Propagation of Historically Significant Specimen Plants: The Historic Plant Nursery Program of the National Park Service and the Arnold Arboretum of Harvard University

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INTRODUCTION

Historic Plants. In 1863, Nathaniel Hawthorne planted two hawthorn trees in front of his home, The Wayside, in Concord, Massachusetts. He planted a pink one in honor of his daughter Rose and a white one for his daughter Una. More famous for his command of the written word than his talent in landscaping, Hawthorne apparently planted the two trees so close together that, as they grew, they grafted into one tree. A later occupant of the house, Louisa May Alcott wrote a poem about this tree in a letter to the Hawthornes, demonstrating the value she placed on it. This original, unified specimen still stands in front of The Wayside in 1997, now a National Park Service site. Blooming each spring, half in pink, half in white, the tree is a living legacy to Hawthorne and his daughters. Its presence helps tell the story of the site and also gives testament to the values of the people who once lived there.

Nathaniel Hawthorne's tree is a prime example of a landscape feature with great historic significance. All over the world, extreme measures are taken to protect and preserve buildings and homes with historic significance, but in the United States it is only within the past 20 years that attention has been given to preserving the landscapes that surround these historic structures. All too often it is assumed that the greatest value of the site belongs to the structures and their contents, when in fact the landscape and all its features may contribute just as much to the history of *the place*.

DEVELOPMENT OF THE HISTORIC PLANT NURSERY PROGRAM

In 1992, the National Park Service, recognizing the need for leadership in the area of historic landscape preservation, created the Olmsted Center for Landscape Preservation, located at the Frederick Law Olmsted National Historic Site in Brookline, Massachusetts. The mission of the Olmsted Center is to provide assistance with the preservation and ongoing management of historic landscapes at National Park Service sites in the northeastern U.S. The Olmsted Center conducts historical research, develops management plans, and organizes field projects, including hazard-stabilization tree work, hedge management, and pruning projects.

As part of the routine management of these historic landscapes, there is always the issue of what to do with the aging and declining specimens. Deteriorating specimens can be stabilized, but eventually will either die or become hazardous and need to be removed. Removal of these specimen plants can result not only in great change in the overall design intent of the landscape, but can also result in the loss of a specimen of historical significance.

The Olmsted Center wanted to develop a program geared specifically toward the conservation of these original, historically significant specimen plants. Through propagation of the original plant, a new specimen could be produced for in-field

replacement which was a genetically authentic copy of the original. The Olmsted Center intended to use this program as a prototype for the National Park Service, with the hope that other Park Service regions in the United States might then establish their own propagation and nursery programs.

To develop this program, the Olmsted Center needed assistance from a botanical institution in the propagation and development of these replacement specimens. It was imperative that the collaborating institution not only have great expertise in propagation but also have an operational setup which could attend to the quality of each individual specimen. They turned to the Arnold Arboretum of Harvard University, a leading expert in woody plant propagation, which is located in Jamaica Plain, Massachusetts, about one mile from the Olmsted site. The two sites already share a significant historical connection, since the Arboretum's first director, Charles Sprague Sargent, worked with Frederick Law Olmsted Sr. to design the Arboretum grounds in 1872.

In 1991, the Olmsted Center and the Arnold Arboretum established a collaborative agreement, initiating two projects. The first project was the Historic Plant Inventory. The purpose of this 2-year program was to identify and inventory the woody plants at eight National Historic Sites. The plants were evaluated based on significance and existing condition, and recommendations were then made for propagation. The Historic Plant Nursery program was established as a follow up to the Historic Plant Inventory. In 1993 the first of the significant historic plants identified through the Inventory project were propagated at the Arboretum's Dana Greenhouse. The next year, the Arnold Arboretum offered use of their nursery space to the Olmsted Center in order to grow on these plants. In January 1995, I accepted a collaborative position, working with both organizations to develop the Historic Plant Nursery program.

PLANT SELECTION AND PRIORITIZING

One of the biggest challenges of this program was the establishment of guidelines for selecting and propagating these specimen plants. It was simply not possible to propagate every significant woody plant from every site within the National Park Service northeast field area. We needed criteria for prioritizing among many specimens, selecting those that were the most significant and in the most declining condition.

The first step was to clearly define what we considered significant. Plants are defined as historically significant based on their direct association with a historic figure or event, or that somehow help to tell the story of the site or its occupants, such as in the case of Nathaniel Hawthorne's tree. Plants which play a key role in a historic, designed landscape, often referred to as character-defining features, are also considered significant. One of the first specimens to be selected for propagation was the American elm at the Olmsted National Historic Site, chosen for its extreme importance to the site. This tree stands over 3 stories tall and is approximately 200 years old. Although this specimen was not planted by Frederick Law Olmsted, he prized it for its striking form and requested it be retained through all renovations and improvements to the landscape. This tree is a quintessential example of a character-defining feature within the landscape — its presence on the site is one of particular grandeur and elegance, and without it the site would be drastically different.

Other plants are chosen for their botanical or horticultural rarity or uniqueness, such as species or cultivars hard to find in today's commercial nurseries. Historic orchards often have many mature specimens that may no longer be fruiting, making identification of the exact variety remote. The Wick Orchard, located at Morristown National Historical Park in Morristown, New Jersey, is an example of just such an orchard. This orchard has great historical significance since General George Washington had established an encampment for his soldiers there one winter during the Revolutionary War. In 1993, Olmsted Center took scion material from the few remaining trees as the first step in an orchard restoration project. Most of the varieties could not be exactly identified due to their advanced age. In the spring of 1995, over 100 containerized replacement trees were returned to the park to be planted in the orchard.

How the Program Works. The Historic Plant Nursery program is designed to operate on a 3- to 5-year rotation, with everything from selecting the plants for propagation to the return of grown replacement plants back to the site occurring within this time frame. Approximately 20 original specimen plants are selected each year for propagation. Once propagated, the plants are grown in containers for 1 to 2 years, and then are planted into the nursery until they are large enough to be returned to their respective sites. Although only one replacement plant is needed for the in-field replacement, four propagules of each original plant are grown in the nursery, and the healthiest is then selected for return to the site.

Management of the program involves regular communication between the Olmsted Center, the staff at the Arboretum's Dana Greenhouse, and the participating National Park Service sites. An annual inventory is taken of all plants in the program, and each site receives a memo informing them of how the plants are doing and when they can anticipate their return. Monthly meetings are held between Olmsted Center and the Dana Greenhouse staff, to discuss nursery management issues. A database has been constructed to keep track of the plants in the program, and an operational manual has also been compiled which contains all information related to management of the program.

PROPAGATION AND NURSERY MANAGEMENT

Since the goal of this program is conservation of the original specimen plant's germplasm, we propagate primarily by vegetative means. If propagation by cuttings or grafting is not possible, we will then propagate by seed. Each fall, the Olmsted Center provides a list to the Dana Greenhouse staff of those plants to be propagated the following year. The greenhouse staff makes recommendations for method of propagation and also orders the understock needed for grafting. Once we decide on the plants to be propagated, cuttings and scion materials are collected from the sites by National Park Service staff and are shipped directly to the Dana Greenhouse.

During the first year of my appointment, I received training from the staff at the Dana Greenhouse 1 day per week in the skills of woody plant propagation and general nursery management. The Dana Greenhouse is equipped with excellent propagation facilities, including a fog room, mist benches, and open benches with bottom heat. There is a cold frame and shade areas outside, as well as a large full-sun area with irrigation for large container plants.

During the winter, the young container plants are kept in a cold storage facility

at Minuteman National Historical Park in Concord, Massachusetts. The cold storage room is located in the basement of an old barn, and is equipped with lights, fans, heaters, an intake fan, and thermometers. The plants go into cold storage in early November and emerge in mid-April. The plants are monitored each week while in cold storage, to check for watering needs and also for rodent damage or fungal infection.

When the plants come out of cold storage in the spring, most are planted directly into the nursery. Those that are too small to be put into the ground at that time will spend another year in containers. Others, such as vines and shrubs, may be returned to their original sites, since some of these do not require any time in the nursery.

In April 1997, we had the first removal of specimen replacement plants from the nursery, marking the first completion of a nursery production cycle. A total of 78 plants were dug, balled and burlapped, and sent back to their original eight sites. These plants were propagated in 1993 and 1994. Although each site only needed one good specimen plant to be used as the in-field replacement, all of the sites were so enthusiastic about the plants they took all of the extra specimens.

CONCLUSION

Since the program began in 1993, 99 historic specimen plants have been propagated, from 15 National Park Service sites. What began as a 1-year trial program has continued for the past 3 years. Its success is directly related to the effectiveness of the collaborative agreement between the Arnold Arboretum and the Olmsted Center and also to the interest that exists in this type of conservation. It is extremely satisfying to be part of this program since we are able to see the complete cycle from the beginning to the end, as each plant returns to its site as a living piece of history.

There is a growing interest in conservation of historic plant material, creating potential for similar programs in conjunction with both private and public organizations. Conservation of historically significant specimen plants is an important aspect of historic preservation as it offers the unique opportunity to have a tangible connection to the past.