

Landscape Culture

a newsletter for cultural landscape stewards

Cultural Landscapes Program

Fall 2017

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CARL Nursery Program: Park Installs In-house Plant Nursery to Propagate Historic Plants

When Hurricane Ivan tore through Carl Sandburg National Historic Site in 2004, one of the casualties was a 160 year old American elm tree, *Ulmus americana*. Irene Van Hoff, the park's Natural Resource manager, didn't need to look far for a replacement. She had propagated a sapling from the tree's seed two years prior. That fortuitous experiment marked the beginning of the park's in-house nursery program.

Like many cultural landscapes, the vegetation at CARL includes historical plantings that date to the period of significance and represent varieties that may be hard to find or no longer exist in the nursery trade. After planting the elm, Irene asked herself, "What if we need another one of these?" She applied and received funding for an in-house plant nursery project to "conserve culturally and botanically significant plants of CARL." Seeds and cuttings were taken by horticulturists from the local CESU program and propagated to stock the new nursery.

The nursery was built by park maintenance staff and volunteers and consists of three facilities: a tree and shrub nursery, a greenhouse, and raised beds.

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Irene Van Hoff at new CARL Plant Nursery.

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:



» **Tree and Shrub Nursery.** The nursery measures 50' x 40' and is positioned in an open field in the maintenance area. It is compact, consisting of 4 planting rows approximately 10 feet apart, on centers. Nearly all of the individuals in the nursery are the progeny of veteran specimens that remain in the historic landscape. Much of the nursery stock was collected from the grounds as seedlings that had sprouted naturally and would have been weeded out or mowed over. Other stock was propagated from cuttings taken from landscape specimens.

» **Greenhouse.** The greenhouse is a small (16' x 10') hoop-style cold frame located behind the maintenance building. It has a plastic cover, shade cloth (as needed), and a ventilation fan powered by a small solar panel. The greenhouse is used to propagate and over-winter plants needed to keep the gardens of the cultural landscape well-stocked and looking their best. It is also used to protect store bought plants in spring until they are transplanted into flowerbeds.

» **Raised beds.** In addition to the greenhouse there are three raised beds (10' x 4') used for outdoor propagation of flowers and shrubs often needed to refresh plantings. These beds serve as a place to create new starts from plants such as irises, dahlias, forsythia, lobelia, and ferns.



New CARL Plant Nursery.

A stand-alone irrigation system was also installed as part of the project. The rooftop catchment system harvests rainwater from the maintenance building and directs it to a 1200 gallon underground tank that supplies the nursery's drip lines. Maintenance of the nursery includes winterizing the irrigation system as well as mowing, mulching, weeding, pruning, and tracking each of the plants in a database. Volunteers have been critical to the success of the nursery. Irene works with a small but dedicated group of volunteers on resource projects every other Thursday. Their help has been instrumental to the nursery's success.

The nursery currently holds 20 different tree and shrub species and five types of perennials. The elm sapling that Irene grew from seed was planted in the same location its parent once stood and is now 12' tall.

Employee Spotlight



Name: (Elizabeth) Brooke Derr

Job Title: Horticulturist

Years with NPS: 6 1/2

Favorite Maintenance task?

Caring for Historic Trees

Favorite Project you have worked on?

Currently, we are in the beginning stages of propagating one of the historic trees (*Styphnolobium japonicum*, Weeping Scholar-tree) in the Falling Gardens at Hampton NHS.

What is important/interesting to you about your cultural landscape?

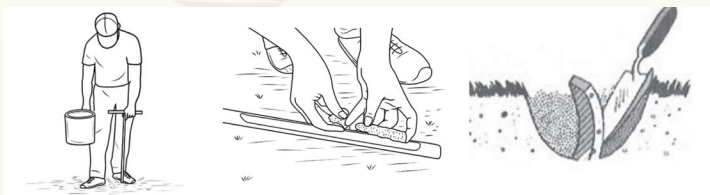
The landscape at Hampton NHS is complex and layered, yet changes in American landscape preferences, values, and lifestyle are easily identified. Only a handful of original trees still stand to maintain the living connection between 1790 and now and we are doing our best to keep them going for as long as possible.

How to Do a Soil Test

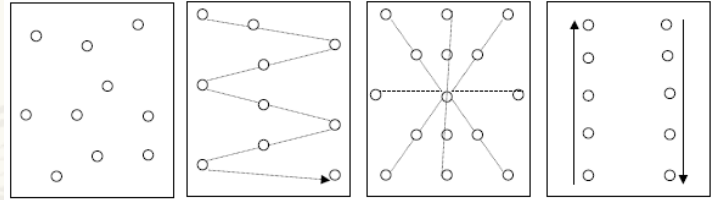
Soil testing is an essential tool for cultural landscape preservation maintenance, as it reveals the health of the soil. Fertility varies over time and soils that support lawns, field crops, orchards, and landscape plantings tend to become nutrient-depleted if organic nutrients, compost or nutritional mulch have not been added in several years. Plants that produce crops are particularly heavy feeders. Annual testing is appropriate for soils growing crop plants, but every 3-5 years is good for most cultural landscape components, including ornamental lawns. Spring and fall are the best times to test, but fall is particularly good, if the park is preparing to plant or to seed the cultural landscape.

There are two ways to test soil: by using a do-it-yourself kit purchased from a hardware store or plant nursery (for approximately \$25), or by using a USDA Cooperative Extension Service in your state or county (for \$15-\$20 per sample). Our recommendation is to go with the pros, rather than do-it-yourself. The park will receive more accurate, comprehensive information from the Extension Service, along with recommendations on how to correct deficiencies. The USDA Cooperative Extension System is a nationwide, non-credit educational network. Each US state and territory has a state office at the land grant university and a network of local or regional offices. [Use this map to find your local office.](#)

1. Start by contacting your local Extension Agent to get a soil sampling kit. Obtain a sampling kit for each component of the landscape to be tested, i.e., lawn, shrubs and trees, orchards, meadows, field crops, display beds, etc. should be tested separately. The kit will contain a small box or bag for approximately one pint of soil, as well as a form for you to indicate the type of plants to be grown in the soil.
2. Take a soil sample with a digging tool, such as a soil probe, trowel, shovel, or spade. Be sure you can dig 3 to 6 inches deep. You'll also need a clean bucket. With a soil probe, collect ribbons of soil about 2" long and 1" wide. With a trowel, shovel or spade, open up a 3 – 6" deep wedge-shaped hole and shave a 1" thick slice of soil from the edge.



3. Take 10 – 20 random or systematic samples across the landscape component to be tested. (See the diagram for examples of random and systematic sampling.) Remove debris such as thatch or leaf litter or rocks from the soil and combine the 10 – 20 samples in the bucket.



4. Put about a pint of the soil mixture into the sample bag or box.
5. Repeat the procedure to create another sample for a different landscape component soil test (e.g., lawn, plant bed, orchard etc.). Use multiple tests for landscape components larger than one acre.



6. Mail the sample with the form to the Extension Service lab (this is often associated with a university). Payment can be made with a government purchase card. Expect to pay around \$20.00 per sample.

The results will be mailed to the park, with an analysis of Nitrogen, Potassium, Phosphorus, Calcium and Magnesium, along with pH, micronutrients, percentage of organic matter and soluble salts (an indication that too much synthetic fertilizer has been added in the past). The results will indicate whether the analysis is too high, sufficient, or too low for the plants the park is intending to grow.

If the soil is low in nutrients, most deficiencies can be addressed by incorporating compost or spreading nutritional mulch. Lawns will be healthier if a mulching mower is used to return the clippings to the surface. If the pH is too acidic, the Extension Service will recommend an application of granular or pulverized limestone (calcitic or dolomitic). This is most effective if worked down into the soil, rather than left on top. For too acidic soils in lawns, apply limestone after core aeration. If the pH is too alkaline, the Extension Service will recommend the application of elemental sulfur. Sphagnum Peat is a more organic soil acidifier, as it adds organic matter to the soil when worked below the surface. Let us know what you discover from your soil test!

Defensible Space in Cultural Landscapes



Buckner Orchard, NOCA.

With over **8.5 million acres burned** across the U.S. in 2017 and the prominent loss of **Sperry Chalet** in Glacier National Park to fire, NPS staff will be looking harder at creating defensible space around historic buildings. Defensible space is the zone around a structure from which it can be safely and effectively defended from a wildfire in “normal” burning conditions. Some defensible space guidance calls for the reduction of vegetation within a 30-200 foot swath around a building. This practice, however, can be detrimental in cultural landscapes where the historic building is only one component of the historic property. Ornamental vegetation, native vegetation, and small scale features also should be considered when creating or improving defensible space in order to reduce the impact on the overall historic character.

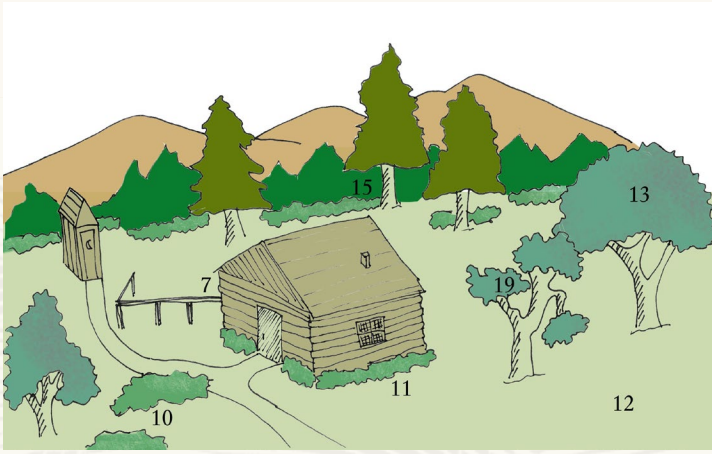


Buckner Homestead, 1923.

Historical Landscape Architects can recommend more nuanced approaches to managing the building ignition zone in order to preserve vegetative cultural resources and the valued forested setting at historic sites. One such approach to managing fire risk is utilizing fuel reduction and thinning of canopies. At North Cascades National Park, for example, an interdisciplinary team of staff from the fire, natural resources, cultural resources divisions worked on site to ensure a fuel reduction plan was implemented with limited impacts to both cultural and natural resources within the Buckner Homestead.

Buckner Historic District is located on the eastern side of the North Cascades, within dry fire-prone Douglas-fir/Ponderosa pine forest. While the forest provides habitat for specific endangered species and conveys the historic character of the homestead, the forest has become dense over time. The team surveyed the Buckner Homestead to ensure that the fuel reduction plan (thinning stands of conifers to minimize the risk of fire spreading through the crowns of trees) avoided removal of specimen trees that were important for cultural resource or natural resource values. Instead of following a uniform prescription of ignition zone management, the team developed a site specific defensible space plan. They instigated a selective thinning approach in the adjacent forest, flagging specific trees to create a more open canopy,

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while preserving the open forest and shade. After the trees are removed the forest will have a character more similar to historic, pre-fire-suppression era conditions.

Treatment Guidelines

There are three components of creating defensible space in a cultural landscape: pre-fire planning, structural treatment, and vegetative treatment. The recommendations below were compiled from a variety of sources including the [Firewise USA Toolkit](#) and the [Arthur Carhart National Wilderness Training Center Fire Management Toolbox](#).

Pre-fire Planning

1. Identify and map contributing historic features including small scale features (such as fences and corrals), archeology, and vegetation. Consult your regional Cultural Landscapes Program staff or Park Cultural Resources Manager for existing Cultural Landscape Inventories (CLI) and maps.
2. Incorporate wildland fire issues into new Cultural Landscape Reports.
3. Consider Historic American Landscapes Survey documentation for sites at high risk.
4. Utilize [NPS Wildland Fire Risk Assessment](#) criteria to assess site. Understand the local fire regime and structural vulnerability. Not all buildings within a forested landscape are highly susceptible to fire. Create a treatment plan commensurate to risk. Include fire managers when planning and designing treatment projects.
5. Follow Section 106 of the National Historic Preservation Act compliance when conducting any work within a cultural landscape/historic property, including emergency stabilization.

Structural Treatment

6. Do not store flammable materials such as firewood near historic buildings.
7. In vulnerable cultural landscapes, install a concealed metal barrier between wooden fences and historic structures.
8. Avoid chemical fire retardants on historic structures. Instead, utilize water and Class A foams. During a fire, utilize specialists to install a temporary exterior sprinkler system.
9. Purchase fire resistant building wraps for at risk buildings. Utilize experts to install if necessary. (Wraps are more effective on smaller buildings and for vulnerable elements on larger ones.)

Vegetative Treatment

10. Avoid clearing a preset perimeter around a historic building. Where vegetation removal is necessary due to vegetation density, work to increase spacing rather than clearing (i.e., 10' between tree canopies and 4' between shrubs).
11. Allow low-growing, high moisture, drought and fire-resistant plants that are compatible with the historic character to remain.
12. Low-mow turf to avoid grassland fuel build-up.
13. Prune trees and shrubs to remove deadwood, and shorten branches that overhang chimneys and roofs.
14. Remove woody debris, leaf litter, and dried needles from roofs, gutters and the ground around historic features.
15. In highly fire prone areas, prune tree canopies 6-10' from the ground.
16. When removing select trees, fell away from the historic property, flush cut stumps, roughen ends to encourage decay, and conceal with soil and duff.
17. In highly fire prone areas, install and maintain irrigation system to keep vegetation hydrated. Otherwise, water manually in the driest season.
18. Mulch around cultural landscape vegetation to preserve soil moisture.
19. During a fire, install a temporary irrigation system and a fire resistant wrap around historic vegetation (e.g., an orchard, specimen trees).

Pests & Diseases: Emerald Ash Borer

The Emerald Ash Borer (*Agrilus planipennis* Fairmaire) was identified in North America in 2002, most likely after it was accidentally transported from its native Asia in wood packing material. Emerald Ash Borer (EAB) has caused ash tree decline across the Midwestern and Northeastern United States. The beetle is the most destructive forest insect introduced to the continent in recent history and is now impacting 31 U.S. states and two Canadian provinces.

Identifying an infestation

The Emerald Ash Borer targets green, black, and white ash trees. The ½ inch-long, metallic green adults nibble on the ash tree foliage, but they do not cause much damage to the trees.

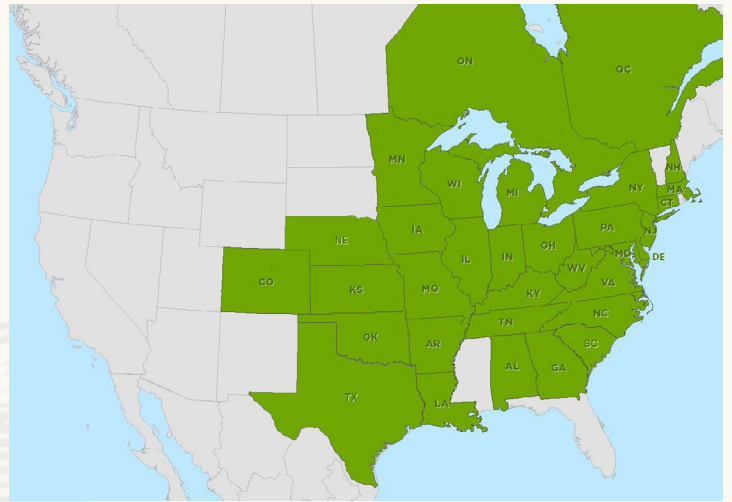
Split tree bark reveals a winding path through wood where larvae have bore galleries. The EAB is most destructive during the insect's early stage of life. When the larvae feed on the inner bark, it limits the tree's ability to transport water and nutrients, and the dead trees quickly become brittle.

The insects leave a D-shaped hole in the bark when they emerge as adults in the spring. Affected trees may also exhibit bark splitting and epicormic shoots (or water sprouts) growing from the roots and trunk. Woodpeckers eat the EAB larvae, so heavy woodpecker damage on ash trees may be another sign of infestation.

What to do about the EAB?

Prevention

The beetle's distribution is largely due to individuals and businesses transporting infested nursery stock, firewood, or unprocessed logs. Because of its impact, Federal and State agencies like the USDA enforce



Spread of the EAB by 2017. Click on the map for full timeline.

quarantines and fines to regulate the transport of wood products.

There is no known cure once a tree is infected, and most ash trees succumb to the beetle's effects within 3-6 years after infestation. With a nearly 100% mortality rate, preventing the spread of EAB is critical.

To help limit the spread of the beetle, you can:

- » Understand the signs and risks of infestation
- » Share information with staff and visitors, and
- » Don't move firewood from impacted areas

Forest monitoring and management

Early detection and quick response are important steps in addressing new infestations. Regularly monitor high risk areas and respond with prompt, interagency action where the EAB is identified. EAB management actions can be a part of broader forest or landscape management plans.

Mitigate danger from hazardous trees

Dead ash trees quickly become hazardous. Provide staff with training on hazard tree identification and management. Remove and remediate dead or dying ash trees, particularly in places that are commonly traveled by visitors or employees.

Restore healthy forests

The EAB has significantly reduced the number of ash trees across several regions of North America, and our current ability to eradicate infestations is limited.



Image: USDA/Gerald Wheeler

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Rehabilitate forest ecosystems by promoting and restoring healthy, sustainable urban and rural forests. Consider options for using salvaged ash trees and planning for long term management of ecosystem functions - with or without ash trees.

A case study

Theodore Roosevelt Island, part of the George Washington Memorial Parkway in Washington, DC, [was closed for several weeks this summer](#) while park staff removed hazardous, diseased trees along the park's trails.

Trees on the island have both cultural and natural value. The Olmsted Brothers firm helped to establish a



CCC workers clearing brush among trees at Theodore Roosevelt Island.

forest on Roosevelt Island over a period of fifteen years, developed as a living memorial to Theodore Roosevelt. The plan featured meandering paths through a mature, native forest, envisioning visual connections to surrounding memorials with a feeling of sanctuary.

In the 1930s, members of the Civilian Conservation Corps (CCC) cleared the island of most of its non-native vegetation and planted native hardwood trees and shrubs to fill gaps in the existing native forest. Over 35,000 plants were added to the island at this time. Ashes (*Fraxinus* sp.) were among the dominant large trees that Frederick Law Olmsted, Jr. selected for the forest.

Other parks of the National Capital Region have been [significantly impacted by EAB infestation](#). Where park cultural landscapes have lost ash trees, compatible substitute trees can be planted. Examples of other native or specimen hardwoods are tulip poplar and willow oak.

- » [How An Invasive Bug is Killing Off Our Region's Ash Trees](#): NPS botanist Liz Matthews talks with NPR about the impacts of the EAB within NPS units at Theodore Roosevelt Island, C&O Canal, and Piscataway Park.
- » Contact your park's regional [Integrated Pest Management](#) (IPM) coordinator for assistance.
- » [Emerald Ash Borer Information Network](#)

Upcoming Training Opportunities

Vanishing Treasures

[Introduction to Masonry Preservation AND Masonry Repair and Construction Techniques](#)

Wupatki National Monument, October 23-27, 2017.

[Preservation Engineering: Diagnosing, Monitoring, and Repairing Masonry Structures](#)

Tumacacori National Historical Park, November 14-16, 2017.

[Guiding Principles for Field-based Historic Preservation](#)
Cane River National Historical Park, December 5-7, 2017.

[2017 Vanishing Treasures Course Catalog](#)

National Preservation Institute

[NEPA Compliance and Cultural Resources](#)
Richmond, VA, October 24-25, 2017.

[Section 106: An Introduction](#)

Minneapolis, MN, October 24-26, 2017.

Denver, CO, November 14-16, 2017.

[NAGPRA Essentials](#)

Seattle, WA, November 14, 2017.

[Conflict Management and Negotiation Skills for Cultural and Natural Resource Managers](#)

Montpelier, VT, November 1-3, 2017.

Internal NPS

[Researching, Preserving, Interpreting LGBTQ History](#)
Philadelphia, PA, December 5-7

Argonne National Laboratory with partners

[Visual Resources Stewardship Conference](#)
Lemont, Illinois, November 7-9, 2017.

Charlie Pepper Retires



*Charlie Pepper,
NPS Preservation
Horticulturist.*

On October 30, 2017, Charlie Pepper will retire from a thirty two-year career with NPS. Trained as a Horticulturist at Cornell University, Charlie began his NPS career as a Seasonal Gardener at Frederick Law Olmsted National Historic Site and ended as the Preservation Maintenance and Education Program Manager with the Olmsted Center for Landscape Preservation. Charlie leaves behind a remarkable legacy of influence on the stewardship of cultural landscapes throughout the NPS. His training

programs, guidance to parks and project management have given NPS Facility and Resources Management staff in every region skills and tools to care for cultural landscapes.

Ever the innovator and charismatic leader, Charlie has championed numerous initiatives to improve NPS landscape management, including the Arborist Training Program, the Landscape Maintenance Skills Development Program, Maintained Landscapes in FMSS, Cultural Resources for Facility Managers training, Sustainable Turf Grass Stewardship and Historic Orchard Preservation workshops. In the last ten years of his career, Charlie has invested in the education of the next generation of landscape stewards, by leading the Olmsted Center's Branching Out Youth Education Program and contributing to the development of the Stephen T. Mather Building Arts and Craftsmanship High School in New York City.

Many of us will feel a loss with Charlie's retirement. Beyond his expert knowledge and experience, Charlie is known for his warm, enthusiastic personality that has engaged so many of us in wanting to do the right thing for cultural landscapes. Charlie, we salute you, and wish you a wonderful retirement.