

**Conservation Collections at Meadowlark Botanical Gardens, USA:
Supporting the International Agenda and Educating the Public. From:
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Introduction



Meadowlark Botanical Gardens in Vienna Virginia, USA has created three distinct native plant collections in support of the *International Agenda for Botanic Gardens in Conservation*. The largest of these is the Potomac Valley Collection (PVC). PVC development is based on biogeography and floristic composition within the Potomac River basin (see BGC News Vol. 3 # 7, 2001). Alternatively, the Virginia Native Tree Collection (VNT) and the Virginia Native

Wetland collection (VNW) include species that occur within the state as a political unit.

Virginia is topographically and floristically diverse. The Appalachian Mountains in the southwest region of the state reach elevations of 1600 meters. Many other peaks in the west are more than 1200 meters high. West to east the state traverses six distinct geographic regions. These include the Appalachian Highlands, Valley and Ridge, Shenandoah Valley, Blue Ridge, Piedmont and Coastal Plain. The Coastal Plain embodies much of the Chesapeake Bay and reaches the Atlantic Ocean further east. The entire state is located between 40' & 36' North and 74' & 83' West. In Takhtajan's *Floristic Regions of the World*, Virginia occupies the Appalachian Province and the northern tip of the Atlantic and Gulf Coast Plain Province. Virginia is a state where bromeliads reach their most northerly distribution, cacti adorn beach dunes, endemic birches are found and northern spruce forests dominate the highest mountains. It is also a state in

need of both *in situ* and *ex situ* conservation. A principal goal of these collections is to educate the public about the connection between garden conservation collections and saving plants in the wild.

The Virginia Native Wetland (VNW)



This collection is located in and around a small wetland called Lake Lina at the lowest elevation in the Gardens. The native biota of Lake Lina is an ideal classroom for educational programs focused on Virginia's native wetlands and the need for conservation. No horticultural selections are used in this collection. Conservation work began in 1999. Several native trees were already established on the site when the boardwalk was installed adjacent to the lake over ten years ago. Among these are numerous bald cypress trees.

These trees have grown well and developed their trademark "knees" on the water's edge. Sycamore, black gum, river birch, willow and sweet gum also grow in the area. Many of Virginia's most southerly wetland shrubs and wildflowers are on exhibit here.

Lake Lina is a place of solitude in the garden... place where native plant horticulture and habitat conservation blend to create a naturalized wetland. Aquatic native plants such as pickerelweed, native fragrant water lilies, arrowhead and sweet flag flourish in summer's humidity. On the lake shore, pitcher plants, red and blue cardinal flower and blue flag iris, souring rush (*Equisetum*) mingle with aromatic bayberries. Many wide spread wetland species are naturalizing around the lake, including cattails and numerous native sedges. *Cyperus* and *Carex* represent two particularly specious genera.

Lake Lina also provides habitat for aquatic animals and birds. Several species of turtles, northern water snakes and native frogs inhabit the area. Many native fish and aquatic insects coexist with the plants. Wading birds frequent the lake. Great blue herons, green herons and black crowned night herons enjoy secretive hunting on the water's edge. A full assortment of perching birds enjoys the lake too.

The Virginia Native Tree Collection (VNT)

The Virginia Native Tree collection resides in a far corner of the gardens. Here visitors can see some of the State's best native trees for use in the home setting. Several smaller native trees make up a good part of this collection. The fringe trees, native members of the olive family, routinely amaze visitors with their fragrant, strap-like white flowers. In the fall, these trees display a dark blue ovoid drupe. This is an ideal tree for the discerning gardener with a small yard.

Growing close by are several paw paws (*Asimina*). These handsome little trees are familiar to people who spend time along local rivers where it grows in abundance. The long, broad leaf tapers neatly to a "drip tip," a feature that illustrates its tropical origin as a member of the Annonaceae. When crushed, the leaves have a distinctive odor reminiscent of diesel fuel. The fruit is a large oblong berry with a slightly coriaceous green or brown rind. The mesocarp is white and creamy, often described as a mix between apple and banana with large black seeds. Paw paw is widely regarded as Virginia's finest indigenous fruit.

Other trees in this collection include the hop hornbeam, a hazelnut relative with soft shaggy bark. Also from the Corylaceae is the hornbeam or muscle wood. This tree is notable for its extremely hard wood and fine twigs with delicate imbricate buds. Muscle wood is slow growing and, with age, provides a beautiful fluted trunk. Further along the trail, is overcup oak, so named as the imbricate involucre on the acorn covers nearly the entire nut. A tree with highly variable cruciform leaves, it is a good candidate for low, wet sites.

The sweetbay magnolia grows nearby. Found from Massachusetts to Florida, sweetbay magnolia varies in size, attaining much larger stature in the south. In time, sweetbay becomes a handsome yard tree. The early summer flowers are creamy white and very fragrant. Several other native trees are in this collection, which is located below the Hillside gazebo, about a ten-minute walk from the Visitors Center. The VNT is one of the featured collections in our Specimen Tree program.

Collection Based Education for Conservation

In the United States, avocation gardens are consistently encouraged to use horticulture selections in popular literature and at many public gardens. In Meadowlark conservation collections, horticultural selections are used only in the VNT. We intentionally depart from the relatively strict genetic mandate of the PVC and VNW. This is a specific strategy designed to interest ornamental gardeners in native species through initial use of horticultural selections. The vast majority of native plants in the American nursery trade are selections. Thus, most avocation gardeners are using these horticultural creations without realizing the wild ancestor may be in need of conservation.

Ultimately, we hope to encourage use of native plants in the landscape and educate the public about the often-subtle differences between native species that represent wild populations and horticultural selections. Furthermore, we educate the visiting public and avocation gardeners alike about the ecological and conservation value of native plants in public garden collections and in the landscape at large. Through this decidedly didactic approach, we have created a forum based on living collections that promotes the *International Agenda* and fosters an appreciation for conserving plant diversity to a wider audience.

**Garden Portrait: from the Public Garden Number 3, 2003
American Association of Botanical Gardens and Arboreta**

**Meadowlark Botanical Gardens:
A Garden Born of Politics and Environmentalism**

Keith P. Tomlinson



Franklin Delano Roosevelt was a man of bold ideas. The New Deal was his greatest domestic policy achievement. Every working American for the past 60 years has benefited from one of those New Deal programs- Social Security. Implementing such a vast social initiative required experts in many fields. Among these dynamic thinkers were Harvard-trained economist Gardiner Means and social historian Caroline Ware. In 1935, they bought a 74-acre farm in Virginia's rolling Piedmont outside Washington, D.C.

As Dr. Means and Dr. Ware worked to bring the New Deal to life, they became ingrained in Washington's lively political and academic scene. Over 50 years, they grew to love the farm- raising sheep dogs, farming wheat, and planting flower gardens while writing and teaching. By the 1970's Washington's suburbs were fast surrounding the once rural farm. Lifelong environmentalists, Means and Ware wondered if their land might make a good public park- perhaps an arboretum or public garden.

Donating the Land

Means and Ware entrusted their beloved 74-acre farm to the Northern Virginia Regional Park Authority (NVRPA) in the summer of 1980. NVRPA already owned several thousand acres of parkland in Northern Virginia. Caroline Ware simply stated the property should “create a permanence in the land...a way by which the farm could remain a haven for trees, shrubs and flowers to preserve the bounty of the Virginia country side.” Following these wishes, NVRPA bought a contiguous 21-acre parcel and started planning a public garden.

The 95-acre site is unparalleled in the Washington region for development of a public garden. Topographically, the property embodies the Virginia Piedmont with large hills dropping off to small streams, forested hollows, and expansive views. As early as 1607, Captain John Smith recognized the beauty of the Potomac Piedmont: *“The country is not mountainous nor yet low but such pleasant plaine hills and fertile valleys, one prettily crossing an other and watered so conveniently with the sweete brooks and christall springs, as if art it selfe had devised them.”*

Facilities and Collections

By the mid-80s, three lakes were added to the largest stream course. Several trails outlined in an early master plan took shape. Collections of hosta, daylilies, and ornamental cherry trees were planted. Later, an azalea garden, lilac collection, and a Siberian iris and native tree trail were added. Three gazebos were built in different areas of the garden. Meadowlark opened officially in April 1987 with Means and Ware as the guests of honor. Less than three years later both had passed away but their vision of a public garden was taking shape.

The Meadowlark Visitor Center opened in 1992, featuring a gift shop, library, large fireplace, and high vaulted ceilings. A short time later, the garden received a large donation of dwarf conifers from the private collection of Dr. Albert Paulsen. Perennial, butterfly, herb gardens, and an ornamental grass collection were established by the mid-90s concurrent with irrigation expansion. In 1998, The Atrium, an events facility opened. Built to match the Visitor Center in the architectural style and attended by an exquisite White Garden, The Atrium rapidly became a premier public garden event venue. In 2000, Washingtonian Magazine voted it among the top three event venues in the Washington metropolitan area.

This year, a historic log cabin dating to 1755 opened to the public and an exceptional new wooden bridge was built between islands in Lake Gardiner. Built of seven native hardwoods, the bridge is both curved and arched. A revised master plan is in development and taxonomic survey of collections is in progress. The Visitor Center will be remodeled this year to expand exhibit space.

Instilling a Conservation Ethic



In 1999, Meadowlark initiated development of a regional native plant conservation program. Like most native collections, the objective is to foster conservation of native plants and their habitats through public education and display. The administration of the gardens deemed it important that the new collection be regional in scope. Instead of allowing political boundaries to define the native plants of this particular region, staff developed a criteria based on biogeographic factors.

Regional geology, topography, and forest composition are important to development of the collection. Within this framework, we identified the Potomac River Valley as a geographic province that determines which native plants we accession.

The Potomac Valley Collection plays an increasingly important role as our principal initiative in support of both in situ and ex situ conversation of regional plant diversity. No selections are used in the native collections. Moreover, the collection focuses on regional genotypes and ecotypes. The Washington, D.C., Academy of Sciences recognized establishment of this collection with its annual Biological Sciences Award this spring.

Education and Community Service

With a balance between ornamental and conservation collections, Meadowlark is expanding programmatically. Classes and tours throughout the year teach topics in ornamental horticulture. A new Biodiversity Series education program started four years ago. Participants can join wildflower and birding hikes, study the Gaia Theory, canoe a wetland marsh, or learn about invasive species and plan diversity. Interns from local universities and community colleges join the staff each year for training opportunities. Meadowlark coops education programs with Elder Hostel, Smithsonian Associates, gardens clubs, public schools, and regional community centers. The garden also works with the U.S. Department of State training elite Diplomatic Security Service agents for visits to public gardens and museums. Embassy staff, diplomats, and members of Congress use the garden as a retreat from the city and for entertaining.

President Roosevelt was an innovator who offered a new social paradigm. Presumably, he had no idea his political agenda would also give birth to a public garden. Environmentalists long before the term had meaning, Gardiner Means and Caroline Ware made their contribution to the nation's social fabric and then bestowed an extraordinary gift on the people of Northern Virginia- a public garden devoted to aesthetics, conservation, education, and community service.

New Plant Conservation Initiative at Meadowlark Botanical Gardens, USA: The Potomac Valley Collection

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Keith P. Tomlinson, Manager

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Meadowlark Botanical Gardens in the state of Virginia near Washington, D.C., initiated a new regional native plant conservation program in 1998, in its otherwise largely ornamental collections. Like most native collections, its objective is to foster conservation of native plants and their habitats through public education and display. The administration of the gardens, however, deemed it important that the new collection be highly regionalized in scope. Instead of allowing human abstractions, such as political boundaries, to define the flora of this particular region, we developed a criteria based on biogeographic factors, to define the collection. Regional geology, hydrology, climate and floristics are central to development of the collection. Within this framework, we identified the Potomac River Valley as geographic province that determines which native plants we accession. This collection plays an increasingly important role at Meadowlark Botanical Gardens as our principal conservation initiative in support of the *Convention on Biological Diversity*.

Biogeographic Features of the Potomac Valley

The Potomac Valley encompasses 37,824 square kilometers between 38' and 40' north latitude and 80' and 76' longitude. The watershed's main course flows west to east for 640 kilometers. Twenty major tributaries add another 1,100 kilometers of waterways. The largest of these include the Shenandoah, Monocacy, Cacapon, and Conococheague rivers. Smaller tributaries, mainly in the mountains, combine to make-up 4,300 kilometers of stream corridors. About fifty percent of the watershed is forested.

In global terms, the area falls within Takhtajan's North American Atlantic Floristic Region. The Potomac River traverses five physiographic provinces west to east; these include Allegheny Highlands, Ridge and Valley, Blue Ridge, Piedmont and

the Coastal Plain. Each of these regions contains unique plant communities. In some cases, these communities enjoy broad protection in national and state parks. In other areas, plant communities are under siege from urban sprawl, grazing and logging. Takhtajan recognizes almost one hundred taxa as “endemic or nearly endemic” to the North American Atlantic Floristic Region. Many of these taxa are illustrative of the Potomac Valley flora and comprise an important part of our current accession activity.

The Appalachian highlands of the Potomac Valley reach 1200 meters. Red spruce and northern hardwood forest occupy this region. Several northerly taxa reach their southern limit in the Appalachian Highlands. Within the Ridge and Valley Province, plant communities called shale-barrens support many unique species. Among these are the endemic *Phlox buckleyi*, *Trifolium virginicum* and *Senecio antennariifolius*, to name a few. Further east, in the broad Shenandoah Valley, limestone outcrops support many calcareous cliff-dwelling species. Ferns are of particular interest in this area. One of our region’s most unique small shrubs, Cliff Green (*Paxistima canbyi*), is also at home on these limestone formations.

The eastern portion of the Potomac Valley lies within the foothill-like Piedmont and the alluvial Atlantic Coastal Plain. Vast deciduous forests of white oak, red oak, red maple, American beech and rock oak embrace a diversity of shade-loving lower-canopy trees, shrubs, wildflowers and ferns. Bald cypress trees grow here, very near their natural northern limit. Some areas of the eastern Piedmont and the Coastal Plain are widely developed. The need for conservation of native plant communities in this area is immediate.

Combining Existing Resources and Developing New Ones



No flora for the Potomac Valley currently exist, however, within the four states of which the Potomac Valley is a part, three—including Pennsylvania, West Virginia and Maryland—have floras. Virginia has no systematic treatment of its flora yet, but it does have a very useful flora atlas.

We use these four resources, along with topographic maps, geographic information systems and fieldwork to determine species composition and distribution within the watershed. In addition, we consult with various private and government agencies working to conserve plant diversity in all four states. This exchange enables increased communication on both *exsitu* and *insitu* conservation projects. Through this process, we are developing new detailed

information on the composition, distribution and conservation status of the Potomac Valley plants. Ultimately we intend to develop a database for this information.

The display and interpretation of native species is a central goal of the collection. The collection will provide our staff with the ongoing task of understanding conservation needs of native species throughout the Potomac Valley and interpreting that information to the public through education programs. We will continue to add accessions in accordance with various strategies outlined in *International Agenda for Botanic Gardens Conservation* and the *Darwin Technical Manual* both publications of Botanic Gardens Conservation International.

From a programmatic perspective, the Potomac Valley collection is the foundation of our institutional mission centered on aesthetics, conservation, education and community service. Moreover, this collection's development supports Meadowlark's parent agency, the Northern Virginia Regional Park Authority, in conserving and cataloging native species on its own properties, all 4,583 hectares of which are in the Potomac Valley.

Objectives for the Potomac Valley Native Plant Collection

- Strengthen the existing collection within the fiscal, administrative and curatorial practices of the garden.
- Foster an understanding of the aesthetic and ecological value of native plants within the community.
- Develop and implement educational programs that focus on native plant horticulture and conservation.
- Provide conceptual framework for the public to foster awareness for regional plant conservation with issues such as water quality and ecosystem/habitat conservation.
- Facilitate a temporal understanding about the Potomac Valley plant communities by interpreting their natural history.
- Raise public awareness about obtaining native plants and discourage wild collecting.
- Encourage *insitu* and *exsitu* conservation projects throughout the Potomac Valley.
- Work in partnership with local universities, museums and other gardens to encourage systematic, ecologic and biogeographic research on Potomac flora.
- Establish curatorial and horticultural internship programs working with the Collection.
- Illustrate the effects of exotic invasive species on native plant communities.
- Propagate stock plants for reintroduction into the wild when deemed appropriate.

- Rescue plants from construction sites and other disturbed areas when all viable conservation alternatives are exhausted.
- Research and assemble criteria to evaluate the collection's impact as a vehicle for conservation and education.