

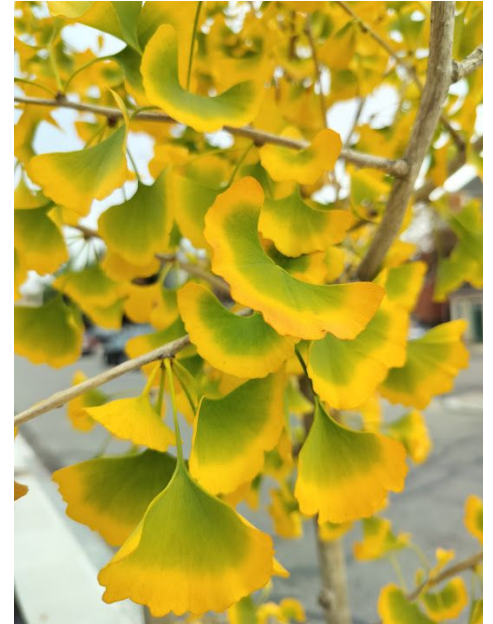
PROVIDENCE COMMUNITY TREE KEEPER TRAINING

PART I - "CLASSROOM" SESSION



WHAT THIS SESSION COVERS

- **Context - Providence's Urban Forest**
- *Whys & Whats of the PCTK program*
- **What the program/certification allows and doesn't allow (tools, jurisdiction, etc.), Safety/liability**
- *Basic biology of tree pruning, basics of cutting technique*
- **How do we decide what to prune on a street tree?! (Priorities, structural defects, preventative measures and improvements, etc.)**
- *Logistics of pruning (What to do w/ debris? Tracking/reporting)*
- **Ongoing communication and program participation**



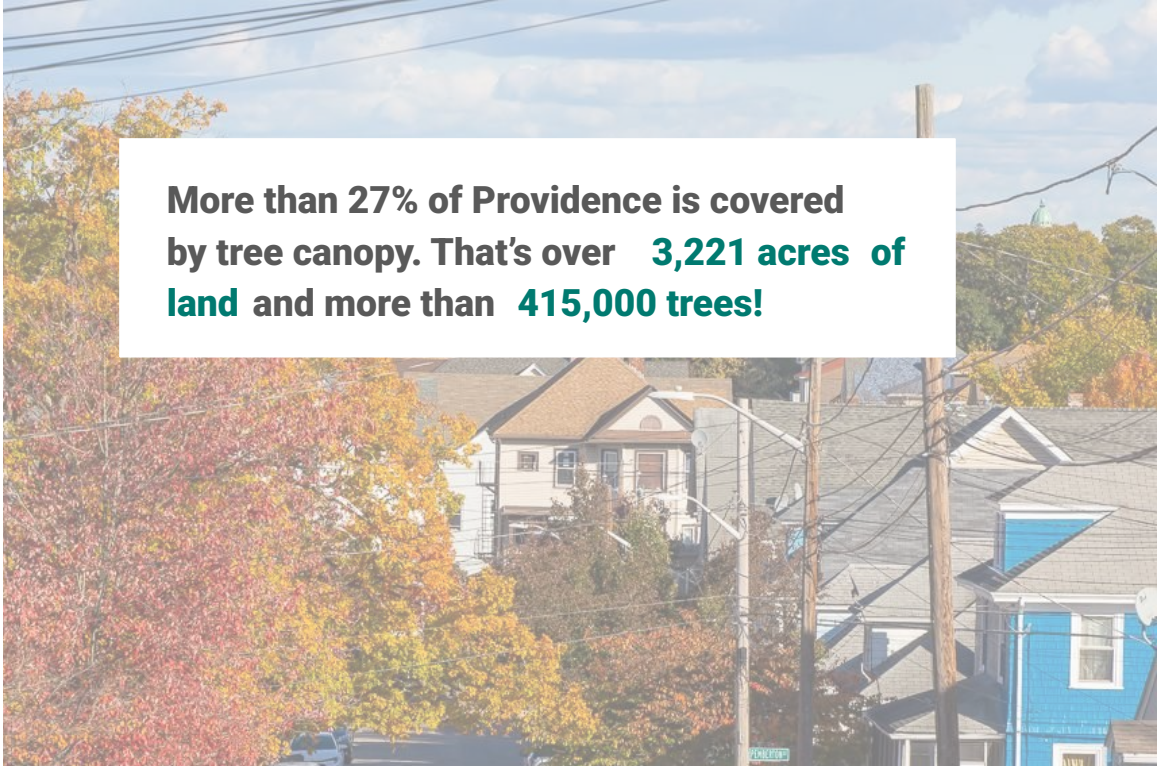
INTRODUCTIONS:

- Name, Pronouns if you like, where in/around Providence do you live/work/learn/spend time?
- What brought you to this program, or what experience do you have with trees/growing things?



WHAT IS THE URBAN FOREST?

It's the collection of *all* the trees that live within our city. All the beings that rely on and live among them—including us—are urban forest creatures!

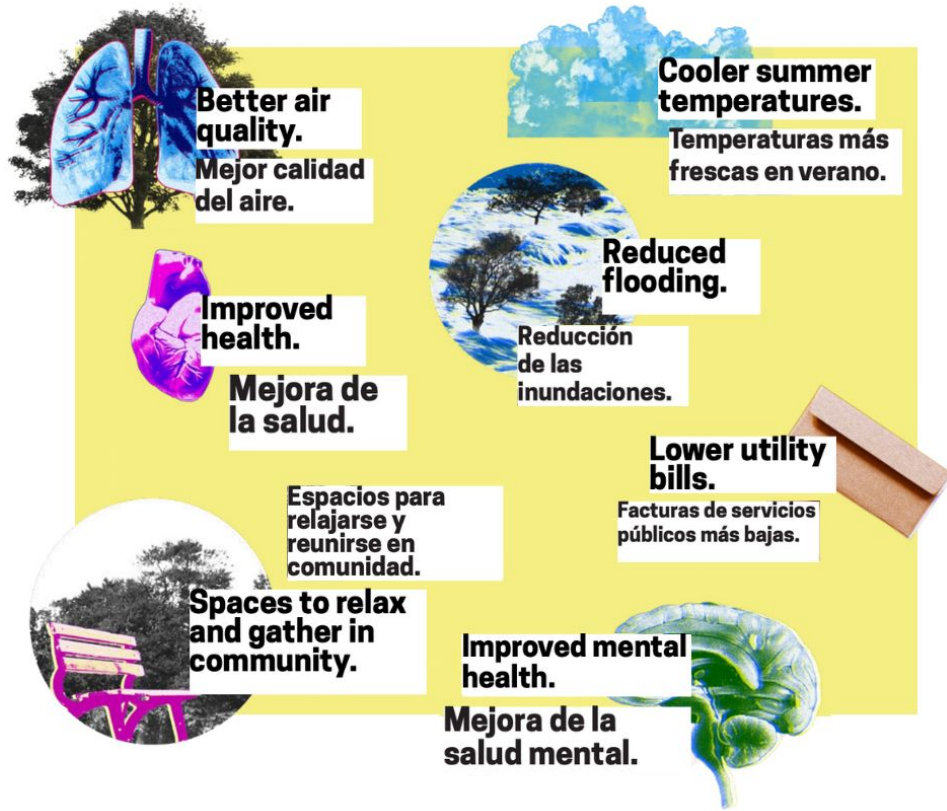


More than 27% of Providence is covered by tree canopy. That's over **3,221 acres of land and more than **415,000 trees!****

WHY TREES?

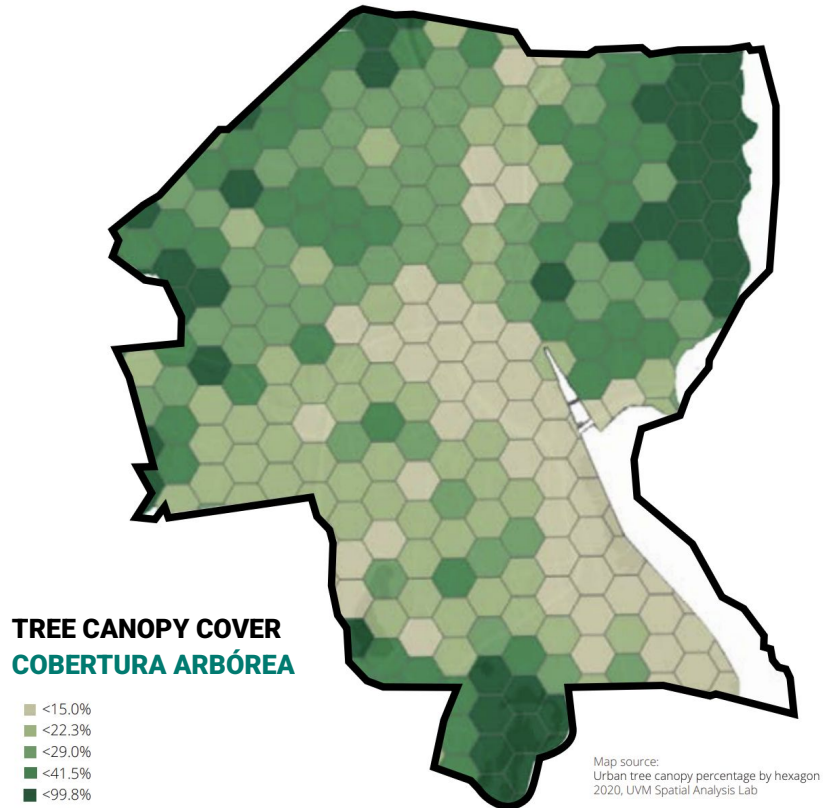
When we take care of the trees around us, they take care of us, providing a range of benefits that include:

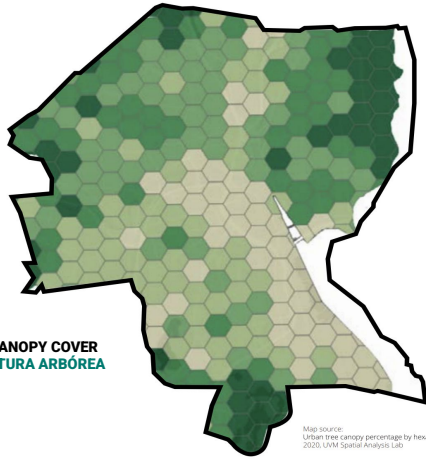
In fact, trees are the only urban infrastructure that *increase* in value over time, and that infrastructure needs to be maintained!



HOWEVER, PROVIDENCE'S URBAN FOREST IS NOT EQUITABLY DISTRIBUTED.

TREE EQUITY: the fair, equitable distribution of trees and the resources required to sustain them across all neighborhoods in a city, so that everyone has equal access to the health, climate, and economic benefits of the urban forest.

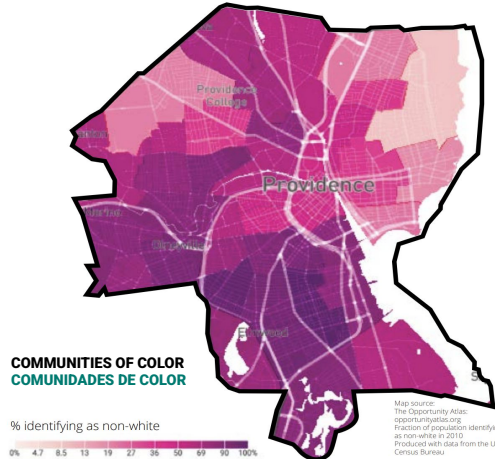




TREE CANOPY COVER
COBERTURA ARBÓREA

- <15.0%
- <22.3%
- <29.0%
- <41.5%
- <59.8%

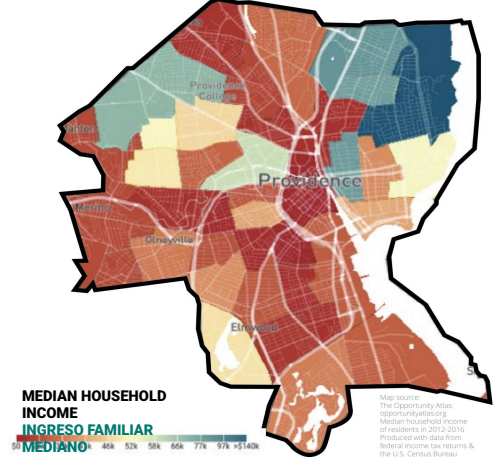
Map source:
Urban tree canopy percentage by hexagon
2020, UVM Social Analysis Lab



COMMUNITIES OF COLOR
COMUNIDADES DE COLOR

% identifying as non-white
0% 4.7 8.5 13 19 27 36 50 60 80 90 100%

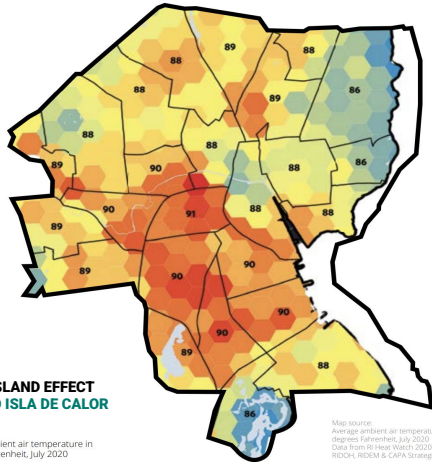
Map source:
The Opportunity Atlas:
opportunityatlas.org
Fraction of population identifying
as non-white in 2010
Produced with data from the U.S.
Census Bureau



MEDIAN HOUSEHOLD INCOME
INGRESO FAMILIAR MEDIANO

50 60 70 80 90 100
\$0 \$20k \$40k \$52k \$66k \$77k \$140k

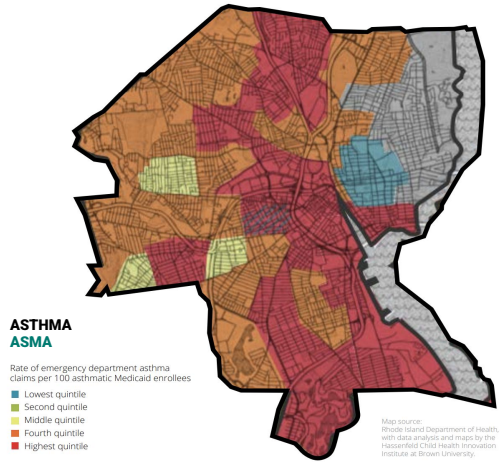
Map source:
The Opportunity Atlas:
opportunityatlas.org
Median household income
of residents in 2012-2016
Produced with data from
federal income tax returns &
the U.S. Census Bureau



HEAT ISLAND EFFECT
EFFECTO ISLA DE CALOR

Average ambient air temperature in
degrees Fahrenheit, July 2020

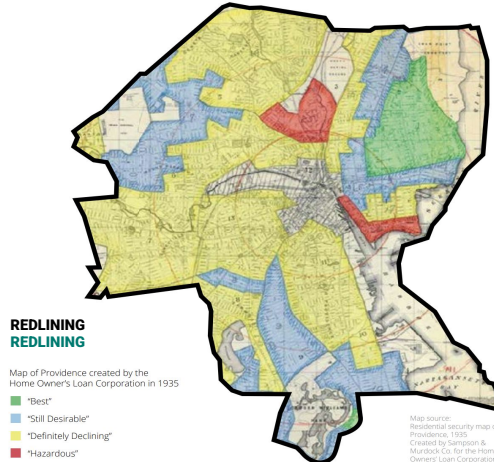
Map source:
Average ambient air temperature in
degrees Fahrenheit, July 2020.
Data from RI Heat Watch 2020.
RISMA, RID&M & C&M Strategies



ASTHMA
ASMA

Rate of emergency department asthma
claims per 100 asthmatic Medicaid enrollees
■ Lowest quintile
■ Second quintile
■ Middle quintile
■ Fourth quintile
■ Highest quintile

Map source:
Rhode Island Department of health,
with data analysis and maps by the
Hasslerfield Child Health Innovation
Institute at Brown University



REDLINING
REDLINING

Map of Providence created by the
Home Owner's Loan Corporation in 1935

- "Best"
- "Still Desirable"
- "Definitely Declining"
- "Hazardous"

Map source:
Residential security map of
Providence, 1935
Created by Sampson &
Murdock Co. for the Home
Owner's Loan Corporation

Our Urban Forest Network / Nuestra Red del Bosque Urbano

**City Forestry
Division**

**División Forestal de
la Ciudad**

**Community Urban Forestry
Practitioners**

**Organizaciones comunitarias que
practican la silvicultura urbana**

**Education and Training
Groups**

**Grupos de educación y
formación**

Utility Companies

**Empresas de
servicios públicos**

Municipal Departments

**Departamentos
municipales**

Environmental Groups

Grupos ambientalistas

**Advocates for
Intersecting Issues**

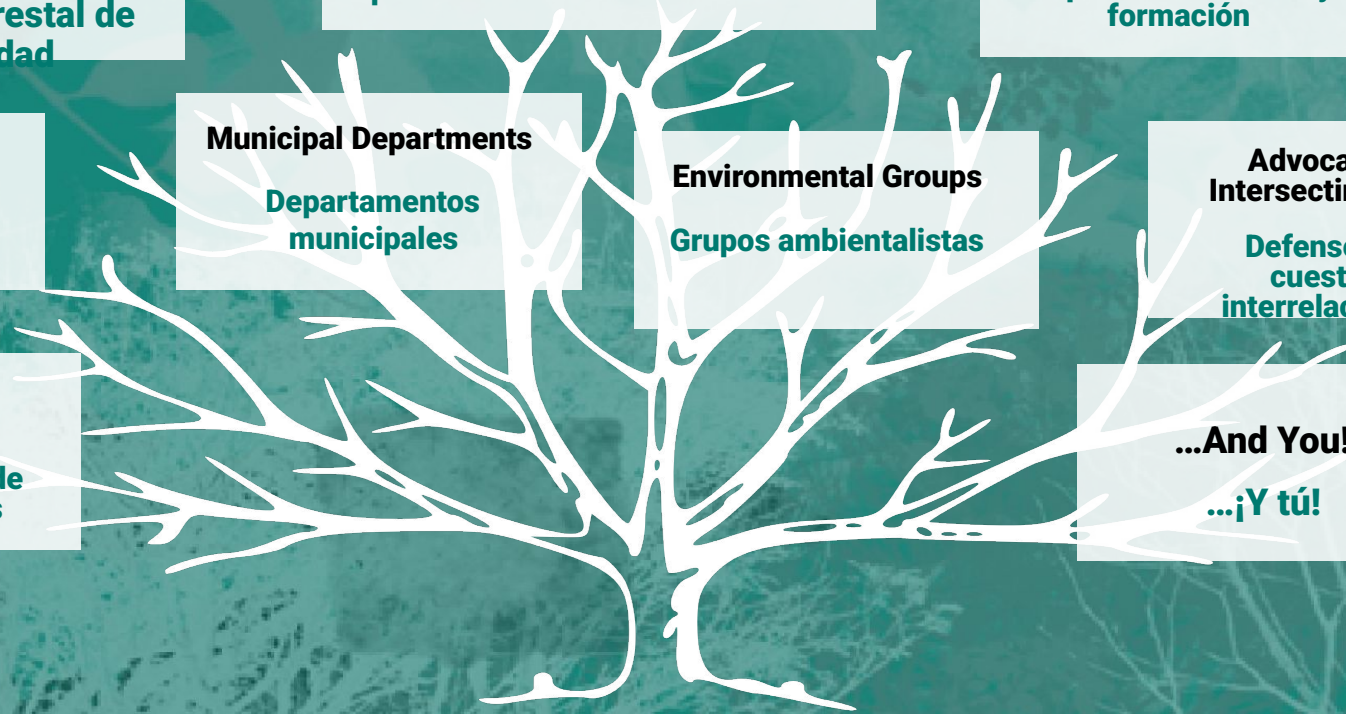
**Defensores de
cuestiones
interrelacionadas**

**Private Tree Care
Companies**

**Empresas privadas de
cuidado de árboles**

...And You!

...¡Y tú!



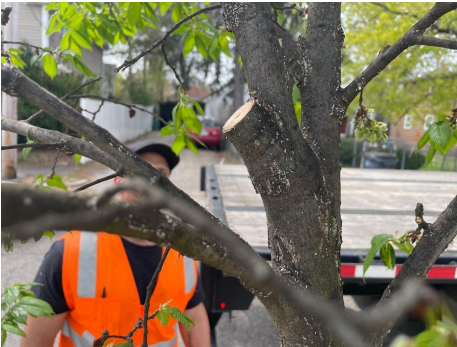
The *WHY* of the PROVIDENCE COMMUNITY TREE KEEPERS PROGRAM

- Young and newly planted trees require special care in order to survive and thrive —It's not easy being a young street tree!
- Approx 550 trees are planted every year along Providence's streets and public spaces through PNPP/the City's Neighborhood Planting Program—and more are planted by groups like WRWC and Groundwork, or by developers because of zoning/ordinance requirements.
- Limited capacity / resources of the City Forestry Division means in-house or contracted crews can't keep up w/ preventative pruning of *mature trees*...there's NO capacity for pruning small/young trees :(



The *WHY* of the PROVIDENCE COMMUNITY TREE KEEPERS PROGRAM

- Pruning/caring for young trees in their first 2-6 years, is *critical* for their survival, and sets our tree canopy up for success down the road!
 - Issues can be addressed or prevented *easily/quickly now* w/ a few small hand cuts. *If not dealt with, can lead to structural problems and increased risk down the road* (when they'll require a whole crew/lots of big equipment to address, and create big wounds that are harder for a tree to heal!)



WHY SHOULD WE PRUNE URBAN TREES?

(Can't they just be left alone?!)



Naturally occurring structural issues ↗



Human activity-related issues ↗

CHALLENGES FACING OUR URBAN TREES:

- Vehicle or human-caused damage
- Conflict with surrounding infrastructure
- Weather events
- Drought, soil compaction, and pollutants that can cause canopy dieback
- Pests and disease



...pruning can prevent or respond to these impacts on trees, reducing the harm done to trees, people, and other infrastructure.

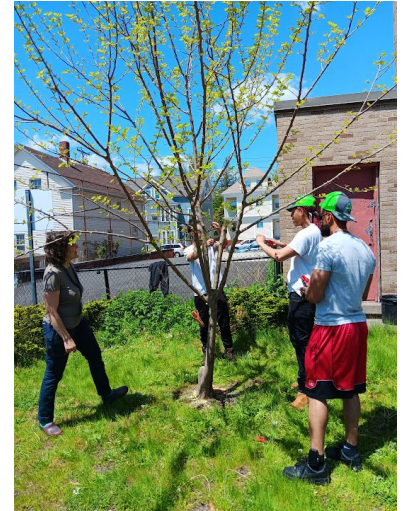
The *WHAT* of the PROVIDENCE COMMUNITY TREE KEEPERS PROGRAM

- In 2016 the PCTK program was created!
 - Modeled on ones in other cities, to help address gap in young tree care by training residents and community members in young tree care and pruning: authorizing them to prune trees in the public right-of-way, and inviting them to become stewards of and advocates for Providence's public trees!
- The Providence Parks Department's Forestry Division contracts PNPP (the City's long-standing partner in tree planting and care) to administrate the Providence Community Tree Keeper (PCTK) program.
- We lead trainings like this one directly for residents/the general public, as well as through youth and adult jobs training and educational programs via our many community partner organizations



WHAT AM I ALLOWED TO DO AS A CERTIFIED PCTK?!

- Prune trees in the Right-of-Way and on other public City-owned and managed spaces...
- With your feet-on-the-ground...
- Using hand tools!

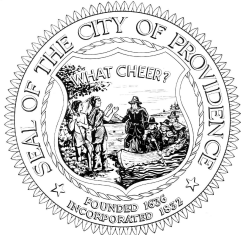


CITY'S TREE ORDINANCE

Section 23 ½ of the Providence Code of Ordinances

“A permit shall be required for planting, spraying, pruning, cutting above ground, removing, or otherwise disturbing any tree on any street, park, or other public place.”

PVD Tree Keeper certification permits you, by authority of the City Forester, to engage in tree care and pruning of public trees in accordance with the PCTK guidelines



WHERE IN PROVIDENCE AM I AUTHORIZED TO PRUNE?

- Trees in the **Public Right-of-Way**: i.e. in sidewalk tree pits or tree lawns!
- Trees in City Parks, at Providence Public Schools, or other City owned/managed properties



*With some
qualifiers....*

COMMUNICATE PROACTIVELY, GET BUY-IN, AVOID CONFLICT

Let people who might care know if your planning pruning the trees where they live, work, steward, etc.

(An opportunity to educate them about trees, best practices, and why you care!)



STREET TREES: Use your judgement! If it looks like someone cares for the space in front of their home or business, leave a flyer or verbally check-in with them *before* you prune, to let them know what you're planning to do, and why!

Querido vecino,

Un grupo de voluntarios del programa **Providence Community Tree Keepers** está trabajando en tu barrio. Este grupo va a mantener algunos de los árboles jóvenes en tu calle y posiblemente en el frente de tu hogar o negocio (podándolos y/o cubriendo la tierra con mantillo).

Los Providence Community Tree Keepers son residentes, miembros de la comunidad, y participantes en programas de desarrollo de la fuerza laboral que están capacitados y autorizados por la División Forestal de Providence para podar y cuidar los árboles jóvenes en las calles y parques de nuestra ciudad. Podando los árboles correctamente asegura que las ramas se mantengan alejadas de las calles, aceras, y casas.

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de acuerdo con la **Ordenanza Municipal de Árboles de Providence**, y también ayuda a mantener los árboles florecientes que crecerán para ser seguros, sanos y resilientes! (Si por alguna razón **NO** quieres que yo podel/cuide los árboles, nos puede llamar: (401) 484-7359)

El programa **Providence Community Tree Keepers** es administrado por la División Forestal del Departamento de Parques y Recreación en colaboración con Providence Neighborhood Planting Program (PNPP).

Para más información sobre PVD Tree Keepers Program (PNPP),
visita www.pnpp.org / info@pnpp.org / (401) 484-7359.
Si tienes preguntas generales sobre los árboles de la División Forestal: (401) 785-9450.



Dear Neighbor,

Volunteers and trainees with the **Providence Community Tree Keeper** program are working your neighborhood, and they may be doing some pruning and tree pit maintenance on the young street tree(s) in front of your residence or business.

The Providence Community Tree Keepers are residents, development program, students, and urban forestry workforce authorized by PNPP and the City's Forestry Division to help prune and take care of our City's young street and park trees. Proper pruning of young trees helps make sure tree branches stay clear of streets, sidewalks, driveways and homes (in accordance with Providence's **Municipal Tree Ordinance**) and also helps ensure our city's future mature trees are safe, healthy and resilient! (If for any reason you would prefer that tree pit care or pruning **NOT** be done on these trees, please let us know by calling (401) 484-7359.)

The **Providence Community Tree Keepers** program is administered by the Providence Department of Parks & Recreation's Forestry Division, in partnership with the Providence Neighborhood Planting Program (PNPP).

If you would like more information about PVD Tree Keepers, visit www.pnpp.org, email info@pnpp.org, or call (401) 484-7359. If you have general questions about Providence's street trees, contact the City Forestry Division at: (401) 785-9450.



PARKS, SCHOOLS, OR OTHER CITY-MANAGED PUBLIC SPACES: *Get permission from PNPP or Providence Forestry first!*

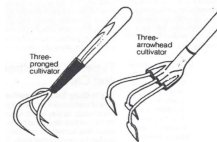
**Many PVD parks and schools have Friends Groups or school staff who help steward the space (<https://www.providenceparks.org/find-a-member-group-or-park>), and there are often specific goals or longer term plans for trees in these spaces....
Ask PNPP and we can connect you to the relevant groups/invested parties!**

AUTHORIZED TOOLS:

- Hand pruners/saws, single extension pole pruner - only what you can reach w/ your feet on the ground.
- No chainsaws, hedge-trimmers, or other power tools.
- Loppers are great for breaking down brush/branches, but **DON'T** make good clean pruning cuts!



Bypass Pruners



Hand Cultivators



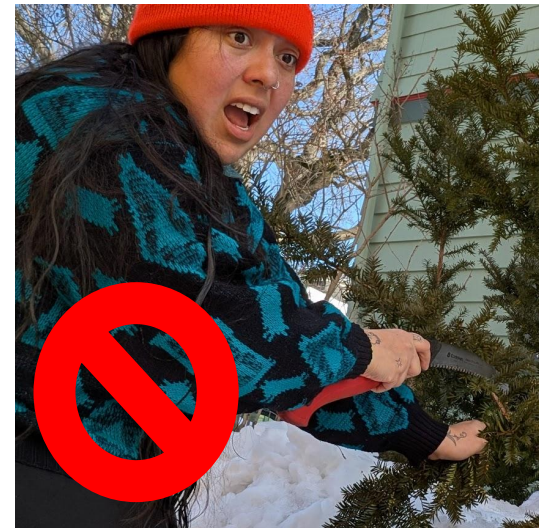
Folding Saw



Fixed Blade Saw

SAFETY TALK! TOOL SAFETY!

- Hand-powered tools are **still sharp**, especially if you buy them new or routinely sharpen them!
- Always be mindful of **the path of your cutting blade**, and what may be in its way!
- Never leave your hand saws unfolded or unsheathed and your pruners open. **Tools AND fingers can last a lifetime if we treat them with respect :)**



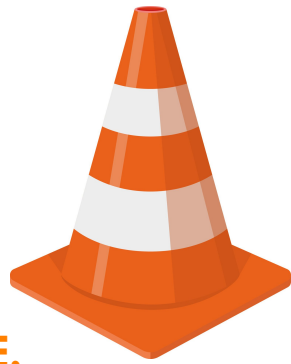
SAFETY TALK!

**NO CLIMBING ON
LADDERS, TRUCK
BEDS, MILK CRATES,
ETC.**



SAFETY TALK! TRAFFIC SAFETY

Many of the trees you will be pruning are on the street and in public spaces people use everyday.



- **ALWAYS LOOK BOTH WAYS BEFORE STEPPING INTO A BIKE LANE, ROAD OR DRIVEWAY**, and keep an eye on sidewalk traffic!
- Always think about where your branch is going to fall once you prune it off. Have friends help catch or hold branches as they are pruned to avoid hitting people/property or obstructing traffic flows.
- If possible, wear **HIGH VIZ CLOTHES**, so you stand out to the world around you! (If you're working in a busy area and you have them, it's great to use traffic cones for extra visibility).

TREE PIT MAINTENANCE:

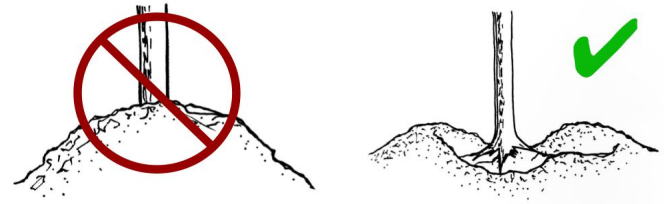
Young trees need care from the **ROOTS** to **THE SHOOTS**, from the **GROUND** to the **CROWN**!

Weeds, road contaminants, and soil compaction can all lead to young tree decline.



BEFORE WE EVEN *THINK* ABOUT PRUNING, IMPORTANT TO PROVIDE CRITICAL CARE AT THE BASE OF THE TREE:

- Cleaning up trash
- Weeding and aerating the soil
- Making sure soil and mulch are in a donut shape, and **NOT** piled up around the trunk



SOIL COMPACTION (i.e. HARD-PACKED DIRT)
KILLS TREES! Using a hand tool to carefully loosen
the top few inches of dirt in a tree pit is a *huge* help



Make mulch donuts, NOT volcanos:





Tree berming & mulching



Young tree watering

Girdling Roots

We remove them on planting day, but sometimes more begin to grow as the tree puts out new roots! Snip them at the base before they get too big.



LET'S TALK PRUNING!



PRUNING IS...

The practice of selectively removing parts of a tree (generally branches) to remove deadwood/damage/disease, enhance form, improve the tree's structure, and direct new/healthy growth.

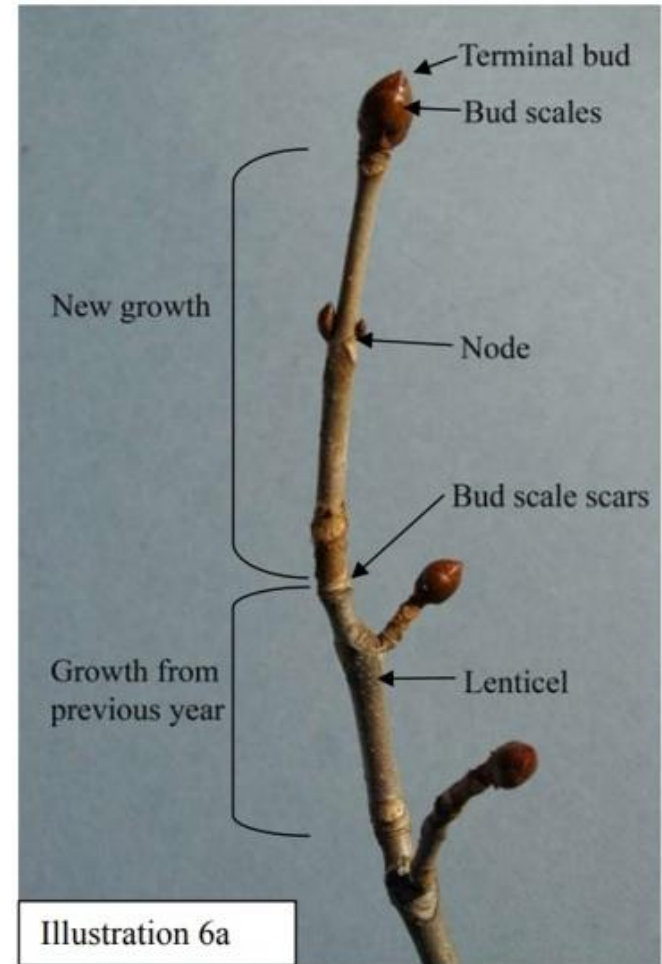
WHAT HAPPENS WHEN YOU PRUNE A TREE?

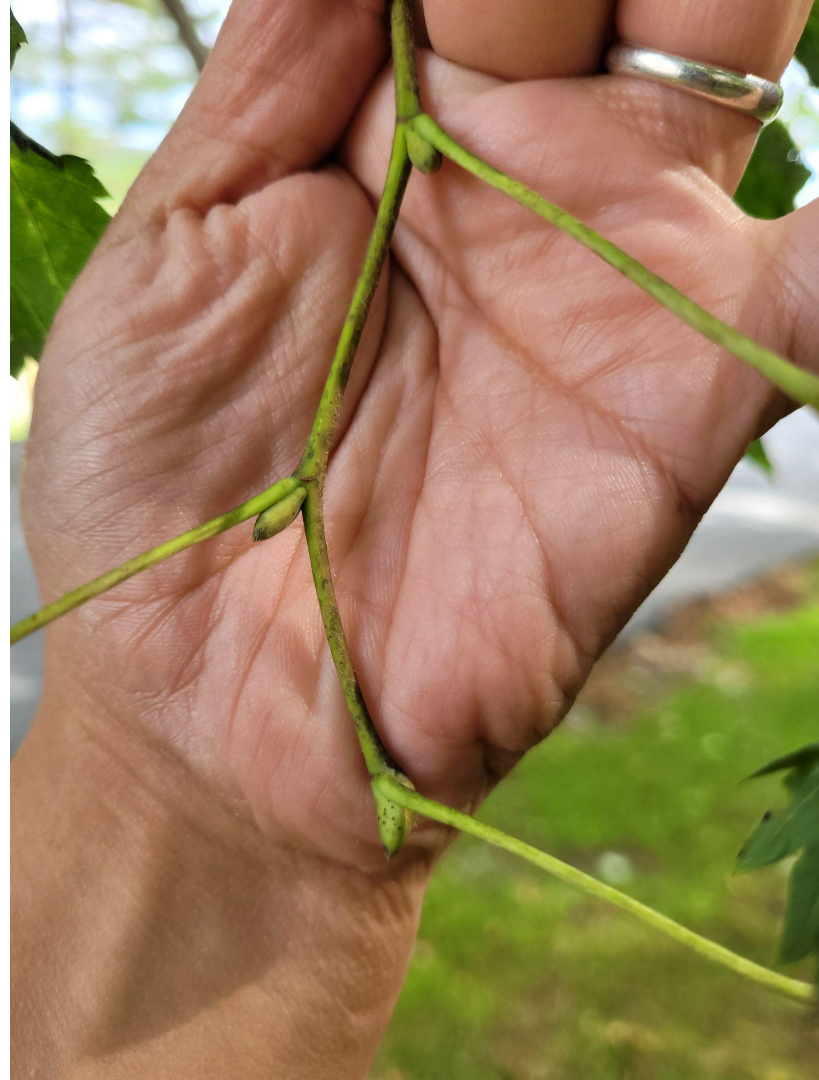
- We know that it is important to care for our growing trees by pruning them and what to prune them.
- Let's take a step back and think about tree biology and how trees grow and recover when pruned.



Tree Biology:

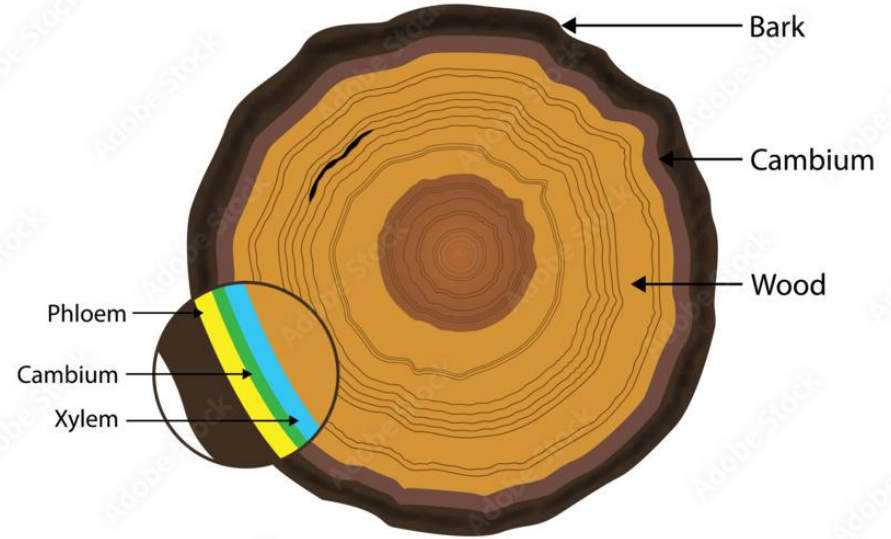
- Each tree species has a road map to how they grow.
- New **branches** start from a **bud**, as the branch grows it gets more buds.
- As that branch grows with the seasons, last years buds grow into their own new branches. This is how we end up with big **main branches**, with smaller **lateral branches** coming off.





Tree Biology:

- Trees grow taller and thicker as they age. This growth comes from a special layer between the bark and the interior wood called the **cambium layer**.
- The cambium layer is like the lifeblood of the tree. It transfers water, vital nutrients and sugars from one part of the tree to the other.
- When the cambium layer is disrupted or if it dries up then trees start to die.

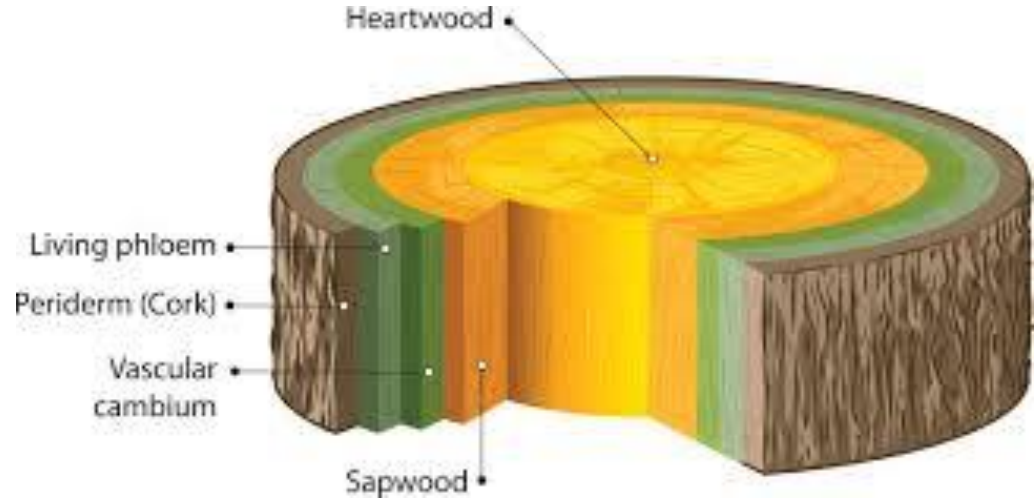


phloem
a living tissue that carries food
from the leaves to the roots

xylem
a dead tissue that carries water
from the roots to the leaves

What happens to a tree biologically when you prune it?

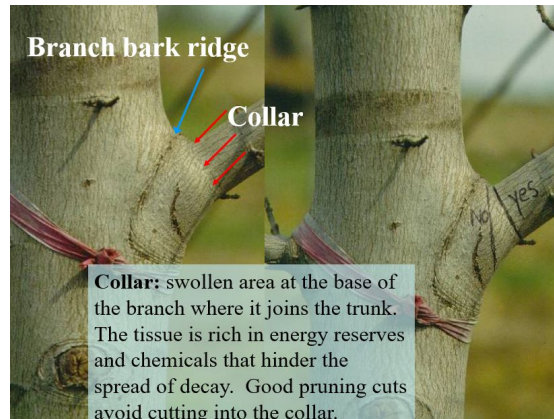
- Trees are compartmentalizers. If we lost a major limb it would be a life threatening event. When a tree loses a limb it is often not a life threatening situation *for the tree*.
- When cambium gets disrupted and heartwood is exposed the tree goes into protective mode. It does this in two ways...



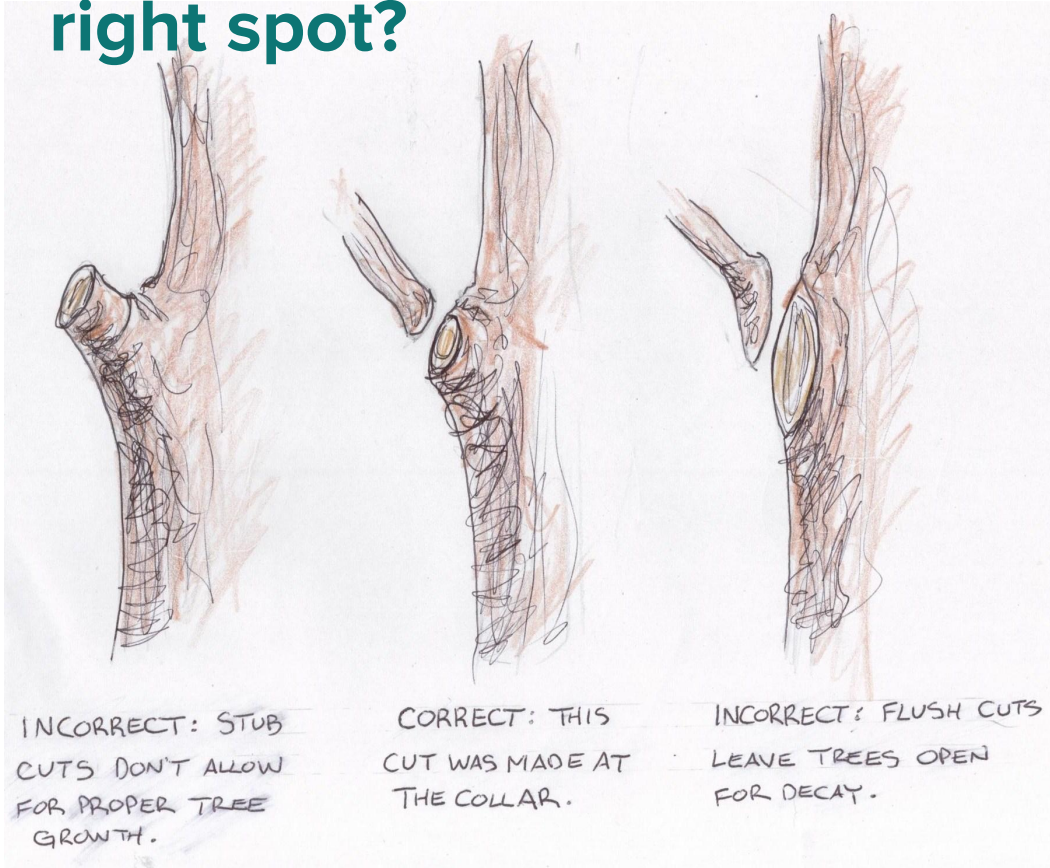


WHAT HAPPENS TO A TREE BIOLOGICALLY WHEN YOU PRUNE IT?

- When we prune a tree intentionally we prune it to **just outside the branch collar, perpendicular to the direction the branch is growing in.**
- **Branch Collar = the magic zone**
- **The smaller the wound, the quicker and easier the healing process is**



What happens if we DON'T cut a branch off in the right spot?



It is important to cut in the right spot. This branch wasn't pruned in the right spot and now there is dieback.

What happens if we DON'T cut a branch off in the right spot?

Stub cut! Wound can't properly close & heal!



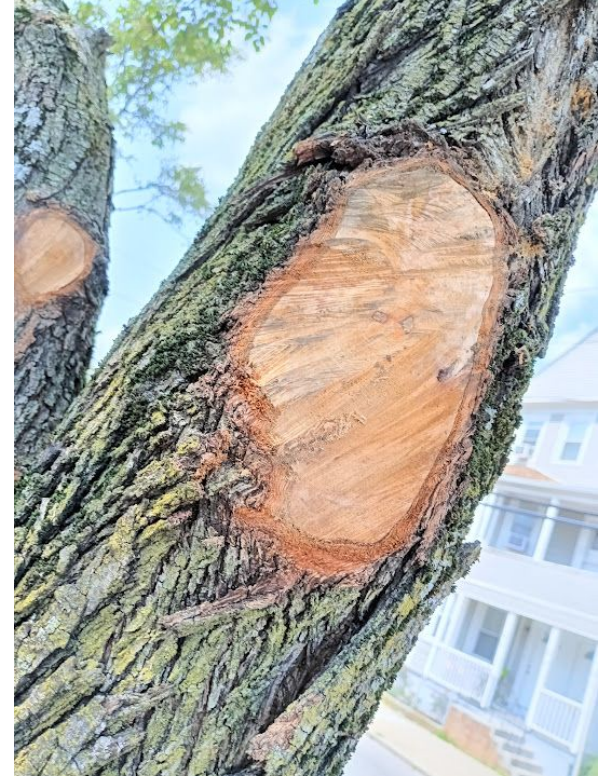
Proper cut!



Flush cut: cut too much off, delayed/slow healing!



Flush Cuts! Cutting too much!



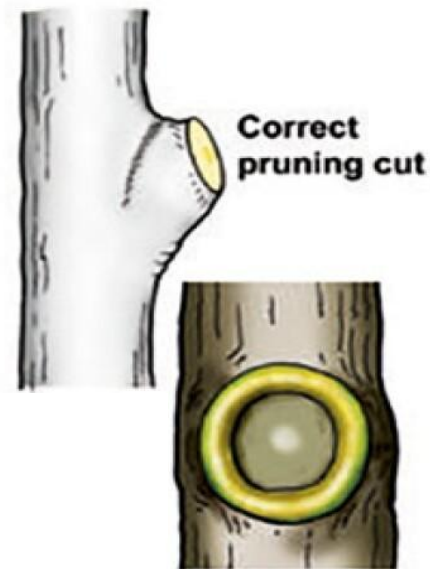
Oh, no!



What went wrong here?

PRUNING TECHNIQUE

Next session, we'll be out in the field actually pruning trees that have some of these issues... So let's talk about HOW to correctly prune a branch off the trunk!

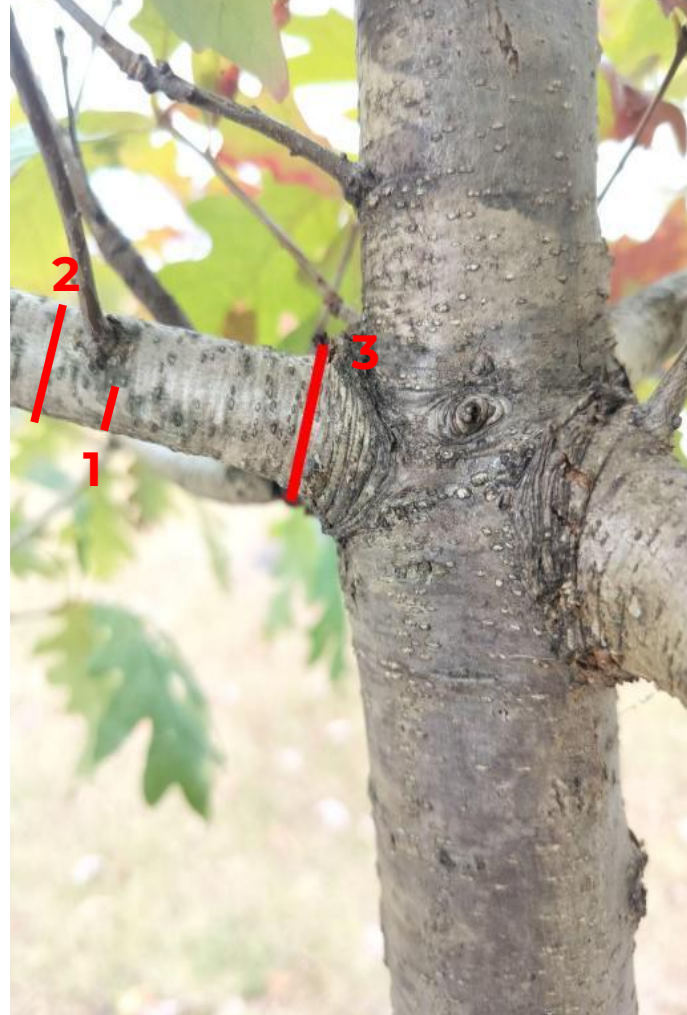
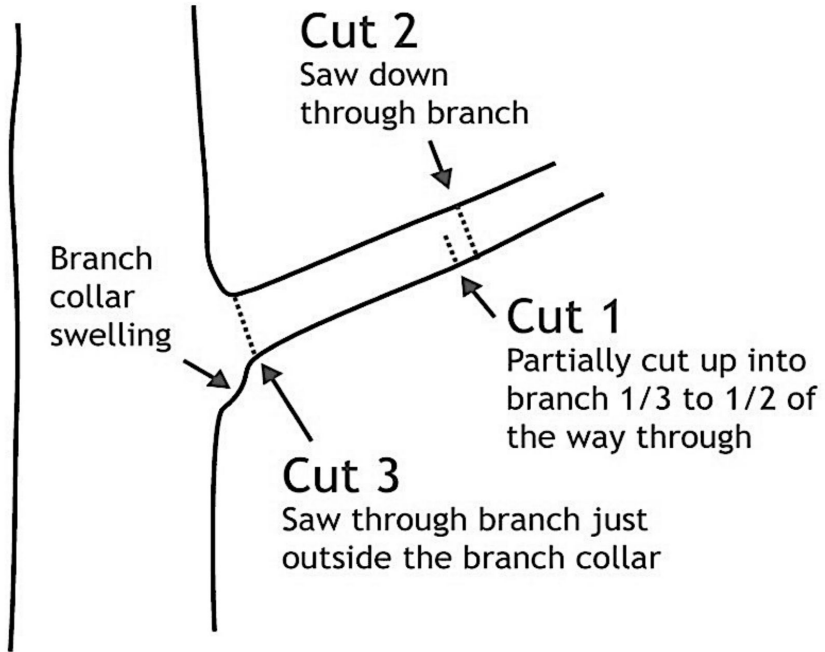


In order to make a good pruning cut, you'll need to identify the branch collar



Mechanics of a cut:

The Three Cut Method



Mechanics of a cut: *How to angle the blade*



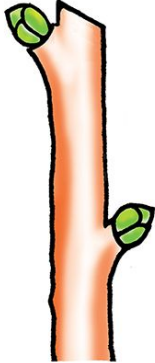
Making as small and as clean of a pruning wound is important. Here are examples of pruning cuts/damage points that weren't able to properly heal...



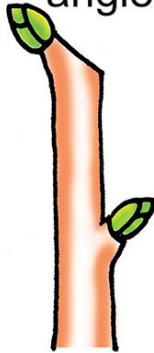
But what if I am not pruning back to the main stem?

When you are not pruning back to a union with a branch bark ridge, you have to prune to a branch union or bud. All branches started as a bud and have what it takes to close over the pruning wound.

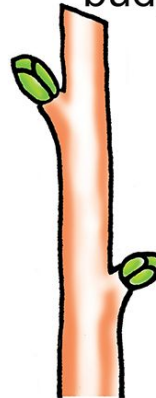
Good cut!



Too close to bud,
angle too tight



Too far from
bud, left a stump

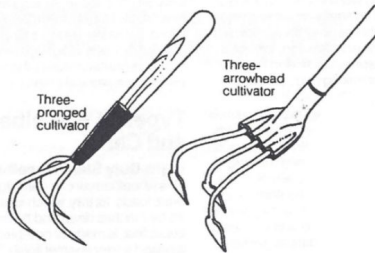


The right tools for the job:

Your PCTK badge allows use of **hand tools** (no chainsaws) on branches you can reach **while both of your feet are firmly planted on the ground!**

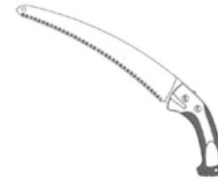
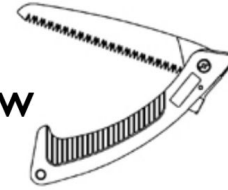


Bypass Pruners



Hand Cultivators

Folding Saw



Fixed Blade Saw

NO POWER TOOLS!!!!!!

The right tools for the job...

When to use a hand pruner v a hand saw



- **Bypass hand pruners** are great for trimming away material **1 inch or less** in diameter.
- **Hand saws** are great for pruning branches that are **larger than an inch** in diameter.



The BIG Picture:
What is pruning?
Why do we do it?



Street trees are ideally pruned and trained to have an excurrent form with a strong single stem/trunk/leader

Notice how the lower limbs have been pruned off for street and sidewalk clearance



Ellery St

A large, leafless tree with a thick trunk and many bare branches stands in a park. In the background, there is a red building with white trim. The sky is overcast and grey. The foreground shows a paved path and a grassy area.

Park trees are often keep a more “natural” form than street trees.

Most PVD parks and schools have maintenance staff or friends groups who steward

Check in with any relevant groups/invested parties before going out and pruning anything... *even on the street!*

Park trees often have the space to grow big. The bigger the tree, the more benefits we all feel.

There are lots of diff outcomes you might want to achieve w/ pruning...

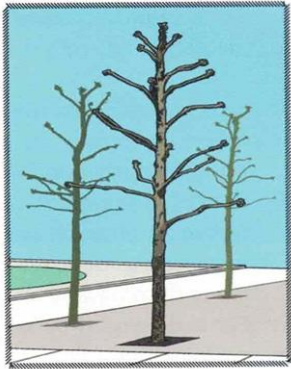


Figure 4. Pollarding is a semi-formal pruning system. After years of sprout removal, pollard heads develop at the end of the branch.



Figure 5. Espalier is a formal system for developing plants in a two-dimensional plane.

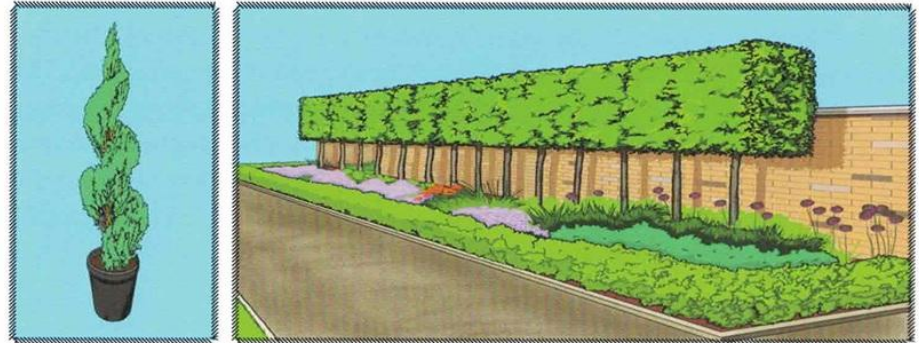
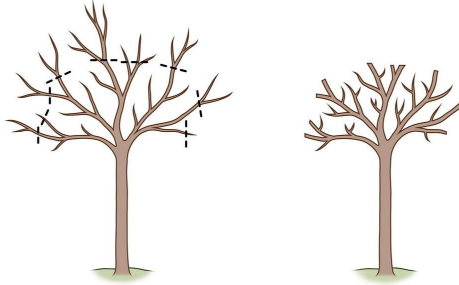


Figure 3. Topiary is a formal pruning system in which plants are pruned to the desired shape such as the spiral topiary (left) or aerial hedge (right).

*...your goals and the specifics of the site and type of tree will inform how, when, what and how often you prune! **PCTK badges are geared towards pruning primarily young street trees for damage mitigation, clearance and form***

Other techniques to **NOT** do on street and park trees: Heading, Topping and Lion Tailing

Where you are pruning on the tree matters!



- **Heading Cut:** The removal of the main leader of a tree's new growth OR cutting back major branches between nodes

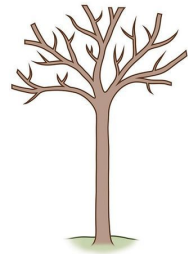
- **Topping Cut:** removing the main leader of a tree



- **Lion Tailing:** removing all the lateral branches off a main branch.

Other techniques to **NOT** do on street and park trees: Heading

Heading Cut: The removal of the main leader of a tree's new growth OR cutting back major branches between nodes. Often see this in aesthetic landscaping but it is **NOT** actually good for the trees. Usually bad with one exclusion:



- Only exception pruning orchard trees: we don't teach this right now. Not appropriate for street trees.

Other techniques to **NOT** do on street and park trees: Topping

Topping Cut: The removal of the main leader of a tree. Usually bad, but may look like other things:



- Topping cut look-alikes: cleaning up after a tree was hit by a car.
- Forestry “butts”. You may see it around the city but you will never be removing a large tree as part of PCTK.

OTHER TECHNIQUES TO **NOT** DO ON STREET AND PARK TREES: LION TAILING

Lion Tailing: removing all the lateral branches off a main branch. Often see this in aesthetic landscaping but it is **NOT** actually good for the trees.



Lion tailing makes the tree's structure weaker and can leave a tree **MORE** prone to breaking in the future

SO HOW DO YOU PRUNE A PVD STREET TREE?!

Now that you know what young tree pruning is & why we do it, we'll start looking at how to decide which branches to prune (by identifying the issues you see on each tree!)



WHEN YOU FIRST APPROACH A TREE, WALK ALL THE WAY AROUND IT. WHAT DO YOU NOTICE?

- **Ground condition**

- Weed overgrowth
- Compaction
- Mulch presence
- Potential hazards to us!
(needles, waste, garbage)

- **Tree condition**

- Wounds/damage
- Living canopy vs. deadwood
- Bad pruning cuts
- Signs of pest/disease



- **Surrounding infrastructure**

- Sidewalk lifting
- Overhead wire interference
- Nearby buildings/structures
- Blocked traffic signs

- **Stay aware of your surroundings at all times!**

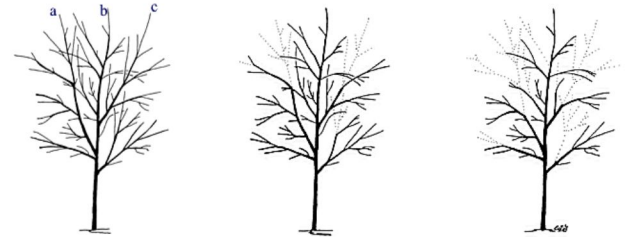
- Road traffic
- Falling tree debris
- People walking by

TAKE IT SLOW!

- Wait a couple of years after planting a tree before pruning it -- let it get settled!
- Trees can bounce back, but pruning shouldn't be a huge stress to a tree: **don't prune more than 25% of the crown of a young tree in a growing season** (less for mature trees) making note of previous recent pruning wounds.

YOUNG TREE PRUNING - PRIORITIZING!

- **First priority [tree has already experienced harm – goal: prevent further harm] Also called “cleaning”**
 - 3 Ds (dead, damaged or diseased!)
 - Stubs & sprouts
- **Second priority - Assessing/weighing multiple Current structural defects, future preventable structural defects, clearance pruning. [Overall goal: improve tree’s structure to prevent branch failure]**
 - Cross branching
 - Weak branch unions
 - Double leader
 - Closely stacked branches
 - Sidewalk/road clearance, low branches (also called “limbing up”)
 - Branches nearing surrounding infrastructure / buildings
 - Aesthetics! Making the tree look balanced/symmetrical



Important to remember: there are often *multiple* right answers, and it usually takes *multiple* seasons of pruning to get a tree into good shape!

THE 3 DS: DEAD, DAMAGED & DISEASED



THE 3 DS: HOW TO TELL IF PART OF A TREE IS DEAD IN WINTER



Live cambium = Live tree material

...

Alive cambium will be green. You can check by gently scraping the bark at the end of the branch.

...

Additionally, if the tree has external buds (not all do) look closely to see if they are desiccated or not even there anymore.



THE 3 DS: DEAD, DAMAGED & DISEASED



THE 3 DS: BEST PRACTICES AROUND PRUNING OUT DISEASE



- You cannot prune out all diseases.
 - Here we have **black knot of prunus**, which is a fungal issue that **can** be pruned out and does occur on street trees in pvd.
 - Send us pics if you are unsure!
- If you are pruning out diseased tree material you **MUST** sanitize your tools in between branch removals.
 - Sanitizing tools prevents the spread of the issue you are trying to prune out.
 - You can buy special tool sanitizers, but rubbing alcohol and a rag or spray bottle works just fine.
 - Dispose of material in a safe way. Never carry wood (diseased or not) over state lines.

“CLEANING UP” STUBS & SPROUTS



ADDRESSING STRUCTURAL ISSUES:

“GOOD” STRUCTURE VS “BAD” STRUCTURE

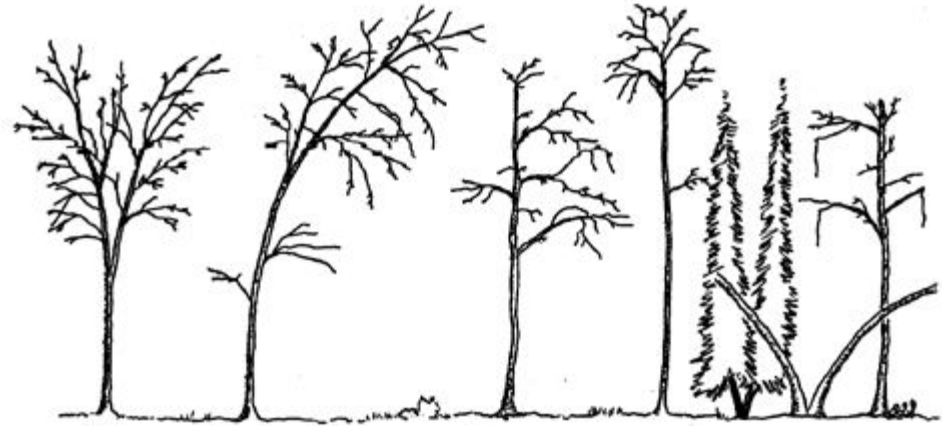
Good, structurally sound trees feature

- **Leaders-** a single, dominant central leader vs codominant/competing, multiple leaders
- **Branch attachment-** branches with wide, “u” shaped angles of attachment vs tight, “v” shaped angles of attachment & included bark
- **Branch aspect ratio-** branches that are significantly smaller in diameter than the trunk/parent branch vs large aspect ratio branches (branches that are $\frac{1}{3}$ - $\frac{1}{2}$ or more the size of parent branches)
- **Branch spacing/direction-** well-spaced, outward growing, lateral branches vs clustered/crowded branches, crossing/inward growing, vertical branches

Each instance of bad structure leads to more likelihood of branch and/or whole tree failure. Keep in mind, different tree species have different forms and growth habits....

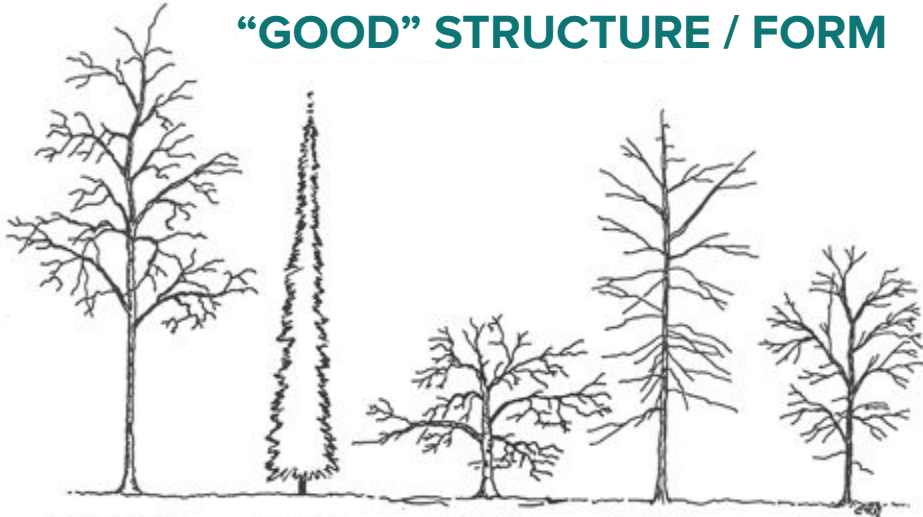
“BAD” STRUCTURE / FORM

A well-structured tree is resilient, able to withstand wind and snow/ice loads, and has a longer, safer lifespan

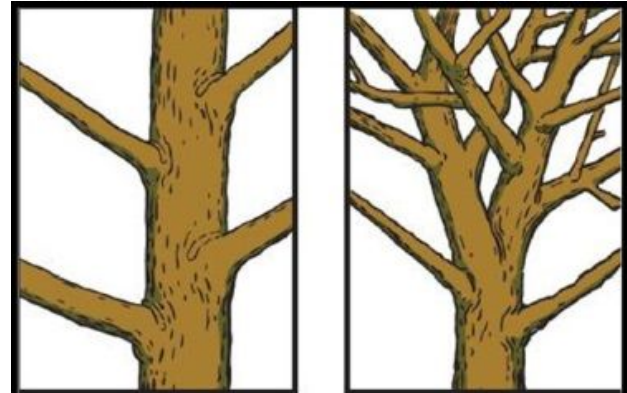


- Weak codominant trunk
- Leaning tree
- One sided canopy
- Branches only at top — small live crown ratio
- Weak, double trunk
- Dead top and branches

“GOOD” STRUCTURE / FORM



- One main trunk
- Main branches on lower half of canopy — high live crown ratio
- Live foliage at top of tree
- One trunk
- Branches spaced apart
- One trunk
- Small diameter branches
- One trunk
- Main branches spaced apart



Good Structure

Poor Structure

“Good” versus “bad” tree form



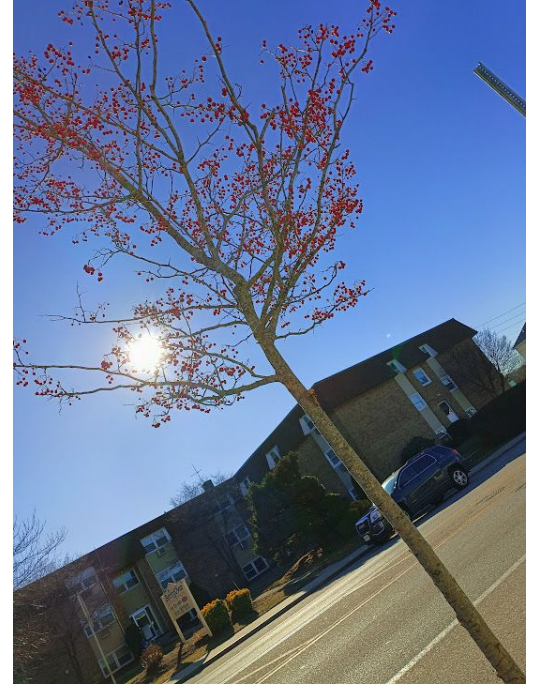
“bad” tree form



“Good” tree form



LEADER - the main, usually central, stem or trunk that grows vertically upward



Trees with good structure have a single, dominant central leader....



... vs trees with codominant/competing, multiple leaders

Addressing Multiple / Codominant Leaders

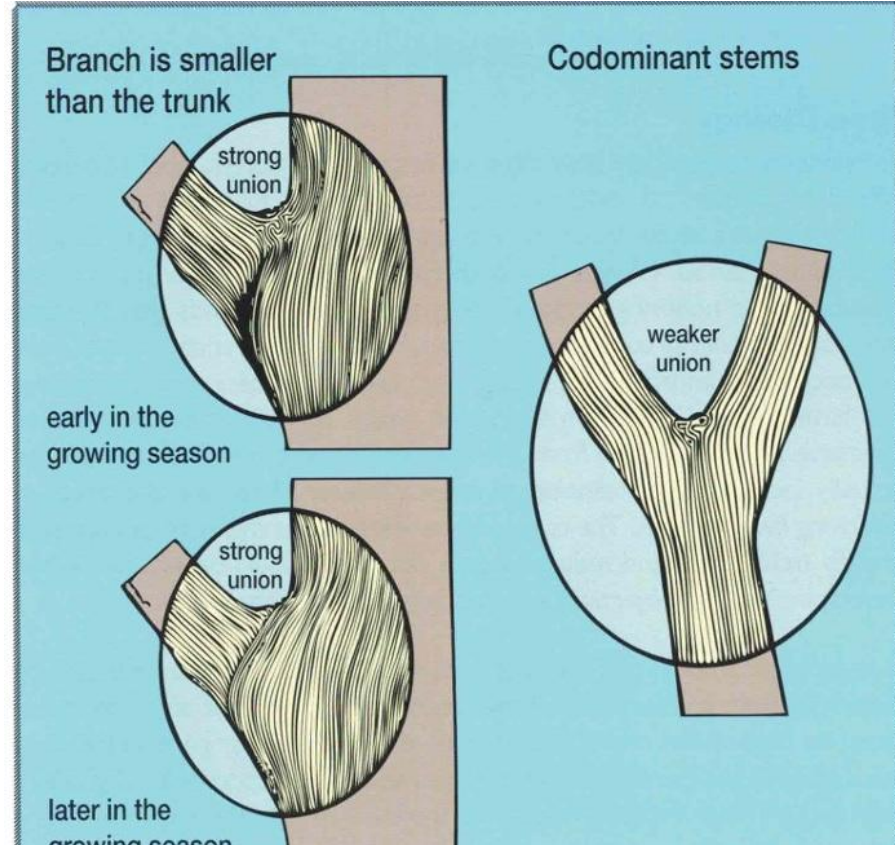
How do you decide which leader should be the winner?

Check for size, orientation, and structural issues higher up

Remove or reduce (remove a portion of) the competing leader(s) depending on the size and portion of branches needing to be removed (while staying under 25%)



BRANCH ATTACHMENT / UNION- the structural junction where a branch meets the trunk or a parent stem. Branch attachments are strengthened by interlocking wood grain, a branch collar, and a branch bark ridge



Recognize strong branch attachments as well as where to make final cut!

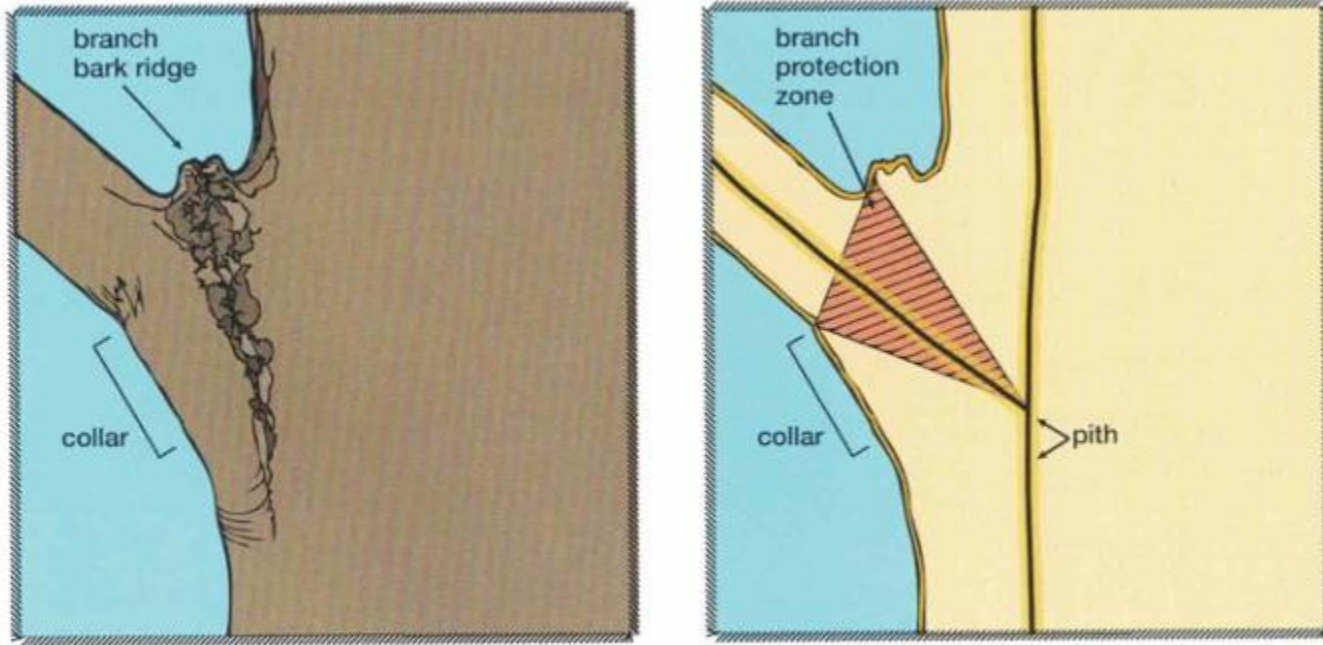
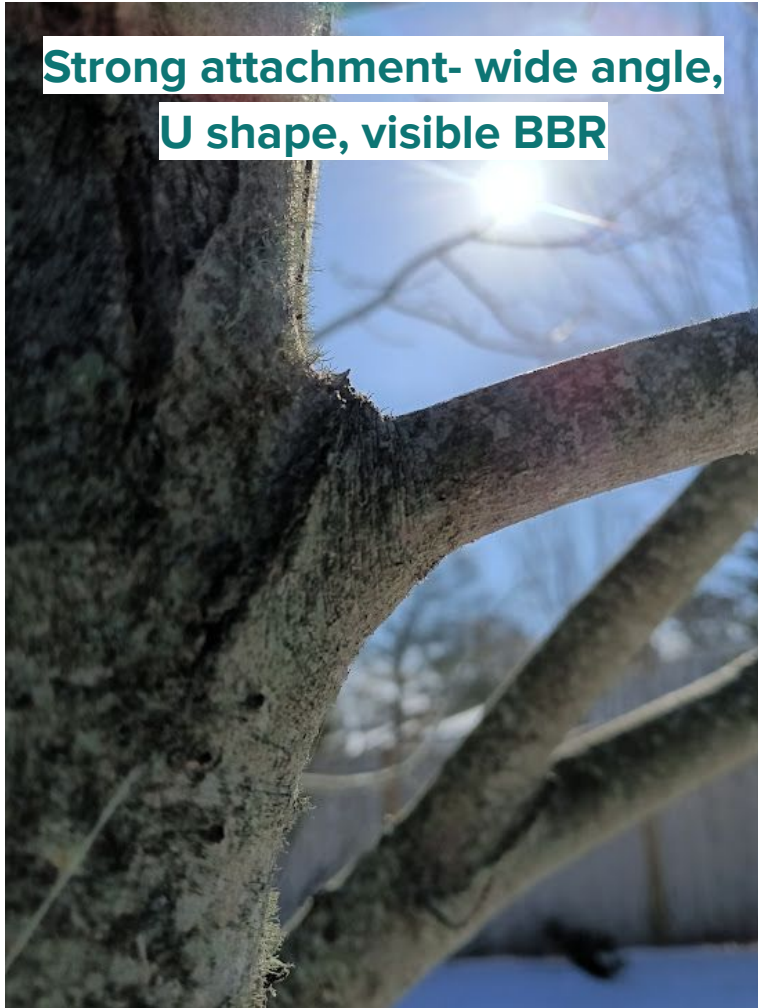


Figure 12. A branch protection zone at the base of branches reduces the spread of decay into the stem.

**Strong attachment- wide angle,
U shape, visible BBR**



**Weak attachment- tight angle,
V shape, included bark**

Address weak branch unions by removing!

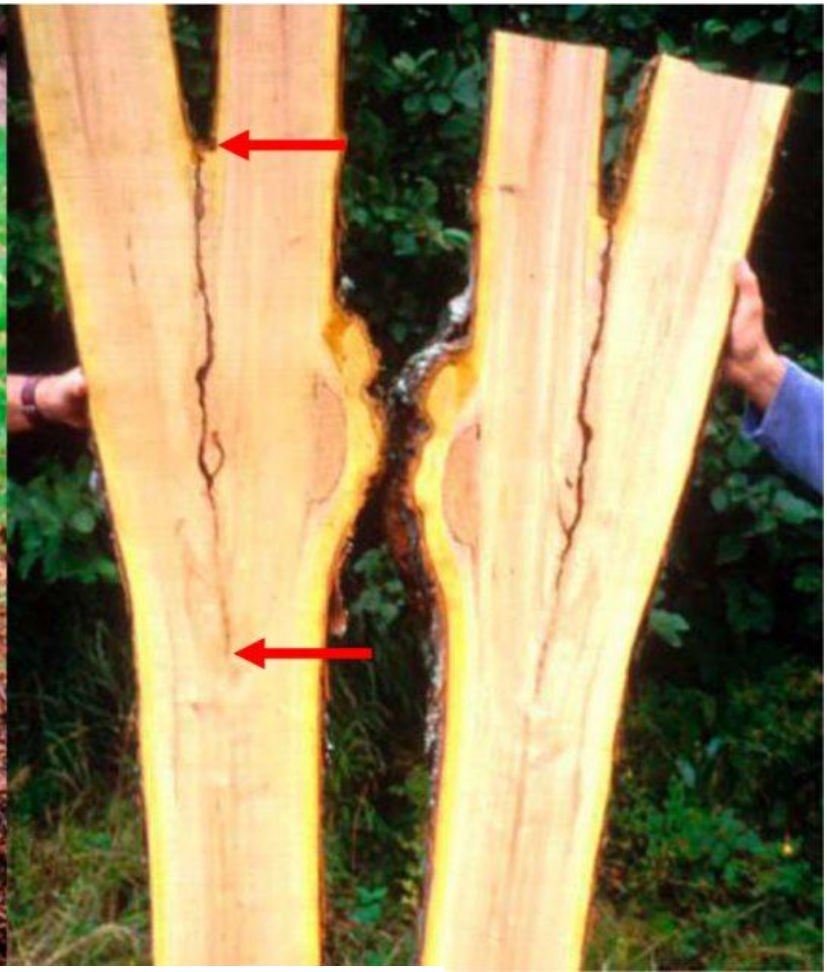


Here's what can happen when codominant leaders and branches with weak attachments are **NOT** removed...







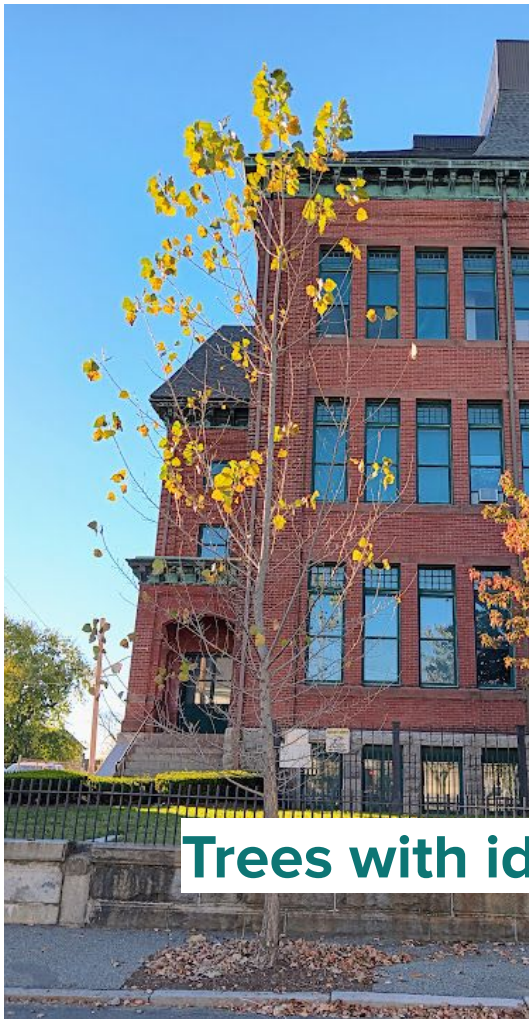


A look inside: included bark!

BRANCH ASPECT RATIO = the diameter of a branch, relative to the diameter of its “parent stem” or the trunk.



To be structurally sound, a branch should be less than $\frac{1}{2}$ the diameter of the trunk or parent branch.



Trees with ideal branch aspect ratio



To address, remove large ratio branch or reduce by cutting back to another branch which will slow it's growth



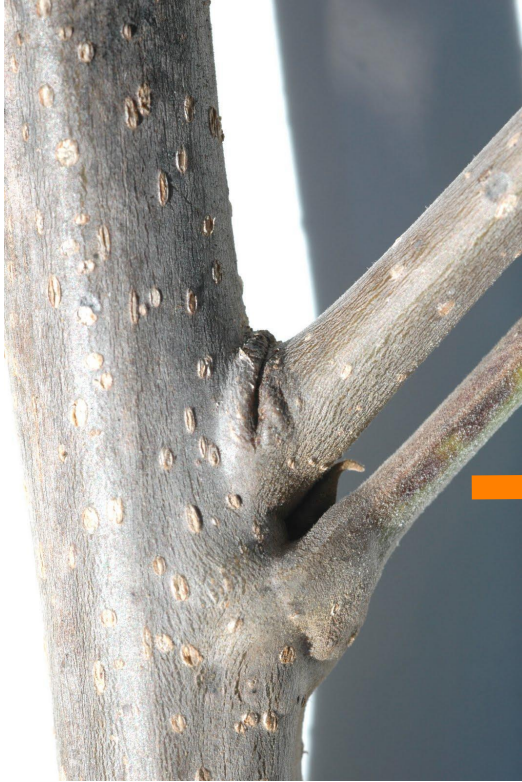
Trees with large aspect ratio branches

Branch spacing- the vertical and radial arrangement of branches along the trunk of a tree



Branch clusters

Tightly spaced, clustered branches can lead to a lot of stress and weight on one portion of the tree and as they grow can become included and sometimes choke each other out!



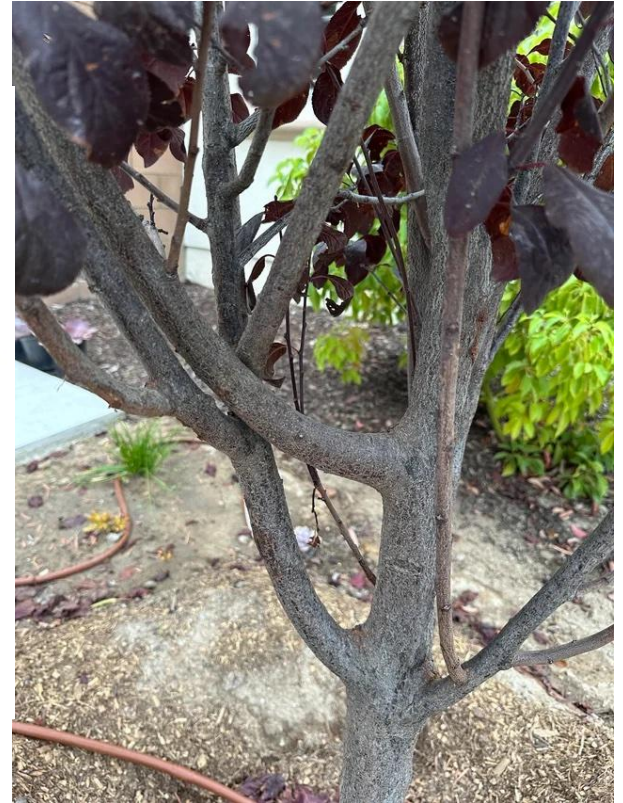
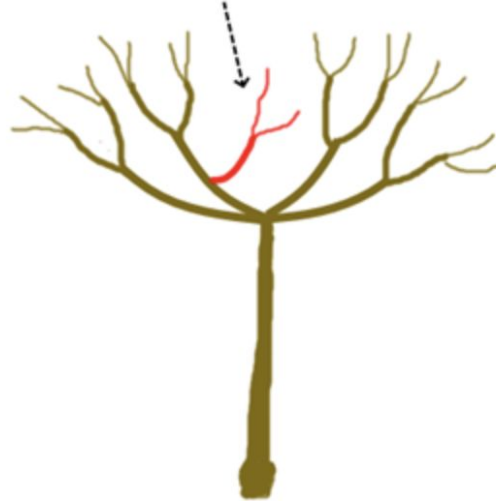
Removing clusters and/or tightly spaced branches



Inward Growing, Crossing and/or Rubbing Branches



branch growing inwards
towards open vase centre



Removing branch clusters and/or tightly spaced, inward growing branches



Remove one!



Clearance Pruning & Limbing Up

Clearance pruning and **limbing up** of young street trees is an important aspect of PCTK.

...

Newly planted and young trees often have branches that grow into the airspace over the roads and sidewalks. It can be harder for us to get around and more likely that tree branches get broken or ripped off.

...

As young trees grow fuller and taller we can slowly reduce or remove the lower branches until they no longer are conflicting with our daily life.





Clearance Pruning & Limbing Up

Clearance requirements for Providence street trees are **8ft over sidewalks, 12 ft over roadways, and 18 ft over truck thoroughfares!**

...

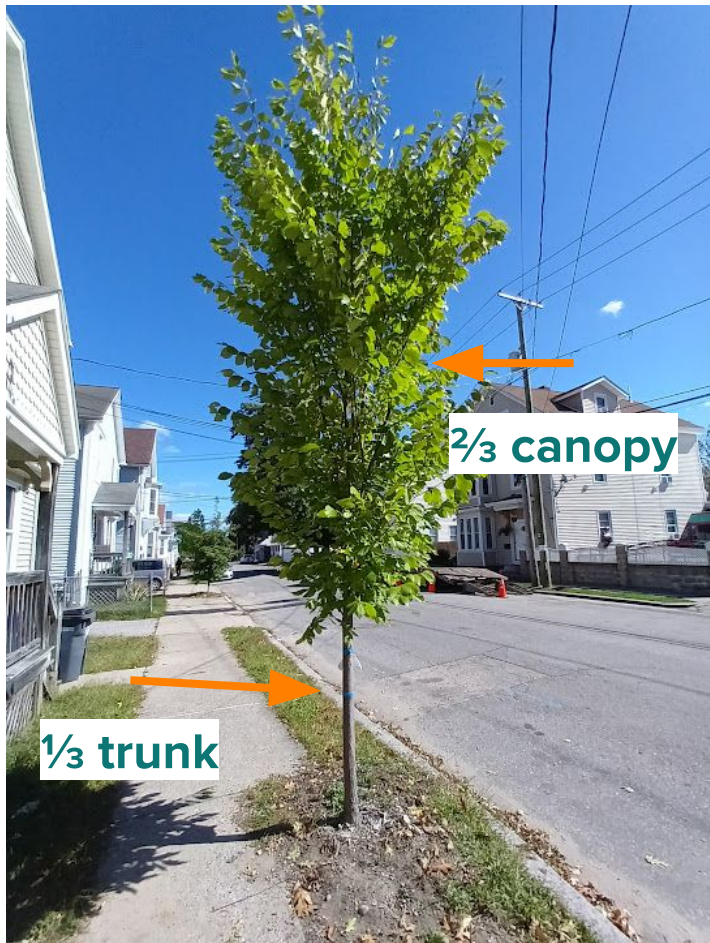
When limbing up keep in mind, a tree should ideally have a $\frac{1}{3}$ trunk to $\frac{2}{3}$ canopy ratio

...

Clearance pruning can also include pruning for lines of sight around intersections and street signs.

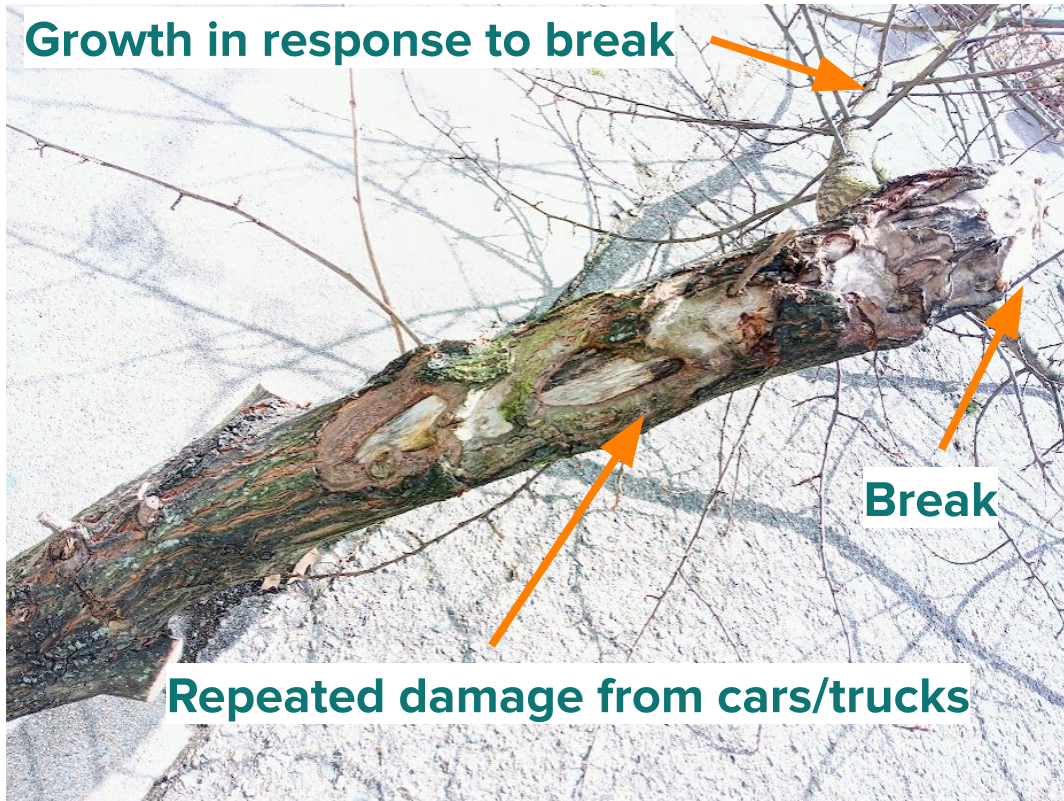
...

It usually takes multiple pruning cycles over years to safely get young trees to meet clearance requirements!



Trunk to canopy ratio

Branch removed from over street





Limbing up before and after

WHAT TIME OF YEAR SHOULD I PRUNE?

It is always better to prune sooner rather than later, but if you can take time to decide when to prune take species into consideration.

Table 5. Trees that often drip sap (bleed) during late winter, early spring.

- | | |
|--|------------------------------------|
| • Avocado (<i>Persea americana</i>) | • Birch (<i>Betula spp.</i>) |
| • Cottonwood (<i>Populus spp.</i>) | • Elm (<i>Ulmus spp.</i>) |
| • Flowering dogwood (<i>Cornus florida</i>) | • Hackberry (<i>Celtis spp.</i>) |
| • Honeylocust (<i>Gleditsia triacanthos</i>) | • Hornbeam (<i>Carpinus</i>) |
| • Magnolia (<i>Magnolia spp.</i>) | • Maple (<i>Acer spp.</i>) |
| • Mesquite (<i>Prosopis spp.</i>) | • Poplar (<i>Populus spp.</i>) |
| • Silk-oak (<i>Grevillea robusta</i>) | • Walnut (<i>Juglans spp.</i>) |
| • Willow (<i>Salix spp.</i>) | |

Depending on *what* you are pruning, there are better or worse times of the year to prune. Pruning at the right time of year can help to tree recover quicker and reduce the risk of disease.

Oaks and elms should *ideally* be pruned in winter to lessen the spread of disease

How do you know when to STOP before you've pruned too much?!



The rule of thumb is never to prune more than 25% of a tree's living canopy** during one growing season.

- A good way to determine this is to take a picture during your initial assessment (when you first approach the tree) and reference it as you remove branches).
- If you're worried you are on the verge to cutting too much, stop! You can always come back next year and prune more. Trees need enough healthy canopy to grow & survive!

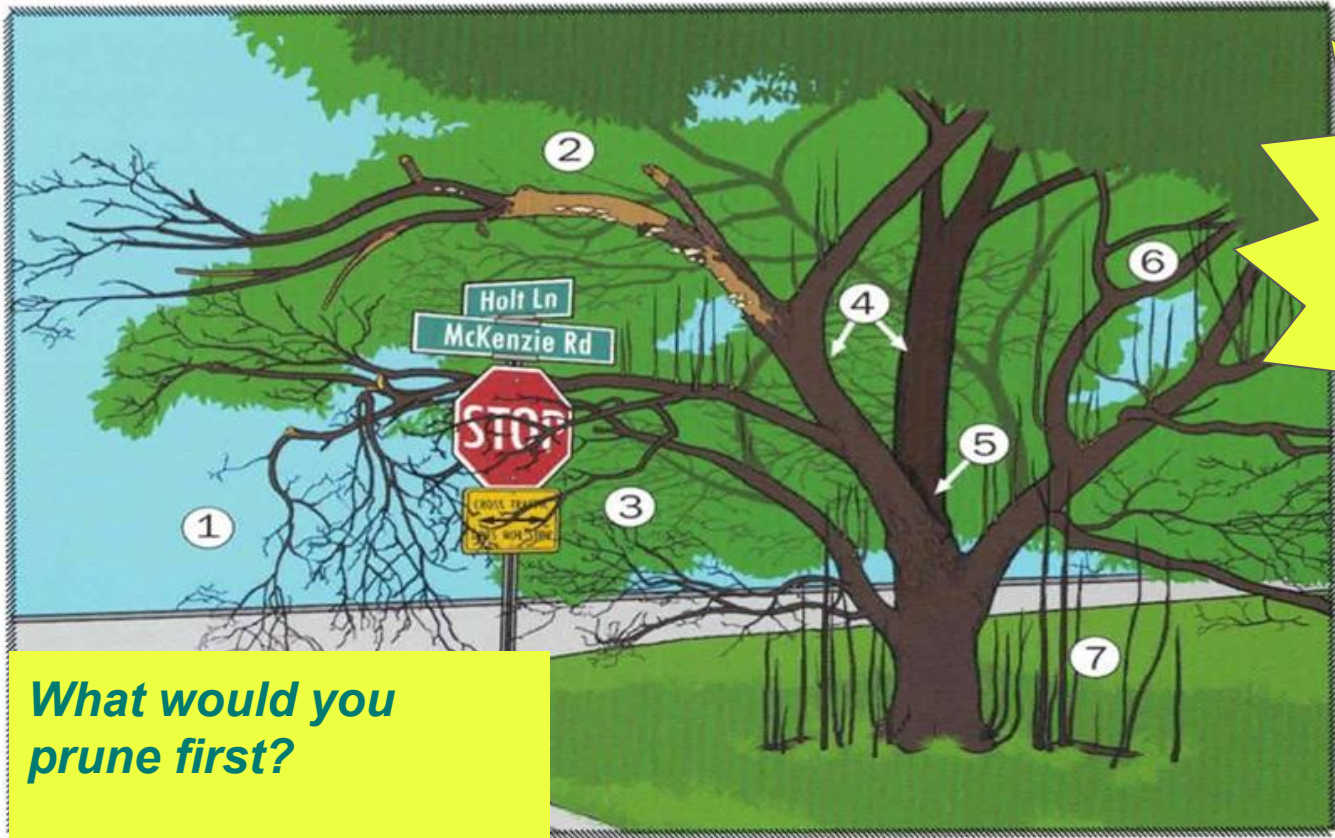
*****Removing deadwood does not count towards this pruning limit!***

...finally, remember that there is rarely ONE right answer!



The name of the game is damage-prevention! Trees are incredibly resilient, but in urban conditions where trees already face a lot of stress, we don't want to give them yet another thing to stress over! Use the tools you've learned to address the most pressing issues & then come back in a year – we can learn A TON by simply observing how trees respond to pruning.

Triage! Remember the 3-Ds, deal with the worst first, and then make a plan to return next year!



What would you prune first?

Figure 1. Several consequences can occur when pruning is not performed at all. These consequences include: 1) an accumulation of broken branches; 2) dead branches; 3) branches that interfere with site function; 4) weak, codominant stems; 5) defects such as included bark; and in some species, development of 6) watersprouts; and 7) suckers.

Wrap Up: *Where do I leave what I prune?*



Leave branches with yard waste pickup: either in bins/bags, or broken down to 4 ft or less length and bundled together with twine. Never carry wood over state lines.

...

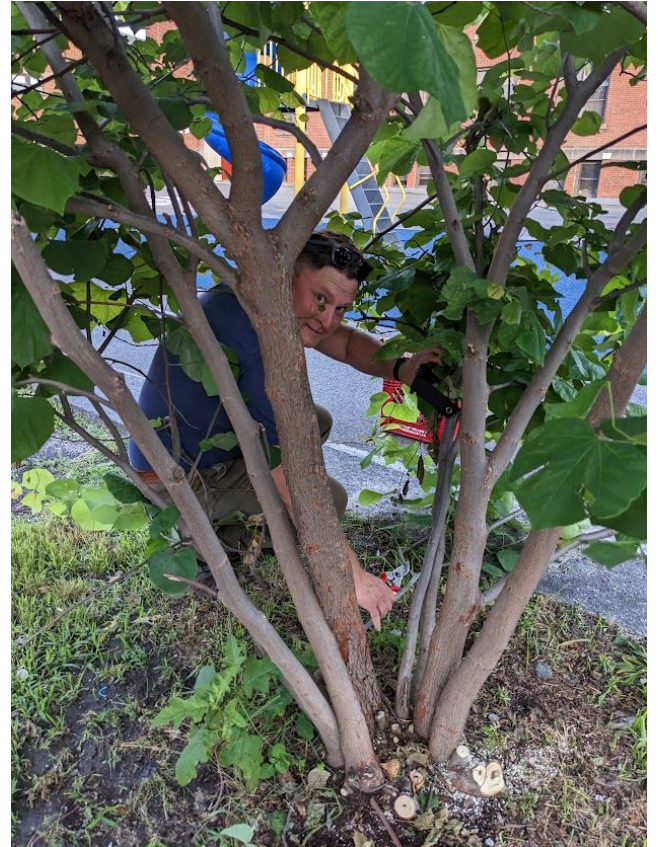
If you are planning to prune at a scale that would create more debris than you can leave for curbside yard waste pickup, let PNPP know and we can make a plan to pick up of debris.

...

Trash from tree pits should be dispensed of safely, (If you're doing a lot of TreeLC you might want to get a sharps container, to dispose of any needles you might find!)

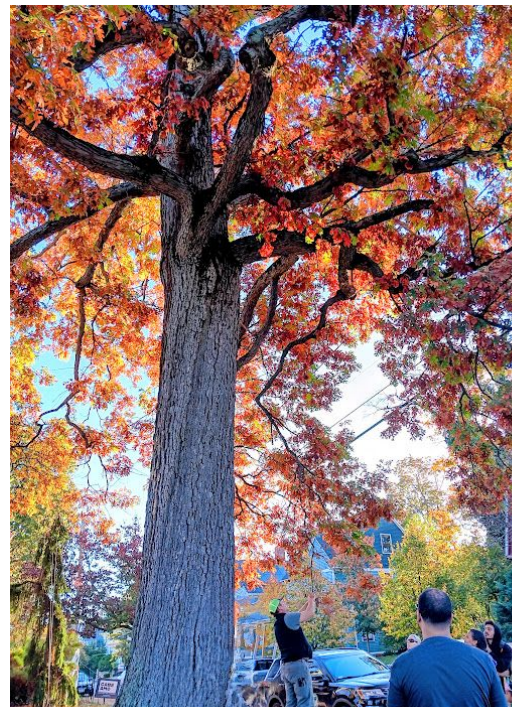
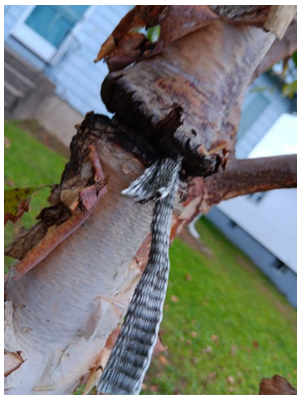
WRAP UP: *REPORTING PCTK WORK & STAYING IN TOUCH!*

- <https://pnpp.org/currentpvdtreekeepers/>
- PCTK Google Group/Listserv



Other ways to support our urban trees!

- Organize a TreeLC day in your neighborhood! (We can help you coordinate getting mulch from the wood waste depot, tools, etc.)
- Remove old stakes & ropes/arbor tie!
- Buy or scrounge wood to protect young trees and prevent soil compaction
- **ACT AS OUR EYES & EARS LOOKING OUR FOR THE TREES!**



PVD Tree Keepers (YOU... pretty soon!) are the caretakers of & ambassadors for our URBAN FOREST :)



Stay in Touch!

Organize a
neighborhood planting:



Follow us on Instagram: [@pnpptrees](https://www.instagram.com/pnpptrees)



Visit our website: www.pnpp.org



Send us an email: info@pnpp.org