

Landscape Culture

a newsletter for cultural landscape stewards

Cultural Landscapes Program

Fall 2021

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Mulching the Urban Forest in the Washington Monument Grounds

In July of 2021, Urban Forester [Matt Morrison](#) led crews to spread over 300 yards of wood chip mulch under groves of cherry trees in the Washington Monument Grounds. The wood chip mulch will extend the life of cherry trees that contribute to the historic character of the landscape. In addition, the wood chips, created by the park, will provide ecosystem benefits.



Wood chip mulch, created by the park from tree clippings, is dumped for workers to spread. Note: landscape mats are used to prevent damage to turf from equipment (NPS).

As the Urban Forester for the National Mall, Matt manages both a natural and cultural resource.

Urban Forest as a Cultural Resource

The trees in the Washington Monument Grounds are a character defining feature of the cultural landscape. Expanses of open lawn bordered by allées and groves of trees have characterized the site since the 1800s. Trees were planted on the Washington Monument Grounds as early as 1855.

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About Us

Learn more about [cultural landscapes in the National Park System](#).

Learn more about the [organizational management of NPS cultural landscapes](#).

Park Cultural Landscapes Program [sharepoint](#).

For current news about NPS cultural landscapes, join us on social media:





Crews spread mulch under a grove of cherry trees adjacent to the Washington Monument (NPS).

Cherry trees hold a particular significance in the landscape. They grew on the site by 1886 and in 1912, the City of Tokyo donated 3,000 [cherry trees](#) to be planted in the National Mall including around the Tidal Basin. The trees were a token of friendship between the two nations. The cherry blossom festival draws more than 700,000 visitors to the Mall every spring.

Urban Forest as a Natural Resource

Although the Mall is a highly urban park, the trees Matt manages provide ecosystem benefits including shade, habitat, stormwater retention, and improved air quality. They are part of the Washington D.C. [urban forest](#) that contains 170,000 public trees. Nationally, urban forests make up [141 million acres](#). Urban forests enhance the environment in cities and towns for both people and wildlife, and help to mitigate the impacts of climate change.

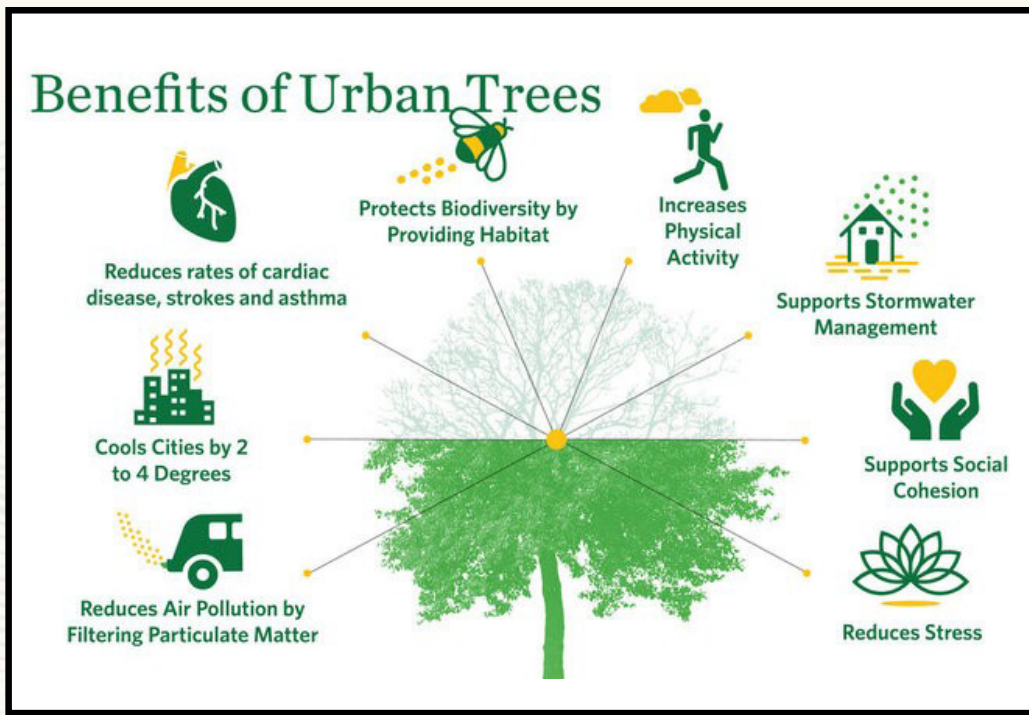
Mulch

Native forests contain a layer of forest litter above a rich layer of decomposing organic material. The input of dead plant material onto the forest floor sustains a food web of fungi, bacteria, insects, and other living organisms. A healthy soil food web supports tree health and ecosystem health. However, within ornamental maintained landscapes such as the Washington Monument Grounds, human activities disrupt the soil food web. Heavy foot traffic causes soil compaction which reduces pore size and organic matter infiltration. Pesticides and herbicides kill beneficial organisms. The removal of dead material for the sake of aesthetics interrupts the primary food source of the soil food web.

The crews led by Matt spread six inches of wood chip mulch across the floor of the Tidal Basin cherry grove, a historic feature of the landscape. The wood chips serve as a substitute for natural forest litter. They will enhance soil biology, insulate the soil, and improve water retention. By improving soil health, the mulch will promote the longevity of the cherry trees.



A bird looks for insects in the mulch (NPS).



The benefits of urban trees for people and the ecosystem (<https://www.washingtonnature.org/>).

Matt summarized the many benefits of mulch as follows:

- Provide a satisfying aesthetic and promote the longevity of trees
- The mycorrhizae fungi thrive in the rejuvenated soil which perpetuates the cycle of information and nutrients being transported and exchanged among the trees
- Reduce carbon footprint by utilizing the in-house tree crew's daily generated greenwaste negating necessity of removal from the park and subsequent disposal
- Amend soil with rich organic nutrients and minerals
- Aerate soil
- Eliminate the impact of mowers, string trimmers, and herbicides
- Reduce soil compaction around tree roots
- Retain moisture for uptake through roots

The mulch provides a uniform appearance compatible with the historic designed landscape. Maintaining an edge between the mulch and the turf was necessary to reinforce the formal design character. Originally the maintenance staff created a 3-inch-deep angled shovel-

cut edge between the mulch and the turf. However, the edging proved to be labor intensive, and the park may experiment with installing an edging material to reduce labor input.

Matt is excited about the benefits this project will reap in the urban forest. He states, "As a good steward, I have an obligation to manage our trees not as a grouping of individual trees, but as one super organism called The Urban Forest." The introduction of mulch, replicating forest litter, will support the urban forest ecosystem of the Washington Monument Grounds.



Crisp edge between the mulch and turf (NPS).

NPS Turf Classes and Typical Maintenance Needs

The word “turf” refers to grass that is maintained as a ground cover. “Can’t we just call that lawn?” you say, and the answer is “not exactly”. Lawn is a manicured version of turf. Not all turf in the national parks needs to be maintained to this standard. The NPS has identified six classes of turf to help clarify management objectives and the appropriate type of maintenance. Only one of the classes is “lawn”, and this class should be limited to areas that need to appear manicured to satisfy certain objectives.

“But why six classes?” you ask, “isn’t that overly complicated?” Well, it’s not as complicated as it sounds, as there’s really just two major categories for the turf classes: “Basic” and “Specialty”. Basic is generic turf defined mostly by mowing height. Specialty is more

precise to serve a specific purpose. Most NPS turf will be in the Basic category unless there are management objectives that would place them in the Specialty turf category. There are two Basic classes: Short (B1) and Tall (B2); and four Specialty Classes: Lawn (S1), Sports (S2), Period (S3) and Tall Vegetative Cover (S4).

You can learn more about the “[Classes of NPS Turf](#)” on the Common Learning Portal, including the characteristics of each class and their typical maintenance needs. Park Facility Management and Cultural and Natural Resources Management staff are encouraged to collaborate in a planning process that delineates their park’s managed turf areas into classes. By doing this, staff time and inputs can be targeted most effectively.

NPS Turf Classes		
TURF CLASS	LEVEL OF MAINTENANCE INPUT	EXAMPLE
Basic Turf		
B1 Functional/Short Turf	Medium: maintain for foot traffic durability, rather than high aesthetic quality.	General turf, visitor-use areas (picnic areas, gathering areas)
B2 Functional/Tall Turf	Low: mow seasonally or annually to prevent woody plant establishment.	Parkway median, buffer zones
Specialty Turf		
S1 Lawn Turf	High: limit weed invasion, frequent mowing, aerating, overseeding, top-dressing, and fertilizing.	Memorial grounds
S2 Sports Turf	High: limit weed invasion, frequent mowing, aerating, overseeding, top-dressing, and fertilizing.	Baseball field, soccer field, golf course
S3 Period Turf	Variable: inputs depend on desired character.	Fort parade ground, historic grounds
S4 Tall Vegetative Cover	Low to medium: annual mowing to prevent woody plant establishment, control for invasive species or plants that impact desired character.	Agricultural field, demonstration meadow



“Basic” Short (B1) turf at Chickasaw NRA, in an area that receives day use by visitors (NPS).



“Basic” Tall (B2) turf at San Antonio Mission NHP, in an infrequently mown area that receives no foot traffic (NPS).



“Specialty” Lawn (S1) turf at Herbert Hoover NHS, in a memorial to the 31st US President (NPS).



“Specialty” Sports (S2) turf at the Presidio, Golden Gate NRA, in a baseball field (NPS).



“Specialty” Period (S3) turf at Saint-Gaudens NHP, depicting late 19th-and early 20th-century conditions (NPS).



“Specialty” Tall Vegetative Cover (S4) at Gateway NRA, providing educational, cultural and ecological values (NPS).

Basic Classes

Short (B1) and Tall (B2) turf are the most flexible classes. B1 and B2 turf primarily function as ground cover. Short turf (B1) areas support foot traffic and passive recreation. Tall turf (B2) areas are unmown and visitor access is limited to mown routes where present. Typical uses of the Short (B1) class include day-use areas and the grounds of administrative facilities. The Tall (B2) class is for transition and buffer areas, road shoulders, viewsheds, and greenspaces that are typically not visitor-use areas.

Mowing is the dominant maintenance activity for the Basic classes. Short turf (B1) is mowed regularly (often enough to remove no more than 1/3 of the plant) and Tall turf (B2) is mowed annually in most cases. Short turf (B1), in areas of high visitor use, requires supplemental maintenance like aeration, overseeding, and fertilizer. Basic turf is composed of any mixture of grasses appropriate for the park's environment (check with the local extension service), along with some other, non-invasive plants that may be considered weeds.

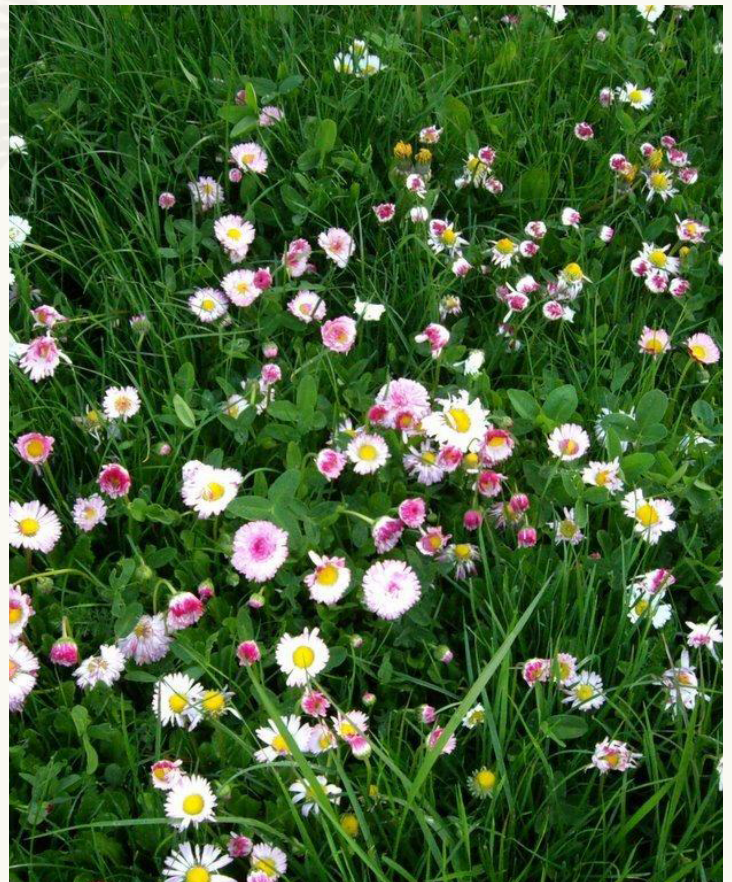
Specialty Classes

Lawn (S1) and Sports (S2) are the “green carpets”, with short, dense, uniform turf. Sports is differentiated from Lawn by extra durability for wear and tear and cushion to minimize injury. Both classes require a high level of maintenance, target a specific appearance, and should be limited to areas with objectives that justify this type of care. Care for Lawn (S1) and Sports (S2) classes involves frequent mowing, aerating, overseeding, top-dressing, and fertilizing.

Period (S3) and Tall Vegetative Cover (S4) have unique appearances tailored to the park. Period (S3) is the class for turf areas that reflect the appearance of a historic period, and Tall Vegetative Cover (S4) is for more diverse and irregular grassland areas that serve educational or resource management objectives. Both the latter Specialty classes can be more flexible in appearance than Lawn (S1) or Sport (S2), but may have a prescriptive mixture of grasses to convey the desired character for the area. However, both need maintenance and monitoring to retain the species composition that define them.

Turf in the national parks covers a colossal 395 million square feet and is found from the subtropics to the subarctic. A diversity of turf classes is a necessity of these many growing conditions but also essential to meet park management objectives that embrace law, policy, and park plans. Turf has an influence on the aesthetic character and use of park spaces, along with their educational, cultural, and ecological value. Regardless of class, turf is a facility that requires investment. By using the turf classes, we can better align our facility investment with park management objectives, increase sustainable operations, and enhance the visitor experience.

Please contact Susan Dolan at susan_dolan@nps.gov or Michael Stachowicz at michael_stachowicz@nps.gov with questions.



Close up view of “Period” S3 turf at Longfellow House Washington’s Headquarters NHS, showing a mix of Fine fescue, Clover, Yarrow and English Daisy (NPS photo).

Employee Spotlight



Gene Long at GWCA (NPS).

Name: Gene Long

Position: Laborer

Park: George Washington Carver National Monument

How long have you worked for the NPS? Three years

What is your background? I grew up mowing cemeteries with my dad and did it for many years. From there it was an easy fit to work for a lawn care company, mowing, landscaping and removing trees on commercial and residential properties. Later I became the Lead Groundskeeper for the local school district and maintained the turf around buildings and on athletic fields.

Even though I have a degree in Finance, what I really wanted was a position supporting the National Park Service because I think it is one of the crown jewels of the Department of the Interior. The Park Service is full of treasures that are available for the people and I wanted to be part of protecting these irreplaceable and invaluable assets. It took several tries to secure a position, wear the green and gray and share the park with people from all over the United States. Visitors often comment that the park is 'quite the hidden gem'.

Also, I have developed a life-long love of nature. One of my favorite pass-times is to sit quietly in the woods or along a creek and wait for wildlife to go about their business without noticing me. Time spent with nature is time well spent in my book.

Of course, if I could go back 30 years, I would have started with NPS right out of high school.

What is your favorite part of your job? Mowing is very familiar and somewhat therapeutic for me because I get to be outside and make a positive difference in the 'look' of the park. It matters to me that the park looks neat and cared for because it conveys a message to visitors that the place is valued and treasured – first impressions make a difference.

I also really enjoy taking in the trees, especially now that I am learning how to 'see' them. I really admire them and notice that they are well established features of the park and how the old trees seem to carry the history from decades past.

What project are you working on? I joined the 2020-22 Arborist Training Program and have been working on learning new tree care information each month for 10 months now. We are currently working on diagnosing tree disorders and conducting tree assessments.

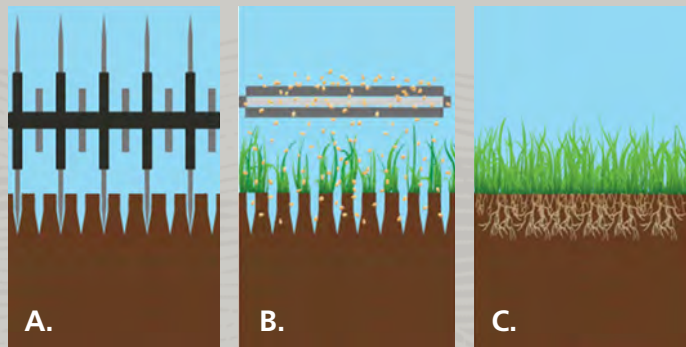
The knowledge I gain from the program is very helpful in naming trees and understanding what I am seeing. Not a week goes by that I haven't seen or used something that I have learned. One of the best things about the training is to be part of group, hear different perspectives and establish a network of folks to reach out to when I have questions about trees.

What was your favorite experience in the park? Prairies need fire to rejuvenate the ecosystem and the park has a wildland fire crew that performs controlled burns within the park. The whole burning process, typically done in the fall, followed by reinvigorated life in the spring is very interesting to watch.



Gene Long and volunteers repair a split rail fence at GWCA (NPS).

Tool of the Moment: Slit Seeders



A. Slit seeder blades cut into the soil. B. Grass seed is dropped into slits up to 1/4" deep. C. Seed germinates resulting in denser turf (www.whygoodnature.com).

Turf that receives foot or equipment traffic needs aerating and overseeding. Aerating relieves compaction, and overseeding increases turf density. Aerating and overseeding should be done in combination. A slit seeder is designed to overseed large areas of turf after aerating. Its knife-like blades cut through the soil surface and deposit the grass seed approximately 1/4" into the soil.

Timing: Aerating and overseeding are done when soil is soft enough (but not saturated) to be penetrated by aerating tines and slit seeder blades. Seasonal temperature and moisture should favor seed germination and root establishment (in 4-6 weeks).

Timing is grass-type dependent. **Cool season grasses** (dormant in summer) are best seeded in early fall (includes Fine Fescues, Tall Fescue, Perennial Rye, Kentucky Bluegrass). **Warm season grasses** (dormant in the winter) are best seeded in spring (includes Bermuda, Zoysia, St. Augustine).

Routine: Aerate turf with a hollow core aerator that removes plugs of soil to open up compacted soil. An effective core density is a 4" x 4" square pattern. Slit seed by making two passes in a diamond pattern (45-degree angle) for even distribution of seed. A drag net can be pulled behind a tractor over the seeded turf to smooth out remaining clumps and increase seed to soil contact.

When to Use a Slit Seeder: Use a slit seeder to convert an area dominated by weeds to one dominated by turf grass or to introduce new grass seed into a turf area with bare patches. Slit seeding can also achieve good seed to soil contact and eliminate the need to rough up the soil with a rake for a good seed bed.

Slit seeding can be used to introduce grass varieties that are more drought and disease resistant, leading to greater resilience and reducing the need for water and fertilizer. A slit seeder will dethatch a dead grass layer that accumulates during the mowing season and bust up aeration plugs.

Types of Slit Seeders: Use a **Walk Behind** slit seeder (~\$5,000) for tight spaces or small areas, especially cemeteries and designed gardens. In cemeteries consider getting a model with blades closely spaced (less than 2"). A **3-Point Hitch (PTO driven)** slit seeder (~\$10,000) should be used for larger areas, pulled by a tractor with turf tires. If the area is crossed by roads or paths, hydraulically lift the attachment over non-turf areas. Blades can be 2-4" apart, however, additional passes in a diamond pattern are needed to get good coverage.



Above: Self-propelled walk-behind slit seeder (www.ryanturf.com).
Below: A 3-point hitch slit seeder at Statue of Liberty NM (NPS).

Small Engine Essentials Virtual Workshop

The free workshop is designed to prepare NPS employees to be confident and capable in maintaining small equipment such as lawnmowers and push blowers.



Clint Baker of Gateway Arch National Park, participating in a virtual small engine class (NPS).

The six module course runs from January 4 through March 17, 2022 (no classes in February). Each module includes 90 minutes of class time and 90 minutes of lab/hands-on time in park maintenance shop. The course is taught and administered by Cape Cod Community College.

Feedback from students includes a strong positive experience with working on the engines at their home park while tuning in to the live support and instruction from the instructor. The instructor has fine-tuned the virtual learning experience to a degree that the format works very well.

Topics covered include:

Lubrication Systems / Cooling Systems / Servicing Engine Lower End and Valve Train / Fuel Supply, Air Induction, Filters / Carburetion / Fuel System Servicing / Carburetor Repairs / Fundamentals of Electricity, Magnetism, and Electronics / Ignition System Operation / Ignition and Electrical System Servicing (incl. battery service) / Preventative Maintenance / Troubleshooting

If you are interested, it is helpful to lay the groundwork to set up your 'lab/workspace'. You will need:

- » A computer with video and microphone capabilities and adequate/reliable internet connection.
- » A spare 4-stroke engine from a push mower or push blower available to disassemble and reassemble.

Application Process is scheduled to open November 1, 2021 with an application deadline at the end of November. Contact Brooke Derr (elizabeth_derr@nps.gov) if you have any questions.

Upcoming Training Opportunities

Cultural Landscapes: An Overview

National Preservation Institute

On-demand, eLearning, 1 hr (\$100)

Arbor Chat: Coronet Cuts: The Simulation of Natural Fractures

Pacific Northwest ISA

Webinar, Nov. 2, 8:30a PDT, 1 hr

2021-22 Heritage Orchard Conference

University of Idaho

Webinar series, one Wednesday a month Oct.-Mar., 1.5 hrs

Pruning Deciduous Trees

Morris Arboretum

On-location class, Philadelphia, PA, Nov. 9, 9:00a-3:00p

Calibrating Backpack and Other Sprayers

NPS Integrated Pest Management Program

On-demand video, 1 hr

Virtual Learning Resources by Career Field

Common Learning Portal

On-demand

Integrated Pest Management Virtual Training Series

NPS Integrated Pest Management Program

Live and on-demand webinars, ~1 hr each

Announcements & Publications

- » Cultural Resources Inventory System (CRIS) for Facilities Staff. An interactive learning activity that will provide you with an introduction to the Cultural Resources Inventory System (CRIS) for historic structures and cultural landscapes. The training is intended for FMSS Users and Facilities staff.