

**Creating Living Collections  
Policies for the  
Ambler Arboretum of  
Temple University**

**Louise Clarke**

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## Introduction

The Ambler Arboretum of Temple University is rooted in the founding of the Pennsylvania School of Horticulture for Women. Today's campus arboretum, which has grown from the original purchase made by Jane Bowne Haines in 1910, was officially designated as The Ambler Arboreum of Temple University in March 2000. Throughout its existence, the school grounds have served "as a living, learning laboratory that promotes love and knowledge of horticulture".<sup>1</sup>

To better serve its mission as a learning laboratory for the study of horticulture and to increase its educational and scientific value, the arboretum needs to codify its policies and procedures into a cogent set of documents that governs, guides, and limits the collections of the arboretum. The creation of a living collections management policy, collections management manual, and a collections plan are designed to provide that framework.

The focus of this study is to provide an overview of living collections policies from established arboreta large and small, especially campus-based gardens, and to offer suggestions to be incorporated into Temple Ambler's future living collections policies. It is expected that implementation of collections policies will provide a means to maintain basic, standardized information about the arboretum's accessioned plants according to accepted professional standards, which in turn will increase the collections' reference value for students, researchers, and the visiting public.

Adoption of professional standards, such as those proposed by the American Association of Museums (AAM), The Morton Register of Arboreta, or The American Public Gardens Association (APGA), will ensure that the Ambler Arboretum of Temple University meets minimal requirements for future membership in these professional organizations.

## Definitions

A botanic garden or arboretum exists as a type of *museum*, an institution that acquires and preserves collections. In this case, the arboretum exists as a type of natural history museum, akin to zoos and aquaria, but one that specializes in the collection and preservation of living plant specimens.

An *arboretum*, in simplest terms, is a parcel of land on which trees and shrubs are grown for display or study. A collection of plants grown merely for their ornamental value, however, does not make an arboretum. The Morton Arboretum defines an arboretum as “a specialized type of botanical garden that focuses on trees and other woody plants. Arboreta collect, grow, and display trees, shrubs, and other plants for people to study and enjoy, and ideally are open to the public for education and inspiration. A principal goal of arboreta is to encourage and support the planting and conservation of trees for environmental improvement and enhanced quality of life.”<sup>2</sup>

Botanic Gardens Conservation International (BGCI), a London, UK, plant conservation organization, defines *botanic gardens* as “institutions holding documented collections of living plants for the purposes of scientific research, conservation, display and education.”<sup>3</sup>

No agency exists which grants legal accreditation to botanic gardens, so The American Public Gardens Association has compiled a list of standards which includes these generally accepted criteria:

- The garden is open to the public on a least a part-time basis
- The garden functions as an aesthetic display, educational display, and/or research site
- The garden maintains plant records
- The garden has at least one professional staff member (paid or unpaid)
- Garden visitors can identify plants through labels, guide maps or other interpretive materials

*Collections* can be defined as the collected objects (plants) a botanic garden or arboretum has brought together to fulfill its stated purposes. A *collection* can be a subset of the collections, containing plants having some important characteristics in common relevant to the garden’s programs. The Arnold Arboretum operationally defines a collection as “a group of accessions organized by a particular category for curatorial, educational, research, display or other use”.<sup>4</sup>

A *curator*, according to Hohn’s definition, is “a botanical garden staff member responsible for the acquisition, documentation, and preservation of collections for current and future research, conservation, educational and exhibition/display needs”. He/she is “ultimately the

authority and the individual responsible for the development, preservation and use of the collections".<sup>5</sup>

*Curation* is the process of managing a garden's living collections to guarantee its conservation, guide its development, ensure its documentation, and facilitate its enhancement.<sup>6</sup>

The *Collections Management Policy*, sometimes called a Living Collections Policy, is the most important document for managing collections. Beginning with a statement of policy and collections purpose, it defines who is responsible for the growth and protection of collections; the delegation of authority; how to insure continuity in the face of staff turnover; is mission-centric and relates the garden's objectives to its processes to produce meaningful collections; provides guidelines for accessioning/deaccessioning, and disposal of plants in the collections. The policy should also specify the conceptual, qualitative, and quantitative limits of the collection. A well written policy is a tool to guide the actions of its managers in the future.

The *Collections Management Manual* details the steps necessary to implement the policies and plans. It typically addresses organizational structure and operational procedures. Having this document in place reduces time spent managing and resolving crises, while providing benchmarks and guiding the day-to-day management of the collections.

The *Collections Management Plan* is an assessment of the arboretum's collections management program in light of the standards and guidelines established in its collections management policy. It should be compiled by garden staff with direct responsibility for the collections; outside professionals or experts may be invited to participate in its formulation as well.

Deaccessioning, according to the Arnold Arboretum, is the process of removing a living (or dead) specimen from a garden's collection, however, the process doesn't expunge any records associated with that original accession's documentation.

## **The Process of Documentation**

Perhaps the hallmark of an arboretum, which distinguishes it from a park or pleasure ground, is the documentation it creates and maintains about the plants in its collection. Without accurate documentation, an arboretum or botanical garden has a limited story to tell,

and has little reference value for students and researchers. Carl Guthe states "The significance of a [plant] in the collection lies not in itself alone but also in the information relating to it".<sup>7</sup> Information about the plant collection is both a resource and a product; the garden's second most important asset is the information kept about its collections.

As each institution has unique documentation needs that must be tailored to its mission, goals, and collections, there is no one formula that serves all. A generic system proposed by Timothy Hohn in *Curatorial Practices For Botanical Gardens* serves as a model upon which a standardized documentation system can be created. Essentially what one is developing is an information management system. What information is documented and how it is documented determines the program's value. Planning the documentation program should include priorities for the information to be documented and the rules and procedures to be followed for record keeping. The procedures must include standards for terminology, timeliness of entries, and formatting. The structure of a well designed program provides value to information, which if randomly organized or disorganized, is useless.

The system devised to handle plant record information is the major portion of the documentation program. All collections-related documentation including accessioning, cataloging, indexing, deaccessioning, information retrieval, and control data should be included. Staff can design, implement, and maintain the system either manually or via automated methods. Commercially available software may be available that can be tailored to the garden's needs, but success is dependent on the accurate and efficient recording of information about the plants in the collection and ease of information retrieval. Budgetary limitations may dictate system selection, as well as the number of staff available to implement the system.

Uses of the documentation system will include facilitating employment of the collections by varied users, preserving information about the plants in the collections, and tending and controlling the collections, especially preserving conservation details.

Hohn's proposed system describes two broad categories of procedures; firstly to deal with control of the collections, and secondly to record the collections' attributes and accessioned information. For instance, *inventory control* involves the development of a comprehensive, numerically based inventory of the plants in the entire collection. This

becomes the basis for compiling detailed catalogue entries, management of, and use of the plant. Detailed catalogue entries should include a unique entry number, date and method of reception, source information, identification provided by the source, condition upon receipt, and location.

*Location controls* provide a link between the inventory and the collections themselves by tracking the location(s) and movement of the plants while they are resident in the collection. Inventorying or stocktaking is the process of creating inventory and location records at the time of plant acceptance into the collection.

Hohn's adaptation of D. A. Roberts' flowchart of activities involved in implementing a generic documentation system clearly illustrate the steps involved in the process. Roberts defined five stages of documentation: 1) pre-entry stage, 2) entry stage, 3) accession stage, 4) registration stage, and 5) catalogue stage. While not all-inclusive, major activities and processes are elucidated. It should be noted that the quality of information at any stage is dependent on the quality of data entered in the previous stage.

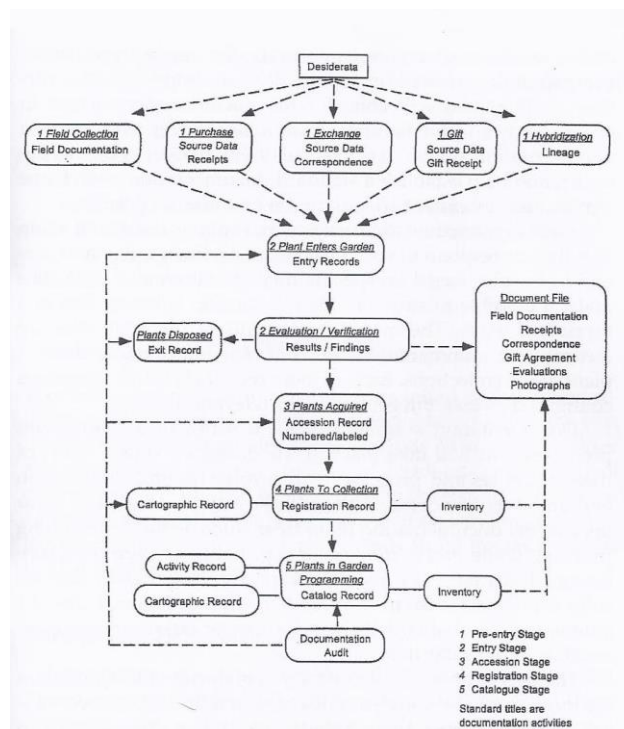


Figure 1. Documentation System Chart  
Adapted from D. A. Roberts, Planning the Documentation of Museum Collections, 1985.

A typical documentation system contains a series of main files that correspond to specific types of documentation and several index files based on specific themes. The main file summarizes all of a plant's relevant information. At the entry stage, established procedures should be written to document all incoming material that itemizes individuals of a group, and clearly distinguishes between temporary and permanent accessions. If propagules of uncertain viability are received, they present additional control and tracking challenges. To create a simplified documentation process, all plants can be entered in an accession register regardless of their predicted length of stay in the collection.

Plants are formally incorporated into the arboretum collections as permanent during the accession stage. A unique accession number is assigned, which stays with the plant during its tenure, and is never reused. The accession record is part of the sequential, official, and permanent register. The register can be as simple as a loose-leaf notebook or part of a computer file.

Accession numbers are typically compound entries that denote year of accession, order of receipt within that year, and possibly number of plants per accession. Multiple plants of an accession may be given additional digits or letters to further identify them.

The accession number must be safely and securely attached to the plant. Documentation should be written which defines when and how plants are labeled and by whom. Labels themselves represent a multitude of options to be decided- the label material, label size, information included on the label, and where to position the label on the plant. Label basics must consider the following points:

- Accession number must appear in a readable format
- The label and its imprint must be reasonably durable
- The label should be adjustable and removable and shouldn't damage plant tissues
- The attachment method should be secure enough to deter separation from the plant
- Label placement should be consistent, E.G. south side of plant

Decisions should have been made prior to this step as to which types of plants are accessioned. For example, are herbaceous plants accessioned, or only woody shrubs and trees?

Accession and interpretive needs may be combined on a single label that includes the botanic name, common name and other information of interest to garden visitors.

Bar codes may also be incorporated as an aid to inventory tracking. See figure 2.

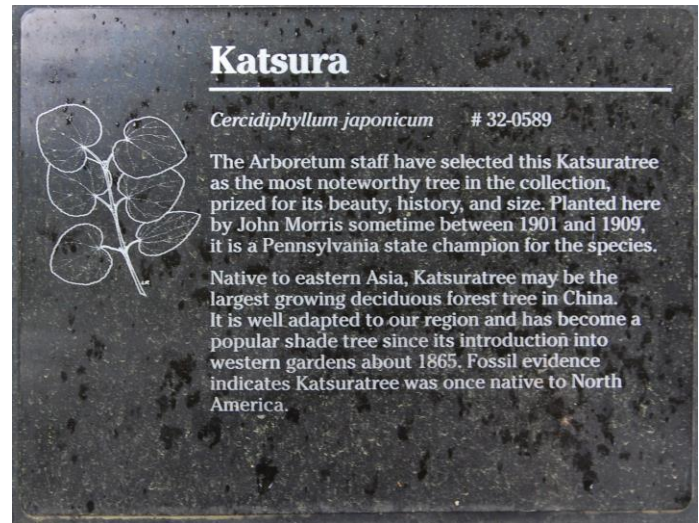


Figure 2. Interpretive label, Morris Arboretum

The registration stage incorporates new files associated with the accession's current status within the arboretum's collection. These records, existing as hard copies or electronic files, contain items specific to the plant, such as receipts, letters, or a location map. These records add depth and breadth to collections documentation. At this time accession information and other pertinent data are entered into a permanent file system which may be file cards or bound registries, but more often reside in computer databases with thorough backups, preferably off-site.

The catalog stage adds records of scholarly information to the accession. This record is a continually changing item that is updated as collections knowledge grows. Catalog records are usually extensions of the previously created registration records, and may be merged in the same storage area. Catalog records often include files about:

- control data including location, labels
- historical data
- conservation data
- activity file detailing horticultural, propagation, condition and preservation data
- phenological records
- naming information- authority, synonymy, and parentage



Catalog records must be configured to provide easy cross-referencing to other related records and is most easily accomplished with computerized records.

When a garden's documentation and collection data are synthesized and processed, valuable outputs can be generated for use in collections management, educational and research pursuits, or public access. Computers make this task immeasurably easier. Some of the outputs could be the entire catalog of the collection, or collections, or a public guide to highlights of the collection. More focused outputs could consist of inventory lists, indexed maps, or labels.

The exit stage deals with loans, infrequent in arboreta, or more commonly deaccessioning and disposal of plant material. Criteria for deaccessioning should be part of the living collections policy, as this function is no less important than accessioning. Reasons for deaccessioning include uncertain or questionable identification, deterioration of the plant, lack of relevance to the program or mission, theft, or plant death. When a plant is deaccessioned, the accession register should be updated with a notation which includes the method of disposition. As stated previously, the accession number is not reused to avoid confusion and maintain plant record accuracy.

### **Recommendations for Documenting Collections from Curatorial Practices For Botanical Gardens Basic:**

- The garden acquires and preserves documentation on its plant collections in the following categories:
  - accession number/plant name
  - verification
  - material received (seed, young plant, etc)
  - condition upon receipt
  - source (immediate and original) and lineage
  - deaccession date and method of disposition
- The garden establishes, preserves, and updates documentation on its plant collections in the following categories:
  - garden location/current condition
- The garden labels all of its accessions with their accession number.
- Electronic documentation uses a convertible or widely accepted software platform.
- Documentation data is accessible to the public.
- The garden preserves its documentation by duplication and responsible storage.
- A documentation audit is performed every 5 years.

Figure 3. Basic Recommendations for Documenting Collections

## **Discussion and Recommendations**

What value does a living collections policy have? According to BGCI, the number one reason is to aid integration of botanic garden organizational activities. Living collection policies are needed to guide the decision-making of arboretum staff. Once policies have been adopted, the collections manual and collection plans can then be written.

At the Ambler Arboretum, the initial steps of creating a curated collection have been taken in the absence of a living collections policy, collections management manual, or a collections plan. Incomplete records exist on index cards and other formats, with no way of easily retrieving data. Use of web-based Plantmapper.com to document the Ambler campus trees has been an ongoing project involving students and faculty that has provided limited benefit to the arboretum.

In curated collections, data entry is typically restricted to one individual or trained delegate(s) to maintain uniformity and accuracy of entries. With Plantmapper's open platform, anyone, anywhere, can enter data, the veracity of which cannot easily be confirmed.

Using the Ambler Arboretum's current resources, the existing data stored in Plantmapper can be used, with verification, as the basis for developing a tightly controlled living collections database. The use of Plantmapper.com can continue to be used by students and faculty as a useful exercise in mapping the Ambler campus trees outside of the arboretum boundaries.

Without a budget for adoption of a computerized plant records system, such as the widely used BG-BASE botanic garden database, a modest first step is to use Microsoft® Access database. A nascent attempt to create an Access database for managing the Ambler Arboretum's living collection was started by the former horticulture supervisor. To insure data integrity, trained arboretum staff should be the only persons with the authority to input plant records. The Horticulture Supervisor or her designee should be the person(s) responsible for data input. Defining the physical limits of the Ambler Arboretum is another necessary step to be addressed in the living collections policy. The somewhat nebulous boundaries create confusion and overlap of responsibilities with the college's facilities staff. The general area of

the Ambler Arboretum seems to lie within the confines of the loop road, approximating 36 acres.

For examples of how other college campuses handle similar situations, the Scott Arboretum of Swarthmore College, Haverford College Arboretum, and the Henry Schmieder Arboretum of Delaware Valley College were contacted. The Scott Arboretum is organized under a Supervisor of Horticulture who oversees both College and Arboretum areas. The supervisor reports to the executive director of the arboretum, as does the Vice President of Facilities for college-related projects. The arboretum staff also cares for four separate gardens on campus. In this case, there is no confusion about grounds versus arboretum areas of responsibility.

Of Delaware Valley College's (DelVal College) 571 acres, 60 are designated as the Henry Schmieder Arboretum. The Schmieder Arboretum is undergoing a transition in leadership and organizational structure, according to horticulturist Mary Boyle. In a personal communication on April 30, 2012, she explained that the arboretum's director is a full time professor who devotes about 25% of his time to arboretum matters. Mary is the only full time arboretum employee who formerly reported to the arboretum director, but now reports to the Director of Grounds and Landscape, whose background is in commercial grounds care. She acts as the curator, plant recorder, volunteer coordinator and tour guide. A full time secretary is shared between the departments. The grounds and landscape department (G&L Department) of DelVal College employs four full time employees, two part time employees, and fifteen student workers. The Schmieder Arboretum was formerly a separate division of the campus, but the reorganization has combined the campus sections into one entity. Duties between the arboretum and G&L department formerly overlapped, but that has been resolved by the reorganization. Mary explained that the G&L staff take care of all turf, including the arboretum, and that the arboretum is likely to be downsized in 2012.

An agreement, written in 2008 by the arboretum director, delineates responsibility for all accessioned plants in the arboretum to the arboretum staff.

Schmieder Arboretum has a Living Collections Policy, but it is weakly worded and under revision. There is no written collections management manual or collections plan. Computerized records are kept in BG-BASE which replaced Microsoft® Access.

Display labels are engraved in weatherproof plastic and last for several years. Accession labels are embossed aluminum tags similar to those in use at the Ambler Arboretum.

The Haverford College Arboretum, dating to 1833, includes the entire 216 acre campus of Haverford College. During personal communication with Bill Astifan (April 26, 2012), who functions as the arboretum's director and assistant director of facilities, he explained that by overseeing both divisions of the campus, interdepartmental conflict is eliminated. The entire campus is maintained by the facilities department, and the Arboretum Association oversees the arboretum's mission, which dictates tree planting and removals, and honors William Carvill's 1834 landscape plan.

The Haverford College Arboretum is a level 2 member of the Morton Register of Arboreta, and aspires to achieve level 3 when its BG-Base records are made available. Bill highly recommended adopting the Morton Register's list of criteria for each level of accreditation as a guideline for sound public garden organization and administration. The Haverford College Arboretum also holds memberships in APGA, American Forestry Association (AFA), International Society of Arboriculture (ISA), BGCI, and has been named a Tree Campus by the Arbor Day Foundation.

There does exist a living collections policy, written and overseen by the Arboretum Association, which has been requested for this study, but not yet received. Mr. Astifan, acting as the arboretum director, administers the policy.

The mission statement for the Ambler Arboretum needs revision to correct the name of the arboretum and to more succinctly state the garden's purpose. In the living collections policies referenced for this report, each garden's mission statement is typically included. See Appendix A for the Ambler Arboretum mission statement.

Membership in the American Public Gardens Association will elevate the status of the Ambler Arboretum and provide worldwide recognition through the APGA's website. Adoption of the criteria listed on page 2 will satisfy the APGAs minimum criteria suggested for botanical gardens.

Alternatively, the Morton Arboretum has instituted an accreditation program, the Morton Register of Arboreta, [www.Arbnet.org](http://www.Arbnet.org). Specific to arboreta, the Register has 4 levels of

accreditation designed to recognize gardens at varying stages of development. Reviewing the criteria of the levels can help focus the Ambler Arboretum's development and possible participation in the Register.

All living collections policies are tailored to each garden's needs, and examples worth emulating include sections from the Scott Arboretum's Collections Policy. (See Appendix B). Included in their document are an Emergency Drought Plan and an Invasive/Exotic policy. (See Appendix C). As both of these pressures are bound to impact the Ambler Arboretum, foresight and planning can guide decision-making when these events occur. More detailed policies include the Voluntary Codes of Conduct For Botanic Gardens and Arboreta from the 2001 St. Louis Declaration on Invasive Plant Species. See Appendix D.

To elevate the Ambler Arboretum to the status of an "accredited" public garden, the formulation and adoption of a living collections policy will be the foundation upon which its collections management manual and collections plan will be built. Putting this structure into place will guide the future development of the arboretum, keeping it mission-focused, while adding value to the collection for the visiting public, researchers, and students alike.

## List of Illustrations

Figure 1. Documentation Style Chart from *Curatorial Practices For Botanical Gardens*

Figure 2. Interpretive label, Morris Arboretum

Figure 3. Basic Recommendations for Documenting Collections from *Curatorial Practices For Botanical Gardens*

## References

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## Appendices

Appendix A .....	Mission Statement of Ambler Arboretum
Appendix B .....	Scott Arboretum Collections Policy
Appendix C .....	Scott Arboretum Invasive/Exotic Policy
Appendix D .....	Voluntary Codes of Conduct For Botanic Gardens and Arboreta
Appendix E .....	The Arnold Arboretum of Harvard University Living Collections Policy
Appendix F .....	Local Contacts at Campus Based Arboreta

## **Appendix A**

### **Mission Statement of Ambler Arboretum**

The Landscape Arboretum of Temple University Ambler is an accessible, historic, public garden within a respected institution of higher education. Its mission is to serve as a living, learning laboratory that promotes love and knowledge of horticulture, understanding of the relationship between people and the environment, and awareness of both the need for and means to achieve greater environmental responsibility. The Landscape Arboretum is committed to celebrating the achievements of the Pennsylvania School of Horticulture for Women and preserving the historic significance of the campus. Its three areas of focus are sustainability, the health benefits of gardens, and the history of women in horticulture, agriculture, and design.

## **Appendix B**

### **The Scott Arboretum of Swarthmore College**

# **Collections Policy**

Approved by: \_\_\_\_\_ on: \_\_\_\_\_

### **Statement of Purpose:**

The Scott Arboretum of Swarthmore College is a living museum, which was originally accredited in 1995 through the American Association of Museums with exhibits of ornamental plants. The Arboretum was established in memory of Arthur Hoyt Scott in 1929. The donors wished to bring to fruition a dream held by Mr. Scott of creating a public garden on the campus, devoted to growing the best varieties of plants available for gardens of the Delaware Valley.

The Scott Arboretum was originally known as the Scott Horticultural Foundation, but changed its name in 1986 to reflect more accurately the nature and objectives of the organization. (Attachment #1)

### **The Purpose of the Arboretum's Collection**

- 1) **Horticultural Display**-To acquire, cultivate and display collections of good ornamental plants, with "good" applying to superior bloom, foliage, growth habit, hardiness, vigor and resistance to pests and diseases. The collections create the College landscape and should be exhibited with superior design and high-quality maintenance techniques.
  
- 2) **Plant Evaluation**-To carry out systematic evaluations on the plant collections, to insure that new, improved varieties are added, and that inferior plant forms are deleted; and to encourage the use of improved species or selections of plants through visual display and education.



- 3) **Public Education**-To disseminate information on the Arboretum's plant collections through labeling, interpretation, public programs and publications; to provide general horticultural education for the public; to inspire a greater interest in the art and science of gardening.

## **Collections Committee**

- 1) The Collections Committee is comprised of the Curator, Director, Horticultural Coordinator, Plant Records Supervisor and the Curatorial Intern.
- 2) This Committee is chaired by the Curator.
- 3) This Committee is responsible for all matters that impact the Arboretum's collections.
- 4) This Committee meets regularly as needed, but at a minimum of twice per year.

## **Acquisitioning**

- 1) The Arboretum acquires plants for several reasons and purposes as they relate to the goals of the Arboretum. The following is an explanation as to why plants are acquired for the Arboretum's collections.
  - a. North American Plant Collections Consortium (NAPCC)-The Arboretum holds two NAPCC collections which are governed through the American Association of Botanic Gardens and Arboreta (AABGA) and the United States Department of Agriculture (USDA). The acquisition of plants for these collections is developed in conjunction with the plant curation goals of the Arboretum (Attachment #2). The Arboretum's two NAPCC collections presently include:
    - i. Ilex
    - ii. Magnolia
  - b. Collections Curation-On a three year basis important generic collections are identified to go through a complete curation process. (Attachment #3). From this curation it is determined which new taxa should be added to the Arboretum's collections.
  - c. Evaluations-The Arboretum participates in formalized evaluation programs. These are collaborations with other institutions. Plants are often given to the Arboretum or acquired by the Arboretum in order to fulfill the requirements of these evaluation programs. These programs presently include:
    - i. Holly Society of America-Winter Hardiness Trials
    - ii. National Boxwood Trial Program
    - iii. Gold Medal Award Program
  - d. Dedicated Trees-The Arboretum has an active program to add dedicated trees to the Arboretum's collections. These plant choices are selected by the Collections Committee, Director or Curator.
  - e. Special Collections-There are collections and gardens at the Arboretum which because of their highly ornamental nature require the addition of plants to satisfy an aesthetic standard. Often the acquisitions for these collections does not go through the Collections Committee. These collections include:
    - i. Rose Garden
  - f. Project Proposals-Arboretum staff can submit ideas for the addition of plants to the Arboretum's collections via a Project Proposal Form. The Collections Committee reviews

these proposals twice a year and then makes determinations as to which plants should or should not be added to the Arboretum's collections. (Attachment #4)

- g. Gifts-On occasion the Arboretum is given a gift from a visiting professional. These plants are reviewed at a Collections Committee meeting and then a determination is made as to whether to accession them.
- h. New Construction-As the College builds new buildings or renovates other buildings or areas, the need for new plantings arise. For these projects the Arboretum works with landscape architects to determine what new plants will be added to the collections.

## **Plant Records**

- 1) All plants added to the Arboretum's collections are accessioned. This process validates the acquisition as a bona fide addition to the Arboretum's collection.
- 2) Once the plant has been received it goes through the following process:
  - a. Nomenclature Check
  - b. Enter into paper ledger, assign accession number
  - c. Enter in BG-Base
  - d. Label plant
  - e. Map with BG-Map

This process applies for seeds, cutting, and other non-rooted plants.

This process is described in detail in the Scott Arboretum Plant Records Manual

- 3) The Arboretum only accessions woody plants. Herbaceous perennials, annuals, tender perennials, and tropicals are recorded in ledgers but do not go through the accessioning process and are not considered Collection plants.

## **De-accessioning**

- 1) The Collections Committee approves all plants to be removed from the Collections. There are several criteria which can result in us removing a plant from the collections. These criteria include:
  - a. Hazardous plant
  - b. Plant in poor health
  - c. Construction obstacle
  - d. Elimination of an evaluation project
  - e. Renovation or elimination of a garden or area
  - f. Plant is deemed to not have ornamental attributes
  - g. Pest and Disease problems
  - h. Invasive/exotic plant
  - i. Growing Area Assessment Program-eliminated un-necessary duplication of similar plants.

## **Invasive/Exotic Plants**

The Scott Arboretum has adopted a pro-active approach to treating invasive or potentially invasive plants in our collections (Attachment #5)

## **Collections Care**

- 1) Landscape Priority Listing-This document prioritizes care for collections and garden areas at the Scott Arboretum based on a number of different criteria. It is revised annually. (Attachment #6)
- 2) Drought Plan-This was developed to insure that all plants in our collections receive the best care during periods of drought (Attachment #7)
- 3) Tree Pruning Maintenance Cycle-All trees in the Arboretum's collections receive regular pruning care. This is conducted on a 7-year rotational schedule such that trees in each area are evaluated for pruning needs every 7-years at a minimum (Attachment #8)
- 4) Integrated Pest Management-The Arboretum employs a gardener who oversees the Integrated Pest Management at the Arboretum. Regular monitoring of pests and disease ensure top collections management.

## **Access**

The Arboretum is willing to share propagules with other botanical institutions. They must get permission first from the Plant Records Supervisor or the Curator. They also must fill out a Propagation Request Form (Attachment #9), so that this information can be tracked in BG-Base.

## **Attachments**

- 1) Mission Statement
- 2) Curation Goals
- 3) Steps to Curating a Collection
- 4) Project Proposal Form
- 5) Invasive/Exotic Policy
- 6) Landscape Priority Listing
- 7) Emergency Drought Plan
- 8) Tree Pruning Maintenance Cycle
- 9) Propagation Request Form

## Appendix C

### Scott Arboretum Invasive/Exotic Policy

#### Invasive/Exotic Policy

- 1) The Scott Arboretum has adopted a pro-active approach to treating invasive or potentially invasive plants in our collections. Consistent with Federal Executive Order #13112 we apply the following to evaluate plants for acquisitions and de-accessioning.
  - a. Prevent the introduction of invasive species
  - b. Detect and control such species
  - c. Monitor invasive species
  - d. Educate the public on invasive species.
  
- 2) Invasive Species Policy (see attachment)-This document was created to identify those species at the Arboretum which exhibit invasive characteristics. Each plant is given a ranking based on the extent of its invasiveness in the landscape.
  
- 3) Identification of Invasive/Exotic Plants-The Scott Arboretum staff evaluates plants looking for those which might exhibit the following characteristics which are consistent with invasive/exotic plants:
  - a. Invade other parts of the world
  - b. Spread by rhizomes or root suckers
  - c. Have short juvenile periods
  - d. Germination without pre-treatment
  - e. Not likely from other parts of the United States
  - f. Not likely an interspecific hybrid
  - g. Is a target family: *Rosaceae, Fabaceae, Myrtaceae, Liliaceae, Oleaceae, Caprifoliaceae.*
  
- 4) Education regarding Invasive/Exotic Plants
  - a. Websites
    - i. USDA Invasive Species Page ([www.invasivespecies.gov](http://www.invasivespecies.gov))
    - ii. Exotic Pest Plant Councils ([www.se-eppc.org](http://www.se-eppc.org))
    - iii. Federal Interagency Committee for the Management of Noxious and Exotic Weeds ([www.fcmnew.fws.gov](http://www.fcmnew.fws.gov))
    - iv. National Invasive Species Council ([www.invasivespecies.gov](http://www.invasivespecies.gov))
    - v. Center for Invasive Plant Management ([www.weedcenter.org](http://www.weedcenter.org))

## Appendix D

### Voluntary Codes of Conduct For Botanic Gardens and Arboreta

from the St. Louis Declaration on Invasive Plant Species 2001

<http://www.fleppc.org/FNGA/St.Louis.htm>

1. Conduct an institution-wide review examining all departments and activities that provide opportunities to stem the proliferation of invasive species and inform visitors. For example, review or write a collections policy that addresses this issue; examine such activities as seed sales, plant sales, book store offerings, wreath-making workshops, etc.
2. Avoid introducing invasive plants by establishing an invasive plant assessment procedure. Predictive risk assessments are desirable, and should also include responsible monitoring on the garden site or through partnerships with other institutions. Institutions should be aware of both direct and indirect effects of plant introduction, such as biological interference in gene flow, disruption of pollinator relationships, etc.
3. Consider removing invasive species from plant collections. If a decision is made to retain an invasive plant, ensure its control and provide strong interpretation to the public explaining the risk and its function in the garden.
4. Seek to control harmful invasive species in natural areas managed by the garden and assist others in controlling them on their property, when possible.
5. Promote non-invasive alternative plants or, when possible, help develop non-invasive alternatives through plant selection or breeding.
6. If an institution participates in seed or plant distribution, including through Index Seminum, do not distribute known invasive plants except for bona-fide research purposes, and consider the consequences of distribution outside your biogeographic region. Consider a statement of caution attached to species that appear to be potentially invasive but have not been fully evaluated.
7. Increase public awareness about invasive plants. Inform why they are a problem, including the origin, mechanisms of harm, and need for prevention and control. Work with the local nursery and seed industries to assist the public in environmentally safe gardening and sales. Horticulture education programs, such as those at universities, should also be included in education and outreach efforts. Encourage the public to evaluate what they do in their own practices and gardens.
8. Participate in developing, implementing, or supporting national, regional, or local early warning systems for immediate reporting and control. Participate also in the creation of regional lists of concern.

9. Botanical gardens should try to become informed about invasiveness of their species in other biogeographic regions, and this information should be compiled and shared in a manner accessible to all.
10. Become partners with other organizations in the management of harmful invasive species.
11. Follow all laws on importation, exportation, quarantine, and distribution of plant materials across political boundaries, including foreign countries. Be sensitive to conventions and treaties that deal with this issue, and encourage affiliated organizations (plant societies, garden clubs, etc.) to do the same.

## **Appendix E**

The Arnold Arboretum of Harvard University Living Collections Policy

<http://arboretum.harvard.edu/plants/collections-management/living-collections-policy/>

## **Appendix F**

### **Local Contacts at Campus Based Arboreta**

#### **Haverford College**

William Astifan, Haverford College Arboretum Director

[wastifan@Haverford.edu](mailto:wastifan@Haverford.edu)

(610) 896-1101

#### **Henry Schmieder Arboretum of Delaware Valley College**

Mary Boyle, Horticulturist

[Mary.Boyle@delval.edu](mailto:Mary.Boyle@delval.edu)

(215) 489-2366

#### **Scott Arboretum of Swarthmore College**

Andrew Bunting, Curator

[abuntin1@Swarthmore.edu](mailto:abuntin1@Swarthmore.edu)

(610) 328-8025