

Landscape Culture

a newsletter for cultural landscape stewards

Cultural Landscapes Program

Spring 2019

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Converting Mowed Turf to Grassy Meadow at Anacostia Park

Over several decades, NPS staff at National Capital Parks East (NACE) has been converting areas from mowed turf into grassy meadow. The effort supports the goals for the “Natural Resource Recreation Zone” within the 2017 Anacostia Park Management Plan. The vision is to actively manage the park to improve and protect the quality and resiliency of the Anacostia Park ecosystem, and to contribute to the greater Anacostia Watershed Restoration Plan. Former Resource Manager Steven Syphax and current Manager Mikaila Milton are among the champions of the effort.

On a rainy day last spring, NACE Chief of Facility Management Diana Bramble led a field trip of turf workshop participants to one converted grassy meadow, located on a low-lying flood plain of the Anacostia River. Diana, who has a Master’s Degree in Sustainable Landscape Design from George Washington University, began with the multiple benefits of meadows.

“Meadows have ecological benefits for insects and herbivores. They provide habitat shelter, storm water

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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.](#)

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



NACE Chief of Facility Management Diana Bramble explains the process for converting mowed turf to a grassy meadow at Anacostia Park in Washington, DC (NPS).



Joe Pye weed and mixed meadow grasses provide numerous ecosystem benefits and a sense of place at [Anacostia Park](#) in Washington, DC (NPS).

management, and also erosion protection, as the meadow root system can be three feet deep. Meadows also provide a sense of place, as they have a more unique character than mowed turf. They suggest the idea of a protected place for natural resources or for different uses than mowed turf. Meadows can also help mitigate Carbon emissions through Carbon sequestration.”

Diana is clearly a meadow enthusiast and a leader in sustainability. As we stood beside the meadow in the pouring rain, the Anacostia River was rising to flood stage and water pooled on the roads and mowed turf. Puddles and run-off were absent from the meadow, however, as rainwater was soaked up by the spongy mass of tall grasses and forbs. What a perfect day to witness storm water management in process!

How Does NACE Staff Create and Manage Meadows?

1. Staff began with a NEPA and Section 106 public planning process that analyzed potential affects and determined there would be no significant impact.
2. One fall, staff low-mowed the Fine fescue and Tall fescue turf area with a rotary mower for the last time.

3. Immediately, staff used a tractor-pulled slit seeder to over-seed with two native perennial grasses: Panic grass and Little bluestem. The turf fescues and native grasses were allowed to grow tall for a year.
4. The next fall, staff mowed the meadow with a tractor-pulled flail mower, and then over-seeded again with more native grasses and forbs. Over time, Joe Pye weed and other forbs started to flourish alongside the grasses.
5. Now, the established meadow is mowed just once a year in spring, providing shelter for wildlife through the winter and allowing seeds to chill before disturbance. Mowing serves as weed control, by preventing woody plants from establishing.
6. Staff maintains a three-foot wide perimeter buffer of mowed turf to keep invasive exotic plants from migrating into the meadow.
7. Staff maintains a six-foot wide buffer of mowed turf between the meadow and an adjacent forest to prevent pioneering trees from encroaching.
8. Every three years, staff spot-treat or hand-pull invasive exotic plants such as Porcelain berry and Ailanthus. The pigment “Bullseye” is used to mark herbicide-treated vegetation.

NACE staff and park visitors have seen the ecological benefits and beauty of their work. With a small staff spread thinly over 14 park units, NACE has demonstrated what’s possible with clear communication and commitment to a landscape treatment process. Let us know if you’re interested in learning more about how to reduce the area of mowed turf in your park.

Employee Spotlight



Name: Jennifer Gibson

Job Title: Chief, Division of Interpretation and Resources Management

Park: Whiskeytown National Recreation Area (WHIS)

Years with NPS: 21

What is your background?

I started my career working for the U.S. Fish and Wildlife Service's California Condor Recovery Program tracking condors in the Los Padres National Forest backcountry. From there, I move on to Channel Islands National Park and The Nature Conservancy's Santa Cruz Island Preserve. I got my M.S. in Ecology from San Jose State University working on lizards on Santa Cruz Island and then started my career at WHIS in 1999 in the fire program. I was fortunate enough to step into the Ecologist position when I finished my M.S. as a SCEP student. Since I have been at WHIS, I have been impressed by the park's diversity, resilient plant communities, and people, and have been passionate about oak woodland restoration, rare plant conservation, and preserving the park's historic orchard trees.

What is important to you about the cultural landscapes of your park?

The cultural landscapes at WHIS are really a story within a story. On the surface, the landscape can transport a visitor back in time to provide a firsthand experience of what it was like to experience that time period. This includes the sounds, smells, and the overall feeling of experiencing that time period. But if you dig a little deeper, each element of that landscape has a fascinating story within itself. It's this complexity that enables the landscape to connect with visitors on so many levels. An example at WHIS is the Tower House Historic District's Cultural Landscape. Each element of this landscape has a unique story behind it, including the historic fruit trees - from the discoverer of the variety, to the taste of the fruit, to how it was utilized, and to how it has survived up to today. Park visitors love these trees and they get so excited about all the different varieties. I have met so many people that come out to the park just to be able to taste an apple that was the favorite apple of Thomas Jefferson. Or, they want to see what a Lady Apple looks like. This connection from the stories behind each element in the landscape to the visitor brings together all the fundamental elements of the mission of the NPS.

What is the most inspiring project you have been a part of?

I have two, really. One is the restoration of the historic orchards within the Tower House Historic District, and this is not only inspiring but also is downright fun. One of the park's primary goals is to rehabilitate and restore the Tower House Historic District cultural landscape including the historic orchards and traditional/historic roads, trails and irrigation system. The district is listed on the National Register of Historic Places and is the premiere cultural resource in the park. It also represents a period of national history when the California Gold Rush was at its prime and is used as the center for the park's curriculum-based Gold Rush Program for 4th graders. Thousands of students and visitors come to this area annually and the orchard trees are critical features within the historic district landscape and serve as the focus for the Harvest Festival, which is a special event dedicated to celebrating the many heirloom varieties of fruit trees. Working on a restoration project that brings so much joy to park visitors is really inspiring to me.

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The second project that I have found inspiring at the park and I am extremely passionate about is restoring oak woodland habitat. Since most of the plant communities that you see at WHIS were shaped in large part by anthropomorphic disturbance, these oak woodlands are to me...a cultural landscape. Historically, significant portions of the park could be described as an open woodland dominated by Black oak, with Ponderosa pine in lesser proportions. These areas were most likely once maintained by the local Native American tribes, which often targeted Black oak stands for frequent underburning. The consequences of frequent low intensity fire include gaps within the canopy, a rich seed bed, and light reaching the forest floor, which results in a diverse understory of grasses, forbs, and shrub species, and even the germination of tree species. Specific to WHIS, areas like "Sheep Camp" in the Brandy Creek watershed acquired its name because historically, there was once a diverse understory of grasses and forbs that could provide abundant forage for the livestock of early European settlers. Today, the absence of frequent low intensity fire in WHIS forests has facilitated the encroachment of Douglas fir into these oak woodlands. Lacking intervention, the historically dominant oak woodland/Ponderosa pine forest will not regenerate under current conditions, which lacks light and a natural fire regime of frequent low intensity fire.

Park staff collaborated with the University of Montana in determining the historic conditions of the woodlands before settlers arrived in the mid-1800's, and determined that many areas were selectively logged in the 1950s and 1960s. Typically, the large

and vigorous conifers were harvested and non-merchantable species like oaks and small diameter conifers were left. The Ponderosa pines and old, big Black oaks that you find today in the upper canopy most likely witnessed the historic stand conditions and the extraction of timber.

Today, the dominant tree species have also shifted from Black oaks with spreading limbs and diverse conifer species, to a dense Douglas fir dominated forest. In some areas, there is evidence of competition-induced stress and mortality, with a substantial quantity of dead and down woody material on the forest floor. Although the stand conditions vary throughout the park, there are some locations that can make you feel as though you have walked into a closet and shut the door; it is dark and eerily silent.

As Douglas fir increases in size, they become more resistant to low intensity fires, which is typically the intensity of prescribed fire. Only under the hottest burn prescriptions allowable could prescribed fire begin to kill Douglas fir that has encroached over the last 70 years, but this intensity of fire has the potential to kill the old oaks and conifers, which are already stressed and in a weakened state. Therefore, the removal of many of these young trees must be addressed by other means, such as mechanical equipment – or small-scale logging - to remove the larger, more fire-resistant Douglas fir prior to the use of prescribed fire as a tool to maintain these woodlands. So far, the park has accomplished two oak woodland restoration projects that have been extremely rewarding and effective.

Selecting Nursery Stock Part 1: Production Method and Size

In the last issue we discussed Tree Replacement: Planning, Planting and Establishment. In this issue and the summer issue we'll delve deeper into this topic and discuss nursery stock selection. When ordering plant material from a nursery or creating specifications for a planting service contract, plant size and production method should be identified, as both can have a large impact on successful plant establishment in the cultural landscape.

Nursery Production Method

Nursery stock is sold with bare roots, in containers, or with rootballs wrapped in burlap ("balled and burlapped" or "B & B"). Bare root plants are grown in the ground, lifted and sold in the dormant season

without soil attached. These are common for fruit trees and restoration plantings, are low cost and can be easily transported. However, bare root stock must be planted within a short period in early spring and larger plant specimens are generally not available.

Containerized nursery stock is grown in pots. Shrubs and small trees are most commonly available in containers. Of the three production methods, containerized plants can be most easily stored and can be planted at any time of year. However, as they've received plentiful water in the nursery, containerized plants can easily be shocked by a change in conditions after transplanting. Mitigate transplanting shock

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Bare root, container, and balled and burlapped nursery stock (Arborday.org).

by planting in the dormant season. The roots of containerized plants may have circled the inside of the pot, potentially inhibiting establishment after transplanting. Mitigate encircled roots by making vertical cuts with a sharp blade up the root mass, to encourage the roots to spread out after transplanting.

Balled and burlapped plants are grown in the ground, dug with a hydraulic tree spade, and transported with burlap wrapped in wire or twine around the root ball. Their roots are the most stable of the three types of nursery stock and are generally quicker to establish than containerized plants. However, B & B plants can be more difficult to transport, and their burlap and wires should be removed at planting. The root mass of B & B stock is more susceptible to drying out than containerized stock, and a best practice is to transplant during the dormant season.

Tree Size

For small trees under seven feet, specify the desired size by height. Specify the desired size of trees over seven feet by caliper. Caliper is the diameter of the tree near the base. Nursery tree calipers range from under an inch to eight inches. Fruit tree calipers are measured at the root collar, trees with calipers four inches and under are measured six inches from the soil, and trees with calipers over four inches are measured 12 inches above the soil. Upon receipt, check tree size to verify the accuracy of the order.

The [American Horticulture Industry Association's American Standard for Nursery Stock](#) (ANSI Z60.1) provides guidelines for recommended root area in relation to tree caliper and height. For deciduous and coniferous trees and shrubs, these guidelines ensure the caliper to root ball ratio is sufficient to support

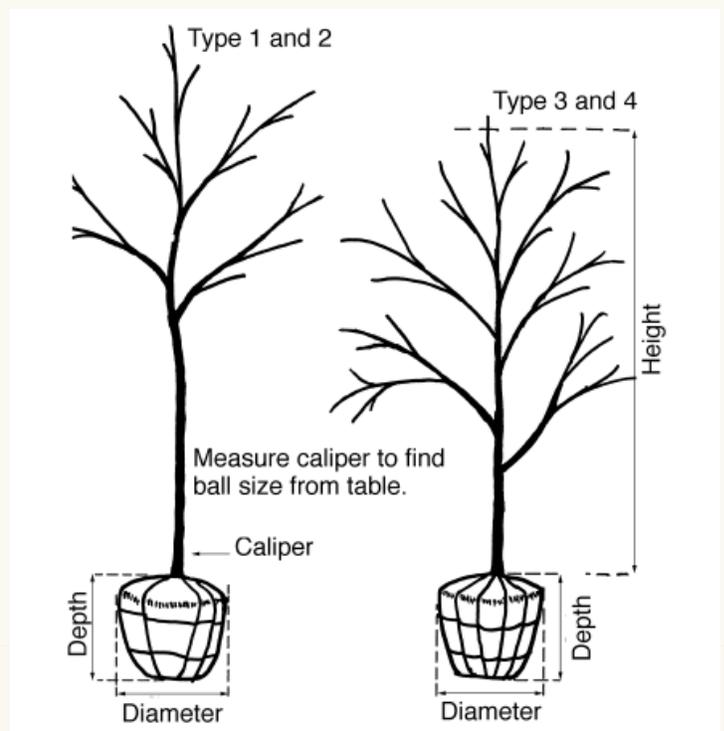
Sample Size Specifications for Tree Nursery Stock

Caliper/height specification	Average height range	Minimum root ball diameter	Minimum root ball depth	Acceptable container classes
1/2 in./4 ft	4 to 5 ft.	12 in.	7 7/8 in.	#2, #3, #5
1 in/ 7 ft	8 to 10 ft.	16 in.	10 3/8 in.	#7, #10, #15
2 in.	12 to 14 ft.	24 in.	14 3/8 in.	#20, #25, #45
4 in.	16 to 18 ft.	42 in.	25 in.	#95/100
6 in.	--	60 in.	36 in.	--

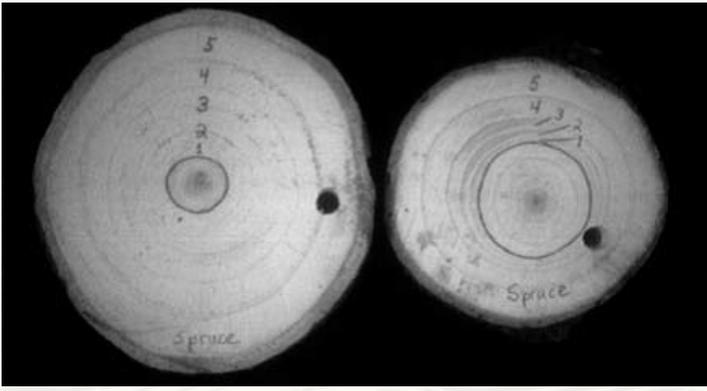
establishment. (A plant is considered established when its roots support shoot growth at a similar rate to a non-transplanted plant.)

Specifying large nursery stock can be tempting when replacing a historic tree, to fill the void left behind. But research has shown that smaller nursery stock actually establishes faster than larger stock. In many cases, smaller stock will outpace the size of larger stock in several years. This is because the roots of small and large stock extend into the soil at approximately the same rate per year. In a race for establishment, smaller

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Balled and burlap tree measurements (American Standards for Nursery Stock. ANSI Z60.1-2014).



These spruce trees were transplanted when the one on the left was smaller than the right (indicated by outline '1'). The smaller tree at transplanting grew much more rapidly as the larger tree experienced transplant stress (Watson, Gary W. *Tree Transplanting and Establishment*).

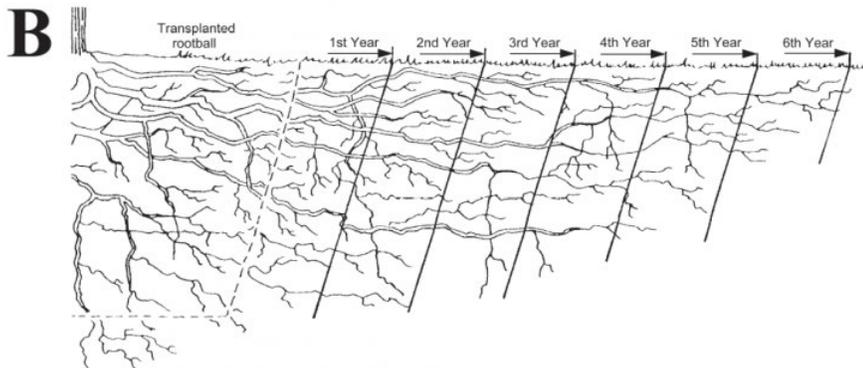
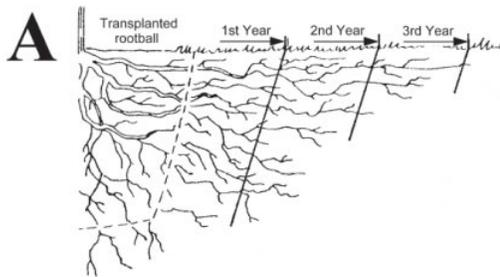
nursery stock has the advantage as it requires less root area. Larger trees take more time to establish as their roots must expand further to acquire sufficient area for anchorage and water supply.

As a rule of thumb, in temperate climates, trees need one year to establish for every inch of caliper (3 months per inch in subtropical climates). The difference in height between a 2-inch caliper and a 4-inch caliper tree is typically 3-6 feet. This small size deficit is easily overcome when a 2-inch caliper tree becomes established two years earlier than a 4-inch caliper tree.

Planting service contracts should provide a one year guarantee of survival, and two-years for larger trees

under normal conditions. Plants that die during the warranty period are replaced by the contractor at no cost to the government. Carefully considering the production method and size will better equip park staff to help new plantings survive beyond the warranty period. Stay-tuned for the summer issue to learn more about tree selection.

Equivalent yearly root growth of small (A) and large (B) tree (Watson, W. Todd. *Influence of Tree Size on Transplant Establishment and Growth*).



Tunneling Mammals in Cultural Landscapes

In 1876, construction stopped on the coastal defenses at Fort Point, San Francisco, leaving the earthwork batteries incomplete. According to this [history of Fort Point](#), the fort's caretaker "now found himself not only combating rusty iron in the old fort but fighting off the advancing hordes of gophers which multiplied in the slopes of the earthwork batteries." While the Fort Point battery does not have this gopher problem today, gophers at the [Fort Point United States Coast Station Historic District](#), located less than a mile away along the coast, impact the landscape and pose a challenge to turf management.

Burrowing mammals can be an important component of a healthy ecosystem. They may also cause damage to cultural resources. This article describes a few examples of burrowing mammals, their impacts in

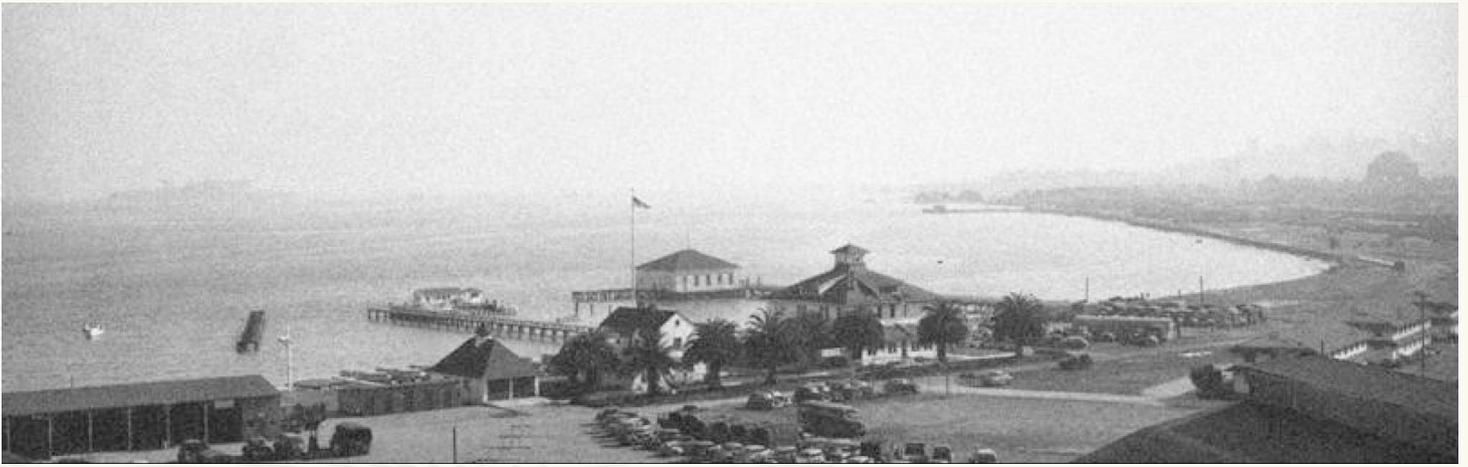
cultural landscapes, and management options.

Prairie Dogs, Pocket Gophers, and Moles

Burrowing animals that may impact historic sites include voles, moles, shrews, mice, ground squirrels, groundhogs, gophers, prairie dogs, and rabbits. Three of the burrowing animals that pose common concerns for cultural landscapes are highlighted below.

Prairie dogs are herbivorous burrowing rodents within the squirrel family that occur only in North America. There are just five species. Utah and Mexican prairie dogs are Threatened and Endangered Species, and the others are now rare due to eradication, habitat loss, and plague. The most common species, the black-tailed prairie dog, is found across the eleven U.S. states of

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Fort Point Lifesaving Station, not dated, from the Photo Collections of Golden Gate. National Recreation Area, Presidio Museum files, National Park Service. No catalog number available (In Fort Point United States Coast Guard Station Historic District Summary Cultural Landscape Report, 2008).

the Great Plains, in northern Mexico, and southern Canada. Prairie dog colonies are a complex networks of tunnels with multiple openings, identified by mounds surrounding the burrow entrances.

Prairie dogs can be an ethnographic resource, which is a component of a landscape culturally valued by traditionally associated people. [The Black-Tailed Prairie Dog Management Plan for Badlands National Park](#), concerning the historical territory of the Oglala Sioux Tribe of the Lakota people, considers this ethnographic value in the plan's impact topics. Prairie dogs were historically used as a food source by Native Americans in prairie landscapes, and their bones were used to manufacture tools. Prairie dog colonies have also had a traditional role in spiritual and medicinal practices.

[Pocket gophers](#) are also herbivorous burrowing rodents. Their name comes from the fur-lined pouches

on the side of their head, used for carrying food. Pocket gophers occupy a variety of habitats, primarily throughout the western United States. Out of the 34 species in the western hemisphere, only one species is found in each locality. They can be distinguished by appearance, through their fan-shaped soil mounds, and by their plugged tunnel entrances that help keep intruders out.

[Moles](#) are insectivores, not rodents, with a diet consisting mainly of grubs, beetles, beetle larvae, and worms. They're relatives of shrews. Because of their high energy demands, moles cover a larger area than most tunneling mammals. They're antisocial outside of the breeding season, and three to five moles per acre is considered a high population. Their extensive tunneling is beneficial to soil health, but may also lead to problems for turf or landscape plants, due to voids introduced around root systems.

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Black-tailed Prairie Dog (USFWS).



A pocket gopher creates a fan-shaped mound at Agate Fossil Beds National Monument (NPS).

Unlike gophers, moles create volcano-like mounds in excavating their tunnels. The pile of soil is thrown up in the center, and rolls down the sides to make a symmetrical-shaped molehill. Also different from gophers, mole tunnels are shallow beneath the ground, giving the appearance of raised ridges in turf or soil, with brown turf along the ridge. These are most apparent in early summer and again in fall, September to October.

Impacts of Burrowing Animals

Burrowing animals can have positive and negative impacts on a site, affecting the natural systems and features, archeology, structures and vegetation in a cultural landscape.

In terms of positive impacts, small burrowing mammals mix soil horizons, aiding in the movement of soil air and moisture, and blending organic matter. Moles eat some plant pests, such as Japanese beetles. The tunnels provide shelter for other animals, too. Prairie dogs are a “keystone species” that provide habitat or food for ferret, fox, burrowing owl and the ferruginous hawk.

Burrowing animals can threaten archeological resources and historic structures through disruption, destabilization, and information loss. At Fort Larned National Historic Site, prairie dogs may be damaging historic wagon ruts of the Santa Fe and Oregon trails. Historic Scotland published [technical guidance on Burrowing Animals and Archaeology](#) that describes the specific challenges of burrowing animals around protected archaeological sites and monuments.

Burrowing animals can also have a negative impact on vegetation within cultural landscapes. Tunnels



Young apple tree roots severed by gophers at [John Muir National Historic Site](#) (NPS).

harness water, causing a loss of surface irrigation water, plant desiccation and soil erosion. Prairie dogs cut back plants around their colony sites to improve their ability to detect predators. At Bent’s Old Fort National Historic Site, their activities have threatened a prairie restoration site.

Tunneling moles damage plants by disrupting roots, causing brown foliage and dieback. They may also cause indirect damage when other species use mole tunnels for passage and protection, feeding on tubers and roots.

Gophers damage plants through direct consumption or by smothering foliage with their mounds. Gophers damage trees by stem girdling and clipping, root pruning, and root exposure caused by burrowing. The exposed soil of mounds can become seedbeds for invasive plants.

Gophers may also gnaw on underground utility lines and irrigation systems. The tunnels created by both moles and gophers can interfere with mowing and be detrimental to the appearance of a maintained landscape.

Maintenance and Management

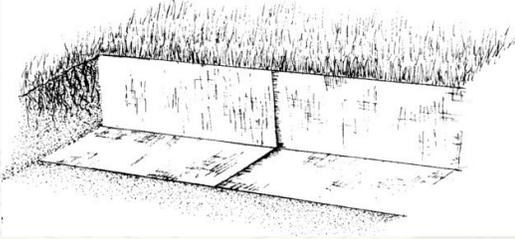
In any NPS cultural landscape, [integrated pest management \(IPM\) principles](#) are used to manage animals that are part of a natural ecosystem and a threat to the integrity of cultural resources. These include:

- » Understand the pest, including its habitat, lifecycle



Gopher damage to turf at [Belle Point, Fort Smith National Historic Site](#) (NPS).

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The underground fence, commonly made of wire or mesh, can protect plants and turf from gophers and moles ([Internet Center for Wildlife Damage Management](#)).

and ecological significance;

- » Define management objectives for short and long term priorities, including pest damage and action thresholds (the action threshold is just below the damage threshold)
- » Build consensus with stakeholders for the use of control mechanisms
- » Monitor pest populations and damage to resources
- » Treat the pest population when the action threshold is reached
- » The control mechanism should be the least toxic possible
- » Continue to monitor over time.

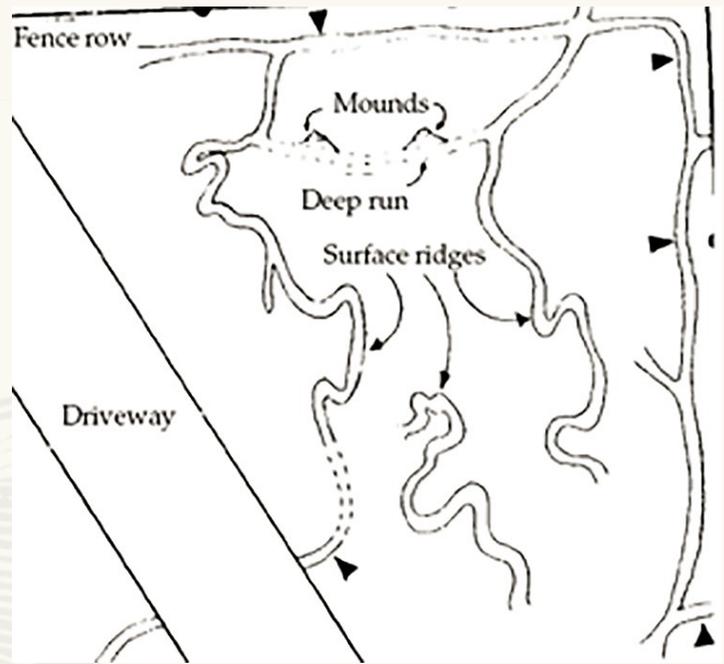
NPS Policy ([Management Policies, Section 4](#)) calls for restoring native species to natural conditions, with respect to abundance and distribution. It also allows for intervention and control under certain circumstances, such as hazards to human health or threats to the integrity of cultural resources.

Prairie Dogs

Several NPS units have developed prairie dog management plans with the goals of managing for long-term, self-sustaining populations while avoiding site- or resource-specific negative impacts.

The [2008 Sand Creek Massacre National Historic Site Prairie Dog Management Plan](#) discusses options for controlling prairie dogs, including:

- » Use of vegetative barriers and/or grazing management to discourage colony expansion,
- » Acquisition of conservation easements,
- » Use of fencing and other barriers to prevent colony expansion,
- » Live trapping and translocation of prairie dogs,
- » Directed sport shooting to site-specific areas,
- » Use of approved rodenticides to control populations, and
- » Ongoing monitoring of prairie dogs and vegetation.



Locations for setting mole traps around a network of tunnels. Note that curving surface ridges and tops of mounds are avoided ([Internet Center for Wildlife Damage Management](#)).

Pocket Gophers and Moles

Trapping is an effective method of controlling both moles and pocket gophers. This requires digging, setting, and checking traps regularly. While laborious, trapping avoids the use of toxins that could harm non-target species.

Repellents: Repellents contain castor bean oil, and need to be applied regularly to active tunnels as a spray or granular application.

Exclusion: Underground fencing can be used to protect orchards, high value turf and plant beds. This vertical barrier has a 90 degree lip that helps deter moles and gophers from digging under it.

The [2013 Archeological Resources Management Plan / Environmental Impact Statement for Knife River Indian Villages National Historic Site](#) discusses various strategies for managing the pocket gophers that threaten the park's archeological resources. While a trapping program was used in past years, the park is currently using a CO₂ machine that has less ground disturbance.

Additional Resources

- » [NPS Prairie Dog Monitoring](#)
- » [The Prairie Dog: A Century of Confusion and Conflict in Park Management](#) (George Wright Forum, 2009)

Tool of the Moment: Aerial Lift

Arborists can access trees through climbing with ropes, or by aerial lifts. Aerial lifts, also known as high lifts, are available as tow-able equipment or mounted on trucks (bucket trucks). Boom lifts are the most effective type of lift for pruning and are manufactured with telescoping or articulating lifts. Articulating lifts offer flexibility for movement around a tree.

Aerial lifts are used for pruning, removing trees, and cable installation. They're often safer and more efficient than climbing trees. Lifts are especially useful for pruning storm-damaged and hazard trees with an unstable structure. Climbing is preferable to using aerial lifts when a tree is inaccessible (on a slope or far from a road), has tightly spaced branches, or is taller than the standard lift. Lifts can compact soils and access mats should be used in vegetated areas. In addition, lifts constrain pruning to a position outside of the tree, rather than from the inside, which may reduce the quality of fine pruning.

Arborists with Fall Protection Training can use aerial lifts to increase the efficiency of their work. Talk to your Safety Officer for more information on training.



Click on this photo to watch a short video of an aerial lift in action at JOMU (NPS/ Keith Park).

Video Corner



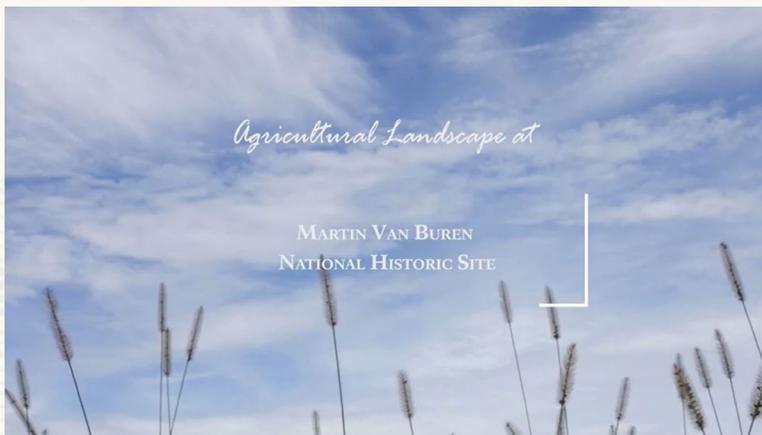
The Cultural Landscape at Appomattox Court House National Historical Park

Appomattox Court House National Historic Park, the site of the April 9, 1865 surrender that led to the end of the Civil War, became a unit of the National Park Service in 1933. The [Appomattox Court House National Historical Park: Cultural Landscape Report. Vol II](#) documents the landscape history, conditions, and recommended preservation treatment for the historically significant features of the site to guide its current and future management.



High Lift Pruning at John Muir National Historic Site

Keith Park removes dead fronds from the historic palm trees in front of John Muir's home using an aerial lift.



Also available at [Olmsted Center for Landscape Preservation NP Gallery collection](#).

The Agricultural Landscape at Martin Van Buren National Historic Site

At the Martin Van Buren National Historic Site, the National Park Service collaborates with Roxbury Farm CSA, the Open Space Institute, and the Olmsted Center for Landscape Preservation to preserve President Martin Van Buren's historic farmland by supporting sustainable agriculture now and for generations to come. The [Agricultural Management Guidelines for the Martin Van Buren National Historic Site](#) integrates best management practices for sustainable agriculture with the preservation of a historically significant cultural landscape.

Upcoming Training Opportunities



The third annual [Preservation Horticulture Workshop](#) will be held August 27-29 at Fort Vancouver, WA. Join us for this hands-on course to learn more about plant care in your cultural landscape: tree condition assessments, tree replacement, pruning, landscape renovation, and more. Travel scholarships are available. [Registration](#).

Vanishing Treasures

[Guiding Principles for Field-based Historic Preservation](#)

June 25-27

Grand Teton National Park

July 16-18

Hawai'i Volcanoes National Park

August 5-7

Grand Teton National Park,

October 22-24

Golden Gate National Recreation Area

[Wood and Log Preservation and Repair](#)

July 15-19

Grand Teton National Park

[Defining the Problem: Diagnosing Historic Building Deterioration](#)

August 12-15

Grand Teton National Park

[Pre-contact Masonry Preservation and Repair](#)

October 21-25

Wupatki National Monument

National Center for Preservation Training and Technology

[Cemetery Preservation Workshop](#)

June 14-15

Bardstown, KY

[3D Photogrammetry Workshop](#)

August 19-23

Moose, WY

National Preservation Institute

[Traditional Cultural Places](#)

September 12-13

Portland, OR

[Landscape Preservation: An Introduction and Advanced Tools for Managing Change](#)

October 22-24

Portland, OR

Pacific Northwest International Society of Arboriculture

[Women's Tree Climbing Workshop](#)

June 7-9

Seattle, WA

Utah State University Forestry Extension

[Lunch and Learn Webinar: Remediating compacted soils compromised by urban construction](#)

June 11, 12:00 Mountain Time