

Winthrop University

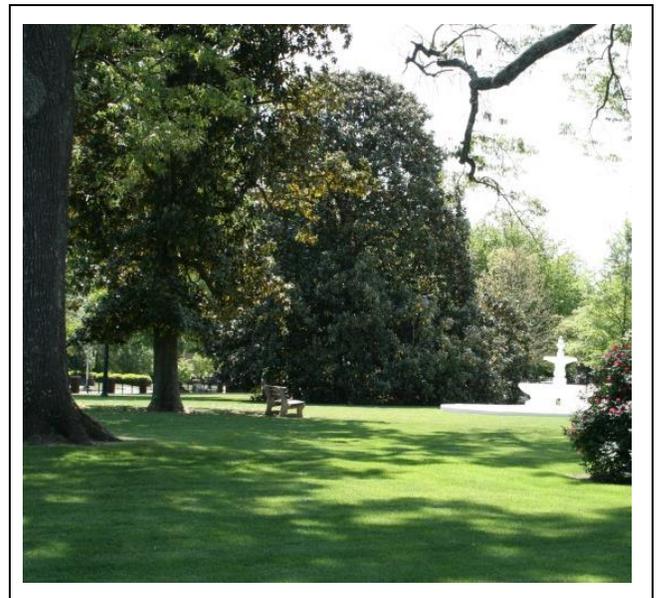
Campus Tree Plan

August 25, 2016
Revised December 21, 2021

1.0 Purpose / Introduction

The purpose of this plan is to develop a long range plan that strategically develops policies, procedures, and practices that will be used in planting, protecting, maintaining, and removing trees that ensure a safe, attractive, and sustainable tree campus.

Trees are very important to Winthrop University's charm and we cherish the value of those trees. *"The distinctive architecture, coupled with an abundance of colorful foliage, towering shade trees, and well-manicured lawns, attracts numerous visitors each year."* Our most famous tree is the Southern Magnolia on front campus that was selected as the 2010 Heritage Tree by TreesSC. However, because many of the existing trees are of similar maturity and species, there is a need to create proactive long range plan that will to ensure a healthy and diverse tree canopy if we are to maintain the distinct character of the campus. Despite the desire to quickly replace trees lost, it must be understood that not all trees will be or should be replaced because of concerns for life safety and general long-term maintenance of trees and buildings while simultaneously considering the many aesthetic, environmental, educational, historical, and psychological benefits trees offer, thus establishing the basis for developing a comprehensive Campus Tree Plan.



2.0 Responsible authority/department

This plan to be applied to the 109 acre Main Campus as well as the 300+ acre Research & Recreation Complex. While all faculty and staff will have knowledge of the guidelines established by this tree plan, Winthrop Facilities Management & Operations under the direction of the Associate Vice President for Facilities Management, Director of Operations, and Assistant Director of Ground will be responsible for ensuring the guidelines are adhered to. The tree Campus Tree Advisory Committee provides guidance for planning, approval of tree plan, education of campus population, and ensures development of connectivity to the community.

3.0 Campus Tree Advisory Committee

- *City of Rock Hill Forester (no term limit)*
- *Associate VP Facilities Management (no term limit)*
- *Assistant Director Grounds & Custodial Services (no term limit)*
- *Greenhouse Supervisor (no term limit)*
- *Sustainability Coordinator (no term limit)*
- *Environmental Health & Safety (no term limit)*
- *Faculty (1) (no term limit)*
- *Student (1) (one year term)*

4.0 Campus Tree Selection & Care Policies

4.1 Choosing a Planting Location

There are many considerations when selecting the location of a new tree. Most critical is the site's climate, overhead conditions, nearby buildings, below grade conditions, proximity of existing trees, soil conditions, and drainage. For more information, refer to the Clemson Cooperative Extension cut sheet – [Choosing a Planting Location](#) (document title hyperlinked) "Choosing a Planting Location" was revised by Bob Polomski, Ph.D., Extension Horticulturist/Arborist, 06/12. Revised by Millie Davenport, HGIC Horticulture Specialist, Clemson University, 11/06. Originally prepared by Bob Polomski, Ph.D., Extension Horticulturist/Arborist, and Debbie Shaughnessy, HGIC Information Specialist, Clemson University, 01/99.

4.2 Tree Selection

Considerations when selecting a new tree include color, form, texture, appeal, soil type & moisture, and space. When selecting a tree from a source (see 4.14), consider proper sizing, rootball characteristics, how and where tree was grown, and condition of the tree, i.e. pests or other damage. Refer to the [American Standard for Nursery Stock ANSI Z60.1- 2014](#) (document title hyperlinked) for current standards for nursery stock trees and shrubs. Refer to 4.10 of this document for a list of recommended trees. Refer to 4.11 of this document for undesirable trees. For other information, refer to Clemson Cooperative Extension cut sheet – [Tree Selection](#) (document title hyperlinked) "Choosing a Planting Location" was prepared by Bob Polomski, Extension Consumer Horticulturist, and Debbie Shaughnessy, HGIC Information Specialist, Clemson University. (New 01/99.)

4.3 Planting

The planting hole shall be dug such that the root ball sits on undisturbed soil and the root flare is at or less than two inches above the adjacent finished grade. The width of the hole should be at least twice the diameter of the root ball and have sloping sides. Thoroughly water in the root ball and add more soil if settling of backfill occurs. For more information, refer to Clemson Cooperative Extension cut sheet – [Planting Trees Correctly](#) (document title hyperlinked) "Planting Trees Correctly" was prepared by Bob Polomski, Extension Consumer Horticulturist, and Debbie Shaughnessy, HGIC Information Specialist, Clemson University. Revised by Joey Williamson, HGIC Horticulture Information Specialist, Clemson University. (New 5/99. Revised 10/04.)

4.4 Fertilizing & Pest Management

Trees will only be treated for pest problems as a last resort and/or as required. Before fertilizing a tree, a need must be established based on soil testing, the age of the tree, and location. If it is determined that a tree requires fertilizers, follow the industry recommended amount and process for applying these fertilizers specific to the tree being fertilized. For more information, refer to Clemson Cooperative Extension cut sheet – [Fertilizing Trees & Shrubs](#) (document title hyperlinked) "Fertilizing Trees & Shrubs" was prepared by Bob Polomski, Extension Consumer Horticulturist; Donald L. Ham, Extension Urban Forestry Specialist; and Debbie Shaughnessy, HGIC Information Specialist, Clemson University. Revised by Joey Williamson, HGIC Horticulture Information Specialist, Clemson University. (New 05/99. Revised 10/04.)

4.5 Pruning Trees

Tools, time or season, species, and techniques are the key factors to consider when pruning trees. Pruning will be completed only when safety of people is imminent, the health of the tree requires maintenance, and to improve the tree's aesthetics. **When removing branches, the pruning cut shall not damage the branch bark ridge and branch collar. Evergreen trees should not be limbed for clearance but rather be allowed to maintain branches to the ground unless required for safety requirements.** For more information, refer to Clemson Cooperative Extension cut sheet – [Pruning Trees](#) (document title hyperlinked) "Pruning Trees" was prepared by Bob Polomski, Extension Consumer Horticulturist, and Debbie Shaughnessy, HGIC Information Specialist, Clemson University. (New 1/99.)

4.6 Maintenance

The maintenance pruning schedule shall be dictated by tree species, age, function, and placement. Trees adjacent to roadways, walkways, signs, and street lights are annually inspected for safety and clearance issues and maintenance pruned as necessary. Maintain all plants to keep sight lines and physical access to emergency phones clear. Tree canopies should be maintained to prevent diminishing light from fixtures that are intended for security or safety purposes. Annual night inspections are recommended to look for problem areas.

4.7 Mulch

“Volcano Mulching” is not permitted. This causes the trunk to soften and become susceptible to fungal diseases and rot. The root flare of the trunk must be above ground and free from any contact with mulch. This can be achieved by pulling mulch away from trunk by 2 to 3 inches. For trees 2 to 6” in diameter, mulch every two years at depth not to exceed a 4”. For larger trees, mulching to be done as required, depth not to exceed 4”. For more information, refer to Clemson Cooperative Extension cut sheet – [Mulch](#) (document title hyperlinked) “Pruning Trees” was prepared by Marjan Kluepfel, HGIC Horticulture Specialist, and Bob Polomski, Extension Consumer Horticulturist, Clemson University. Revised by Joey Williamson, HGIC Extension Agent, Clemson University. Revised by Janet Scott, HGIC Extension Agent Clemson University. (New 04/99. Revised 05/08.)

4.8 Topping Trees & Heading

The practice of topping is not permitted. Internode (heading) cuts should not be used except in storm response and crown restoration procedures. Heading of large limbs will be completed by professional tree removal service. For more information, refer to Clemson Cooperative Extension cut sheet – [Topping Trees](#) (document title hyperlinked) “Topping Trees” Prepared by Chuck Burgess, HGIC Horticulture Specialist, Clemson University. (New 12/05.)

4.9 Removal

Trees are only removed when required to protect the public safety or when they interfere with construction. Diseased trees are assessed to determine if recovery is reasonable after treatment. Should the disease be irrecoverable, the tree will be removed to maintain public safety. Trees may be removed after consultation with the Associate VP of facilities management. For trees that are removed, a weight of the wood that is chipped into mulch is required to be submitted to the Office of Sustainability.

4.10 Replacement

Any tree removed shall be replaced in the same location if:

- The species is found on the list of recommended trees (See 4.12) or approved by Campus Tree Committee.
- The stump can be removed to the extent necessary to replant and fill soil properly prepared to support new tree.
- There are no utility or location conflicts.
- The species is not on the list of prohibited trees (See 4.13)

4.11 Stump Grinding

After trees are removed, the stumps are then scheduled for grinding, provided there is adequate access to the site. When the stump is ground out, the grindings are raked and left slightly mounded to allow for decay and settling. It is not recommended to plant a new tree in that location unless the hole is properly cleared and prepared with new soil.

4.12 Recommended Tree List

Recommended Trees 30 feet mature height or less		
Trees Requested to Enhance Curriculum		
Mountain Laurel (<i>Kalmia latifolia</i>)	Pawpaw (<i>Asimina triloba</i>)	**Anisetree (<i>Illicium floridanum</i>)
Eastern Redbud (<i>Cercis canadensis</i>)	White Fringe-tree (<i>Chionanthus virginicus</i>)	**Buckeye (<i>Aesculus pavia</i>)
Painted Buckeye (<i>Aesculus sylvatica</i>)	American hornbeam or Blue-Beech or Ironwood or Musclewood (<i>Carpinus caroliniana</i>)	
Other Trees		
Waxmyrtle (<i>Myrica cerifera</i>)	Umbrella Tree (<i>Magnolia tripetela</i>)	Short Leaf Pine (<i>Pinus echinata</i>)
**Yaupon Holly (<i>Ilex vomitoria</i>)	American Hophornbeam (<i>Ostrya virginiana</i>)	Umbrella Tree (<i>Magnolia tripetela</i>)
Blackhaw Biburnum (<i>Viburnum rufidulum</i>)	Hoptree (<i>Ptelea trifoliata</i>)	American or Common Witch-Hazel (<i>Hamamelis virginiana</i>)
Hoptree (<i>Ptelea trifoliata</i>)	Blackhaw Biburnum (<i>Viburnum rufidulum</i>)	**Crape Myrtle (<i>Lagerstroemia</i>) (not from North America)
Flowering Dogwood (<i>Cornus florida</i>)		
**Not native to north-central section of Piedmont (Rock Hill)		

Recommended Trees

Greater than 30 feet mature height

Trees Requested to Enhance Curriculum		
Blackgum, Black Tupelo (<i>Nyssa sylvatica</i> var. <i>sylvatica</i>)	Black Walnut (<i>Juglans nigra</i>)	Black Cherry (<i>Prunus serotina</i>)
American Persimmon (<i>Diospiros virginiana</i>)	**Butternut or White Walnut (<i>Juglans cinererea</i>)	**American Linden, Basswood (<i>Tilia americana</i>)
**American chestnut (<i>Castanea dentata</i>)	Sassafras (<i>Sassafras albidum</i>)	Sourwood (<i>Oxydendrum arboreum</i>)
American beech (<i>Fagus grandifolia</i>)	Yellow-poplar, Tuliptree (<i>Liriodendron tulipifera</i>)	American Holly (<i>Ilex opaca</i>)
White Oak (<i>Quercus alba</i>)	**Bigleaf Magnolia (<i>Magnolia macrophylla</i>)	Loblolly pine (<i>Pinus taeda</i>)
Post Oak (<i>Quercus stellata</i>)	Magnolia (<i>Magnolia acuminata</i>)	**Longleaf pine (<i>Pinus palustris</i>)
Bitternut hickory (<i>Carya cordiformis</i>)	**Sweetbay Magnolia (<i>Magnolia virginiana</i>)	**Pitch pine (<i>Pinus rigida</i>)
Pignut Hickory (<i>Carya glabra</i>)	Box elder (<i>Acer negundo</i>)	Virginia pine (<i>Pinus virginiana</i>)
Silverbell (Carolina silverbell) (<i>Halesia tetraptera</i>)	Cucumber magnolia (<i>Magnolia acuminata</i>)	Red maple (<i>Acer rubrum</i>)
	Green Ash or Red Ash (<i>Fraxinus pennsylvanica</i>)	
Other Trees		
**Baldcypress (<i>Taxodium distichum</i>)	Overcup Oak (<i>Quercus lyrata</i>)	Short Leaf Pine (<i>Pinus echinata</i>)
River Birch (<i>Betula nigra</i>)	Chestnut Oak (<i>Quercus prinus</i>)	American Tulip Tree (<i>Liriodendron tulipifera</i>)
**Pagoda Dogwood (<i>Cornus alternifolia</i>)	**Laurel Oak or Darlington Oak (<i>Quercus hemisphaerica</i>)	Black Tupelo (<i>Nyssa sylvatica</i>)
Water Oak (<i>Quercus nigra</i>)	**Southern Live or Evergreen Oak (<i>Quercus virginiana</i>)	
Swamp Chestnut Oak (<i>Quercus michauxii</i>)	**Pin Oak (<i>Quercus palustris</i>)	
**Bur Oak (<i>Quercus macrocarpa</i>)	Willow Oak (<i>Quercus phellos</i>)	
**Shingle Oak (<i>Quercus imbricaria</i>)	Scarlet Oak (<i>Quercus coccinea</i>)	
American Hophornbeam (<i>Ostrya virginiana</i>)	Eastern Red Cedar (<i>Juniperus virginiana</i>)	
American Sycamore or Planetree or Buttonwood (<i>Platanus occidentalis</i>)	**Swamp White Oak (<i>Quercus bicolor</i>)	
**Not native to north-central section of Piedmont (Rock Hill)		

4.13 Existing Campus Trees

Existing Campus Trees		
Willow Oak (<i>Quercus phellos</i>)	Flowering Dogwood (<i>Cornus florida</i>)	Southern Magnolia (<i>Magnolia grandiflora</i>)
**Canadian Hemlock (<i>Tsuga Canadensis</i>)	**Deodar Cedar (not from North America) (<i>Cedrus deodara</i>)	**Southern Crabapple (<i>Malus angustifolia</i>)
**Pecan (<i>Carya Illinoensis</i>)	Red Oak (<i>Quercus ?</i>)	**Carolina Ash (<i>Fraxinus Caroliniana</i>)
American Elm (<i>Ulmus Americana</i>)	**Serbian Spruce (<i>Picea omorika</i>)	**Ginkgo (<i>Ginkgo Biloba</i>)
**Laurel Oak or Darlington Oak (<i>Quercus hemisphaerica</i>)	Water Oak (<i>Quercus nigra</i>)	American Tulip Tree or Poplar (<i>Liriodendron tulipifera</i>)
**Southern Live or Evergreen Oak (<i>Quercus virginiana</i>)	**Sugar Maple (<i>Acer saccharum</i>)	American Holly (<i>Ilex opaca</i>)
**Longleaf pine (<i>Pinus palustris</i>)	Eastern Redbud (<i>Cercis canadensis</i>)	White Oak (<i>Quercus alba</i>)
**Okame Flowering Cherry (??)	**Japanese Zelkova (<i>Zelkova serrata</i>)	White Ash (<i>Fraxinus Americana</i>)
Urbinite or Red or Green Ash (<i>Fraxinus pennsylvanica</i>)	**Baldcypress (<i>Taxodium distichum</i>)	Eastern Red Cedar (<i>Juniperus virginiana</i>)
**Crape Myrtle (<i>Lagerstroemia</i>) (not from North America)	**Scotch Pine (<i>Pinus sylvestris</i>)	**Kwanzan Cherry (<i>Prunus 'Kanzan'</i>)
**Pin Oak (<i>Quercus palustris</i>)	River Birch (<i>Betula nigra</i>)	Shumard Oak (<i>Quercus shumardii</i>)
Savannah Holly (<i>Ilex x attenuata 'Savannah'</i>)	Pignut Hickory (<i>Carya glabra</i>)	**Saucer Magnolia (<i>Magnolia x soulangeana</i>)
**Bufordii Holly (??)	**Carolina Hemlock (<i>Tsuga caroliniana</i>)	**Nellie Stevens Holly (??)
**Fosteri Holly Hybrid (??)	**London Plaintree (<i>Platanus x acerifolia</i>)	**Bur Oak (<i>Quercus macrocarpa</i>)
**Chinkapin Oak (<i>Quercus muehlenbergii</i>)	Short Leaf Pine (<i>Pinus echinata</i>)	**Chaste Tree (<i>Vitex agnus-castus</i>)
**Osage Orange (<i>Maclura pomifera</i>)	Sourwood (<i>Oxydendrum arboreum</i>)	**Carolina Cherry Laurel (<i>Prunus caroliniana</i>)
**Japanese Maple (<i>Acer palmatum</i>)	**Golden Chain Tree (??)	**Fraser Photinia (<i>Photinia x fraseri</i>)
**Japanese Black Pine (<i>Pinus thunbergii</i>)	**Little Gem Magnolia (??)	**Lacebark Elm (<i>Ulmus parvifolia</i>)
**Weeping Cherry Tree (??)	**Chinese chestnut (<i>Castanea Mollissima</i>)	**Wax Leaf Legustrum (??)
**Fruitless Sweet Gum Tree (<i>Liquidambar styraciflua</i> 'Rotundiloba')	**Swamp White Oak (<i>Quercus bicolor</i>)	**Weeping Yaupon Holly (??)
Carolina Cherry Laurel (<i>Prunus caroliniana</i>)	**Saw Tooth Oak (<i>Quercus acutissima</i>)	American Beech (<i>Fagus grandifolia</i>)
American Sycamore or Planetree or Buttonwood (<i>Platanus occidentalis</i>)	**Japanese Flowering Crabapple (<i>Malus floribunda</i>)	**Red Maple (<i>Acer rubrum</i>)
**Not native to north-central section of Piedmont (Rock Hill)		

4.14 Prohibited Tree List

For a complete list of plants that are not permitted on campus, refer to [Invasive Plant Pest Species of South Carolina](#) (July 2011) (document title hyperlinked) Other Prohibited Trees include the following:

All ash trees are prohibited as a result of emerald ash bore threat.		
Crabapples with poor disease resistance.		
Bradford pear (Pyrus calleryana ‘Bradford’)	Zelkova (Zelkova serrata)	Washington Hawthorn (Crataegus Phaenopyrum)
Sweet gum (Liquidambar styraciflua)	Chinese elm (Ulmus parvifolia)	Chinese Chestnut
Silver maple (Acer saccharinum)	Leyland Cyprus (X Cupressocyparis leylandii)	
No species that has been identified as an invasive species by the South Carolina Exotic Pest Plant Council, South Carolina Forestry Commission, Dept. of Agriculture Forest Service. Refer to Clemson’s Invasive Plant Pest Species of South Carolina .		

4.15 Sources for Purchasing Trees

<p>Wilson’s Nursery (click hyperlink for more information) 921 W. Main Street Rock Hill, SC 29732 803-327-6116</p>	<p>Farmer’s Exchange (click hyperlink for more information) 322 S. Cherry Rd. Rock Hill, SC 29732 803-324-2925 (may be able to order or provide sources)</p>
<p>Mr. Jack's Tree Farm in Charlotte, NC (click hyperlink for more information) 16310 Wrights Ferry Road Charlotte, NC 28278 704-589-0435 Casey Bolen</p>	<p>Woodlanders Inc. (click hyperlink for more information) 1128 Colleten Ave. Aiken 29801 Native source (mail order but may request to work with in contract for larger sizes)</p>
<p>Ty Ty Nursery (click hyperlink for more information) 4723 US Hwy. 82 West Ty Ty Ga. 31795-0130 888-758-2252</p>	<p>UNC Charlotte Dr. Jeff Gillman, Director email: jgillman@uncc.edu Phone: 704-687-0722</p>
<p>Rolling Hills Nursery 873 Museum Rd. Rock Hill, SC 29732 (803) 329-1080</p>	<p>Paula Gross, Assistant Director email: pmgross@uncc.edu phone: 704-687-0719 Spring Sale: April</p>

In addition, refer to [List of South Carolina Certified Nurseries and Dealers of Nursery Stock](#) (click hyperlink for more information)

4.16 Resources

[TreesSC](#) (click hyperlink for more information)

“Trees SC is a collaboration of individuals, organizations, and agencies dedicated to our state’s trees. Together, we work to foster the stewardship of South Carolina’s urban and community forests through education, advocacy, and networking.” (Description is from website.)

[i-Tree](#) (click hyperlink for more information)

“i-Tree is a state-of-the-art, peer-reviewed software suite from the USDA Forest Service that provides urban and rural forestry analysis and benefits assessment tools. The i-Tree tools can help improve forest management and advocacy efforts by quantifying forest structure and the environmental services that trees provide.” (Description is from website.)

[Invasive Plant Atlas](#) (click hyperlink for more information)

“The Invasive Plant Atlas of the United States is a collaborative project between the National Park Service, the University of Georgia Center for Invasive Species and Ecosystem Health, the Invasive Plant Atlas of New England and the Lady Bird Johnson Wildflower Center. The purpose of the Atlas is to assist users with identification, early detection, prevention, and management of invasive plants. The focus is on non-native invasive plant species impacting natural areas, excluding agricultural and other heavily developed and managed lands. Four main components are species information, images, distribution maps, and early detection reporting procedures. The Invasive Plant Atlas is one step in the effort to combat invasive species, preserve our natural landscapes and the native plants, animals, and other creatures that inhabit them.” (Description is from website.)

[Missouri Botanical Garden](#) (click hyperlink for more information)

Look up, view a photo and read about the over 6,800 plants which are growing or have been grown in the Kemper Center display gardens (plus selected additions) by scientific name, common name and/or selected plant characteristics. (Description is from website.)

5.0 Protection, Preservation Policies & Procedures

5.1 Protecting Trees During Construction

During the design phase of new construction or renovation, reasonable effort should be made to save all trees in or near the proposed construction area. This tree policy is to be brought to attention of contractors during pre-construction meeting and/or included in specifications. Protection of trees and root system must also be considered during any trenching planned or completed on campus. Refer to Clemson Cooperative Extension cut sheet – [Protecting Trees During Construction](#) (document title hyperlinked) Prepared by Debbie Shaughnessy, HGIC Information Specialist, and Bob Polomski, Extension Consumer Horticulturist, Clemson University. (New 09/99.)

5.2 Managing Catastrophic Events

Storm response and recovery are prioritized by the severity of the disruption. Trees and debris that blocks campus streets, disrupts campus operations, or poses hazards to individuals entering campus. Once critical needs are addressed, any other damaged trees will be assessed to determine if the trees can be salvaged or require removal. The tree committee will convene to evaluate replacing those trees lost and establish a reasonable time schedule for replacement.

5.3 Annual Assessment

The committee’s charge is to conduct an annual review and to revise the Tree Campus Plan recommendations, policies, procedures, and practices used in planting, protecting, maintaining, and removing trees as to maintain a safe, attractive, and sustainable tree campus as determined necessary.

5.4 Memorial Trees

Any proposals for trees planted in dedication are to be reviewed by the tree committee to ensure trees selected and planted shall meet the intent of this plan. Collaborate with development

6.0 Prohibited practices

The following practices are prohibited because they could be harmful to the campus trees:

- Posting of signs, artwork, banners or attaching any object to any tree
- Using trees to secure dogs, bicycles, motor bikes, mopeds, and motor scooters
- Cutting down or otherwise destroying or damaging campus trees outside the guidelines established by this tree plan
- Topping of trees, heading, hat-racking, or any other form of inappropriate crown/branch reduction pruning shall not be permitted except in emergency situations or in executing a crown restoration procedure
- Volcano mulching

7.0 Goals and Targets

- Committee to meet annually to review and/or revise Tree Campus Plan
- Maintain Tree Campus Certification
- Develop and maintain training program for all Facilities Management staff (Matt researching options.)
- Develop online self-guided interpretive program that highlights key trees on campus
- Develop Campus Landscape master plan
- Complete and maintain GIS Campus Tree Inventory for both main campus and recreation complex
- Hire and/or include in existing job description (50% of time) Certified Arborist and someone with Tree Risk certification
- Establish and maintain membership to TreesSC (July 2016)
- Develop long-term landscape plan & Integrated Pest Management Plan
- Identify migratory birds or other species that we can assist by the plants we choose.
- Incorporate tree plan into revised master plan
- Establish plan that eliminates any parking within the drip line of trees
- Investigate process for establishing long-term protections of existing forest
- Identify and certify heritage trees – look into RH heritage tree
- Identify funding sources

8.0 Glossary of Tree Terms (document titles are hyperlinked)

- [Arbor Day Foundation](#)

9.0 Communication

Upon implementation, this plan will be made available for review on the Facilities Management and the Office of Sustainability web site. Arbor Day events will be coordinated with the City of Rock Hill and will serve as a means for communicating this tree plan annually.

10.0 Other

Tree Policies Referenced:

- [University of Oregon](#) (13 pages)
- [Longwood University](#) (13 pages)
- [Wake Forest University](#) (18 pages)
- [Virginia Tech](#) (11 pages)
- [University of Connecticut](#) (74 pages)
- [Georgia Tech](#) (8 pages)