

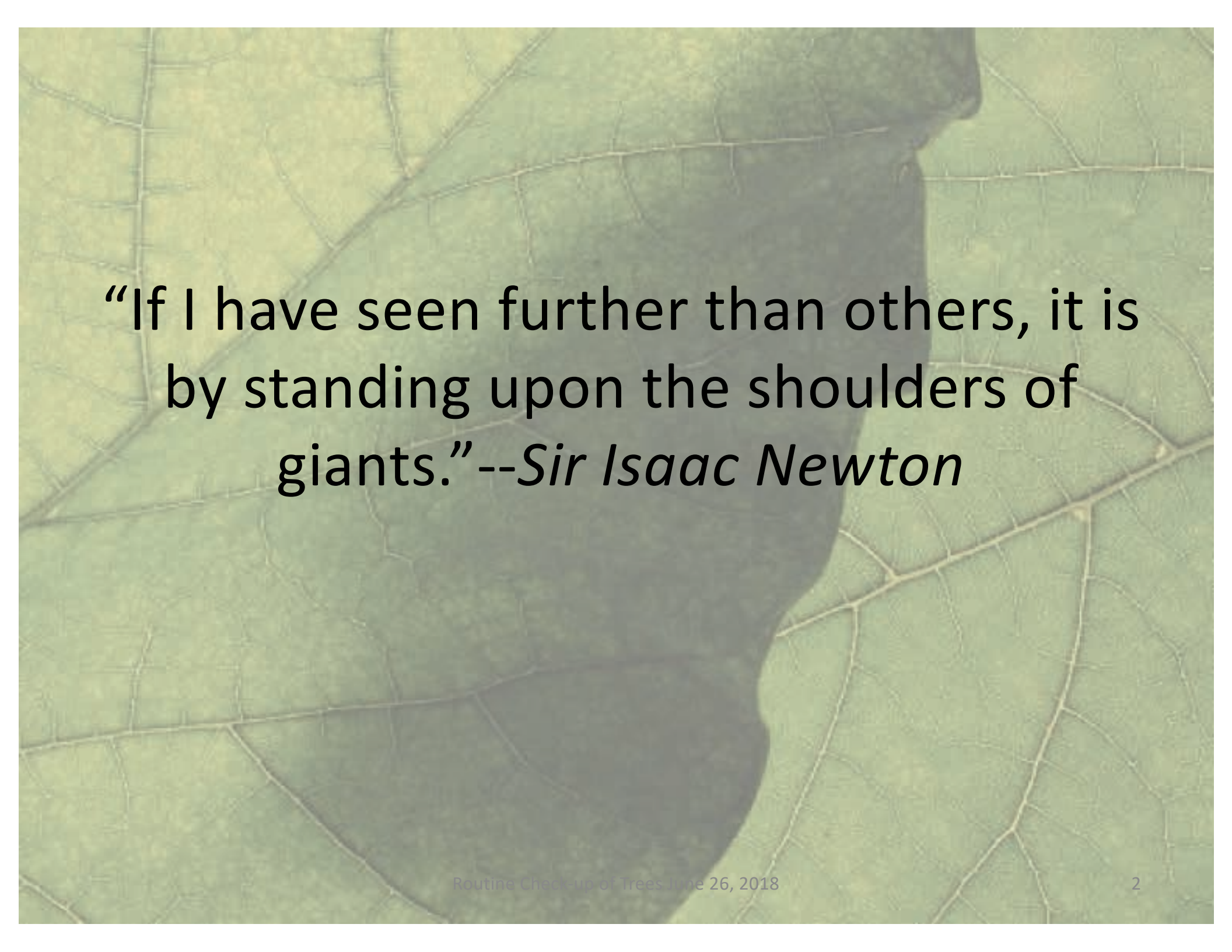
Have you Checked your Trees Lately? A Routine Check-up of Trees Saves Lives & Property

Robert F. Polomski, Ph.D. 

Clemson University

June 26, 2018

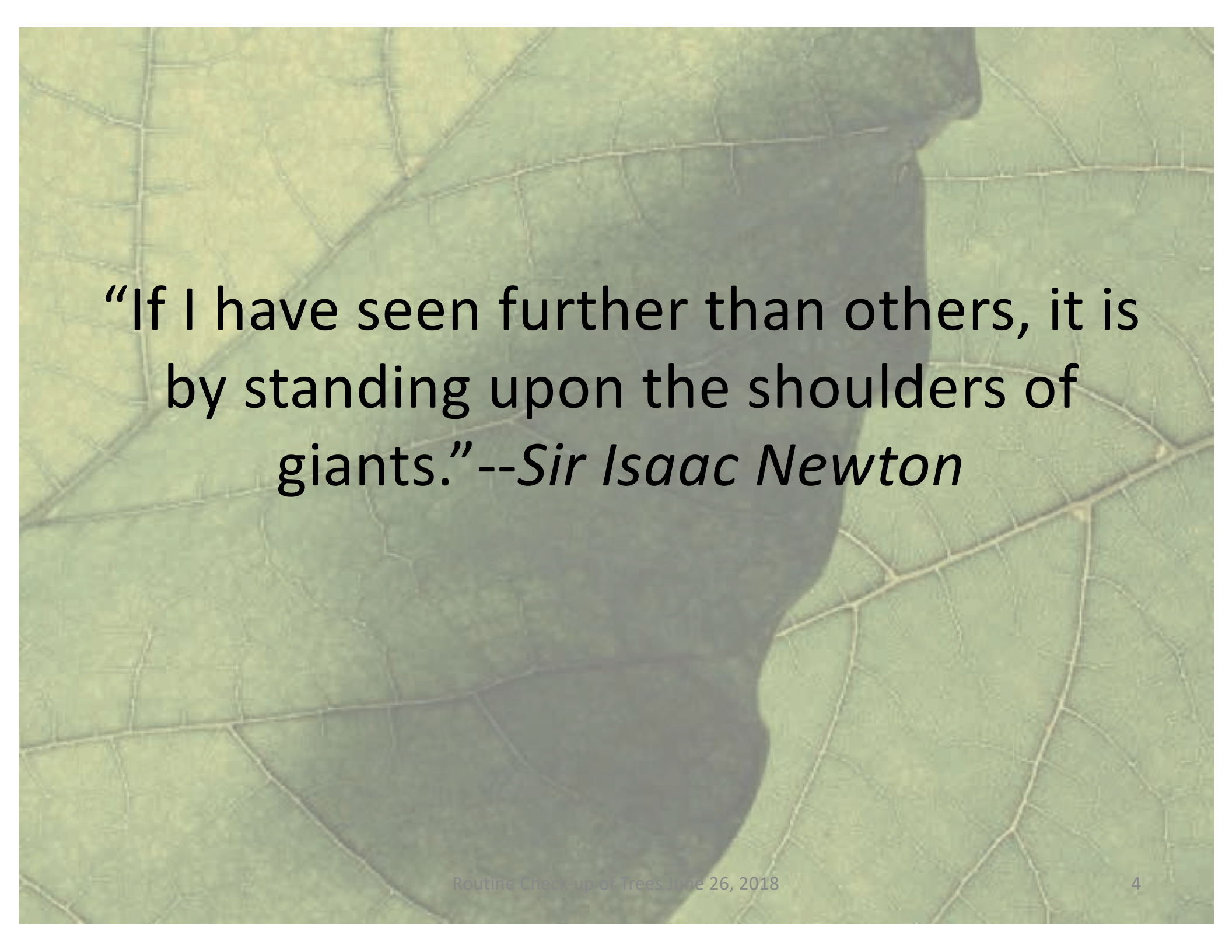
CLEMSON
EXTENSION



“If I have seen further than others, it is
by standing upon the shoulders of
giants.” --*Sir Isaac Newton*



Dedication:
Dr. Bonnie Lee Appleton
(1948-2012)
Mentor, Professor, and
Virginia Cooperative
Extension Horticulture
Specialist



“If I have seen further than others, it is
by standing upon the shoulders of
giants.” --*Sir Isaac Newton*

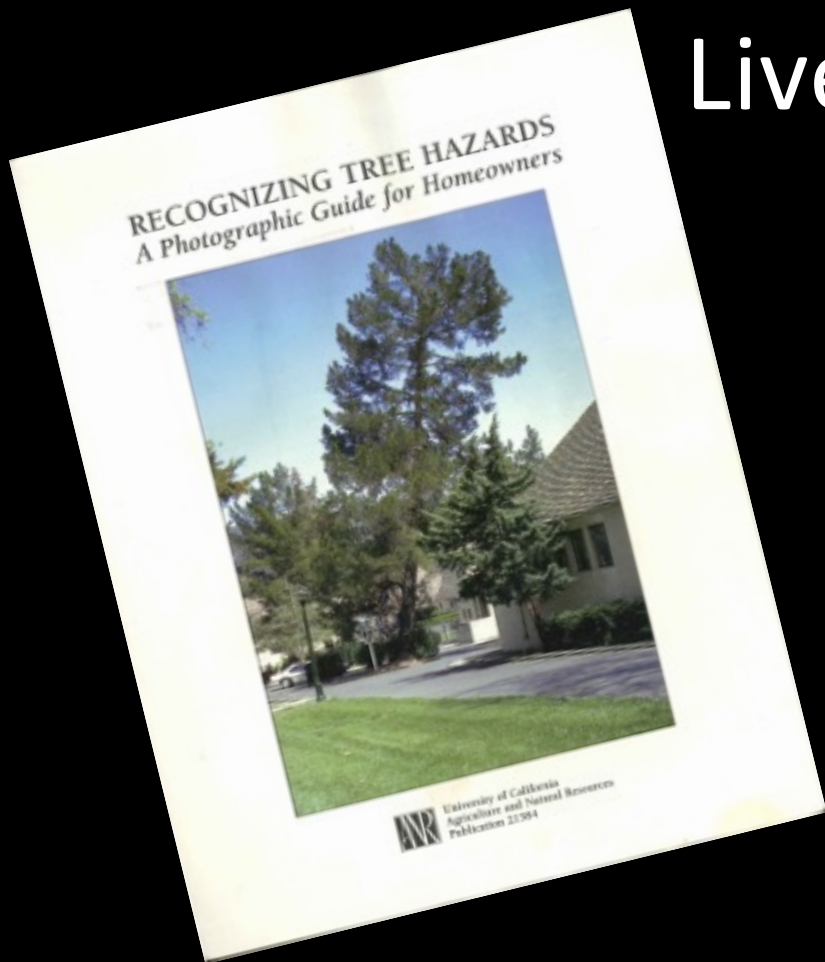
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Have you Checked your Trees Lately?
A Routine Check-up of Trees Saves
Lives & Property

Why?

Have you Checked your Trees Lately? A Routine Check-up of Trees Saves Lives & Property



Costello, L. R., B. Hagen, K. S., Jones. 1999.
Univ. of Calif. Pub. 21584.



Polomski, B. 2014. *Carolina Gardener*, Nov-Dec., p. 22-24.

Presentation Objectives

- ✓ Raise tree owner awareness regarding duty of care: establishment → maintenance → removal.
- ✓ Teach tree owners observational skills re: above- and below-ground structural integrity.

Presentation Outline

- Address conflict: trees as liabilities vs. assets
- Discuss responsibilities of tree owner (a.k.a. consumers)
- Review “mortality spiral”
- Illustrate “7 point tree checkup list” for tree owners
 - Know when to consult a certified arborist for advice or mitigation.

Storms bypass area



A massive tree rests on its side over the sidewalk at 204 Park Ave. on Thursday downtown Greenville. The tree also hit the house.

Greenville native killed by falling tree

Poplar crashes through roof of Clemson grad's Georgia home

By Patricia Newman
STAFF WRITER
newman@greenvilleonline.com

A day after Greenville native Ed Timmons was killed when a poplar tree fell through the roof of his home in Georgia, his former teachers at Lenoir High School recalled him as a good student who worked hard and went on to get an engineering degree from Clemson.

"What a tragedy," said Brenda Leach, Timmons' former math teacher at Lenoir. "I taught him for years and years. He was so smart and didn't mind getting involved in doing things around the school."

On Monday, his life was again threatened when a large tree fell through the roof of his home.

His wife, Brenda, also a Greenville native, had decided to sleep in the basement with their two children, who were frightened by the noise, said Deputy Fire Chief Jerry Malone, with the Decatur Fire Department.



Fatal fall: Greenville High graduate Ed Timmons was killed when a poplar tree fell through the roof of his home in Georgia. (Ed, left) by the tree.

Timmons, 36, was known around school as an intelligent, well-organized student who held numerous leadership positions in extracurricular activities.

As part of the student government at Lenoir High School, he helped coordinate the school's annual fundraising events, Wake Through Week. During the week-long event, both schools would compete with each other to see who could raise the most money.

"He did a good job," said Don Lightfoot, a history teacher at Lenoir. "I'd take a lot of work and be

See STORMS on page 10

Trees' weak spots hide potential danger

Inspections can reduce risk of fatal accidents, experts say

By Paul Alongi
STAFF WRITER
palongi@greenvilleonline.com

The Upstate's leafy landscape is under attack from an array of killers that leave trees vulnerable to falling over and shedding limbs, sometimes with tragic results, experts told GreenvilleOnline.com.

A green canopy provides shade in the summer and helps make the region beautiful, but having thousands of pounds of timber towering overhead has also proven deadly. Even trees that appear healthy have come toppling down, sometimes in calm weather.

Falling trees or limbs have killed at least four people in the Upstate in the past five years, while causing power outages and property damage. The tally doesn't include people killed by trees that were being cut.

Ice storms, lightning and wind are often obvious fac-

HAZARD SIGNS

- Squirrel holes
- Mushroom growth
- Dead sticks poking above the treetop



A Tale of Two Storms

In the fall of 2007, two separate storms within a 24-hour period slammed Elgin, S.C., with 70 mph winds. The event

Upstate weather to remain unsettled

By David Dykes
And Paul Alongi
STAFF WRITERS

Upstate residents cast wary glances upward Thursday as dark clouds formed on the horizon and fears rose that another round of potentially violent weather was about to thunder through the area.

The Upstate was spared further damage as severe weather bypassed the region. Today should be mostly sunny, forecasters said, but they added the local weather will remain unsettled. Thunderstorms are possible again Saturday afternoon.

"This is one of the typical (weather) patterns we can see" at this time of year, said Mark Malbick, a meteorologist in the state climate office of the Department of Natural Resources. "It's not unusual to see strings of these kind of storms moving through."

The recent wet weather will

WANT MORE?

See photos from past storms at GreenvilleOnline.com

help ease rainfall concerns, but most of the state still is two to five inches below normal and many areas are flirting with drought conditions, he said.

Showers and thunderstorms also are possible Sunday and Monday, forecasters said.

A string of storms has rocked the Upstate one night after another for more than a week, downing trees and power lines across the region.

In addition, the Jonesville fire chief suffered minor hand injuries when lightning apparently hit a communications tower near the main fire station and traveled inside.

"It wasn't actually a burn. It just made a red place on my hand," Chief Jimmy Wilkins

told GreenvilleOnline.com. "It



In Philadelphia, a curious neighbor braves a post-storm wind to examine a 60-foot black oak that failed in hurricane Irene's wake.

See STORMS on page 3B

calm in July 2007 when an apparently healthy tree

See TREES on page 3A

Bradley Hudson with Schneider Tree Care trims a 90-year-old water oak in Greenville. Experts say trees should be checked periodically, as disease, drought and pests can weaken a tree without anyone noticing.

Routine tree maintenance may prevent threat to life and limb

's' weak spots potential danger

HAZARD SIGNS

- Inspect trees
- Measure crown
- Check decay
- Check for hollow trunks

Regular checkups can root out old branches, weak spots, experts say

By Angelia Davis
STAFF WRITER
adavis@greenvilnews.com

Ann Petrich knows that God was watching over her Tuesday morning as she and her friends were taking a walk around their neighborhood block along Earle Street.

The women were able to run away just as a huge branch of an old oak tree began to break. A moment later, the branch fell onto a power line, broke a pole and a transformer, and landed across the width of the street.

"I have strong faith," she said. "There's no way we would've survived because it was huge. We could've easily been right underneath it."

Arborists say instances such as sudden limb drops or tree failure can happen when heavy rains and high winds cause tree roots to loosen their grip on saturated soil. But the key to prevention, experts say, is routine tree maintenance.

There have been 5.97 inches of rain to date for the month of July, which is 4.35 inches above normal, according to the National Weather Service at the Greenville-Spartanburg International Airport.

In June, the rainfall was 9.99 inches, which is 6.07 inches above normal. The wettest June on record for the metro area is 11.24 inches in 1909.

Liz Gilland, community forestry program coordinator at the City of Greenville Forestry



Near miss: Earle Street neighbors Anne Richbourg, left, and Ann Petrich just missed being hit while out for a walk Tuesday when the branch of an old oak tree, in the foreground, broke it, hit a power line and fell across the street.

CARE GUIDE Get tips online

- Find information on selecting a tree care professional and get tips on planting and protecting trees. For this and more, click on Local News at:

GreenvilleOnline.com

WHO TO CALL ABOUT TREES

- If you're concerned about a tree or limb on a public right of way falling, you can:
- In the city, call the parks/public grounds department at 467-4350
 - In the county, call the public works department at 467-7010

INDICATIONS OF TREE TROUBLE

- Dead wood — wood that is often dry and brittle and cannot bend in the wind.
- Cracks — a deep split through the bark
- Weak branch unions — places where branches are not strongly attached to the tree.
- Decay — an example of advanced decay is wood that is soft, punky, or crumbly, or a cavity where the wood is missing
- Cankers — a localized area on the stem or branch of a tree where the bark is sunken or missing.
- Root problems — Symptoms of root problems include soil mounding, twig dieback, dead wood in the crown, and off-color or smaller than normal leaves
- Hollow trunks — examples are trees that lean

to reduce risk of fatal accidents, experts say



Worker with Schneider Tree Care trims a 50-year-old water oak in Greenville. Experts say to check periodically as disease, drought and pests can weaken a tree without



Richmond, VA Dec. 2011



Routine Check-up of Trees June 26, 2018

Richmond, VA

LIFE & CULTURE | DECEMBER 7, 2011

Year of the Tree: Save It or Chop It?

By ANNE MARIE CHAKER

To chop, or not to chop: Homeowners do mental gymnastics figuring out the financial effects.



Andrew Cebulka for The Wall Street Journal

Bartlett Tree Experts' Brian Hawkins slices through a 60-foot Southern red oak felled in Tony Keinath's Charleston, S.C., yard.

Healthy shade trees are real assets. A mature, shade-producing tree can add as much as \$10,000 to the value of a property, says David Hucker, chairman of the Council of Tree and Landscape Appraisers, in Rockville, Md. The net cooling effect of a young, healthy tree is equal to 10 room-size air-conditioners operating 20 hours a day, according to the U.S. Forest Service.

Even the most majestic tree feels like a ticking time bomb to a homeowner waiting for it to topple.

If your tree falls on a neighbor's home, damages are typically covered by the neighbor's own homeowner policy, says Victor Merullo, a Columbus, Ohio lawyer who specializes in tree disputes.

LIFE & CULTURE | DECEMBER 7, 2011

Year of the Tree: Save It or Chop It?

By ANNE MARIE CHAKER

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SPORTS, 1C
HOW CAN YOU STOP JACKSON?

METRO, 3A
How do colleges rank?

WEDNESDAY, SEPTEMBER 13, 2017
 GREENVILLEONLINE.COM

The Greenville News

USA TODAY FLORIDA STRUGGLES BACK TO ITS FEET PAGE 1B

TROPICAL STORM IRMA



IRMA'S WAKE

Storm leaves four dead in S.C., thousands without power

As the sun peeked through the dense Tuesday morning in Greenville, it revealed the damage left behind after Tropical Storm Irma rumbled through the area Monday and early Tuesday morning.

Debris from trees and bushes littered yards and streets. Some trees and bushes appeared to fall during the storm, which peaked at gusts of wind as high as 50 miles per hour in the Upstate.

The storm left more than 40 roads closed to traffic in parts of the Triad, many of them in the mountainous northern parts of Greenville and Pickens counties. Crews working through the morning Tuesday to remove a giant oak tree that fell across all lanes of traffic on Augusta Street in Greenville.

The 27 roads closed in Greenville County were restricted only to Jasper County, state officials said.

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Irma ruins Edisto Beach's brand-new sand dunes

KIRK BROWN / AMERICAN INDEPENDENT MAIL

Total flooding from Tropical Storm Irma obliterated Edisto Beach's newly created sand dunes Monday, burying the town's main road under up to 3 feet of sand.

Monday marked the second time in the past year that Edisto Beach has been damaged by a tropical weather system.

After the town was razed by Hurricane Matthew last October, a \$17 million beach reconstruction project was completed several months ago. But the beach's new 5-foot dunes vanished Monday as a powerful tide fueled by Irma's storm surge came ashore.

"We are very grateful that Irma was a much nicer person than Matthew. This will be a much easier recovery."

JANE DARY
 jd@edisto.com

See EDISTO, Page 8A

METRO

/ STATE

sought in 2 robberies

BEACH - Police officers in two hotel robberies last night in a Conway vacation spot.

Myrtle Beach police officers in two hotel robberies last night in a Conway vacation spot. Myrtle Beach police officers in two hotel robberies last night in a Conway vacation spot. Myrtle Beach police officers in two hotel robberies last night in a Conway vacation spot.

IRMA'S WRATH



A tree rests on a house on Jones Avenue in Greenville Tuesday following Tropical Storm Irma.

PHOTO BY LAURIE WITKOWSKI



Tripp and Lightsey Welch look at a tree that fell in front of their property on Crescent Avenue in Greenville following the tropical storm. Workers clear a tree and power lines on Crescent Avenue in Greenville Tuesday following Tropical Storm Irma. A man walks by a downed tree and power line on Augusta Street.



Routin

The South Carolina Republican has spoken out on race issues from the Senate floor, speaking about his own mistakes with racial profiling, even while wearing his senatorial pin.



<https://www.greenvilleonline.com/>
Sept. 13, 2017

Routine Check-up of Trees June 26, 2018



<https://www.greenvilleonline.com/>
Sept. 13, 2017

Routine Check-up of Trees June 26, 2018

Metro

Upstate recovering after storms wreaked havoc

Nikie Mayo Greenville News
USA TODAY NETWORK - SOUTH CAROLINA

The Upstate was still recovering Monday from a collection of thunderstorms that barreled through Sunday afternoon, bringing 60 mph winds that toppled trees, downed power lines and capsized a boat on Lake Jocassee.

The storms organized in the North Carolina mountains and then moved quickly toward the Upstate, unleashing the bulk of their strength on Oconee and Pickens counties, according to National Weather Service meteorologist Justin Lane.

"We were hit hardest in areas north of the city of Pickens."

Denise Kwiatek
Pickens County emergency management director

Two people on Lake Jocassee were trying to make it back to the boat landing at Devils Fork State Park ahead of the storm, but the waves were too rough and caused their 18-foot boat to capsize.

David Lucas, a spokesman for the

state Department of Natural Resources, said the people were spotted and rescued by a passerby, and he said no one was injured.

"This is a situation that could have gone much worse," he said. "At one point earlier in the day, they had several more people on that boat. Some of them decided to stay on the bank. If there had been more people on that boat when the waves got rough, we obviously could have been talking about different outcomes today. Everyone was very lucky."

Visitors to Devils Fork were unable to

See STORMS, Page 2AA



2AA | TUESDAY, JUNE 26, 2018 | THE GREENVILLE NEWS

S

Page 1AA

leave for several hours after the storm as downed trees blocked traffic to the only major landing on the lake.

In Pickens County, as of late Monday morning, there were still multiple secondary roads that were blocked by downed trees. In northern Pickens County, many traffic lights were still not working, said Denise Kwiatek, the county's emergency management director.

"We were hit hardest in areas north of the city of Pickens," she said. "We are telling people that if they come to a tree in the road, do not attempt to go around it. Back up and go in another direction. These trees are entangled with power lines that could be energized, and we do not want people to come in contact with them."

Both Duke Energy and Blue Ridge Electric Cooperative were still working to restore power to some customers in Pickens and Oconee counties.

At the height of the storm, Blue Ridge reported having 5,500 customers without power, and the cooperative said it had 16 broken power poles and damage to a transmission line.

Power was expected to be restored to all customers in the Upstate by Monday afternoon, officials said.



Motorists were stuck on the main road from Devil's Fork State Park for more than three hours after a storm downed trees and power lines. ERIC OSINOR



June 23, 2018



TREES...
 and green space
 improve our physical
 and mental health.



TREE RESEARCH

Trees and Forests Improve Air Quality and Human Health

Tweet 1 +1 0 Like 0

By Nowak, David J.; Hirabayashi, Satoshi; Bodine, Allison; Greenfield, Eric

Syracuse, NY (July 25, 2014) — In the first broad-scale estimate of air pollution removal by trees nationwide, U.S. Forest Service scientists and collaborators calculated that trees are saving more than 850 human lives a year and preventing 670,000 incidences of acute respiratory symptoms.

While trees' pollution removal equated to an average air quality improvement of less than 1 percent, the impacts of that improvement are substantial. Researchers valued the human health effects of the reduced air pollution at nearly \$7 billion every year in a study published recently in the journal Environmental Pollution. Download the research: "[Tree and Forest Effects on Air Quality and Human Health in the United States.](#)"

Routine check-up of Trees June 26, 2018



USA SNAPSHOTS®

Trees givin' shade

Strategically planted trees save up to

56%

on annual air conditioning costs.



SOURCE U.S. Department of Agriculture,
Forest Service, opei.org
MICHAEL B. SMITH AND JANET LOEHRKE, USA TODAY

Tree tags quantify tree benefits



Who needs trees anyway?

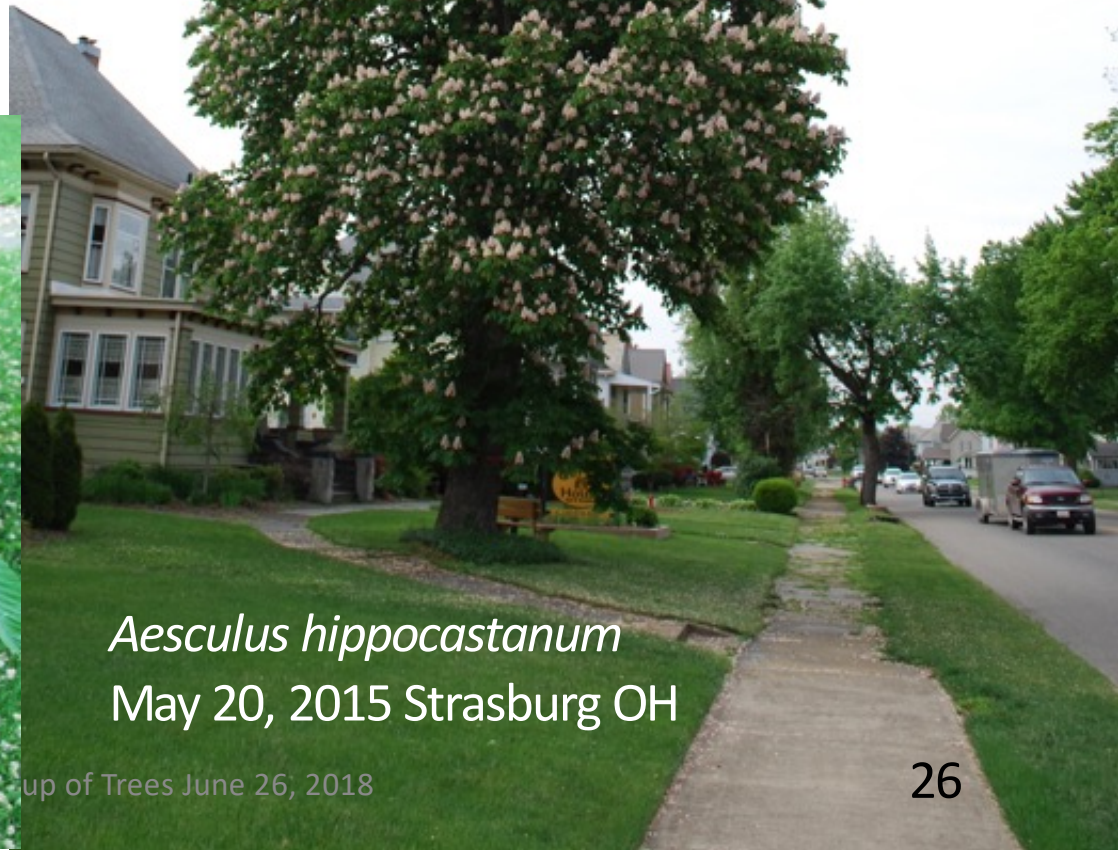


05.17.2010





People
choose to
cohabitate
with trees.



Aesculus hippocastanum
May 20, 2015 Strasburg OH

up of Trees June 26, 2018

Resident's view of tree\$

Roger B. Swain, Ph.D.



“People in suburbia see trees differently than foresters do. They cherish every one. It is useless to speak of the probability that a certain tree will die when the tree is in someone's backyard....



Resident's view of tree\$

“You are talking about a personal asset, a friend, a monument, not about board feet in lumber.” —*Roger Swain, Ph.D.*



Trees → responsibility.

Tree Owner

- Duty of care: some level of responsibility to ensure a reasonable degree of safety for people or property near the trees under his or her care.*



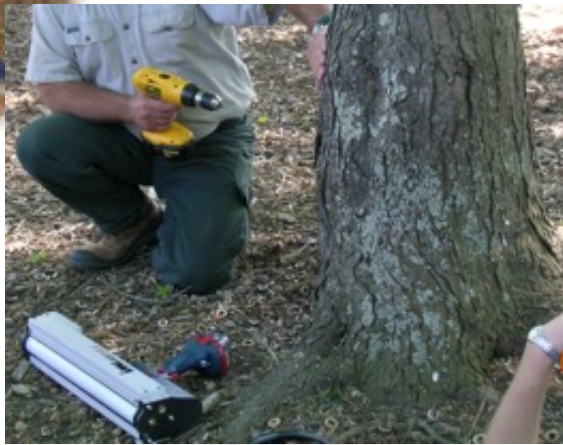
Trees → responsibility.

Tree Owner

- Duty of care
- Urban trees:
 - Establishment
 - Maintenance
 - Removal
- Conduct biannual tree inspections

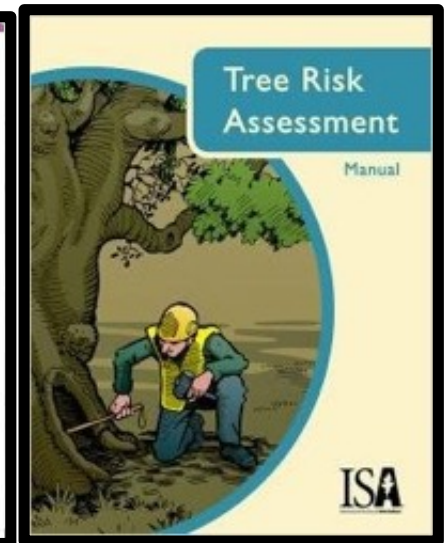
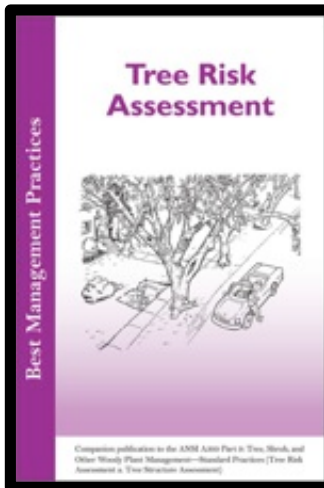


Arborist's Role



Professional
certified arborist

- Conduct risk assessment
 - Level 2 → Level 3
- Mitigate → act to reduce risk

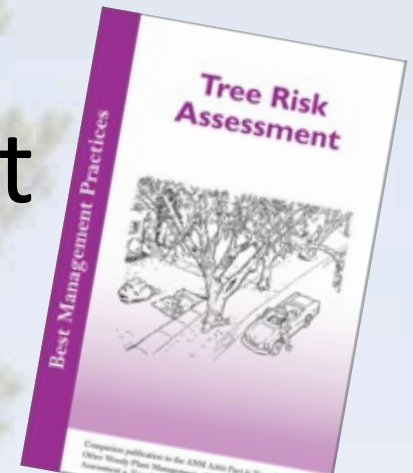


Routine Check-up of Trees June 26, 2018

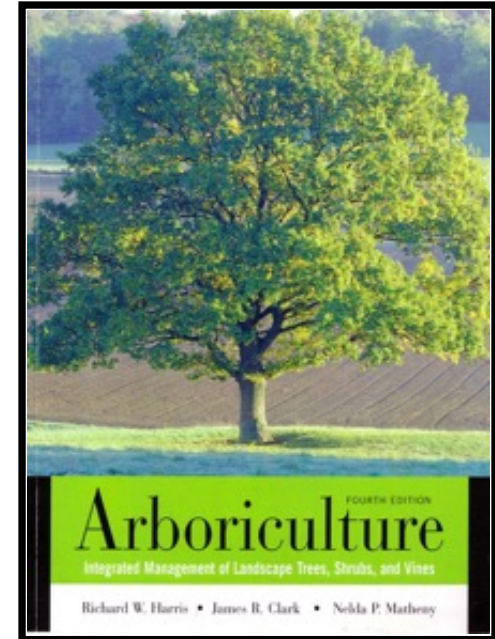
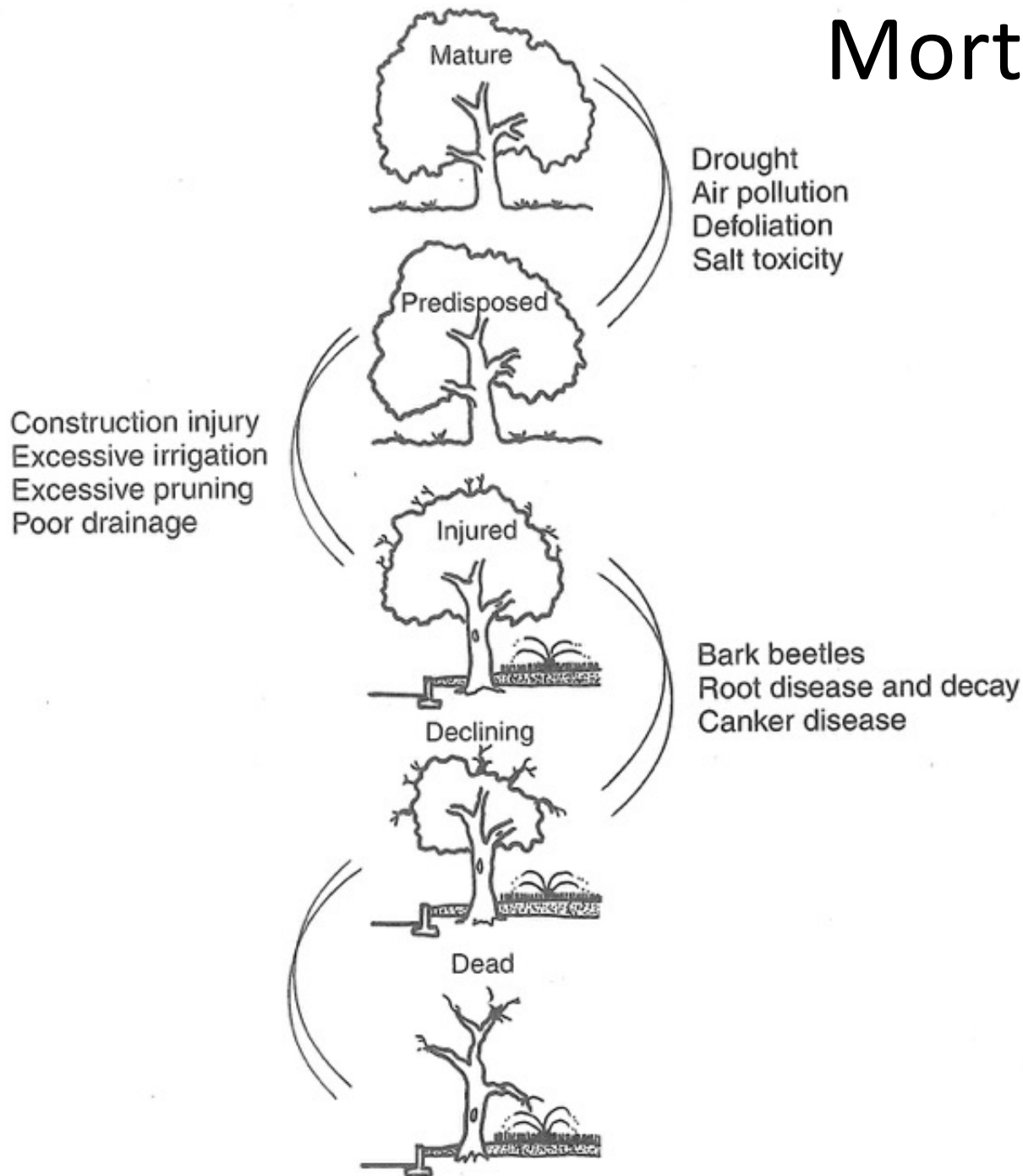
Tree owner duty of care: inspect

- ✓ **defect*** – injuries, changes in growth patterns, decay, or other conditions that reduce structural strength
- ✓ **hazard** – tree part(s) that might **fail** and be a likely source of harm.
- ✓ **failure (tree failure)** – breakage of trunk/stem, branches, roots, or loss of mechanical support in root system.
- ✓ **harm** – personal injury or death, property damage, and/or disruption of activities.

*Definitions: Dunster, J. A. et al. 2013.



Mortality Spiral



Harris et al., 2004.

FIGURE 2-39 Trees often die from a series of linked events. A mortality spiral describes the tree's transition from vigorous to stressed, from stressed to injured, from injured to declining, and from declining to dead. At each stage, specific biological, cultural, and environmental factors are involved.

Mortality Spiral

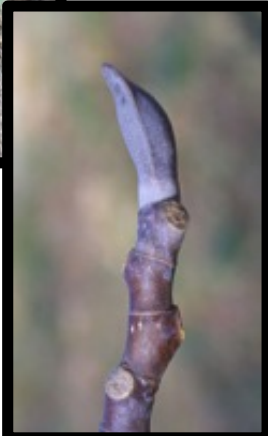
1. Mature
2. Predisposed/
stressed



3. Injured
4. Declining
5. Dead

7 Point Check-up: I.D. the species.

Identify.



Trees vary in their ability to compartmentalize decay.

Strong Compartmentalizers

Maples, various (*Acer x freemanii*, *A. rubrum*, *A. saccharum*)

Catalpa (*Catalpa* spp.); may be intermediate

Hornbeam (*Carpinus* spp.)

Ash, some (*Fraxinus*)

Honeylocust (*Gleditsia* spp.)

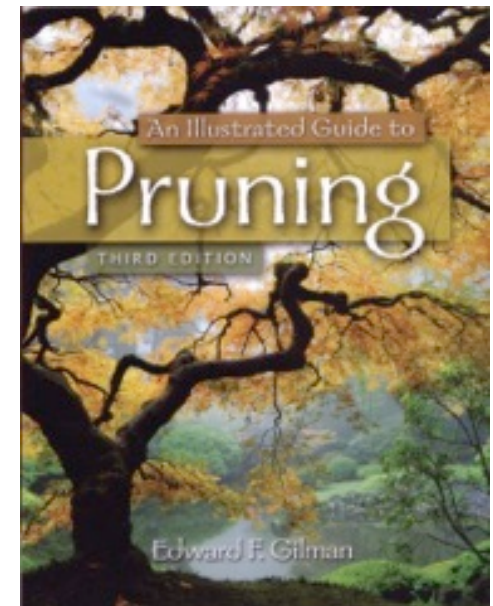
Crapemyrtle (*Lagerstroemia* spp.)

Pitch pine (*Pinus rigida*)

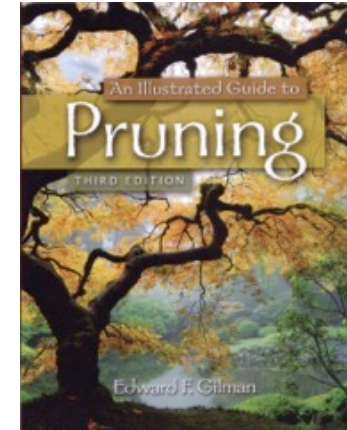
Black locust (*Robinia pseudoacacia*)

Elm, various (*Ulmus alata*, *U. americana*, *U. parviflora*)

Professionals:
arborists, LAs,
landscape
contractors,
Extension
Educators



Trees vary in their ability to compartmentalize decay.



Weak Compartmentalizers

Horsechestnut (*Aesculus hippocastanum*)

Maples (*Acer platanooides*, *A. negundo*, *A. saccharinum*)

Birches (*Betula* spp.)

Hackberry (*Celtis* spp.)

Redbud (*Cercis canadensis*)

Southern magnolia (*Magnolia grandiflora*)

Cherry (*Prunus* spp.)

Willow (*Salix* spp.)

Hemlock (*Tsuga* spp.)

Oaks vary in ability to compartmentalize decay.

Weak Compartmentalizers

Oak, various (*Quercus laurifolia*, *Q. nigra*, *Q. laevis*, *Q. phellos*, *Q. shumardii*, *Q. palustris**, and *Q. velutina**)

*may be intermediate

Strong

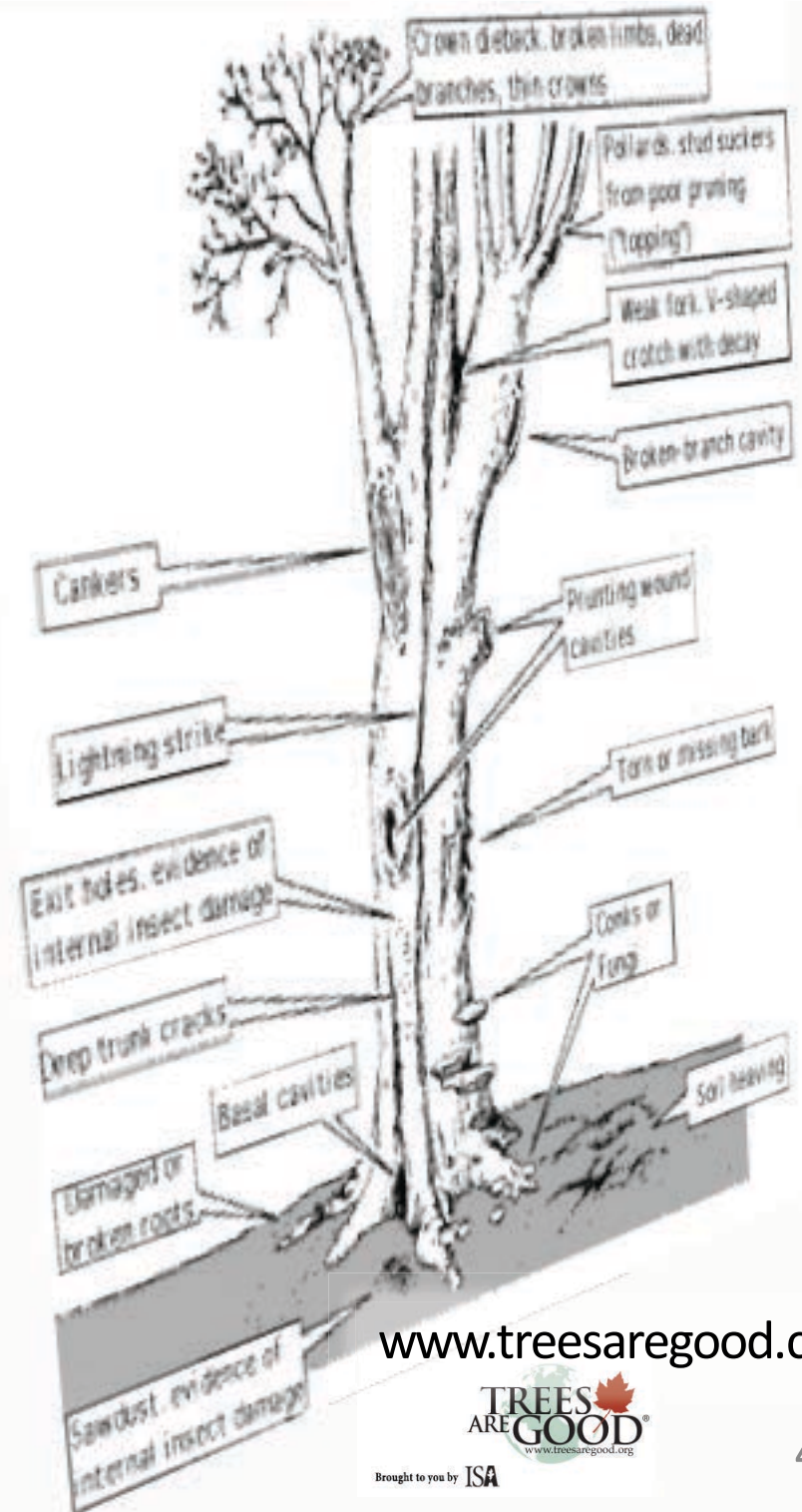
Compartmentalizers

Oaks, various (*Q. alba*, *Q. geminata*, *Q. macrocarpa*, *Q. petraea*, *Q. robur*, *Q. rubra*, and *Q. virginiana*)

Gilman, E. F. 2012. *An Illustrated Guide to Pruning*, 3rd ed. Delmar, Clifton Park, NY.

7 Point Check-up

1. Dead, hanging, or broken branches
2. Leaning tree
3. Multiple trunks
4. Weak branch unions
5. Trunk and branch cracks
6. Decayed wood
7. Root issues



Routine Check-up of Trees
June 26, 2018

www.treesaregood.com/




Brought to you by ISA

1. Dead, hanging, or broken branches.

--branches > 2 inches → remove immediately.





Sapwood rot



Look for dead,
hanging, or
broken branches

Water oaks, *Q.nigra*

Routine Check up of trees June 26, 2018

Look for dead, hanging, or broken branches



Water oaks, *Q.nigra*



Quercus nigra

Look for dead, dying limbs.

Routine Check-up of Trees June 26, 2018

7 Point Check-up

1. Dead, hanging, or broken branches
2. Leaning tree
 - a. Exposed roots or mound of soil near base → take action.



2. Leaning tree.





Carya spp.

June 12, 2018



June 22, 2018

2. Leaning tree

- Inspect trunk and branches
- Remove soil from contact with trunk/root flare
- Look for
 - root flare
 - buttress roots

Routine Check-up of Trees
June 26, 2018



Quercus nigra

2. Leaning tree

- Evaluate tree's proximity to dwelling




Routine Check-up of Trees June 26, 2018





Charlotte, NC

A large, ancient live oak tree with Spanish moss hanging from its branches, situated in a cemetery in Savannah, Georgia. The tree is the central focus, with its thick, gnarled trunk and sprawling canopy dominating the frame. Spanish moss hangs in long, delicate strands from the branches, creating a canopy of green and white. The ground is covered in fallen leaves and shadows cast by the tree. In the background, other trees and a path are visible, suggesting a cemetery setting.

Live oak, *Quercus virginiana*
Bonaventure Cemetery
Savannah, GA

7 Point Check-up

1. Dead, hanging, or broken branches
2. Leaning tree
3. Multiple trunks



3. Multiple trunks.

- cracks or splits in codominant stems
- several branches arise same point on trunk



Codominant
trunks →
catastrophic
failure.



Bradford pear
Pyrus calleryana 'Bradford'

Routine Check-up of Trees June 26, 2018



Routine Check-up of Trees June 26, 2018

Codominant trunks.



Routine Check-up of Trees June 26, 2018

4. Multiple trunks.





March 4, 2013



Routine Check-up of Trees June 26, 2018

4. Multiple trunks.

Routine Check-up of Trees June 26, 2018





Quercus nigra



7 Point Check-up

1. Dead, hanging, or broken branches
2. Leaning tree
3. Multiple trunks
4. **Weak branch unions**
 - ❑ Large branches > 3 inches diam → crack or split at union

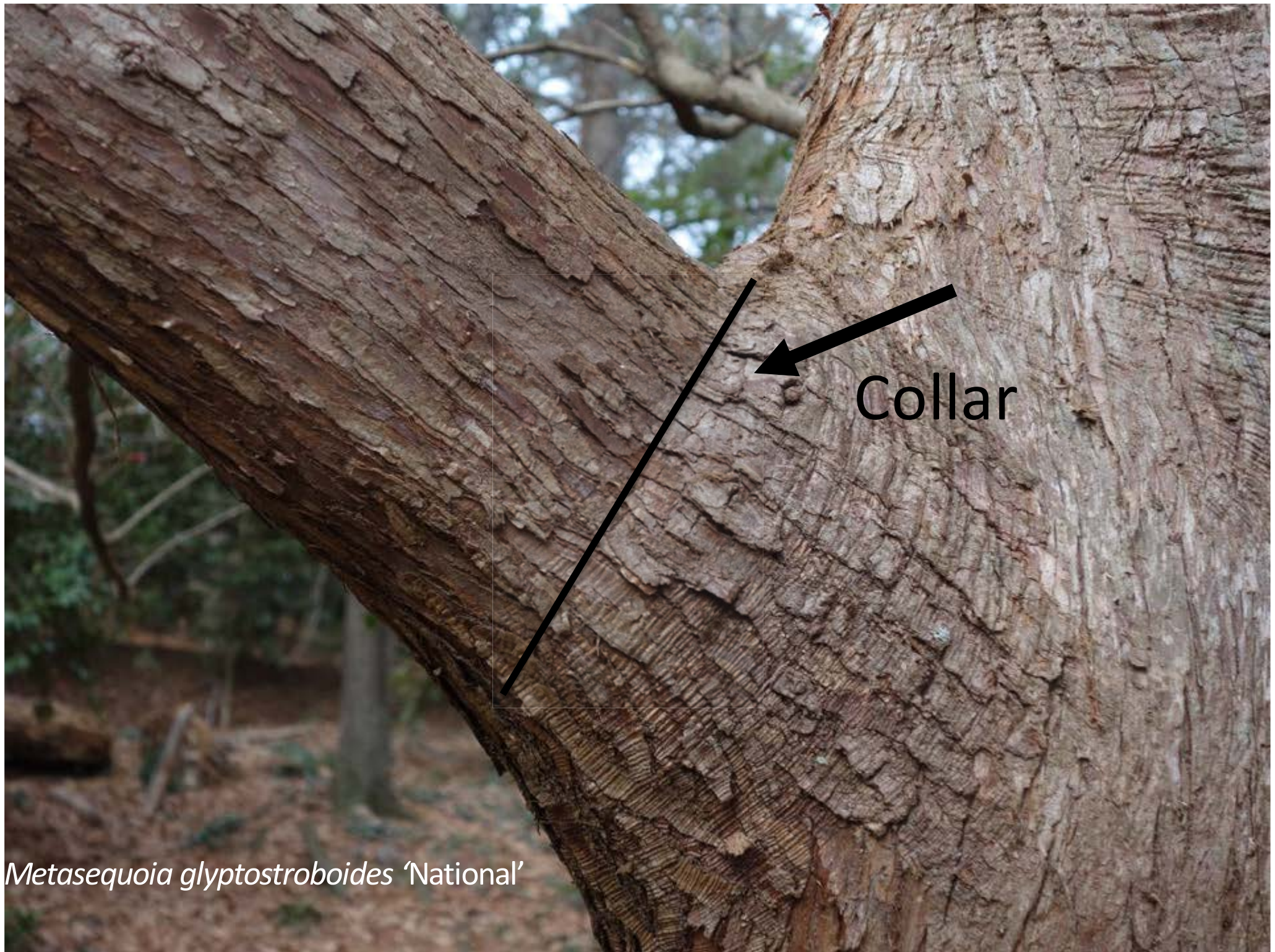


Bradford pear trunks 3_14_2014 Easley SC

Strong branch union

- Branches with small aspect ratio (< 1/2 trunk diam.) preferred over limbs with large aspect ratio
- Branch collar
- Branch bark ridge
- No included bark





Collar

Metasequoia glyptostroboides 'National'



Strength of branch attachments

Weak union

Strong union

Zelkova serrata
Jan. 17, 2014

Limb failure due to codominance.



7 Point Check-up

1. Dead, hanging, or broken branches
2. Leaning tree
3. Multiple trunks
4. Weak branch unions
5. Trunk and branch cracks

Prunus xyedoensis
Sept. 14, 2017

Routine Check-up of Trees June 26, 2018



5. Trunk and
branch cracks →
may lead to
failure





26, 2018

Bacterial wetwood disease



5. Trunk and
branch cracks →
may lead to
failure





Deodar Cedar, *Cedrus deodara*



Shear plane crack

Deodar Cedar, *Cedrus deodara*

7 Point Check-up

1. Dead, hanging, or broken branches
2. Leaning tree
3. Multiple trunks
4. Weak branch unions
5. Trunk and branch cracks
6. **Decayed wood**



Poor pruning → insect and or disease problems





conks



mushrooms



Quercus alba Sept 10, 2015

Bulge =
response
growth



Bulge associated w/ codoms



6. Decayed wood: cavities, cankers, mushrooms and conks



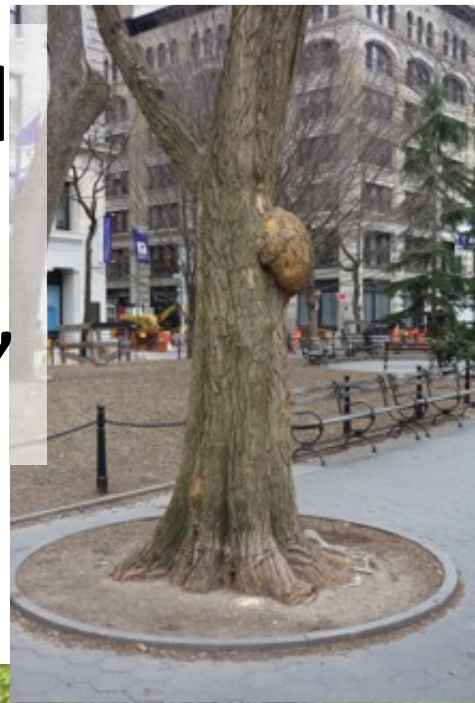
Routine Check-up of Trees June 26, 2018



6. Decayed wood → cavity



Burls: trunk and branch
“abnormalities.”



Lichens



Lichens





Tulip-poplar (*Liriodendron tulipifera*)



Do not fill
cavities.



*Juglans
regia*

Asbury,
NJ



Do not fill cavities



7 Point Check-up

1. Dead, hanging, or broken branches
2. Leaning tree
3. Multiple trunks
4. Weak branch unions
5. Trunk and branch cracks
6. Decayed wood
- 7. Root issues**



7. Root issues

“It has been said that 80 % of all landscape tree problems start below ground.”



Watson, G. W. 1994. Introduction, pp. vii. In Watson, G. W. and D. Neely (eds.). *The Landscape Below Ground*. ISA, Savoy, IL.



7. Root issues: soil mound, soil cracking near root collar, broken roots sticking out of soil, stem girdling roots



7. Root “issues”: stem girdling roots



Acer rubrum

Lower Makefield Township,
PA

March 19, 2018

Routine Check-up of Trees June 26, 2018

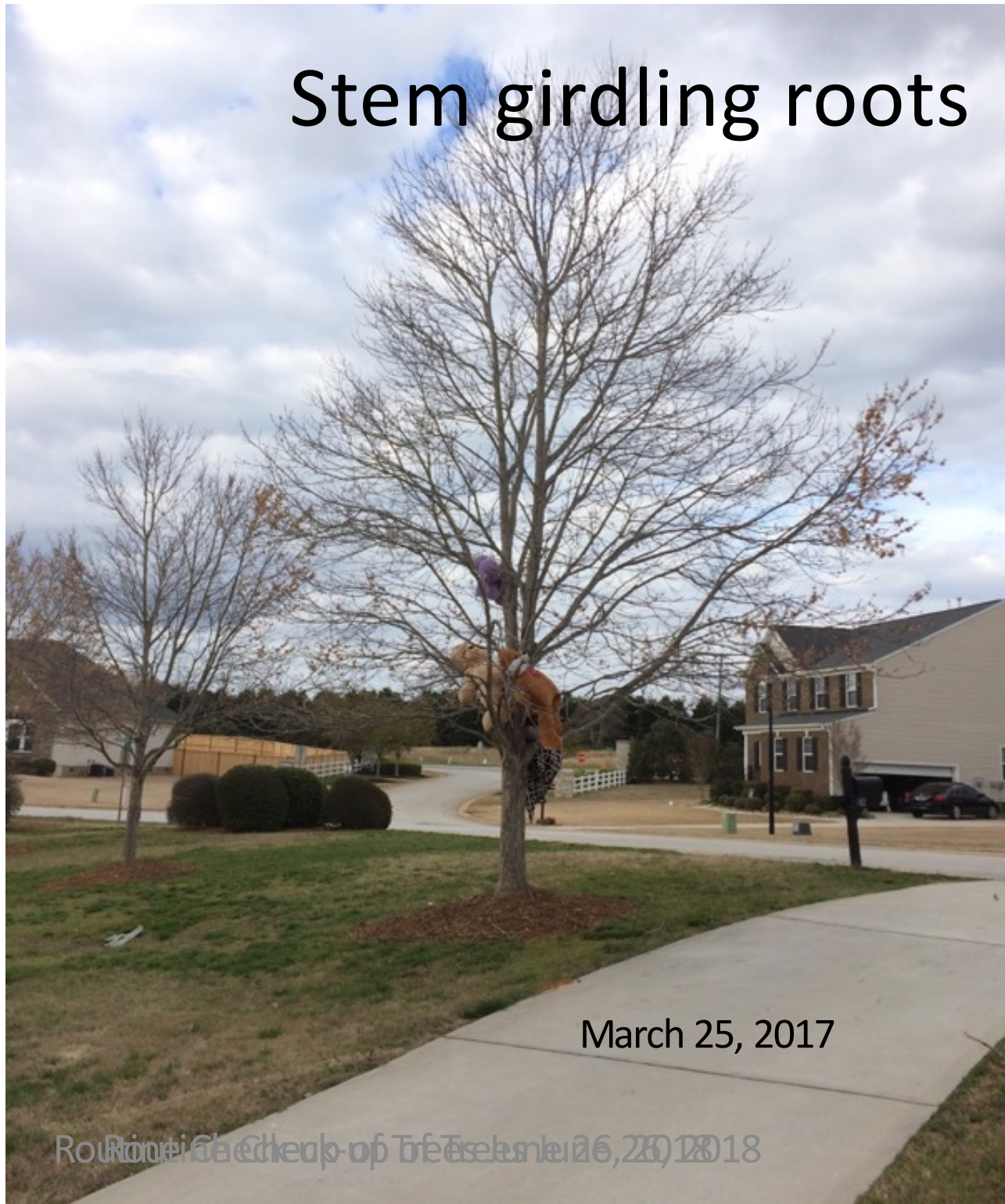
Stem girdling roots



Acer rubrum
April 28, 2018

Irmo, SC

Stem girdling roots



March 25, 2017

Roots that girdle up the trunk





Red maple, *Acer rubrum*
Easley, SC March 26, 2018



Stem girdling roots



Stem girdling roots hidden by mulch.



Red maple, Acer rubrum
June 20, 2018

Easley,



Roots: examine root collar



Encircling, constricting roots → consult an arborist



Water oak, *Quercus nigra*



01.19.2010

Root collar examinations



Original soil depth

White Oak, *Quercus alba*



Post oak, *Quercus stellata*,

Defects → contribute to failure

- ✓ Planted too deep
- ✓ Excessive mulch layer

Japanese zelkova, *Zelkova serrata*
Nov. 4, 2012 Easley, SC

Routine Check-up of Trees June 26, 2018





March 19, 2013

101

Routine Check-up of Trees June 26, 2018

Tree failure: deep-planted, overmulched Japanese zelkova



Easley, SC
April 6, 2017

Routine Check-up of Trees June 26, 2018

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Japanese zelkova, *Zelkova serrata*
DBH = 8 in.
April 6, 2017

Routine Check-up of Trees June 26, 2018



Japanese zelkova



April 6, 2017

Failed Japanese zelkova

Dead center is a linear depression with a ridge on either side of the valley - the valley is oriented up and down in the photo. This is the outward sign of a bark inclusion resulting from root tissue wrapping around the trunk base. Because root tissues rarely graft to trunk tissue the bark of both simply becomes included in the union of the two - just like occurs when two stems develop an inclusion. The tissue below this stem girdling root died as a result of lacking access to resources from the leaves.

Ed Gilman, Professor Emeritus, Univ. of FL



Routine Check-up of Trees June 26, 2018

Root inspection of leaning Japanese zelkova

June 12, 2017

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Routine Check-up of Trees June 26, 2018

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Embedded stem girdling root.



Japanese zelkova
June 12, 2017

Routine Check-up of Trees June 26, 2018

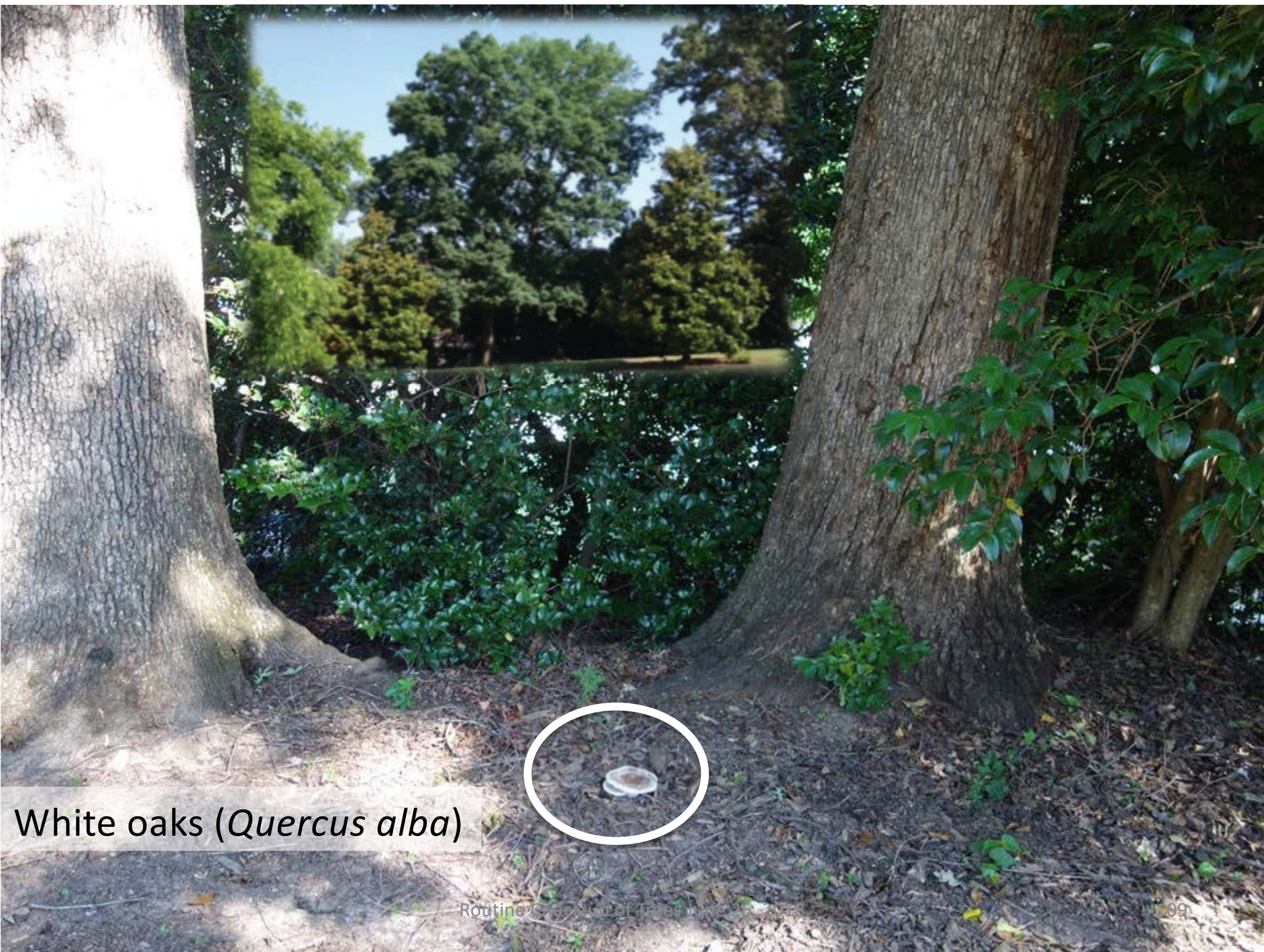


Roots: mushrooms and conks



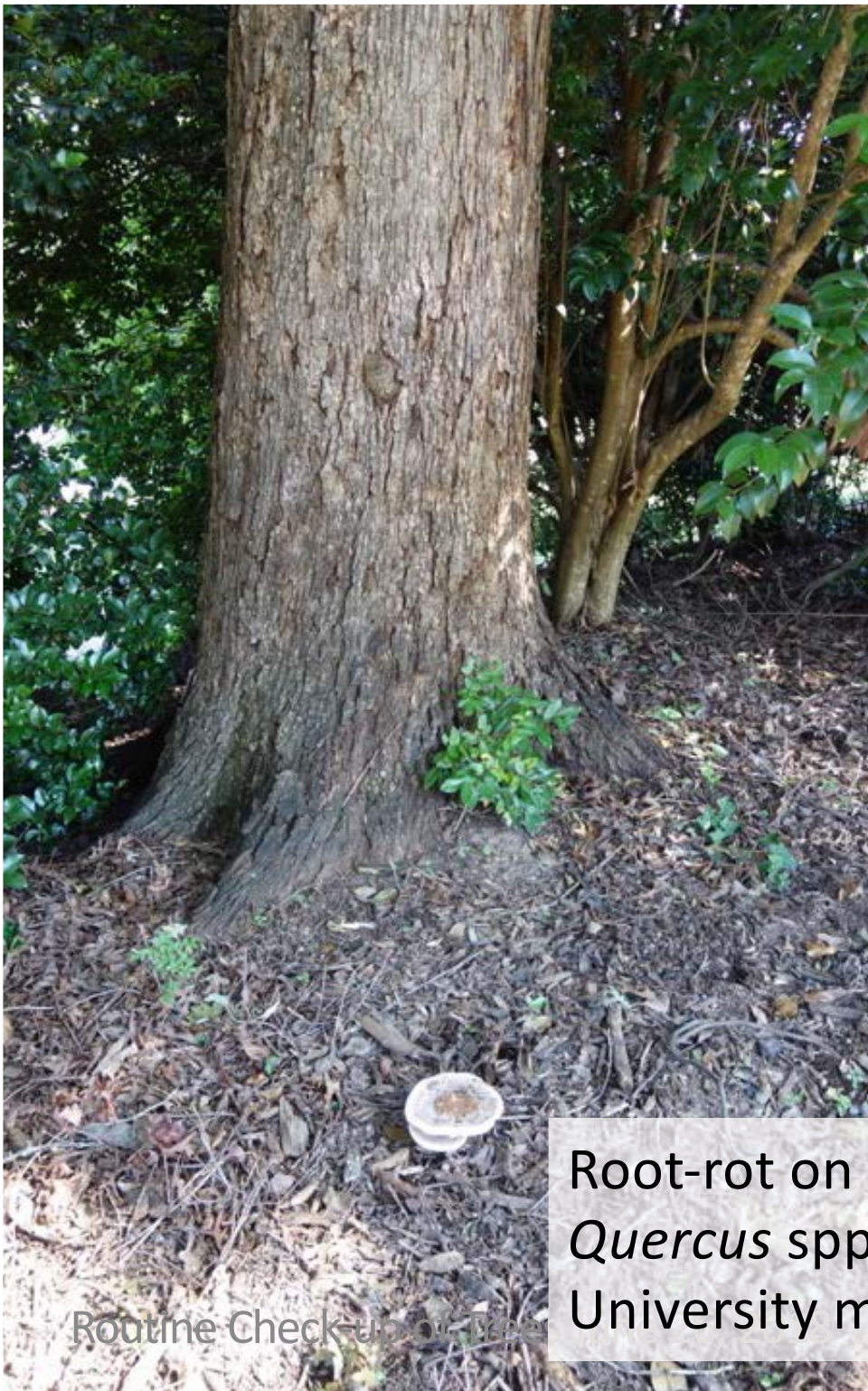
Varnish fungus (*Ganoderma lucidum*)





White oaks (*Quercus alba*)

Laetiporus persicinus



Root-rot on living hardwoods (especially *Quercus* spp.)—Julia Kerrigan, Ph.D., Clemson University mycologist.

Welcome Guest! - [Login](#) | [Sign Up](#)

ARTICLES

CALENDAR OF EVENTS

FEATURED BOOKS

SIGN UP A FRIEND



Your Tree: Healthy
 by Charlotte Kidd

Strong winds; rains are prolonged and... the neighbor's oak? A huge branch...

Is your homeowner's insurance current? Who is... procrastinated about consulting an arborist. What...

You look out your window. Heave a sigh of relief... porch. But your neighbor's garage isn't so lucky.

Routine tree maintenance can prevent threat to...

Regular checkups can root out old branches, weak spots, experts say

By Angella Davis
 STAFF WRITER
 adavis@greenvilles.com

Ann Petrich knows that God was watching over her Tuesday morning as she and her friends were taking a walk around their neighborhood block along Earle Street.

The women were able to run away just as a huge branch of an old oak tree began to break. A moment later, the branch fell onto a power line, broke a pole and a transformer, and landed across the width of the street.

"I have strong faith," she said. "There's no way per... it was huge. We could've easily been right underneath it."



Routine Check-up of trees June 26, 2018

Trees' weak spots hide potential danger

Inspections can reduce risk of fatal accidents, experts say

By Paul Abing
 STAFF WRITER
 pabing@greenvilles.com

The Upstate's leafy landscape is under attack from an array of killers that leave trees vulnerable to falling over and shedding limbs, sometimes with tragic results, experts told GreenvilleOnline.com.

A green canopy provides shade in the summer and helps make the region beautiful, but has thousands of potential towers also present in trees.

Ice storms, lightning and wind are often obvious factors in bringing down trees. But drought, pests and disease can quietly weaken trees without anyone noticing, tree experts said.

"The biggest hazard is not looking up and identifying problems before they kill somebody," said Erich Schneider, chief executive of Schneider Tree Care.

Three young children have been killed by falling trees and limbs in Greenville County since 2002, including a 9-year-old Tapscott boy who was playing in his yard this month.

Why the tree rolled out from its roots at the moment it did remains unknown. A neighbor has said the weather was calm but that it had rained earlier in the day.

The weather was also calm in July 2007 when an apparently healthy tree

See TREES on page 1A

Bradley Hudson with Schneider Tree Care trims a 60-year-old water oak in Greenville. Experts say trees should be checked periodically, as disease, drought and pests can weaken a tree without anyone noticing.



Call-to-action: educate your clientele

Inspect your trees.

Routine Check-up of Trees June 26, 2018

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Conduct biannual tree inspections

- ✓ Conduct 7-step 360° visual inspection at ground level
- ✓ Look for injured, dying, dead tree parts → structural defects
- ✓ Record and document observations
- ✓ Do not remove large branches or trunk sections on your own
- ✓ Consult certified arborist for advice or mitigation.

"Trees are the guardians
of the Earth
We are the guardians
of the trees"

Author unknown.

Thank you for your interest in tree inspections and for your appreciation of people who live with trees.



Bob Polomski

bp1msk@clemson.edu

Routine Check-up of Trees June 26, 2018

References

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- Dunster, J. A., E. T. Smiley, N. Matheny, and S. Lily. 2013. *Tree risk assessment manual*. Champaign, IL:ISA.
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- Harris, R. W., J. R. Clark, and N. P. Matheny. 2004. *Arboriculture: Integrated Management of Landscape Trees, Shrubs, and Vines*. 4th ed. Prentice Hall.
- Minnesota Department of Natural Resources; USDA Forest Service 1996. *How to recognize hazardous defects in trees*. NA-FR-01-96. Radnor, PA: U.S. Dept. of Agriculture, Forest Service, Northern Area State & Private Forestry.
- Smiley, E. T., N. Matheny, and S. Lilly. 2011. *Best management practices: Tree risk assessment*. Champaign, IL:ISA.

Resources

- American Society of Consulting Arborists
(<https://www.ascaconsultants.org/default.aspx>)
- eXtension.org
 - Trees for energy conservation
- International Society of Arboriculture
(www.isa-arbor.com)
- Southern Regional Extension Forestry
(<https://www.extension.org/>)
- Tree Care Industry Association
(<https://tcia.org/>)
- TreesAreGood®



www.isa-arbor.com • www.treesaregood.org

Sukran

Kamsa hamaida

Tack

Danke

Efharisto

Gracias

Thuk Ji Chhe

Spasiba

Thank you!

Do jeh

Na gode!

Ngiyabonga!

Achu

Merci

Sađol

Kam ouen

Dziakuje

Dank U wel

Think about this....



We adorn trees.

Chicago, IL
March 20, 2011

We live with trees.



Fremont cottonwood (*Populus fremontii*)
Carson City, NV
Aug 4, 2017

A large, ancient live oak tree with a thick, gnarled trunk and sprawling branches arches over a paved path. A yellow sign with black text reads "LOW CLEARANCE - 10'". The path is shaded by the tree's canopy, and other trees and greenery are visible in the background. A person is partially visible on the right side of the path.

Live oak, *Quercus virginiana*
Beaufort, SC

We live with trees.

We are awed by trees.

Post oak *Quercus stellate*
Clemson Univ., Clemson, SC July 23, 2013



We revere trees.



Toomer Oaks Auburn, AL

March 26, 2011

Routine Check-up of Trees June 26, 2018

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We celebrate with trees.

March 26, 2011

Routine Check-up of Trees June 26, 2018



We honor trees.



Bur oak, *Quercus macrocarpa*

We love trees.

Jeanne Briggs, Ph.D.
Jan. 1, 1955 –
March 8, 2018

Post oak, *Quercus stellata* March 7, 2013 Auburn Univ.

Our safety and their health and longevity requires regular inspections and proper maintenance.