

PRESERVING THE PAST PREPARING FOR THE FUTURE



The ARNOLD
ARBORETUM
of HARVARD UNIVERSITY

◆ Annual Report 2015 ◆



Who We Are

Founded in 1872 and the first public arboretum in North America, the Arnold Arboretum of Harvard University is a leading center for the study of plants and biodiversity. A 281-acre preserve laid out by pioneering American landscape architect Frederick Law Olmsted, the Arboretum stewards one of the world's most comprehensive and best documented collections of temperate woody plants, with particular focus on the floras of the eastern United States and eastern Asia. Curated collections of living plants, herbarium specimens, and library and archives support research as well as public programs for all ages. Open free every day, this jewel in the Emerald Necklace park system is among Boston's most beloved open spaces.





Message from the Director

William (Ned) Friedman
Director & Arnold Professor of Organismic and Evolutionary Biology

The year 2015 represents a remarkable turning point in the history of the Arnold Arboretum—one that underscores both our legacy and the remarkable promise of what lies ahead. As America's first public arboretum and penultimate jewel in Boston's Emerald Necklace, our landscape is a treasured part of our community. Yet this pastoral setting, so beautifully realized through the foresight and brilliance of Charles Sprague Sargent and Frederick Law Olmsted, offers Boston, Harvard University, and the world one of the most important collections for the study and appreciation of plant diversity.

In these pages, we share some of the tremendous progress we have made over the past year. Responding to the challenges presented by habitat destruction and climate change, the Arnold Arboretum launched a major initiative to explore, document, and conserve biodiversity and to accelerate the expansion of our collections of trees, shrubs, and vines: the Campaign for the Living Collections. This 10-year plan honors the role the Arboretum has played in plant discovery while positioning the institution to address the evolving needs of science, from genomic initiatives to investigating plant responses to environmental change. The Campaign also aims to boost the Arboretum's role in advancing global conservation, as well as reestablish our historical efforts to promote world-class horticulture. We are focused on the century ahead.

Our aim is nothing short of ensuring that the Arnold Arboretum continues to be among the finest plant collections on Earth and an inspiring and beautiful oasis for all. While the Campaign and its attendant fundraising effort represent a unifying focus across our institution, this report also sheds light on other projects and accomplishments that made 2015 so special—from the establishment of our "Tree Spotters" citizen science project, to the unveiling of new online resources for curatorial information and images of our plants, to the expansion of our beloved bonsai and penjing collection. At this critical juncture in our history, I hope you stand with us in shaping a future for the Arnold Arboretum that is a credit to our history and will benefit the lives of many generations to come.

2015 in Highlights

March 27

The Arboretum holds a symposium at the Harvard Center in Shanghai, China, examining the history and continuing importance of plant exploration, conservation, and biodiversity.



January 12

The Director's Lecture Series kicks off its fifth season of talks focused on biodiversity, evolution, and the environment.

April 25

Arboretum members enjoy staff-led tours of the Arboretum landscape and plant collections on Members' Tour Day.



May 17

The Wolkovich Lab launches the Tree Spotters program, a citizen science initiative documenting plant life cycles in the collections to aid climate change research (page 6).

June 17

Arboretum announces the creation of the Living Collections Fellowship Program, designed to support initiatives in horticulture, curation, and plant production.

June 22

Students and experts from around the world come to the Arboretum to participate in an intensive summer course on plant anatomy co-sponsored with micro-MORPH, a National Science Foundation Research Coordination Network.

March 15

The Arboretum and the Royal Botanic Gardens, Kew publish Former Director Peter S. Ashton's *On the Forests of Tropical Asia: Lest the Memory Fade*, the first book to describe the forests of the entire tropical Asia region.



May 10

An estimated 40,000 visitors attend Lilac Sunday, the 107th annual celebration of our renowned lilac collection.



August 9

The Arboretum and The National Park Service hold a public event in the Conifer Collection to commemorate the 150th anniversary of Frederick Law Olmsted's *Yosemite Report*, credited with galvanizing the conservation movement in the US.

September 1

Curator of Living Collections Michael Dosmann joins a collecting expedition in western China to document most of the remaining wild populations of paperbark maple (page 10).

September 28

Director William (Ned) Friedman signs a trilateral agreement with Huanglong Nature Reserve and Chengdu Institute of Biology of the Chinese Academy of Sciences to strengthen collaboration in the study and conservation of China's biodiversity (page 10).

December 1

Callin Switzer, a graduate student in the Arboretum's Hopkins Lab, publishes research on the Australian bee's unique technique for releasing pollen from flowers in *Arthropod-Plant Interactions* (page 6).



November 16

The Arboretum installs 108 solar panels on the roof of the Hunnewell Building maintenance garage as part of a continuing commitment to sustainability (page 16).

August 31

Participants in the Isabella Welles Hunnewell Internship program complete a major soil health assessment as part of a redoubled focus on holistic collections care (page 12).



September 2

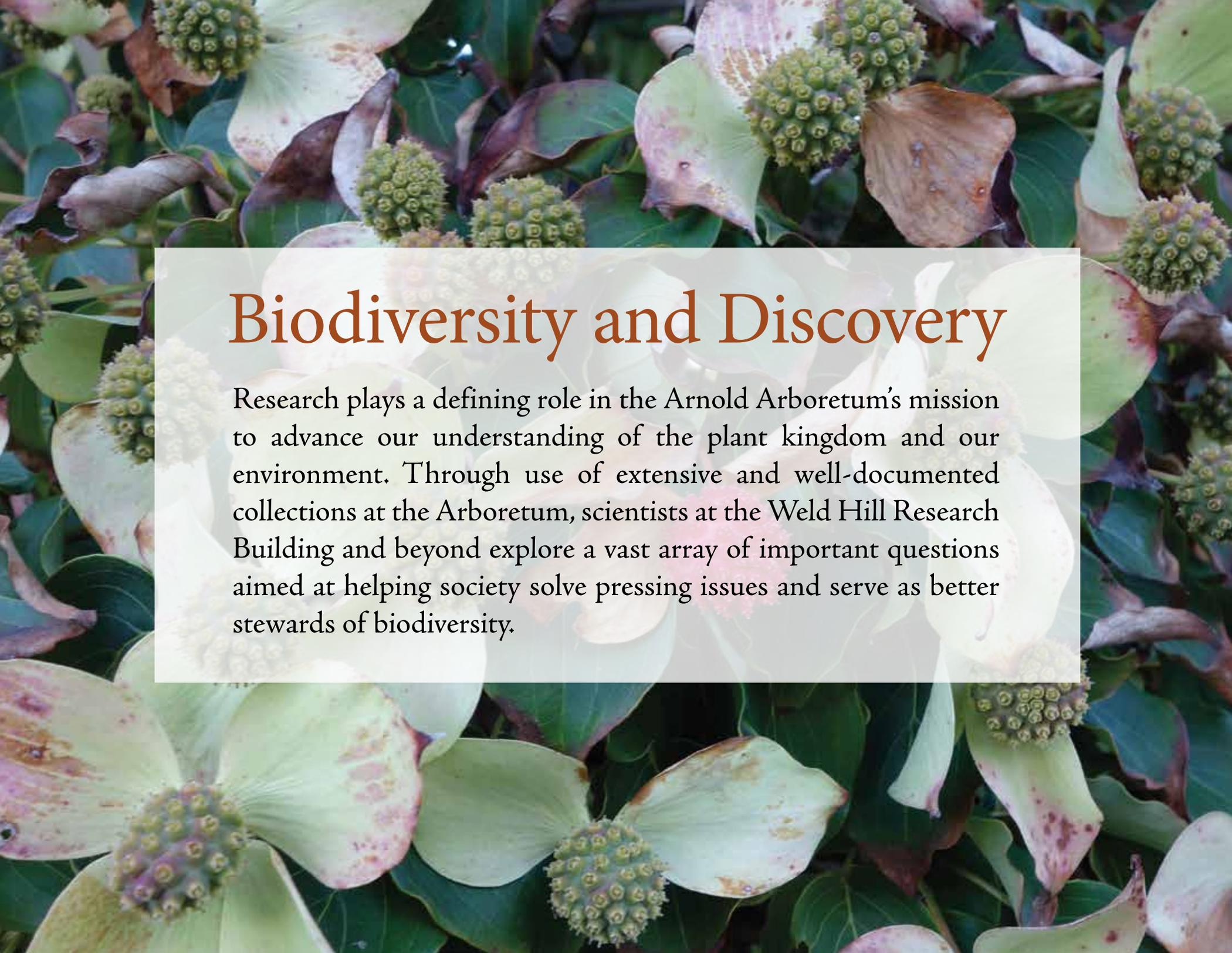
The Arboretum launches the Campaign for the Living Collections, a ten-year initiative focused on plant exploration and collections development (page 10).

October 23

Visitor Center unveils *Turning Wood: The Art of the Woodturner*, an exhibition of works by local woodturning groups, and offers turning demonstrations for the public.

December 9

The Arboretum receives a donation of ten new bonsai plants from Martin Klein, including one of a style completely new to the collection (page 12).



Biodiversity and Discovery

Research plays a defining role in the Arnold Arboretum's mission to advance our understanding of the plant kingdom and our environment. Through use of extensive and well-documented collections at the Arboretum, scientists at the Weld Hill Research Building and beyond explore a vast array of important questions aimed at helping society solve pressing issues and serve as better stewards of biodiversity.

The Friedman Lab

The Evolution of Flowering Plants

The laboratory of William (Ned) Friedman, Arnold Professor of Organismic and Evolutionary Biology and Faculty Fellow of the Arnold Arboretum, primarily focuses on reconstructing the evolutionary origins and diversification of flowering plants.

In 2015, the lab developed a “model” system taxon—*Nymphaea thermarum*, a water lily extinct in the wild—and investigated the unusual reproductive biology of *Welwitschia mirabilis* from southern Africa. Other accomplishments included publishing the first microbiome of all detectable organisms living on the surface of a tree—in this case, a *Ginkgo biloba* (ginkgo) at the Arboretum—and research on *Franklinia alatamaha* (Franklin tree) that revealed a novel seed development pattern.



Director William (Ned) Friedman (left) and Emeritus Senior Research Scientist Peter Del Tredici examine a ginkgo.



Robin Hopkins and *Phlox*

The Hopkins Lab

Adaptation and Speciation in Plants

Research in the laboratory of Robin Hopkins, Assistant Professor of Organismic and Evolutionary Biology and Faculty Fellow of the Arnold Arboretum, focuses on the evolutionary processes of species formation and adaptation in plants. The lab employs behavioral studies, population surveys, and genomic sequencing to tackle fundamental questions of how populations and species diverge.

In 2015, the lab focused on plant-pollinator interactions, bumblebee “buzz” pollination, and the co-evolution of cycads with their weevil pollinators. Additionally, Robin and her team began to explore variation in the genomes of *Phlox* species to better understand divergence and hybridization in these plants.

The Wolkovich Lab

Temporal Ecology and Climate Change

Elizabeth Wolkovich, Assistant Professor of Organismic and Evolutionary Biology and Faculty Fellow of the Arnold Arboretum, researches how global changes alter plant communities. Investigations in her lab center on understanding recent shifts in the timing of plant life cycle events like leaf-out and flowering.

In 2015, the lab added new research plots—for a total of six from Boston to Quebec—where over 30 species are sampled to track forest response to climate change. The team completed a study on how alternating temperatures may affect spring leaf-out in the Northeast, and collected data on 150 varieties of wine grapes in California. The lab also initiated a citizen science program called Tree Spotters to track and document plant life cycle events in the collections.



Tree Spotters record phenological observations in the landscape.

Citizen Science in Action

In 2015, the Wolkovich lab initiated Tree Spotters, a dynamic citizen science program focused on observing and recording phenological data. Working with databases created by the National Phenology Network, Tree Spotters collect information about the timing of plant life-cycle events in the Arboretum collections. Over time, these data will help researchers address critical questions about plants' responses to climate change.

The program empowers the public to contribute to science and more deeply engage with our trees. Comprising volunteers from all walks of life, Tree Spotters receive training to connect the community with the Arboretum's scientific mission and inspire all to take a closer look at the plants they encounter in our landscape.

Fellowships and Awards

Katharine H. Putnam Fellowship in Plant Science

Chase Mason, *Putnam Fellow, Arnold Arboretum*

The evolution of leaf physical and chemical defenses in relation to the leaf economics spectrum (LES), habit, and species' source climate

Ashton Award for Student Research

Nalaka Geekiyanage, *PhD Candidate, Kyoto University, Japan*

Drought response of tropical trees at the Nonggang National Nature Reserve in southwestern China

Deland Award for Student Research

Steve Decina, *PhD Candidate, Boston University*

The effect of urbanization on biogeochemical cycles

Sargent Award

Jianhua Li, *Associate Professor, Hope College and formerly Arnold Arboretum*

The reconstruction of the early tree of life of *Acer*

Luke Keogh, *Postdoctoral Fellow, Ludwig-Maximilians University, Germany*

The role of Wardian Cases in the movement of live plants between continents

Research in the Collections

Comprising more than 15,000 extensively documented woody plants representing nearly 4,000 taxa, the living collections of the Arnold Arboretum represent a vital and dynamic resource for studies ranging from botany to horticulture, entomology to mycology, ecology to archaeology, and many other fields. Curated digital records, a cultivated herbarium, and extensive library and archive holdings boost their utility for discovery.

In 2015, the Arboretum accepted proposals requesting access to the collections from 119 scholars from 12 countries and 62 institutions. To date, these proposals have generated 617 points of access with Arboretum plants.



Ling Guo, Registration Authority for the genus *Malus*, holds a vouchered specimen in the Arnold Arboretum Cultivated Herbarium.

Flower Form and Function



A graduate student working in the Friedman Lab, Kristel Schoonderwoerd studies the development of corolla fusion in *Kalmia latifolia* and horticultural mutants. During her undergraduate years, Kristel became interested in the evolution of the diversity of flower form and function, a topic that became a theme for her future projects including her current research.

After completing her master's studies in evolutionary biology, Kristel received the Arboretum's 2014 Deland Award to study the reproductive traits of *Franklinia alatamaha* and *Stewartia ovata*. She returned in 2015 to study *Kalmia latifolia*, comparing floral development in wild type and mutants of the species in research that could provide valuable insight into the development of the highly specialized flower of the mountain laurel.

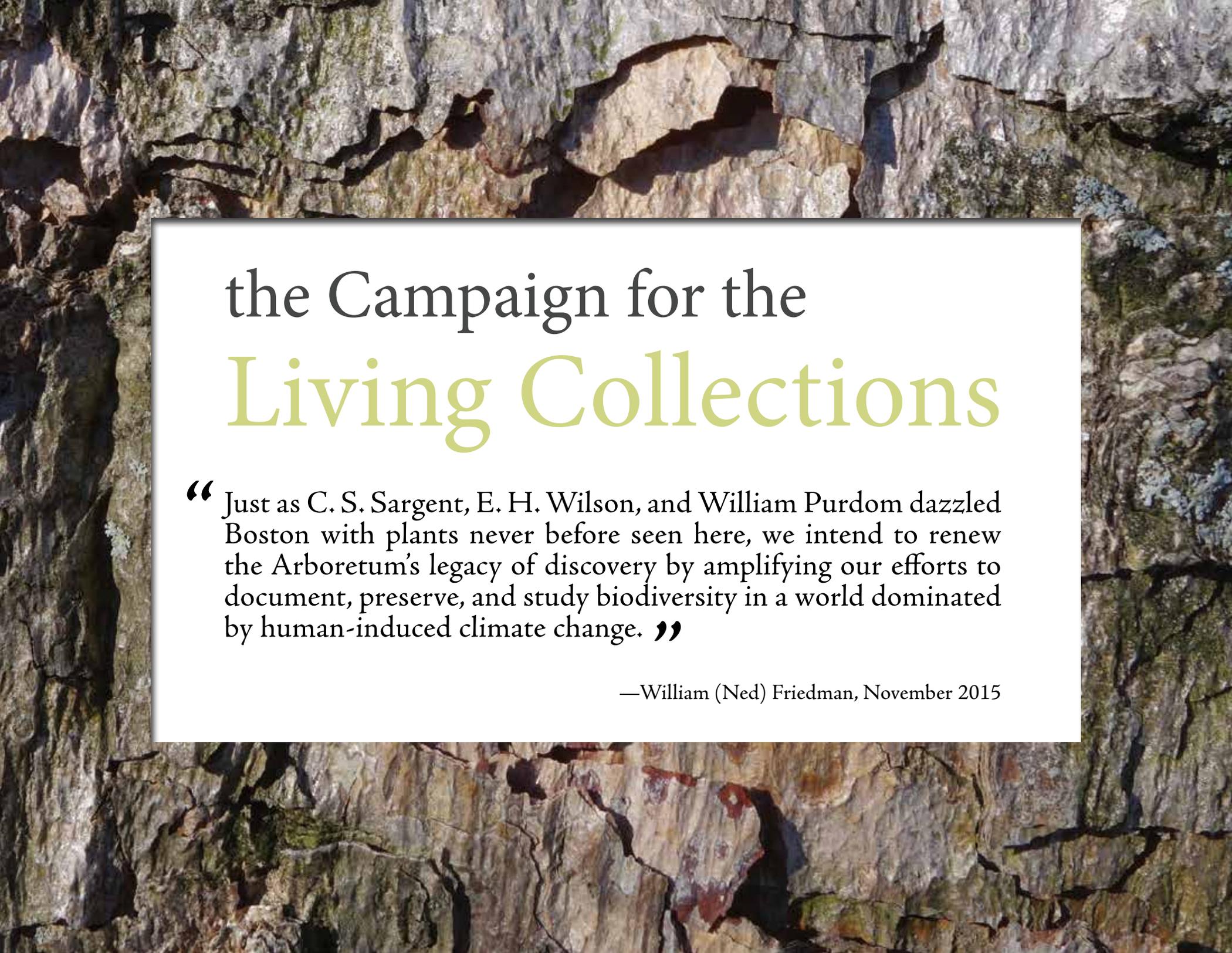
Plant Self Defense

As a Katharine H. Putnam Fellow, Chase Mason conducts independent research in the field of plant evolutionary ecophysiology. He is primarily interested in how key plant traits mediate adaptation to diverse environmental pressures such as climate, soil fertility, and disease.



Chase Mason

His Putnam Fellowship research examines the evolution of leaf physical and chemical defenses in relation to the leaf economics spectrum, leaf habit, and species' source latitude and climate across 16 woody genera. As such, the Arnold Arboretum is one of only a handful of locations worldwide where this kind of broad phylogenetic comparative work is possible.



the Campaign for the Living Collections

“Just as C. S. Sargent, E. H. Wilson, and William Purdom dazzled Boston with plants never before seen here, we intend to renew the Arboretum’s legacy of discovery by amplifying our efforts to document, preserve, and study biodiversity in a world dominated by human-induced climate change. ”

—William (Ned) Friedman, November 2015

Envisioning Tomorrow's Arboretum

Climate change and habitat destruction have only increased the importance of institutional study and documentation of threatened biodiversity and the preservation of rare and endangered plants. To help science address these challenges over the next century, the Arnold Arboretum launched the Campaign for the Living Collections.

This 10-year initiative to boost plant exploration and collections development targets some 400 taxa for acquisition from all parts of the temperate world, including 150 new to the Arboretum. A corresponding fundraising campaign seeks to raise \$5 million to endow this critical effort to prepare the Arboretum for the century ahead.



Kyle Port collects *Salix exigua* in northern Idaho in September 2015.

Expeditions to Idaho and China

Expeditions for the Campaign for the Living Collections kicked off in August 2015 with a trip to Idaho led by Manager of Plant Records Kyle Port. Kyle joined partners from Washington State University and the University of Idaho in national and state forests, collecting 60 specimens representing 42 species—30 new to the Arboretum.

This was complemented by two expeditions in western China led by Curator of Living Collections Michael Dosmann. In September, Michael joined partners from the North America-China Plant Exploration Consortium to document the endangered paperbark maple (*Acer griseum*). He also participated in an inventory of China's Huanglong National Nature Reserve in northern Sichuan, netting 10 new species for the Arboretum.



Michael Dosmann scouts *Acer griseum* in China.

Conservation Spotlight: *Acer*

As part of the Campaign for the Living Collections, the Arboretum will enhance 17 priority genera, including six coordinated nationally with the Plant Collections Network for their conservation value. Among these are the maples (*Acer*), a collection recognized in 2009 by Botanic Gardens Conservation International as comprising the largest number of endangered *Acer* species in cultivation. The Campaign targets 53 species of maples to further develop this critical resource.

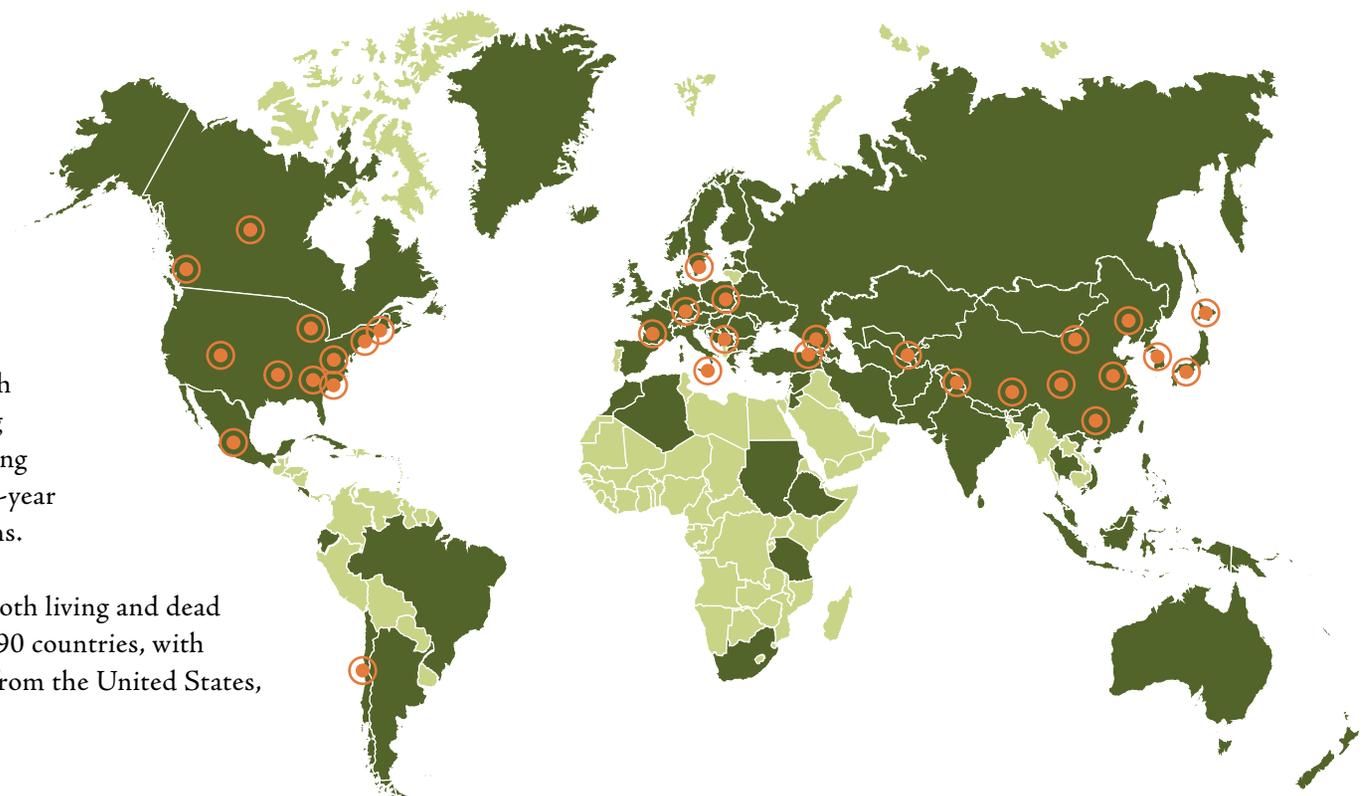
A broad network of organizations partner with the Arboretum in its conservation goals. In September 2015, the Arboretum signed a partnership agreement with the Chengdu Institute of Biology and the Huanglong National Nature Reserve to foster collaborative fieldwork and collection in China. Maples will be among numerous genera the organizations will inventory and collect in coming years.

Exploring Our Legacy, Envisioning Our Future

The collections of the Arnold Arboretum were developed through nearly a century and a half of exploration and plant collection from natural habitats around the temperate world.

This work continues in earnest with an expanded focus on documenting vanishing biodiversity and conserving endangered species through our 10-year Campaign for the Living Collections.

Accessioned plants of wild origin both living and dead (legacy collections) originate from 90 countries, with particularly strong representation from the United States, Canada, China, Japan, and Korea.



Expeditions Unveiled

To better understand the legacy and impact of our work in plant exploration, the Curation and Library staffs collaborated to comprehensively define, quantify, and organize these efforts for an online resource entitled Expeditions Unveiled, which chronicles nearly 100 collection events between 1876 and 2015.

■ Countries of origin for Arboretum plants, 1876–2015

○ Regions targeted in the Campaign for the Living Collections

A Leader in Collections Care

New leadership in our horticulture and plant production operations initiated a trajectory that, in 2015, was defined by several fundamental improvements in the care of the living collections and management and appearance of our Olmsted-designed landscape.

Priorities were enhancing the visitor experience in the Explorers Garden, the Conifer Collection, and Peters Hill, as well as improving aesthetics and preserving the historical character of the Arboretum's perimeter.

Three full-time arborists and a team of 11 horticulturists and gardeners made extraordinary progress in advancing many initiatives for collections stewardship and plant health, including a full soil analysis of the Arboretum landscape initiated over the summer by the 2015 Isabella Welles Hunnewell Interns.

Donation Brings New Bonsai

In the fall of 2015, ten new bonsai joined our celebrated collection of dwarfed potted plants, including an Austrian pine (*Pinus nigra*) "forest," a style never previously grown in this collection. Part of a generous donation by Martin Klein of Andover, Massachusetts, the new acquisitions enhance the horticultural value of our collection and provide unique opportunities for visitors to explore this ancient art form.



Collections At a Glance

The Living Collections of the Arnold Arboretum include 14,897 individual plants belonging to 10,184 accessions and representing 3,790 taxa.



113

ADDITIONS TO THE
LIVING COLLECTIONS

- 261 Removals from the living collections
- 800 Distributions to scholars and botanical gardens/arboreta

The Herbarium of the Arnold Arboretum (A) at the Harvard University Herbaria holds 1,456,673 mounted specimens, and the Cultivated Herbarium of the Arnold Arboretum holds 131,887 specimens.



5,941

SPECIMENS ADDED TO THE
HERBARIUM OF THE ARNOLD ARBOREUM

- 50% of the living collections are represented by vouchered specimens in the Cultivated Herbarium

The Horticultural Library of the Arnold Arboretum holds 21,954 books, 10,600 periodicals, 47,050 film/video/photographic items, 18,500 digital images, and archival materials representing 350 collections.



644

HISTORICAL IMAGES DIGITIZED

- 112 Pages added to the website
- 15 Exhibitions in Library and Visitor Center

All figures as of December 2015



Education and Community

As a part of Harvard University, the Arboretum is committed to providing educational opportunities for students as well as visitors of all ages. Educational programs utilize the Arboretum's unique resources—the living collections as well as staff expertise—to further engage the community with plants and nature.

Engagement at a Glance



ESTIMATED VISITORS

- 38,319 Guests at Visitor Center
- 150 Guided Tours
- 6 Art Exhibitions



CLASSES, LECTURES, AND TREE MOBS

- 1,856 Program Participants
- 11 Partnering organizations for programs



CHILDREN PARTICIPATING IN FIELD STUDY PROGRAMS

- 64 Field Study Programs conducted
- 92 Classes participating in Field Study Programs

*How Many Visitors?

It is difficult to estimate how many visitors enter the Arboretum landscape every year, or even every day. Unlike many other botanical gardens and arboreta, the Arnold Arboretum charges no entrance fee and is freely accessible to the public through multiple gates from dawn to dusk every day, year-round.

As a partner of both Harvard University and the City of Boston, the Arboretum not only facilitates research and scholarship but also recreation and open access for all to experience a deeper connection with nature.

Private Support for Education

- ◆ Children's Programs at the Arnold Arboretum are made possible by the generosity of Henry and Nod Meyer through the Nature Study Fund for City Children, with additional support for Boston Public School visits by the Henry Meyer Boston School Initiative.
- ◆ Clinton H. & Wilma T. Shattuck Charitable Trust supported the Buses for Boston program, which brings children from Boston Public Schools to the Arboretum for field study programs.
- ◆ Descendants of H.H. Hunnewell supported the Isabella Welles Hunnewell Internship Program, our summer horticultural education and training program for public garden management.

All figures as of December 2015

Technology and Sustainability

Responding to new directions in science and an accelerating pace of discovery worldwide, the Arnold Arboretum remains at the forefront of research and scholarship and serves the public as a community resource through innovation. Embracing the possibilities of new technologies fundamentally improves how we steward and share our collections, disseminate new knowledge, and contribute to the sustainability of our mission.

A Visual Resource

A new feature on the Arboretum website connects curated information on our plants with their images captured over time by staff and associates. The Plant Image Database is a free and searchable online resource of contemporary images of accessioned plants.

Images detail morphological (form) and phenological (seasonal stages) characteristics of Arboretum trees, shrubs, and vines. Meanwhile, search tools allow you to find plants by family and genus, scientific name, common name, and accession number, as well as general categories including flower, fruit, or fall foliage.

Useful for plant identification, reference, and biodiversity discovery, the database represents a dynamic resource with new images and features added frequently.



Sharing Our Collections Data

The Arnold Arboretum curates more than just living plants. We also amass, organize, and share vast amounts of data about our collected organisms to enhance their use as scientific specimens, horticultural exemplars, and objects of fascination.

In 2015, we made tremendous progress toward sharing integrated data about our collections through an accessible and intuitive search interface on the Arboretum website. Initiated through a collaboration with developers of our collections database (*BG-BASE*), the Arboretum launched a unified inventory application that combines plants and their documentation with the mapping power of GIS (geographic information system). The Plant Inventory Search will soon offer additional features such as direct links to Arboretum plant images and our Seed Herbarium.



Kyle Port uses GIS equipment to map Arboretum plants.

Investing in Solar Energy

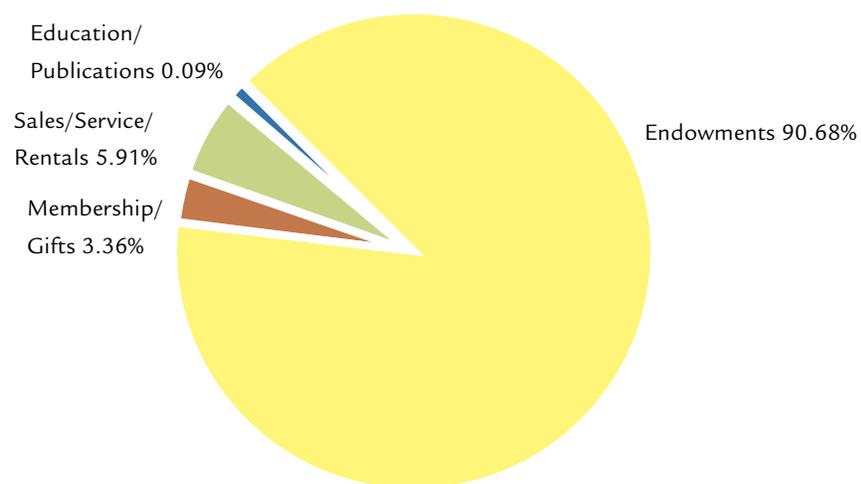
Complementing energy-focused renovations to the Dana Greenhouses in 2014, the Arboretum installed 108 solar panels on the roof of the Hunnewell Building's maintenance garage in the fall of 2015 with support from the Harvard Office for Sustainability's Green Revolving Fund. The high-efficiency panels reduce the Arboretum's dependence on fossil fuels and help reduce greenhouse gas emissions.

Aligning with the institution's historical commitment to conservation and environmental sustainability, this move may soon gain additional traction through a similar project planned for the Dana Greenhouses.

Statement of Activities

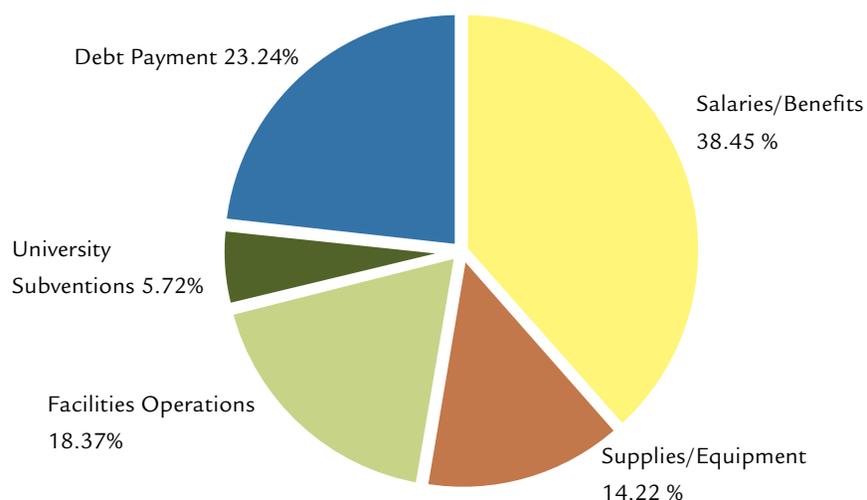
FISCAL YEAR 2015: JUNE 30, 2014 - JULY 31, 2015

Beyond funding for sponsored research, the Arboretum relies on the past and present philanthropy of its friends and members, who have generously supported the institution since its founding. The information here reflects the financial activities of the Arboretum in the 2015 fiscal year (June 30, 2014 – July 31, 2015).



INCOME

Endowments	12,803,567
Sales/Service/Rentals	834,511
Membership/Gifts	473,717
Education/Publications	13,374
Total Income	14,125,169



EXPENSES

Salaries/Benefits	5,726,687
Supplies/Equipment	2,118,160
Facilities Operations Services	2,735,374
University Subventions	851,968
Debt Payment	3,461,154
Total Expenses	14,893,342
Excess (Loss)	(768,173)

Staff and Volunteers

ARNOLD ARBORETUM STAFF

Administration and Operations

- John Barbosa, *Custodial Crew Chief*
- Donna M. Barrett, *Accounting Associate*
- Cynthia Cushman, *Human Resources Coordinator*
- William (Ned) Friedman, *Director of the Arnold Arboretum and Arnold Professor of Organismic and Evolutionary Biology at Harvard University*
- Edin Guerra, *Custodian*
- Kimberly Hall, *HR/Payroll Coordinator*
- Donna Heimlich, *Senior Human Resources Consultant*
- Matthew Jordan, *Director of Finance*
- Karen Lacourse, *Special Assistant*
- Karen Pinto, *Staff Assistant*
- David J. Russo, *Facilities Manager*
- Stephen Schneider, *Director of Operations*
- Tracy Smith, *Assistant Facilities Manager*

Curation

- Michael Dosmann, *Curator of Living Collections*
- Susan Hardy Brown, *Curatorial Assistant*
- Irina Kadis, *Curatorial Assistant*
- Kyle Port, *Manager of Plant Records*
- Kathryn Richardson, *Curatorial Assistant*
- Jordan Wood, *Curatorial Fellow*

Education and Public Programs

- Catherine Cremin, *Visitor Engagement Staff*
- Regina Mission, *Visitor Engagement Staff*
- Nancy Sableski, *Manager of Children's Education*
- Veronica Smith, *Visitor Engagement Staff*
- Kate Stonefoot, *Manager of Visitor Engagement*
- Pamela Thompson, *Manager of Adult Education*
- Sheryl L. White, *Visitor Education Assistant*

External Relations and Communications

- Jon Hetman, *Director of External Relations & Communications*
- Wendy Krauss, *Membership Coordinator*
- Barbara Murphy, *Development Assistant*
- Nancy Rose, *Editor of Arnoldia*
- Meghana Srinivasan, *Marketing and Communications Specialist*

Greenhouse

- John Herbert Alexander III, *Plant Propagator*
- Tiffany Enzenbacher, *Supervisor of Plant Production, Manager of Plant Production*
- Bob Famiglietti, *Greenhouse Horticultural Technologist*

Horticulture

- Rachel Brinkman, *Horticulturist*
- Matthew Connelly, *Horticulturist*

- John S. DelRosso, *Head Arborist*
- Robert Dowell, *Gardener I*
- Robert Ervin, *Arborist*
- Kirsten Ganshaw, *Horticulturist*
- Andrew Gapinski, *Manager of Horticulture*
- Scott Grimshaw, *Horticulturist*
- Dennis Harris, *Horticulturist*
- Wesley Kalloch, *Horticulturist*
- Gregory Laplume, *Horticultural Technologist*
- Brendan McCarthy, *Horticulturist*
- James Papargiris, *Working Foreman*
- Susanne Pfeiffer, *Horticulturist*
- Jed Romanowiz, *Gardener II*
- Nima Samimi, *Gardener II*
- Kyle Stephens, *Arborist*
- Mark Walkama, *Horticulturist*

Information Technology

- Stephen Hill, *IT Systems Administrator*
- Victoria Wei Lin, *Database Specialist*
- George Morris, *Director of Information Technology*
- Donna Tremonte, *Applications Programmer*

Library

- Larissa Glasser, *Library Assistant*
- Lisa E. Pearson, *Head of Library & Archives*
- Stephanie Turnbull, *Library Assistant*

Staff and Volunteers continued...

Research

- Mike Barrett, *Greenhouse Assistant*
- Heather Briggs, *Post-doctoral Fellow*
- Josh Curley, *Greenhouse Assistant*
- David Des Marias, *Research Associate*
- Daniel Flynn, *Post-doctoral Fellow*
- Ailene Ettinger, *Putnam Fellow*
- Elizabeth Forrestel, *Post-doctoral Fellow*
- William (Ned) Friedman, *Director of the Arnold Arboretum and Arnold Professor of Organismic and Evolutionary Biology*
- Jessica Gard, *Faculty Assistant*
- Ben Goulet, *Graduate Student*
- Stuart Graham, *Graduate Student*
- Robin Hopkins, *Assistant Professor of Organismic and Evolutionary Biology*
- Brian Leib, *Weld Hill Growth Facilities Manager*
- Juan Losada, *Post-doctoral Fellow*
- Chase Mason, *Putnam Fellow*
- Franchesco Molina, *Graduate Student*
- Rebecca Povilus, *Graduate Student*
- Frederico Roda, *Post-doctoral Fellow*
- Faye Rosin, *Director of Research Facilitation*
- Shayla Salzman, *Graduate Student*
- Jehane Samaha, *Lab Technician*
- Jessica Savage, *Post-doctoral Fellow*
- Tim Savas, *Lab Technician*
- Kristel Schoonderwoerd, *Graduate Student*
- Eyob Solomon, *Plant Technician III*
- Sevan Suni, *Post-doctoral Fellow*
- Callin Switzer, *Graduate Student*

- Campbell Webb, *Senior Research Scientist*
- Elizabeth Wolkovich, *Assistant Professor of Organismic and Evolutionary Biology*
- Kea Woodruff, *Weld Hill Growth Facilities Manager*
- Grace Yu, *Lab Technician*

Associates and Visiting Scholars

- Diana Bernal-Franco, *Visiting Fellow*
- Robert Cook, *Associate*
- Peter Del Tredici, *Associate*
- Brian Donahue, *Visiting Scholar*
- Ailene Ettinger, *Visiting Fellow*
- Eric Goolsby, *Visiting Fellow*
- Andrew Groover, *Visiting Scholar*
- Ling Guo, *Visiting Scholar*
- Richard Pagett, *Associate*
- Lucy Hutyra, *Associate*
- Luke Keogh, *Visiting Fellow*
- Jianhua Li, *Associate*
- Barry Logan, *Visiting Scholar*
- Morgan Moeglein, *Visiting Fellow*
- Dan Papaj, *Visiting Scholar*
- Cary Pirone, *Visiting Fellow*
- Marcela Serna, *Visiting Fellow*
- Dan Sullivan, *Visiting Fellow*
- Pam Templer, *Associate*
- Stacy Young, *Visiting Fellow*

VOLUNTEERS

Living Collections Advisory Board

- Timothy M. Boland, *Executive Director of the Polly Hill Arboretum*

- David E. Boufford, *Senior Research Scientist at the Harvard University Herbaria*
- Michael J. Donoghue, *Curator of Botany at the Peabody Museum and Sterling Professor of Ecology and Evolutionary Biology at Yale University*
- Michael S. Dosmann, *Curator of Living Collections at the Arnold Arboretum*
- William E. Friedman, *Director of the Arnold Arboretum and Arnold Professor of Organismic and Evolutionary Biology at Harvard University*
- Andrew Gapinski, *Manager of Horticulture at the Arnold Arboretum*
- Larry Hufford, *Professor and Director of the School of Biological Sciences and Director of the Marion Ownbey Herbarium at Washington State University*
- Paul W. Meyer, *F. Otto Haas Executive Director of the Morris Arboretum of the University of Pennsylvania*
- Donald H. Pfister, *Curator of the Farlow Library and Herbarium and Asa Gray Professor of Systematic Botany at Harvard University*

Arnoldia Editorial Committee

- Phyllis Andersen, *Landscape Historian at the Landscape Institute at Boston Architectural College and former Arnold Arboretum Director of the Institute for Cultural Landscape Studies*
- Michael S. Dosmann, *Curator of Living Collections at the Arnold Arboretum*
- William (Ned) Friedman, *Director of the Arnold Arboretum and Arnold Professor of Organismic and Evolutionary Biology at Harvard University*

Staff and Volunteers continued...

- ✦ Kanchi Gandhi, *Senior Nomenclatural Registrar at Harvard University Herbaria*
- ✦ Peter Del Tredici, *Emeritus Senior Research Scientist, Arnold Arboretum*

Docents

- ✦ Susan Adams
- ✦ Marty Amdur
- ✦ Robbie Apfel
- ✦ Barb Balasa
- ✦ Amy Cohen-Rose
- ✦ Kathy Corcoran
- ✦ Frances Doyle
- ✦ Walter Evans
- ✦ Sidney Fiarman
- ✦ Brian Karlsson-Barnes
- ✦ Bart Kelso
- ✦ Rhoda Kubrick
- ✦ James Leighton
- ✦ Bob Mayer
- ✦ Chris McArdle
- ✦ Colin McArdle
- ✦ Jane Phipps
- ✦ Kevin Schofield
- ✦ Angela Sciaraffa
- ✦ Ajay Sequeira
- ✦ Martha Shaw
- ✦ Nancy Stutzman
- ✦ David Tarbet
- ✦ Florrie Wescoat
- ✦ Emily Wheeler

Interpreters

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Acer diabolicum



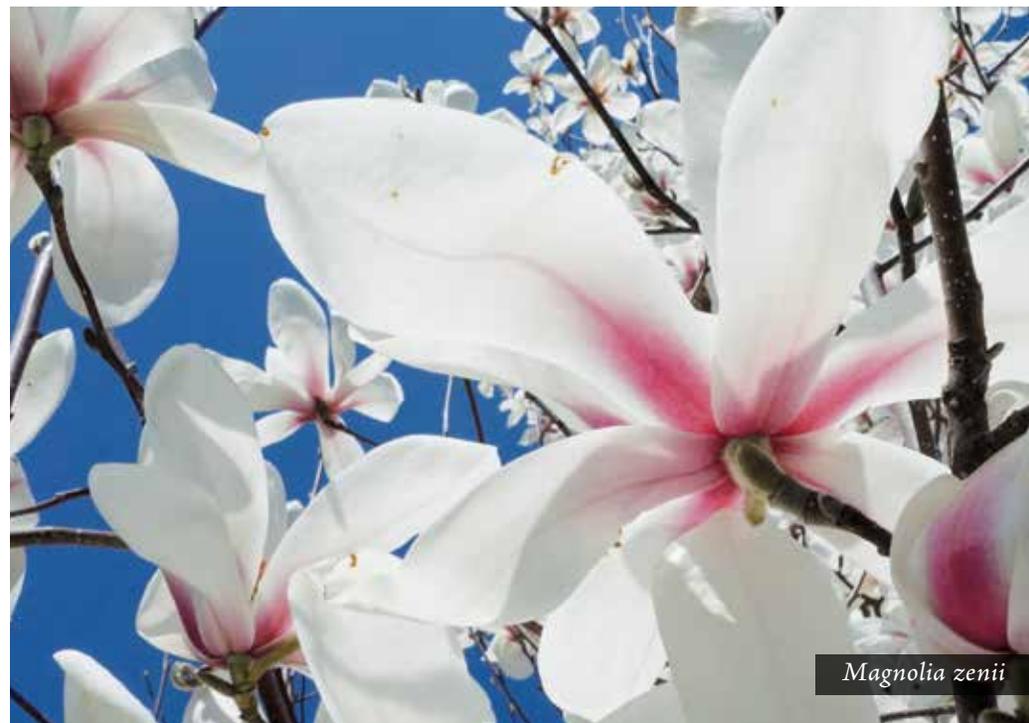
Syringa 'Purple Haze'



Cryptomeria japonica



Stewartia pseudocamellia



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Pinus rigida



Metasequoia glyptostroboides



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