NATIONALLY ACCREDITED
American Public Gardens Association
PLANT COLLECTION

Plant Collections Network
AMERICAN PUBLIC GARDENS ASSOCIATION

THE NATIONALLY ACCREDITED *QUERCUS* COLLECTION™ AT SARAH P. DUKE GARDENS

Beth Hall Hoffman and Annabel Renwick

Bark detail of a cherrybark oak (*Quercus pagoda*). Photo by Gabriel Campos.

Top of page: Duke Gardens' Bartram oak (*Quercus × heterophylla*) has leaves that resemble each of its parents. Some look like a willow oak (top left) and others more like a northern red oak (top right). Photo by Andrew Crowl.

Oaks support life more than any other tree species in North America, providing food and shelter for fungi, birds, animals, and insects, and hosting more than 800 species of moths and butterflies in the United States. In North America, *Quercus* are the dominant trees by number of species and biomass, with around 220 species in Canada, the United States, and Mexico. Oaks range from majestic deciduous trees to evergreen shrubs, each playing an important ecological role in forests and other habitats. The genus has high species diversity and variability within species, with substantial hybridization occurring between species.

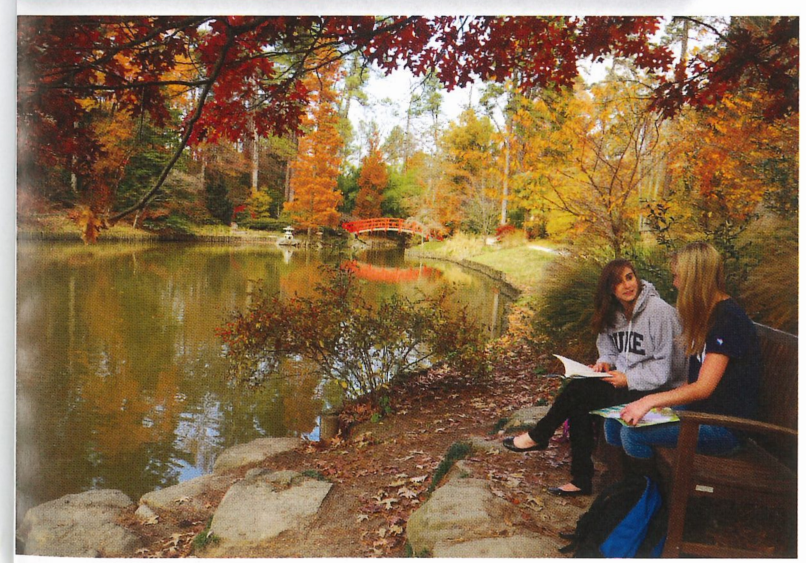
Sarah P. Duke Gardens is a botanic garden in the heart of Duke University that inspires transformative learning, promotes wellness, and builds community. The Gardens' mission is closely tied to the *Quercus* collection, which we use for educational programs, research, and to display the breadth of variation within the genus. While the focus of the collection is oaks native to the southeastern United States (which we define as reaching from Virginia to Arkansas and Texas), the garden also displays representative oaks from Asia and Europe. Duke Gardens is in the Piedmont region of North Carolina and has a climate well suited to growing oak taxa from the southeastern United States, which was an important factor in our decision to apply to join the multi-institutional *Quercus* collection. Duke Gardens is honored to join the Plant Collections Network Multisite *Quercus* Collection™, and we successfully became a Nationally Accredited Collection™ in 2023.

Duke Gardens' *Quercus* collection consists of 292 accessions representing 35 taxa. They grow throughout the Gardens' 55 acres, in woodland areas and garden settings. We have accessions of several species that are currently held by ten or fewer institutions in the Multisite Collection. Those species are: bluff oak (*Quercus austrina*), Darlington oak (*Q. hemisphaerica*), laurel oak (*Q. laurifolia*), Chinese evergreen oak (*Q. myrsinifolia*), Oglethorp oak (*Q. oglethorpensis*), cherrybark oak (*Q. pagoda*), ubame oak (*Q. phillyreoides*), and bastard oak (*Q. sinuata*).

THE NATIONALLY ACCREDITED *QUERCUS* MULTISITE COLLECTION™

- Auburn University Davis Arboretum
- Bartlett Tree Research Laboratories & Arboretum
- Boyce Thompson Arboretum
- California Botanic Garden
- Chicago Botanic Garden
- Cornell Botanic Gardens
- Denver Botanic Gardens
- Gabis Arboretum at Purdue Northwest
- Green-Wood
- Holden Forests & Garden
- Landis Arboretum
- Missouri Botanical Garden
- Morris Arboretum of the University of Pennsylvania
- Mount Auburn Cemetery
- New York Botanical Garden
- Sarah P Duke Gardens
- Scott Arboretum of Swarthmore College
- Starhill Forest Arboretum of Illinois College
- The Morton Arboretum
- UC Davis Arboretum and Public Garden
- United States National Arboretum
- University of California Botanical Garden
- University of Washington Botanic Gardens

Branches of a southern live oak (*Quercus virginiana*). Photo: Aaron Siegle.



Below, left: Students study under a southern red oak (*Quercus falcata*). Photo: Erika Zambello

There are ten species of oak naturally occurring in the gardens: white oak (*Q. alba*), southern red oak (*Q. falcata*), swamp chestnut oak (*Q. michauxii*), chestnut oak (*Q. montana*), cherrybark oak (*Q. pagoda*), willow oak (*Q. phellos*), northern red oak (*Q. rubra*), post oak (*Q. stellata*), black oak (*Q. velutina*), and Bartram oak (*Q. × heterophylla*). Many accessions in the collection predate Duke Gardens' dedication in 1939. The application process revealed that these documented naturally occurring trees are a clear strength of the collection that we had not considered before. Our next step is to identify naturally occurring trees in the plant records database, which will help our stewardship of the collection.

A wonderful demonstration of oaks' propensity to hybridize came to the forefront during the inventory of the collection. A large Bartram oak (*Q. × heterophylla*) in a wooded area of the garden was studied by Dr. Paul Manos, a biology professor at Duke University. He believes this tree to be 80 to 90 years old, which means it predates development of its location in the garden. The hybrid between *Q. phellos* and *Q. rubra* occurred naturally. He is currently exploring genetic studies to verify its parentage.

Completing the application was a long but fulfilling process, and it has helped us focus our collections. Writing a collection development plan refined our objectives for the oak collection. It has also influenced how we think about other collections throughout the garden.

Duke Gardens' primary goal for the collection is to obtain and maintain oak species native to the southeastern United States (which we define as reaching from Virginia to Arkansas and Texas). Plants from drier regions like Texas and Mexico will be considered as conditions permit. Collection development focuses on wild germplasm of species not in the collection and species that are represented in the collection but are not of wild provenance. We are also considering duplications to safeguard the collection.

Joining the collaborative efforts of the Multisite Collection group helps Duke Gardens meet conservation and education goals that could not be achieved on our own. We look forward to working together to conserve oaks for the future.

Beth Hall Hoffman is Paul J. Kramer Plant Collections Manager at Sarah P. Duke Gardens.

Annabel Renwick is curator of the H.L. Blomquist Garden of Native Plants at Sarah P. Duke Gardens and curator of the *Quercus* collection.