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Washington University Campus Arboretum Collections Policy Research Report, 2019

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Washington
University
in St. Louis

**Washington University
Campus Arboretum
Collections Policy
Research Report, 2019**

*Produced by the Sustainability Exchange Campus
Arboretum Group, Fall 2019 for Washington University
Facilities Planning and Management and the Washington
University Campus Arboretum*

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Preface/Report:

To the head curator of the Washington University Campus Arboretum,

After researching the Morton Arboretum and MoBotG collections policies, the collections policies for arboretums typically follows a general guideline. First and foremost, the collections policy should start with an introduction that lays out the purpose and legal governance of the arboretum. The collections policies then discusses plant collection guidelines for determining new additions to the collection. Afterwards, the next section details how plants in the collection are maintained and monitored. Finally, the collections policy should briefly touch on tree evaluation and inventory, as well as the protocol for the removal of any dead or living trees. Our primary resource was the Morton Arboretum's collection policy, as the MoBotG policy included significant irrelevant clauses regarding the protection of non-arboreal vegetation/

Going into each section in further detail, we attempted to do our best to use our knowledge and understanding of the bureaucracy of the arboretum and its perceived goals, missions, and protocols. Additionally, we attempted to closely mirror the language used in the Morton Arboretum CP when applicable. Complete sentences are likely adaptations made by us from the Morton Arboretum CP's language and styling. The outline below was not created with the intention of providing a definitive collections policy proposal, but a representation of our idea of what a CP for the arboretum we've been working in might look like. We hope that if anything, it can serve as a general outline as well as a brainstorming springboard that both shows ambiguities in current arboretum public image as well as our idea of the relationship that the arboretum has with the rest of Wash U's general administration.

For the more disambiguous and/or potentially legally mandated subclauses, we have bolded the sentences that we feel more confident in proposing as the direct language for the arboretum's CP. This has been done in an attempt to cut some time out of reviewing the rest of our report. The inclusion of the language directly, however, is not an expectation, but simply one more potential way in which we felt we could assist in the process of drafting a CP. As the language has been written for the purposes of the Sustainability Exchange course, ownership of this document and all of its language belongs to Washington University Facilities Planning and Management

At the end of the report, you will also find more raw and unprocessed research notes that demonstrate an abridged outline of other arboretum CPs from around the US. As we selected Morton as the most relevant due to its location and specialization in trees (over the MoBotG), the outline we used to report the above-mentioned suggestions and notes follows the Morton Arboretum's. However, the notes we have provided for other non-Midwest arboretums should demonstrate that similar considerations and concerns were taken into account when devising the following report.

We hope that this is at least marginally useful as the arboretum continues to work towards tier-2 arboretum status. Please let us know if there are any questions or concerns regarding this report, as we would be happy to clear up any confusion in the language or contents of this report.

Sustainability Exchange Campus Arboretum Group, Fall 2019

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Compilation Outline:

- **Intro**
 - **Purpose** -- preserve existing trees and build diversity of trees on campus
 - Purpose of the policy
 - Plan defines guidelines and describes roles for parties participating
 - Outlines living conditions for collections
 - General nature of arboretum research and educational purposes
 - **The purpose of the Washington University Arboretum is to _____ . This policy and its guiding mission apply to all trees that are recognized units of the collection. There are several reasons for a university to host an arboretum on their campus. The main goal of an arboretum is to promote conservation and education. Arboretums are places where unique and endangered plants can thrive, be protected, and contribute to increasing the biodiversity of an area. The Washington University Arboretum additionally hopes to expand on the conservation and education of its patrons by specifically focusing on the natural heritage of Missouri and its future ecological outlook.**
 - **Governance**
 - General stakeholders in command line:
 - Andrew Martin and the Danforth Campus administration
 - Kent Theiling and Facilities Planning and Management
 - All foremen/ecologists for groundskeeping contractors and landscape architecture firms paid to perform services for Washington University's campus
 - Governance is relevant when dealing with any drastic changes to the collections policy, budget, or noteworthy expansions of tree plantings into currently developable lands. Day to day operations will be governed by the Arboretum curator (Kent)
- **Plant acquisition policy**
 - **Purposes**
 - The plant collections play an integral part to achieve the Arboretum's mission in supporting research and educational programs, as well as to enhance the aesthetic appeal of the Arboretum's land.
 - **QUOTED FROM THE MORTON ARBORETUM CP**
 - **Classifications**
 - Taxonomic - Unique taxon representative of Missouri's heritage as well as cultivars that demonstrate genetic variability in native vegetation
 - Geographic - Midwest and Missouri native or adaptive species
 - Special habitat - Trees suitable for urban greenspace cultivation and thermal tolerance to higher heats
 - Horticultural -
 - Evaluation/Research - Wide selection of trees based on specific educational interests including but not limited to those with non-lumber products and notably ancient genetics. New classifications for education can be added to expand the educational outreach value of the arboretum

- **Collection development** -- development of cultivar collection that branches from native collections
- **Collection renovation** -- tree risk management; pruning and treatments to preserve existing campus trees
 - **Collections will be maintained through procedures outlined in Maintenance through continuous assessments in order to ensure the longevity of the arboretum, continuity of quality, quality of visitor experiences, and improvement of the arboretum's scientific value.**
- **Access and use**
 - **All of the arboretum collection is fully contained on Washington University's campus, and is accessible to the public barring any university limitations including but not limited to campus wide events, security concerns, and parking and traffic**
- **Care for Collections**
 - **Acquisition** -- where we get them from
 - Focal Point
 - Local, sustainable(?) nurseries within _____ miles from the Washington University campus
 - **Criteria for acquisition**
 - Name and source are known
 - Ability to withstand St Louis' microclimate and future projected thermal trends, including any amplification of heat island effects
 - Washington University has the financial means and Focal Pointe has the logistical means of obtaining and maintaining the tree
 - Not invasive and no risk of invasion
 - If a cultivar, there are qualities that make it valuable to the area, based on the expertise of Arboretum staff or an outside expert
 - Historical significance
 - E.g. Mt Vernon Tulip Poplar
 - Conservation
 - Trees sustainable in global warming
 - E.g. _____
 - **Authorized personnel**
 - **Kent (Curator)**
 - **Focal Point (Groundskeeping group)**
 - **Washington University Administration/Facilities Planning and Management (Sponsor)**
 - **Plant records**
 - **Plant records will be stored online by Student Technology Services. As of now that includes a Box Account that stores all tree photos, species, descriptors. The photos are obtained from photography teams, the species from the tree source/seller, and the descriptors from University specialists and other academic resources.**
 - **Recording**
 - **Data records will be obtained by the arboretum from all groups that actively deal with the collection of biometric data, including groundskeepers and landscape architects. Additionally, as an academic resource, the arboretum will rely**

on data collection from not only the main groundskeeping group and landscape architects, but also from data collection and field-work focused courses. All collected data will be maintained in a dataset, and the dataset will include fields for _____, _____, and _____.

- **Reporting**
 - Any information regarding trees can be reported directly to the curator of the arboretum (Kent Theiling), including any changes to the trees
 - (Should the website have a contact or incident report page???)
- **Inventories**
 - Inventories of plants should be kept up to date and inventory should be taken at least once a year. Inventory will be completed by the arboretum curator, groundskeepers, and the students of any field-work focused courses (with the approval of the arboretum curator)
- **Catalog**
 - All information about the arboretum and the most recent biometric data for the collection will be kept on a publically accessible website on Washington University's servers. The website can be found at tree.wustl.edu
- **Nomenclature**
 - Plant naming conventions are as follows:
 - The vernacular name (e.g. Black Gum) is used in place of the scientific name on tags, printed map products, and online resources
 - If the tree is a cultivar, the vernacular name is followed by the name of the cultivar in paranthesis (e.g. "Wildfire")
 - Plant names will be changed with sufficient evidence indicating misidentification/misclassification and the approval of the arboretum curator (Kent Theiling)
- **Propagation** - breed and cultivate through natural processes
- **Labeling**
 - Current labeling procedure uses QR code tree tags either on the trunks or on a post close to the base of the tree. QR code tags are noticeable and can easily be identified by branded imagery on the tag. Each tag displays the name of the tree and the QR code imagery that redirects the user to a designated page for the arboretum entry
- **Verification**
 - Verification involves checking that a previous identification is correct or assigning a name to an unnamed accession. Checking the name involves two procedures:
 - Identification, which is the determination of a plant as being identical with or similar to a particular taxon.
 - Nomenclature, which is concerned with the determination of the correct scientific name of the plant
- **Locating**

- **Collection area maps and field inventory records are kept for all collections. Both location data and any non-spatial data will be maintained in the following data formats:**
 - **Trees locations are geolocated using WGS 1984 GPS coordinates and stored on a GIS. This data is used for various end-user maps (online and print) to guide users to each tree, as well as for any research uses requiring this geospatial data.**
 - **Various data formats including Microsoft Excel spreadsheets, CSVs, and image file formats are used for maintaining inventory and biometric data for the collection**
- **Maintenance**
 - **Focal Point, LLC is the independent contractor hired by Washington University in Saint Louis for groundskeeping and tree maintenance. The Wash U Arboretum will guide and maintain the operational end of tree maintenance**
 - **Washington University Arboretum will use ensure the following maintenance procedures:**
 - **General ground-layer landscaping with a focus on sustainability**
 - **Annual mulching for trees**
 - **Irrigation services for water-deficient areas and/or saplings**
 - **Pest control measures for insects (spraying)**
 - **Tree prunings**
 - **Stakings when appropriate**
 - **Fertilizing when appropriate**
 - **Bracing and cabling**
 - **The Washington University Arboretum and Washington University Facilities Planning and Management will independently perform the following maintenance procedures**
 - **Label Maintenance**
- **Evaluation** - evaluating trees for adaptability, disease susceptibility, potential for invasiveness
 - **The reasons for field evaluations of the collections are:**
 - **To determine a plant/plant collections relevance to the Arboretum's Mission, and**
 - **To ascertain a plant/plant collection's performance.**
 - **Recommendations can be made during an evaluation regarding maintenance, plant acquisition, and deaccessioning.**
- **Removal of plants**
 - **Reasons below are for the removal of plants that are part of the Washington University Campus Arboretum collection. Policies regarding the removal of non-arboretum plants on Washington University's property are provided by**
 - **Reasons for removal**
 - **Typical reasons for removal include the following:**
 - **Irreparable tree damage or tree damage**
 - **Trees that pose risk of falling and causing danger to life or property**

- Presence of significant evidence indicating that tree functions negatively affect surrounding ground vegetation more than expected
 - Misidentification of plants seriously detracts from the purpose or mission of the arboretum or is a misidentified invasive
 - Plant is irreparably infested invasive insects, diseases, and/or insects that can rapidly degrade the tree to the extent where it poses a threat to life or property
 - Additionally, any unlisted reason for the removal of arboretum trees can be authorized by University administration as well as Arboretum management
 - Removal of dead trees
 - The removal of dead trees can be authorized by Washington University administration as well as Arboretum management
 - Removal of living trees
 - The curator (Kent Theiling) of arboretum can initiate and approve of the removal of living arboretum trees. If a living tree poses a threat to university property or the University administration feels strongly that a tree should be removed, the university reserves the right to initiate a request to remove a living tree, but still requires the approval of the curator.
 - Removal of hazardous trees
 - When the curator (Kent Theiling) is not available, the University administration and its contracted groundskeepers (Focal Pointe) are authorized to cut down trees that pose a clear and immediate threat to life or property. Trees removed through this method should not be destroyed, so that the biological resources (propocules, leaf and flower samples, genetic material samples) of the tree can be preserved
 - Deaccessioning trees
 - Trees may be removed from the collections when they no longer fulfill any of the Arboretum's missions of education, research, outreach, and horticultural display. The ultimate
 - Inventory
 - Plants continually change throughout their lifetime, therefore it is necessary to inventory living collections on a timely basis (every year)
-

Auxiliary Notes/Non-Midwest Arboretum CP Considerations (Bolded words do not have specific function)

Morton Arboretum:

- General outline:
 - **Intro**
 - **Purpose** -- preserve existing trees and build diversity of trees on campus
 - Purpose of the policy
 - There are several reasons for a university to host an arboretum on their campus. The main goal of an arboretum is to promote conservation and preservation. Arboretums are places where unique and endangered plants can thrive, be protected, and contribute to increasing the biodiversity of an area.
 - **Governance** -- how we take care of the trees; line of command
 - **Plant collections**
 - **Purposes**
 - Definitions
 - **Classifications**
 - Taxonomic
 - Geographic
 - Special habitat
 - Horticultural
 - Endangered or threatened
 - Evaluation
 - **Collection development** -- development of cultivar collection that branches from native collections
 - **Collection renovation** -- tree risk management; pruning and treatments to preserve existing campus trees
 - Collections will be maintained through procedures outlined in Maintenance through continuous assessments in order to ensure the longevity of the arboretum, continuity of quality, quality of visitor experiences, and improvement of the arboretum's scientific value.
 - **Access and use**
 - All of the arboretum collection is fully accessible to the public
 - Aesthetics
 - Curators
 - **Plants in the collections**
 - **Acquisition** -- where we get them from
 - Focal Point
 - **Criteria for acquisition**
 - **Name and source are known**
 - **Ability to withstand microclimate of area where it resides**
 - **Arboretum can maintain it both physically and clerically**
 - **Not invasive**
 - **If a cultivar, there are qualities that make it valuable to the area, based on the expertise of Arboretum staff or an outside expert**
 - **Historical significance - Important chapters in the development of institution**
 - **Conservation**

- **Trees sustainable in global warming**
- **Trees sustainable in urban environments**
- **Add to the comprehensiveness of collection or the aesthetic, historic, or scientific attributes of the arboretum**
- **Possibility to support research opportunities**
- **Means of acquisition**
- **Authorized personnel**
 - Kent
- **Plant records**
 - Plant records will be stored online by Student Technology Services. As of now that includes a Box Account that stores all tree photos, species, descriptors. The photos are obtained from photography teams, the species from the tree source/seller, and the descriptors from various reputable and quoted sources such as the Morton Arboretum.
- Propagation
- **Labeling**
 - Current labeling procedure uses QR code tree tags either on the trunks or on a post close to the base of the tree. QR code tags are noticeable and can easily be identified by branded imagery on the tag.
- Sitting within collection
- **Verification**
- **Locating**
- **Maintenance**
 - Focal Point, LLC is the independent contractor hired by Washington University in Saint Louis for groundskeeping and tree maintenance. The Wash U Arboretum will guide and maintain the operational end of tree maintenance
 - Washington University Arboretum will use ensure the following maintenance procedures:
 - General ground-layer landscaping with a focus on sustainability
 - Annual mulching for trees
 - Irrigation services for water-deficient areas and/or saplings
 - Pest control measures for insects (spraying)
 - Tree prunings
 - Stakings when appropriate
 - Fertilizing when appropriate
 - Bracing and cabling
 - The Washington University Arboretum and Washington University Facilities Planning and Management will independently perform the following maintenance procedures
 - Label Maintenance
-
- **Evaluation**
- Interpretation
- Collecting by visitors
- **Removal of plants**

Arnold Arboretum at Harvard University

- General Outline:
 - Purpose of the policy
 - Purpose of the collections
 - Legal and ethical considerations
 - Access and Use
 - Scope of Living Collections (see below)
- Core collections
 - Maximize species diversity
- Conservation collections
 - Under threat from extinction; maintained for research/preservation/education
- Synoptic collections
 - Provide synoptic representation of Earth's temperate woody flora
- **Historic collections**
 - **Important chapters in the development of institution**
- Nurseries and Horticulturists
 - May lack full documentation, but are derived from historically significant nurseries, botanical institutions, and horticulturists
 - Often represent initial introduction of species into cultivation
- Cultivar collections
 - Distinctive cultivars
 - Cultivars with names proposed prior to 1953
 - Arnold Arboretum cultivar introductions
- Special collections
 - Dwarfed potted tree collection
 - Display collection
 - Natural and naturalized areas: spontaneous flora
 - Interior, greenhouse and nursery collections

University of Arizona Arboretum

- Introduction
 - Purpose of policy
- Purpose of collections
- Plant record system
- Acquisition
 - **Selection criteria**
 - **Educational/interpretive or research potential**
 - Functional or landscape potential
 - Preservation of rare cultivated plants, especially those which honor the University's heritage
 - Dominance or importance within a pertinent eco-geographic region
 - Economic or ethno-botanic utility
 - Ex situ conservation of taxa.
 - Initiation and approval
 - Legal and ethical aspects
 - Gifts

- Care of the collections
- Deaccessioning and disposal
- Access to collections

ArbNet ABC Arboretum

- Introduction
 - **Plan defines guidelines and describes roles for parties participating**
 - **Outlines living conditions for collections**
 - **Shows contents of arboretum**
 - **General nature of arboretum research and educational purposes**
- Purpose
 - Promote understanding and appreciation of trees and nature
 - Focus on native plants and well-documented plant collections for professional and public study and enjoyment
- Acquisition
 - Living collections as primary focus
 - Signature collections
 - Distinctional collections recognized internationally or nationally
 - Highest priority of curation
 - Long-term commitment
 - research encouraged
 - Primary collections
 - Exhibit aesthetic values or diversity within a family
 - Genetic resources at local level
 - General collections
 - Exemplar specimens and unusual taxa
 - Limited numbers of taxa within genus
 - Genetic selections less important than aesthetic attributes
- **Criteria for accession**
 - **Add to the comprehensiveness of collection or the aesthetic, historic, or scientific attributes of the arboretum**
 - **Possibility to support research opportunities**
 - Appropriate to cultural attributes of site
 - No risk of becoming invasive
 - Trees have priority over shrubs/etc.
- Records
- Collection management
- Access

Wash U Arb CP Notes

- Criteria that would fit our campus -- form policy around this
- Focus on Missouri arboretums
- Historical facts for descriptions more than data
- Few trees that need data/info (ones not planted yet)
 - 100, 104-106
- Develop a guide to add to and build on
- Morton will be reviewing ours, so additional research should be built back into a framework set up by Morton Arboretum
- Looking at trees that grow south of us

- Looking at Compton Oak currently to see how it performs here