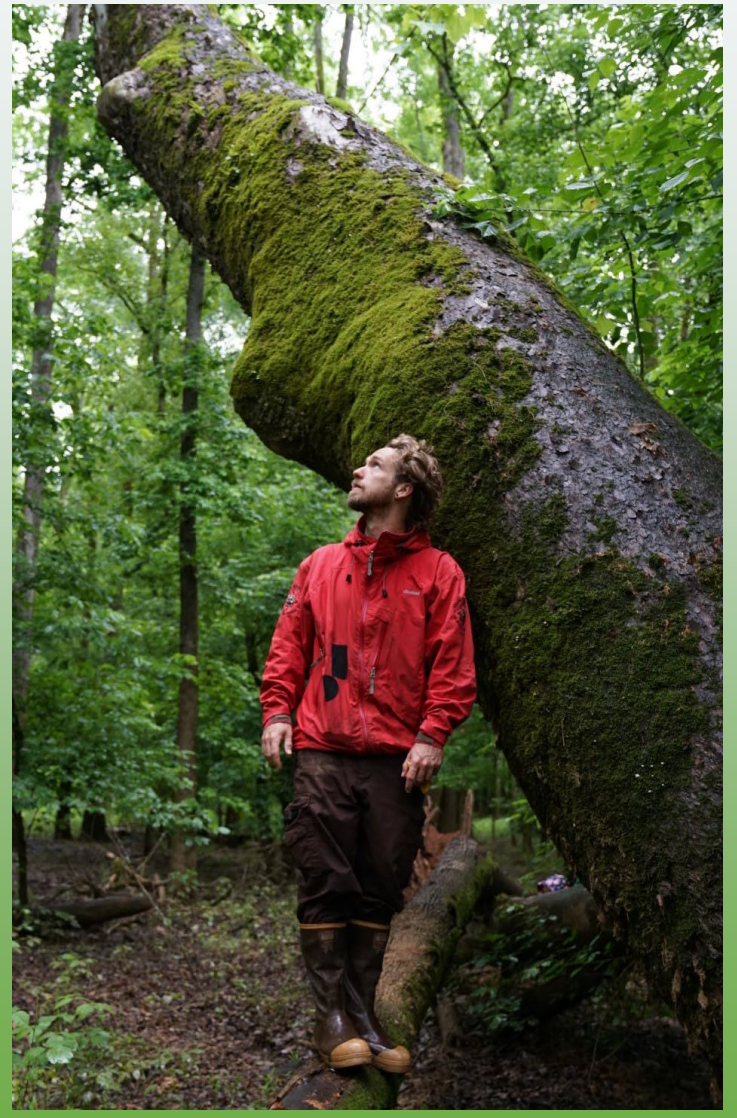
# Managing Aging Canopies



Mateo Fennell
ACC Community Forester
Mateo.Fennell@accgov.com

ISA SO-10340A - TRAQ

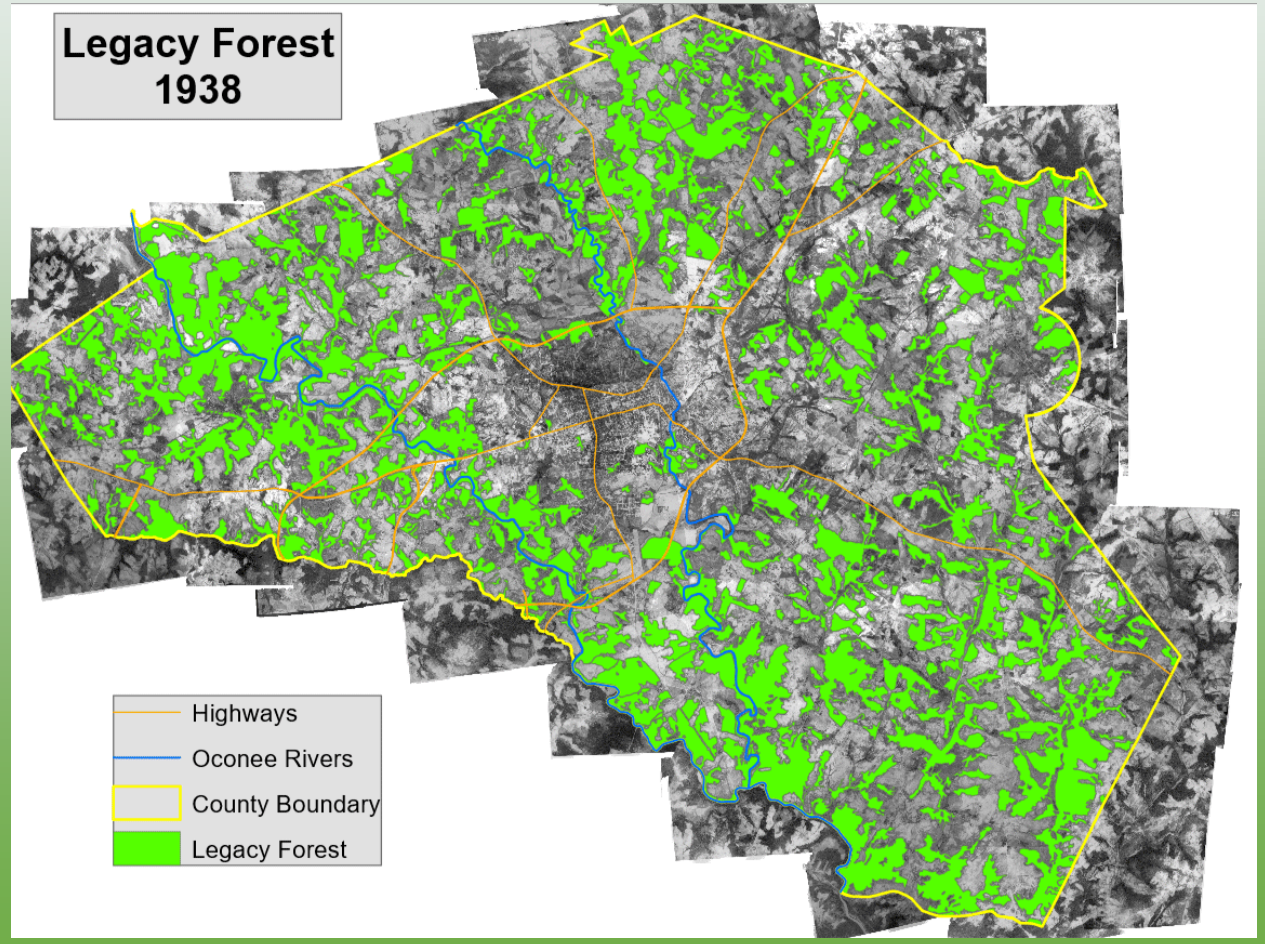
# Athens Clarke County Canopy

ACC Community Tree Study 2021

2021 - 58.2% Canopy Coverage

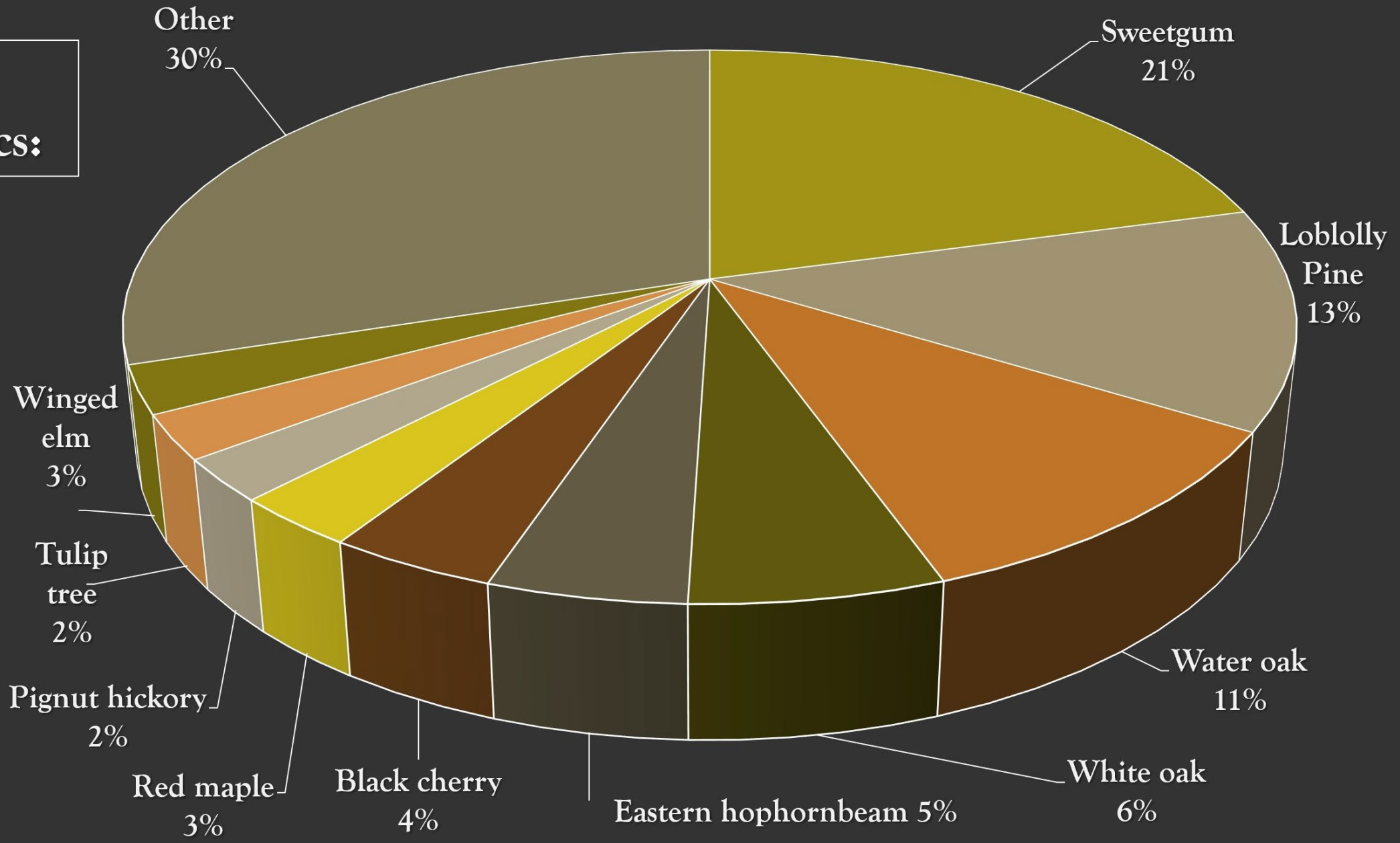
1938 - 32% Canopy Coverage

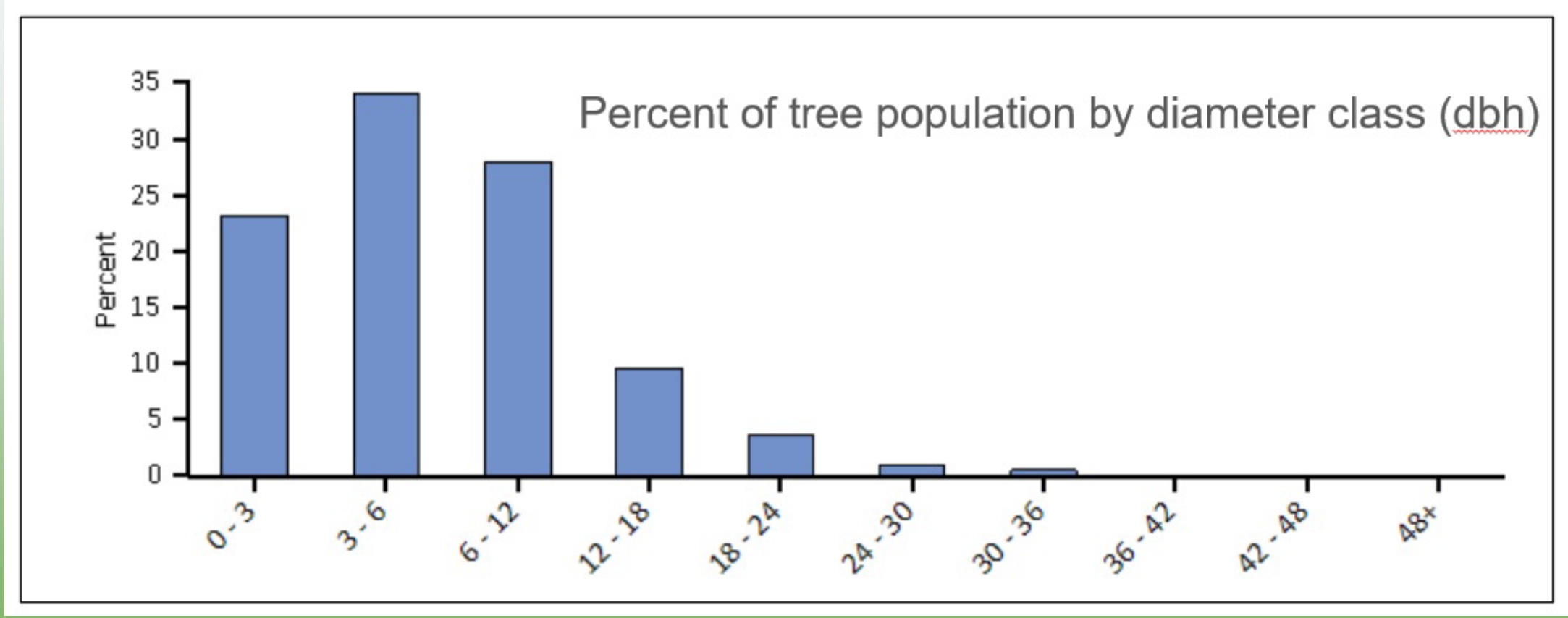
| City, StateOngoi | Existing Canopy | | Canopy Goal | | Population | City Size (Square Miles) |
|---|---|---|---|---|---|---|
| | UTC Cover | Year Assessed | UTC Cover | Target Date | | |
| Athens-Clarke County, GA | 58.2 % | 2021 | 45% | Ongoing | 128,671 | 118 |
| Tallahassee, FL | 55% | 2015 | - | - | 190,894 | 103 |
| Atlanta, GA | 48% | 2008 | Increase | Ongoing | 472,522 | 134 |
| Charlotte, NC | 47% | 2012 | 50% | 2015 | 842,051 | 298 |
| Gainsville, FL | 47% | 2015 | - | - | 131,591 | 63 |
| Pittsburgh, PA | 40% | 2011 | 60% | 20-year plan (2031) | 303,625 | 58 |
| Jacksonville, FL | 38% | 2002 | Increase | Ongoing | 880,619 | 747 |
| Tampa, FL | 32% | 2011 | - | - | 377,165 | 175 |
| Boston, MA | 29% | 2006 | 49% | 2016 | 673,184 | 90 |
| Baltimore, MD | 20% | 2007 | 40% | 2036 | 621,849 | 92 |
| Philadelphia, PA | 20% | 2011 | 30% | 15-year plan (2025) | 1,568,000 | 142 |
| Mimami, FL | 20% | 2016 | 20% | Ongoing | 453,579 | 55 |

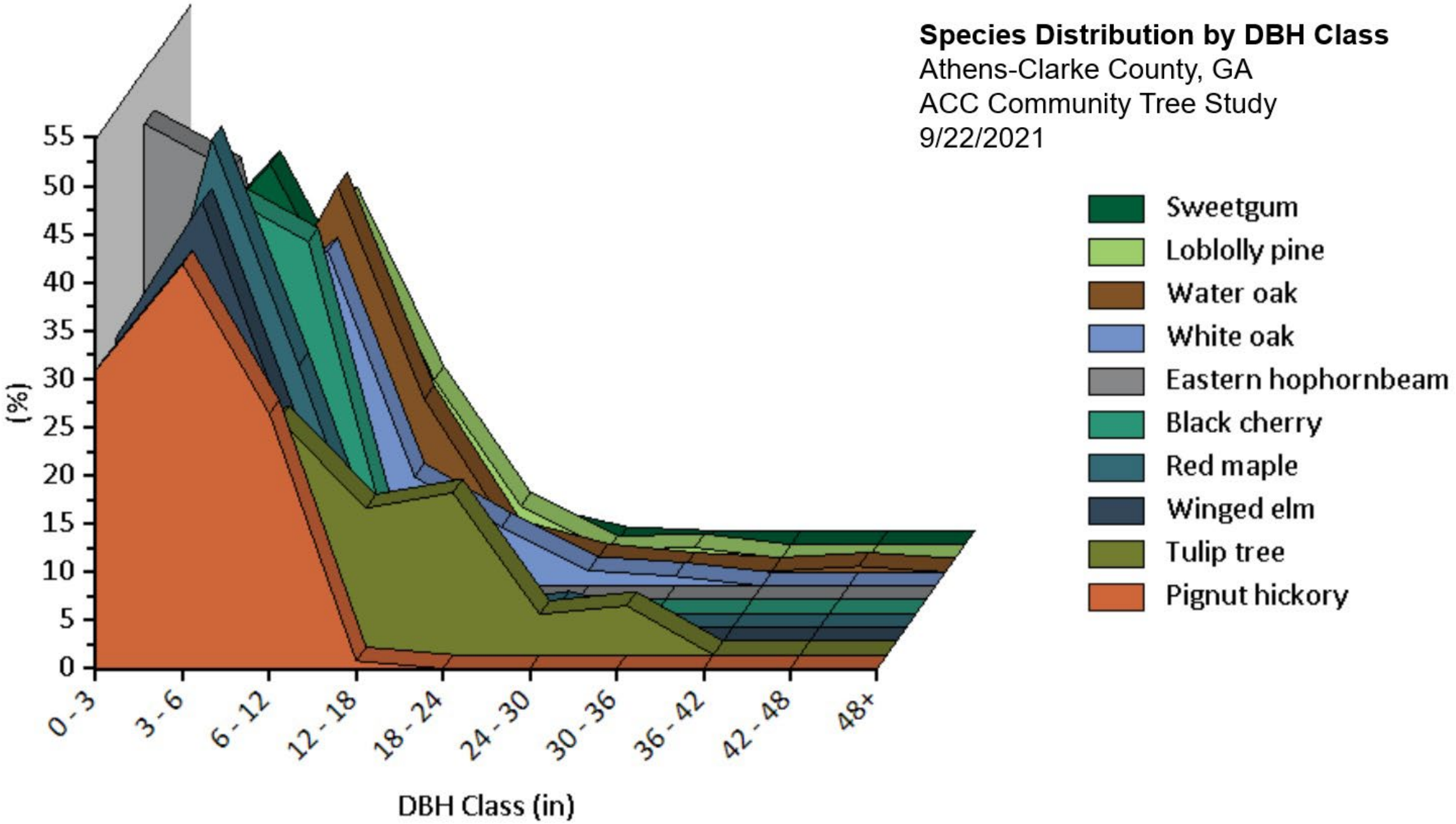


# Species Composition of ACC's Community Trees, 2021

## ACC Tree Characteristics:




Percent of tree population by diameter class (dbh)
Percent
35
30
25
20
15
10
5
0
0 - 3
3 - 6
6 - 12
12 - 18
18 - 24
24 - 30
30 - 36
36 - 42
42 - 48
48+


Species Distribution by DBH Class
Athens-Clarke County, GA
ACC Community Tree Study
9/22/2021
Sweetgum
Loblolly pine
Water oak
White oak
Eastern hophornbeam
Black cherry
Red maple
Winged elm
Tulip tree
Pignut hickory
(%)
55
50
45
40
35
30
25
20
15
10
5
0
0 - 3
3 - 6
6 - 12
12 - 18
18 - 24
24 - 30
30 - 36
36 - 42
42 - 48
48+
DBH Class (in)

ca. 1910

Photo by Rodney Walters Oct. 2021


S Finley St

March 1926

HE RED AND BLACK

# Forestry Students Save "Tree That Owns Itself"

Having breasted many chilling winds, the pelting drizzles of many icey rains and sleets, the joyful rejuvenation of many buxom springs, the sulty breath of many torpid summers, and having suffered all of the vicissitudes of heat and cold and moist and dry for perhaps centuries, that rugged, old patriarch white oak so familiar to many of use—"The Tree That Owns Itself" is slowly succumbing to that insidious decay against which it has so courageously stood its ground for so long.

Acting at the request of a committee of interested citizens, Dr. Andrew M. Soule, president of the Agricultural College, has requested the Division of Forestry to investigate the condition of the tree and to employ any measures possible to prevent its dying. As a result, Prof. Thos. D. Burleigh, head of the Division of Forestry, has solicited the aid of the students in his division in undertaking to save this historic tree.

### Rot Being Removed

Equipped with chisels, gouges, mauls, pruning saws, ropes, and safety belts, students in the Division of Forestry, under the supervision of L. E. Sawyer, instructor, are utilizing some of their laboratory periods at the tedious task of chipping out, as nearly as possible, all infected and decayed wood from the massive bole of the tree, and in sawing off dead and infected branches. A cavity extending almost one-third around the circumference of the trunk has already been chipped out from two to three inches deep. Indications are that there are yet further ramifications of the fungi causing the decay.

The work is both toilsome and dangerous, especially the work in "the air" in removing the huge, heavy limbs. One water line, running near the surface of the ground, was burst by a falling limb during the operations Monday afternoon. The scar remaining wherever a limb is severed is painted with creosote to prevent the entrance of fungi.

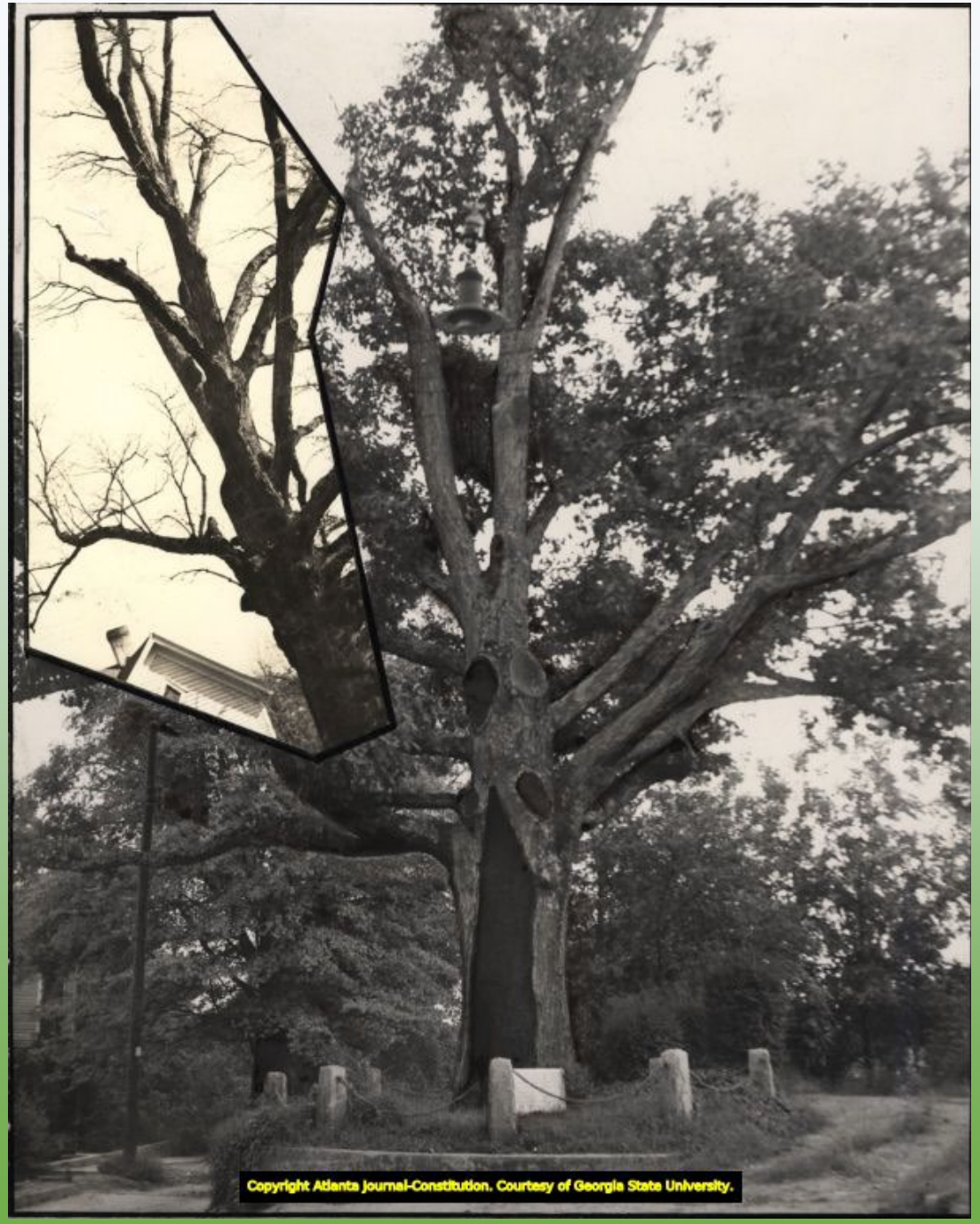
It is the opinion of the forestry faculty that the vitality of the tree is greatly impeded by a lack of sufficient moisture in the proximity of the tree's root system to satisfy adequately the tree's ponderous thirst. It is understood the City of Athens is contemplating building a stone wall around the base of the tree and filling the same in with earth in order to make available more moisture.

### Cement Being Installed

After the removal of all infected wood possible, the cavity, or cavities, will be filled in with cement. In doing this, precaution will be exercised to prevent the possible seeping-in of rain water running down the trunk. The entrance of water behind the cement filling, would, due to its contact with the bare wood, make conditions favorable for renewed infections.

Due to the tree's advanced age and its extensive infection, coupled with its crowded location and consequent insufficient water supply, it is doubtful if the tree's life can be prolonged but a few years at the greatest. The forestry students are laboring hopefully, however, at the discouraging task of eliminating, or at least stalling, the activity of the tissue-destroying fungi, which seem to have the tree in a death strangle.

Photo taken sometime in the 1930's.


Copyright Atlanta Journal-Constitution. Courtesy of Georgia State University.

# Tree Work Is Expensive!

High end tree companies aim to get $100-$125 per worker hour.

4 person crew = $3200-$4000 per day of work.

<$2400 per day is a good deal.

# Tree Planting Is Expensive!

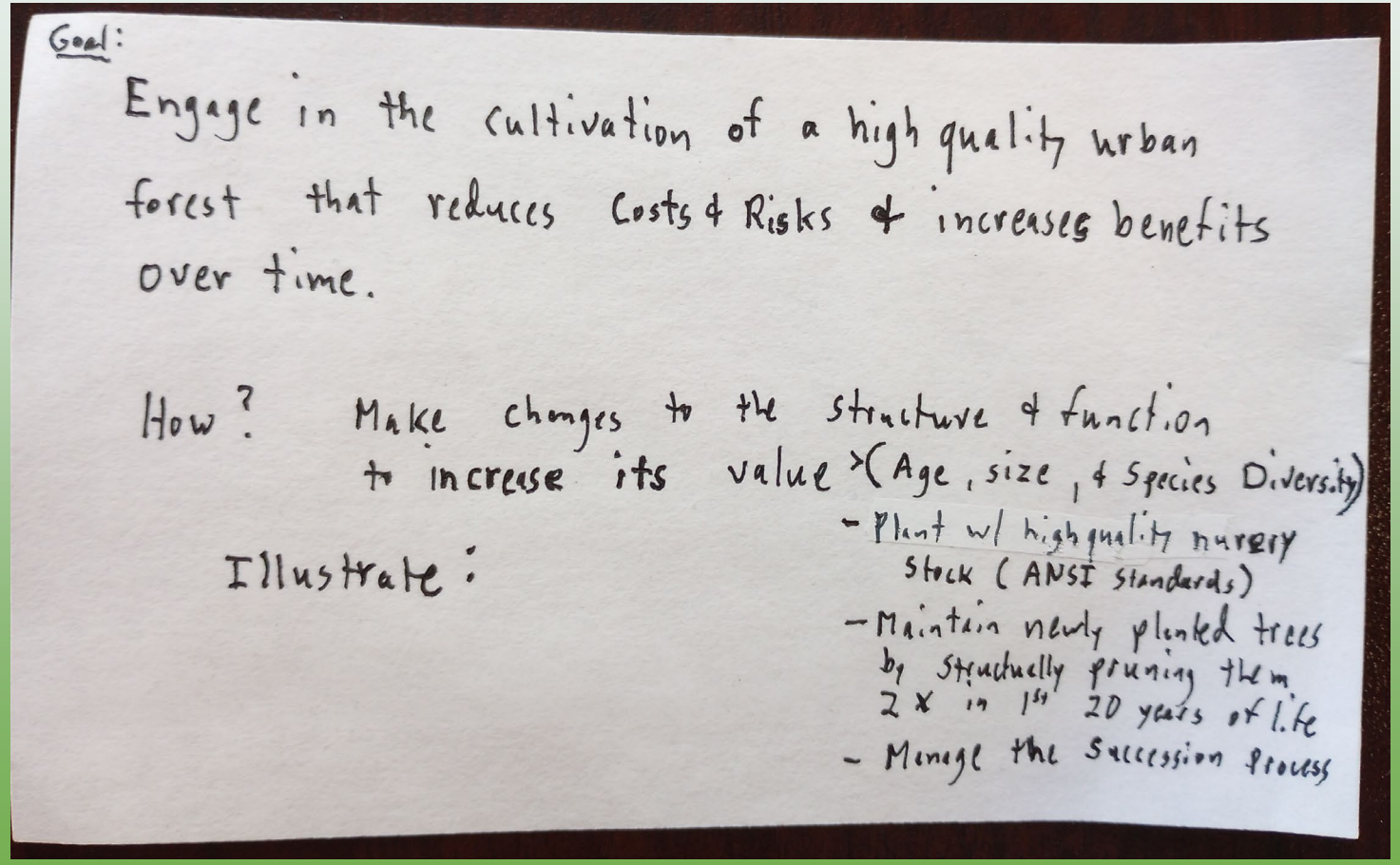
Nursery pricing is $100 per 1” of diameter.

Final planted cost 2”caliper tree- $500

Photo by Dave Harp 2022

# Goal as a municipal arborist:

"Engage in the cultivation of a high quality urban forest that reduces Costs & Risks and increases benefits over time." Rodney Walters



Reduce Costs:

- Plant with high quality nursery stock
- Early structural pruning
- Revisit tree species and planting lists

Goal:
Engage in the cultivation of a high quality urban forest that reduces Costs & Risks & increases benefits over time.

How? Make changes to the structure & function to increase its value (Age, size, & Species Diversity)
- Plant w/ high quality nursery stock (ANSI standards)
- Maintain newly planted trees by structurally pruning them 2x in 1st 20 years of life
- Manage the succession process

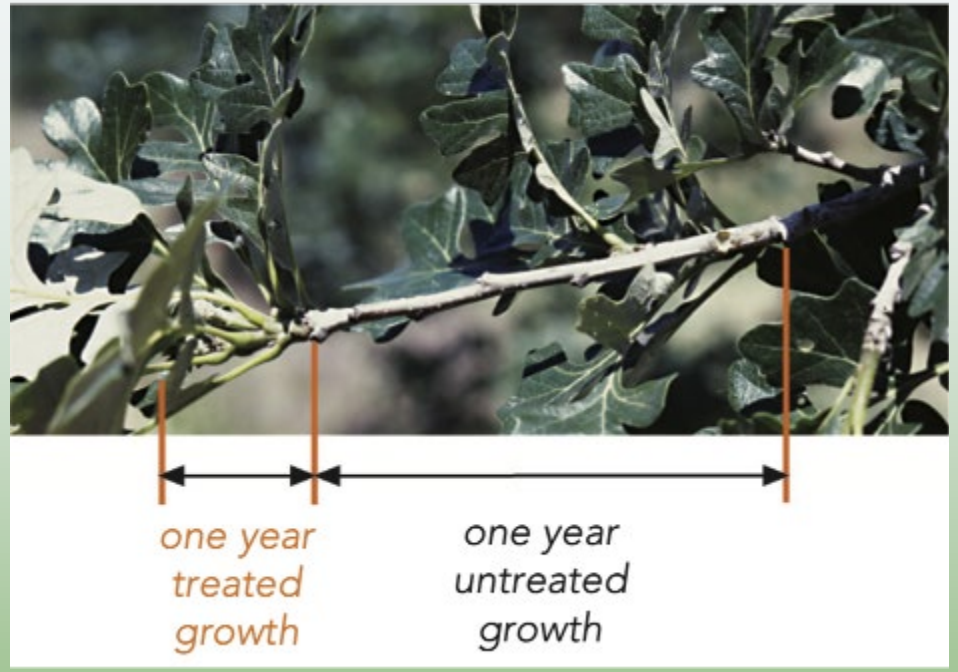
Illustrate:

"Right tree, right place, right time."

Reduce Costs:

Photos Courtesy of www.Rainbowtreecare.com

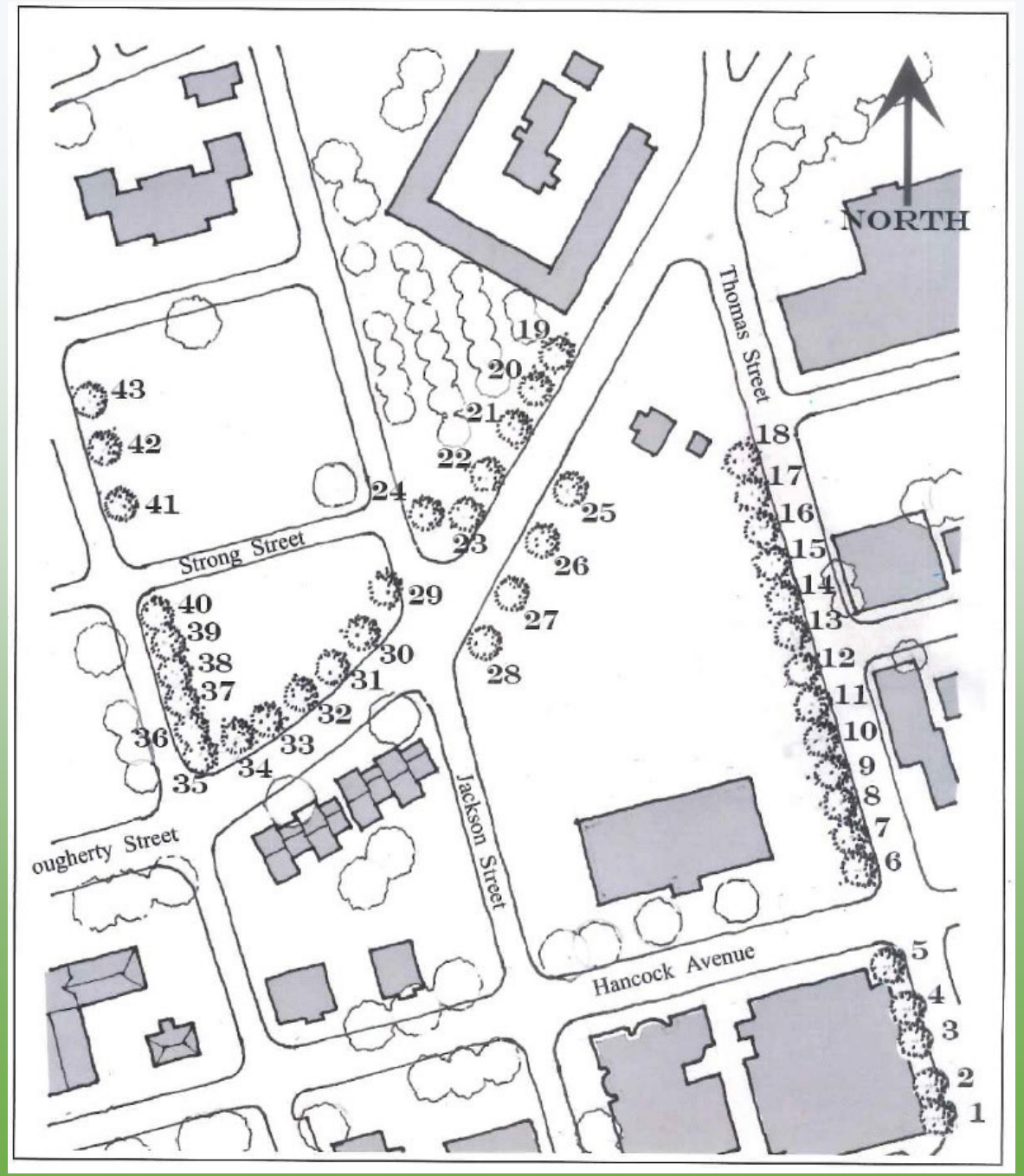
## Cambistat Treated Tree




## Treatment for Trees in Mild Decline


Information and photo's from
Watson, G.W. 1996. Tree Root System Enhancement with Paclobutrazol. J. Arboriculture 22:211-217.

- Do not use Paclobutrazol on Dogwood or Japanese Maple
- Always reduce dosage when large areas of canopy are missing, tree is stressed, or tree canopy is shaded by other neighboring trees.




# Downtown

| Downtown All | | | |
|---|---|---|---|
| Map I.D. | For Last | First | From |
| 25 | All Children | | Anonymous |
| 33 | All Children | | Junior Woman's Club |
| 6 | Allen | Benjamin Heyward | Lucy and Howell C. Erwin |
| 7 | Allen | Corinne Chadwick | Lucy and Howell C. Erwin |
| 9 | Allen | Lucy Banner | Lucy and Howell C. Erwin |
| 29 | Allen | Patrick Edward | M/M James Cooley |
| 2 | Belger | William Nathaniel | Emily Green |
| 13 | Berdanier | Robert Dawson | Fredrick A. Dawson |
| 28 | Blount | Christopher Austin | Nancy Blount Smith |
| 27 | Blount | Michael Andrew | Nancy Blount Smith |
| 32 | Burnett | Sarah Elizabeth | M/M Joseph Burnett, Jr. |
| 3 | Chasman | Rebecca and Jeffery D. | Rhetta and Robert P. Grey |
| 38 | Cooley | Susan Catherine | M/M James Cooley |
| 5 | Dicks | Alec and Claude | Claude and Charlotte Williams |
| 11 | Ditman | Jeffery Stuart | Jayne Dittman |
| 14 | Dure | Beau | M/M Leon S. Dure III |
| 16 | Epting | Ashely Cameron | B. Fargason Epting |
| 15 | Epting | Daniel Fargason | B. Fargason Epting |
| 17 | Galland | Maxwell, Bradford, and Phelps | M/M M. O. Phelps |
| 10 | Gay | Kimberly Creed | Alice Felts Gay |
| 21 | Hodgson | McCullough | M/M Paul Hodgson |
| 31 | Ingram | Allison Elizabeth | M/M James Cooley |
| 30 | Ingram | Dawson Franklin | M/M James Cooley |
| 22 | Junior Misses Garden Club | | Junior Ladies Garden Club |
| 26 | Karwoski | Leslie | Ruth J. Carpenter |
| 12 | Landis | Annabelle | Jayne Dittman |
| 34 | Lay | Carlton Russell | M/M Carlton N. Mell |
| 20 | Leathers | Sara Pharr | L. Milton Leathers |
| 1 | Nicholls | Peter J. | Robert P. Nicholls |
| 4 | Pesnell | Paul and Patrick | Terri Pesnell |
| 36 | Pittman | Katherine Leigh | Robert and Jewel John |
| 37 | Pool | Diana Jonelle | Kenneth W. Pool |
| 19 | Rice | John Lamar | Mrs. John Q. West |
| 8 | Thompson | Jessica Barbara | Lucy and Howell C. Erwin |
| 35 | Tillman | Joseph Espy | Anne Fowler |
| 24 | Whitworth | Grant | M/M Gerry Whitworth |
| 23 | Whitworth | Jason | M/M Gerry Whitworth |
| 18 | Wilkins | Johnny and Ellen Fraser | M/M John Wilkins, Jr. |

A “tree baby” and her tree at the 1991 reunion.

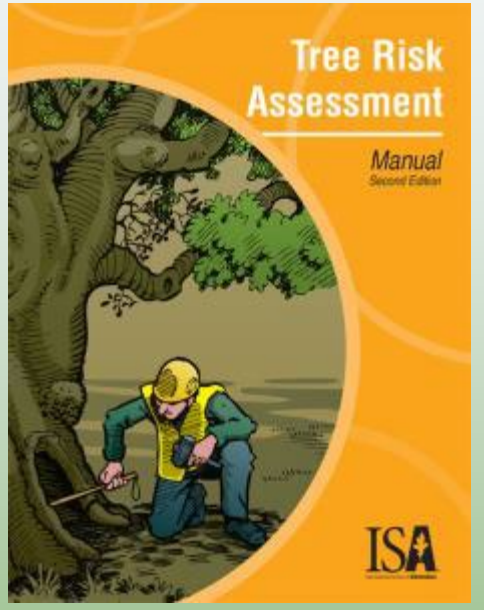
Willow Oak @ 24” DBH- Paclobutrazol Materials Cost- roughly $33 plus labor cost. - Range $16.50 to $44
-10 trees=240” of DBH

**In house- $330 plus labor**
**PHC Subcontractor- $1000**
**Tree company- >$2400**

How To Reduce Risk: “Tree Risk Assessment is the systematic process used to identify, analyze, and evaluate tree risk.”

Tree Risk Assessment Manual p.3

“A penny saved is a penny earned.”




ISA QUALIFICATIONS TREE RISK ASSESSMENT

“There is a dead tree on my road, it needs to be removed.”

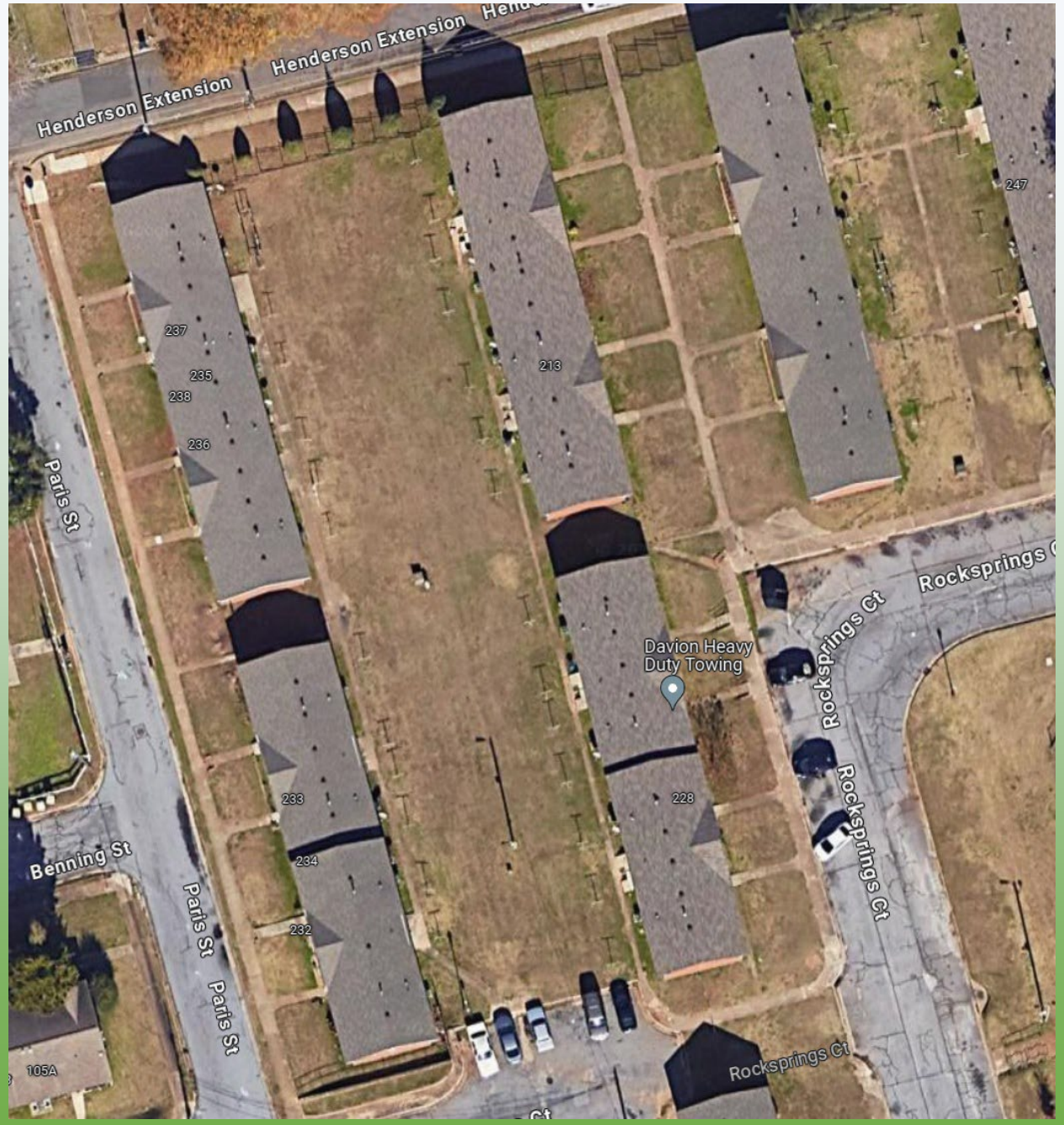
“This tree started leaning recently, y’all need to get rid of it.”

“The tree is within falling distance of my home, it needs to go.”

How To Reduce Risk:

How To Reduce Risk:


Paris St


Henderson Extension
Henderson Extension
Hende
247
213
237
235
238
236
Paris St
Rocksprings Ct
Rocksprings
Davion Heavy
Duty Towing
233
228
234
Benning St
Paris St
Paris St
232
Rocksprings Ct
105A


PRIVATE
PROPERTY
NO TRESPASSING


2008 Google Street view


2012 Google Street view


2013 Google Street view


2017 Google Street view


2022 Google Street view

Retrench- to reduce or diminish in extent, to live at less expense, to cut off, or to reinforce.

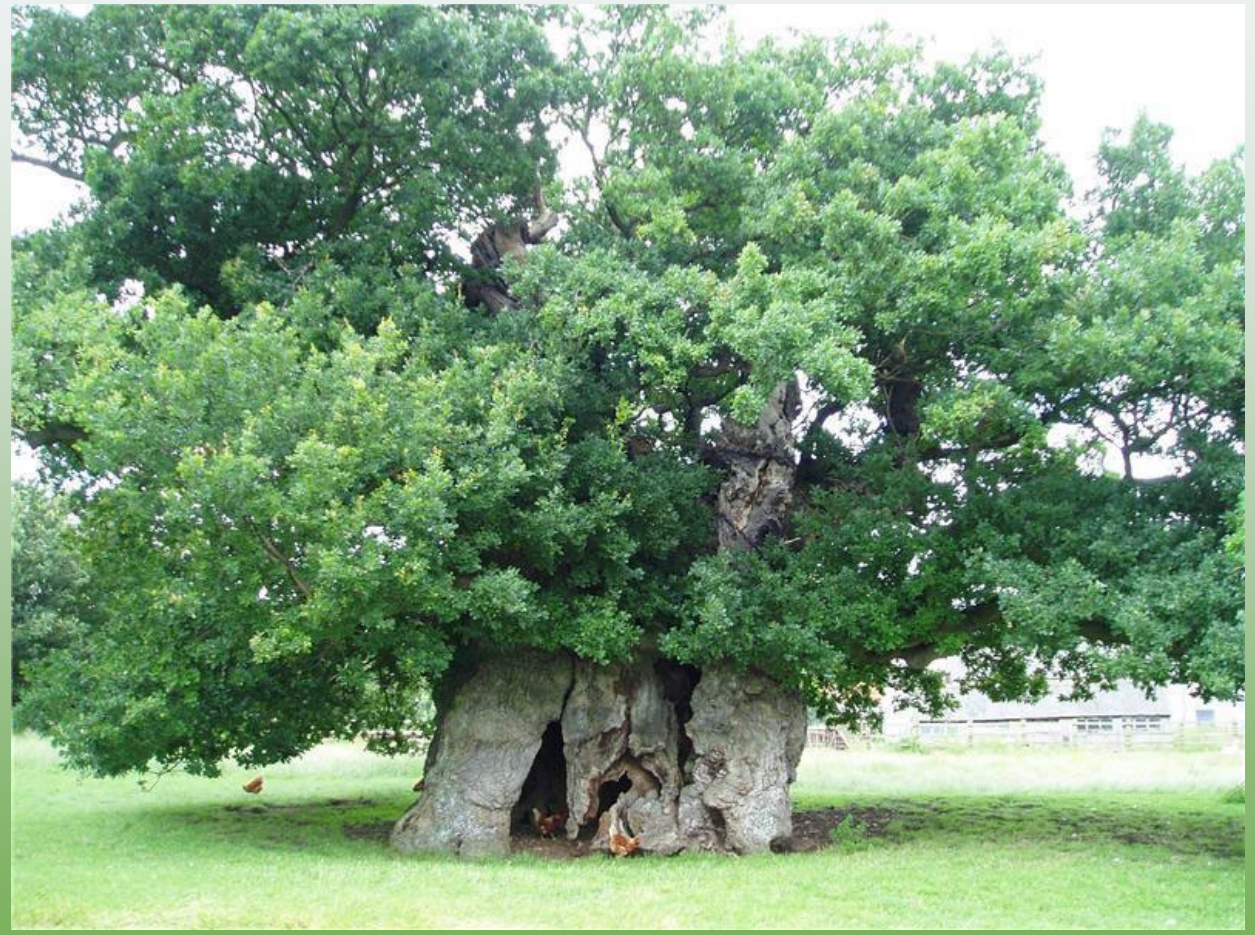


Photo by Woodland Trust Ancient Tree Inventory

British Standard: “Retrenchment pruning is a phased form of crown reduction, which is intended to emulate the natural process whereby the crown of a declining tree retains its overall biomechanical integrity by becoming smaller through the progressive shedding of small branches and the development of the lower crown.”

# The Arthur Hugh Clough Oak's Upper Crown Descent

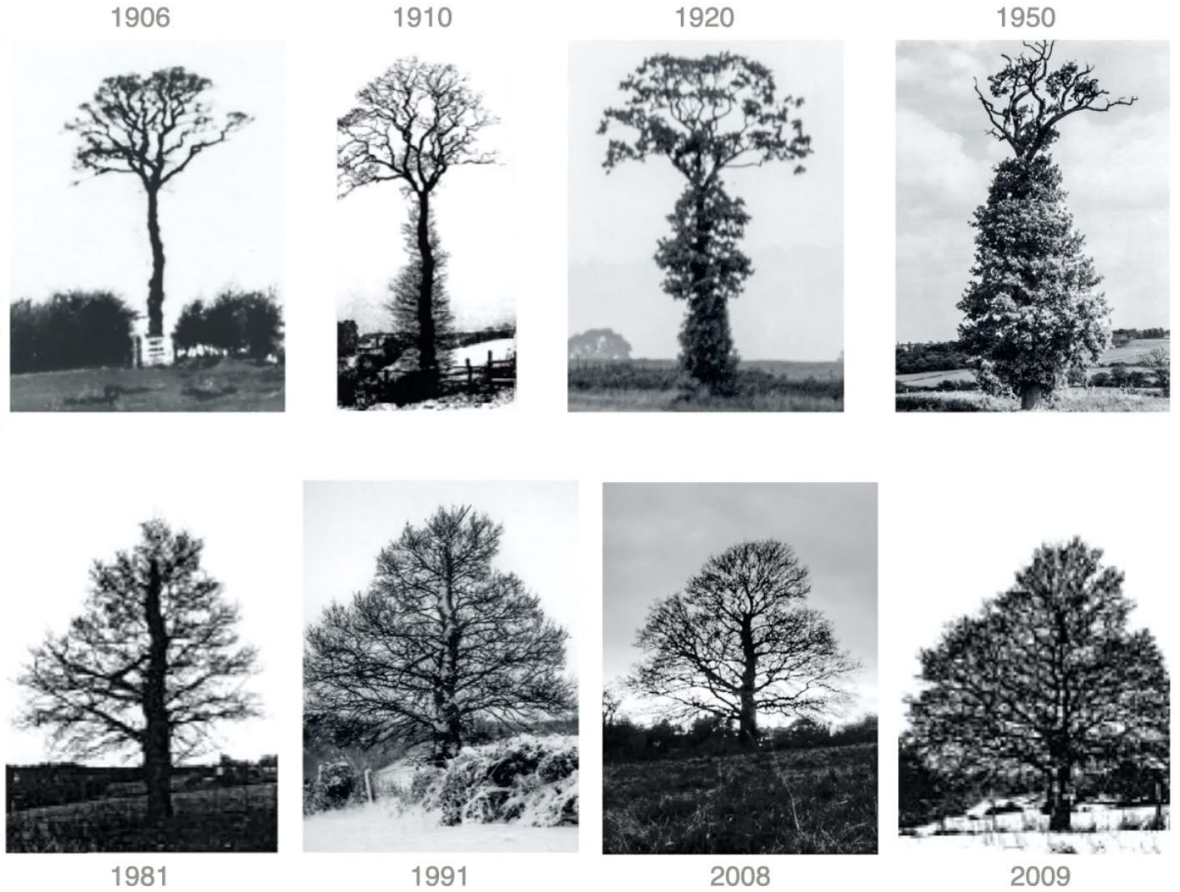
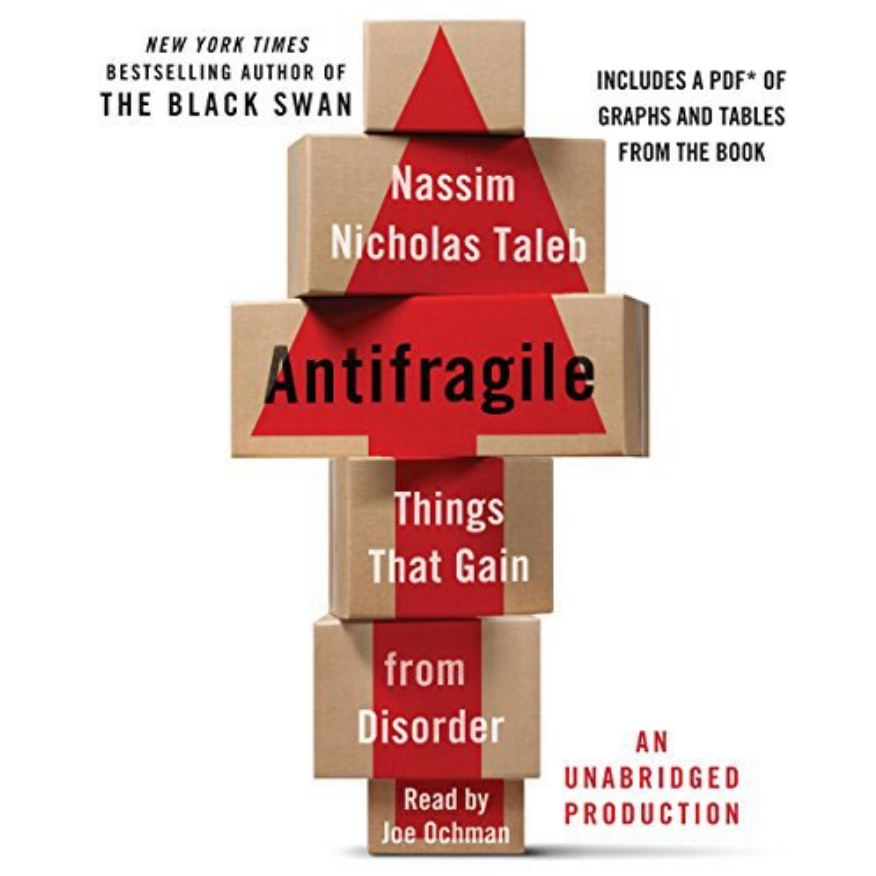
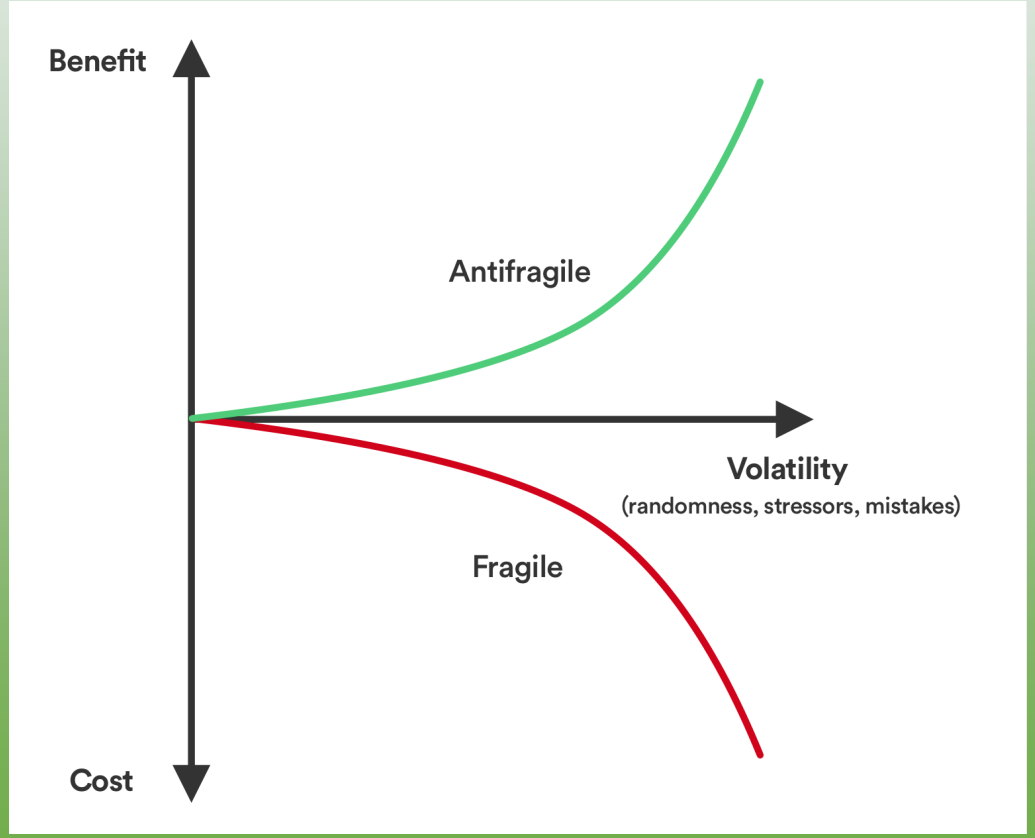



Photo source: Philip J. Stewart in Fay, 2011, Sajdak, 2019 and Drénou, 2021.

Low resolution time-lapse photography with different camera positions above and approximate camera positions below




"Antifragility is defined as a convex response to a stressor or source of harm, leading to a positive sensitivity to increased volatility. Likewise, fragility is defined as a concave sensitivity to stressors, leading to a negative sensitivity to increased volatility."




Sycamore, Yellow Poplar, Basswood, Ginkgo, and Sweetgum can be considered "Antifragile" and they are all perfect retrenchment candidates.

Reduce Cost, Reduce Risk, Maximize Benefits

1. Retain trees and mitigate risk when appropriate
   - Crown reduction and cabling

2. PHC and PGRs to increase tree health and longevity

3. Consider planting easily retrenched (antifragile) trees


Mateo Fennell
ACC Community Forester
Mateo.Fennell@accgov.com
706-521-1360