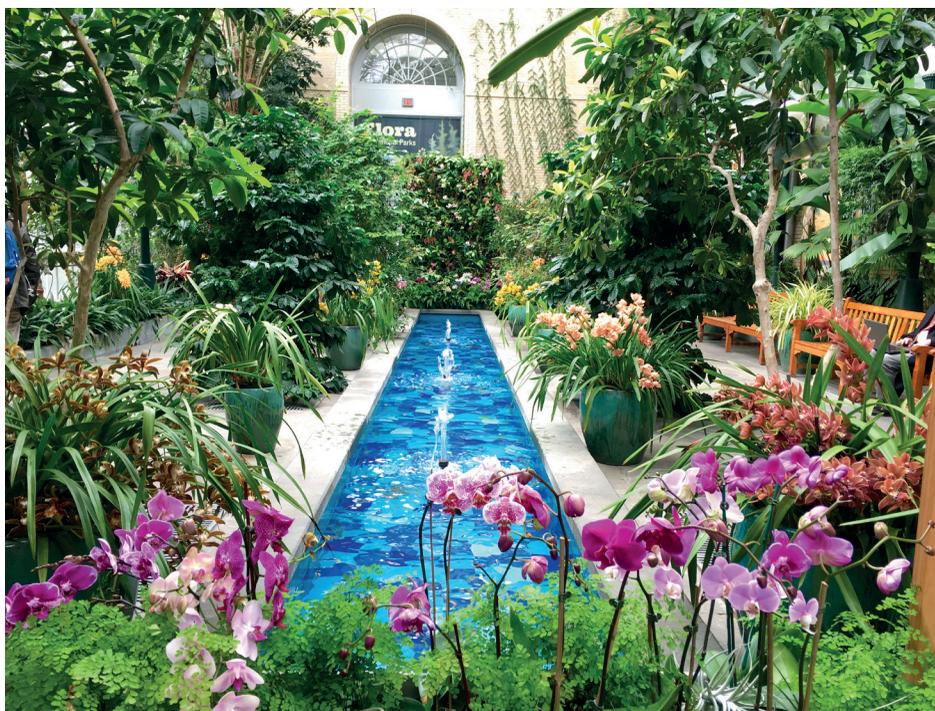


Fig. 5 The current configuration of the USBG Conservatory. Image courtesy of the USBG.

themed primarily to cultural uses of plants, specific taxonomic groups, biogeographical and ecological classifications. The largest room is the central Tropics house, which contains an eclectic version of a tropical rainforest, complete with a canopy walk to view the higher elevations of the forest. The Garden Court showcases economically important tropical and subtropical species important for food, construction, beverages, cosmetics, wood, spices and agriculture. There are also houses focusing specifically on non-flowering plants, Hawaiian endemic plants, medicinal plants, Mediterranean climate plants, cacti and succulents, orchids, and rare and endangered species. One of the greenhouse rooms is seasonal, currently displaying plants of US coastal dune and wetland communities. One of the courtyards is the Children's Garden, which provides a space for children to plant, water and play among plants. The second courtyard is a microclimate garden called Southern Exposure, where the protected nature of the courtyard allows a year-round display of plants from the southern United States that normally would not be cold-tolerant in an unprotected location in Washington, DC.

National Garden

The National Garden is the walled exterior garden immediately west of the Conservatory. It was completed in 2006 and consists of six sections: the Regional Garden, Rose



Fig. 6 The outdoor National Garden with the US Capitol in the background. This section of the National Garden focuses on plants native to the Mid-Atlantic US. Image courtesy of the USBG.

Garden, Butterfly Garden, First Ladies Water Garden, Lawn Terrace and Amphitheatre. The Regional Garden takes up almost two-thirds of the outdoor National Garden, and contains important collections of plants focusing on the mid-Atlantic native flora of the US, especially perennial woody plants of the eastern coastal plain and Piedmont.

Bartholdi Park

Bartholdi Park is located just south of the Conservatory, across Independence Avenue. It is a triangular park managed by the USBG that connects the main block of the Garden to the American Veterans Disabled for Life Memorial immediately to the south. The Park contains a small Administration Building constructed in 1932 and is anchored by the monumental Fountain of Water and Light which was designed by French sculptor Frédéric Auguste Bartholdi and debuted in 1876 in Philadelphia before being moved to the US Botanic Garden in 1877. The Fountain was moved to its own park in 1932. Since then, the Park has focused on demonstrating the latest horticultural materials and techniques to the public at homeowner scales. The Bartholdi Fountain was completely restored in 2011 and the Park is currently undergoing its first full renovation since 1932. The new Bartholdi Park will open in the second half of 2016 with permanent plantings and interpretation to showcase sustainable horticulture techniques. This area will also include raised annual beds to facilitate programmes and education in accessible horticulture and horticultural therapy.



Fig. 7 The Bartholdi Fountain seen from the south end of Bartholdi Park looking north towards the USBG Conservatory. Image courtesy of the USBG.

Production Facility

The current US Botanic Garden Production Facility is located approximately five miles (8.05km) from the Conservatory in the southern corner of Washington, DC. It is periodically open to the public for behind-the-scenes tours. Completed in 1993 and featuring over 85,000 sq. ft (7,897 sq. m) of growing space under glass, it is the largest facility of its kind supporting a public garden in the United States. It contains 34 greenhouse bays divided into 16 environmental zones. There are also various outdoor growing facilities including cold frames, a lathe house and outdoor nursery space. Most of the Garden's plants are cared for at some point in this facility, maturing into display-worthy specimens in the Conservatory, or developing flower, fruit or other features before being rotated through the publicly viewable displays in the Conservatory and National Garden.

Major plant collections

The USBG accessioned plant collections number approximately 12,000, representing over 7,500 taxa. At any given moment the Garden is growing approximately 65,000 individual plants for collection or display. The major collections are Orchids, Medicinal Plants, Rare and Endangered Plants, Economic Plants, Carnivorous Plants, and Cacti and other Succulents. The Garden serves as a rescue centre for plants confiscated at US borders in accordance with the Convention on the International Trade in Endangered Species of Wild Fauna and Flora (CITES).



Fig. 8 Aerial photograph of the USBG Production Facility in south-eastern Washington, DC. This facility is located approximately 5 miles (8.05km) from the Conservatory. It houses the majority of the USBG collections and contains approximately 80,000 sq ft (7,432 sq. m) of greenhouse space. Image courtesy of the USBG.



Fig. 9 USBG gardener Elliot Norman oversees the cacti and succulent collection at the Production Facility. Image courtesy of the USBG.



Fig. 10 The Mediterranean House in the USBG Conservatory. Plants native to the five Mediterranean climate regions of the world are grown alongside plants associated with the agriculture and horticulture of Mediterranean climates. Image courtesy of the USBG.

PROGRAMMING AND EDUCATION

Temporary exhibits

The USBG focuses heavily on temporary exhibits. Some recur and others are new each year. For example, the Garden's holiday exhibit, *Season's Greenings*, which combines models of Washington DC buildings and monuments made exclusively from dried plant parts, model trains and winter horticultural displays, is a perennial favourite of local residents, attracting over 200,000 visitors per year during its annual six-week run. While the primary goal of the holiday exhibit is to delight families with traditional holiday plants and decorations, there is always an effort to layer an educational message onto the exhibit. For example, this year is the 100th anniversary of the US National Park Service. In the main display room, the Garden will replicate a variety of iconic US National Park Service structures and natural monuments, such as the Grand Canyon and Yellowstone Park Lodge, from plant materials, while showcasing plant species found in various national parks across the United States.

The USBG also combines its orchid collection with the Smithsonian Institution's orchid collection once a year, alternating exhibit sites. In odd-numbered years the Smithsonian hosts the orchid show, while the USBG hosts in even-numbered years. These two collections, when combined, represent one of the largest orchid collections in North America, with approximately 5,000 taxa. The USBG and Smithsonian have been



Fig. 11 The USBG during the annual holiday show. The model of the US Capitol shown here is made out of plant parts, mainly twigs, acorns, leaves and tendrils, and took more than 500 man hours to complete. Image courtesy of the USBG.



Fig. 12 The Orchid House in the USBG Conservatory. Image courtesy of the USBG.



Fig. 13 The main entrance to the USBG in 2014 at the time of the exhibit, *Amber Waves of Grain*, which showcased the diversity, history and importance of the agronomic species wheat (*Triticum* spp.). The bed in the display contains a wooden sculpture of awnless winter wheat surrounded by common agronomic weeds of temperate wheat fields. Agriculturally related displays have become increasingly effective ways of increasing the public's interest in plants. Image courtesy of the USBG.



Fig. 14 The main entrance to the USBG in 2015 at the time of the exhibit, *Exposed: The Secret Life of Roots*. The monumental root sculpture by Pennsylvania artist Steve Tobin served to attract attention to the often overlooked, but critically important, subject of plant roots. Image courtesy of the USBG.

collaborating on this exhibit for over 25 years. The goal of the orchid exhibit is both to be visually stunning and to showcase the tremendous diversity of the orchid family, while highlighting the evolutionary forces that have led to orchid radiation and adaptation.

Every year the Garden also designs an exhibit that runs from May to October focusing on a specific theme of particular interest in plants. These exhibits have included agricultural displays, specific families of plants, plant physiology and ecology, and cultural uses of plants. These exhibits are often spread between one of the interior gallery spaces and front terrace. The current exhibit – *Flourish Inside and Out* – was developed in consultation with Chicago Botanic Garden and focuses on horticultural therapy: see Shaw (2015a; 2015b) for programmes to improve physical and mental health.

Children's education

Helping to foster the next generation of plant enthusiasts is core to the USBG's mission. Education staff welcome school groups throughout the year, often focusing on hands-on plant science. In the summer, the USBG runs a series of four-day summer camps to expose inner-city children to the wonders of plants. This Hands On Plant Science (HOPS) programme teaches participants the basics of plant metabolism, ecology and economic botany through hands-on activities using the outdoor National Garden as a living plant



Fig. 15 Children planting in the USBG Children's Garden, which promotes active play with water, soil, plants and garden tools. Image courtesy of the USBG.

laboratory. As a part of the HOPS programme, the Garden also runs a teacher training institute, where teachers from around the country compete for slots to learn how to integrate hands-on plant science into their science curricula. Children's education programmes always prioritise hands-on activities and learning through experience, including opportunities for children to get their hands into the soil in the Children's Garden.

Courses, lectures and other public programmes

Diverse programmes for public engagement with plants and planted spaces are the cornerstone of USBG activities. In 2015, the Garden hosted 340 programmes directly serving 23,883 visitors. These programmes are categorised into demonstrations, festivals, lectures, teacher training, tours, workshops and music programmes. The three most common programme types are demonstrations, lectures and tours.

Partnerships

Many of the Garden's most innovative programmes and outreach efforts are the result of partnerships with other government agencies, public gardens and cultural institutions. For example, the USBG established the Sustainable SITES Initiative (2016) together with the American Society for Landscape Architects and the Lady Bird Johnson



Fig. 16 Volunteer Todd Brethauer explaining the botany and uses of *Amorphophallus konjac* to a visitor. Image courtesy of the USBG.

Wildflower Center at the University of Texas at Austin. This programme is the most advanced certification available for constructed landscape sustainability in the United States. Since 2015, it has been administered by the US Green Business Certification Inc. In order to help educate homeowners in sustainable horticulture, the USBG worked with the Lady Bird Johnson Wildflower Centre to adapt Sustainable SITES for the homeowner audience. The resulting programme, Landscape for Life (2016), is one of the leading programmes for sustainable horticulture outreach in the US, and is currently taught by over 150 institutions throughout the country.

The USBG also has several partnerships with the Smithsonian Institution. Among them are a yearly scholarly botanical symposium planned jointly by the USBG and Smithsonian Institution, National Museum of Natural History, Department of Botany. In addition, the North American Orchid Conservation Center, which was founded by the USBG and Smithsonian Environmental Research Center, aims to study and conserve all North American native orchid species.

As a final example, in 2014 the USBG entered into a partnership with the John F. Kennedy Center for Performing Arts (which is the US national theatre) to develop original botanically themed theatrical performances. Ultimately, the Garden and the Kennedy Center jointly produced an original musical entitled *Flowers Stink*, about a young girl who finds a love for nature while struggling through a school assignment to write a poem, and a site-specific theatrical piece called *The Cerulean Time Capsule*.



Fig. 17 A 2015 image from *Flowers Stink*, an original musical about a girl who discovers a passion for nature while completing a poetry assignment. The botanical education content of the musical was determined by the USBG and the play was specifically designed to be performed in the National Garden Amphitheater for local school groups. Image courtesy of the USBG. Photographer: Teresa Wood.

The latter play was an interactive time-travel adventure that brought audiences through the USBG Conservatory looking for a mythical plant called the cerulean time capsule that possesses the secret to time travel. Through such partnerships, the USBG is able to work with non-traditional groups who help the Garden reach out to new audiences and leverage novel strategies, in this case theatre, to make plants more accessible to non-traditional audiences.

MOVING FORWARD

After almost 200 years of existence, the US Botanic Garden is still evolving. As one of the most visited gardens in North America, special attention is paid to the educational and enrichment opportunities offered to visitors. The USBG is also one of the only free botanic gardens in the US that is located in the middle of a major metropolitan area. As such, the Garden plays an important role as a 'starter garden' – that is to say, a garden with low access barriers that lends itself to first-time garden visitors. For example, a good portion of US Botanic Garden visitors are spontaneous visitors who only make the decision to stop into the Garden when passing by. It is very common for American and international tourists to Washington, DC to pass by the USBG while walking between the Smithsonian national museums and the US Capitol Building. Often they stop by the

USBG just to get out of the summer heat or even to use the rest rooms. The fact that no expenditure of money is required to enter means that the Garden presents a wonderful opportunity to surprise unsuspecting visitors. With such a low barrier to access and so many casual visitors, the USBG is able to provide a first experience for many visitors into the world of botanical institutions. The aim is always to make the visitors' experience enjoyable and awe-inspiring so they will develop a taste for plants. With this in mind, the Garden is always looking for more innovative ways to appeal to first-time visitors. Lately, the USBG has been focusing heavily on plant-based agriculture. Everyone eats and most people really enjoy it. Considering that almost all food comes directly or indirectly from plants, agriculture represents a tremendous opportunity to connect people to plants in a fun and relatable manner. Additionally, since the major driver of plant biodiversity loss has been land conversion for agriculture, food and agriculture also present a relatable entry point into the complex world of conservation and ecosystem provisioning.

The USBG is always seeking to improve its plant collections. Unfortunately, some of the records associated with earlier collections are incomplete or missing. The Garden is slowly working through the collections to replace any species of unknown origin with those of known provenance. Additionally, the Garden is beginning to organise plant exploration expeditions again for the first time since the 1860s. Current target collecting locations include the eastern United States and the Philippines. Through the new collection activities the USBG hopes to contribute to the Global Strategy for Plant Conservation (CBD, 2012) in a more robust way so as to achieve the strategic targets set by both the Global Strategy and its North American counterpart, the North American Botanic Garden Strategy for Plant Conservation (BGCI, 2016).

Due to increased public awareness of challenges to the biosphere, and the central role that plant resources will play in a sustainable future, it is an excellent time for botanic gardens. The USBG is gearing up to enter its 200th year in 2020 with a renewed sense of vigour for its mission to safeguard botanical treasures and help excite the public to engage in the wonders of the plant kingdom.

ACKNOWLEDGEMENTS

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REFERENCES

- BGCI (2016). *North American Botanic Garden Strategy for Plant Conservation, 2016–2020*. Botanic Gardens Conservation International US, Glencoe, IL.
- CBD (Convention on Biological Diversity) (2012). *Global Strategy for Plant Conservation: 2011–2020*. Botanic Gardens Conservation International, Richmond.

-
- LANDSCAPE FOR LIFE (2016). Available at <http://landscapeforlife.org> (accessed July 2016).
- SHAW, S. (2015a). Guest Essay: Gardening and mental health. *Sibbaldia* 13, 3–13.
- SHAW, S. (2015b). The positive effects on mental health of visiting botanic gardens. *Sibbaldia* 13, 51–59.
- SOLIT, K.D. (1993). *History of the United States Botanic Garden: 1816–1991*. US Government Printing Office, Washington, DC.
- SUSTAINABLE SITES INITIATIVE (2016). Available at www.sustainablesites.org (accessed July 2016).
- UNITED STATES BOTANIC GARDEN (2016). Available at: <https://m.usbg.gov/about-us> (accessed August 2016).

FURTHER READING ON THE HISTORY OF THE USBG

- ALLEN, W.C. (2001). *History of the United States Capitol: A Chronicle of Design, Construction and Politics*. US Government Printing Office, Washington, DC.
- FALLEN, A.-C. (2007). *A Botanic Garden for the Nation: The United States Botanic Garden*. US Government Printing Office, Washington, DC.