Mature trees are a valuable asset to you and to your community. Large, old trees provide beauty and service, and contribute to the safety and livability of your neighborhood.

For the varied and valuable benefits they provide, you need to make careful decisions to care and maintain them. As with any investment, you need to make careful decisions to ensure the long-term health of your trees.

Arborists are professionals who specialize in the care of trees. Most arborists provide a suite of services from consultation to tree work. An arborist will help you with planting, maintaining, pruning, fertilizing, pest management, and an array of other tree care practices.

Portland Parks & Recreation’s Urban Forestry division staffs arborists that are certified by the International Society of Arboriculture. The City’s arborists are available to give you advice on how to care for your trees and to issue any permits required for any work in or on City rights-of-way.

When we plant a tree, we hope it will grow tall and straight; that it will have a full, healthy crown with strong, well-spaced branches; that it will cast a broad expanse of sheltering shade; that it will resist damage by wind and ice; and that it will be easy to maintain. Without proper pruning, however, a tree can become unhealthy and expensive to maintain. An unpruned or poorly maintained tree is prone to become hazardous, with branches that break during storms, have weak and unsightly shoots, and interfere with traffic, pedestrians, and overhead wires.

Pruning permits are REQUIRED for street trees

Before pruning any street tree or other publicly owned tree, obtain a pruning permit from PP&R Urban Forestry. Many permits can be self-issued online at portlandoregon.gov/trees. For heritage trees and branches over 6” in diameter, a city arborist will inspect the tree and recommend specific pruning work that will provide the best benefit for the tree and may save you the expense of extensive pruning in the future.

To request a translation, interpretation, accommodation, modifications, or additional information, please contact 503-823-4437, or use City TTY 503-823-6868, or Oregon Relay Service: 711.

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1 Pruning Young Shade Trees 2 How to Make a Proper Pruning Cut 3 Visibility and Safety 4 Young Tree Pruning 5 When Do I Prune My Tree? 6 Tree Care and Pruning 7 Common Tree Pests and Diseases

Pruning Young Shade Trees

Pruning trees while young to promote good structure will make trees more resilient to storms. Early inspection and pruning helps prevent failures and storm damage later in a tree’s life.

Tree Care and Pruning

• Permits and proper pruning
• Safety and visibility
• Tips for hiring an arborist
• Common tree diseases

Additional Tree Resources

International Society of Arboriculture (ISA)
503-874-8263, treesaregood.org, pnwisa.org
Database of certified arborists, tree care information

Bureau of Development Services
503-823-7526
Trees on private property during development

Friends of Trees
503-282-8846
Community and natural area tree planting programs

Portland Code Enforcement
503-823-2633
Law limbs and dead trees on private property

The City of Portland complies with all non-discrimination, Civil Rights laws including Civil Rights Title VI and ADA Title II. To request translation, interpretation, accommodation, modifications, or additional information, please contact 503-823-4437, or use City TTY 503-823-6868, or Oregon Relay Service: 711.
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For the varied and valuable benefits they provide us, trees are an investment well worth the regular care and maintenance they require. As with any investment, you need to make careful decisions to ensure the long-term health of your trees.

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The branch collar is the swollen area where the branch connects to the trunk. A proper pruning cut should be made just outside the branch collar and should not remove or damage the branch collar. This allows for proper closure of the wound. To prevent tearing of the bark and vascular tissue, use the three-cut approach to pruning.

Branches should be pruned at the branch collar—not at mid-branch. Mid-branch pruning, called tipping or topping depending on branch size, is harmful to trees, promotes the growth of weakly attached epicormic sprouts, and can lead to the death of the branch or tree!

The three-cut pruning method

<table>
<thead>
<tr>
<th>Cut 1</th>
<th>Cut 2</th>
<th>Cut 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Make a small undercut a few inches out from the branch collar.</td>
<td>Remove the limb above cut 1.</td>
<td>Remove the stub by cutting just outside the branch collar.</td>
</tr>
</tbody>
</table>

Sharp, clean tools make the smoothest cuts. Choose the tool based on the size of the branch. For small branches (under one inch), bypass pruners should be used. Bypass pruners have a curved cutting blade and are good for pruning tree limbs. For slightly larger cuts (up to four inches) a pruning saw may be used. Chainsaws are preferred when pruning branches over four inches and should be used only by qualified individuals. Refer to the "Tips for Hiring an Arborist" section of this brochure.

Visibility and Safety

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STREET CORNERS
All intersections must have clear visibility for pedestrians and vehicles—even where no traffic signs or signals are present. When the City is notified of a visibility problem, the adjoining property owner is contacted as a reminder to keep nearby trees and shrubs trimmed.

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To ensure safe passage for everyone, tree limbs must hang no lower than 7½ feet above the sidewalk, 11 feet above residential streets, and 14 feet above main arterial streets.

Pruning for stop sign clearance is necessary for public safety.

Common Tree Pests and Diseases

ANTHRACNOSE
A fungal disease that causes leaves to brown and drop in middle to late summer. Wet spring weather increases the presence of the fungus.

Susceptible species: Pacific and eastern dogwoods (Cornus nuttallii and Cornus florida), London planetrees, American sycamore, and some other common hardwoods.

Treatment: Prompt removal of affected leaves can help reduce next year’s outbreak. Anthracnose rarely kills trees. If removal is necessary, replace with a tree species that is resistant to anthracnose.

APHIDS
Trees affected by aphids are commonly misreported as dripping sap. These small insects suck sap from leaves and excrete a clear, sticky honeydew that can drop onto cars and anything under the tree. Honeydew sometimes encourages a black fungal growth called sooty mold.

Susceptible species: Many species, but lindens and tulip poplars are particularly susceptible.

Treatment: Leaves of small trees can be sprayed with water to mechanically remove aphids.

BRONZE BIRCH BORER
Birch require cool, moist soil and reduced exposure to direct sun. If planted in a less than ideal site, trees may be stressed and susceptible to this wood boring beetle. Damage usually begins in the top of the tree and slowly progresses down the canopy.

Susceptible species: Most birches, although a few species show some resistance.

Treatment: Maintaining a healthy tree is the best strategy for prevention. Plant birch in appropriate sites only. Keep trees mulched and watered during dry, hot periods. Prune dead branches promptly.

DUTCH ELM DISEASE (DED)
Blockage of water-conducting tissues indicated by flagging (localized leaf wilt, yellowing, and browning) results from infection with the lethal fungus. The disease is spread primarily by elm bark beetles. Because fresh pruning wounds attract the elm bark beetle, elm pruning is restricted to times of beetle inactivity (October 15 to April 15).

Susceptible species: Most elm trees.

Treatment: DED has no known cure. Prompt removal and destruction of diseased trees at approved facilities limits disease spread, and dead wood pruning reduces beetle habitat. Replacing removed elms with a tree species other than elm is recommended.

VERTICILLIUM WILT
A fungus in the soil that can cause water transporting cells to shut down. This causes leaves to brown and die. Verticillium wilt usually only appears in damaged or otherwise stressed trees.

Susceptible species: Certain species of maple, ash, redbud, dogwood and linden trees to various degrees.

Treatment: Plant verticillium-resistant species and reduce stress on affected trees.

WEB WORM AND TENT CATERPILLAR
A caterpillar that feeds on a tree’s foliage, creating a web or tent in the branches.

Susceptible species: Many species, including alder, crabapples, and madrones.

Treatment: Mechanical control by pruning out infected areas can be effective.

Arborist’ section of this brochure.
Never Top Trees

Topping is when main branches of a tree are cut back to stubs. This way of pruning:

• is bad for the health of a tree,
• can make a tree less safe than if it had been pruned correctly,
• ruins the natural beauty and grace of a tree, and
• may lead to a tree's death.

Contrary to the many myths in its defense, topping is one of the worst things you can do for the health of your tree. That is why in Portland it is illegal to top trees. Topping can lead to fines and/or mandatory removal and replanting of the topped tree.

Topped branches respond with a vigorous growth of weakly attached limbs that are more susceptible to breakage and storm damage. Insects and diseases take advantage of the tree's increased vulnerability and stress. Sun scald and decay destroy once healthy tissue. Topping leads to immediate death in some species and a reduced life span in others. Proper pruning is a better choice and will enhance a tree's health, beauty, safety, and life span. A reputable arborist will not recommend topping.

Tips for Hiring an Arborist

Hire a reputable arborist who is licensed, bonded, and insured. The City of Portland requires licensing. Call 503-823-5157 for verification. State law requires registration with the Oregon State Construction Contractors Board. Call 503-378-4621 for verification.

Ask for International Society of Arboriculture (ISA) credentials. ISA certification indicates the individual has passed an exam on all aspects of tree care and maintenance, and demonstrates a willingness to keep up to date on research related to trees and tree care. Some arborists are not certified, but still abide by the Tree Care Industry Association pruning standards.

Ask for references and check them. Select an arborist with a proven track record of good and ethical work practices. Remember, you are hiring a “doctor” for “preventive care” for your trees; make decisions as thoughtfully as you would for your own health care.

Get more than one bid. Two or more estimates are worth the extra effort, and many reputable companies provide estimates free-of-charge. Determine which bid has the best combination of cost, scope of work, skill, and professionalism. Be willing to pay market rates and beware of exceptionally low estimates.

Don’t rush because you are promised a discount. Be sure you understand the work to be done and the cost of the services. Don’t pay in full before the work is done; reputable arborists will rarely ask for payment up front.

Avoid arborists who recommend excessive pruning or topping. Knowledgeable arborists rarely recommend topping a tree or other drastic pruning that might injure trees. Reputable arborists more commonly recommend various options to address tree conditions and situations.

Never allow a tree worker to climb your trees using spikes or spurs. Tree-climbing spikes or spurs cause wounds in trees and open a pathway for diseases and insects, potentially weakening or killing the tree.

Adapted from the Pacific Northwest International Society of Arboriculture, pnwisa.org.

Young Tree Pruning

AT TIME OF PLANTING
Prune only dead or broken branches. It is best to leave as much leaf surface as possible to produce food that will work to build a larger root system. The roots and above ground parts will be larger after one year if only minor pruning is done at the time of planting.

A. Prune broken branches.
B. If more than one leader is present, remove the one with a crook or other defect to protect the main leader from competition.
C. Unless immediate visual clearance is needed, do not remove the small branches growing low on the trunk. These branches help the tree develop a strong taper and will eventually be removed.

3—4 YEARS AFTER PLANTING
By this time, the tree's root system should be anchoring the tree and providing nourishment to the growing branches. Growth is far enough along to reveal potential problems that can easily be corrected with pruning. Don’t remove more than 25% of the canopy during pruning.

A. Remove branches that are growing back into the tree.
B. Remove branches that are rubbing.
C. Eliminate branches with narrow angles.
D. Remove suckers from around the base of the tree whenever they emerge.

5—7 YEARS AFTER PLANTING
Your tree is quickly becoming an adult. Now is the time to ensure it has good structure over its lifetime. Imagine what your tree will look like as it grows larger. It is important to realize that branches do not move upward as a tree grows taller! The center of a branch that attaches to the trunk five feet above ground will always be at five feet.

A. Remove low limbs. If a limb will interfere with traffic, stop signs, or pedestrians, removing it now is a good idea. City regulations require the following clearances: 7½’ over sidewalks, 11’ over residential streets, and 14’ over arterial streets.
B. Prune tree canopy as discussed above. Remove those branches that are rubbing, growing back toward the tree, or attached at narrow angles.
C. Prune to create more even spacing between lateral branches as needed. If possible, evenly space laterals 8-12 inches apart to produce an ideal “ladder” at maturity.
D. Don’t over-prune. Removing too many branches at once reduces the tree’s ability to produce food. Never remove more than 25% of the tree’s canopy at one time. If more work is needed, phase the work over multiple years.
When Do I Prune My Tree?

Some say “any time the tools are sharp.” Understanding how your tree will respond will help you make the best decisions for your tree. Generally speaking, the following guidelines apply:

- Broken and dead branches and root suckers can and should be pruned any time of the year.
- Because most trees in Portland experience seasonal dormancy, pruning during the fall and winter months encourages vigorous new growth in the spring without depriving the tree of actively photosynthesizing tissues.
- Limited pruning is okay in summer. Keep in mind that pruning during the growing season removes leaf surface that is manufacturing food for next year’s growth. Light pruning will have little impact on future growth, but heavy pruning may slow or dwarf your tree’s growth.
- Avoid pruning in spring to prevent damage to future growth, but heavy pruning may slow or dwarf your tree’s growth.

Preventing Sidewalk Damage

Selecting the right tree for the site is the best way to prevent sidewalk problems. Only plant trees from Urban Forestry’s Approved Street Tree Planting Lists, which have been carefully selected for success in the right-of-way. Trees and Utility Lines

Since working near powerlines is dangerous and can be life threatening, pruning around any utility line should only be done by a professional.

Call your power company before any tree work is done near their lines. They can identify the line for you and help prevent the growth of large surface roots which interfere with sidewalks.

Who to call

Portland General Electric
888-221-7070

PacifiCorp
503-736-5460

PacifiCorp
888-221-7070

PGE: Portland General Electric

PW: Portland Works

PT: Portland Transit

Telephone, cable, or other communication lines

Primary Power Lines

Transformer

Secondary Power Lines

Telephone, cable, or other communication lines

Mature Tree Care

To provide the best possible care, it is important to know what kind of tree you have. Different species respond differently to tree care practices. If you are unsure, an arborist can identify your tree and advise you about the particulars of the species.

Water

Your mature tree has an extensive root system that can supply your tree with the water it needs—even during the summer months. Unless there is a particularly long dry summer, your mature tree will not need to water your tree. When doing your homework, find out if your tree is drought tolerant. If not, consult an arborist about how and when to water during unusually dry summers.

Pest Management

Each tree species is susceptible to a different collection of insect and disease problems. Learn how to identify the problems that are specific to your tree and the available remedies. Check your tree often for signs of stress. Many problems are more readily and inexpensively treated when diagnosed at an early stage.

Pruning

Find out how your tree responds to pruning. Typically, mature trees require the removal of dead and broken limbs only. Some trees may also benefit from the removal of branches that may harm the health of the tree in the future. Look for branches that are rubbing or are attached to the trunk at a sharp angle. Always consult a professional arborist before pruning a mature tree.

Examine your tree on a regular basis. Look for signs of potential problems and compare that problem to what you know about your tree species.

- Are limbs dying at the ends?
- Is the shape of the tree unbalanced, or is the tree leaning to one side?
- Do the leaves look healthy, or are they yellowing, withering, blotched, undersized, or chewed by insects?
- Are there cracks in the trunk or branches?
- Are there signs of root rot? Root decay is often difficult to detect but can potentially cause your tree to fail. One sign of root decay is mushrooms growing on or near the base of your tree.

If you determine that one of these conditions exists, and you are unsure how to address the situation in a way that contributes to the long-term health of your tree, consult a certified arborist.
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- Avoid pruning in spring to prevent damage to delicate young leaves and buds.

Hands-on tree pruning classes are offered by PP&R’s Urban Forestry. Visit portlandoregon.gov/trees for details.

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- Install root barriers when planting street trees, which direct root growth down and away from hardscapes. Root barriers are required in planting strips less than four feet wide and are recommended in all other sites.
- Encourage deep root growth by watering newly planted trees longer and less frequently. Deep watering 15 gallons a week allows the soil to become moist several feet down, encouraging roots to grow deeper where there will be less interference with surface hardscapes.
- Prune small roots annually. This easy practice involves cutting small (<1/4” diameter) surface roots before they grow under the sidewalk. Thrust a sharp nursery spike into the soil along each sidewalk edge to a depth of 12 inches. Separate root ends to prevent them from grafting back together. Start the first year the tree is planted. To prune any other roots on street trees a root pruning permit from Portland Parks and Recreation is needed.

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Find out about the history of your tree. What trauma has the tree already been through? Has it been topped? Are there signs of decay? Have there been activities around the root zone that may have severed the roots or compacted the soil?

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A fungal disease that causes leaves to brown and drop in middle to late summer. Wet spring weather increases the presence of the fungus.

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Treatment: Prompt removal of affected leaves can help reduce next year’s outbreak. Anthracnose rarely kills trees. If removal is necessary, replace with a tree species that is resistant to anthracnose.

APHIDS

Trees affected by aphids are commonly misreported as dripping sap. These small insects suck sap from leaves and excrete a clear, sticky honeydew that can drop onto cars and anything under the tree. Honeydew sometimes encourages a black fungal growth called sooty mold.

Susceptible species: Many species, but lindens and tulip poplars are particularly susceptible.

Treatment: Leaves of small trees can be sprayed with water to mechanically remove aphids.

BRONZE BIRCH BORER

Birch require cool, moist soil and reduced exposure to direct sun. If planted in a less than ideal site, trees may be stressed and susceptible to this wood boring beetle. Damage usually begins in the top of the tree and slowly progresses down the canopy.

Susceptible species: Most birches, although a few species show some resistance.

Treatment: Maintaining a healthy tree is the best strategy for prevention. Plant birch in appropriate sites only. Keep trees mulched and watered during dry, hot periods. Prune dead branches promptly.

DUTCH ELM DISEASE (DED)

Blockage of water-conducting tissues indicated by flagging (localized leaf wilt, yellowing, and browning) results from infection with the lethal fungus. The disease is spread primarily by elm bark beetles. Because fresh pruning wounds attract the elm bark beetle, elm pruning is restricted to times of beetle inactivity (October 15 to April 15).

Susceptible species: Most elm trees.

Treatment: DED has no known cure. Prompt removal and destruction of diseased trees at approved facilities limits disease spread, and dead wood pruning reduces beetle habitat. Replacing removed elms with a tree species other than elm is recommended.

VERTICILLIUM WILT

A fungus in the soil that can cause water transporting cells to shut down. This causes leaves to brown and die. Verticillium wilt usually only appears in damaged or otherwise stressed trees.

Susceptible species: Certain species of maple, ash, redbud, dogwood and linden trees to various degrees.

Treatment: Plant verticillium-resistant species and reduce stress on affected trees.

WEB WORM AND TENT CATERPILLAR

A caterpillar that feeds on a tree’s foliage, creating a web or tent in the branches.

Susceptible species: Many species, including alder, crabapples, and madrones.

Treatment: Mechanical control by pruning out infected areas can be effective.