

Recommendations for Tree Protections for Chatham County Unified Development Ordinance

**Chatham County Tree Protection Working Group
December 5, 2022**



Tree Protection Working Group Recommendations for Chatham County Unified Development Ordinance

Introduction

The Tree Protection Working Group was approved by the Chatham County Board of Commissioners in May, 2022. Its mission is to create recommendations to the BOC for new regulations to protect trees and forest cover in Chatham County that can be incorporated into the Unified Development Ordinance. It is composed of 8 members from the Environmental Review Advisory Committee, the Planning Board, the Climate Change Advisory Committee and Grand Trees of Chatham.

- Elaine Chiosso, Chair, Environmental Review Advisory Committee
- Jeannie Ambrose, Environmental Review Advisory Committee
- Heather Holley, Environmental Review Advisory Committee
- George Lucier, Planning Board
- Caroline Siverson, Planning Board
- John Graybeal Climate Change Advisory Committee
- Alicia Koblansky, Climate Change Advisory Committee
- Sharon Garbutt, Grand Trees of Chatham

Chatham County has grown from 51,482 people to 77,889 between 2001 and 2021, a 66% increase. In that same period of time we have lost 87,722 acres of forest land, equivalent to a 27% decrease in tree cover since 2000, and 14.9 metric tons of CO₂ emissions. This is higher than the 24% average loss during that time period in North Carolina as a whole. (<https://www.globalforestwatch.org>).

Chatham County is predicted to continue to develop rapidly and loss of more forest cover is expected, if unchecked. These tree protection and canopy coverage recommendations will give the county the tools needed to protect more of the existing tree coverage, with benefits for air quality, water quality, stormwater mitigation, temperature moderation and carbon storage.

Aerial View of Chatham County, September, 2018



1. Purposes for Tree Protection

A. Conserving Natural Resources:

- Improving air and water quality
- Protecting and improving the quality of county's rivers, streams, and wetlands
- Improving surface drainage and aquifer recharge
- Reducing and controlling storm water runoff to minimize soil erosion and pollution, while promoting soil stabilization and enrichment
- Promoting the preservation of connected open space, existing tree canopy and vegetation
- Protecting natural diversity and wildlife habitat
- Minimizing fragmentation of wildlife habitat by preserving connecting forested areas

B. Reducing and Mitigating Climate Change and Responding and Adapting to Emerging Threats:

- Absorbing and sequestering carbon dioxide as well as sulfur dioxide and nitrous oxides from the atmosphere and filtering other airborne pollutants
- Moderating temperature by providing shade and increasing energy conservation
- Controlling velocity and direction of storm water runoff to prevent flooding



2. Chatham County Tree Arborist

We recommend that Chatham County hire an ISA (International Society of Arboriculture) certified tree arborist to oversee tree protection elements in the UDO and to work with developers to help meet relevant regulations on tree protection. The arborist should be a full-time position within the Planning Department. **See Appendix A**

3. Minimum Tree Canopy Coverage Area Recommendations

- a. All new development must conserve the required percentages of tree canopy within its total area depending on zoning classifications. **See Appendix B**
- b. Stream buffers required by the Chatham County Watershed Protection Ordinance shall not be counted as part of the tree canopy area minimum requirements.
- c. Replacement plantings for minimum tree canopy coverage area are required for developments built on former pasture, crop or other cleared land.
- d. In Compact Residential, Compact Mixed Use and Compact Non-Residential Districts, a minimum of 5% of the tree canopy requirement must be in defined park areas.

4. Replacement Trees Recommendation

In order to meet minimum tree canopy percentages the following standards and requirements shall be met:

- a. Standards for replacement trees, including density, caliper size and height shall be determined by the type and size of tree at maturity. **See Appendix C**
- b. Native trees and shrubs must be selected from the list provided by the county arborist. Species not on the list may be approved by the county arborist. **See Appendix D**
- c. Invasive non-native species shall not be used as replacement plantings. **See Appendix E**

5. Protection and Classification of “Grand Trees”

- a. We recommend that the four categories of Grand Trees of Chatham be used as definitions: **See Appendix F**
 - **Champion Trees:** Trees are nominated and selected for this category based on their large size for that particular species.
 - **Historic Trees:** Nominees must be at least 50 years old to qualify. The trees must be specifically associated with some significant historical event or location.
 - **Landmark Trees:** Emphasis is on remarkable natural groupings or communities of trees rather than individual trees.
 - **Meritorious Trees:** Category accommodates special trees in a variety of situations.
- b. All 4 categories must be protected and preserved during development unless the county arborist finds there is no practicable way to retain certain trees, in which case the county arborist will determine appropriate mitigation.

6. Incentives for logging operations (silviculture)

- a. We recommend that Chatham County investigate incentives to protect trees within the riparian buffers, as silviculture is currently exempt from county rules under state law.
- b. We also recommend incentives for silviculture to encourage protection of a percentage of the tree canopy during logging operations.



Appendix A

Chatham County Arborist Job Description

Justification

- This full-time position within the Planning Dept. is essential for implementation of the Tree Protection rules in Chatham County's new Unified Development Ordinance [UDO]

Description of major duties and responsibilities but are not limited to:

- Does fieldwork to assess and inventory trees to identify native trees or groves of particular significance
- Collaborates/consults with NC Natural Heritage Program staff on their site evaluation of NHP priority natural areas to produce a base map and Arborist Report
- Coordinates with county departments, Planning Board, and other advisory boards and committees [including a new Tree Advisory Board?] on developing a specific tree protection plan as part of the permitting process for each applicant
- Reviews and/or approves reports, development proposals and related documents submitted by the permit applicant for consistency with applicable environmental regulations and policies
- Maintains a list of plants appropriate to sites being developed—preferably, drought tolerant and native species, and a list of non-permitted plants that are unsuitable for use in any purpose due to their invasive tendencies.
- May approve the use of desirable native species that are not generally available in the required minimum size provided that the sum of the caliper of the tree(s) planted is equal to or greater than the required caliper specified in the regulations for replacement tree standards
- Meets with applicant prior to any tree disturbance
- May approve an appropriate alternative tree removal mitigation plan during site development if there is no practicable way to retain protected tree(s) as defined by Grand Trees of Chatham criteria.
- Performs periodic on-sight inspections and/or supervision to verify compliance of standards for tree protection, mitigation, and removal before, during and after construction
- Investigates, identifies, and enforces any possible regulatory violations of county tree protection regulations
- Prepares and maintains records and data bases.
- Analyzes data from aerial surveillance maps for a biennial status report/presentation on county-wide tree canopy coverage
- Engages in education outreach programs to inform the public about the value of trees and tree retention and encourages developers, landowners, and others to increase biodiversity by integrating habitat connectivity among parcels of land using native plant species and native species diversity, and removing/reducing non-native invasive plants in their tree protection/landscape plans.

Qualifications:

- ISA [International Society of Arboriculture] Arborist Certification

Appendix B

Minimum Tree Canopy Percentages in UDO Zoning Classifications

(Based on current probable zoning classifications under review)

Residential Zones	Percentage Canopy
Parks	50
Protected Lands	70
Agricultural subdivision	20
Conservation Residential	60
Rural Residential	35
Suburban Residential	25
Compact Residential	20
 Non-Residential Zones	 Percentage Canopy
Rural Village	30
Office/Institutional	30
Neighborhood Business	20
Compact Mixed Use	20
Community Business	20
Compact Non-Residential	20
Regional Business	20
Rural Highway Commercial	30
Light Industry	20
Heavy Industry	20

Notes:

1. Stream/wetland buffers required by watershed regulations shall not be counted in tree canopy calculations.
2. Public right of ways, waterbodies, stormwater and utility easements shall not be included in the total land area used in the canopy coverage calculation.
3. Replacement plantings for minimum tree canopy coverage are required for developments built on former pasture, crop or cleared land except for Parks and Protected Lands.
4. In Compact Residential, Compact Mixed Use and Compact Non-Residential Districts, a minimum of 5% of the tree canopy requirement must be in defined park areas.

Appendix C

Tree replacement to meet canopy percentage requirement

If the existing tree canopy is less than the minimum standards required herein or not able to provide long-term benefits, the required minimum canopy coverage shall be established by planting new trees. The tree canopy deficit shall be determined by subtracting the area of retained tree canopy as shown on the tree protection plan from the minimum area of canopy coverage required.

General Standards for replacement of canopy:

- Plantings of replacement trees in buffer and open space areas shall be native, non-invasive and drought tolerant with consideration given to the availability of irrigation and to the possibility of deer browse damage. Supplemental watering shall be provided during dry spells for the first growing season to assure the success of the planting and some form of deer deterrence utilized until plantings are established.
- Plantings in buffers and open space areas shall be clustered to provide a natural look and shall reflect the native plant communities appropriate to the hydrology of the area.
- Plantings on individual lots in residential districts and in commercial, industrial and mixed-use districts may be more formal and utilize non-invasive species that are locally adapted to the conditions of the site with an emphasis on the use of native plants where possible.
- Street trees shall be required at the rate of one canopy tree and one understory, either deciduous or evergreen, tree for every 65 feet of street frontage along existing and proposed public and private streets within a development, not including alleys.
- Plantings in all areas shall be selected to add diversity and to avoid monocultures that can encourage the spread of pests and diseases.
- Tree replacement areas shall be contiguous with existing canopy or other landscape features such as floodplains and stream buffers on site as well as on surrounding properties to prevent forest fragmentation wherever possible.
- Native trees and shrubs shall be locally sourced and from seed grown species to the extent possible.

Planting Standards:

The approval and implementation of a planting plan shall be in accordance with the following:

1. One (1) replacement tree per 500 square feet of tree canopy coverage deficit shall be planted in accordance with an approved planting plan.
2. The replacement planting shall include a mix of the basic plant types including
 - A. Large deciduous canopy trees - 30 feet or greater in height and width
At least 2-inch caliper or 10 feet in 25 gallon container at time of planting and spaced at least 18 feet apart.
 - B. Evergreen Trees - at least 20 feet tall having green foliage year around
- At least a minimum height of eight feet at the time of planting.

- Shall be planted at least 12 feet apart
- C. Deciduous Understory Tree – 10 to 30 feet
 - At least 1-inch caliper or 8 foot height for single stemmed tree
 - 8 foot height for multi-stemmed tree at time of planting.
 - Should be planted at least 12 feet apart

3. At least 50% of replacement trees shall be large canopy trees

4. When ten or more trees are required to be planted on a site to meet these regulations, a mix of species shall be provided as follows:

- 11 to 20 trees, 3 species required, maximum of 40% of a single species
- 21 to 40 trees, 4 species required, maximum of 35% of a single species
- 41 to 80 trees, 6 species required, maximum of 30% of a single species
- 81 to 150 trees, 8 species required, maximum of 25% of a single species
- Over 150 trees, 10 species required, maximum of 20% of a single species

5. Standards for plant materials are to meet or exceed size and shape relationships specified in the latest edition of ANSI-Z60.1 American Standard for Nursery Stock

6. Standards for planting shall be in keeping with those established by ANSI A300 Tree Care Operations: Standard Practices for Tree, Shrub, and Other Woody Plant Management - planting and transplanting.

7. The county arborist shall maintain a list of plants appropriate to sites being developed. The list shall include drought tolerant and native species

8. The county arborist shall maintain a list of plants that are not permitted for any use due to their invasive tendencies. Such species shall not be planted as landscaping for any purpose.

9. The county arborist may approve the use of desirable native species that are not generally available in the required minimum size provided that the sum of the caliper planted is equal to or greater than the required caliper specified above.

Appendix D

Recommended Native Plant List

Trees:

Acer floridanum – Southern Sugar Maple
Acer leucoderme – Chalk Maple
Acer negundo – var *negundo* – Eastern Boxelder
Acer rubrum var. *drummondii* – Drummond's Red Maple
Acer rubrum var. *rubrum* - Red Maple
Acer rubrum var. *trilobum* – Carolina Red Maple
Acer saccharinum – Sugar Maple
Aesculus sylvatica – Painted Buckeye
Aesculus pavia – Red Buckeye
Alnus serrulata – Tag Alder
Amelanchier arborea – Common Serviceberry
Amelanchier canadensis – Canadian Serviceberry
Aralia spinosa – Devil's Walking Stick
Asimina spinosa – Pawpaw
Baccharis halimifolia – Groundseltree
Betula nigra – River Birch
Carpinus caroliniana ssp. *caroliniana* – Ironwood
Carpinus caroliniana ssp. *virginiana* – Ironwood
Carya carolinae – septentrionalis – Carolina Shagbark Hickory
Carya cordiformis – Bitternut Hickory
Carya glabra – Pignut Hickory
Carya laciniosa – Shellbark Hickory
Carya ovalis – Red Hickory, Sweet Pignut Hickory
Carya ovata – Shagbark Hickory
Caryo pallida – Sand Hickory
Carya tomentosa – Mockernut Hickory
Castanea dentate – American Chestnut
Castanea pummila - Chinkapin
Celtis laevigata var. *laevigata* – Sugarberry
Celtis occidentalis var. *occidentalis* – Common Hackberry
Celtis tenuifolia – Dwarf Hackberry
Cercis Canadensis var. *Canadensis* – Eastern Redbud
Chionanthus virginicus – Fringe tree
Cornus alternifolia – Alternate-leaved Dogwood
Cornus florida – Flowering Dogwood
Crataegus aprica – Sunny Hawthorn
Crataegus crus-galli – Cockspur Hawthorne
Crataegus flabellat – Fanleaf Hawthorne

Crataegus marshallii – Parsley Hawthorn
Crataegus phaenopyrum – Washington Hawthorn
Crataegus punctata – Dotted Hawthorn
Crataegus uniflora – One-flower Hawthorn
Crataegus viridis – Green Hawthorn
Diospyrus virginiana – Common Persimmon
Euonymus atropurpureus var. *atropurpureus* – Eastern Wahoo
Fagus grandifolia var. *caroliniana* – American Beech
Frangula caroliniana – Carolina Buckthorn
Fraxinus americana – White Ash
Fraxinus caroliniana – Carolina Ash
Fraxinus pennsylvanica – Green Ash
Fraxinus profunda – Pumpkin Ash
Halesia tetraptera var. *tetraptera* – Silverbell
Hamamelis virginiana – American Witchhazel
Ilex decidua – Possumhaw
Ilex montana – Mountain Holly
Ilex opaca – American Holly
Juglans nigra – Black Walnut
Juiperus virginiana – Eastern Red cedar
Kalmia latifolia – Mountain Laurel
Liquidambar styraciflua – Sweetgum
Liriodendron tulipifera – Tulip poplar
Magnolia macrophylla – Bigleaf Magnolia
Magnolia tripetala – Umbrella-Tree
Magnolia virginiana – Sweetbay
Malus angustifolia – Southern Crabapple
Morella cerifera – Wax Myrtle
Morus rubra – Red Mulberry
Nyssa biflora – Swamp Tupelo
Nyssa sylvatica – Blackgum, Black Tupelo
Ostrya virginiana – Hophornbeam
Oxydendrum arboretum – Sourwood
Pinus echinata – Shortleaf Pine
Pinus palustris – Longleaf Pine
Pinus serotina – Pond Pine
Pinus taeda – Loblolly Pine
Pinus virginiana – Virginia Pine
Platanus occidentalis – American Sycamore
Populus deltoids – Eastern Cottonwood
Prunus americana – American Plum
Prunus angustifolia – Chickasaw Plum
Prunus Mexicana – Mexican Plum
Prunus serotina – Black Cherry
Ptelea trifoliata – Hoptree
Quercus alba – White Oak

Quercus bicolor – Swamp White Oak
Quercus coccinea – Scarlet Oak
Quercus falcate – Southern Red Oak
Quercus lyrata – Overcup Oak
Quercus marilandica – Blackjack Oak
Quercus michauxii – Swam Chestnut Oak
Quercus montana – Chestnut Oak
Quercus nigra – Water Oak
Quercus pagoda – Cherrybark Oak
Quercus palustris – Pin Oak
Quercus phellos – Willow Oak
Quercus rubra – Northern Red Oak
Quercus shumardii – Shumard Oak
Quercus stellate – Post Oak
Quercus velutina – Black Oak
Rhododendron catawbiense – Catawba Rhododendron
Rhus copallinum var. copallinum – Shining Sumac
Rhus glabra – Smooth Sumac
Salix nigra – Black Willow
Sassafras albidum – Sassafras
Staphylea trifolia – American Bladdernut
Styrax grandifolius – Bigleaf Snowbell
Symplocos tinctoria – Sweetleaf
Taxodium distichum - Bald cypress
Tillia americana var caroliniana – Carolina Basswood
Tsuga Canadensis – Eastern Hemlock
Ulmus alata – Winged Elm
Ulmus americana – American Elm
Ulmus rubra – Slippery Elm
Vaccinium arboretum – Sparkleberry, Farkleberry
Viburnum nudum – Possumhaw Viburnum
Viburnum prunifolium – Blackhaw
Viburnum rufidulum – Rusty Blackhaw

Shrubs and Subshrubs:

Amelanchier obovalis – Coastal Plain Serviceberry
Amelanchier stolonifera – Running Serviceberry
Amorpha fruticosa – False Indigo Bush
Amorpha herbacea – Dwarf Indigo bush
Aronia arbutifolia – Red Chokeberry
Aronia prunifolia – Purple Chokeberry
Arundinaria gigantea – Giant Cane
Arundinaria tecta – Switch Cane
Asimina parviflora – Smallflower Pawpaw
Berberis canadensis – American Barberry

Callicarpa americana – American Beautyberry
Calycanthus floridus var. *glaucus* – Sweet Betsy
Ceanothus americanus – New Jersey tea
Cephalanthus occidentalis – Common Buttonbush
Chimaphila maculate – Striped Pipsissewa
Chimaphila umbellata ssp. *cisatlantica* – Pipsissewa
Clematis ochroleuca – Curlyheads
Clethra alnifolia – Sweet Pepperbush
Cornus amomum – Swamp Dogwood, Silky Dogwood
Cornus stricta – Stiff Dogwood
Cornus racemosa – Gray Dogwood
Corylus Americana – American Hazelnut
Corylus cornuta – Beaked Hazelnut
Cunila origanoides – American-dittany, Wild oregano
Cyrilla racemiflora – Swamp Titi
Dirca palustris – Eastern Leatherwood
Epigaea repens – Trailing Arbutus
Eubotrys racemosa – Coastal Fetterbush
Euonymus americanus – Hearts-a-busting
Fothergilla major – Mountain Witchalder
Galax urceolata – Galax
Gaultheria procumbens – Wintergreen, Teaberry
Gaylussacia brachycera – Box Huckleberry
Gaylussacia baccata – Black Huckleberry
Gaylussacia dumosa – Dwarf Huckleberry
Gaylussacia frondosa – Blue Huckleberry
Huperzia lucidula – Shining Firmoss, Shining Clubmoss
Hydrangea arborescens – Wild Hydrangea
Hypericum crux-andreae – St. Andrew's Cross, St. Peter's Wort
Hypericum densiflorum – Bushy St. John's Wort
Hypericum hypericoides – St. Andrew's Cross
Hypericum lloydii – Sandhill St. John's Wort
Hypericum nudiflorum – Early St. John's Wort
Hypericum prolificum – Shrubby St. John's Wort
Hypericum stragalum – St Andrew's Cross
Ilex glabra – Inkberry
Ilex verticillata – Common Winterberry
Itea virginica – Virginia Sweetspire
Leucothoe fontanesiana – Doghobble
Lindera benzoin var. *benzoin* – Smooth Northern Spicebush
Lindera benzoin var. *pubescens* – Hairy Northern Spicebush
Lycopodium digitatum – Running-Cedar
Lycopodium obscurum – Common Ground Pine
Lycopodium tristachyum – Blue Running cedar
Lyonia ligustrina – Maleberry
Lyonia mariana – Staggerbush

Manfreda virginica – Eastern Falsealoe
Morella caroliniensis – Southern Bayberry
Nestronia umbellata - Leechbrush
Opuntia humifusa – Eastern Prickly Pear
Philadelphus inodorus – Mock orange
Phoradendron leucarpum – Oak Mistletoe
Physocarpus opulifolius – Eastern Ninebark
Pyrola americana – Rounded Shinleaf
Rhododendron arborescens - Smooth Azalea
Rhododendron periclymenoides – Pink Azalea
Rhododendron viscosum – Swamp Azalea
Rhus aromatic - Fragrant Sumac
Rhus michauxii – Michaux’s Sumac
Robinia hispida var. *hispida* – Bristly Locust
Robinia nana – Dwarf Bristly Locust
Rosa carolina – Carolina Rose
Rosa palustris – Swamp Rose
Rubus argutus – Saw-tooth Blackberry
Rubus cuneifolius – Sand Blackberry
Rubus flagellaris – Whiplash Dewberry
Rubus hispidus – Bristly Dewberry
Rubus occidentalis – Black Raspberry
Rubus trivalis – Southern Dewberry
Salix caroliniana – Coastal Plain Willow
Salix humilis – Prairie Willow
Salix sericea – Silky Willow
Sambucus canadensis – Common Elderberry
Selaginella apoda – Meadow Spikemoss
Selaginella rupestris – Rock Spikemoss
Symphoricarpos orbiculatus – Coralberry
Toxicodendron pubescens – Atlantic Poison Oak
Vaccinium caesariensis – High-bush Blueberry
Vaccinium crassifolium – Creeping Blueberry
Vaccinium elliotii – Elliott’s Blueberry
Vaccinium formosum Southern Highbush Blueberry
Vaccinium fuscatum – Black Highbush Blueberry
Vaccinium x marianum (*formosum* x *fuscatum*) – Southern x Black Highbush Blueberry
Vaccinium pallidum – Early Lowbush Blueberry
Viburnum stamineum – Deerberry
Vaccinium tenellum – Small Black Blueberry
Viburnum acerifolium – Mapleleaf Viburnum
Viburnum dentatum – Southern Arrowwood
Viburnum rafinesquianum – Downy Arrowwood
Viburnum recognitum – Smooth Arrowwood
Zanthorhiza simplicissima - Yellowroot
Yucca filamentosa – Adam’s Needle, Bear-Grass

Native Vines:

Bignonia capreolata – Crossvine
Campsis radicans – Trumpet Creeper
Clematis crispa – Swamp Leatherflower
Clematis viorna – N. Leatherflower
Clematis virginiana – Virgin's bower
Gelsemium sempervirens – Carolina Yellow Jessamine
Lonicera sempervirens – Trumpet Honeysuckle
Menispermum canadense – Common Moonseed
Michella repens – Partridgeberry
Parthenocissus quinquefolia – Virginia Creeper
Smilax bona-nox – Saw Greenbrier, Catbrier
Smilax glauca – Whiteleaf Greenbrier
Smilax hispida – Bristly Greenbrier
Smilax laurifolia – Laurel Greenbrier
Smilax rotundifolia – Common Greenbrier
Smilax walteri – Coral Greenbrier
Thysanthera diffusa – Climbing Dogbane
Toxicodendron radicans – Eastern Poison Ivy
Vitis aestivalis var. aestivalis – Summer Grape
Vitis cinerea var. rotundifolia – Possum Grape
Vitis labrusca – Fox Grape
Vitis rotundifolia – Muscadine Grape, Scuppernon
Vitis vulpina – Frost Grape
Wisteria frutescens – American Wisteria

Appendix E

Invasive Plant List

Trees:

Acer plantanoides – Norway Maple
Ailanthus altissima – Tree of Heaven
Albizia julibrissin – Mimosa
Paulownia tomentosa – Princess Tree
Pyrus calleryana – Bradford Pear
Broussonetia papyrifera – Paper Mulberry
Melia azedarach - Chinaberry
Morus Alba – White Mulberry
Quercus acutissima – Sawtooth Oak
Triadica sebifera – Chinese Tallow Tree

Shrubs:

Bambusa spp – Exotic Bamboo
Berberis (Mahonia) bealei - Leatherleaf Mahonia
Berberis thunbergii - Japanese Barberry
Elaeagnus angustifolia - Russian Olive
Elaeagnus pungens -Thorny Olive
Elaeagnus umbellata - Autumn Olive
Euonymus alata - Burning Bush
Ligustrum japonicum - Japanese Privet
Ligustrum sinense - Chinese Privet
Lonicera fragrantissima - Fragrant Honeysuckle
Lonicera maackii - Bush Honeysuckle
Lonicera morrowii – Marrow’s Honeysuckle
Lonicera standishii – Standish’s Honeysuckle
Lonicera x bella (Lonicera tatarica x morrowii) – Pretty Honeysuckle
Lonicera tatarica – Tartarian Honeysuckle
Nandina domestica - Heavenly Bamboo
Poncirus trifoliata - Trifoliate Orange
Phyllostachys spp. – Exotic Bamboo
Pseudosasa japonica – Arrow Bamboo
Rhamnus cathartica – Common Buckthorn
Rhodotypos scandens – Jetbead
Rosa multiflora - Multiflora Rose
Rubus phoenicolasius – Wineberry
Spiraea japonica – Japanese Spiraea
Tamarix ramosissima - Salt Cedar
Vitis rotundifolia – Roundleaf Chaste tree

Vines:

Akebia quinata – Chocolate vine

Ampelopsis glandulosa (*Ampelopsis brevipedunculata*) – Porcelain berry

Cardiospermum haliacacabum – Balloon Vine, Heartseed

Causonis japonica – Sorrel Vine

Celastrus orbiculatus – Oriental Bittersweet

Clematis terniflora – Sweet Autumn Clematis

Dioscorea polystachya – Chinese Yam Vine

Euonymus fortunei - Wintercreeper

Hedera helix – English Ivy

Lonicera japonica - Japanese Honeysuckle

Persicaria perfoliata - Mile-a-minute Vine

Pueraria montana var. *lobata* – Kudzu

Wisteria sinensis – Chinese Wisteria

Wisteria floribunda – Japanese Wisteria

Appendix F

Grand Trees of Chatham Award Categories

Trees may be nominated in the following four categories

- Champion Trees: Trees are nominated and selected for this category based on their large size (which usually also means old age) for that particular species. This might be a 7-foot diameter, 100-foot tall oak but could also be a thirty-foot tall dogwood. Using the measurement and point system established for state and national champion trees, a nominated tree's point total must equal or exceed 75% of the current state champion tree's total. Point total is calculated by an equation using tree circumference, height, and crown spread. (Point totals for NC Champion Trees by species can be found at: https://www.ncforestservice.gov/urban/nc_champion_big_trees_database_search.asp)
- Historic Trees: Nominees must be at least 50 years old to qualify. The trees must be specifically associated with a significant historical event or location (appropriate documentation is required).
- Landmark Trees: Emphasis is on natural groupings or communities of trees rather than individual trees. The White Pine trees at Triangle Land Conservancy's White Pines Nature Preserve exemplify this category.
- Meritorious Trees: Category accommodates special trees in a variety of situations. The board has a broad range of flexibility in presenting awards in this category. Trees in this category could be future Champion Trees, commemorative trees associated with a particular event or trees of special significance to community members.

How a Tree Is Measured

Three measurements are taken: (1) Trunk Circumference (measured in inches), (2) Vertical Tree Height (measured to the nearest foot), and (3) Average Crown Spread (measured to the nearest foot).

How a Champion Tree is Determined

- A champion tree is determined using a formula which adds the tree's circumference in inches to the tree's height in feet plus one-quarter (0.25) of the average crown spread. This is the total point value for the tree. *Example*: A tree 144 inches in circumference, 100 feet tall, with an average crown spread of 80 feet: $144 + 100 + [80 / 4] = 264$ total points.
- Since the size of a tree varies with the species, nominees are compared only with others of the same species: white oak against white oak; flowering dogwood against flowering dogwood, etc.
- In Chatham County a tree is awarded Champion status if its total points are at least 75% of the total points earned by the NC State Champion tree of the same species.

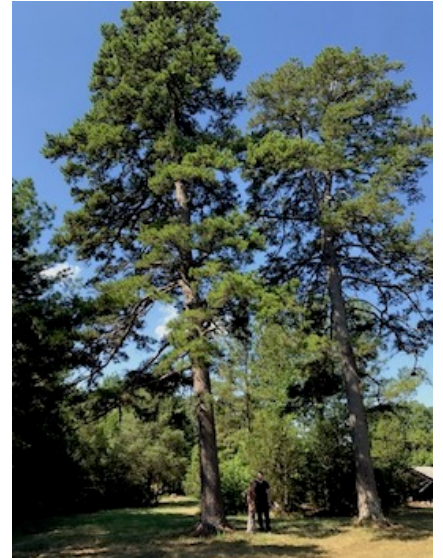
Examples of Grand Trees in Chatham County



State Champion White Oak



State Champion Redbud



County Champion Shortleaf Pines



County Champion Hackberry



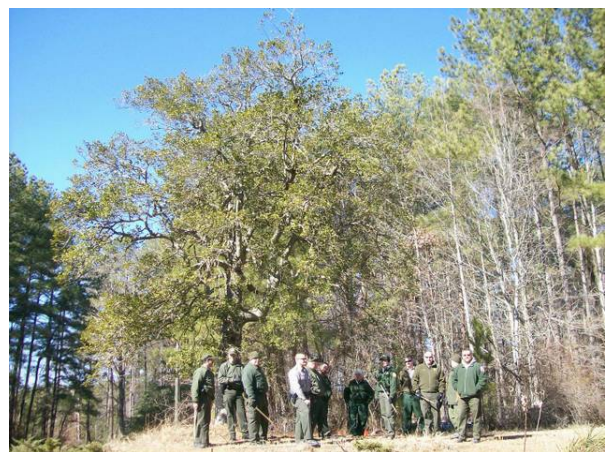
Landmark Group Chestnut Oak



National Champion Blackjack Oak



County Champion Willow Oak



Meritorious American Holly at Ebenezer Church

Appendix G

References and Resources

The following are resources used by the Tree Protection Working Group as we compiled our recommendations for tree protection regulations in the Unified Development Ordinance.

Purposes:

Plan Chatham - Chatham County Comprehensive Plan

<https://www.chathamcountync.gov/home/showpublisheddocument/48133/637209066019700000>

Nicolas Institute for Environmental Policy and NC Forest Service Guide to Local Tree Ordinance Creation

<http://www.ncforestservice.gov/urban/pdf/treeprotection.pdf>

Tree Coverage and Replacement:

Town of Chapel Hill NC UDO

https://library.municode.com/nc/chapel_hill/codes/code_of_ordinances?nodeId=CO_APX-ALAU_SMA_ART5DEDEST_5.7TRPR

Orange County NC UDO

<https://orangecountync.gov/DocumentCenter/View/2288/Unified-Development-Ordinance-UDO-PDF>

Durham NC City UDO

<https://durham.municipal.codes/UDO/8.3.1>

Nicolas Institute for Environmental Policy and NC Forest Service Guide to Local Tree Ordinance Creation

<http://www.ncforestservice.gov/urban/pdf/treeprotection.pdf>

Recommended Native Plants:

Trees, Shrubs and Woody Vines by Will Cook

<https://www.carolinanature.com/trees/>

Invasive Plants:

North Carolina Native Plant Society Invasive Plant List

<https://ncwildflower.org/wp-content/uploads/NCNPS-Invasive-Plant-List-20220914.pdf>

Grand Trees Of Chatham:

Guidelines for The Grand Trees of Chatham Recognition Program

<https://www.chathamcountync.gov/home/showpublisheddocument/26312/636162136084830000>