

THE NEWPORT ARBORETUM



COLLECTIONS MANAGEMENT PLAN

Contents

<i>Introduction</i>	3
The Newport Arboretum.....	3
History of the Newport Tree Society	3
Purpose of Living Collections Management Plan.....	4
Responsibility for Implementation and Review.....	4
<i>The Living Collections</i>	5
Objectives & Principles	5
History of the Collections	6
State of the Forest: Current Collections	7
<i>Records System</i>	9
Inventory and Evaluation	9
Processes, Roles & Responsibilities	10
<i>Design, Planning & Acquisition</i>	10
Species Selection Criteria.....	10
Processes, Roles & Procedures.....	11
<i>Propagation</i>	11
Processes, Roles & Responsibilities	11

THE NEWPORT ARBORETUM

Collections Management Plan

Introduction

THE NEWPORT ARBORETUM

The Newport Arboretum is a citywide arboretum in Newport, Rhode Island consisting of trees planted on both public and private property. The mission of the arboretum is to plant, manage and sustain a healthy, growing urban forest in the city of Newport through the engagement and education of the public and private sectors.

We are dedicated to serving the public and improving our environment through citizen forestry, educational programs and display and conservation plantings in support of a healthy urban forest. The Newport Arboretum will be a national and international resource for plant conservation, display, and education, with a special focus on *heritage horticulture* — the celebration and renewal of Newport’s long history of exploratory arboriculture and its remaining core of historic designed landscapes and plant collections.

From handwritten records of expansive colonial-era hothouses that held specimens from all over the globe, to the scores of Gilded Age landscapes still in cultivation on our island today, Newport is a truly a living museum of American horticulture and landscape architecture. Our goal is to remember and reignite our once burning passion for silviculture by reforesting all four corners of our city with truly special specimen trees planted by private citizens on both public and private property.

Ultimately, we seek to create a citywide arboretum with collections unparalleled in scope and depth—and to do so by designing and implementing sustainable processes that may one day be modeled by communities across the globe.

HISTORY OF THE NEWPORT TREE SOCIETY

The Newport Arboretum is a special project of The Newport Tree Society. The Newport Tree Society was founded in 1987 in response to an aging and ailing urban forest. Its purpose was to

create a sustainable tree protection, maintenance and planting program for the city of Newport. The Society:

- Formed the Newport Tree Commission
- Enacted the Newport Tree Protection, Maintenance & Planting Ordinance
- Negotiated the hiring of an accredited arborist as Newport Tree Warden
- Planted thousands of trees through new planting programs

These achievements qualified Newport to become the second city in the state designated a “Tree City USA.” The city’s public trees began to benefit from formal planning and active regeneration efforts for the first time since the Gilded Age. The majority of the city’s finest specimen trees, however, are found on private landscapes.

In response to the challenge of restoring a forest under the direct care of thousands of private citizens, the Board of the Newport Tree Society has recently completed a long-term strategic plan outlining a new citizen-centered model for citywide reforestation. The 2014-2016 Strategic Plan is organized around The Newport Arboretum, New England’s first citywide arboretum, established in 2011.

PURPOSE OF LIVING COLLECTIONS MANAGEMENT PLAN

The Living Collections Management Plan serves to guide the development of the living collections (and more specifically, the detailed Living Collections Design Schema), keeping their ongoing evolution in alignment with the goals of the Newport Arboretum Strategic Plan and our long-term vision for our urban forest. The plan will provide focus to those charged with the planning, development and management of the living collections, with the aim of optimizing the use of available resources in realizing our mission and vision through effective and appropriate collections development.

RESPONSIBILITY FOR IMPLEMENTATION AND REVIEW

The identification of specific species acquisition and collection development priorities is the responsibility of the Living Collections Committee, with assistance from the Newport Arboretum Advisory Board. The Living Collections Committee will provide recommendations and oversight to ensure that collections development aligns with conservation, education, and display priorities and other goals of the Newport Arboretum Strategic Plan. The Committee will meet at least quarterly to develop specific recommendations for plant acquisition and deaccessioning.

Collection planning will be ongoing, and will include a comprehensive annual review of Special Collections development progress and plans. Periodic review and recommendations for revision of this Plan is the responsibility of the Living Collections Committee, following formal suggestions from the Board of the Newport Tree Society and the Newport Arboretum Advisory Board.

The Living Collections Committee shall meet at least once every three years, or at the call of its Chair, to review and recommend revisions to the goals, policies and processes contained within this Collections Management Plan. The administration of the Policy is the responsibility of the Newport Tree Society Executive Director, and the implementation of the Plan is the responsibility of the Director and staff.

The Living Collections

OBJECTIVES & PRINCIPLES

The Living Collections Management Plan and the Living Collections Design Schema (hereafter referred to as the “Plan & Design Schema”) will be guided by key strategic objectives and guiding principles that cut across forestry, educational and sustainability goals:

- Celebrate Newport’s heritage of exploratory horticulture by collecting and interpreting **rare and exotic trees** and reviving and interpreting **historic landscapes and plantings**.
- Increase our forest’s health and resiliency by **expanding represented taxa** citywide and reviving natural forest areas with **native plantings**.
- Increase Newport’s **tree canopy coverage**.
- **Engage Newporters in replanting** their urban forest on private as well as public property.

Heritage Education and Conservation Goals. One of the Newport Arboretum’s key goals is to preserve, restore and celebrate Newport’s rich horticultural history. We will accomplish this through the identification and effective stewardship of historic trees, special collections, cultivated and natural landscapes, and other natural heritage resources. Heritage planting and conservation measures will be combined with increased interpretation and instruction to bring to life Newport’s singular history as a center for horticulture and landscape architecture. As always, our goals can only be met through successful partnership with Newport institutions and private property owners who hold Newport’s horticultural legacy in their hands.

Taxa Diversity and Conservation Goals. Taxa diversity will be a primary driver in the choice of new accessions to the Living Collections for multiple purposes: celebrating Newport’s heritage of exploratory horticulture, increasing forest resiliency, and supporting worldwide conservation efforts. Our predecessors planted for the thrill and enjoyment of experiencing the fullest range of flora the natural world had to offer, and sharing that bounty with other seekers of knowledge. Today, we plant to celebrate that tradition of exploration and experimentation; but we also plant to fight the relentless problem of species extinction and the loss of genetic diversity in plant stocks worldwide. The Newport Arboretum

will grow species of trees and shrubs that are considered endangered or threatened with extinction according to the CITES list, as well as cultivating tree varieties that may provide genetically variable material for hybridization in the future. Ultimately, our goal is to not only practice conservation and promote biodiversity on public land, but to encourage every Newporter to plant for conservation on their own property.

Native Planting Goals. Goals for native flora education and conservation efforts include: restoring existing natural forested areas, expanding sustainable habitat for native fauna and desirable insects, and encouraging Newporters to plant a diverse palette of native species on their own properties. The Living Collections Management Plan & Design Schema will include specific goals for natives planting and restoration, and will outline the phased restoration and management of ‘natural’ sites such as Miantonomi Park, Ballard Park, etc..

Citizen Engagement Goals. The Plan & Design Schema will meet goals for citizen engagement by including planting goals for private as well as public property across Newport. We seek to engage private property owners in planting and stewardship activities through education and open dialogue, and by providing direct practical support to citizen foresters.

Canopy Coverage Goals. The Plan & Design Schema will include long-term phased goals designed to ultimately optimize tree canopy coverage in all areas of the city and to sustain this ideal canopy in perpetuity.

HISTORY OF THE COLLECTIONS

By the end of the 18th century, Newport was almost entirely denuded of trees as Aquidneck Island’s forests were lost to fuel needs, construction and farmland, with the final decimating blow occurring during the three-year British occupation of Newport (1776-1779).

Tree hunters working for arboreta and private collectors during the Gilded Age loaded new specimens from across the globe onto ships bound for New England. Propagated at the Arnold Arboretum in Boston, young saplings quickly found their way to the mansions and villas springing up along Bellevue Avenue in Newport. Exotic trees graced grand landscapes designed by legends such as Frederick Law Olmsted and Ernest Bowditch, while Newport gardeners and amateur botanists brought seedlings and cuttings to every part of town, planting a generation of trees that defined our city’s character as surely as our Gilded Age mansions or yacht-speckled harbor.

According to John ‘Echo’ Burrows (1926-2010), former head gardener for the Preservation Society of Newport County, by the end of the Gilded Age, Newport’s collection of specimen trees rivaled that of Boston’s Arnold Arboretum in both number and taxa diversity. This assessment was handed down to Echo by his father, Robert Thompson Burrows, who trained at the Royal Gardens in London before emigrating to America in the early 1920’s to join the ranks of hundreds of professional gardeners working on Newport estates.

In his article, “Living Legends of Newport,” former Newport Tree Warden Peter Simpson estimated that by the time of his induction to office in 1991, our thriving Gilded Age tree canopy had shrunk by half. It is widely known that the hurricane of 1938 razed landscapes across Aquidneck Island,

which accounts for certain losses; but more devastating was the lull in plant collecting in Newport in the latter half of the twentieth century, as Newport’s legendary enthusiasm for silviculture was lost along with a generation of scientists and amateur horticulturists. Losses continued as side yards became parking lots in a city that was balancing the blessings of economic development with its unavoidable pressures.

In 1991, the newly-formed Newport Tree Society enacted Newport’s first tree ordinance and hired Mr. Simpson as its first professional tree warden, triggering a turning of the tide for our ailing urban forest. Since that time, thousands of trees have been planted along Newport city streets and in its public parks. But these public trees represent only a fraction of Newport’s tree canopy. And so, in 2011, the Newport Arboretum was established—New England’s first citywide arboretum, and perhaps the first arboretum in America to include private residential trees in its collections.

“In particular I want to gaze again at the glorious trees of Newport — lofty, sheltered and varied...”
 —Thornton Wilder, *Theophilus North*

STATE OF THE FOREST: CURRENT COLLECTIONS

Public Collections. In 2011, when The Newport Arboretum was officially launched, the initial primary Living Collections consisted of all public park and street trees under the care of the City of Newport Forestry Division. This public collection was professionally surveyed in 2012-2013, and the trees (species and location) can be found on our online interactive tree map at www.newportarboretum.org. Following is a total count of the 5,940 public trees surveyed, by species:

LATIN NAME	COUNT						
		Carpinus caroliniana	67	Gymnocladus dioicus	1	Picea glauca	47
Abies balsamea	2	Carya glabra	6	Halesia tetraptera	4	Picea pungens	46
Abies fraseri	3	Carya ovata	1	Hamamelis virginiana	1	Pinus echinata	1
Acer campestre	9	Catalpa speciosa	26	Ilex opaca	5	Pinus nigra	20
Acer griseum	5	Cedrus atlantica	1	Ilex spp.	9	Pinus rigida	1
Acer negundo	1	Celtis occidentalis	18	Juglans cinerea	1	Pinus strobus	19
Acer palmatum	109	Cercidiphyllum japonicum	8	Juglans nigra	13	Pinus sylvestris	1
Acer platanoides	714	Cercis canadensis	5	Juniperus spp.	37	Platanus x acerifolia	365
Acer pseudoplatanus	261	Cladrastis kentukea	6	Juniperus virginiana	31	Populus alba	8
Acer rubrum	263	Cornus alternifolia	11	Koeleruteria paniculata	6	Populus deltoides	8
Acer saccharinum	8	Cornus florida	31	Lagerstroemia indica	4	Populus tremuloides	18
Acer saccharum	96	Cornus kousa	71	Larix decidua	9	Prunus serotina	104
Acer tataricum ginnala	11	Cornus spp.	3	Ligustrum spp.	1	Prunus serrulata	262
Acer triflorum	3	Corylus colurna	1	Liquidambar styraciflua	47	Prunus spp.	251
Acer truncatum	1	Cotinus coggygria	1	Liriodendron tulipifera	22	Prunus x yedoensis	1
Acer x freemanii	5	Crataegus spp.	29	Magnolia x soulangeana	15	Pseudotsuga menziesii	1
Aesculus glabra	2	Cryptomeria japonica	23	Magnolia stellata	6	Pyrus calleryana	265
Aesculus hippocastanum	55	x Cupressocyparis leylandii	14	Magnolia virginiana	3	Pyrus communis	5
Ailanthus altissima	6	Fagus grandifolia	46	Malus spp.	116	Quercus alba	10
Albizia julibrissin	1	Fagus sylvatica	28	Metasequoia glyptostroboides	13	Quercus bicolor	13
Alnus glutinosa	2	Fraxinus americana	25	Morus alba	17	Quercus cerris	8
Amelanchier spp.	9	Fraxinus excelsior	13	Nyssa sylvatica	6	Quercus laevis	22
Betula nigra	14	Fraxinus nigra	1	Oxydendrum arboreum	1	Quercus pagoda	2
Betula papyrifera	13	Fraxinus pennsylvanica	117	Parrotia persica	1	Quercus palustris	272
Betula pendula	2	Ginkgo biloba	19	Phellodendron amurense	3	Quercus phellos	7
Betula populifolia	11	Gleditsia triacanthos inermis	108	Picea abies	11	Quercus robur	328

Quercus rubra	43	Sorbus americana	1	Tilia cordata	207	PLANTING SITES SURVEYED	COUNT
Rhus typhina	1	Styphnolobium japonicum	28	Ulmus americana	32	Stump	125
Robinia pseudoacacia	18	Syringa reticulata	28	Ulmus parvifolia	20	Vacant site medium	31
Salix babylonica	4	Syringa vulgaris	8	Ulmus procera	1	Vacant site small	381
Salix discolor	4	Taxodium distichum	1	Ulmus pumila	150	Vacant site large	271
Salix nigra	14	Taxus spp.	4	Ulmus rubra	22		
Sassafras albidum	1	Thuja occidentalis	199	Ulmus x	34		
Sciadopitys verticillata	4	Tilia americana	207	Zelkova serrata	153		

Private Collections. In addition to the public tree collections, the Living Collections include all those private trees catalogued and described for public education purposes (via arboretum tree tag, inclusion in a Newport Tree Walks map, or in our online interactive tree map).

The Newport Arboretum claims no control, ownership, or overt responsibility over any trees residing on private property that are not specifically protected under City of Newport property codes. Collections on private property belong solely to the property owner. The Arboretum welcomes participation of all tree owners in arboretum programs and activities, and urges property owners to take advantage of the knowledge and assistance of Newport Arboretum staff, board and volunteers when planting, maintaining and otherwise caring for their trees.

As of June 2014, when including all public trees and all private trees found in the Newport Tree Walks series, 172 species are represented in the Living Collections:

Abies balsamea	Betula populifolia	Fagus sylvatica 'Purpurea'	Magnolia virginiana
Abies fraseri	Carpinus betulus	Fagus sylvatica 'Rohanii'	Malus spp.
Acer campestre	Carpinus caroliniana	Fraxinus americana	Metasequoia glyptostroboides
Acer griseum	Carya glabra	Fraxinus excelsior	Morus alba
Acer griseum	Carya ovata	Fraxinus nigra	Nyssa sylvatica
Acer negundo	Catalpa speciosa	Fraxinus pennsylvanica	Ostrya carpinifolia
Acer palmatum	Cedrus atlantica	Ginkgo biloba	Ostrya virginiana
Acer palmatum 'Dissectum'	Cedrus atlantica 'Glaucal'	Gleditsia triacanthos	Oxydendrum arboreum
Acer palmatum 'Sango-kaku'	Cedrus deodara	Gleditsia triacanthos var. inermis	Parrotia persica
Acer palmatum dissectum	Celtis occidentalis	Gymnocladus dioica	Phellodendron amurense
Acer palmatum dissectum atropurpureum	Cercidiphyllum japonicum	Halesia tetraptera	Phellodendron amurense 'Macho'
Acer platanoides	Cercis canadensis	Hamamelis virginiana	Picea abies
Acer pseudoplatanus	Chamaecyparis obtusa	Ilex crenata	Picea glauca
Acer rubrum	Chamaecyparis pisifera	Ilex opaca	Picea jezoensis
Acer saccharinum	Chamaecyparis pisifera 'Boulevard'	Ilex spp.	Picea orientalis
Acer saccharum	Cladrastis kentukea	Juglans cinerea	Picea pungens
Acer tataricum ginnala	Cornus alternifolia	Juglans nigra	Picea pungens 'Glaucal'
Acer triflorum	Cornus florida	Juniperus spp.	Pinus cembra
Acer truncatum	Cornus kousa	Juniperus virginiana	Pinus echinata
Acer x freemanii	Cornus spp.	Koelreuteria paniculata	Pinus nigra
Aesculus glabra	Corylus colurna	Lagerstroemia indica	Pinus rigida
Aesculus hippocastanum	Cotinus coggygria	Larix decidua	Pinus strobus
Ailanthus altissima	Crataegus spp.	Ligustrum spp.	Pinus sylvestris
Albizia julibrissin	Cryptomeria japonica	Liquidambar styraciflua	Pinus thunbergii
Alnus glutinosa	x Cupressocyparis leylandii	Liquidambar styraciflua 'Rotundiloba'	Platanus x acerifolia
Amelanchier spp.	Fagus grandifolia	Liriodendron tulipifera	Populus alba
Betula nigra	Fagus sylvatica	Magnolia 'Yellow Bird'	Populus deltoides
Betula nigra 'Heritage'	Fagus sylvatica 'Asplenifolia'	Magnolia x soulangeana	Populus tremuloides
Betula papyrifera	Fagus sylvatica 'Atropunicea'	Magnolia acuminata	Prunus serotina
Betula pendula	Fagus sylvatica 'Pendula'	Magnolia stellata	Prunus serrulata

Prunus serrulata 'Kwanzan'	Quercus mongolica	Sassafras albidum	Tilia cordata
Prunus spp.	Quercus pagoda	Sciadopitys verticillata	Tilia platyphyllos
Prunus subhirtella 'Pendula' Higan Cherry	Quercus palustris	Sorbus americana	Tilia tomentosa
Prunus virginiana	Quercus phellos	Styphnolobium japonicum	Tilia x euchlora
Prunus x yedoensis	Quercus robur	Syringa reticulata	Ulmus americana
Pseudotsuga menziesii	Quercus robur 'Fastigiata'	Syringa vulgaris	Ulmus americana 'Princeton'
Pyrus calleryana	Quercus rubra	Taxodium ascendens	Ulmus americana 'Washington'
Pyrus communis	Quercus velutina	Taxodium distichum	Ulmus glabra 'Camperdownii'
Quercus alba	Rhus typhina	Taxus baccata	Ulmus parvifolia
Quercus bicolor	Robinia pseudoacacia	Taxus baccata 'Fastigiata'	Ulmus procera
Quercus cerris	Salix babylonica	Taxus spp.	Ulmus pumila
Quercus coccinea	Salix discolor	Thuja occidentalis	Ulmus rubra
Quercus laevis	Salix nigra	Tilia americana	Zelkova serrata

Records System

INVENTORY AND EVALUATION

The Newport Arboretum is committed to the maintenance of accurate, up-to-date, and pertinent records on its accessioned living collections. Comprehensive surveys and inventories are crucial to a better understanding our forest and how best to care for it over the long term. In addition, we believe that making this data publicly available via an online tree map is a powerful tool for education, allowing citizens and visitors to explore our city's tree collection at their leisure, learning more about species that they may want to plant in their own backyards.

Online GIS-Based Tree Database & Map. The current online interactive Newport tree map found at www.newportarboretum.org was created using the Google Map API coupled with a Google Fusion Table. Fusion table data was populated from 2012-2013 citywide public (street and park) tree surveys conducted by Davey Trees, Inc..

A primary short-term administrative goal will be the development of a more advanced online interactive map that can be jointly referenced and updated by the City Division of Forestry, Arboretum volunteers, and the general public. A collaborative mapping tool (such as opentreemap) with a sophisticated public interface will allow anyone to map a tree growing anywhere on the city, or add new data to existing mapped trees.

This type of map is much more likely to be consistently updated, providing better data for urban forestry management. It will provide a more accurate picture of the 'state of the forest,' which will enable us to proactively manage our tree collection, heading off problems and proactively planning for planting years in advance. We expect to many additional benefits from such a platform:

- Tree surveying provides an opportunity for yearlong, meaningful volunteer work... and participation in mapping efforts has been shown to trigger a deeper interest in trees.

- A citywide tree map will integrate with and enhance our Specimen Tree Restoration Program, enabling us to track program success (tree survival rates) over the long term. Program participants can personally upload photos and tree growth statistics.
- Propagators Program members will be able to track the young tree they nurtured from seed or cutting as it leaves their care and is planted elsewhere in the city.
- Donors can more easily be recognized as adopters or sponsors of individual trees, creating new opportunities for donor cultivation.
- Volunteers will be able to record which trees have been surveyed for aggressive and dangerous pests such as the Emerald Ash Borer and Asian Long-Horned Beetle.

PROCESSES, ROLES & RESPONSIBILITIES

Overall administration and oversight of the plant records system is the responsibility of the Director of the Arboretum. Recordkeeping at The Newport Arboretum will rely heavily on volunteer staff. It is the responsibility of the Program Director to coordinate the efforts of volunteers in recordkeeping (including tree surveys, pest inspection surveys, young tree care and survival records, etc.), to establish recordkeeping goals, and to periodically conduct sample testing to gauge the accuracy of data collection and make procedural adjustments accordingly.

Information Requirements. Whenever possible, information pertinent to the accession's taxonomic classification, place of origin, provenance type, source, date of acquisition, date planted, and mapped location will be kept on all items in the living collections.

Biennial Review. The Living Collections Committee will oversee the biennial review of the status of collection inventories, and will use the information gleaned to strategically modify recordkeeping and inventorying activities as well as plant propagation and/or acquisition.

Design, Planning & Acquisition

SPECIES SELECTION CRITERIA

Collections development and specific specimens targeted for acquisition and accession will be evaluated according to the following criteria:

- Value in interpreting Newport's natural history and heritage
- Status as a rare or exotic specimen

- Enhancement of a taxonomic, geographical, ecological, thematic, or natural history collection
- Educational potential
- Value for the support of wildlife
- *Ex situ* and *in situ* conservation of threatened taxa
- Missouri Protocol for invasives
- Susceptibility to EAB/ALB

Ex situ conservation is the conservation and maintenance of samples of living organisms outside their natural habitat, in the form of whole plants, seed, pollen, vegetative propagules, tissue or cell cultures.

In situ conservation is the conservation of species diversity within normal and natural habitats and ecosystems.

The CITES list, produced by the Convention on International Trade in Endangered Species of Wild Fauna & Flora, includes 30,000 species of protected plants.

PROCESSES, ROLES & PROCEDURES

Design, Planning and Collections Management Decisions. The Living Collections Committee will provide oversight of collections development to ensure alignment with research, educational, and display priorities and the Newport Arboretum Strategic Plan.

Acquisition decisions will be preceded by design and planning activities. The Living Collections Committee, comprised of board members, advisory consultants and representatives from the Newport Forestry Division, will meet twice yearly to review and develop recommendations for the development of special collections and general plant acquisition, including evaluation of placement, management, and use of the collections.

Acquisitions & Species Approval Process. Recommendations for acquisitions to the collections may be initiated by the Living Collections Committee and their design consultants, staff, board members, volunteers, members of the Newport Arboretum Special Advisory Board or other board committees, or interested members of the general public. Acquisitions of individual plants or a small collection are initiated by submitting an acquisition proposal to the Living Collections Committee. Half of the members of the Collections Committee will constitute a quorum for the purpose of making recommendations concerning accessions. Approval of the species is separate from its actual acquisition.

Taxonomic collections are organized along systematic (phylogenetic) lines, i.e. arranged by family or genus.

Geographical collections are dedicated to a particular region or location.

Ecological collections are organized by habitat or ecotype (e.g. alpine).

Thematic collections are plant collections of related or morphologically similar plants (e.g. roses, medicinal plants, etc.)

Natural history collections are collections with historical significance that help tell the story of Newport's rich horticultural heritage.

Propagation

PROCESSES, ROLES & RESPONSIBILITIES

Overall administration and oversight of the Newport Arboretum Propagators Program is the responsibility of the Director of the Arboretum. Propagation activities will rely heavily on volunteer staff. It is the responsibility of the Program Director to coordinate the efforts of volunteers and to provide them with the information they need to be successful growers.

A Propagator's Handbook will be developed and made available online to all individuals or groups who wish to participate.

Biennial Review. The Living Collections Committee will oversee the biennial review of the status of propagation activities, and will make recommendations for increases (or decreases) in capacity, depending on the status of acquisition fulfillment. Propagators will also be queried annually for feedback on the propagation process and the level of support they are receiving from Arboretum staff.