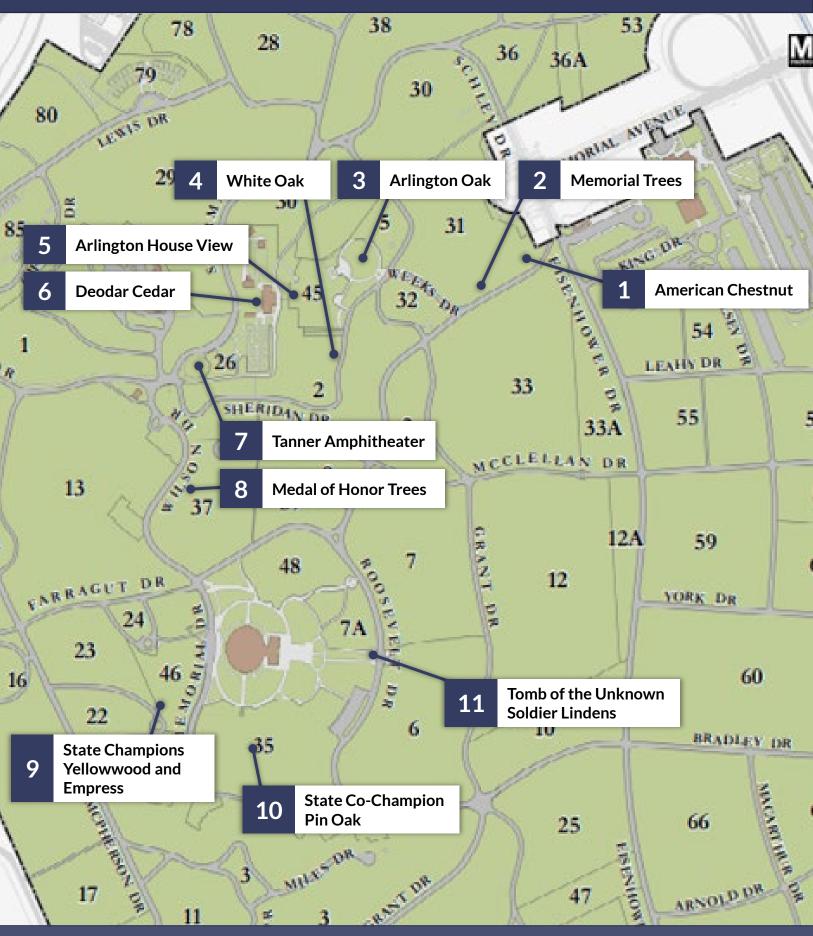
ARLINGTON NATIONAL CEMETERY WALKING TOUR

MEMORIAL ARBORETUM





As you complete this walking tour, we'd love to hear your thoughts about the plants, people, historical events and ideas you encounter. At some stops, you'll see a "Social Media Connection" prompt that refers you to the end of the walking tour where you can see ways to share and join the conversation.

We look forward to connecting with you!



We love hearing about your visit! Share your pictures, questions, and favorite parts of the tour on Facebook, Twitter, and Instagram.





MEMORIAL ARBORETUM

Length: ~2.5 miles

Starting Point: Section 31 (0.2 miles from Welcome Center)

Exertion Level: Moderate

There are three types of stops on this walking tour:



HONOR stops mark specific trees, shrubs and flowering plants.



REMEMBER stops commemorate events, ideas or groups of people.



EXPLORE stops invite you to discover what this subject means to you.

1	American Chestnut Foundation Tree	Section 31	HON
2	Memorial Trees	Roosevelt Drive	REMEN
3	Arlington Oak	John F. Kennedy Gravesite	HON
4	White Oak	Section 2	HON
5	The View from Arlington House	Lawn in front of Arlington House	REME

6 Deodar Cedar Yard behind Arlington House



8 Medal of Honor Famous & Historic Trees

Tanner Amphitheater

Tanner Amphitheater



9 State Champion Yellowwood & Empress Trees

Sections 23 & 46

Section 37



HONOR

10 State Co-Champion Pin Oak

Section 35



Tomb of the Unknown Soldier Linden Trees

Tomb of the Unknown Soldier





ABOUT MEMORIAL ARBORETUM





Kwanzan cherry blooms in front of the USS Maine Memorial in Section 46 in April 2019. (ANC/Elizabeth Fraser)

BECOMING AN ARBORETUM

Among the 400,000 gravesites at Arlington National Cemetery stand nearly 9,000 trees, some older than the cemetery itself. These trees, along with the shrubs, flowers and 639 acres of rolling green hills they sit upon, serve as a living tribute to the veterans and their family members laid to rest at Arlington. In 2014, to commemorate its 150th anniversary, Arlington National Cemetery established this historic landscape as Memorial Arboretum.

In June 2018, Memorial Arboretum was accredited as a Level III Arboretum. Only 24 renowned institutions worldwide maintain this prestigious accreditation, among them only two other cemeteries (Mount Auburn Cemetery in Cambridge, Massachusetts and Spring Grove Cemetery and Arboretum in Cincinnati, Ohio). A Level III Arboretum must have at least 500 species of woody plants, offer educational programming, collaborate with other arboreta and participate in tree science and conservation.

While strolling through these hallowed grounds, consider how the landscape contributes to Arlington's mission to honor and remember the service and sacrifice of individuals buried here.

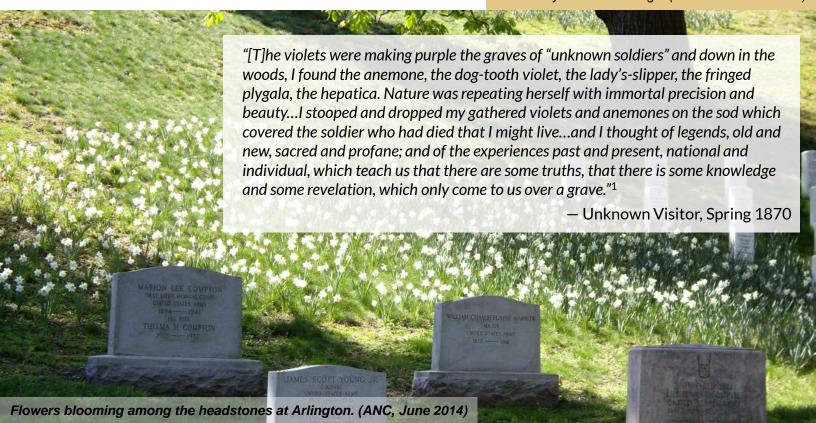


YEAR-ROUND BEAUTY

Whether visiting in the spring, summer, fall or winter, there is always something to see in Arlington's Memorial Arboretum.

Download our Seasonal Guides for recommendations on what horticulture highlights to see each season.

You will notice labels on many trees. The labels include the tree's scientific name, common name, family and native range. (ANC/Elizabeth Fraser)



AMERICAN CHESTNUT FOUNDATION TREE



WALKING TOUR STOP 1

Section 31

Over the past 300 years, the American Chestnut has gone from being the dominant tree in what is now the eastern United States to becoming almost extinct. These trees, which are native to North America, were majestic giants. Their trunks could span well over 10 ft., and they could reach more than 100 ft. high – comparable to today's redwoods in the American northwest. Often the fastest-growing, largest and tallest trees in a landscape, their nuts fed billions of wildlife, people and livestock, and their rotresistant wood was perfect for building material.

What happened to this so-called "perfect tree"? Disease.

Small orange cankers indicate chestnut blight infection. (NPS/Reidman)

Old-growth chestnuts in the Great Smokey Mountains, North Carolina, circa 1910. (Forest History Society/Sidney V. Streator)

In 1904, a forester noticed a fungus forming on the chestnuts at the Bronx Zoo in New York. A year later, the fungus had spread to trees in Virginia, and soon it affected chestnuts up and down the east coast.

USDA scientists later determined that the disease, a fungal blight known as *Cryphonectria parasitica*, arrived on Japanese Chestnuts as early as 1876. Between 1904 and 1940, approximately 3.5 billion American chestnuts died from the blight. Today, few, if any, full-growth American chestnuts remain. However, The American Chestnut Foundation (TACF) is working to change this.

One way that TACF is working to reforest the American chestnut is by breeding the blight-resistant Chinese chestnut (*Castena mollissima*) with the American chestnut to create a tree that is $1/16^{th}$ Chinese chestnut and $15/16^{th}$ American chestnut. This tree is one of the hybrid trees that the Virginia chapter of TACF bred. It was planted on Arbor Day in 2011, along with another hybrid chestnut that fell victim to a deer. So far, the tree has not been infected with the blight, but ANC horticulturalists are keeping a close eye on it. Chestnuts often begin showing signs of infection at about 10 years.



ANC's collaboration with TACF is part of its required collaborative scientific or conservation activities as a Level III Certified Arboretum.

Learn more about Memorial Arboretum's research, science and conservation projects on Arlington's website.

MEMORIAL ARBORETUM WALKING TOUR

From the Welcome Center, cross the street to Roosevelt Drive. On your right, you'll see a black "Welcome to Arlington" sign. The chestnut tree is a few feet in front of this sign.

MEMORIAL TREES



WALKING TOUR STOP 2

Roosevelt Drive

As you walk through the cemetery, you'll notice that several trees have plaques or monuments underneath them. These are Memorial Trees. Memorial Trees are exactly what they sound like: living memorials that commemorate military units and battles, veterans, families and others who serve. Many were dedicated by U.S. presidents, visiting dignitaries or representatives from service organizations. There are 143 Memorial Trees throughout the cemetery, most along prominent walkways. The majority were planted in the 1980s and 1990s.

The somewhat modest monuments that mark a Memorial Tree are actually national monuments that require an act of Congress to be placed. National monuments can include monuments like those on the National Mall in D.C., parks spanning thousands of acres, historic structures and smaller memorials such as these.

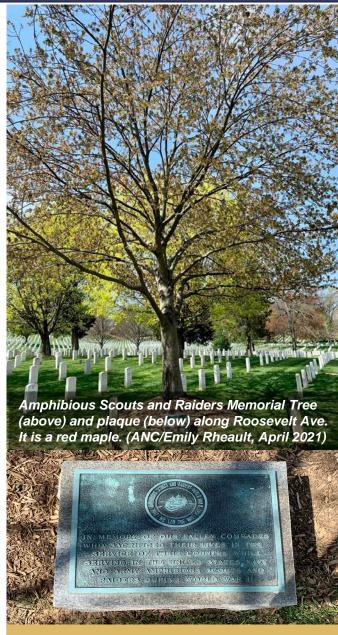
Steps to Plant a Memorial Tree

- 1. Organization or person submits a request to the cemetery
- 2. Cemetery Executive Director and Superintendent approve request
- 3. Cemetery Board of Directors approves request
- 4. Commission of Fine Arts approves request
- 5. Secretary of the Army approves request
- 6. Congressmember introduces a bill to create the monument and it is passed into law

Once a Memorial Tree is approved by Congress, ANC horticulturalists choose a tree and a location for the memorial. If a Memorial Tree ever dies — either because of inclement weather, wildlife, or disease — Horticulture replaces it with another tree of the same species or, if that tree is no longer viable, a similar species.

Memorial Tree Facts

- Number of Memorial Trees: 143
- Most Common Memorial Tree Species: Red Maple (26 of the 143 trees)
- Oldest Memorial Tree: Mother of the Unknown Soldier tree
 - Dedicated: May 8, 1932
 - Tree species: River Birch (Betula nigra)
 - Location: Section 48
- Most Recent Memorial Tree: Vietnam War Helicopter Pilots Association
 - Dedicated: April 8, 2018
 - Tree species: Red Maple (Acer rubrum)
 - Location: Section 35

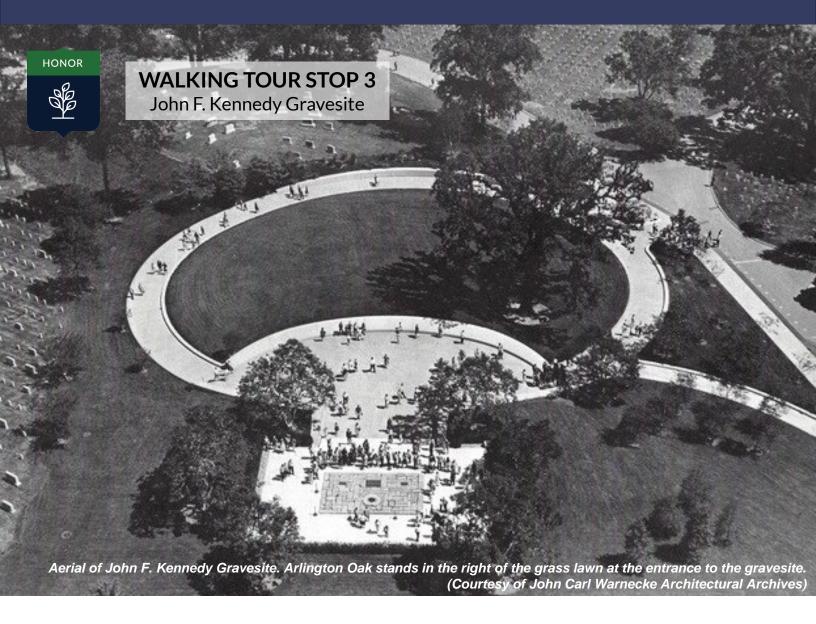


MEMORIAL ARBORETUM WALKING TOUR

Memorial trees flank both sides of Roosevelt Drive. Stop and look at one or more as you walk along Roosevelt Ave.



ARLINGTON OAK



On this hill used to stand an oak tree nearly as old as the United States. It was 10 years old when the Custis family started construction on Arlington House. It was 70 years old when the Civil War broke out. It survived the Army's occupation of this land during the Civil War and the establishment of Arlington as a national cemetery in 1864. When President John F. Kennedy was buried at this spot, it was 170 years old.

This post oak (*Quercus stellata*), fondly referred to as the Arlington Oak, did not meet its demise until 2011 when Hurricane Irene swept through the D.C. region, toppling it and many other trees. At the time, the 220-year-old oak stood about 200 feet tall, and its trunk spanned 5 feet across. There was one silver lining.

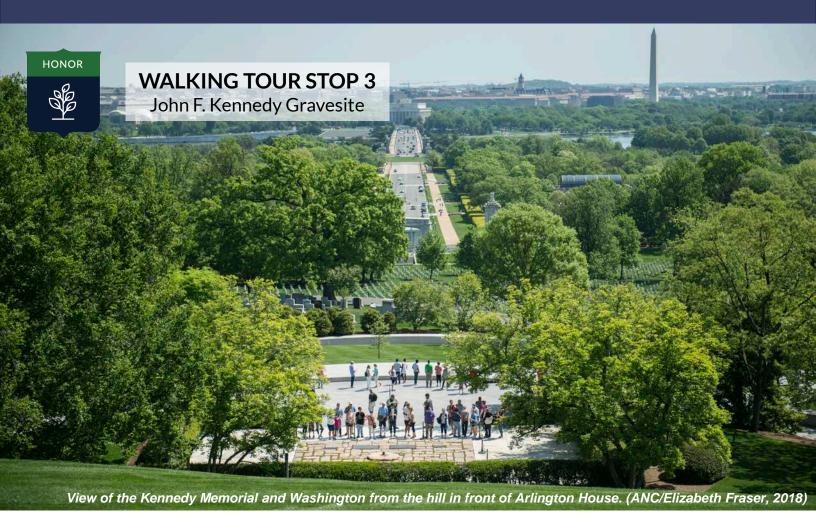




MEMORIAL ARBORETUM WALKING TOUR

Continue on Roosevelt Drive. Turn right on Weeks Drive. President John F. Kennedy's Gravesite is directly ahead. Observe the memorial from the lower circular walkway.

ARLINGTON OAK

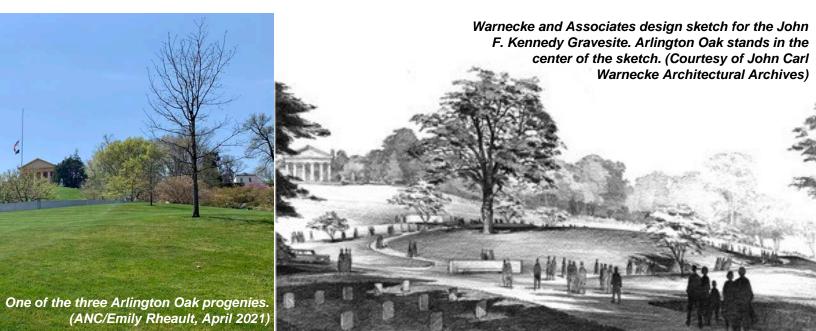


President John F. Kennedy visited Arlington National Cemetery in March 1963. Looking at the view of Washington, D.C. from the hill by Arlington House, he is reported as saying, "I could stay here forever." Eight months later, he was assassinated.

After his death, Kennedy's family knew they wanted to inter him at this spot. In 1963, Jacqueline Kennedy hired John Warnecke to design the memorial and landscape that you see today. Inspired by the 170-year-old Arlington Oak, Warnecke designed the memorial around the oak. In the final design, the post oak featured prominently. It served as a natural focal point and offered its beauty and shade to visitors for the next 48 years.

Kennedy is one of only two presidents buried at Arlington. The other is William Howard Taft, who died in 1930. At the time of Kennedy's death, many believed that he would be buried in Brookline, Massachusetts, where he was born and raised. Besides Taft, Woodrow Wilson was the only other president who had been buried outside of his native state and in the National Capital region. (President Wilson is buried at the National Cathedral in Washington, D.C.)

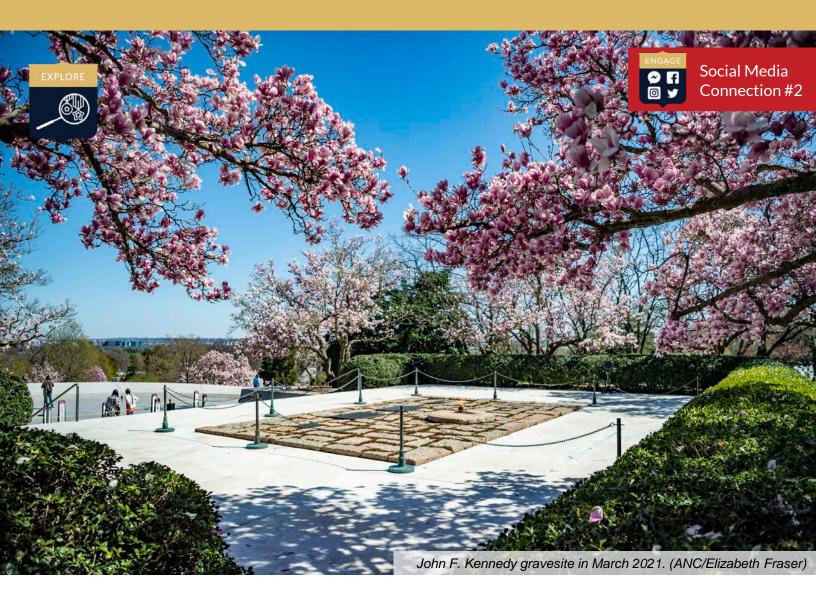
In 2007, an organization called American Forests visited Arlington National Cemetery and collected acorns from the Arlington Oak as part of its historic tree preservation program. For this program, American Forests traveled to historic sites around the country to collect seeds from their trees, which it then used to grow progeny. On Arbor Day the year after the Arlington Oak fell, Arlington planted three saplings grown from its acorns in the spot where the legendary oak once stood. Arlington planted an additional two saplings in the cemetery — one in Section 26 near Tanner Amphitheater and another in Section 36 new Custis Walk.





FORMAL LANDSCAPES





President John F. Kennedy's gravesite is one of the few formally designed landscapes in Arlington's otherwise naturalistic landscape. Other designed landscapes include the Tomb of the Unknown Soldier and the Columbaria.

Designed landscapes are intentionally designed by an architect, gardener or horticulturalist. Each landscape feature is chosen to help evoke a cohesive emotion. Every plant in this landscape was specifically chosen by Warnecke as part of his original design.



Saucer magnolias (Magnolia x soulangiana) stand at the four corners of the gravesite. These trees, which originate from China, bloom large, pink and white flowers in early spring. They require lots of sun and offer a natural habitat and food source to many birds. Saucer magnolias typically grow 20-30 feet tall, with a 25-foot spread.

False holly hedges

(Osmanthus heterophyllus) line the perimeter of the gravesite. These evergreen shrubs bloom small, white flowers in late fall. False holly is a slow growing shrub. Arlington prunes it throughout the year to maintain its formal shape.





Japanese flowering crabapples (Malus floribunda) stand near the entrance to Kennedy's gravesite. These trees bloom small, pink and white flowers in mid-late spring. The flowers are replaced with small, red fruit in the summer that remains throughout the winter, unless eaten by wildlife. These trees typically grow 15-20 feet tall.

REFLECTION QUESTIONS

- What emotions do you feel visiting this memorial?
- What elements of the design, including the trees and shrubs, stand out to you?
- Do you feel differently visiting a gravesite in a designed landscape like this one versus a gravesite in a naturalistic, unplanned section of the cemetery? Why or why not?

WHITE OAK







WALKING TOUR STOP 4

Section 2

Although the Arlington Oak no longer stands, another oak of about the same age stands nearby. This one is a white oak, and it is around 250 years old. It is one of the oldest trees in the cemetery, dating to the American Revolutionary War.

White oaks are native to the eastern United States. Mature trees typically reach about 50-80 feet in both height and spread. White oak trees are versatile. They can tolerate both wet and dry soils, and although young trees require full sun, mature white oaks are shade tolerant. White oaks are one of the most commons trees at Arlington.

Just like the post oak, this white oak was also damaged by a storm. On August 8, 2012, a storm knocked out one of the tree's central branches, giving the tree its unique shape.

This white oak is over 80 feet tall with a similar crown spread. Its trunk diameter is 64 inches.



The start of the American Civil War in April 1861 split the nation in half. Virginia joined the new Confederate States of America, while Washington, D.C., just across the Potomac River, remained the capital of the United States of America.

Arlington House, only three miles from the White House and with sightlines over the entire capital city, took on an immediate strategic importance. At the start of the Civil War, Mary Randolph Custis and her husband Robert E. Lee, a U.S. Army officer, owned Arlington estate, including 196 enslaved persons, who lived and worked on the plantation. On April 20, 1861, Lee resigned from the U.S. Army and pledged his loyalty to the Confederacy. Given the house's proximity to Washington, D.C. and its importance to the U.S. Army, the Lee family fled Arlington House a few weeks later, never to return.

On May 23, 1861, the U.S. Army occupied the Arlington property. It used the house as a headquarters and officers' housing, while soldiers camped around the property. The Army's occupation of the property forever changed its landscape.

The Army cut down many acres of forest to build forts and encampments on the land. Luckily, the Army did not cut down many of the large trees close to Arlington House, including this white oak. Trees like this one were kept to provide shade for soldiers — crucial in Virginia summers.



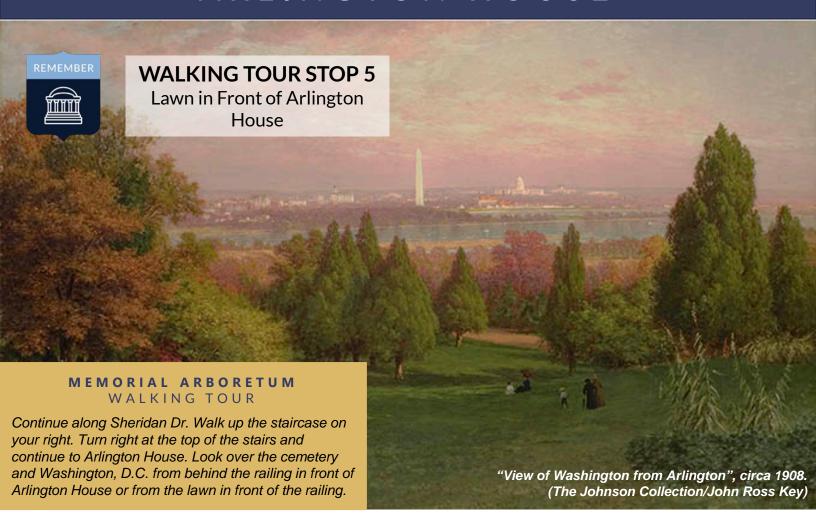
MEMORIAL ARBORETUM WALKING TOUR

From the Kennedy Gravesite, turn right on Sheridan Drive. The white oak is ahead on your right.

Sketch of solders cutting trees at Arlington in 1861. (Arlington House Archives)

TING DOWN THE WOODS ON ARLINGTON HEIGHTS. SERECHED BY OUR SPECIAL ARTEST. See page 2

THE VIEW FROM ARLINGTON HOUSE



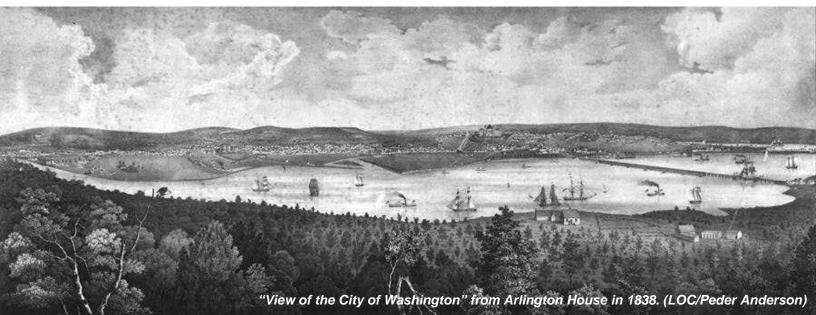
When George Washington Parke Custis, George Washington's step-grandson, inherited this property in 1802, most of the land was not developed. Fields existed at the base of the property near the Potomac River, but beyond that, oaks, hickories and chestnuts covered the hillsides. By the time the Lee family fled in 1861, the property consisted of: a working farm, the "Park," flower and vegetable gardens, a work yard and the forest – all built and maintained by slave labor.

Admiring this same view on a visit to Arlington in 1824, Marquis de Lafayette remarked to Mary Randolph Custis, "Cherish these forest trees around your mansion. Recollect, my dear, how much easier it is to cut a tree than to make one grow."

The Park, which mainly survived the Civil War intact, consisted of 200 acres leading up to and surrounding the house. It is also what became Arlington National Cemetery in 1864. It is not clear exactly when the Park was developed – it may have been part of Custis' initial plan or developed over time – but it was certainly influenced by the landscape at George Washington's Mount Vernon.

Like Mount Vernon, the Park was an English-Landscape-style garden, popular in the 18th and early 19th centuries. English Landscape-style gardens were supposed to artfully imitate nature. These landscapes were not supposed to look designed; instead, they were supposed to be naturally perfect.

From this same view in the 19th century, trees dotted the landscape in small clusters or singly. The trees were either allowed to grow naturally or planted to frame a particular view, in this case the federal city. Throughout the Park, foot paths wended through the trees and livestock roamed the hillside. An article in Harper's New Monthly Magazine in 1853 wrote of the view, "In front, sloping toward the Potomac is a fine Park of 200 acres, dotted with groves of oak and chestnut and clumps of evergreens and behind it the dark forest."



* RURAL & LAWN CEMETERIES

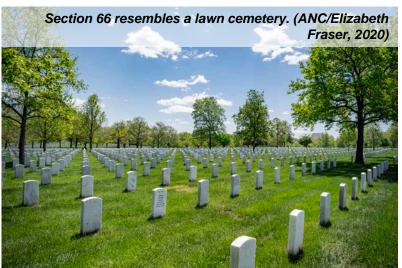


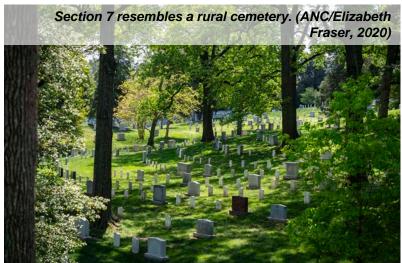


While Arlington has a few formal landscapes, most of the cemetery is naturalistic. Naturalistic landscapes are not formally designed and tend to look semi-natural. There are two major naturalistic landscape styles at Arlington: rural and lawn.

Cemetery sections close to Arlington House are reminiscent of Custis' English-landscape style garden. These sections reflect the nineteenth-century Rural Cemetery Movement. Rural cemeteries offer vistas for visitors to admire. These vistas are achieved through rolling hills and trees planted throughout the cemetery to frame and complement the view.

Newer sections of the cemetery do not resemble these sections. These sections resemble lawn cemeteries, which gained popularity in the 20th century. Lawn cemeteries tend to be flat. They also have minimal plantings within the section. Instead, trees and shrubs line the perimeter with only a few trees within the section itself.





REFLECTION QUESTIONS

- What are the benefits to both rural and lawn cemetery landscapes? The drawbacks?
- Which cemetery landscape style do you prefer? Why?
- How does Arlington's landscape contribute to its mission to honor and remember the individuals buried here?



Arlington property in November 1863, seven months before the cemetery was established. (VMHC/Andrew Russell)

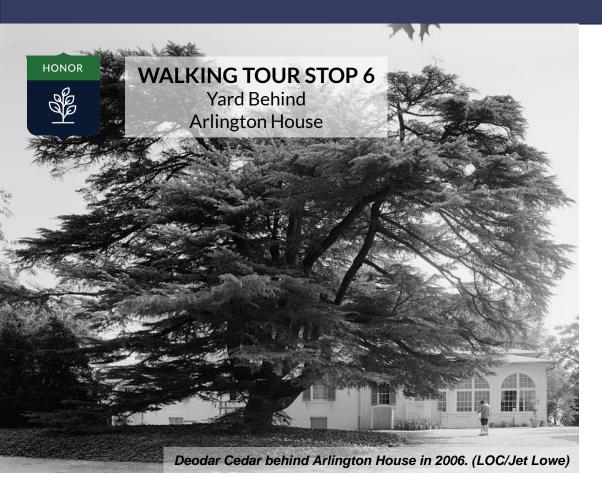
Mowing the Grass

More than 500 acres of Arlington National Cemetery are covered by highly maintained turfgrass. During the growing season, the grass is mowed at least once a week and maintained at a height of 3.5-5 inches. Each year, nearly 18 acres are sodded and 30 acres are renovated to restore whole sections of the cemetery. All of the turf is aerated twice annually.

Caring for Trees

Arlington's trees are on a four-year pruning cycle. This means every tree in the cemetery is pruned at least once every four years. Some older or more at-risk trees may be maintained more often. Newly planted trees come with a one-year maintenance contract to help ensure the tree thrives in its new location.

DEODAR CEDAR



In 1874, David H. Rhodes, the cemetery's landscape gardener, planted this tree. It is a deodar cedar.

Rhodes wrote in his memoirs that he purchased the cedar at Saul Nursery in Washington, D.C. It is one of the few old trees for which the cemetery knows exactly where it came from and when it was planted.

In 1933, Arlington House was established as a national park and ownership of the house, the land around it and this tree was transferred to the National Park Service.

Deodar cedars are native to the western Himalayas where they have been known to reach 250 feet tall. They were introduced to Europe in 1822 and the United States shortly thereafter. Mature deodars typically reach 40-70 feet high with a 20–40-foot spread. They are evergreen trees and therefore keep their foliage year-round. Although there are many trees referred to as cedars, there are only four true cedars: deodar, atlas, cyprus and Lebanon. All true cedars are native to the Mediterranean region or the Himalayas. Arlington has 103 cedars in total — a mix of deodar, atlas and Lebanon cedars.

Most deodar cedars do not look like this cedar. Most have a cone shape, typical for evergreens. However, in 1876, two years after Rhodes planted this tree, a hurricane swept through Washington, D.C. and broke off the top of the tree. That is why it has the unique shape you see today: the central leader was broken out and the lateral branches started taking apical dominance, growing up and around.



Apical dominance is when one branch or stem of a plant is dominant over the other branches or stems. Typically, the main, central stem has apical dominance. In addition to natural causes like storms, apical dominance can be altered though pruning. This is how topiaries and other shaped plants are created.



DAVID H. RHODES

Section 15, Grave 66

MEMORIAL ARBORETUM WALKING TOUR

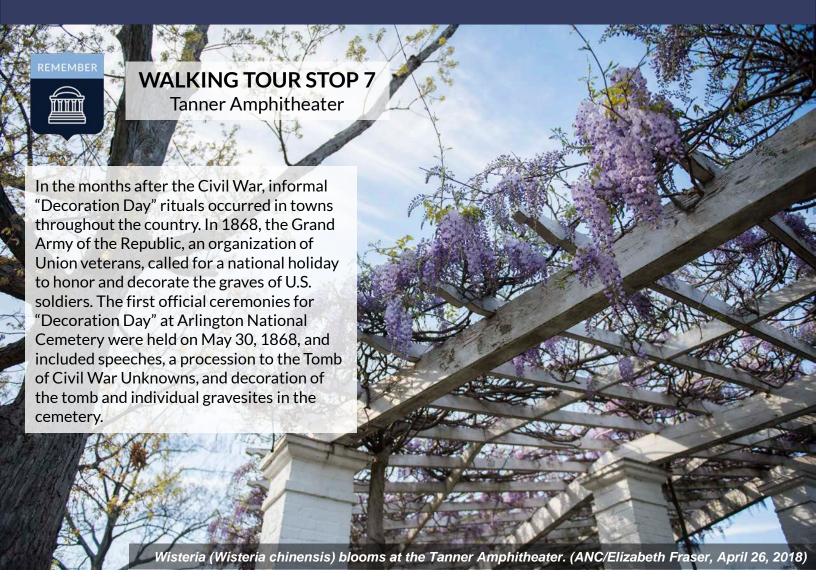
Walk to the back to Arlington House.

David Handsworth Rhodes (1850-1932) was Arlington National Cemetery's first landscape gardener. More than anyone else, he influenced the planning and development of the cemetery's landscape during his over 50-year tenure. Rhodes was hired in 1873, nine years after the property was established as a national cemetery, to manage the cemetery's 200-acres. He had sole charge of the property's estimated 20,000 trees and 100,000 floral plants and shrubs, as well as its roads, fences, water and drainage system and buildings. By the end of his career in 1930, the cemetery had expanded to over 400 acres.

Born in Sheffield, England, Rhodes became a U.S. citizen on February 11, 1881. In addition to his duties at Arlington, Rhodes traveled to other national cemeteries to advise on landscape care and improvements. He also managed burial and repatriation efforts for the U.S. Burial Corps during the Spanish-American War.

Rhodes standing in a Philippine graveyard circa 1900. (The American Cemetery)

TANNER AMPHITHEATER



In 1873, on the fifth anniversary of the first Decoration Day celebrations, a permanent amphitheater was built on the site of the first ceremony. Designed by U.S. Army Quartermaster General Montgomery C. Meigs, it was the first amphitheater constructed in a national cemetery. Meigs' original design included the wisteria you see today – he planted both Chinese and Japanese wisteria. He also planted grapevines, which are no longer here.

In 2015, Arlington National Cemetery, in partnership with the National Park Service's Historic Preservation Training Center, began a historical analysis and restoration project of the amphitheater. Completed in Spring 2019, the project restored the amphitheater to its original colors: metallic bronze capitals and bases, light tan columns and yellow along the base and on the brick columns. One casualty of the restoration work was many of Meigs' original wisteria plantings.

If you look around the amphitheater today, you'll notice some vines that are thicker than the other vines. These are wisteria plants that date to the original amphitheater and they are a mix of Chinese and Japanese wisteria. The smaller vines were all planted after the restoration work completed and are American wisteria, a species native to Virginia. Unlike Chinese and Japanese wisteria which can grow 30-60 feet in length, American

wisteria typically only grows 20-30 feet long.

Wisteria is a beautiful plant, but it grows fast and aggressively, and can quickly take over. For this reason, Arlington prunes the wisteria often — usually about once a month from April to October — and collects the plants' seed pods to try to prevent its spread to the nearby woods or other parts of the cemetery.

Decoration Day eventually came to be known as Memorial Day, and today it serves as a holiday to honor the dead from all American wars.

MEMORIAL ARBORETUM WALKING TOUR

Walk along Sherman Drive (behind Arlington House). Tanner Amphitheater is directly ahead.

Choosing What to Plant

Arlington plants both native and non-native species. When choosing what to plant, ANC's horticulture team considers a plant's disease resistance, water, sun and temperature needs, usefulness to wildlife and aesthetics. Invasive species, like the Chinese and Japanese wisteria, are only kept if they hold historical value.



MEDAL OF HONOR FAMOUS & HISTORIC TREES



WALKING TOUR STOP 8

Section 37, near Grave 158

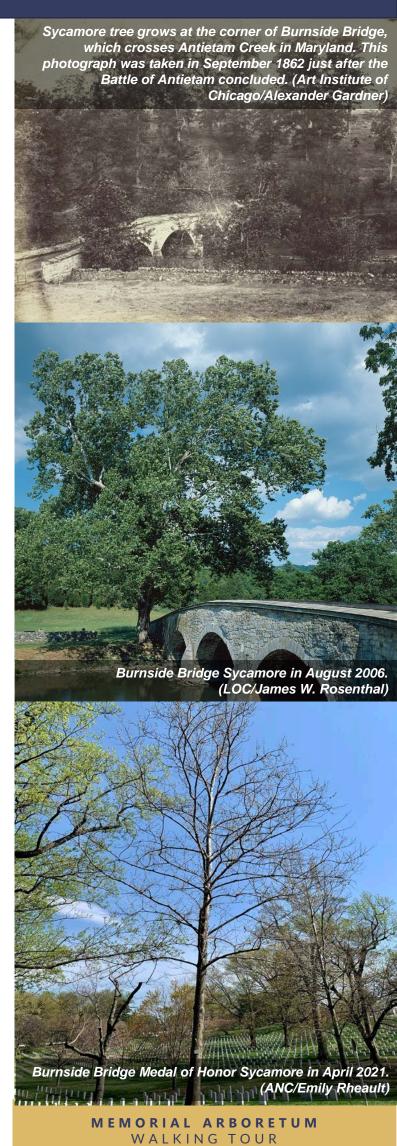
Walking along Wilson Avenue, you might notice some extra special Memorial Trees: Medal of Honor trees. These trees, which represent historical Americans, events and places, were planted in 1992 by the American Forest Society and the Medal of Honor Society.

All 36 Medal of Honor Trees were originally planted in the clearing near Civil War General Philip Kearny's gravesite next to Tanner Amphitheater. However, in 1997, the saplings were transplanted to give the trees more space to grow. There were originally 50 Medal of Honor Trees, but Virginia's climate, characterized by hot summers and cold winters, was not conducive to the diversity of trees from across the United States and only 36 trees remain.

Each Medal of Honor tree is descended from a historic tree. For example, a water oak next to the Brown Chapel African Methodist Episcopal Church in Selma, Alabama (Section 2, near the Kearny Monument) or a pignut hickory from President James Madison's Montpelier in Virginia (Section 13, near grave 14338-1). There are also trees from famous battle sites, like a sycamore that stands next to Burnside Bridge (Section 37, near grave 158), where U.S. troops forced a crossing against the Confederate Army during the Battle of Antietam.

Read this <u>document</u> to learn about each of Arlington's 36 Medal of Honor Trees.

While ANC's horticulture team did not get to choose the types of Medal of Honor Trees planted, it does decide everything else planted in the cemetery. When choosing what to plant — whether a tree, shrub or flowing plant — the biggest factor the horticulture team considers is whether that plant will thrive in Virginia's climate with little to no additional watering or maintenance. The most common trees at Arlington are oaks, maples and hollies. Some of the most common shrubs include boxwoods, viburnums, rhododendrons and oakleaf hydrangeas.



Continue on Sherman Drive and turn left onto Wilson Avenue. Medal of Honor trees are planted along Wilson

Avenue and Farragut Drive. The Burnside Bridge sycamore stands on the left of Wilson Ave, just before

the second bend in the road.

STATE CHAMPIONS YELLOWWOOD & EMPRESS



The Memorial Arboretum is home to three state champion trees and two co-champion trees. In 2012, both the Yellowwood in Section 23 and the Empress in Section 46 were named state champion trees — an upgrade from their previous statuses as co-champions. While the cemetery does not know exactly when these trees were planted, it was likely around the dedication of the Maine Memorial in 1915, making these trees over 100 years old.

Yellowwood (Cladrastis kentukea)

- · Height: 45 feet
- Circumference: 154 inches
- Average crown spread: 56 feet

Empress Tree (Paulownia tomentosa)*

- Height: 57 feet
- Circumference: 213 inches
- Average crown spread: 64 feet

*Please note that the empress tree is a non-native, invasive tree. We encourage you to enjoy this Arlington National Cemetery champion, but we discourage planting it in North America.

MEMORIAL ARBORETUM WALKING TOUR

Continue on Wilson Avenue. Walk past Memorial Amphitheater and turn right into Section 46. The trees stand next to each other at the edges of Sections 23 and 46.

As part of Arlington's status as a Certified Level III Arboretum, it is required to maintain a catalog with data for every tree in the cemetery, including its exact GPS location, changes in size, changes in health and any maintenance work performed on the tree.

Arlington National Cemetery is home to over 9,600 trees and 411 different species varieties and cultivars.

What are state champion trees?

In 1970, 4-H and FFA (Future Farmers of America) created the Virginia Big Tree program to encourage students' interest in forestry and natural resources. The program's mission is to measure and document the state's largest trees and promote the care and appreciation for trees and forests. Today, the program is run by Virginia Tech's Department of Forest Resources and Environmental Conservation and is affiliated with American Forests' National Register of Champion Trees (established in 1940). Virginia consistently ranks among the top-five states for national champion trees.

Volunteers of the program go out in the field every six years and take measurements. To be considered a champion or co-champion, or to make the top five list for a tree species, the tree needs to rank highest with regards to tree height, crown spread and trunk circumference. If two trees score within five points of each other, they are designated as co-champions.

Learn more about the program and other high-ranking trees at bigtree.cnre.vt.edu.

\star

MEASURING UP



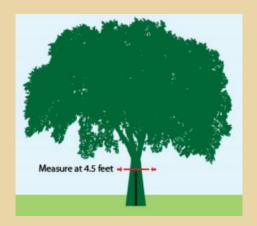


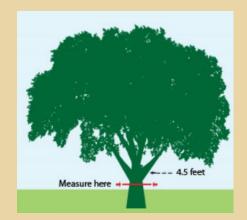
Trees are granted champion status based on three different measurements: trunk circumference, total height, crown or branch spread. For each of those measurements, a tree earns points. The tree with highest point count is named the state or national champion. Cochampions are crowned if multiple trees earn within 5 points of each other.

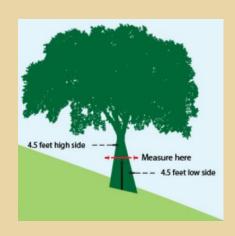
Point total = Trunk Circumference (inches) + Tree Height (feet) + $\left[\frac{1}{4} \times \text{Crown Spread (feet)}\right]$

TRUNK CIRCUMFERENCE

Trees get one point for every inch of their trunks' circumference. You should measure a tree's circumference 4.5 feet from the ground. If a trunk branches at or below 4.5 feet, measure the circumference at its smallest point. If a tree is on a slope, measure 4.5 feet above the ground on both sides and then measure the circumference at the midpoint of those two measurements.

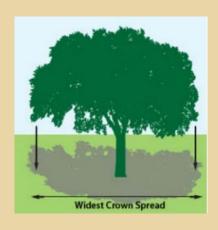






CROWN SPREAD

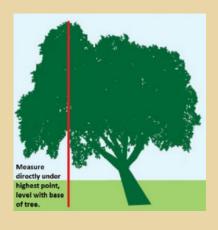
Trees get 1/4 point for every foot of their average crown spread. The crown is the top part of the tree. Crown spread is the distance from one side of the crown to the opposite side of the crown. You should use the average of at least two crown spread measurements.





TREE HEIGHT

Trees get one point for every foot of their height. Find the highest point of the tree and then measure the distance between that point and the ground directly below.





State Champion Sawtooth Oak (*Quercus acutissima*)



State and National Co-Champion Dwarf Hackberry (*Celtis pumila*)

OTHER ARLINGTON CHAMPIONS

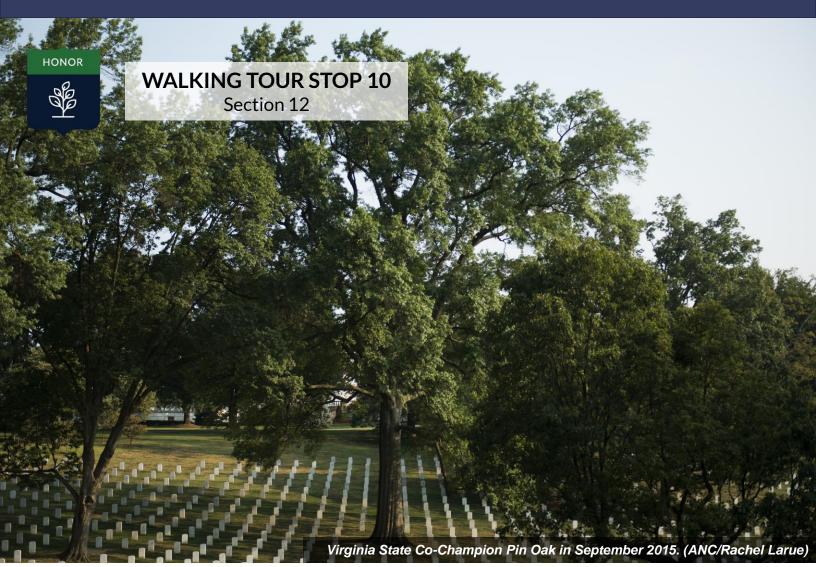
Sawtooth Oak

- Location: Section 12
- Height: 51 feet
- Circumference: 176 inches
- Average crown spread: 90 feet

Dwarf Hackberry

- Location: Section 8
- Height: 42 feet
- Circumference: 66 inches
- Average crown spread: 50 feet

STATE CO-CHAMPION PIN OAK



Looking at this state champion pin oak (*Quercus palustris*), you might guess it's one of the oldest in the cemetery — it's a big tree. However, based on aerial photographs of Memorial Amphitheater from when construction finished in 1919, the tree is no older than the Amphitheater itself.

While pin oaks are naturally fast-growing trees, this tree is an especially fast-growing and large tree. This is because it was the right plant in the right place at the right time. In this location, the pin oak receives ample sunlight since there are few other large trees nearby and, since it is at the bottom of an incline, it also gets plenty of water.

Arlington's State Co-Champion Pin Oak

• Height: 126 feet

Circumference: 192 inches

• Average crown spread: 112 feet

Typical Pin Oak

· Height: 60-80 feet

• Circumference: 125 inches

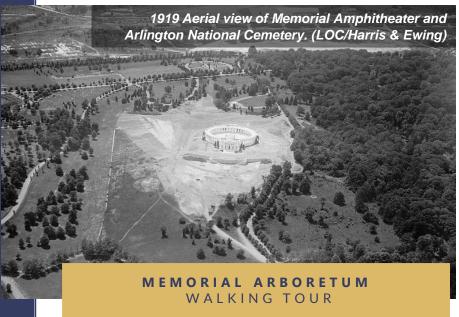
• Average crown spread: 25-40 feet

Preserving Old Trees

One important goal for the horticulture team is maintaining the cemetery's oldest and largest trees. This is both because of the beauty of these trees, but also because they have a massive environmental impact.

In one year, this pin oak can sequester up to 1,400 pounds of atmospheric carbon and intercept up to 23,000 gallons of precipitation per year.

Comparatively, a small, 10-year-old oak tree can only absorb up to 45 pounds of CO_2 per year.



Return to Memorial Drive and walk along the pathway to the right of Memorial Amphitheater. After passing a flagpole, you should see a fire hydrant. Stop in front of the fire hydrant and look over Section 12. The pin oak is the largest tree directly ahead.

TOMB OF THE UNKNOWN SOLDIER LINDEN HEDGE



From Roosevelt Drive, look up the tree-lined avenue to the Tomb of the Unknown Soldier and Memorial Amphitheater. The Tomb was constructed and dedicated in 1921. However, the current design, with the raised sarcophagus, stairway, landing and tree-lined avenue, was not completed until 1932.

This area is an example of formal landscape design. The little leaf linden trees (*Tilia cordata*) that line the avenue contribute to the solemn and dignified feeling of the memorial.

In the original design of the Tomb of the Unknown Soldier landscape, beech trees lined the grass avenue. In the early 1980s, Arlington decided to replace the beech trees with linden trees. There are no records that explain why this change was made.

Both the original beech trees and today's linden trees were pruned to form an aerial hedge. Aerial hedges are commonly used to impart a sense of formality to a landscape, as well as to screen taller structures and higher views. The hedge also reinforces the straight lines of the walkway and draws the eye to the Tomb and Amphitheater.

Over time, the original linden trees weakened or died. To maintain the landscape, Arlington's horticulture team replaced the dead trees with new trees to fill the gaps left by their predecessors. Eventually this led to a scraggly hedge with gaps, as seen in the picture from 2016.

In 2019, cemetery leadership decided to remove the hedge and start over. Forty-four little leaf linden saplings of approximately the same size and height were chosen and planted. After the trees grew for two years, the cemetery began training pruning. Training pruning directs tree growth into the desired shape and form. Regular pruning maintains the existing structure. Horticulture staff expects formal pruning and shaping to be complete in 2040.



MEMORIAL ARBORETUM WALKING TOUR

Continue along the sidewalk, passing the entrance to the Tomb. When the sidewalk splits, turn left toward the steps below the Tomb. Walk down the tree-lined sidewalks, observing the trees on either side.

Hedges have been used for centuries to define boundaries, provide privacy and screen wind. Whether part of a formal or informal landscape, regular clipping is required to maintain desired hedge shape and height. Evergreen hedges, such as yew or boxwood, are common in formal gardens. Deciduous plants, such as hornbeam or linden, can also be shaped into attractive hedges.

Trimming the little leaf linden hedge requires 8 people, 24-36 hours and a system of lasers. The lasers are used to mark the boundaries of the hedge. This ensures crisp sides and clean angles. Leaves and branches outside of the boundaries are removed by hand using pruners and hand tools.



OTHER HORTICULTURE HIGHLIGHTS



ESPALIERED TREE

If you exit the Welcome Center toward the cemetery and turn left, you'll find an espaliered tree along the wall.

Espalier (es-PAL-yay) is a technique to control the growth of a tree along a flat surface, usually a wall, fence or trellis. By pruning and tying branches, this technique creates two-dimensional plants that take up less space than traditional trees or shrubs.

You can also find espaliers along the niche wall in the Millennium section.



Rain garden located near the Administrative parking lot. (ANC/Elizabeth Fraser, July 2019)



MOON TREE

In Section 48, up the hill from Astronaut Stuart A. Roosa's gravesite (1933-1994; Section 7A, Grave 73), is a tree that's out of this world.

Dedicated on February 9, 2005, this American sycamore is a second-generation progeny of one of the original Moon Trees. The Moon Trees were grown from seeds carried to outer space by Roosa during the Apollo 14 mission in 1971.



SOCIAL MEDIA CONNECTIONS





We love hearing about your visit! Share your pictures, questions, and favorite parts of the tour on Facebook, Twitter, and Instagram. Tag Arlington National Cemetery using @ArlingtonNatl and hashtags #ANCEducation and #ANCHorticulture.

#1 ASK A HORTIC<u>ULTURALIST</u>

Have a question for our Horticulture team?
Share your question with us on Facebook and we'll respond with their answer. Make sure to tag Arlington National Cemetery using @ArlingtonNatl and the hashtags #ANCEducation and #ANCHorticulture.

#2 JFK GRAVESITE

President John F. Kennedy's gravesite was designed by a landscape architect. How did the landscape and plants affect your experience at the memorial? What elements of the design, including the trees and shrubs, stood out to you? Share your reflections with us on Facebook, Twitter, and Instagram by tagging Arlington National Cemetery using @ArlingtonNatl and the hashtags #ANCEducation and #ANCHorticulture.

#3 MEMORIAL ARBORETUM

This tour introduces you to Memorial Arboretum – the trees, shrubs and flowers that make it up and the work that goes into maintaining it. Share your favorite part of the tour – whether a photo, fact or reflection – with us on Facebook, Twitter, and Instagram by tagging Arlington National Cemetery using @ArlingtonNatl and the hashtags #ANCEducation and #ANCHorticulture.



MEMORIAL ARBORETUM WALKING TOUR



NOTES

- 1. Annon, Three Visits to Arlington, circa 1870, Virginia Historical Society, Richmond, Virginia, Call Number 1234 A7 T45, in Jennifer Hanna, "Arlington House, the Robert E. Lee Memorial: Cultural Landscape Report," (Washington, DC: U.S. Department of the Interior, National Park Service, National Capital Region, Cultural Landscape Program, 2001), 109.
- 2. Dora Jane Hamblin, "Mrs. Kennedy's Decisions Shaped All the Solemn Pageantry," Life, December 6, 1963, 49.
- 3. G.W. Lafayette to G.W.P. Custis, January 3, 1825, in Hanna, "Arlington House, the Robert E. Lee Memorial: Cultural Landscape Report," 60.
- 4. George Washington Parke Custis Obituary, *Harper's Weekly* (New York, New York October 24, 1857), in Hanna, "Arlington House, the Robert E. Lee Memorial: Cultural Landscape Report," 52.

SOURCES

Arlington House, The Robert E. Lee Memorial. "The Lees Leave Arlington." National Park Service. Accessed April 28, 2021. https://www.nps.gov/arho/learn/historyculture/lees-leave-arlington.htm.

Boeckmann, Catherine. "Growing Wisteria: How to Plant, Grow, and Care for Wisteria. The Old Farmer's Almanac. Accessed April 28, 2021. https://www.almanac.com/plant/wisteria.

"Deodar Cedar." Arbor Day Foundation. Accessed April 28, 2021. https://www.arborday.org/trees/treeguide/TreeDetail.cfm?ltemID=807.

Hamblin, Dora Jane. "Mrs. Kennedy's Decisions Shaped All the Solemn Pageantry." Life. December 6, 1963.

Hanna, Jennifer. "Arlington House, The Robert E. Lee Memorial: Cultural Landscape Report." Washington, DC: U.S. Dept. of Interior, National Park Service, National Capital Region, Cultural Landscape Program, 2001.

Hodgins, Jane. "What it Takes to Bring Back the Near Mythical American Chestnut Trees." U.S. Department of Agriculture. Accessed April 28, 2021. https://www.usda.gov/media/blog/2019/04/29/what-it-takes-bring-back-near-mythical-american-chestnut-trees.

"Japanese flowering crabapple." The Morton Arboretum. Accessed April 28, 2021. https://www.mortonarb.org/trees-plants/tree-plant-descriptions/japanese-flowering-crabapple.

Johnson, Edward C. and Melissa. "Mr. D.H. Rhodes: The Conscientious Caretaker of Arlington National Cemetery." *The American Cemetery* (February 1963): 20-24.

Mahr, Susan. "Espalier." Wisconsin Horticulture: Division of Extension. Accessed April 28, 2021. https://hort.extension.wisc.edu/articles/espalier/.

Morgan, Kate. "The Demise and Potential Revival of the American Chestnut." Sierra Club. Accessed April 28, 2021. https://www.sierraclub.org/sierra/2021-2-march-april/feature/demise-and-potential-revival-american-chestnut.

"Osmanthus heterophyllus." NC State Cooperative Extension. Accessed April 28, 2021. https://plants.ces.ncsu.edu/plants/osmanthus-heterophyllus/.

"Pin Oak." University of Kentucky. Accessed April 28, 2021. https://www.uky.edu/hort/Pin-oak.

Rhodes, David H. "Historic Memories of Arlington National Cemetery, by – David H. Rhodes, Landscape Gardner at Arlington from April 14, 1873 to March, 1930." Arlington National Cemetery Archives. Circa 1930.

Rugg, Julie. "Lawn Cemeteries: the Emergence of a New Landscape of Death." Urban History 33, no. 2 (2006): 213-33.

"Saucer Magnolia." Arbor Day Foundation. Accessed April 28, 2021. https://www.arborday.org/trees/treeguide/TreeDetail.cfm?ltemID=862.

Virginia Big Tree Program. Accessed April 28, 2021. https://bigtree.cnre.vt.edu/index.html.

"White Oak." Chesapeake Bay Program. Accessed April 28, 2021. https://www.chesapeakebay.net/discover/field-guide/entry/white_oak.

MEMORIAL ARBORETUM WALKING TOUR



IMAGES

- **Page 2:** Elizabeth Fraser, Japanese apricot located outside of Columbarium Court 7 in Arlington National Cemetery, March 2, 2021, ANC, https://flic.kr/p/2kGtE8W.
- **Page 2:** Elizabeth Fraser, White flowering Dogwood (Cornus florida) in Columbarium Court 4 of Arlington National Cemetery, May 7, 2018, https://flic.kr/p/HgT2Bp.
- **Page 3:** Elizabeth Fraser, Fall leaves changing in Section 55 at Arlington National Cemetery, October 15, 2020, https://flic.kr/p/2jVXqSN.
- **Page 3:** Elizabeth Fraser, Kwanzan cherry (Prunus serrulata 'Kwanzan') blooms in front of the USS Maine Memorial in Section 46 of Arlington National Cemetery, April 17, 2019, https://flic.kr/p/24XVrXk.
- **Page 3:** Elizabeth Fraser, Greg Huse, urban forester, Arlington National Cemetery, leads a tour through the cemetery's Memorial Arboretum, Arlington National Cemetery, November 17, 2017, https://flic.kr/p/GGnghk.
- Page 3: Seasons Spring, Arlington National Cemetery, June 16, 2014, https://flic.kr/p/nZNeAB.
- **Page 4:** Reidman, Small orange bark cankers indicate chestnut blight infection, National Park Service, no date, https://www.nps.gov/articles/american-chestnuts-in-the-capital-region.htm.
- Page 4: Sidney V. Streator, Old-growth chestnut, Great Smoky Mts., NC., Forest History Society, Durham, NC, circa 1909, http://prestohost26.inmagic.com/Presto/pl/YzRmOGVINDAtMmY0YS00Yjl2LTk2ZjYtZjgzMmJINDk1OWY2LjMxMTU=.
- Page 4: Emily Rheault, American Chestnut Foundation Tree, Arlington National Cemetery, April 6, 2021.
- Page 5: Emily Rheault, Amphibious Scouts and Raiders Memorial Tree, Arlington National Cemetery, April 6, 2021.
- Page 5: Emily Rheault, Amphibious Scouts and Raiders Memorial Tree Plaque, Arlington National Cemetery, April 6, 2021.
- **Page 5:** Elizabeth Fraser, Mother's Tree in Section 48 of Arlington National Cemetery, Arlington National Cemetery, May 11, 2018, https://flic.kr/p/25FRczR.
- Page 6: John F. Kennedy Grave aerial, John Carl Warnecke Architectural Archives, no date.
- **Page 6:** Theodor Horydczak, Arlington National Cemetery. Distant view of Custis-Lee Mansion in autumn, Library of Congress, circa 1920-1950, https://www.loc.gov/resource/thc.5a51335/.
- Page 6: Arlington Oak after Hurricane Irene, Arlington National Cemetery, September 2011.
- **Page 7:** Elizabeth Fraser, Visitors at the gravesite of Robert F. Kennedy in Section 45 of Arlington National Cemetery, Arlington National Cemetery, May 8, 2018, https://flic.kr/p/26TCyuE.
- Page 7: Emily Rheault, Arlington Oak Progeny, Arlington National Cemetery, April 6, 2021.
- Page 7: John F. Kennedy Grave at Arlington sketch, John Carl Warnecke Architectural Archives, no date.
- **Page 8:** Elizabeth Fraser, Magnolia x soulangiana bloom at the John F. Kennedy gravesite at Arlington National Cemetery, Arlington National Cemetery, March 28, 2021, https://flic.kr/p/2kQ9fib.
- **Page 8:** Elizabeth Fraser, Magnolia x soulangiana bloom at the John F. Kennedy gravesite at Arlington National Cemetery, Arlington National Cemetery, March 28, 2021, https://flic.kr/p/2iFMruk.
- **Page 8:** Elizabeth Fraser, Visitors view President John F. Kennedy's gravesite in Section 45 of Arlington National Cemetery, Arlington National Cemetery, October 24, 2017, https://flic.kr/p/CEnrSG.
- Page 8: Emily Rheault, JFK flowering crabapple tree, Arlington National Cemetery, April 6, 2021.
- Page 9: Emily Rheault, White oak in Section 2, Arlington National Cemetery, April 6, 2021.
- **Page 9:** Cutting Down the Woods on Arlington Heights, New York Illustrated News, Arlington House Archives, 1861, https://www.nps.gov/arho/learn/historyculture/union.htm.
- **Page 10:** John Ross Key, "View of Washington from Arlington," The Johnson Collection, circa 1908, https://thejohnsoncollection.org/john-ross-key-view-of-washington-from-arlington/.
- **Page 10:** Peder Anderson and Fitz Hugh Lane, "View of the City of Washington," Library of Congress, 1838, https://www.loc.gov/exhibits/uscapitol/s6.html.
- **Page 11:** Elizabeth Fraser, Section 7 of Arlington National Cemetery, Arlington National Cemetery, May 4, 2020, https://flic.kr/p/2j4vKyY.

MEMORIAL ARBORETUM WALKING TOUR



IMAGES, continued

- **Page 11:** Elizabeth Fraser, Section 66 of Arlington National Cemetery, Arlington National Cemetery, May 4, 2020, https://flic.kr/p/2j4vKLm.
- Page 11: Andrew Joseph Russell, "Arlington, From the Great Oak," Virginia Museum of History & Culture (1994.121.101), November 1863, http://museumcatalog.virginiahistory.org/final/Portal/Default.aspx?component=AADB&record=ebb3fc42-9fdf-4fd7-9e25-1a93007e7352.
- Page 12: Jet Lowe, Elevation looking east Arlington House Deodar Cedar, West service court, Lee Drive, Arlington National Cemetery, Arlington, Arlington County, VA, Library of Congress, 2006, https://www.loc.gov/pictures/item/va2023.photos.362694p/.
- **Page 12:** David H. Rhodes in a Philippine graveyard, circa 1900, in Edward C. and Melissa Johnson, "Mr. D.H. Rhodes: The conscientious caretaker of Arlington National Cemetery," *The American Cemetery*, February 1963, 20.
- **Page 13:** Elizabeth Fraser, Wisteria (Wisteria chinensis) blooms at the Tanner Amphitheater in Section 35 of Arlington National Cemetery, April 26, 2018, https://flic.kr/p/JsXU2S.
- **Page 13:** Elizabeth Fraser, James R. Tanner Amphitheater at Arlington National Cemetery, Arlington National Cemetery, June 12, 2019, https://flic.kr/p/2gd5CV1.
- **Page 14:** Alexander Gardner, Burnside Bridge, Across Antietam Creek, Maryland, Art Institute Chicago, September 1862, https://nocache.www.artic.edu/artworks/196184/burnside-bridge-across-antietam-creek-maryland.
- **Page 14:** James W. Rosenthal, Burnside Bridge Sycamore, Southwest of Burnside Bridge, Historic Burnside Bridge Road, Sharpsburg, Washington County, MD, Library of Congress, 2006, https://www.loc.gov/resource/hhh.md1748.photos/?sp=1.
- Page 14: Emily Rheault, Burnside Bridge Medal of Honor Sycamore, Arlington National Cemetery, April 6, 2021.
- Page 15: Rachel Larue, A Yellowwood tree, left, and an Empress Tree, right, both Virginia State Champion tree, near the Memorial Amphitheater, in Arlington National Cemetery, Arlington National Cemetery, April 23, 2015, https://flic.kr/p/sh2hcK.
- **Page 16:** Big Tree Measurement and Scoring: Virginia Big Tree Program, Virginia Cooperative Extension, http://bigtree.cnre.vt.edu/documents/treemeasurementpictorial.pdf.
- **Page 16:** Rachel Larue, A Sawtooth Oak, in Section 12 of Arlington National Cemetery near McClellan Gate, was recently named a Virginia State Champion Tree, Arlington National Cemetery, August 12, 2015, https://flic.kr/p/xdN3XN.
- **Page 16:** Elizabeth Fraser, A Dwarf Hackberry (Celtis tenuifolia) in Section 8 of Arlington National Cemetery, Arlington National Cemetery, Sept. 21, 2018, https://flic.kr/p/PaAv7N.
- **Page 17:** Rachel Larue, A Pin Oak, in Section 12 of Arlington National Cemetery near the Memorial Amphitheater, was recently named a Virginia State Co-Champion Tree, Arlington National Cemetery, September 4, 2015, https://flic.kr/p/yaNDK3.
- **Page 17:** Harris & Ewing, ARLINGTON NATIONAL CEMETERY. VIEWS OF ARLINGTON FROM THE AIR, CENTERING THE MEMORIAL AMPHITHEATRE, Library of Congress, 1919, https://www.loc.gov/pictures/item/2016870196/.
- **Page 18:** Theodor Horydczak, Arlington National Cemetery. Approach to Tomb of the Unknown Soldier from east I, Library of Congress, circa 1930-1950, https://www.loc.gov/pictures/item/2019681748/.
- Page 18: Aerial of Tomb approach, Arlington National Cemetery, May 2003.
- **Page 18:** Rachel Larue, Service Members wait for the start of a full honors wreath laying ceremony at the Tomb of the Unknown Soldier in Arlington National Cemetery, Arlington National Cemetery, June 15, 2016, https://flic.kr/p/J9jSA5.
- **Page 18:** Rachel Larue, Linden Trees near the Tomb of the Unknown Soldier in Arlington National Cemetery are trimmed, Arlington National Cemetery, January 12, 2017, https://flic.kr/p/QXFe8o.
- **Page 19:** Elizabeth Fraser, Rain gardens located along the Administration parking lot at Arlington National Cemetery, Arlington National Cemetery, August 2, 2019, https://flic.kr/p/2gNkEoB.
- Page 19: Kelly Wilson, Espaliered tree, Arlington National Cemetery, June 10, 2021.
- Page 19: Emily Rheault, Moon tree, Arlington National Cemetery, April 6, 2021.