



United States Department of Agriculture
Research, Education, and Economics
AGRICULTURAL RESEARCH SERVICE

U.S. National Arboretum Strategic Plan 2013-2017

INTRODUCTION

Many of the first U.S. presidents envisioned a national garden where science could be applied to improving the agricultural and industrial uses of our plant resources to advance the economic prosperity of our fledgling nation.

As our vast natural forests were explored, American interests also extended abroad, dispatching new plants and crops to Washington, D.C. at the bequest of Congress and the President. Here, they were catalogued and distributed through what would become the U.S. Propagation Garden within the Agricultural Division of the U.S. Patent Office, the pre-cursor to the U.S. Department of Agriculture (USDA). The botanical vision of the founding fathers was incorporated, but left unfulfilled in each reiteration of the National Mall until 1867 when an *Arboretum Americanum*—a grand national arboretum of scientific plant collections arranged in aesthetic landscapes—was begun on the grounds of the newly founded USDA. By the end of the 19th century, calls for the expansion of the gardens and arboretum conflicted with designs for the National Mall and a new location was sought. In 1917, the USDA approved a new site on a largely undeveloped tract between Mount Hamilton and the Anacostia River in northeastern District of Columbia. By now, the nursery industry, garden clubs, land grant universities, and associated scientific societies had combined forces with the Department, calling for the formal establishment of a national arboretum. Ten years later, on March 4, 1927, the National Arboretum Act became law, creating the U.S. National Arboretum, “for the purposes of research and education concerning tree and plant life.”

Today, more than 500,000 people visit the U.S. National Arboretum in Washington, D.C. every year. They come for many reasons—the beauty of its 16,000 varieties of plants; its balance of cultivated gardens and natural landscapes; the quiet of its 446 acres only a few miles from the halls of Congress; and the opportunity to see and learn something new about the plant world.

But few visitors know they are coming to one of world’s leading horticultural science institutions credited with introducing more than 650 cultivars of woody and herbaceous plants into the United States. In addition, the U.S. National Arboretum is developing new approaches to detecting and treating plant diseases, meeting a critical need in our growing global economy. As part of the USDA Agricultural Research Service, the U.S. National Arboretum employs scientists who maintain a large and invaluable inventory of germplasm and herbarium specimens to support research by scientists around the world and who are developing and testing new trees which can thrive in highly stressed urban environments. The scientists also are protecting the

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horticultural and landscape industries, and agriculture generally, through the development of new methods for identifying and controlling invasive plants and pathogens at our borders.

The purpose of this strategic plan is to guide the direction of the U.S. National Arboretum in its highly visible functions as a public garden and educational facility, and as an enduring contributor of research needed to maintain a healthy and beautiful environment for future generations.

This strategic plan was developed by a panel of 12 experts in plant science and education, most of whom have substantial experience at the nexus of research and practice leading to sound environmental horticulture (the study of managing plants for their long-term contributions to environmental sustainability). The panel was divided between those who work for the Agricultural Research Service, the USDA, and at other institutions that share the mission and goals of the U.S. National Arboretum. The panel supplemented their personal knowledge and experience with data from a survey they developed and conducted with substantial assistance from the Longwood Gardens Graduate Program at the University of Delaware. Using a Qualcomm-based system, the team developed a snow-ball method survey sample of U.S. National Arboretum stakeholders, including scientists; landscape industry leaders; public garden professionals; U.S. National Arboretum employees, volunteers and visitors; stakeholder support groups (including garden club members, environmental groups, the Friends of the National Arboretum, the National Bonsai Foundation, and many others); neighbors and other interested parties. The more than 2,500 respondents to the survey placed varying levels of importance on different attributes of the U.S. National Arboretum and its programs, but shared support for clearly defining the organization as a place of scientific discovery, where new plants, practices, and knowledge about ornamental and woody plants is renewed, displayed, and used to enhance the environment. They also view the U.S. National Arboretum as a place where people connect with plants and develop an understanding, appreciation, and a love of plants' aesthetic, economic, and environmental value.

MISSION STATEMENT

The U.S. National Arboretum enhances the economic, environmental, and aesthetic value of ornamental and landscape plants through long-term, multi-disciplinary research, conservation of genetic resources, and interpretative gardens and exhibits.

VISION STATEMENT

The U.S. National Arboretum, a premier scientific institution, inspires discovery, understanding, conservation, and the love of plants. Connecting people with plants in a serene urban oasis with unique collections, gardens, and natural settings, the U.S. National Arboretum, through its programs and exhibits, demonstrates the practical application of plant science and man's dependence on plants.

CORE VALUES OF THE U.S. NATIONAL ARBORETUM

The following interrelated values underlie all of the strategic goals and objectives of this plan. These values will drive the way the plan is to be implemented, and serve as a framework for discussions with employees, administrators, and program leaders in the Agricultural Research

Service and the USDA, and external scientists, stakeholders, volunteers, visitors, and other interested persons.

DISCOVERY

The U.S. National Arboretum is committed to innovation resulting from its research accomplishments. Its programs foster and support horticultural science and related fields that provide new plant materials and management approaches to improve the environment and sustain the people, industries, and systems that support the landscape. The U.S. National Arboretum fosters and supports discovery by others by providing germplasm, scientific guidance, cooperation, collaboration, and training. It also creates an opportunity for discovery through the establishment of a learning environment—in person and remotely for staff, visitors, students, and other interested persons.

CONNECTIONS

The U.S. National Arboretum is committed to integrating its functions, programs, and collections in a cohesive and mutually beneficial way. With science as the basis of its programming, the U.S. National Arboretum will provide educational, interpretive, and demonstration activities for constituents to discover and connect to plants. The visitor experience at the U.S. National Arboretum will be improved by linking new and heritage collections and showing the relationships among natural systems. A major aspect of connections is strengthening the U.S. National Arboretum’s relationships with other Agricultural Research Service scientists and laboratories, university researchers, public gardens, and conservationists. Similarly, the U.S. National Arboretum will strengthen and expand partnerships with support groups and those who share aspects of its mission within the city, the nation, and the world.

SUSTAINABILITY

The U.S. National Arboretum supports and embodies environmental sustainability through its research, education, and demonstration programs and seeks to model sustainability in all of its program and garden management practices. The U.S. National Arboretum also seeks to achieve operational and financial sustainability by expanding the base and stability of support for its activities.

SERVICE

As a Federally supported public entity, the U.S. National Arboretum values service to the American people, industries, and systems that support the landscape, the environment, and public and private lands. Service is reflected in the problem-solving research and conservation of plant genetic resources that are enhanced through the educational programs and display gardens that disseminate these discoveries, technologies, and information.

ACCESS

The U.S. National Arboretum ensures physical access to its collections and exhibits and intellectual access to the science-based knowledge, staff expertise, and learning opportunities for all. In addition, the U.S. National Arboretum is to be a portal for understanding the plant sciences across the spectrum of agriculture.

STRENGTHS AND CHALLENGES FACING THE U.S. NATIONAL ARBORETUM

The U.S. National Arboretum has a highly skilled and dedicated staff; long-term supporters and volunteers; and committed stakeholders in the community. It has a history of scientific discovery and development of plants and practices in environmental horticulture, and strong support among industry and scientific colleagues. The U.S. National Arboretum is located on 446 prime acres, two miles from the U.S. Capitol. Because of its location, it is part of a major green area of the city featuring beautiful, contoured, and well-drained terrain, a newly renovated Administration Building, and extensive Herbarium and well-documented collections. The U.S. National Arboretum is part of the local history and benefits from established neighborhood strength, as well as new commercial and residential developments in the area. Perhaps most significantly, the U.S. National Arboretum has benefited from sustained, long-term, foundational support from the Agricultural Research Service.

A primary challenge facing the U.S. National Arboretum with its multi-pronged mission of research, education, and public display gardens is its unconventional fit with the broader programs of the Agricultural Research Service. The U.S. National Arboretum became part of Agricultural Research Service in the early 1950s as a research unit within the Beltsville Area. About the same time, it opened its gates to allow the public to enjoy its collections, many of which reflected prior research emphases, such as the azalea breeding program. With the popularity of these collections, and a growing number of new gardens and features, such as the National Bonsai and Penjing Museum (established from an initial, bicentennial gift from Japan); the National Herb Garden; the Gotelli collection of dwarf and slow growing conifers; and additional privately assisted garden development, such as the Asian collections and Fern Valley, the popularity of the U. S. National Arboretum as a visitor destination has grown substantially. Today, it is among the 10 most visited public gardens in the United States.

These are the 16 major gardens at the U.S. National Arboretum:

- Administration Building Court of Honor and Aquatic Plants
- Asian Collections
- Azalea Collections
- Dogwood Collections
- Fern Valley Native Plant Collections
- Flowering Tree Collection and Walk
- Friendship Garden
- Gotelli Dwarf and Slow-Growing Conifer Collection
- Holly and Magnolia Collections
- National Bonsai and Penjing Museum
- National Boxwood Collections
- National Capitol Columns
- National Grove of State Trees
- National Herb Garden
- Perennial Collections
- Washington Youth Garden

The growth in public interest and visitation to the U.S. National Arboretum has created the need to support unique, non-research functions, including some aspects of the current Gardens Unit and the Education and Visitor's Services Unit. Historically, these multi-mission programs of the U.S. National Arboretum have been viewed as competing with projects focused exclusively on the science-based mission of the Agricultural Research Service. This conflict of purpose may limit the ability of the gardens and educational programs to attract new resources through the Agricultural Research Service budget process. As such, some aspects of the U.S. National

Arboretum's institutional needs may not be included in agency endorsed requests for new program funds.

As Federal resources have become more constrained, requests for funds needed to maintain and improve facilities, educational programs, exhibit and display elements, and visitors' services have been initiated through the independent actions of U.S. National Arboretum supporters seeking Congressional budget add-ons. This is not a sustainable or integrated strategy for assuring long-term support.

STRATEGIC PLAN

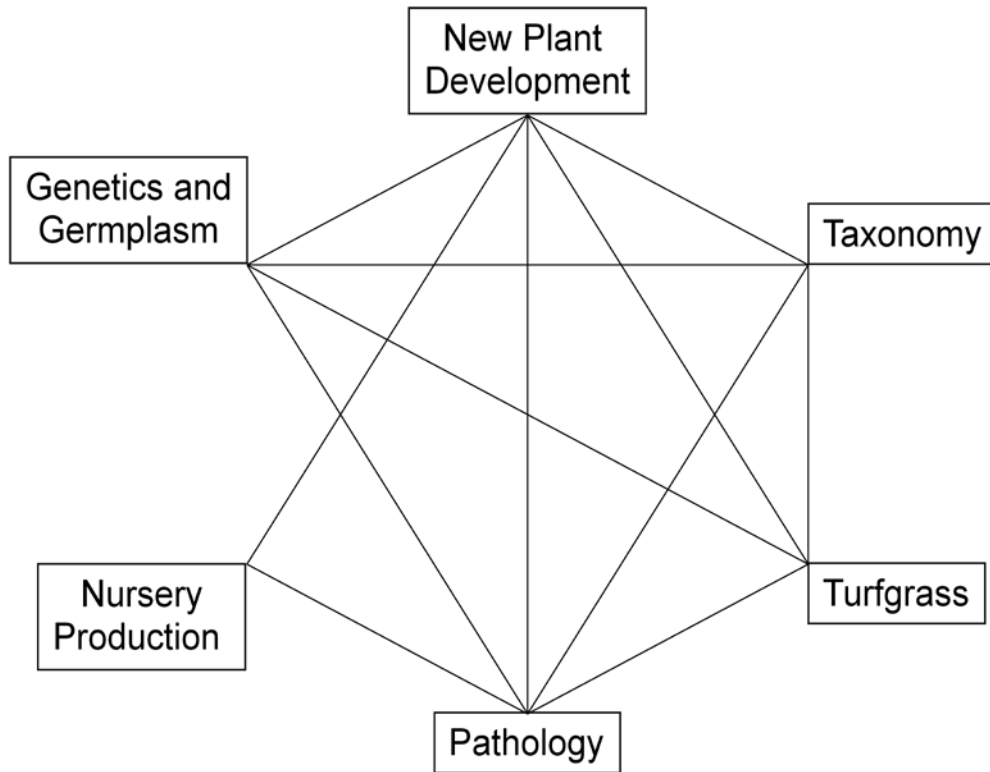
This strategic plan considers the strengths and challenges facing the U.S. National Arboretum and proposes to address these issues by focusing on its core strength as a science-based institution. This commitment to science defines the U.S. National Arboretum as a place of discovery, where research is integrated into all of its functions and activities. As such, the U.S. National Arboretum would strengthen and expand its service to the Agricultural Research Service not only honing and connecting its research mission to educational programs and visitor experiences, but also by becoming a public showcase for plant science. This will require diversifying funding sources available to the U.S. National Arboretum and creating new approaches for managing resources from both appropriated and non-appropriated sources. It also may require redefining partnerships with the U.S. National Arboretum's support and advocacy groups, scientific colleagues, and institutions that share its mission.

The U.S. National Arboretum's Strategic Plan aligns with the objectives outlined in the 2012-2017 Agricultural Research Service Strategic Plan under Strategic Goal Area 3: Crop Production and Protection; Performance Measure 1.3.1—*Develop knowledge, strategies, systems, and technologies that maximize the production efficiency of our annual, perennial, greenhouse, and nursery cropping systems. Develop new technologies and tools contributing to improving these systems to meet current and future food crop production needs of diversified consumers, while ensuring economic and environmental sustainability and production efficiency, health, and value of our nation's crops;* and Performance Measure 4.3.2—*Provide scientific information to increase our knowledge of plant genes, genomes, and biological and molecular processes to protect crops and cropping systems from the negative effects of pests and infectious diseases.*

The U.S. National Arboretum's strategic plan also links to ARS Strategic Goal Area 2: Natural Resources and Sustainable Agricultural Systems; Performance Measure 2.2.1—*Develop technology and practices to promote improvement of integrated, effective and safe water resource management;* and Performance Measure 2.2.2—*Improve quality of atmosphere and soil resources; understand effects of climate change through development of knowledge and technologies.*

The goals of research conducted primarily through the Floral and Nursery Plants Research Unit (FNPRU), supported by the germplasm maintained in collaboration with the Garden's Unit, are to enhance environmental sustainability and economic and aesthetic value of landscape plants. This is accomplished directly through efforts to understand the taxonomy of selected plants, develop new plants, improve production practices, and protect plants from known and unknown

pathogens and threats. In addition, the U.S. National Arboretum fosters research among a wide range of partner and independent institutions by maintaining and making available germplasm. The diagram illustrates the interrelationships among the primary research foci of the U.S. National Arboretum.



Systematic maintenance and broad-based use of the U.S. National Arboretum’s biological materials collection, numbering nearly one million different elements, expands the value of these genetic resources to other research institutions, plant breeding operations, the nursery industry, and property owners. An important component of this plan is the development of methods to detect and control new and economically important plant pathogens. In addition, U.S. National Arboretum research, particularly related to development of low-input turf grasses, environmentally tolerant urban trees and shrubs, and drought-resistant plants, contribute to both conservation and restoration of watersheds.

The U.S. National Arboretum’s strategic plan also aligns with the USDA Research, Education, and Economics (REE) strategic plan, which emphasizes both the conduct and dissemination of research through academic programs and citizen education. A strategic goal of the U.S. National Arboretum is to enhance public understanding of agriculture, particularly of the plant sciences, through displays and exhibits featuring agency and other publically supported research. Further, the plan calls for expanding the use of the U.S. National Arboretum as a convener for discussions of new research approaches, issues, and opportunities to advance science for agriculture and the environment.

STRATEGIC GOALS AND OBJECTIVES

STRATEGIC GOAL 1:

Ensure the National Relevance of U.S. National Arboretum Research to the Agricultural Research Service, other Scientific Institutions, Stakeholders, and the Public.

A critical challenge facing the U.S. National Arboretum is in establishing a clear identity as a plant science institution, focused on environmental and landscape horticulture, as well as showcasing the breadth of agricultural research. This must be accomplished in a scientifically credible manner, while being aesthetically effective and engaging visitors.

Both within the Agricultural Research Service and the USDA, as well as among public visitors, there is often misunderstanding of the goals and purposes of the U.S. National Arboretum. It is frequently viewed as a park, or “plant zoo,” created for recreation and contemplation.

Although those activities are welcome benefits derived from visiting the grounds, the U.S. National Arboretum is an active place of discovery. Scientists conduct individual and collaborative research at the U.S. National Arboretum and its greenhouses, laboratories, and facilities in Beltsville, Maryland, and McMinnville, Tennessee. Educators create programs and interpretative aids to help visitors—in person and through the Web site—to experience the excitement of learning about plants in nature and through cultivation. In addition, the public gardens collect, preserve, and display valuable germplasm to assist in future research; serve as a testing ground for exploring plant cultural and edaphic requirements and production challenges; evaluate new and improved cultivars of economically, environmentally, and aesthetically valuable plants; and provide the public with the opportunity to see the results of current and past research accomplishments.

The U.S. National Arboretum is also a focus of cooperative and collaborative efforts to develop, protect, and preserve trees and woody plants. As such, it needs to better explain its roles as part of a larger horticultural science community and the industry and people who are supported by this work. The U.S. National Arboretum maintains a substantial herbarium; is a founding partner in the North American Plant Collections Consortium (NAPCC); an active participant in the Agricultural Research Service National Plant Germplasm System and other multi-institutional scientific efforts; and host to students, post-doctoral fellows, and other professionals developing expertise and credentials in horticulture. The U.S. National Arboretum has substantial opportunities to expand its role and visibility as a national leader in environmental horticulture.

The needs of the research, education, and public garden functions of the U.S. National Arboretum are substantial and increasing. The long-term success of many programs is dependent on sustained partnerships with agencies and organizations which share aspects of the U.S. National Arboretum’s goals and activities. The needs of stakeholders, including the landscape industry, homeowners, and communities, are served by the research conducted by the U.S. National Arboretum staff, and disseminated through public education, exhibits, and displays.

Historically, the most noted focus of the U.S. National Arboretum's research has been on breeding improved trees, shrubs, and herbaceous plants, particularly to expand the geographic and climatic range in which these plants succeed. The continuing challenge for the U.S. National Arboretum is to selectively breed plants for sustained value in the environment (especially those requiring long-term research and development), while expanding fundamental breakthroughs in plant science to benefit not only ornamental horticulture, but also support broader plant protection, environmental management, and disease identification and control. This will require ongoing and expanded collaborative planning of research priorities with other scientific, industry, horticultural, and environmental interests through joint priority setting, multi-institutional efforts, and participation of U. S. National Arboretum scientists. The resulting engagement will help redefine the leadership of the U.S. National Arboretum in creating and disseminating the knowledge needed to advance environmental horticulture.

Objective 1.1: *Strengthen the U. S. National Arboretum identity as one that denotes science-based information, germplasm conservation and access, plant introduction, and research.*

Strategies:

1. Take advantage of the U.S. National Arboretum's education mission and vast public space to showcase applied research. Serve as the conduit between research and research application in the public understanding of science in agriculture.
2. Identify and solicit support from commercial agricultural interests to implement exhibits; Identify and solicit support from other plant breeding and improvement programs within the Agricultural Research Service for projects that may have mutual benefits.
3. Plan and implement garden exhibits that interpret American agriculture and its economic importance to highlight the role of the USDA and the Agricultural Research Service in these industries in scholarly, yet engaging ways.
4. Define the working culture of the U.S. National Arboretum to include opportunities and expectations for all staff to participate in science-based meetings, collaboration, and training.

Objective 1.2: *Leverage the U. S. National Arboretum's national status to advance germplasm conservation and research related to it.*

Strategies:

1. Establish a culture of collaboration and develop a strategy to promote national and international engagement and outreach. This will allow the U.S. National Arboretum to convene discussions of issues such as the Convention on Biological Diversity, foster nationally recognized plant collections and international exchanges, and advance collaborative research and education.
2. Expand existing and establish new collaborations with collection-based institutions to increase access and use of plant germplasm.
3. Expand work with researchers and collections within the broader National Plant Germplasm System to better address horticultural germplasm issues and programs.

4. Leverage relationships with international agencies and scientists to share recent methods and findings and to obtain plant material from foreign sources that fill gaps in domestic germplasm collections.

Objective 1.3: *Strengthen and expand collaborations with the Agricultural Research Service and other Federal scientists on projects of mutual benefit or where public visibility of field experiments would advance public understanding of the issue.*

Strategies:

1. Work with researchers and collections within the National Plant Germplasm System to better address national germplasm issues and other shared research interests.
2. Advocate broader use of the U.S. National Arboretum's Herbarium resources within the Agricultural Research Service, including the National Plant Germplasm System.
3. Work collaboratively with U.S. Forest Service urban tree breeding programs and researchers to leverage the various Federal programs toward mutually agreed goals.

Objective 1.4: *Emphasize accessibility of the U. S. National Arboretum research, plant collections, and staff.*

Strategies:

1. Expand and diversify the U. S. National Arboretum's research, education, and display garden portfolios to better reflect the needs of stakeholders, and invite critique of all programs to assess currency and relevancy.
2. Expand opportunities in the area of plant breeding, including re-evaluating both current ornamental plant breeding programs and "legacy" breeding efforts as to their possible visibility and marketability to the nursery industry and the public.
3. Utilize the U.S. National Arboretum's Living Collections Policy Committee to consult with university, industry, and private plant breeders to assess and coordinate priorities for collecting and maintaining living collections and germplasm.
4. Expand collaborations with the North American Plant Collections Consortium and other collections-based arboreta and public gardens, and explore and identify potential funding opportunities for visiting collections managers and curators to work at the U.S. National Arboretum, utilizing the institutions' germplasm resources.
5. Create competitive internship opportunities for students concerning research at the U.S. National Arboretum.
6. Explore and identify opportunities to convene meetings and conferences for scientists, horticulturists, and garden professionals at the U.S. National Arboretum.

STRATEGIC GOAL 2:

Increase the Public and Stakeholders' Awareness of and Engagement with the U.S. National Arboretum and its Programs.

A second goal of the U.S. National Arboretum is to increase public awareness and engagement with its programs. Fundamentally, this is the need to create and implement a communications plan, supported by scientifically significant research accomplishments and excellent exhibits, displays, and programs to make the U.S. National Arboretum a recognizable national treasure, and a must-see destination in the Nation's capital. Currently, the U.S. National Arboretum is often called a "hidden gem." This plan calls for polishing that gem and taking full advantage of its prime setting 2 miles from the U.S. Capitol. For those who cannot literally travel to the U.S. National Arboretum, the organization will expand its Web presence to include scientific and educational Webinars in collaboration with groups such as Master Gardeners. Similarly, the U.S. National Arboretum will initiate joint efforts with local institutions, such as the Smithsonian Institution and the U.S. Botanic Garden, to create programs that emphasize gardens in the metropolitan area.

The U.S. National Arboretum will pursue opportunities to strengthen relationships with related USDA and other government stakeholders, particularly with the U.S. Forest Service, the Animal and Plant Health Inspection Service (import quarantines and risk assessment, the National Clean Plant Network initiative, and general control of invasive species), and the Natural Resources Conservation Service, especially in regard to the PLANTS database. Similarly, other organizations that have a dual mission of conservation and recreation may have created management strategies that the U.S. National Arboretum could review and potentially emulate to address challenges of meeting public needs with limited resources.

With growing national concern about science, technology, engineering, and mathematics (STEM) education, the U.S. National Arboretum should position itself as a focus of plant science and environmental education. The grounds of the U.S. National Arboretum are a living laboratory and the staff is a wealth of knowledge and expertise that can be used to inspire students to study plants and the ecosystems of which they are an essential part. The U.S. National Arboretum could integrate the research performed across Agricultural Research Service with educational programs and displays for citizens who are "K-through-Gray." For example, working with the long-established Washington Youth Garden, the U.S. National Arboretum could develop children's guides to the collections, with games and family experiences, to help youth understand the underlying science of plants.

As one of the largest green spaces in Washington, D.C., the U.S. National Arboretum preserves some of the natural attributes and landscapes of this mid-Atlantic city. The U.S. National Arboretum also plays an important role in Chesapeake Bay watershed management, particularly for the Anacostia River. The U.S. National Arboretum could expand its current engagement with the District and regional governments to serve as an example of outstanding environmental management, particularly water management, and to contribute to local greening programs, such as neighborhood gardening initiatives, rain garden development, and evaluating trees and shrubs for the local, urban environment.

Objective 2.1: *Develop and implement an outreach strategy to create a “brand” for the U.S. National Arboretum as a vital and dynamic institution serving the Nation and as a must-see destination in the Nation’s Capitol.*

Strategies:

1. Develop an aggressive and effective communication strategy reflecting the work of the U.S. National Arboretum that could benefit every citizen, in every Congressional District.
2. Develop an exciting and informative Web presence that is inviting to the public and shows the critical role plants have in our global environment.
3. Develop “on the road” experiences and virtual access to the U.S. National Arboretum (demonstration and other hard materials to pack and transport, as well as Webinars, etc.).
4. Investigate a strategy to brand plants, products, and practices developed by the U.S. National Arboretum.

Objective 2.2: *Communicate the mission and strategic direction of the U.S. National Arboretum to highlight its role and relevance to internal and external stakeholders.*

Strategies:

1. Engage and promote the U.S. National Arboretum to the various plant societies and organizations who share an interest in both the public display gardens and research efforts of the facility.
2. Work with national stakeholder groups to support the development of an engaged national audience.
3. Seek ways to emphasize a common national agenda with partners in industry, universities, and scientific organizations.

Objective 2.3: *Instill with the public the excitement, value, and importance of plant science in their lives.*

Strategies:

1. Collaborate with educational institutions to provide materials and guidance for K-12 teachers to incorporate plant sciences into biology, mathematics, ecology, and other curriculum; utilize the U.S. National Arboretum facilities and collections to model, demonstrate, and practice these educational programs.
2. Expand youth education at the U.S. National Arboretum in collaboration with the Washington Youth Garden. Coordinate with others to develop new approaches to engage students, teachers, and citizens in discovery based plant education.

Objective 2.4: *Develop a strategy to become a vital member of the larger local community.*

Strategies:

1. Provide educational/training opportunities on environmental issues important to the local community, such as water management, urban greening, or street tree initiatives.

2. Expand opportunities for citizens to engage in the benefits and joys of gardening.
3. Establish and maintain working relationships with the appropriate D.C. government departments.
4. Work with new and existing commercial development in the neighborhood on a collaborative U.S. National Arboretum marketing strategy.

STRATEGIC GOAL 3:

Enhance the Visitor Experience of the U.S. National Arboretum.

Since its creation in 1927, the U.S. National Arboretum has served dual roles as a research and education institution and as a public display garden. These roles have functioned somewhat independently of one another, thus diminishing opportunities for program integration and, at times, leaving the display gardens as independent of the research programs. Addressing this issue will require two sets of actions: First, integrating research and display functions around the science-based theme of plant discovery to reflect the U.S. National Arboretum’s mission and to add clarity to the visitor experience; and second, improving the facilities and spaces while adding multiple functionalities simultaneously to expand program opportunities and concession income potential for the primary benefit of the display gardens.

Central to this effort is the goal of establishing a “Plant Discovery Center,” which would initially serve as a concept and ultimately as a venue for plant science education and a place to convene scientists for dialogue about opportunities, approaches, projects, and accomplishments on a broad range of issues in the plant sciences. This proposed Center would host improved visitor amenities and exhibits that demonstrate environmental management through plants and related landscape issues and provide a central gathering point for U.S. National Arboretum visitors. As an immediate step in achieving an improved visitor experience, the U.S. National Arboretum must update and add satellite restrooms, continue to work with partners to modernize the gift shop, and expand concession opportunities utilizing existing spaces. Some of this can be achieved through new policies and use management of recently renovated space in the U.S. National Arboretum’s administration building.

The U.S. National Arboretum works to continuously maintain, modernize, and develop garden displays and collections; however, information about and interpretation of these improvements are not always available in a timely manner. The development of a strategy to incorporate additional signage and interpretative materials should be integral in planning new and current displays. This should include a strategy for implementing a more vigorous program of docents and garden guides, primarily utilizing highly skilled volunteers, as well as improved maps and visitor guides.

Although the U.S. National Arboretum is not a park and is not designed for recreation, the layout of the facility and its roads and trails lend themselves to outdoor activities, especially for walking and biking, and as a natural classroom. To encourage attendance, the U.S. National Arboretum needs to develop a strategy to collaborate with local government and emerging businesses in the area to expand accessibility to the facility by way of links to the District’s public transit system, and by alternate means, such as bicycles.

Similarly, since more than 70,000 vehicles drive by the New York Avenue boundary of the U.S. National Arboretum daily, the facility needs a strategy to develop better signage, and perhaps signature plantings, and a sense of arrival at its major entrances.

Objective 3.1: *Improve the amenities and visitor services on the grounds.*

Strategies:

1. Create a new concept for plant science education that defines the U.S. National Arboretum as a hub to convene scientific discussions on important issues and opportunities towards the advancement of plant sciences.
2. Establish the visitor center as an extraordinary destination with engaging exhibits and as a gateway to the garden collections.
3. Expand other facilities, including food service, satellite rest rooms, shuttle stops, seating areas, pervious parking lots, lighting, and signage.
4. Develop a docent program with scheduled and by-appointment tours to increase access to the U.S. National Arboretum collections; create educational programs to train docents for engaging specialized groups such as Master Gardeners, garden clubs, schools, and other community groups.

Objective 3.2: *Enhance the garden display experience.*

Strategies:

1. Create a coherent link between visitor center/garden displays and research programs and environmental projects to connect the garden aesthetic to discovery. Implement new technologies for on-site plant identification and location.
2. Invite Agricultural Research Service plant science laboratories and researchers to participate in collaborative development of exhibits at the U.S. National Arboretum that showcase relevant discoveries.

Objective 3.3: *Enhance the visibility of the U.S National Arboretum.*

Strategies:

1. Improve transportation and public access to the U.S. National Arboretum, exploring public transportation, such as a shuttle bus from a metro station or the National Mall.
2. Explore potential resources and support for enhancing curb appeal along New York Avenue and Bladensburg Road with improved signage and U.S. National Arboretum-specific planting creating a sense of arrival.
3. Create a way finding system of directional signage and graphics.
4. Link the U.S. National Arboretum to other tourist attractions, such as gardens and tours, and what's in bloom in newspapers and Web sites.
5. Examine hours of public operations to determine if seasonal changes are needed.

STRATEGIC GOAL 4:

Ensure the Long-term Sustainability of the U.S National Arboretum.

The long-term stability of the U.S. National Arboretum is dependent upon implementing a new business model that balances appropriated, contributed, and concession income in a sustainable manner. This is particularly true for maintaining the public gardens and educational programs.

The new support model for the U.S. National Arboretum will expand public-private partnerships, not only for financial support, but also for joint planning and potentially for operations of some functions, particularly visitor services and amenities. This can begin by clarifying and re-codifying the functional relationships with the current primary support organizations, including the Friends of the National Arboretum, the National Bonsai Foundation, the National Capital Area Garden Clubs, and the National China Garden Foundation. New memoranda of understanding (MOUs) need to be developed that emphasize cooperative planning and goal-setting where appropriate. Ultimately, the U.S. National Arboretum may benefit from a new support system organized as a jointly managed foundation similar to several existing models, such as the National Park Foundation. This plan calls for review of those models and deliberation as to whether authority should be sought to create a structure that can expand and stabilize private support to assist with U.S National Arboretum operations and development.

Across the spectrum of activities performed by the U.S. National Arboretum there are opportunities for expanded stakeholder involvement. For example, in collaboration with the Office of National Programs, the horticultural and landscape industry and scientific and research colleagues around the Nation could be invited to review environmental horticulture research priorities and projects. In addition, given the unique service nature of Gardens and Visitors projects, a new strategy for reviewing multifunctional activities could be developed in collaboration with the Office of National Programs. This could result in systematic review for all integrated activities of the U.S. National Arboretum, as well as research programs.

The U.S. National Arboretum, as a place of discovery, needs to work with a wide range of partners to create a sense of newness and excitement that sustains interest and support for its research, education, and gardens mission, and helps people value plants as an essential part of the environment.

Objective 4.1: *Establish public-private partnerships to facilitate collaborative enhancements to the U.S National Arboretum mission.*

Strategies:

1. In the immediate term, develop a new MOU with Friends of the National Arboretum, the U.S. National Arboretum's primary private partner, to provide the mechanism for the organization to become a more effective force for the long-term sustainability of the facility. Explore ways to create a shared vision that partners embrace and collaboratively move forward.
2. Streamline agreements with other partner organizations to focus on planning and mutual support for collaborative activities.

3. Create a new master plan with priorities that are shared with the public and potential donors.

Objective 4.2: *Explore and pursue promising alternative funding strategies.*

Strategies:

1. Explore opportunities for partnering and in-kind contributions from industry and professional organizations for U.S. National Arboretum-initiated exhibits.
2. Develop environmental sustainability demonstrations and related activities that could be supported by public granting agencies and organizations.
3. Expand the utilization of collaborative agreements for obtaining funding from outside sources.

Objective 4.3: *On-site revenue generation.*

Strategies:

1. Explore options for additional new revenue through special events, weddings, corporate outings, and other activities with emphasis on mission-relevant activities; review facilities use practices, with emphasis on mission-relevant activities.
2. Explore the potential for increased revenue from charging admission and parking fees.
3. Continue, and develop innovative and collaborative regularly scheduled revenue raising activities, such as events and sales supported by partner organizations, including Friends of the National Arboretum.

Objective 4.4: *Develop a gifts/donations plan and policies that can support operations, programs, and capital improvements.*

Strategies:

1. Review structures and authorities of U.S. National Arboretum support groups to coordinate planning and execution of fund-raising approaches, including consideration of establishment of a jointly managed foundation (public/private partnership) for the U.S. National Arboretum.
2. Collaboratively create an integrated gifts plan with major support groups of the U.S. National Arboretum, including Friends of the National Arboretum, the National Bonsai Foundation, and the National China Garden Foundation to support immediate, on-going, and long-term operational and capital improvement goals.
3. Develop new organizational structures and adapt instruments for managing donor interests and funds, including endowments and special purpose funds.

CONCLUSIONS AND NEXT STEPS

This strategic plan is designed to provide a broad framework for decision-making at the U. S. National Arboretum for the next 5 years. Both the values of the U.S. National Arboretum and the strategic objectives can help to limit and focus actions to those intended to achieve the

mission of the organization. For example, this plan suggests that the U.S. National Arboretum will substantially emphasize those actions which integrate its core research functions across all of the programs, displays, investments, and decisions. Similarly, projects which integrate and link collections with one another, to broad goals (such as demonstrating sustainable management of horticultural assets), and to community enhancement will have priority of human capital and financial resources.

The plan also suggests that a greater portion of what the U.S. National Arboretum accomplishes will be in partnership or collaboration with others, both to maximize the resources needed to support initiatives, but also to extend the impact of its work. This may require redefining some partnerships to emphasize aspects of the mission, particularly broadening linkages to plant science research activities across the agency, and with other research gardens across the nation.

POTENTIAL PROGRAM INITIATIVES FOR THE U.S. NATIONAL ARBORETUM

“Greening the Urban Environment:”

An opportunity for research and discovery at the U.S. National Arboretum.

More than at any other period in history, people are living in cities. As our urban areas develop, there is increasing recognition of the importance of vegetation to provide a host of ecosystem and social services. These include heat-island effect moderation, biodiversity corridor preservation, storm water mitigation, improvements in human health, and, of course, psychological benefits. Unfortunately, due to poor infrastructure and inherent environmental stresses, healthy urban forests are challenging to establish and maintain. Furthermore, there is a limited candidate pool of trees tolerant of the vagaries of the urban environment. And, of those known for their abilities to survive challenging sites, many possess invasive traits that make them undesirable. An opportunity exists for a substantive, long-term, research campaign that comprises three inter-related themes: Infrastructure, Stress Tolerance, and Invasiveness.

Infrastructure improvements. A basic and applied research program can identify how to build cities in ways that successfully support healthy trees that reach maturity with canopies that successfully deliver desired ecosystem and social services. The paradigm must incorporate the latest advancements in engineering, city planning, and architecture—but be built upon a foundation of tree biology.

Stress tolerance. We must survey a broad range of horticultural genetic materials (including wild-collected species, natural and artificial hybrids, cultivars, etc.) and evaluate their potential candidacy as successful street trees based upon empirical evidence. For those selected, it will be necessary to develop protocols to improve upon the raw materials to create a diverse, variable, productive, and urban-tolerant selection of trees for use in every Tree City USA. To accomplish this task, the methods must incorporate traditional but primarily modern technologies.

Invasiveness. The lessons of reproductive and developmental biology learned from model systems must now be extended to street trees in response to specific problems, such as invasive ecology. Specifically, genetic modification can be used to induce sterility in species that, aside from their high fecundity, would be ideal street trees because they possess traits of urban tolerance. While this may exclusively focus on fruit development, modification to eliminate pollen production can also be pursued in respond to pollen-induced allergies.

Creating a Center of Excellence in Asian Plants:
Linking Current Asian Collections with the National Bonsai and Penjing Museum and the
Classical Chinese Garden to be established at the U.S. National Arboretum.

At present, the U.S. National Arboretum is home to one of the Nation's best collections of Asian plants, primarily housed in Asia Valley along the Anacostia River. In addition, as a result of a Bicentennial Gift from Japan to the United States, The National Bonsai and Penjing Museum has a collection of nearly 300 premium bonsai and penjing, representing a unique cultural tradition with woody ornamentals and trees. The China Garden at the U.S. National Arboretum would offer one more place to find peace, tranquility, and classical Chinese culture in our nation's capital. A joint project of the U.S. Department of Agriculture and the People's Republic of China Academy of Forestry, the China Garden promises to become an important destination in Washington, D.C. As a living classroom, it will help to foster a better understanding of Chinese culture, provide research opportunities in Asian gardens and plants, and symbolize a commitment to continued friendship between the United States and China. This garden will illustrate the commitment the two countries have to horticulture, science, and the arts, and will serve as a testament to each of their celebrated cultural histories. The China Garden Project also will allow expansion of collaboration between Chinese and American scientists in plant exploration and development of new cultivars of environmentally important taxa, and to jointly improve knowledge of the attributes of sustainable environments.

In January 2011, Agriculture Secretary Tom Vilsack and China's Ambassador to the United States Zhang Yesui signed a Memorandum of Understanding to construct a classical Chinese garden at the U.S. National Arboretum in Washington, D.C. The China Garden project has its roots in a 2004 gift from the Government of China and represents an opportunity to build a permanent tribute to U.S.-China relations in our nation's capital. The People's Republic of China is to provide some 22 structures, classical Chinese art and furnishings, as well as some of the landscaping and rockeries for the garden, while the United States will provide site preparation, utilities, plants, and long-term maintenance and operation of the completed Garden.

The National China Garden Foundation, a 501(c) (3) non-profit organization, was established in early 2011 and will champion the garden and raise funds for construction and maintenance. Once completed, the U.S. National Arboretum will own the China Garden. Set on 12 acres in the heart of the U.S. National Arboretum, the China Garden will welcome visitors to a blend of nature, art, and architecture unlike any other on the East Coast. In combination with existing heritage collections, the China Garden will complete a center of excellence in Asian plants and plant culture at the U.S. National Arboretum and expand opportunities for new multi-national collaboration.

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