



All About The Trees

ARE YOU READY FOR THE NEXT BIG STORM

Weather



Eight Dead, Including Two Children, in Fierce Nor'easter



Two municipal workers, David Boardly, left, and James Ockimey, worked to clear a downed tree in Marple Township, Pa., on Friday. *Matt Slocum/Associated Press*

By Christina Caron

March 3, 2018



Falmouth receives more than 100 damage reports as blizzard blasts Cape Cod

Updated Mar 13, 2018; Posted Mar 13, 2018



A fallen tree prompted one of many road closures in Falmouth during the blizzard on Tuesday, March 13, 2018. Here, police share a photo of a downed tree on Gifford Street. (Falmouth Police/Twitter)



Storm Events

- ▶ 2018 – 9 days with events, 8 with property damage
 - ▶ 2017 – 13 days with events, 9 with property damage
 - ▶ 2016 – 17 days with events, 13 with property damage
 - ▶ 2015 – 11 days with events, 7 with property damage
 - ▶ 2014 – 10 days with events, 6 with property damage
-
- ▶ Data from NOAA Storms Database
 - ▶ Events: (**Blizzard, Heavy Snow, High Wind, Hurricane (Typhoon), Ice Storm, Strong Wind, Thunderstorm Wind, Tornado, Tropical Depression, Tropical Storm, Winter Storm**)

Trees can be Hazardous

Not all trees pose a risk

Personal injury
Property damage } Risk



Benefits of Trees

- ▶ Property value
- ▶ Cooling – shade
- ▶ Heating – wind protection
- ▶ CO₂
- ▶ O₂
- ▶ Wildlife



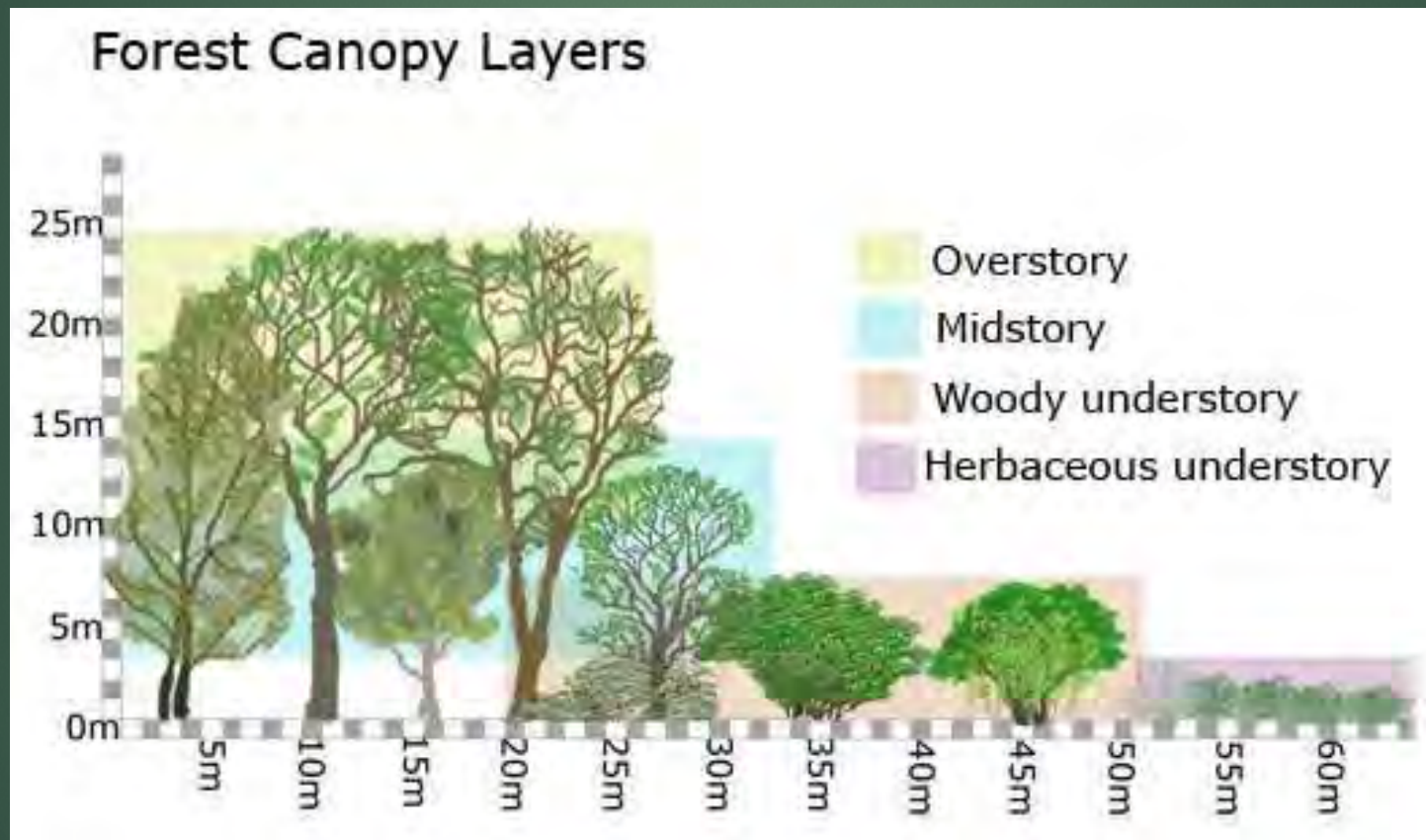
What we know about trees and storms

- ▶ The higher the wind speed the more likely trees will fail
- ▶ Wind isn't the only factor
 - ▶ Precipitation, storm speed
 - ▶ Tree canopy density and composition
 - ▶ Tree species, age, health and structure
 - ▶ Site characteristics (water table, soil, compaction)

Trees in groups survive winds
better than trees growing
individually



Diversity & Layers





REcolorado



Some species resist wind better than others

Highest wind resistance

- ▶ *Cornus florida*, dogwood
- ▶ *Ilex opaca*, American holly
- ▶ *Taxodium distichum*, baldcypress

Medium – High wind resistance

- ▶ *Acer palmatum*, Japanese maple
- ▶ *Betula nigra*, river birch
- ▶ *Carpinus caroliniana*, Hornbeam
- ▶ *Carya glabra*, pignut hickory
- ▶ *Cercis canadensis*, red bud
- ▶ *Chionanthus virginicus*, fringe tree
- ▶ *Liquidambar styraciflua*, Sweetgum
- ▶ *Magnolia virginiana*, sweetbay
- ▶ *Nyssa sylvatica*, tupelo

Medium-Low Wind Resistance

- ▶ *Acer rubrum*, red maple
- ▶ *Acer saccharinum*, silver maple
- ▶ *Celtis occidentalis*, hackberry
- ▶ *Platanus occidentalis*, sycamore
- ▶ *Prunus serotina*, black cherry
- ▶ *Quercus alba*, white oak
- ▶ *Ulmus americana*, American elm

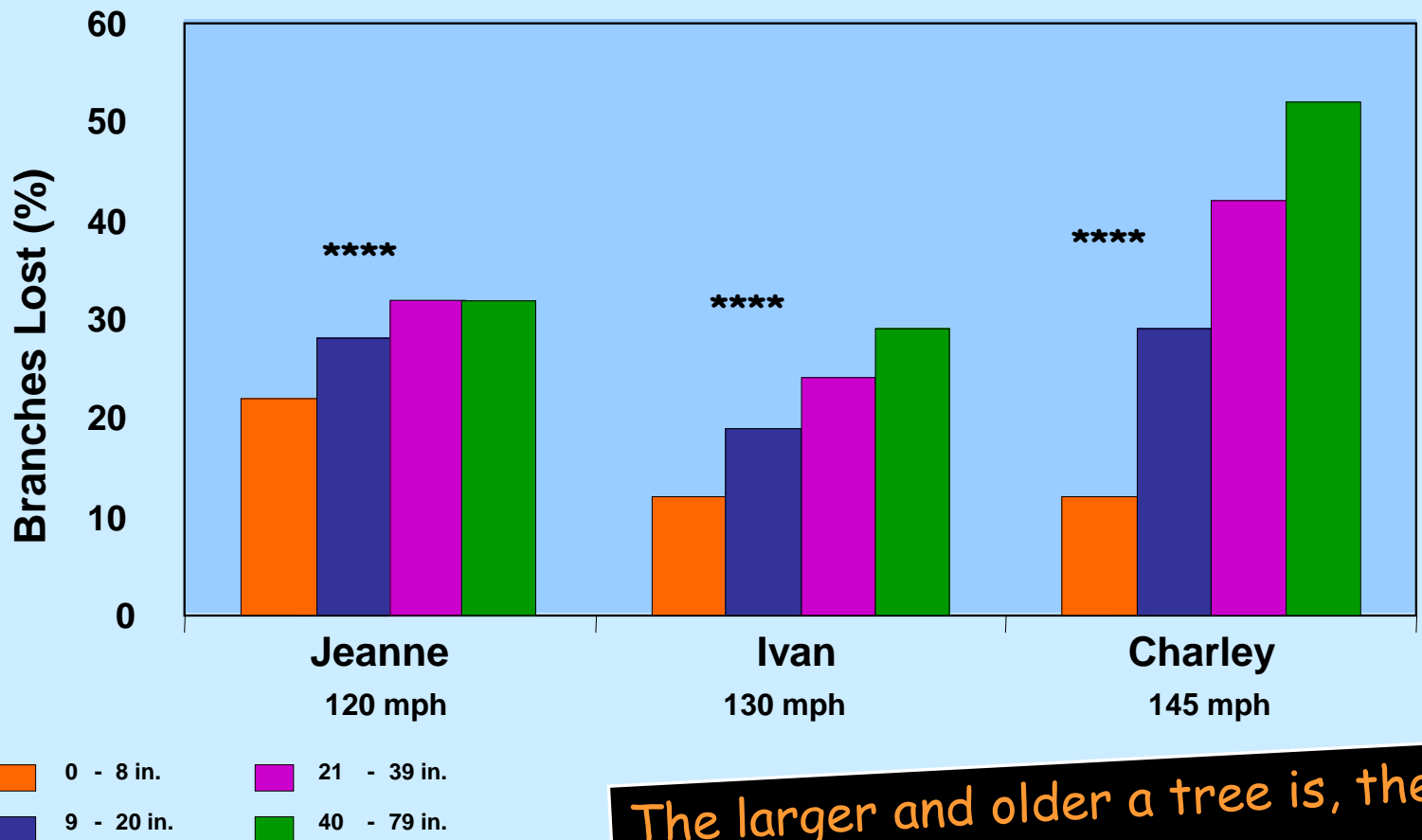
Lowest Wind Resistance

- ▶ *Liriodendron tulipifera*, tulip poplar
- ▶ *Pyrus calleryana*, Bradford pear
- ▶ *X Cupressocyparis leylandii*, Leyland cypress

Older Trees are more likely to fail

- ▶ Beware of over-mature trees
 - ▶ Trees have lifespans
 - ▶ As trees approach their life expectancy they often become more vulnerable to decay

Older trees are more likely to fail in hurricanes

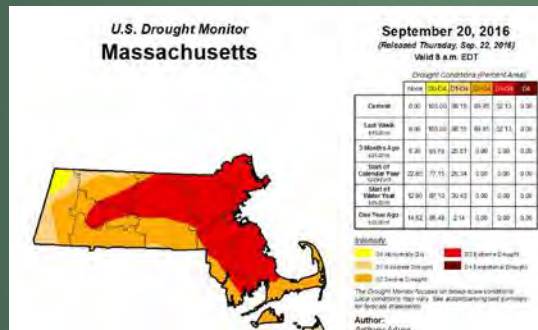


The larger and older a tree is, the more branches it will lose.



Unhealthy Trees are Predisposed to Damage

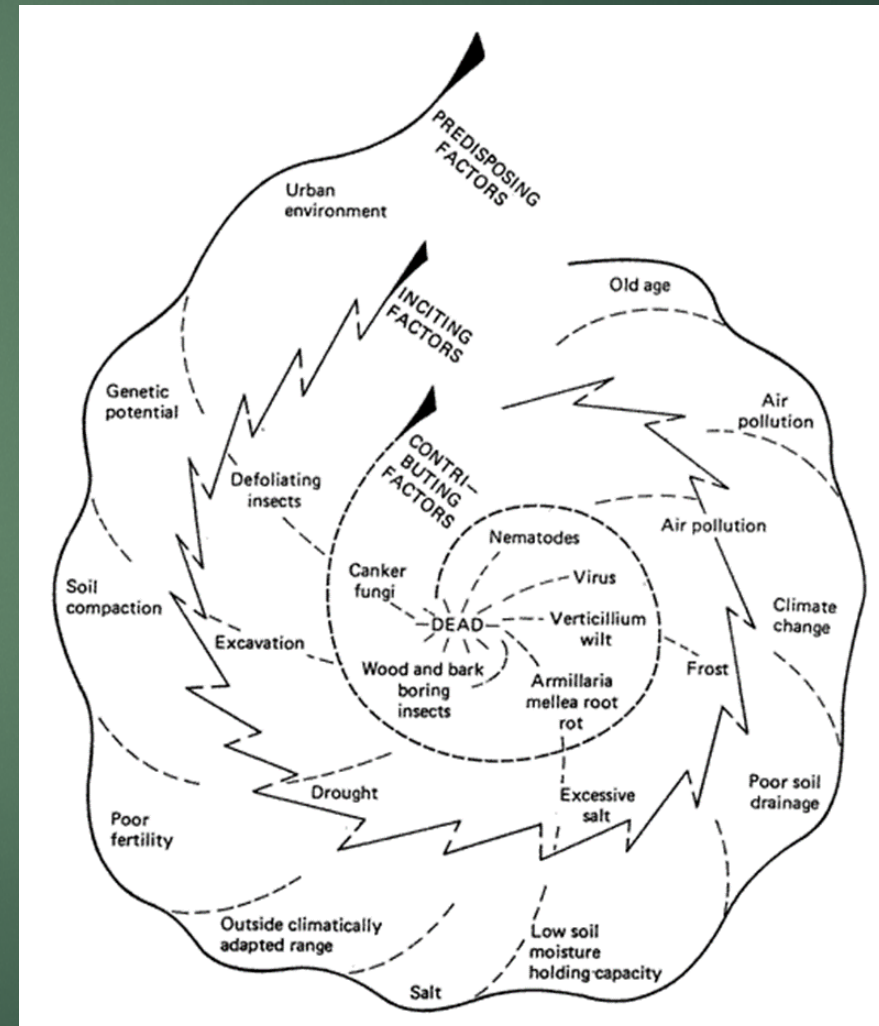
- ▶ Winter Moth
- ▶ Gypsy Moth
- ▶ Black oak gall wasp
- ▶ Drought
- ▶ Soils



Hartford Courant

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Huge Number Of Dead, Dying Trees In Connecticut At Increased Risk Of Falling Due To Years Of Drought, Insects

















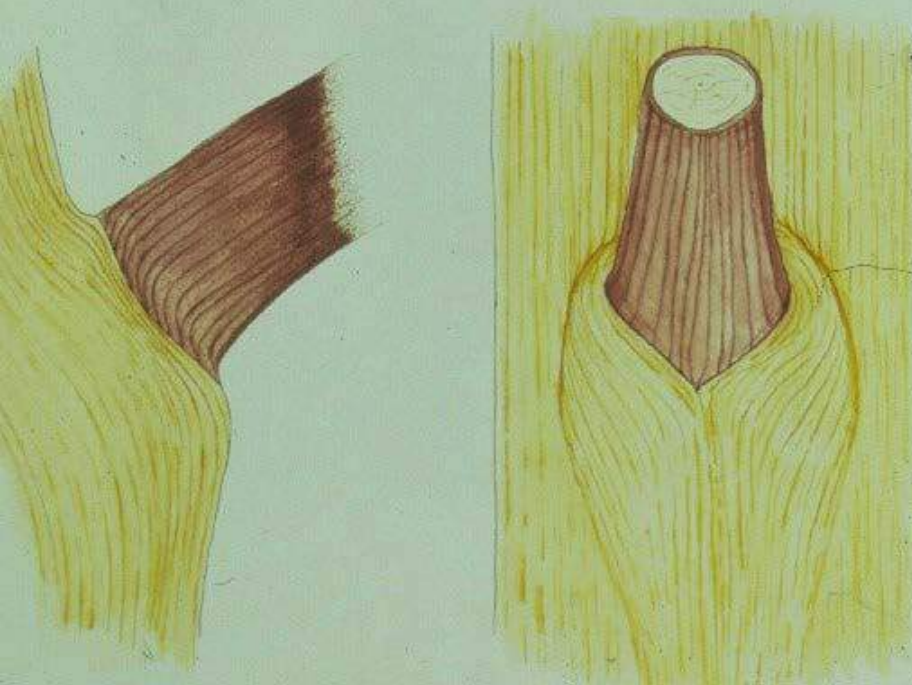
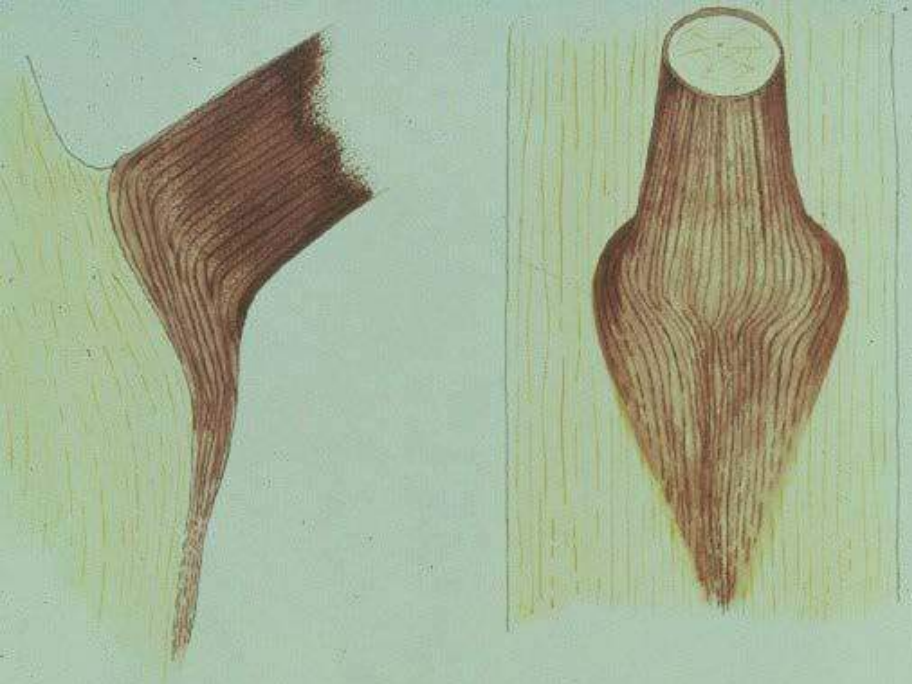
Trees with Poor Structure are more Vulnerable to Damage



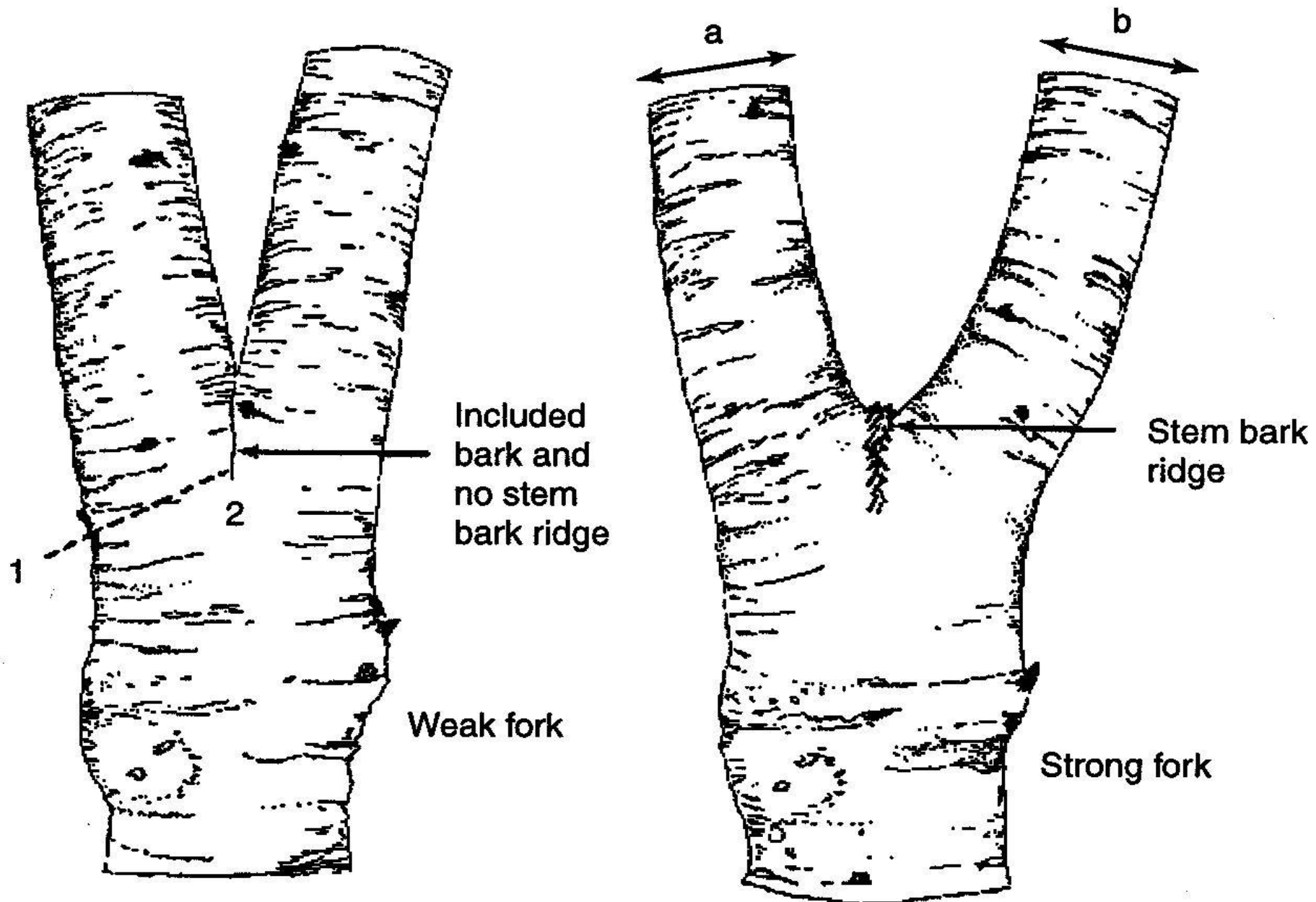








Two codominant stems



Why are they
a problem?

Included bark
beginning to form

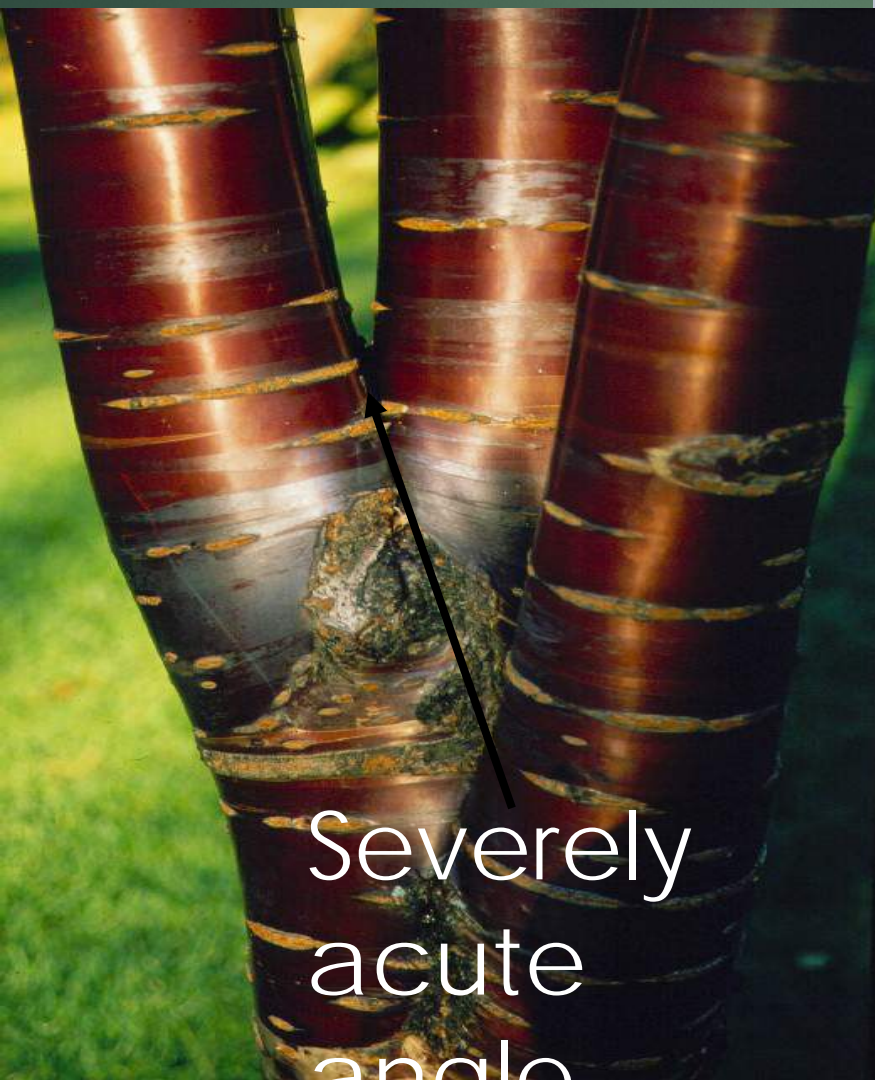


A photograph of a tree trunk, split vertically. The bark is dark, textured, and covered in some green moss or lichen. A horizontal line of decay and discoloration runs across the middle of the trunk, where the bark has been removed, revealing the lighter-colored wood underneath. The background is a blurred forest floor with brown leaves and green plants.

Bark inclusion

Decay and
discoloration
from self
wounding

These are weak












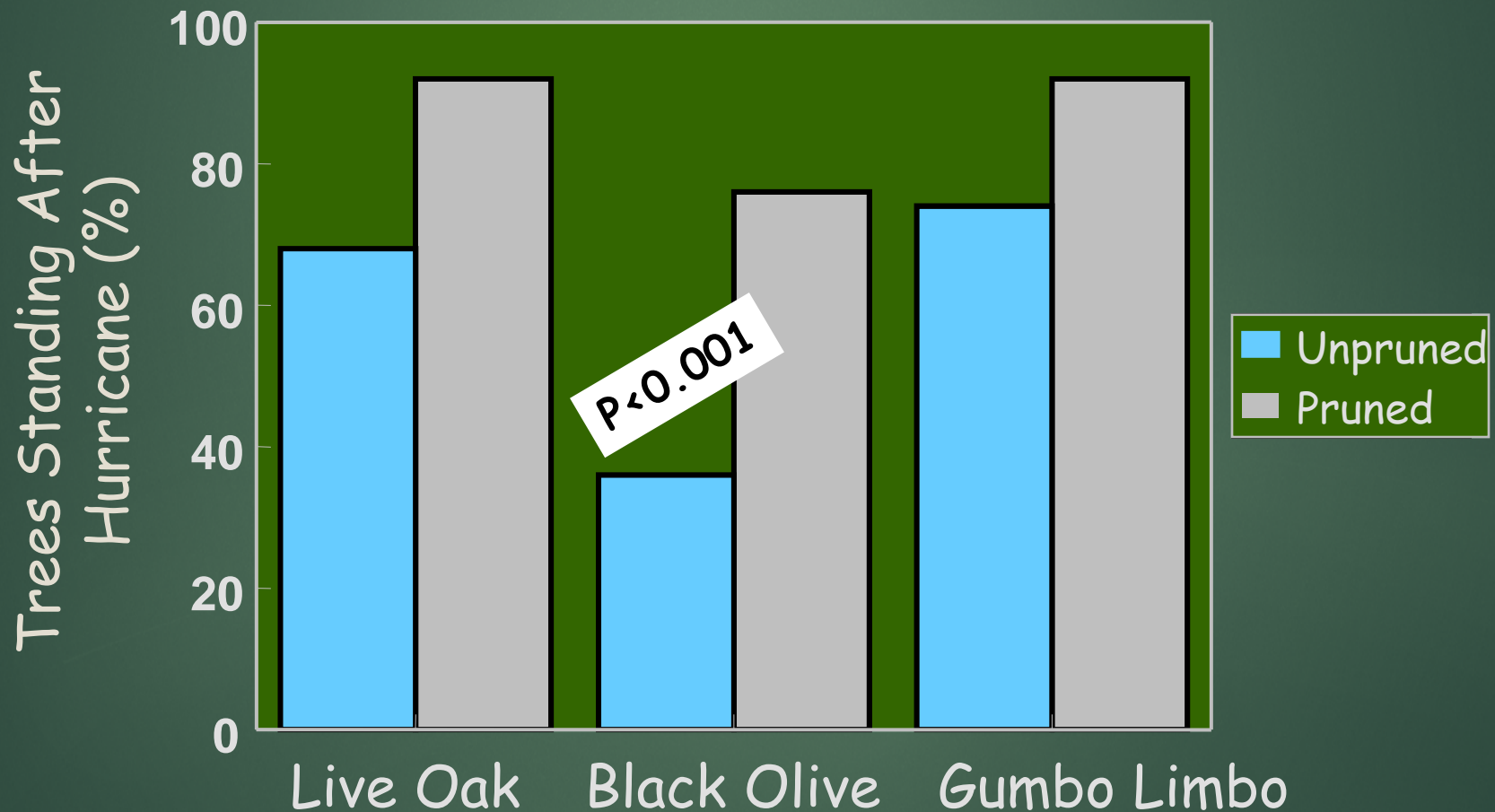






Don't forget hazard risk is based on probability of personal injury or property damage.

Well-pruned trees survive better than unpruned trees



Pruning
treatment

Before testing

During testing

No
pruning



Lower trunk angle at 120mph = 27
Upper trunk angle at 120mph = 46

Reducing



Crown was reduced in height using
a reduction cut.



Lower trunk angle at 120mph = 10
Upper trunk angle at 120mph = 17

Thinning



Crown was thinned by removing primary branches back to trunk.



Lower trunk angle at 120mph = 12
Upper trunk angle at 120mph = 23

Raising



Crown was raised by removing lowest branches.



Lower trunk angle at 120mph = 10
Upper trunk angle at 120mph = 31

Training Young Trees

- 🌿 Select the central leader
- 🌿 Identify permanent scaffold branches
- 🌿 Remove or subordinate competing and aggressive branches
- 🌿 Leave as much foliage as possible (1/3 rule)

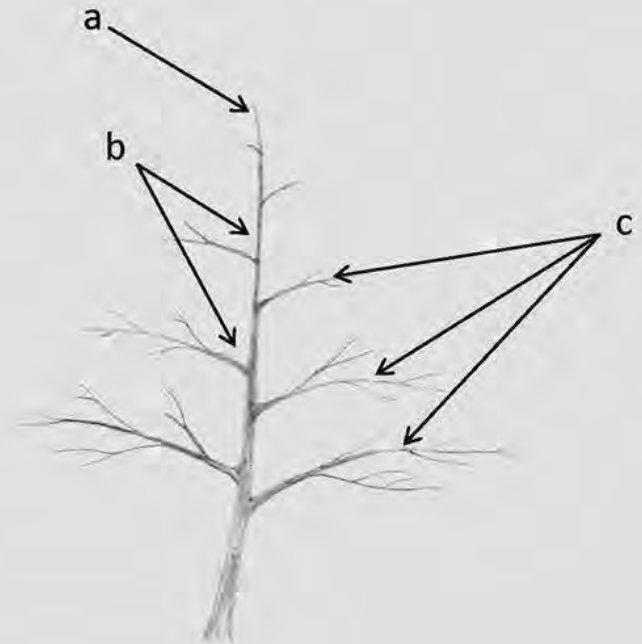
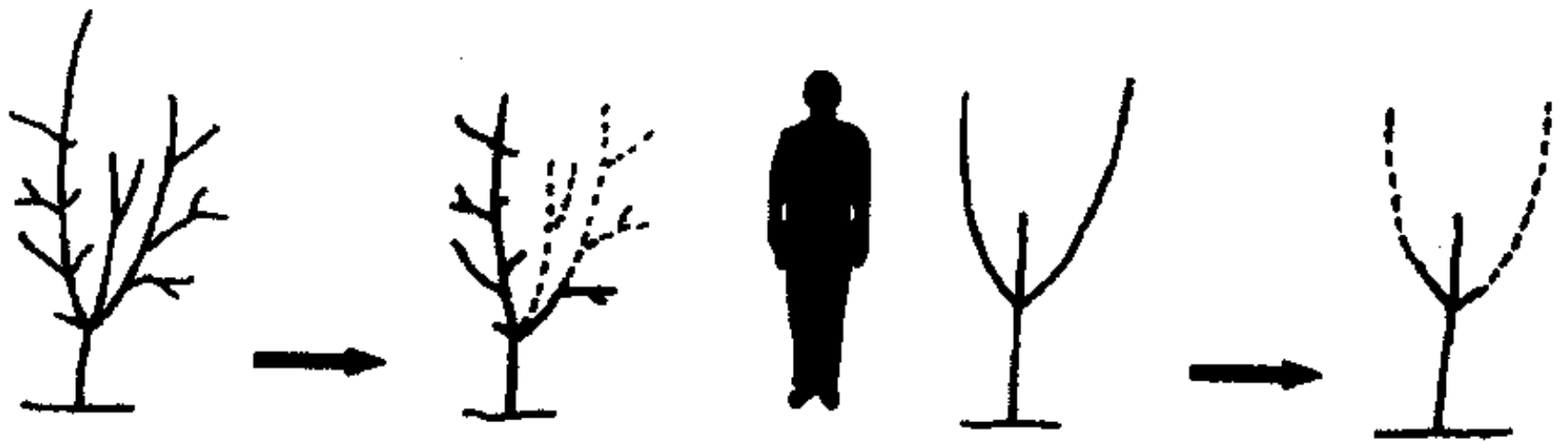


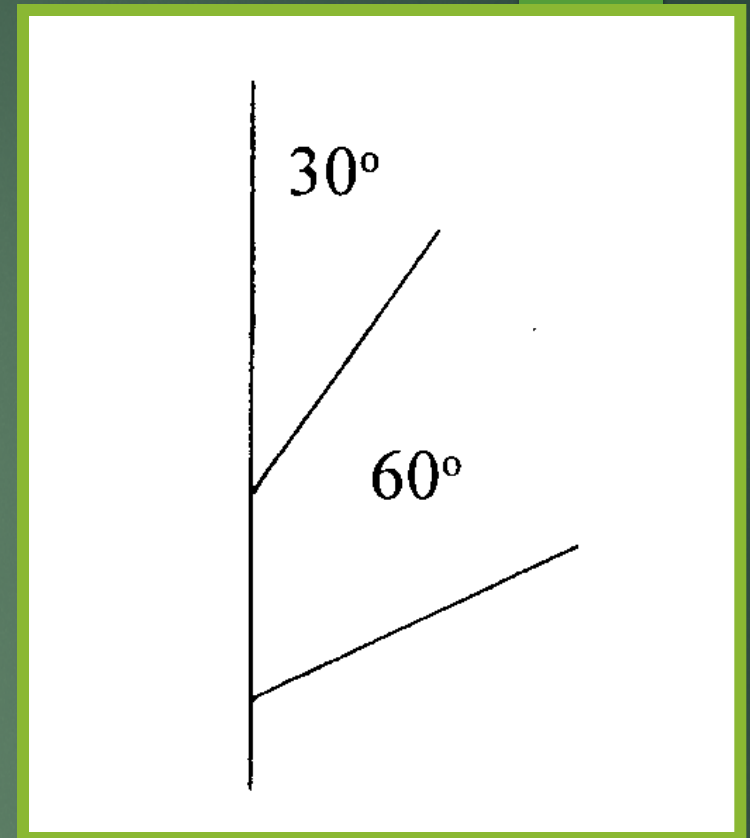
Fig. 1

- a. Central Leader
- b. 60 -70 branch angle
- c. Scaffold limbs



Narrow crotches are weak and prone to splitting

60 and 70 degree branch angles have greater strength / less storm damage



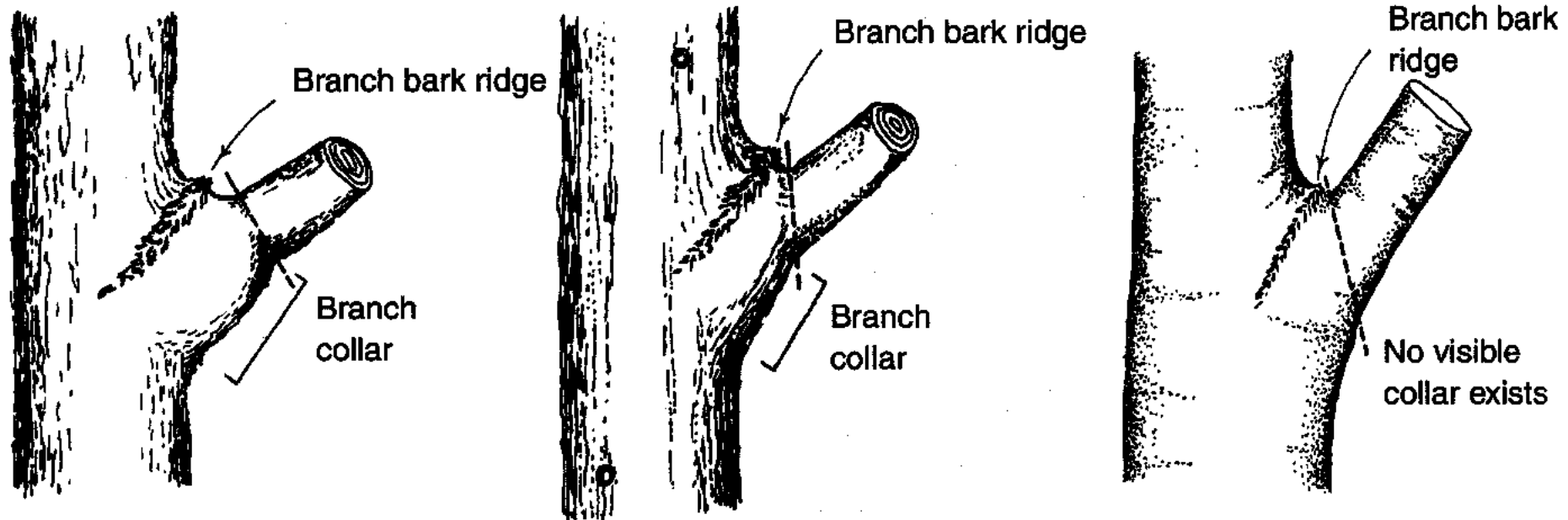
Waiting too long to correct a problem may result in a disfigured tree.



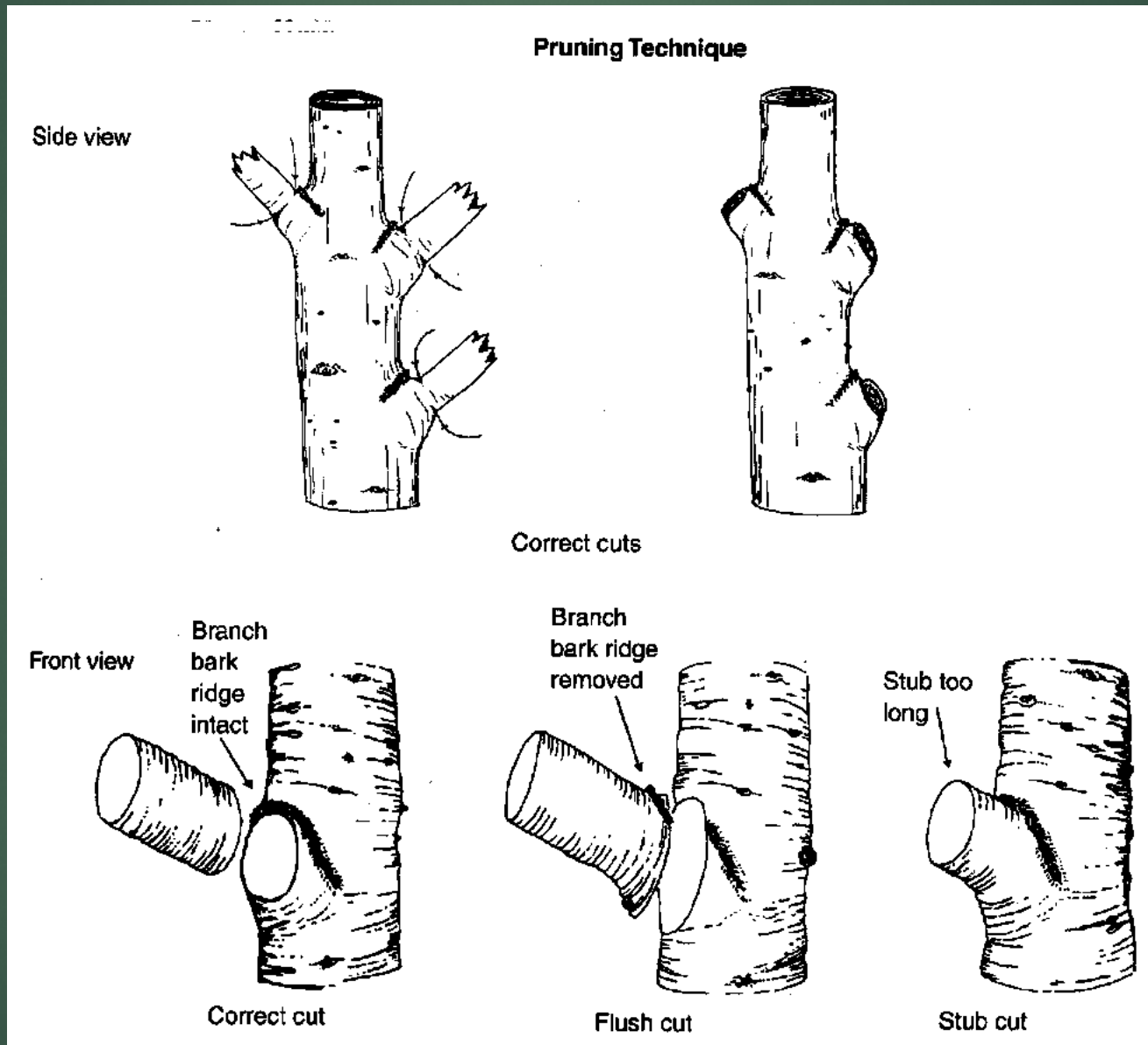
Closely spaced scaffolds restrict growth of central leader
Remove branches that touch or are on top of one another
Leave branches equally spaced along the trunk

Photo: David Seavey

Branch Attachment



Proper Pruning Cuts



Proper Pruning Cuts

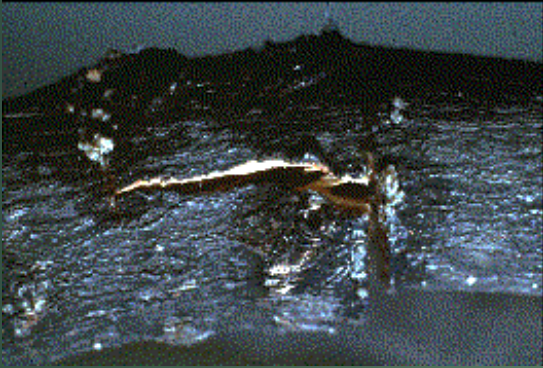


Callus or woundwood develops in a smooth circular pattern if pruning cuts were made properly.

Oval shaped or irregular callus indicates injury to the trunk or parent branch.



Large Branch Removal



First cut on underside;
one foot from trunk



Second cut on top;
slightly past underside cut

**Branch weight is
reduced**



Final Step - Make a bottom cut at the
outside edge of the branch collar.



Trees with more rooting space survive better

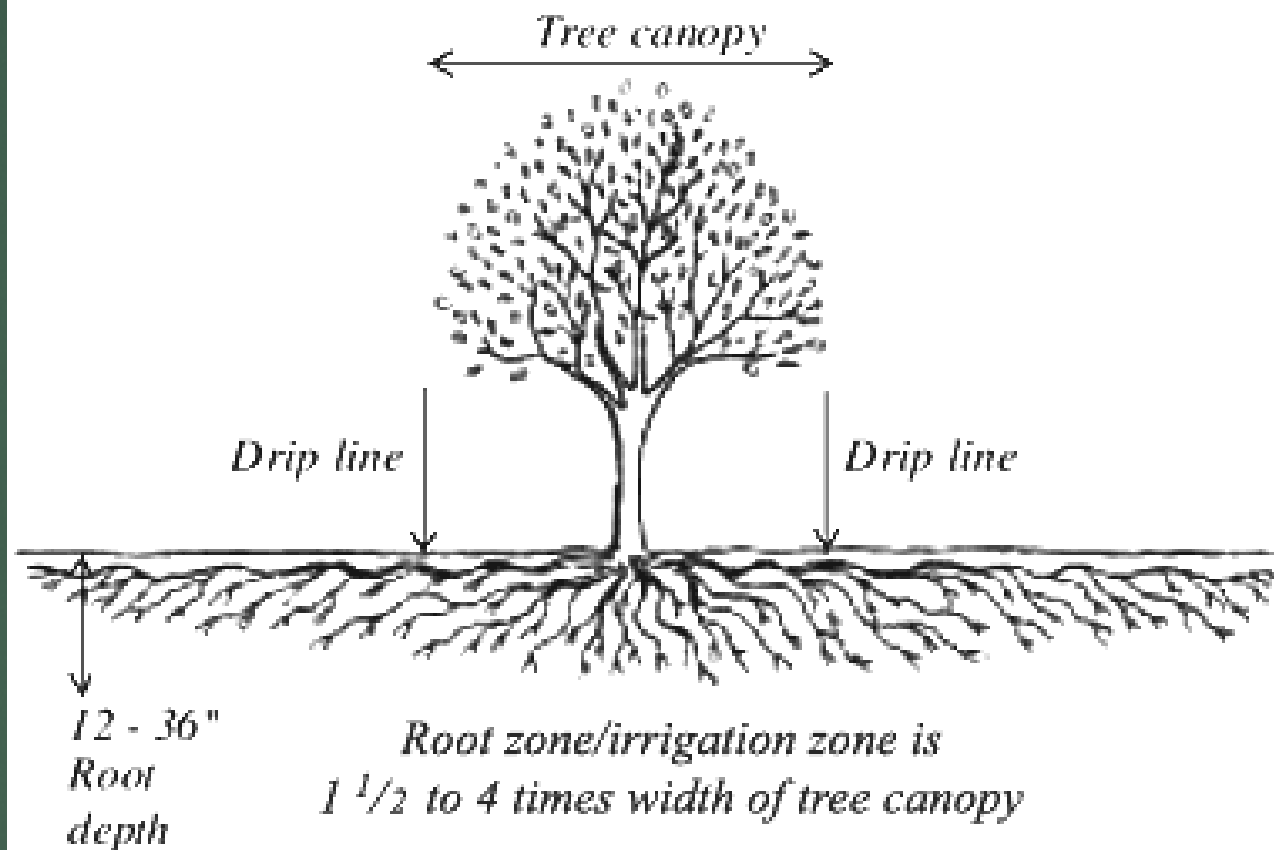


Photo Credit: Chuck Lippi



Photo Credit: Brent Marable

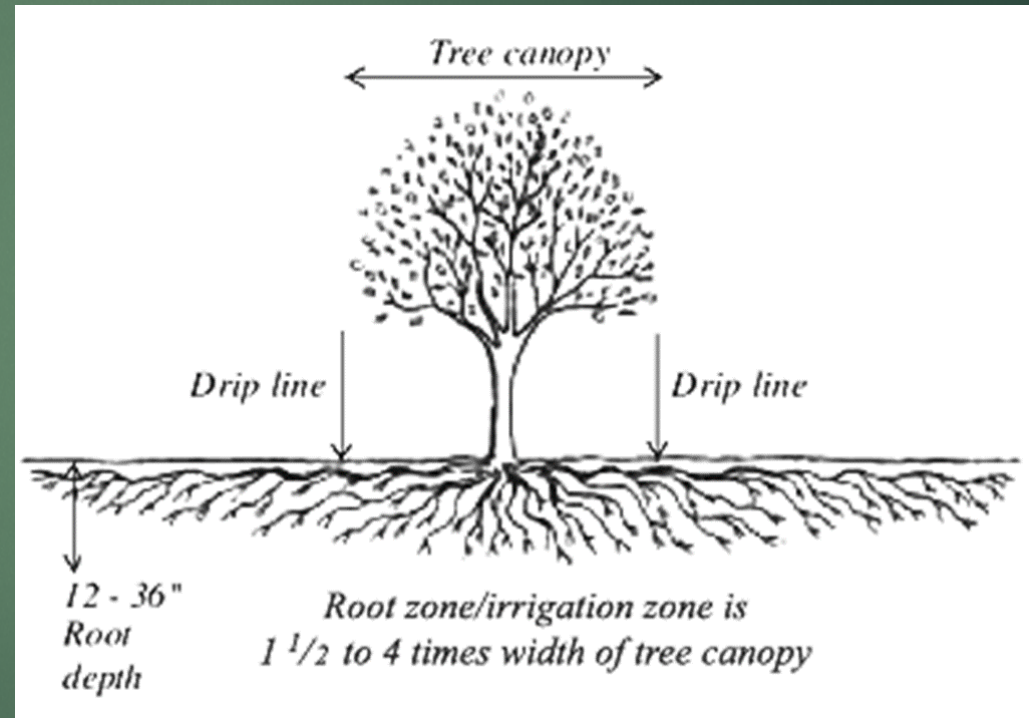




Root Space

► Minimum

- Small Trees (< 30') – 10' x 10'
- Medium Trees (30 - 70') – 20' x 20'
- Large Trees (>70') – 30' x 30'



Soil Depth



Roots cut during construction

Step two

Step one



Step three



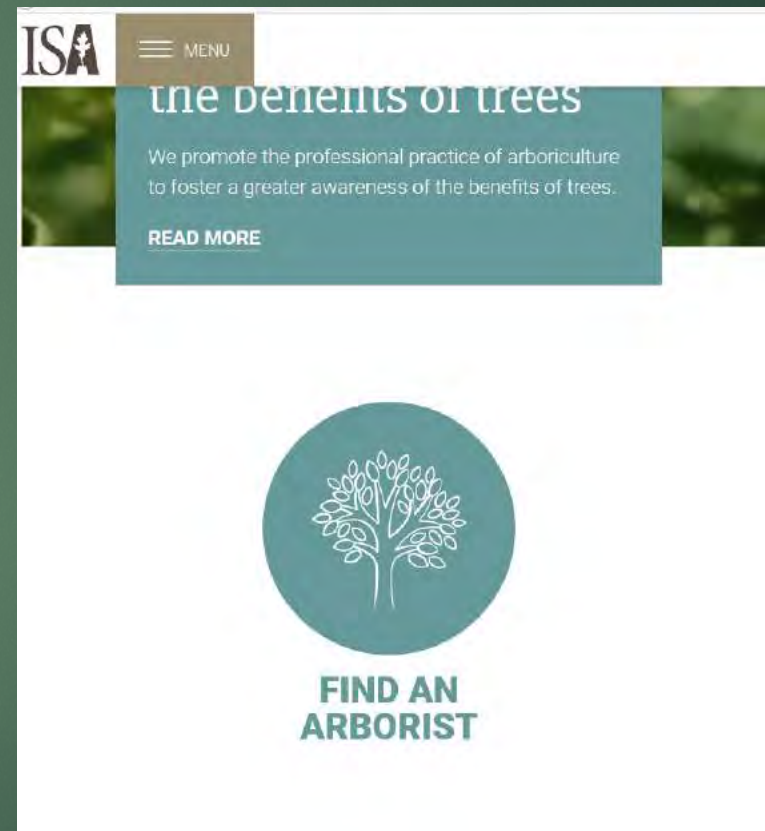
Photo credit: Andy Kittsley

Recommendations

- ▶ When a tree fails, plant a new tree
- ▶ Plant Trees in groups of 5 or more
 - ▶ Plant with diversity in mind
- ▶ Plant Wind Resistance Trees
- ▶ Give trees enough rooting space for the mature size of the tree
- ▶ Evaluate above and below ground considerations for space based on mature size of tree
- ▶ Consider life span when managing trees
 - ▶ Remove over mature trees
- ▶ Remove hazard trees
 - ▶ Poor Structure, Decay

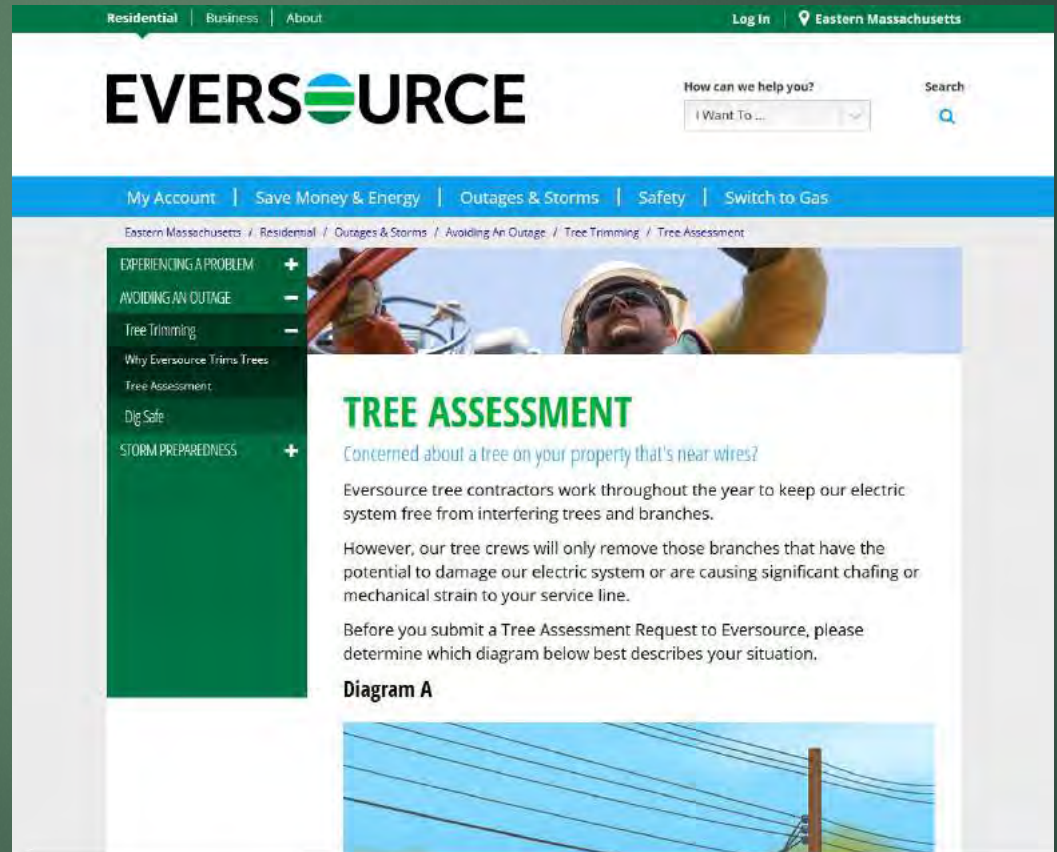
Hire a Certified Arborist

- ▶ International Society of Arboriculture
 - ▶ <https://www.isa-arbor.com/>
- ▶ Massachusetts Arboriculture Association
 - ▶ <https://massarbor.org/>



Trees near utilities

► <https://www.eversource.com>



The screenshot displays the Eversource website interface. At the top, a green navigation bar includes links for 'Residential', 'Business', and 'About', along with 'Log In' and 'Eastern Massachusetts'. The Eversource logo is prominently featured in the center. To the right of the logo is a search bar with the placeholder text 'How can we help you?' and a dropdown menu labeled 'I Want To ...'. Below the navigation bar, a blue banner contains links for 'My Account', 'Save Money & Energy', 'Outages & Storms', 'Safety', and 'Switch to Gas'. A breadcrumb trail indicates the current location: 'Eastern Massachusetts / Residential / Outages & Storms / Avoiding An Outage / Tree Trimming / Tree Assessment'. On the left side, a green sidebar menu lists various topics: 'EXPERIENCING A PROBLEM' (with a plus icon), 'AVOIDING AN OUTAGE' (with a minus icon), 'Tree Trimming' (with a minus icon), 'Why Eversource Trims Trees', 'Tree Assessment', 'Dig Safe', and 'STORM PREPAREDNESS' (with a plus icon). The main content area features a large image of a tree trimmer in a yellow safety harness and helmet. Below this image, the heading 'TREE ASSESSMENT' is displayed in green. The text explains that Eversource tree contractors work year-round to keep the electric system free from interfering trees and branches, but only remove branches that pose a risk to the system or cause significant chafing or strain. It encourages users to submit a 'Tree Assessment Request' and determine which diagram best describes their situation. The section is titled 'Diagram A' and includes a small image of power lines and a utility pole.

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- EXPERIENCING A PROBLEM +
- AVOIDING AN OUTAGE -
- Tree Trimming -
- Why Eversource Trims Trees
- Tree Assessment
- Dig Safe
- STORM PREPAREDNESS +

TREE ASSESSMENT


Concerned about a tree on your property that's near wires?

Eversource tree contractors work throughout the year to keep our electric system free from interfering trees and branches.

However, our tree crews will only remove those branches that have the potential to damage our electric system or are causing significant chafing or mechanical strain to your service line.

Before you submit a Tree Assessment Request to Eversource, please determine which diagram below best describes your situation.

Diagram A



Questions??

- ▶ Russell Norton
 - ▶ rnorton@barnstablecounty.org

Credits

- ▶ Content including pictures, research, and data from the University of Florida
- ▶ Edward F. Gilman, Professor, Environmental Horticulture Department, IFAS, University of Florida
- ▶ <https://hort.ifas.ufl.edu/woody/index.shtml>