

# Conserving Oaks in North American Plant Collections: A Collaborative Approach

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As much as any ardent collector would love to comprehensively represent the variety of the genus *Quercus* in her garden, the great taxonomic diversity, range of natural habitats, and large mature size of oaks make that virtually impossible. With that in mind, a new cooperative group of American public gardens has recently formed with the goal of representing the oak diversity of North America in its collections. The 15 member gardens were recently recognized as the first multi-institutional collection of the North American Plant Collections Consortium (NAPCC). The members of the multi-institutional *Quercus* collection include:

- Chicago Botanic Garden – Glencoe, Illinois - 48 taxa
- Cornell Plantations – Ithaca, New York - 77 taxa
- Denver Botanic Gardens – Denver, Colorado - 61 taxa
- Holden Arboretum – Kirtland, Ohio - 64 taxa
- Landis Arboretum – Esperance, New York - 14 taxa
- Missouri Botanical Garden – Saint Louis, Missouri - 40 taxa
- Morris Arboretum of the University of Pennsylvania – Philadelphia, Pennsylvania - 58 taxa
- The Morton Arboretum – Lisle, Illinois - 67 taxa
- Mount Auburn Cemetery – Cambridge, Massachusetts - 25 taxa
- New York Botanical Garden – Bronx, New York - 46 taxa
- Rancho Santa Ana Botanic Garden – Claremont, California - 27 taxa
- Scott Arboretum of Swarthmore College – Swarthmore, Pennsylvania - 52 taxa
- UC Davis Arboretum – Davis, California - 92 taxa
- University of California Botanical Garden – Berkeley, California - 71 taxa
- University of Washington Botanic Gardens – Seattle, Washington - 86 taxa

A program of the American Public Gardens Association, the NAPCC is a coordinated network of public gardens dedicated to preserving and expanding the plant diversity represented in gardens for the purposes of conservation, research, education, and public enjoyment. The program celebrates the value of plant collections and promotes high standards of plant collection management. In cooperation with the USDA Agricultural Research Service germplasm repository program and the US National Arboretum, the NAPCC recognizes and supports plant collections of national significance. To date, 42 public garden institutions in North America have committed to holding one or more NAPCC Collections, which together represent a broad variety of species and cultivars of woody and herbaceous ornamental plants.

Establishing the NAPCC Multi-Institutional *Quercus* Collection took nearly two years of leadership and diligent effort on the part of Dennis Collins, horticultural curator at the Mount Auburn Cemetery. Collins started in 2005 by exploring the murky waters of *Quercus* nomenclature and developing a comprehensive list of accepted names and synonyms using regional floras and floristic databases

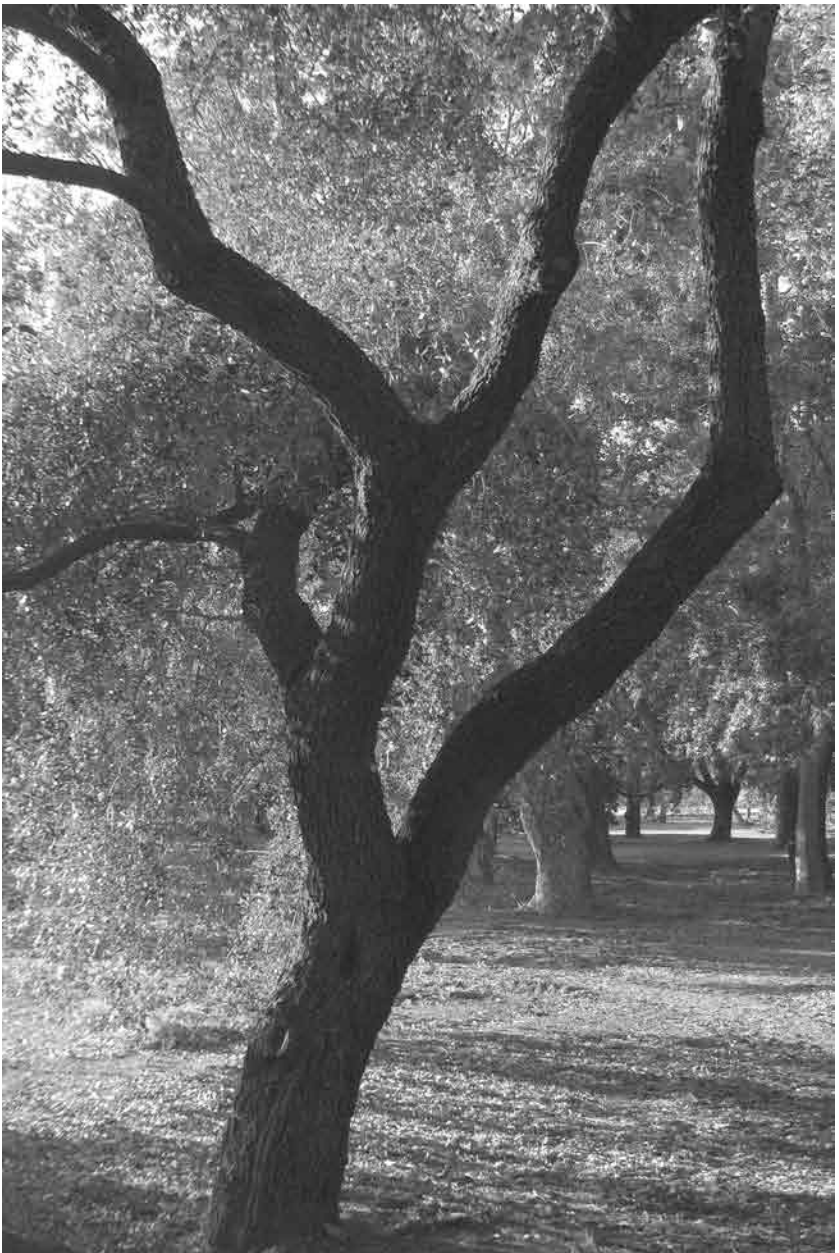


The UC Davis Arboretum chose to celebrate their oak collection's induction into the North American Plant Collections Consortium with an official ceremony. Emily Griswold (center) and Neil Van Alfen (right), dean of the UC Davis College of Agricultural and Environmental Sciences, presented a copy of the NAPCC certificate to John M. Tucker, a lifelong oak scholar and Arboretum supporter.

Photo by Dawn Spinella

from around the world as arbiters. Through this process, he came up with a list of accepted names for naturally occurring oak species, subspecies, varieties, and hybrids worldwide. He then began searching for large oak collections in North American public gardens using word of mouth, an old national inventory of public garden collections, and garden websites as guides. According to Collins, "my goal was finding 10-15 institutions with the broadest taxon diversity, the strongest institutional commitment, the widest geographic representation and a variety of institutional strengths and missions." After successfully convincing 15 such institutions to participate, Collins compiled inventories from the candidate gardens and compared them to his accepted names list. This allowed him to quantify the proportion of North American and world oak diversity represented in the group's collections and to identify gaps of unrepresented taxa. After this first multi-institutional collection application to NAPCC was submitted and 15 site reviewers confirmed that each institution met collection management standards, the collection was accepted into the NAPCC program in August of 2007.

As of July 2008, an updated inventory of the multi-institutional *Quercus* collection included more than 7,500 specimens representing 169 naturally occurring taxa (species, subspecies, varieties, and hybrids). The collection represents 132 oak species, 96 of which are from North America (including Mexico). Of the naturally occurring oak subspecies, varieties and hybrids, the collection includes 37 infraspecific taxa, including 31 from North America. The collection also includes



The rare *Quercus brandegei* Goldman from Baja California, Mexico grows in the collection at the UC Davis Arboretum. Mild winters allow the garden to successfully grow oaks from Mexico and Central America outdoors.

Photo by Emily Griswold

486 specimens of cultivated taxa, including named cultivars and several unnamed artificial hybrids. The nomenclature for this group of plants is still in need of systematic review.

The diversity of the collection is also reflected by the diversity of strengths and interests of the member institutions. Two institutions focus on a particular geographic region of the oak's range: the northeastern United States in the case of Landis Arboretum and the California floristic province in the case of the Rancho Santa Ana Botanic Garden. At the Morris Arboretum, an active international collecting program has resulted in a rich collection of wild-origin hardy oaks from China and around the world. The mild climates at the University of California gardens in Berkeley and Davis allow these institutions to grow a diversity of more tender Mediterranean, Mexican, and Central American oaks. Cornell Plantations houses a variety of experimental oak hybrids, and the collection supports an active breeding research program. In addition to oaks collected elsewhere, several of the institutions are also home to beautiful heritage oaks native to their sites. For example at Mount Auburn Cemetery, where historic preservation of the landscape and monuments are a major focus, 30 of their current oak specimens predate the founding of the cemetery in 1831.

One of the greatest benefits of the multi-institutional *Quercus* collection is the potential for greater collaboration among the member institutions to achieve goals that wouldn't be possible individually. Representative staff from each institution



Luxuriant evergreen foliage of *Quercus rhysophylla* Weath., a Mexican native, at the University of California Botanical Garden at Berkeley.

Photo by Paul Licht

makes up the NAPCC *Quercus* Curatorial Group, which meets annually and has a rotating coordinator position currently held by the author. The group has identified six major goals:

- Conserve germplasm for the genus *Quercus* with an emphasis on North American taxa
- Elevate curatorial standards and improve the credibility of collections-based programs in public gardens
- Determine strategic targets for new acquisitions and acquire new material to expand the collection
- Enhance research into oak taxonomy, hardiness, disease-resistance, and breeding
- Promote collaborations among different institutions and organizations
- Promote public awareness of and appreciation for oaks

Guided by these goals, the NAPCC *Quercus* Curatorial Group has taken on a series of initiatives, one of the first of which was to create a webpage that would serve as a public portal to the collection. The webpage contains a written profile of the collection, links to each member institution, a downloadable spreadsheet of the annually updated collection inventory, and links to online oak references of interest. Ultimately the group hopes to develop an online searchable database of the inventory that will facilitate research use of the collection. An initiative to raise the curatorial standards of member gardens and increase documentation of the collection calls for creating voucher herbarium specimens. Each of these dried, pressed specimens serves as a permanently preserved record of a plant in the living collection and can be sent to expert botanists to verify the plant's identification. Duplicate voucher specimens will be centrally housed at the Liberty Hyde Bailey Hortorium at Cornell University and the US National Arboretum Herbarium, where they will support a larger national project to create a Cultivated Flora of North America.

One of the most important and ambitious initiatives of the NAPCC *Quercus* Curatorial Group is to expand the collection to represent all naturally-occurring North American oak taxa. This will need to be accomplished not only through the expansion of collections at existing member gardens, but also through the recruitment of new member gardens with complementary collections. The group has a target list of unrepresented taxa that was developed by comparing the accepted names list Collins developed with the complete collection inventory. Several member gardens have committed to acquiring specific taxa (with a likelihood of surviving in their climate) from the target list within the next three years. Large gaps remain on the target list for species from the southeastern and southwestern US and species from Mexico. No member gardens currently exist in these regions, and the oaks from these areas generally are not hardy enough to survive in the colder northern climates where most of the member gardens are located. The group is currently seeking gardens with large oak collections in the southeastern US, Texas, and Mexico to join the multi-institutional collection and would appreciate assistance from the International Oak Society membership in locating such gardens.

In order to join the NAPCC, each member garden goes through an application and site review process coordinated by NAPCC Manager Pam Allenstein, an

employee of the American Public Gardens Association (APGA). The NAPCC program is intended to promote the long-term preservation of high quality, publicly accessible plant collections. To be eligible for participation, a garden must have:

- A unique, diverse collection with records on the origin of the plants;
- Long-term institutional commitment to collect, document, grow, and maintain the living plants in the collection and conserve their germplasm;
- The governing body's support, including provision for adequate and sustained resources for the long-term care of the collection;
- Maintenance of the collection in accordance with professional horticultural and curatorial standards with a designated curator and collections policy;
- Reasonable access to the collection for research, evaluation, and introduction;
- And an active membership with APGA.

Those with an interest in joining the NAPCC are encouraged to contact Pam Allenstein for additional information and guidance. A regional network of mentors and recruiters throughout the United States can also assist gardens that are considering submitting applications to the program. Over the past year, four International Oak Society members with extensive oak collections have approached the NAPCC with an interest in joining the multi-institutional *Quercus* collection. The NAPCC *Quercus* Curatorial Group looks forward to expanding the collection to include more of these gardens and a greater diversity of oaks.

The International Oak Society and NAPCC *Quercus* Curatorial Group share many overlapping goals, and collaboration has great potential for mutual benefit.



A magnificent eastern black oak (*Quercus velutina* Lamarck) specimen at the New York Botanical Garden.

Photo from New York Botanical Garden (photographer unknown)



A formal allée of swamp white oak (*Quercus bicolor* Willd.) at the Scott Arboretum at Swarthmore College.

Photo from the Scott Arboretum (photographer unknown)



A heritage scarlet oak (*Quercus coccinea* Münchh.) grows among the monuments at Mount Auburn Cemetery, where preserving the historic landscape is important.

Photo from Mount Auburn Cemetery (photographer unknown)

Curatorial group members have been encouraged to join the International Oak Society, and several are planning on attending the 2009 conference in Puebla, Mexico. Oak taxonomy is notoriously challenging, and the curatorial group is interested in partnering with IOS members to promote research and share new information in this area. Sharing of information has the potential to be useful in all sorts of ways from sharing interesting stories that can enliven garden educational programs and promote oak conservation to sharing expertise about propagation tips or fruitful collecting locations that can help diversify private and public gardens. The member gardens of the NAPCC *Quercus* Collection can benefit IOS members as public reference sites for oak identification, potential sources of acorns (with permission), and places for oak research and study. IOS members can help support the NAPCC member gardens by contributing their expertise as volunteers to oak curation, maintenance, or educational programs. Last but not least, collaborative collecting trips and acorn exchanges have the potential to result in rich collections and experiences for all parties involved.

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**Web Resources:**

NAPCC webpage:  
[http://www.publicgardens.org/web/2006/06/napcc\\_home.aspx](http://www.publicgardens.org/web/2006/06/napcc_home.aspx)

NAPCC Multi-Institutional *Quercus* Collection webpage:  
[http://www.publicgardens.org/web/2008/08/multiinstitutional\\_quercu\\_oak.aspx](http://www.publicgardens.org/web/2008/08/multiinstitutional_quercu_oak.aspx)