CITY OF BEND

COMMUNITY DEVELOPMENT

Street Tree Inventory Manual

2026

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Prepared by:

City of Bend Community Development
Department Urban Forestry Program
2026

Project Staff:

Ian Gray, Urban Forester (541) 388-5577

Colleen Miller, Senior Program Manager – GIS (541)

693-2120 Scott Layne, GIS Analyst II (541) 323-8521

Brenna Visser, Communications Coordinator 541-323-7173

Important Contacts:

In case of emergency call 911

Non-emergency (541) 693-6911

Bend Tree Project hot line (541) 588-4616

City of Bend Administration (541) 388-5505

Learn more about the Tree Inventory:

City of Bend
Community Development
Department Urban Forestry
Program
710 Wall St Bend, OR
97703 Urban Forestry | City
of Bend

QR Code to access the Data Collection Webpage and Inventory Software:

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Inventory Protocol

Identifying Bend's Most Common Street Trees

Introduction

Bend Urban Forestry has an existing partial inventory of ~15,000 street trees across the city. Originally collected in 2006, a re-inventory of those trees and the addition of ~25,000 additional trees is expected to be completed by Fall 2026. You will be collecting information on species, diameter, location, condition, site type, site size, and maintenance need. This training manual will be a resource while you are learning the data collection protocol. It may not cover every situation you will come across in your field work so please feel free to ask questions, get clarification, and bring ideas and concerns to your team and supervisors.

► > Why a tree inventory is important

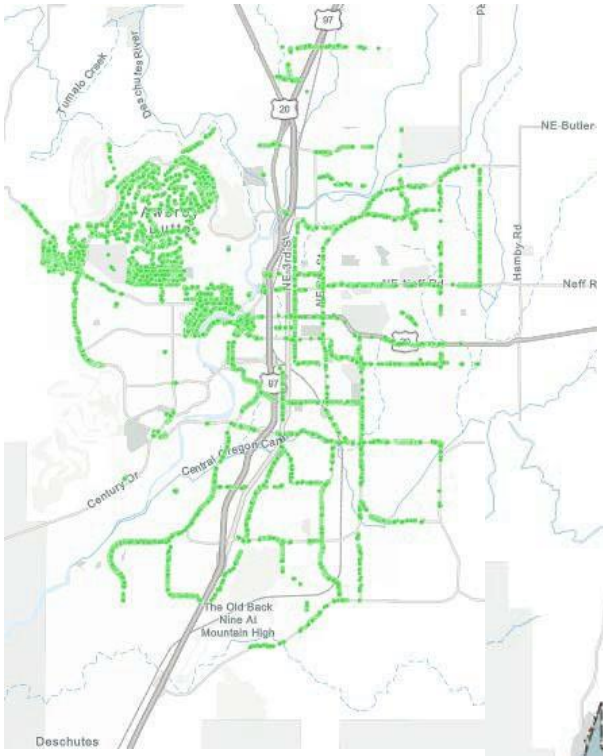
Street trees are an important public asset in urban environments. Data from the Street Tree Inventory Project are used in urban forest management and planning, ensuring that all Portlanders have access to the public health and environmental services provided by urban trees.

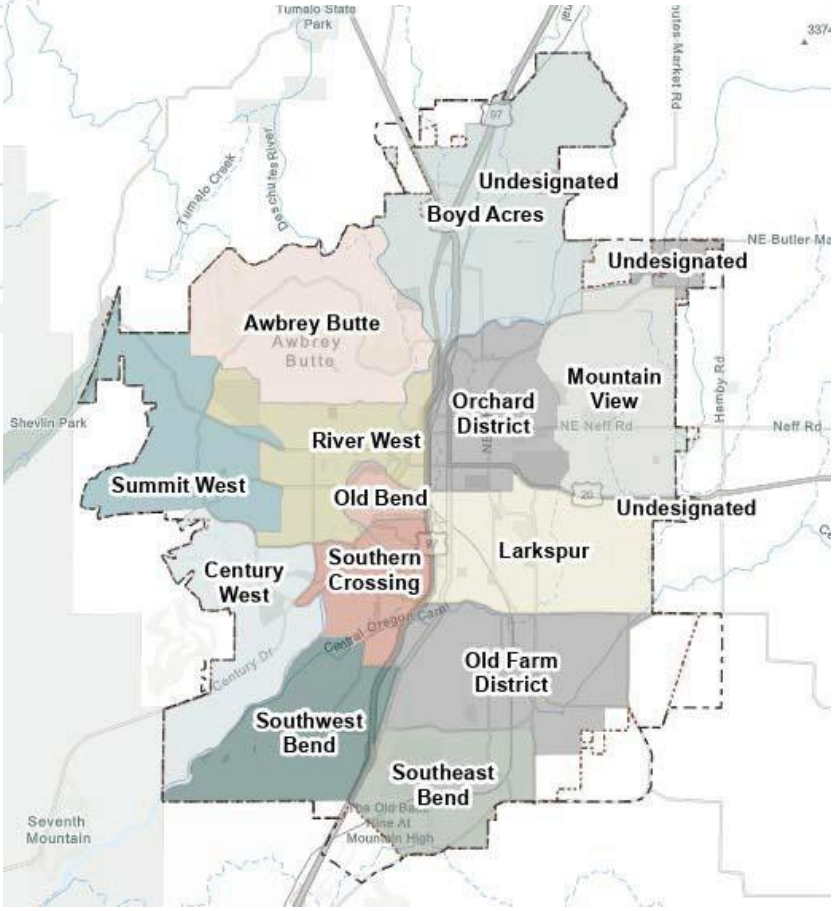
EXAMPLES OF HOW THE STREET TREE INVENTORY IS USED

- Urban Forestry staff use the Street Tree Inventory when reviewing permits or development applications and planning planting or maintenance activities.
- Inventory data informs the species diversity and Approved Street Tree Lists.
- Species data are analyzed to determine the urban forest's vulnerability to pests, disease, and climate change.
- Inventory data shows locations of vacant planting spots and helps inform a more equitable distribution of new plantings and the enjoyment of ecosystem benefits.
- Street tree data are used for various planning projects by other departments.
- The data collected during the Street Tree Inventory are also accessible to the public through the Urban Forestry website and the City's open data site. Students, researchers, neighborhood groups, and the general public can use this data for various purposes to engage with and learn from the urban forest.

► > Inventory Map

The first Street Tree Inventory completed 2006 collected data on 15,000 trees. In 2026, Bend's new Urban Forestry program will kick off a second round of the Street Tree Inventory. This second effort will collect data on over 25,000 trees. Starting as soon as trees are back in leaf in Spring 2026, we will start the new inventory with a view to completing data collection by Fall of 2026. Below you can see maps of the 13 distinct city neighborhoods where we will collect new data along with one showing the arterials and one neighborhood where data already exists.





> Safety

BEFORE HEADING TO THE FIELD

- Dress for the weather. Wear a hat, bring water, and dress in layers for temperature changes. In cases of extreme heat, check in with supervisor about safety guidelines.
- Save supervisor's and team members' phone numbers in your phone — andbe sure your phone and battery packs are charged!
- Sunscreen and water will be made available. bring whatever food or snacks you might need and gather all needed items before leaving the office for the day.
- Let your project supervisor know where you plan to be surveying for the day/week. Work out a plan together with your team and reach out if you need help or backup.
- Together we will plan and prepare to work in the community and interact with the public. Please bring safety concerns to the supervisors or team members.
- Be ready to deal with the unexpected (for instance, there is an emergency and your cell phone doesn't work). As a team we will rehearse what action steps you will take for various situations, both on your own and with your team.

WHILE IN THE FIELD

- Always wear your safety vest and Bend nametag when you are working in the field. In addition to making you more visible, they also let homeowners know that you are conducting official business.
- Carry your photo ID and business cards with tree inventory project contact information.
- Keep your eyes on the road! Although it is easy to walk around with your eyes in the canopy, always make sure to look for traffic before stepping into the road.
- Call for help if you feel unsafe. If you are concerned with your imminent security or safety, please leave the area and contact your supervisor and/or teammates. Skip unsafe areas and mark them on your map to return to later. Safety is a priority and sometimes the work can wait!

WHEN YOU RETURN FROM THE FIELD

- Recharge your phones and restock with anything needed - new maps, water, etc.
- Communicate safety concerns from your day with teammates and supervisors.
- We'll check in regularly about safety and learn from each others' experiences and strategies. Don't hesitate to ask questions and request assistance.

> Tools and Materials

- Phone and charged backup battery
- Important numbers saved in phone
- Tree ID resources (Online apps, Training Manual ID Guide)
- Diameter-tapes and diameter caliper
- Ziploc bags for collecting samples of unknown species
- Safety vest, nametag, City ID badge
- Closed-toed shoes
- Water bottle
- Lunch
- Weather-appropriate clothing

> Talking with Community Members

Through the course of conducting data collection, you are likely to encounter curious and/or concerned community members. The shape of your conversation will depend on the situation. If you are comfortable engaging with the community member that's great! If not, feel free to simply give them a business card and refer them to the City Forester. Below are some talking points to remember:

WHAT IS URBAN FORESTRY AND WHAT DO WE DO?

Urban Forestry is a Division of the Community Development Department. Our mission is to manage and care for Bend's urban forest for current and future generations. The Urban Forestry program touches on three city work areas:

Operations

- Evaluate tree maintenance needs in the right-of-way or on city property
- Respond to tree emergencies in the right-of-way and on city owned property

Permitting

- Review permit applications for tree planting, pruning, and removal
- Review tree requirements for development projects and applications

Outreach and Planning

- Monitor trees impacted during development work
- Analyze tree data for updating urban forestry policy
- Plant trees along right-of-ways and on city property
- Celebrate annual Arbor Day
- Assess tree health and risk
- Engage community with volunteer, stewardship, and educational opportunities

▶ > **Talking with Community Members -** Continued

WHY ARE WE CONDUCTING A STREET TREE INVENTORY ?

Urban forestry needs data on Bend's trees in order to effectively develop policies that will allow us to manage the urban forest for current and future generations. You can't manage what you don't know! The Street Tree Inventory provides data used to sustain a healthy and equitable urban forest. Here are some important facts:

- The benefits of the urban forest are not equally distributed across all of Bend.
- Tree canopy coverage citywide is at about 19%. However, canopy coverage varies from neighborhood to neighborhood.
- Tree canopy levels can correlate on a neighborhood level with income and other demographics. The data may indicate that Bend neighborhoods with less tree canopy are more likely to have more low income households and different ethniccomposition.
- Urban Forestry is working to ensure that all Bend residents have equitable access to the vital public health and environmental services provided by trees and their canopy. This work involves directing resources towards neighborhoods with low canopy cover to support tree planting and tree care where it is needed most.
- Maintenance of street trees can be a barrier for under-served communities. The Street Tree Inventory is gathering important data that will inform new policy for street tree maintenance.

WHY ARE URBAN TREES IMPORTANT?

Public health & environmental services:

- Reduce air pollution
- Cool the city, reduce heat island effect, especially during extreme heat events
- Reduce the amount of rainfall entering sewers, which improves water quality for humans and wildlife, reduces stormwater runoff into streams, creeks, and rivers
- Improve community well-being

A diverse urban forest provides benefits:

- Resilience to pests and diseases
- Year-round beauty, with a variety of flowers, textures, and even bark characteristics highlighted throughout the year
- Provide important wildlife habitat
- Improved urban livability

> Talking with Community Members, continued

QUESTIONS ABOUT URBAN FORESTRY

Refer community members to Urban Forestry's webpage https://www.bendoregon.gov/government/departments/community-development/urban-forestry to learn about

- The Urban Forestry program
- Title 3 and Title 16 tree codes
- Development Permitting
- Links to tree pest information
- Arbor Day and Tree City USA events

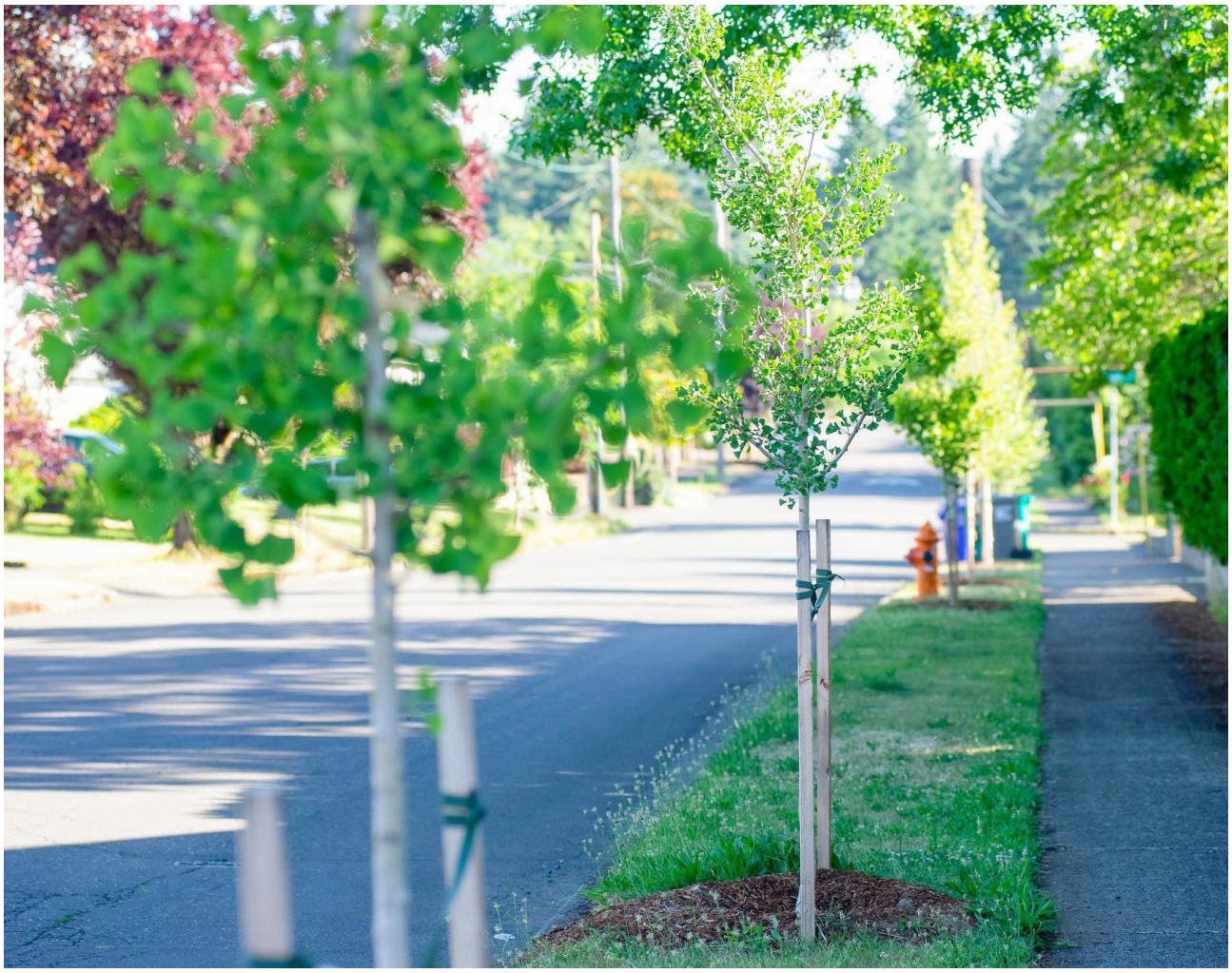
TREE MAINTENANCE OR PERMITTING CONCERNS

Urban Forestry has a single point of contact where you can call or email the Urban Forester with any questions or requests related to trees in the City of Bend. You can provide community members with the following contact info:

- Email: igray@bendoregon.gov
- Phone: 541-388-5577
- Callers can leave a voicemail if it is not answered live. Emails responded to within two business days, but often more quickly.
- If a tree has fallen, or is in imminent danger of falling, and is or will be blocking a public right-of-way or City property, call 541-317-3000 ext. 3 for assistance. Staff from the Transportation & Mobility Department will be dispatched as appropriate.

REPORTING PARK ISSUES

Community members may approach you with questions and concerns about their neighborhood parks. You can refer them to the Bend Parks and Recreation District customer services, (541) 389-7275.



> What trees to inventory

Inventory only street trees. Street trees are located in the public right-of-way, usually between the curb and sidewalk or in center medians and roundabouts. You will sometimes inventory areas that do not have sidewalks and curbs where it is more difficult to decide where city right-of-way end and private property starts.

WHAT IS A STREET TREE?

As a good rule of thumb, trees are woody plants that typically have one main stem, called a trunk, and are over 15 feet tall at maturity. Things to keep in mind:

- Shrubs can grow taller than 15 feet
- Shrubs can have a single stem
- "One dominant trunk" can be tricky to delineate for some species
- Refer to 'Is it a Tree?' in the Table of Contents for more specific guidance.

Do Inventory	Do NOT Inventory
-All tree species that appear to be intentionally planted and/or cared for in the right-of-way, regardless of size -Trees where any part of a the tree's trunk or root flare is in the right-of-way, it is a street tree and should be inventoried -Stumps -Suitable vacant planting spots	-Volunteer trees less than 10 ft. that appear to be not intentionally planted -Shrubs (woody plants typically with more than one main stem and usually with a mature height of less than 15 ft.) -Dwarf specimens, bred or maintained -Specimens maintained or planted as hedges -Espaliered trees or with creeping form -Naturalized area trees or 'volunteers' -Trees growing in pots or containers

> Which Trees to Inventory - continued

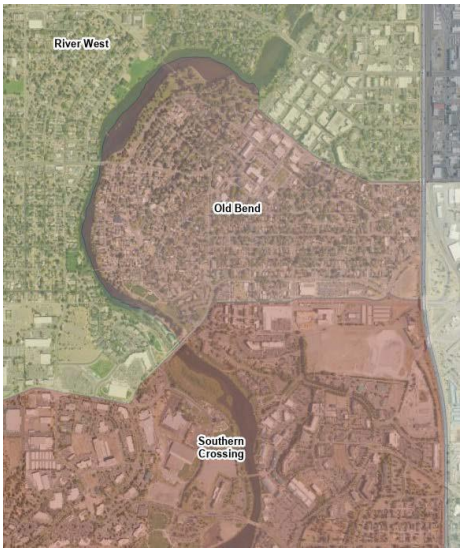
PRIVATE STREETS and PARKS

We will not be inventorying trees behind fences, along private streets and in parks. How to tell if trees are along private roads or in parks:

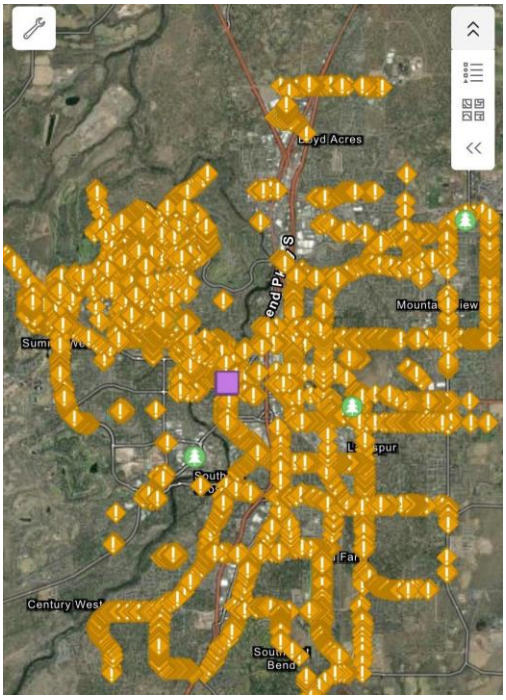
- You are not expected to go behind fences even if it clearly looks like there are right-of-way trees. Be safe and don't risk running into dogs or possibly trespassing. Make a note in the comments and move on.
- Private roads typically have yellow placards below the street sign indicating that it is a private road
- Parks are usually well signed, but there may be trees along the park street frontage that are in the city right-of-way and those should be collected
- Refer to the maps in the data collection tool for help determining the property boundaries

Each neighborhood where we will inventory is divided into sections in the ArcGIS map. These sections each contain varying numbers of trees. You will want to completely inventory a section before moving onto the next section, and complete all the sections in a neighborhood before moving onto the next neighborhood district.

NEIGHBORHOOD BOUNDARIES



You will be assigned a Neighborhood and a Section. As you start your work, you will want to open the ArcGIS Tree Inventory webpage. It will open zoomed out. Using your thumb and first finger you can zoom into your work area, starting a new section of streets or picking up where you left off last time.



> **Where to Inventory -** Continued

NEIGHBORHOOD SECTIONS

Zoom in further to the Neighborhood Section to begin route planning. The size of sections in a neighborhood will vary and will potentially contain differing numbers of trees. When you finish a section, let staff know and new collection area can be assigned.

If you are zoomed in enough you will more clearly see the sidewalks, buildings, and property lines. The property lines are white/beige, but can be a bit faint.

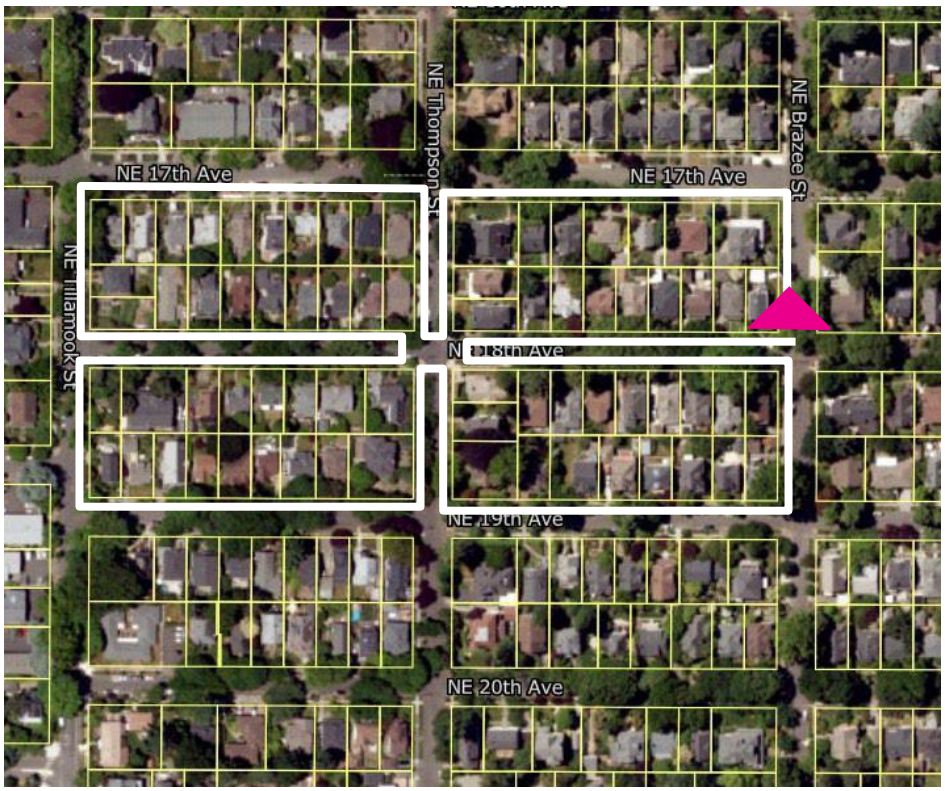
Only inventory trees located on public property, between the tax lot (beige line) and the street. Everything in between is part of the right-of-way. If there is a landscape strip between the curb and the sidewalk inventory all trees here -this is the easiest way to delineate sites for trees you should be collecting.

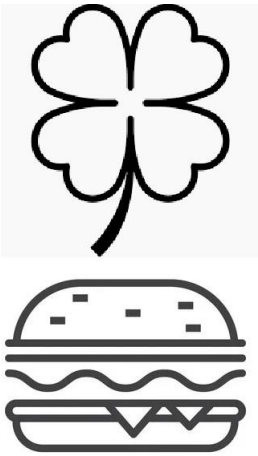
If there are existing tree data points there will be an orange diamond with an exclamation point. Click the point and information tables will populate. Zooming in even further can help show you the approximate locations of the planting strip, the sidewalk, and any remaining right of way between the sidewalk and the property boundary.

► > Planning your work

Over time you may develop your own methods to plan your inventory routes efficiently. Here are some methods to try and see how they work for you in different circumstances.

- The Four-Leaf Clover / the Hamburger

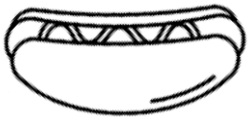




Pick a place to start (pink arrows) and walk the white line until you are back where you started.

- The "B"

- The Hot Dog



> Measuring Tree Size - Diameter at Breast Height

Tree size is measured using diameter at breast height (DBH). This is the diameter of the tree trunk at 4.5 feet above the ground. Diameter - the distance across the approximate centerline of the trunk, is measured indirectly by measuring circumference with a specially calibrated tape.

INTRODUCTION TO DIAMETER TAPES

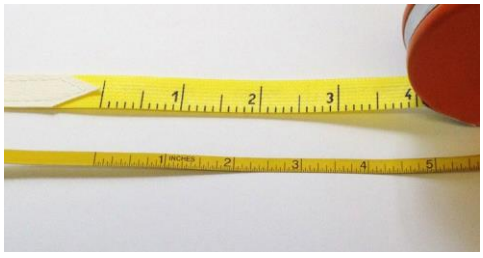
To measure DBH on a large tree, you will use a professional diameter tape. After measuring, the tape is retracted.

To measure DBH on a small tree, the plastic calipers may be preferred because it is easy and quick to manage for smaller diameter younger trees up to approximately 5" inches

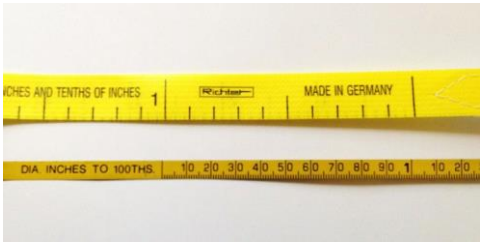
The tape has two sides. One side is calibrated for measuring tree diameter. The back side measures distance. Always keep in mind which side of the tape you are using, and make sure that the tape is not twisted.

To measure distance, such as site width, use the back side of the tape. The distance side (back side) may measure in decimal feet (read to a tenth of a foot), or in imperial units to ¼, 1/8, and 1/16 of an inch. If planting sites are unusually wide you will need to add a couple of measurements together if the tape in not long enough.

Diameter tape (above) and a plastic caliper(below)



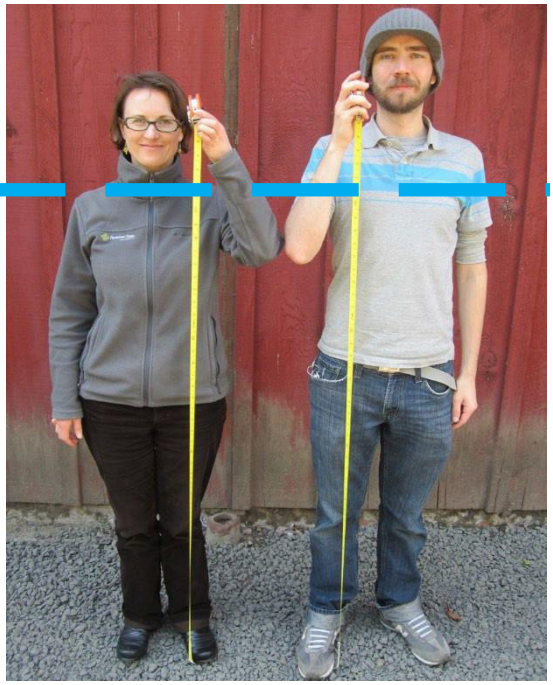
The back of tape is the distance measuring side.



The front of tape is the diameter measuring side

HOW TO MEASURE DBH

1. Measure 4.5’ from the ground on your body. This will save you a lot of time in the field trying to measure 4.5 feet from the ground. You might want to mark your vest with a piece of painters tape or duct tape at this height until you have it memorized.



2. Examine the tree and identify where you will measure DBH. If the tree has a single stem and a gradually tapering trunk, measure at 4.5’. Unfortunately, not all trees grow in such a straightforward manner.

   Need to know where to measure DBH on a multi-trunked tree? Turn the page and follow the flowchart guide.

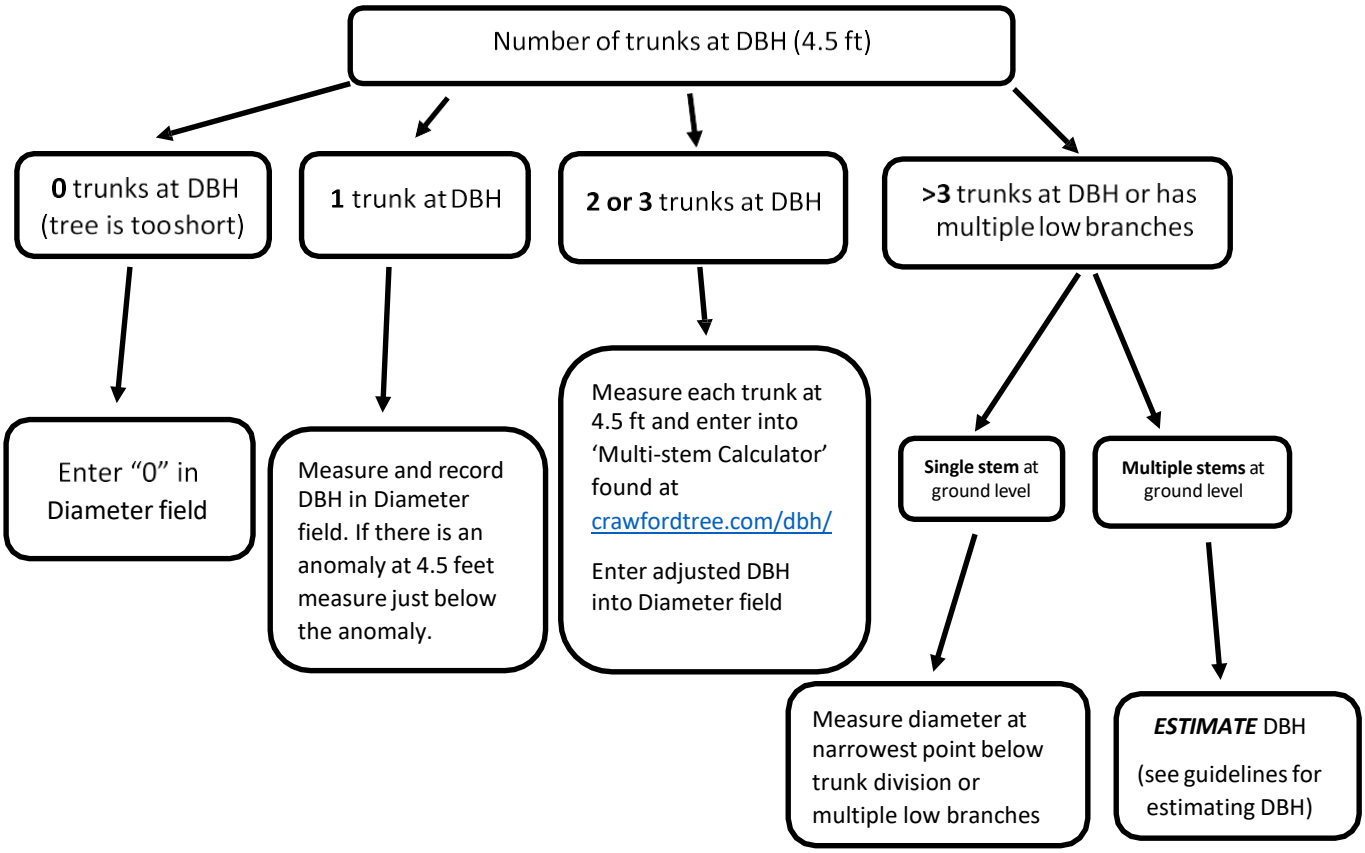
> Measuring Tree Size: Diameter at Breast Height -

3. Hold the clasp end of the tape to the tree, then wrap the tape around the trunk trying to keep it level at 4.5 feet above the ground. Ensure the tape does not twist and that you are using the diameter side of the tape for measuring. You might need a team mate to help hold the tape in position if it is a big tree. You might need to add a couple of measurements together if it is really big.

4. Read diameter from the mark that overlaps with zero on the tape (bottom arrow in photo shows zero, while the top arrow is DBH measurement). Measurements are taken in tenths of an inch. Make sure to read in the correct direction! The diameter of this tree is 21.2 inches (top arrow).

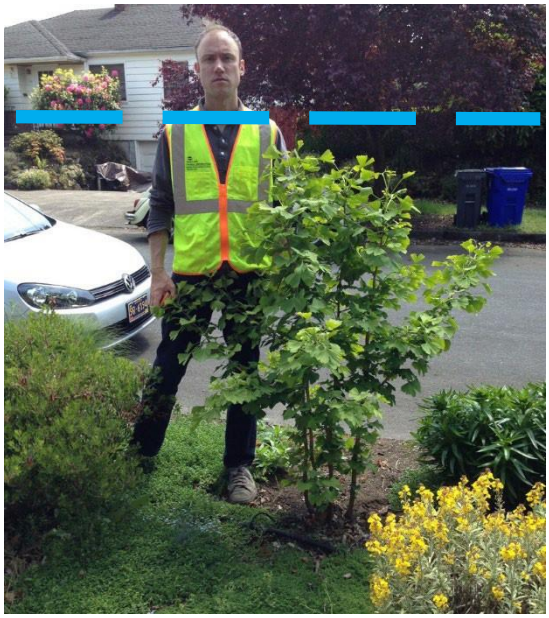
>Measuring tree Size: Diameter at Breast Height - Continued

WHERE TO MEASURE DSH



IF A TREE IS SHORTER THAN 4.5 FEET

There are zero trunks at Breast Height - The tree is too short to measure at 4.5 feet, so Enter '0' in the Diameter field

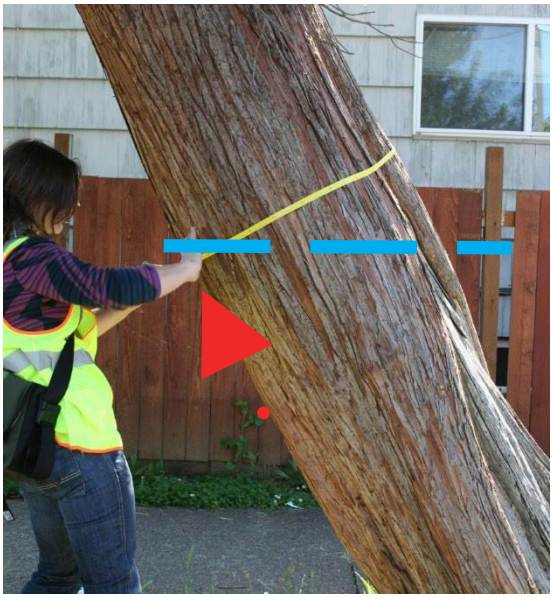


> Measuring Tree Size: Diameter at Breast Height -

ONE TRUNK AT 4.5 FEET

Measure and record DBH to the nearest 0.1 inch in the Diameter field in Field Maps.

If there is an anomaly at 4.5' feet like this burl or deformity, measure below that point.



If a tree is leaning, measure at 4.5' feet up the trunk on the low side. Tape measure should be perpendicular to the trunk axis.

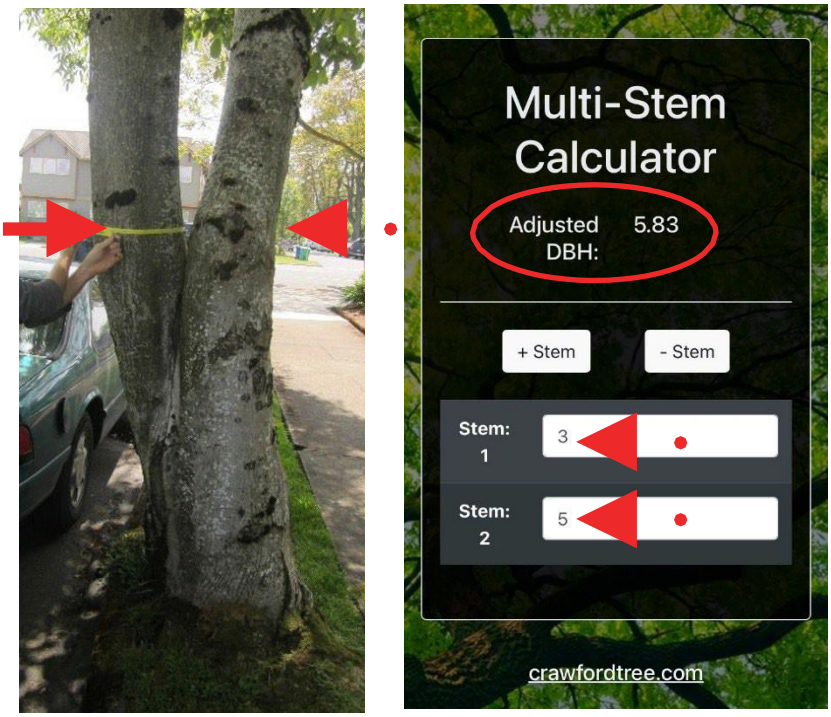
If there is a fork or branching at 4.5' feet, measure below the branching.

► > Measuring Tree Size: Diameter at Breast Height

TWO OR THREE TRUNKS AT 4.5 FEET

Measure each trunk at DBH and enter into 'Multi-stem Calculator' found at crawfordtree.com/dbh/ Enter adjusted DBH into Diameter field.

The two-trunked tree on the right was measured at 4.5 feet. Both trunks were measured, one was 3 DBH and the other 5 DBH. Both trunk DBH numbers were put in the multi-stem calculator, which resulted in an adjusted DBH of 5.83 (red circle). Round to the nearest tenth of an inch for a final DBH, in this case 5.8.



The red arrows show where the three trunks of this tree were measured at 4.5 feet to add into the multi-stem calculator for a final DBH.

FOUR OR MORE TRUNKS AT 4.5 FEET

With a single stem at ground level:

Measure the diameter just below the low branching or trunk division and enter in the Diameter field.

With multiple stems at ground level:

Estimate DBH of all the stems at 4.5 feet bundled together and enter into the Diameter field.

BRANCH OR TRUNK?

Generally, a trunk is a stem that has more than twice the diameter of the next smallest branch.

Put another way, a trunk has at least twice the diameter of a branch.

► > Condition Rating

Tree condition is a general assessment of the health of the tree, meant to be applied quickly in the field. The process is described in three steps: initial visual assessment, live tree canopy assessment, and a final condition rating.

A CONDITION RATING IS ***NOT*** *:*

- An assessment of risk or danger. A 'Poor' condition rating does not necessarily indicate a risk to human safety. We are not conducting Tree Risk Assessments, which should only be conducted by certified arborists with the proper qualifications.
- A prediction of life expectancy. Trees in the urban environment face a number of challenges to growth and survival, and a basic assessment cannot take into account factors not visible from a ground-based visual inspection.
- Purely a math problem. Condition ratings are based on a number of factors, only some of which are quantified (e.g. percent of canopy loss). Factors such as the presence of fruiting bodies, signs of soil heaving, and structural defects are not measured on a number scale, but are taken into account when rating a tree.

STEP 1: INITIAL VISUAL ASSESSMENT

First, examine the tree from top to bottom. Walk completely around the trunk for a full visual assessment. Depending on the size of the tree, you may need to walk further away or across the street to make a visual assessment of the canopy.

Look for signs and symptoms of health problems, damage, structural defects, or poor pruning practices:

- Wounds, broken branches
- Decay, Cavities
- Bark inclusions, Splits, tears
- Fungal Conks/Fruiting Bodies
- Girdling Roots, Soil Heaving
- Cankers
- Oozing sap
- Major structural defects: included bark, cracks, major imbalance due to pruning or branch failure, reaction growth due to poor pruning.

EXAMPLES OF DEFECTS TO LOOK FOR DURING INITIAL VISUAL ASSESSMENT

Cavities

Included Bark

Canker

Fruiting Bodies

Excessive Pruning

Fungal or Bacterial Leaf Disease

Insect Damage

► **Condition Rating** - Continued

STEP 2: LIVE TREE CANOPY ASSESSMENT

Next, estimate the percentage of live tree canopy missing due to fine twig dieback, foliage discoloration, defoliation, or broken and dead (not pruned) branches. In the absence of any other signs and symptoms of poor health, trees will fall into categories as follows:

- **Excellent**: less than 10 percent cumulative fine twig dieback, foliage discoloration, and/or defoliation present.
- **Good**: 10-25 percent cumulative fine twig dieback, foliage discoloration, and/or defoliation present. Broken branches or crown area missing based on visual evidence of large broken (not pruned) or dead branches less than 25 percent.
- **Fair**: 26-50 percent cumulative fine twig dieback, foliage discoloration, and/or defoliation present. Broken branches with crown area missing (not pruned) or dead branches less than 50 percent.
- **Poor**: Greater than 50 percent cumulative fine twig dieback, foliage discoloration, and/or defoliation present. Broken branches with crown area missing (not pruned) or dead branches more than 50 percent.
- **Dead**: No live crown or living leaf or stem tissue, including sprouts or regrowth from the base.

The live tree canopy assessment is an important step toward the final condition rating. Sometimes, this result will be the final rating.

If a tree falls into one of these canopy assessment categories, but has one or more of the symptoms previously listed, that will lower your final rating based on their severity.

► > **Condition Rating -** Continued

TIPS FOR ESTIMATING LIVE CANOPY DAMAGE

You will see trees with variety of canopy damage - leaf damage from insects, fungi or other pathogens, and weather related impacts. Here's how to calculate live tree canopy:

1. Estimate how much of the canopy consists of impacted leaves.
2. Then estimate how much leaf surface area is damaged or missing.

- For example, if half of the total leaves on the tree (50%) are damaged/missing on 20% of their leaf surface area, then 10% of the canopy is missing due to the damage.
  50% of 20% is 10% (0.5 × 0.2 = 0.1)
  With 10% of the canopy missing due to leaf damage, this tree receives a 'Good' rating at the live tree canopy assessment step.
- Scenario 2: 90% of the canopy has damaged leaves, and each of the damaged leaves is missing 60% of the leaf surface.
  90% of 60% is 54% (0.9 × 0.6 = 0.54)
  54% of the canopy is missing, a 'Poor' canopy rating.

Practice with these live canopy calculations and build confidence in your ability to estimate.

Eventually, you will no longer need to do these calculations when you can quickly and accurately estimate missing canopy without doing the math.

STEP 3: FINAL CONDITION R ATINGS

When you're familiar with the condition rating protocol and accustomed to assessing signs and symptoms of health problems and percentage of live tree canopy, you will be able to quickly assign a condition rating based on these abbreviated guidelines:

Excellent
Minimal to no signs of damage, decay or structural defects.
Few street trees are in this condition!

Good
Tree is healthy and vigorous with no apparent problems. Roots are sound, trunk is solid with no bark damage, and canopy is full. No wounds, decay, conks, cavities, root heaving or other symptoms.

Fair
Canopy is at least 50% healthy and vigorous. Tree may have some dead branches, wounds, or other symptoms, but are there is no major decay. Other signs and symptoms are minimal.

► > **Condition Rating -** Continued

Poor
Tree is in a state of decline as indicated by the presence of cavities, decay, conks, root heaving, or significant dead crown areas.

A live stump of any height will be classified as 'DEAD' (below).

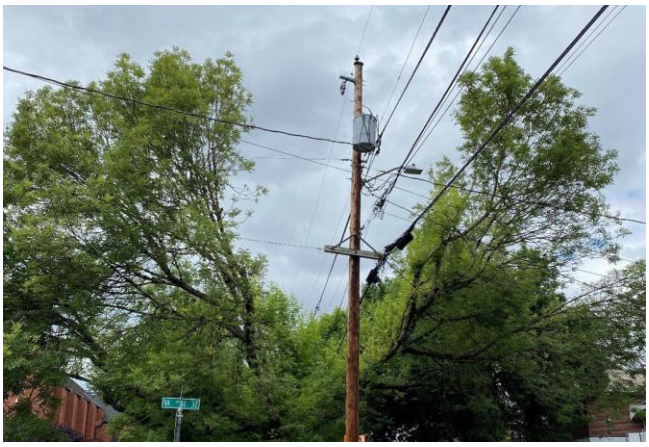
Dead
Tree is 100% dead and has no living leaves or living tissue. No green inner bark (cambium) is found when the outer bark is scratched.

Dead trees can be entered into the Species field as 'Unknown' if it isn't obvious what species it was when alive

Dead Stumps - inventory dead stumps regardless of height like the tree at left. Enter as 'DEAD' in the Condition field. Decorative stumps would receive a maintenance need of 'NONE' - stump grinding and replacement tree planting can be added at a later date.

► > Wires

Some inventories use additonal data fields to describe overhead wires such as: High Voltage (highest wires on a pole - transmission or distribution or street light circuits), Telecoms (lowest wires - cable and phone), and None. A quick way to recognize wires running through a tree is if trees near them are pruned away: elecetrical utility companies require trees to be trimmed 10 ft. from high voltage wires. The only option for field entries for our inventory is simply to tick the box if there are any wires present around a tree or if the wires are directly above a viable vacant planting spot.



High Voltage: Tree pruned away from wires
Telecoms: Not pruned from wires

Any wires within/above the center of a tree's canopy are entered as 'YES' in the - '**Utility**' field. For a young tree, imagine if a tree will grow up into the wires. This is why we say 'Right Tree, Right Place' - only trees that reach a maximum height of 25' feet at maturity should be planted under wires, regardless of the width of the planting strip.

Wires that run from the street to a building are what are referred to as the 'service drops' (electrical supply for individual buildings. We try to use small trees here as well or avoid planting directly under the wires if possible. Keep this in mind when you are locating a point for a vacant tree planting spot

Enter 'YES' in the '**Utility**?' field.

If wires are not present, select 'NO' in the '**Utility**?' field

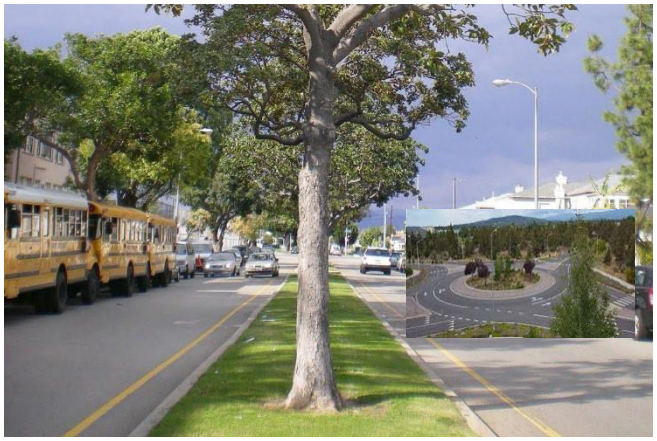
► Parkway Type & Parkway Width

The Parkway Type field in the Survey 123 form has seven categories: Landscape strip, Center median, Roundabout, Other, Strip, Concrete cut, Grate, Open grown, Frontyard. These site types are described here in two groups. The first group of site types are measured for site width. The second group are not measured and 'Zero width' is selected in the data field

GROUP ONE: SITE T YPES MEASURED FOR SITE WIDTH

The following site type categories should be measured, and a measurement (e.g. 5-7ft) entered into the Site Width field.

Concrete Cut: A concrete cutout. If the length of a cutout (parallel to the street) exceeds 8 feet, enter as Landscape Strip



Center Median: Strip in middle of the street. Roundabout: traffic-slowing circles at some intersections. ***Be careful assessing these***

Landscape Strip: Located between a curb and a sidewalk.

Grate: a version of the concrete cut, but covered with a load bearing steel grate, often in high foot traffic areas.

GROUP TWO: SITE T YPES WITH '0' SITE WIDTH

The following site type categories are not measured because it's difficult to determine the exact boundary of the ROW. Enter '0' into the Site Width field.

To inventory trees in these site types, locate the tax lot line in ArcGIS Maps to help you gauge if a tree is in the ROW and use the measuring tool.

Frontyard: curbtight sidewalk adjoins the curb. There is not a planting strip. No planting strip.

Frontyard: The zone where the ROW extends beyond the sidewalk; a planting strip and a curb are present.

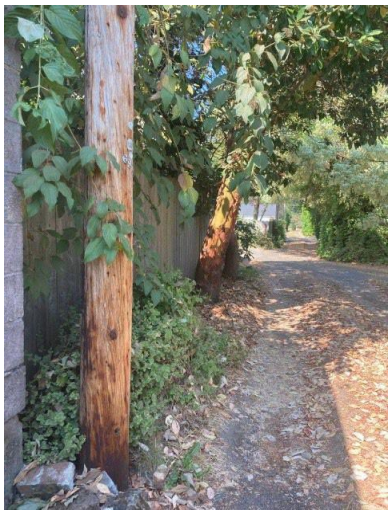
Open Grown: unimproved, curb present but no sidewalk.

Open Grown: unimproved, no curb or sidewalk (alleys fall into this category).

► > **Site Type & Site Width** - Continued

UNUSUAL OR CHALLENGING TO CATEGORIZE SITE T YPES

What the? Take photos, mark it for review, & consult with the team.



Alleys are Unimproved No Curb or Sidewalk. Look for utility poles to determine property lines.

Sites that abut railroad tracks or Max tracks are Other.

Is it a strip or a cutout? You may find a strip where pavers or bricks are installed in lieu of grass or bare ground (photos shown directly to the right) This site type is still entered as Strip.

Is it a strip or a cutout? A driveway apron may cross a strip, creating a planting area that functions as a cutout. If the space is less than 8 feet in length (parallel to street), enter as Cutout.

HOW TO MEASURE SITE WIDTH

- Use the diameter tape using the distance side (back side) of the tape. Enter measurements in site type field to the nearest tenth of a foot (e.g. 5.9). Numerals only, no need to enter units.
- Site Width is measured perpendicular to the street shown in the photo below.
- Measure from the inside of the curb to the sidewalk to capture the size of available planting space. If grass or dirt is growing over the sidewalk or curb, be sure to locate the edge of the sidewalk and curb. This may require pushing thedirt or turf back.
- To measure a swale, locate the edges of the available planting space and measure between those edges.
- In sites with a variation in width, measure across the site at the tree root crown.
- Site widths will generally stay the same down a block, and after you've had practice you can use the same width without measuring record and keep the same data entry down the length of the block. Continue to stay aware of variations as you move down the block and adjust accordingly!

Notice grass is growing over this curb. If grass or dirt is growing over the sidewalk or curb, locate the edges of the available planting space and measure between those edges. This may require pushing the dirt or turf back to find the edge of the sidewalk or curb.

▶ > **Site Type & Site Width** - Continued

PART 1: TIPS & CLUES TO FIND THE ROW IN UNIMPROVED SITES

Determining ROW boundaries and which trees to inventory can be challenging, especially in unimproved areas without a curb or sidewalk. Always check the tax lot lines and aerial imagery in ArcGIS Maps first to determine how wide the ROW is and whether trees fall in the tax lot or ROW. Use the ArcGIS Maps measure tool to find the width of the right-of-way. Then measure the site with the diameter tape to gauge where the property line is. Find the ROW using the tips and clues below:

NOTE: The edge of the roadway and the tax lot can be hard to establish accurately, so don't over think it - if the tree isn't obviously in the right-of-way don't collect it and keep moving!

Clue: Utility poles at the edge of the ROW

Clue: Street signs at the edge of the ROW

Clue: Water Meters at the edge of the ROW

PART 2: TIPS & CLUES TO FIND THE ROW FRONT YARD SITES

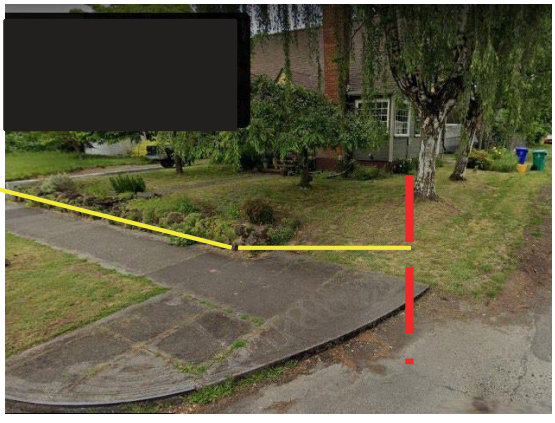
Clue: changes in paving between the driveway and driveway apron (dashed line).

Clue: Fence line

Clue: Retaining wall

Fence in the ROW

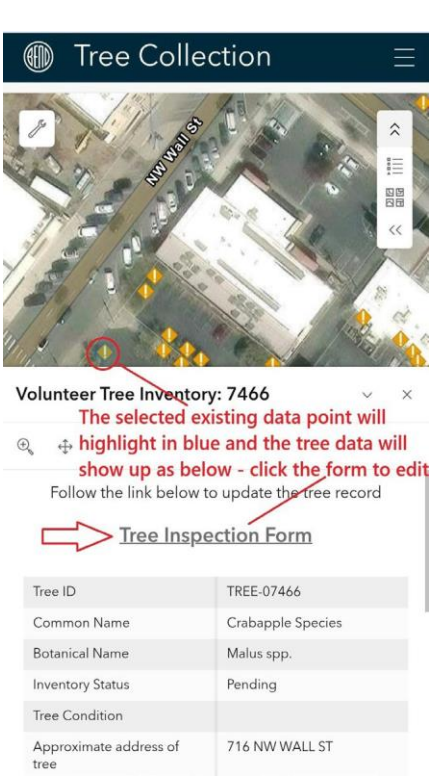
Fence lines and retaining walls often run along the tax lot line (dotted red line) separating private property from the ROW–*but not always!* Check in ArcGIS Maps.

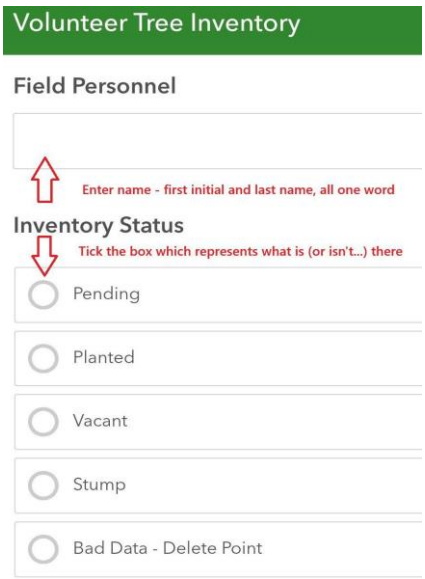


Clue: The edge of the sidewalk corner can help you determine the ROW location.

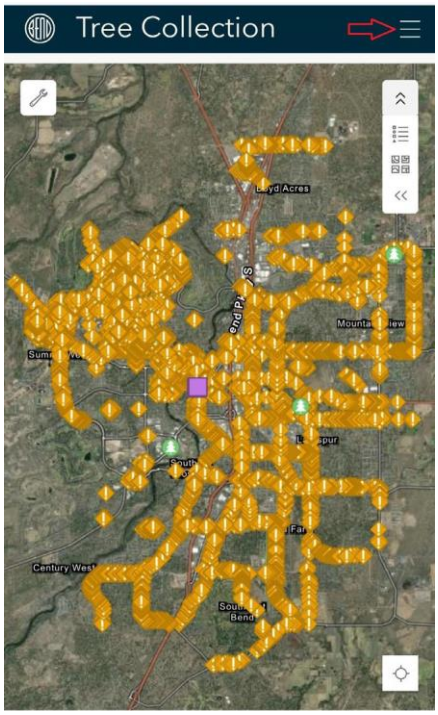
The data for each tree you inventory will correspond to a point in ArcGIS maps. You have two ways to add new data - edit an existing tree point or create a new one:

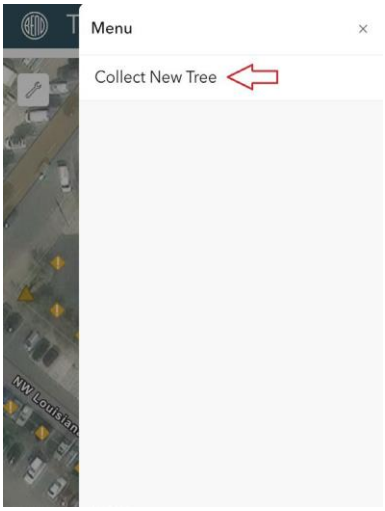
Option 1 - Existing Point with the *orange diamond icon*: Select icon to update fields, select '**Tree Inspection Form**' and existing data will populate. **DBH** is a required field to measure and enter. Edit other data fields if they seem wrong and need updating. If the point is clearly wrong and no trees are nearby, select '**Bad Data - Delete Point**' in the **Inventory Status** field, hit **Submit** and exit back to the main page of the inventory.





Option 2 - New Data Point where no icons exist in the maps corresponding to where you are standing: Tap the 'hamburger' top right on the screen in the blue section and then select '**Collect New Tree**'. Enter Field Personnel name (you) with initial for first name and full last name, as all one word. Tick the appropriate **Inventory Status** box. This should include vacant planting spots.

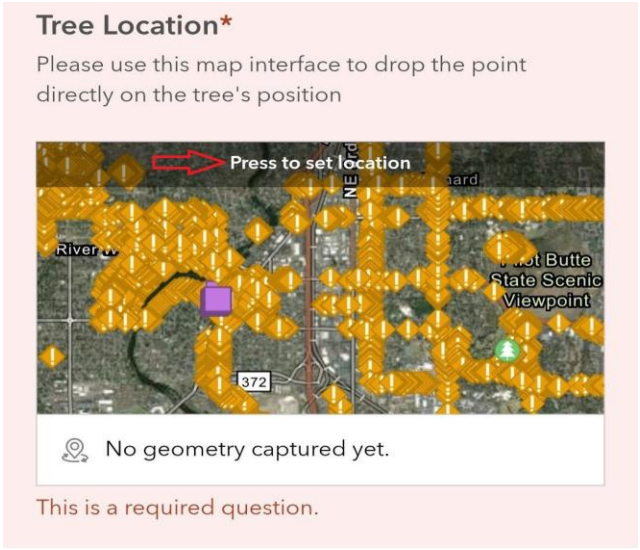


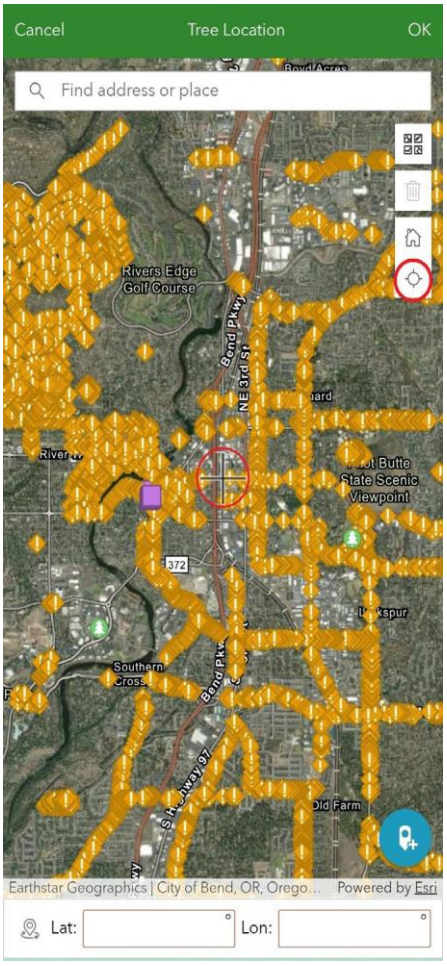


► > **Entering Tree Data Using the Survey 123 Form**

* THE MINIMUM REQUIRED DATA FIELDS ARE **LOCATION**, **COMMON NAME** & **DBH**

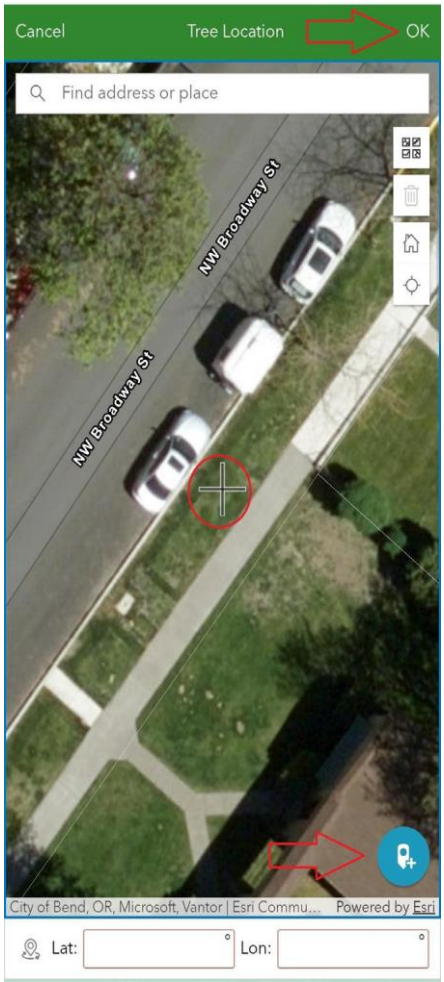
To update a point to a different spot, OR, to drop a pin for a new one, go to '**Tree Location**' and tap '**Press to set location**'. Navigate with the map and zoom in until your location is shown under the magnified cross hairs. Then, click on the blue circle button right of the screen. Click 'OK' top right to confirm or start over by pressing 'cancel' top left of the screen. This data field takes some time to master, but you can always edit the point location later.



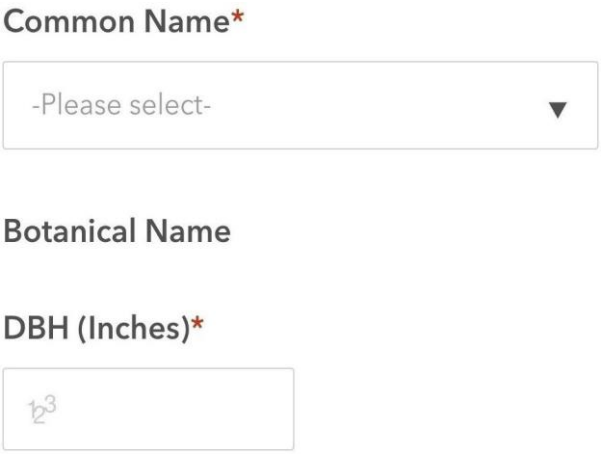


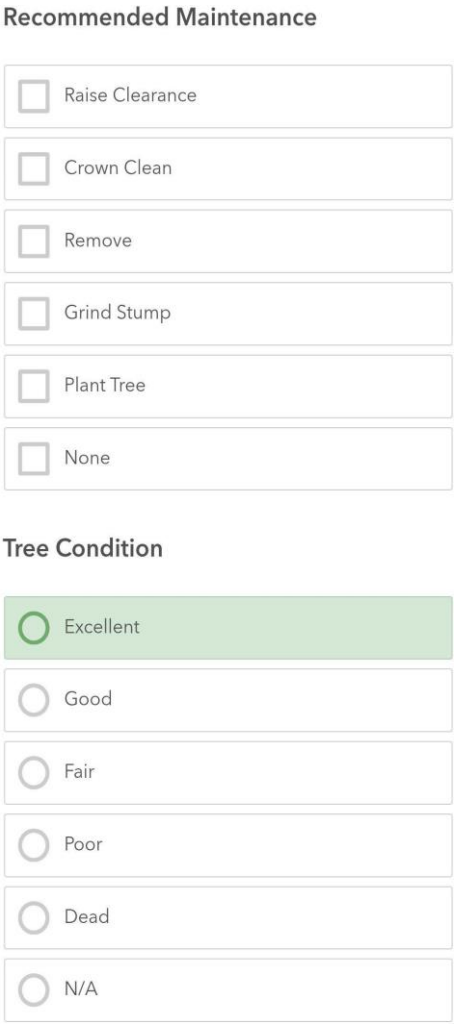
Use the target icon top right on the screen to jump to your location, or use one finger to slide the map over your location and use two fingers by spreading them apart to zoom into your spot
- a tree, a stump or a vacant spot. Fine tune the pin drop location by positioning the map under the cross hairs.

Click the Blue icon to drop a location pin and touch 'OK' to confirm spot. The app will then grab longitude and latitude and a Google address automatically.



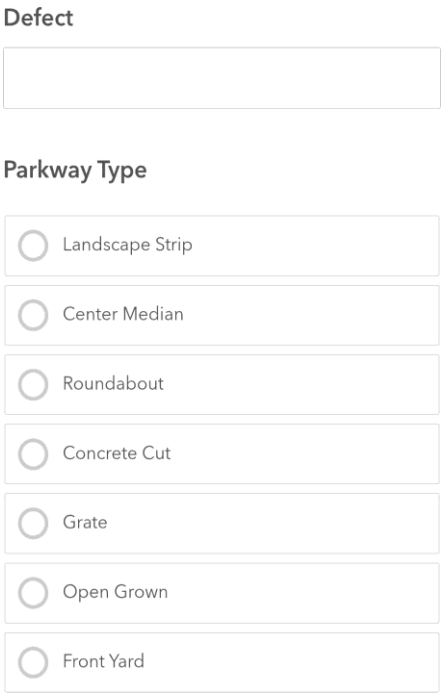
COMMON NAME: Search for the species or genus in the common name in the drop down menu or by beginning to type what you think it is. If unsure of the species choose a genus that is your best guess, or select 'Unknown'— then enter 'Staff Review - tree type' in Comment. If dead, stump or vacant select 'Unknown'.
Botanical name will automatically populate based on entry for common name.
DBH: measure the diameter in inches at chest height 4.5 ft. above ground, enter the number to one decimal point (e.g., 12.4).



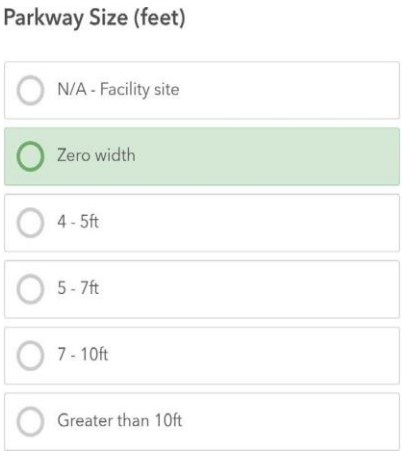


Assess **Tree Condition,** select the corresponding **Tree Maintenance** needs of the tree and select the appropriate box(es) in both data fields.

If you observe any defects in the tree, make note of it with a short description in the **Defect** field, eg. 'Insects', 'Decay', 'Deadwood', 'Canker', or 'Hazard'



Determine what kind of **Parkway Type** the site is and measure the **Parkway Size** to the nearest foot before selecting the corresponding data fields

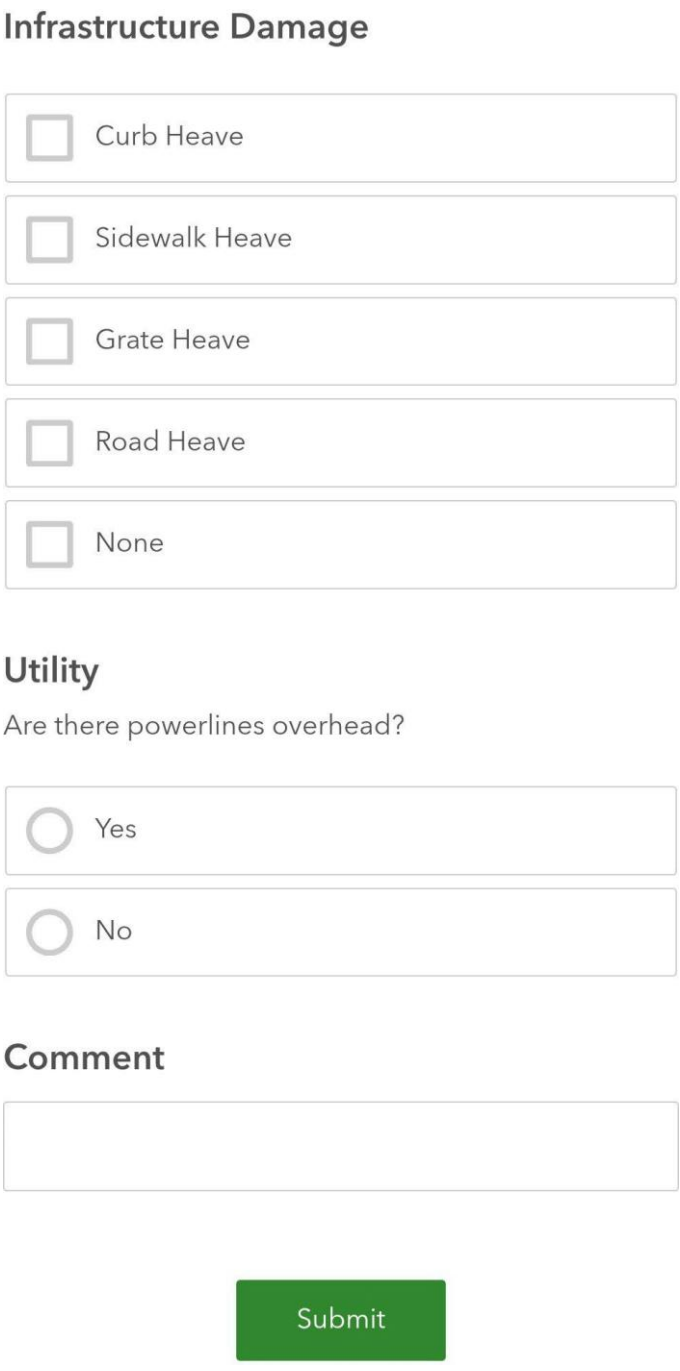


Assess the location for **Infrastructure Damage** from existing or previous trees at the site - don't worry about small pavement cracks, we are most concerned about the obvious ones that you could trip over, like tree grates or sidewalk panels that have been lifted up by the tree roots.

Look up - are there overhead **Utility** wires present Yes or No?

Comments: (up to 250 characters) Make notes for items that might need staff to review. This could include, 'not sure about ID or condition', 'looks hazardous' or 'very sick' , etc. and include details. Or, use note pads to drop off at office.

Submit: Once all the required fields are filled, click and submit and move on to another tree. You can still review and edit any tree points submitted previously. If the app doesn't let you submit there is a required field that is missing.



Identifying Bend's Most Common Street Trees

This tree ID guide is intended to introduce you to the most common street trees you will find in Bend. Once you are familiar with the species in this guide, you will be able to identify most of the trees you come across.

> Species or Genus?

We seek to identify trees accurately to species, but some tree types are listed in the database to genus — when would genus be chosen instead of the species?

- If you know the genus but you can't distinguish between two species with confidence. For instance, *Tilia americana* could be difficult to distinguish from *Tilia platyphyllos*, and it can take some time to learn to distinguish between species of *Fraxinus* (Ash) or *Acer* (Maple). Challenge yourself to learn these distinctions over the course of the season, but until you can make the distinctions with certainty it is perfectly okay to identify to just by genus.
- If you can identify the tree to species, but the species is not in the database. We may occasionally add more species to our list over the course of the year, so you can simply identify by genus, and request the point to be reviewed by review including a note in the 'Comments' field in the Survey 123 collection form.
- If you can't identify the tree to species, you know the genus and you know it is not one of the available species - you find an unfamiliar Maple species for instance and you can rule it out as one of the species in the database, enter it as ***Acer* spp**. Request a review of the data point by puting a note in the 'Comments' field.

► > What to do if you get stuck

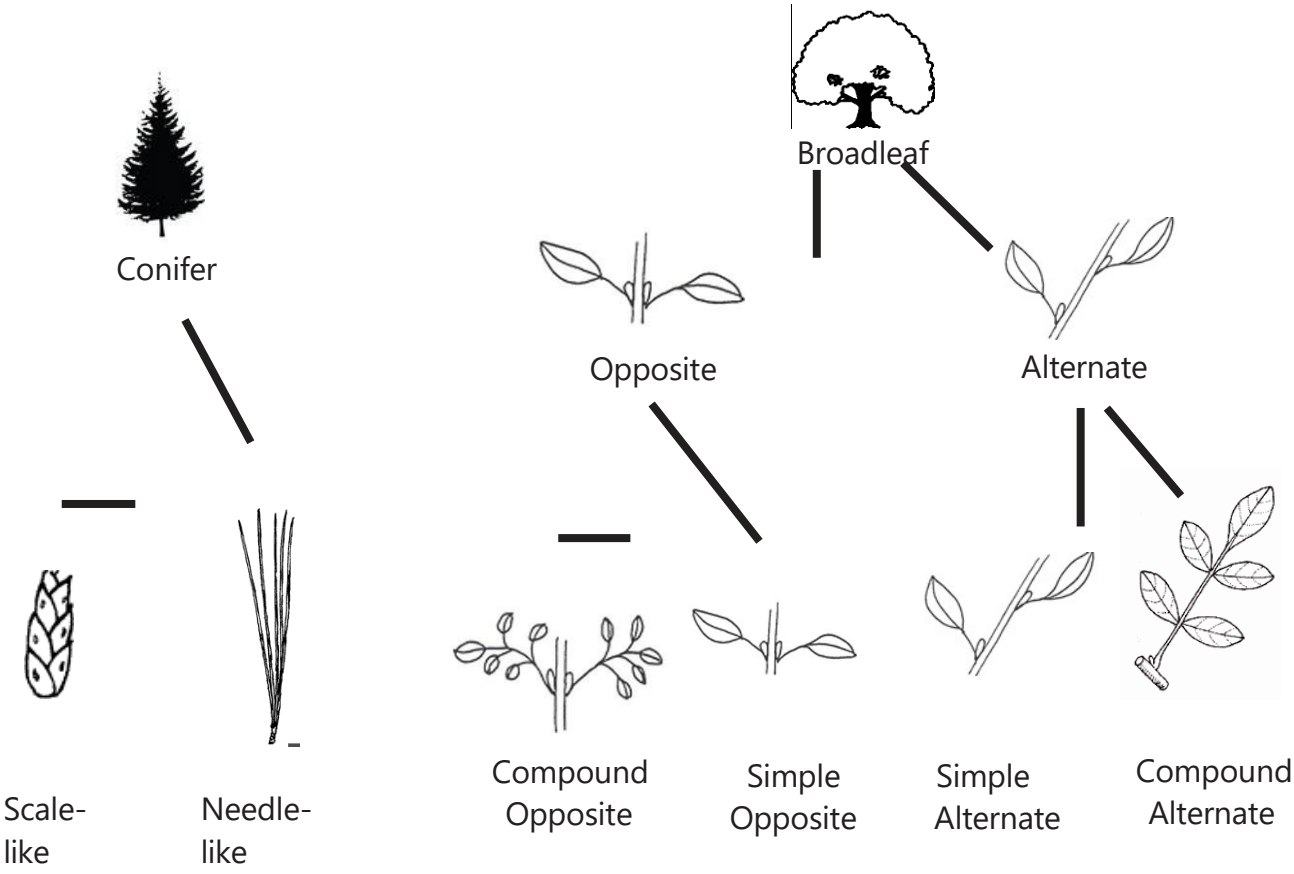
If you've worked through the keys in this guide and on line guide like the Smithsonian Field guide, refer to Staff for other tree ID resources like the OSU landscape plants website. It's focused on trees commonly grown in Oregon and has a key that could help you narrow down the possibilities. Here are some other things to try:

- Consult with your teammates. There's a good chance that someone else has either seen the same tree or could learn a new species in the process. Support each other in keying out unfamiliar trees.
- Beyond leaves, look for other clues like **tree shape, blossoms, fruit, nuts, cones or bark texture - any of these can be definitive indicators of the species**

► > How to Identify a Tree Using a Key

Tree identification keys can help us learn to identify trees by narrowing down possibilities based on two choices. Each step along the key focuses on a characteristic such as leaf arrangement to split all possible tree types into smaller groups until we are left with a small number of possible tree types.

The key in this manual does not include all possible tree types you will come across during the inventory. We have only included the most frequently seen tree species to serve as a reference while you learn common species found in Bend. This manual also doesn't include thorough descriptions of every tree type. Cross- reference the description in this book with the description in the Smithsonian 'Leafsnap' app or other sources to confirm your identification.



► > Is it a Tree?

ISA definition of a tree: woody perennial usually having one dominant trunk and a mature height greater than 5 meters (15 feet).

Things to keep in mind: shrubs can grow taller than 15 feet. Shrubs can have a single stem. "One dominant trunk" can be tricky for some species.

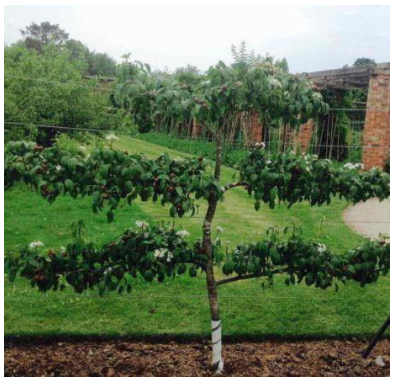
► **Is it a Tree?** - Continued

PART 1: DO NOT INVENTORY

Hedges: planted very closely and/or pruned into a hedge shape

Dwarf specimens: mature height under 15ft, often cultivars

Tree species being maintained as a shrub



Espaliered trees

Volunteers under 10 ft, self-sown, not intentionally planted

Palms

Trees growing in pots

Yuccas

Weeping conifers without a leader.

PART 2: **DO NOT** INVENTORY (SHRUB SPECIES)

Ceanothus

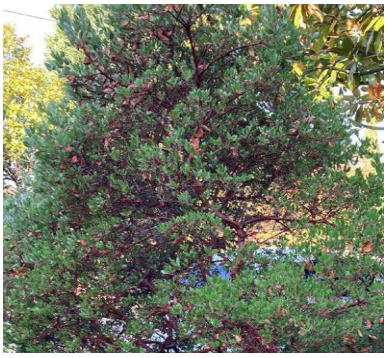
Elderberry

Photinia

Camellia

Rhododendron

Mugo pine

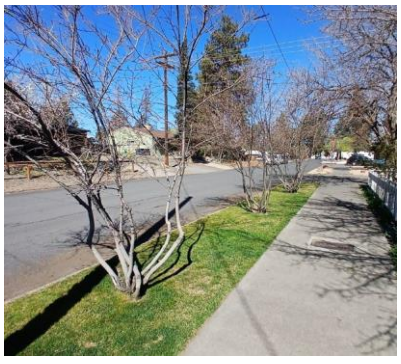


Manzanita

Sumac

Lilac shrubs

Cotoneaster



Multi stem bush-like shrubs

Dwarf Spruce varieties

DO INVENTORY

Acer circinatum Vine Maple, but only if a single stem

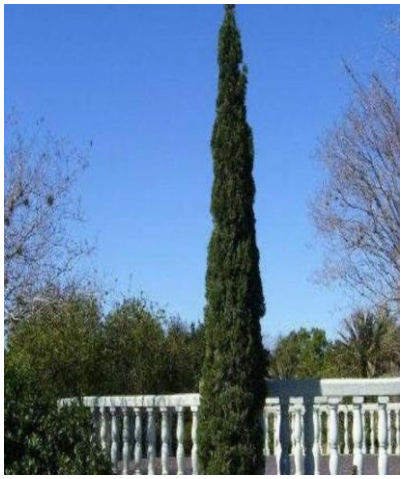
Acer Palmatum Japanese Maple. Non- dwarf only, mature height +15ft

Ilex aquifolium English Holly

Syringa reticulata Japanese Tree Lilac

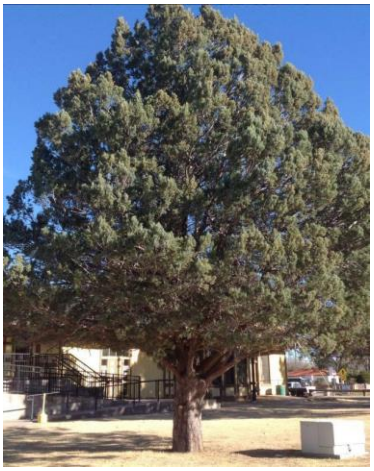
Salix Willow (maintained as a tree)

Corylus Hazel or 'Philbert'



Cupressus sempervirens Italian Cypress

Cupressus leylandii Leyland Cypress *grown as a single stem tree*



Cupressus arizonica Arizona cypress

DO INVENTORY

Prunus laurocerasus English Laurel (maintained as a tree, single stem)

Prunus lusitanica Portuguese Laurel (maintained as a tree, single stem)

Photinia serratifolia Chinese Photinia

Magnolia stellata (single stem only)

Lagerstroemia Crape Myrtle (single stem only)

Amelanchier Serviceberry (single stem only)

Cotinus obovatus Smoke Bush (maintained as a tree)

Clerodendrum spp. Gloryblower

Arbutus menziesii Pacific Madrone

► > Most Common Street Trees in Bend

Conifers — Scale-like leaves

Conifers — Needle-like leaves

Compound Leaves, Opposite Arrangement

Simple Leaves, Opposite Arrangement

► > **Most Common Street Trees in Bend** - Continued

Simple Leaves, Alternate Arrangement

Compound Leaves, Alternate Arrangement

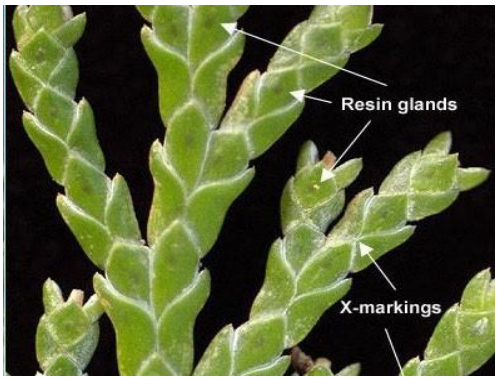
CONIFERS — SCALE-LIKE LEAVES

Cupressus nootkatensis Alaska Yellowcedar

Hook-like projections on seed cones

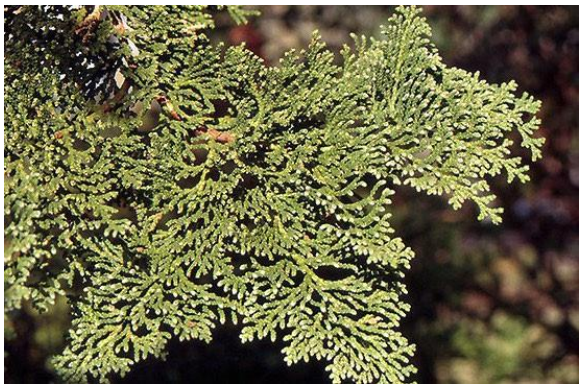
Scales with pointed tips & no markings

Chamaecyparis lawsoniana Port Orford Cedar

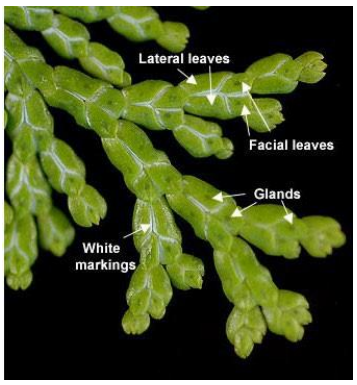


X-shaped stomatal markings

Chamaecyparis obtusa Hinoki Cypress

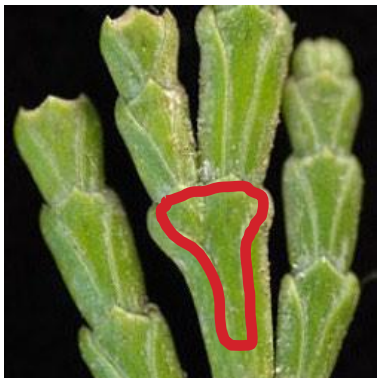


Foliage in flattened sprays

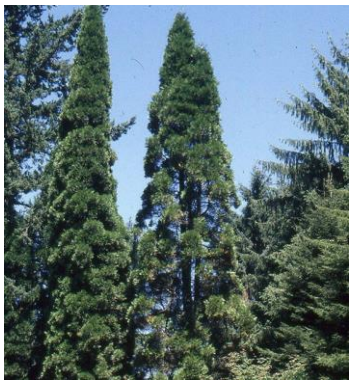


Y-shaped stomatal markings

Calocedrus decurrens Incense Cedar



Scales like a fluted wine glass



Seed cones open like a duck's bill

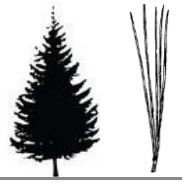
Thuja plicata Western Redcedar

Butterfly-shaped stomatal markings

Rosebud-like seed cones

Juniperus occidentalis Western Juniper

► >Most Common Street Trees in Bend -Continued



CONIFERS — NEEDLE-LIKE LEAVES | PINES

TWO-NEEDLED

Pinus contorta var. contorta Shore Pine

Short needles, often twisted

Seed cones 1-2" long, stalkless, prickled scales

TWO-NEEDLED

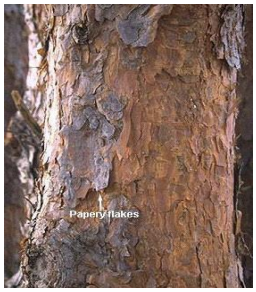
Pinus nigra Austrian Pine

Grey-brown bark

Seed cones without prickles on scales

TWO-NEEDLED

Pinus sylvestris Scots Pine



Orange-brown bark

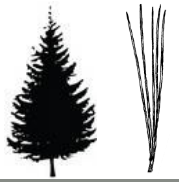
Blue-green needles

Seed cones have a short stalk

TWO-NEEDLED

Pinus contorta Lodgepole pine

Pinus aristata Bristlecone pine



CONIFERS — NEEDLE-LIKE LEAVES | PINES

Pinus ponderosa Ponderosa Pine

Long needles, tufts at branch ends

Bark plated, dark furrows

Seed cones 3-6" , prickled scales

THREE-NEEDLED

Pinus jeffreyi Jeffrey pine

Longer needles at 5-11" inches and bigger cones at 6-10" with downward facing prickles, otherwise very similar

THREE-NEEDLED

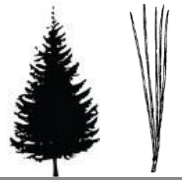
Pinus monticola Western White Pine

FIVE-NEEDLED

P. monticola and *P. strobus* are challenging to tell apart. If unsure, enter as *Pinus spp.*

Pinus strobus Eastern White Pine

FIVE-NEEDLED



CONIFERS — NEEDLE-LIKE LEAVES | SPRUCE & FIR

Picea spp. Spruce

Stiff sharp needles borne on a peg

Scaly Bark

Papery seed cones hang, fall intact

Abies spp. Fir

Flat leaf scars

Furrowed Bark

Seed cones sit upright on branch and fall apart

Abies grandis Grand Fir (similar to and hybridizes with White Fir)

*Note: double white stripe on underside of needle

CONIFERS — NEEDLE-LIKE LEAVES: CEDAR, DOUGLAS-FIR & HEMLOCK

Cedrus spp. Cedar

Clustered needles on woody spurs

Bark plated, gray

Round seed cones disintegrate at maturity

Pseudotsuga menziesii Douglas-fir

Soft needles, buds red-brown and pointed | Furrowed bark | Papery seed cones hang, 3-pointed bract

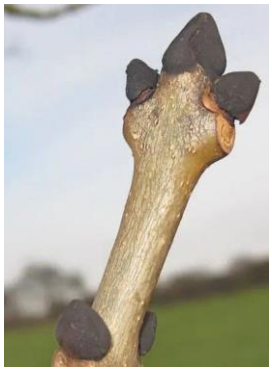
Tsuga heterophylla Western Hemlock

soft short needles, 'feathery' to touch, very small cones, shephard's crook top on younger trees

Identifying Bend's Most Common Street Trees 49

COMPOUND LEAVES, OPPOSITE | ASH

Fraxinus spp. Ash



LEAF: ends with terminal leaflet (odd-compound pinnate). Presence or absence of a leaflet stalk is an ID clue.

FRUIT: a paddle shaped samara (some cultivars no samara)

BUDS: often brown and velvety, resemble a chocolate chip

OTHER: arrangement of bud and leaf scar is an ID clue

Fraxinus americana White Ash

Fraxinus angustifolia Narrowleaf Ash

Fraxinus excelsior 'Aureafolia' Golden Desert Ash

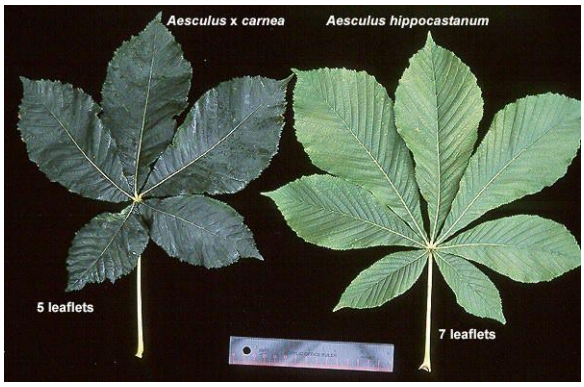
Fraxinus ornus Flowering Ash

Fraxinus pennsylvanica Green Ash

Fraxinus pennsylvanica 'Leprechaun'

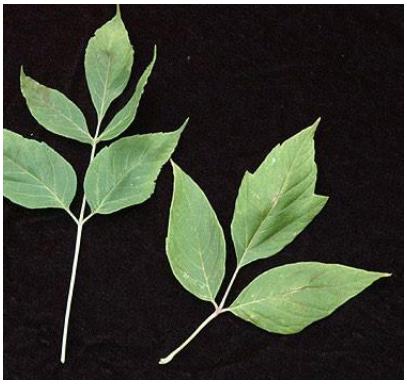
COMPOUND LEAVES, OPPOSITE | HORSECHESTNUT & MAPLE

Aesculus spp. Horsechestnut




Palmately compound leaves. Flowers and fruit borne on panicles. Fruit spiny, green, later brown.

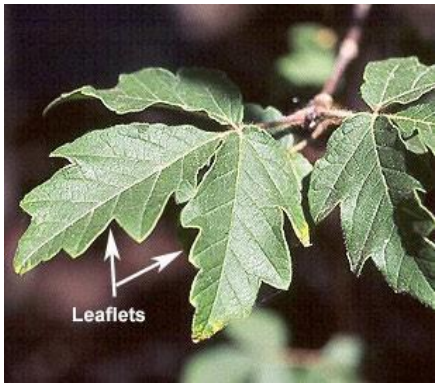
Acer negundo Boxelder



Compound leaf, terminal leaflet with a longer petiolule.

Samaras hang in clustered racemes.

Acer griseum Paperbark Maple



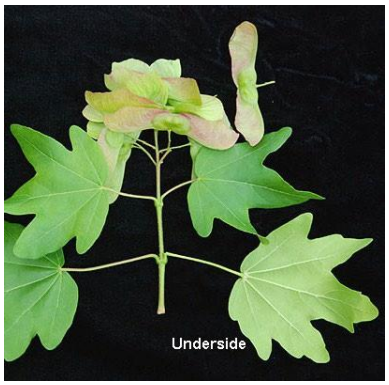

Compound trifoliate leaf with lobed leaflets | bark exfoliates | Samaras 1-1.5" and diverge at 60-90°

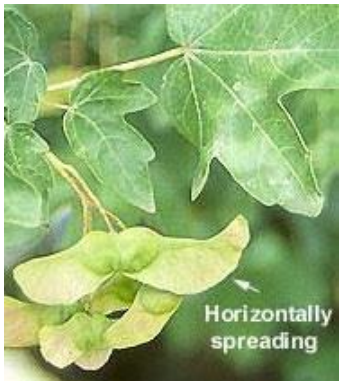
Identifying Bend's Most Common Street Trees 51

SIMPLE LEAVES, OPPOSITE | MAPLE

Acer campestre Hedge Maple







Leaves with 3-5 rounded lobes. Petiole with milky white sap. Winged samara horizontally spreading.

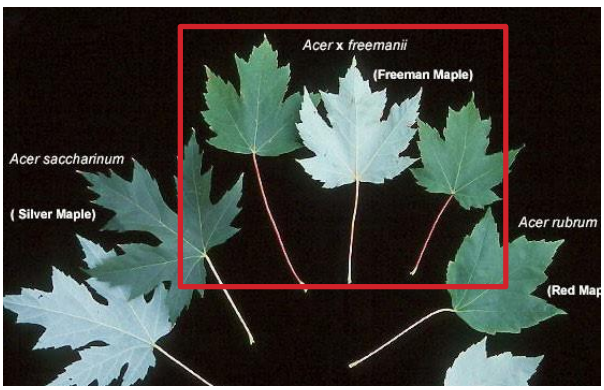
Acer grandidentatum 'Schmidt' Rocky Mountain Glow Maple



Leaves with 3-5 lobes, underside pubescent. Samara at an acute angle, head of wing rounded (a pea).

Acer × *freemanii* Red-silver Maple Hybrid



No samara. Variable leaves, usually 5 lobed. Bark like Red or Silver Maple. Upright form cultivars exist.

SIMPLE LEAVES, OPPOSITE | MAPLE

Acer macrophyllum Bigleaf Maple



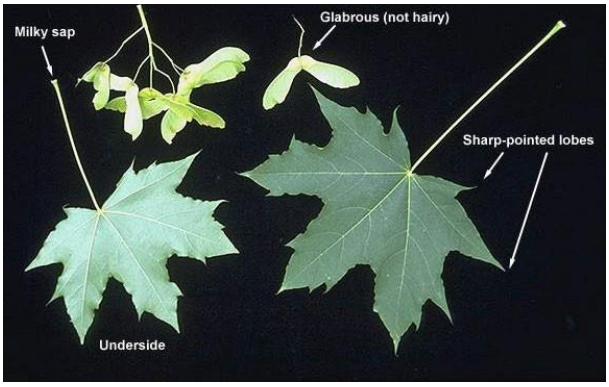
Leaves up to 12", petiole with milky white sap. Samaras, pubescent, winged, pendulous racemes.

Acer palmatum Japanese Maple



Leaves with 5-7 lobes, small and up to 4". Many cultivars exist . Winged samaras 0.5".

Acer platanoides Norway Maple




Green or purple leaves, petiole with milky sap. Samaras 1.5-2" and shaped like a mustache

SIMPLE LEAVES, OPPOSITE | MAPLE

Acer pseudoplatanus Sycamore Maple



Heart shaped leaf base. Purple leaf cultivars exist. Winged samara borne on racemes. Flaky bark.

Acer rubrum Red Maple



3 lobed leaves are typically 4" wide and long. Winged samaras appear in clusters, tinged red

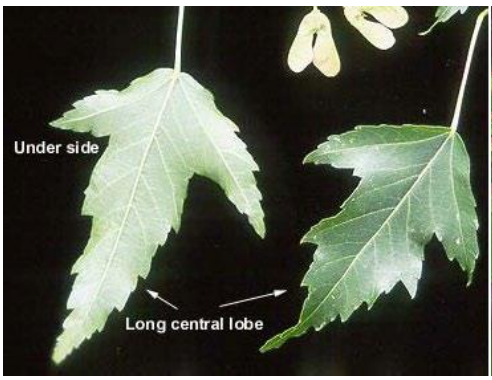
Acer saccharinum Silver Maple



Back of leaf is silvery grey. Leaf is 6" and deeply lobed. Winged samara is 1-2". Gray flaking bark.

SIMPLE LEAVES, OPPOSITE | MAPLE cont'd, ALDER

Acer tataricum ssp. ginnala Amur Maple




3 lobed leaves | Samara 1", red to brown, wings nearly parallel | small tree, round form

Acer saccharum Sugar maple



Alnus rubra Red Alder



SIMPLE LEAVES, OPPOSITE | DOGWOOD

Cornus spp. Dogwood

LEAF: Untoothed, ovate to elliptic, taper pointed, leaf veins curve up towards tip. White fibers when leaf is split gently.

FLOWERS: White or pink in spring/early summer FRUIT: Individual small round fruits, typically red OTHER: Many hybrids and cultivars

Cornus florida Eastern Dogwood

4 white or pink bracts, notched.

Cornus kousa Kousa Dogwood

4 bracts, pointed. Leaf tips elongated. Ripe fruit is pendulous, while immature fruit stands up on stem

Cornus nuttallii Pacific Dogwood

4-8 bracts, not notched like C. florida

SIMPLE LEAVES, Cottonwoods

Populus nigra 'Italica' Lombardy Poplar



This Cottonwood species is much more columnar growth habit, compact vertical canopy, fast growing

Populus deltoides Eastern Cottonwood



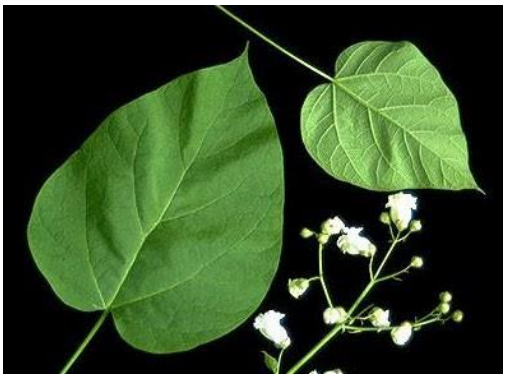
Populus trichocarpa Black Cottonwood



slightly different leaf shape | catkins and seed pods | expanding male catkins

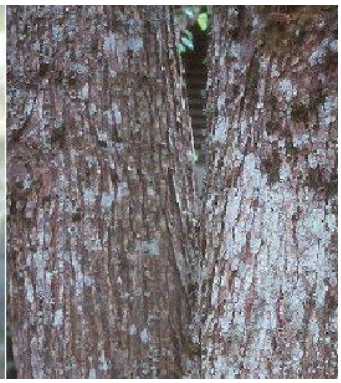
SIMPLE LEAVES, OPPOSITE | OTHER

Catalpa spp. Catalpa



Cercidiphyllum japonicum Katsura





Liriodendron tulipifera Tulip tree



SIMPLE LEAVES, OPPOSITE | OTHER

Paulownia tomentosa Empress Tree




Syringa reticulata Tree Lilac


Maackia amurensis Amur Maakia




SIMPLE LEAVES, ALTERNATE | HAWTHORN

Crataegus spp. Hawthorn

LEAF: Small, toothed leaves, shape varies with species

FRUIT: Round or slightly oblong, similar to crabapple. Spent flower parts will not rub off like on crabapple

OTHER: Usually has thorns (thorn shown is Douglas Hawthorn)

Crataegus × *lavellei* Lavelle Hawthorn

Crataegus douglasii Douglas Hawthorn

Crataegus phaenopyrum Washington Hawthorn

Crataegus monogyna Common Hawthorn

SIMPLE LEAVES, ALTERNATE | CRABAPPLE

Malus spp. Ornamental Crabapple



Small, toothed leaves, may be lobed. Fruit is small and on stalks. Calyx can be rubbed off.

Malus domestica Apple


Malus tschonoskii Tschonoskii crabapple


Large pubescent leaves, very upright growth. Crabapples rather large (but not apple sized).

SIMPLE LEAVES, ALTERNATE | CHERRY

Prunus spp. (cherry) Cherry

LEAF: toothed ovate. Small glands at leaf base

FLOWERS: White or pink in early spring BARK:

Lenticels appear in horizontal stripes

Prunus serrulata Japanese Flowering Cherry

Prunus serrula Paperbark Cherry

Prunus virginiana Chokecherry (cultivar shown)

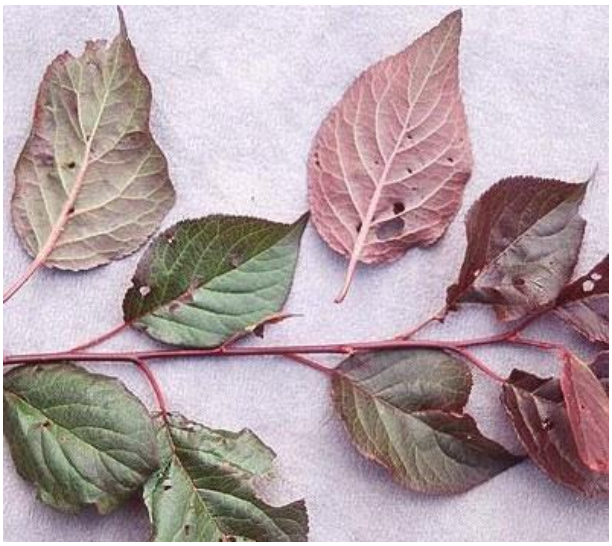
Prunus avium Bird Cherry

SIMPLE LEAVES, ALTERNATE | PLUM

Prunus spp. (plum) Plum

LEAF: toothed and often purple - glands may be present FLOWERS: White or pink in early spring
BARK: Grey, plated
OTHER: Branches may be spined (right photo).
P. cerasifera has a tendency to self sow.

Prunus cerasifera Flowering Plum



Prunus cerasifera Flowering Plum

Prunus cerasifera Flowering Plum

Prunus spp. (plum)

SIMPLE LEAVES, ALTERNATE | PEAR

Pyrus spp. Pear

LEAF: glossy above and smooth underneath. Leaves often appear to be clustered FRUIT: Some species with large edible fruit, others with inconspicuous fruits BARK: grey and lightly furrowed

Pyrus calleryana Flowering Pear

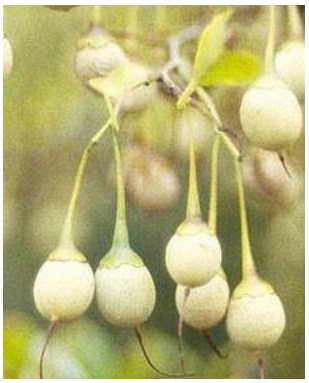
Pyrus calleryana Flowering Pear

Pyrus communis European Pear

Pyrus pyrifolia Asian Pear

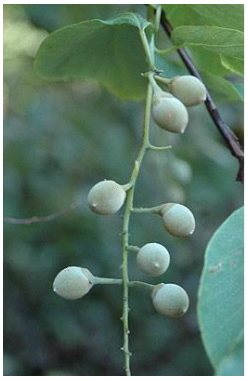
SIMPLE LEAVES, ALTERNATE | SNOWBELL

Styrax japonica Japanese Snowbell


Leaves up to 2". Fruit borne singly or on short racemes. A small tree and a more common species.

Styrax obassia Fragrant Snowbell


Leaves up to 8". Fruit borne on drooping racemes.

SIMPLE LEAVES, ALTERNATE | HORNBEAM

Carpinus spp. Hornbeam

LEAF: toothed leaf margin doubly serrated

FRUIT: Nutlet in three lobed bract. Bract shape is ID clue

BARK: Often smooth and gray

Carpinus betulus European Hornbeam

Carpinus caroliniana American Hornbeam

SIMPLE LEAVES, ALTERNATE | BIRCH

Betula spp. Birch

LEAF: toothed and tapers to a point

FLOWER: Catkins

BARK: Often white, peeling, & with horizontal lenticels

Betula pendula European White Birch



Betula nigra River Birch



SIMPLE LEAVES, ALTERNATE | OAK (DECIDUOUS)

Quercus spp. (deciduous) Oak

Quercus rubra Red Oak

Quercus palustris Pin Oak

Quercus frainetto Hungarian Oak

Quercus coccinea Scarlet Oak

Quercus garryana Oregon White Oak

Quercus robur English Oak

SIMPLE LEAVES, ALTERNATE | OAK (EVERGREEN)

Quercus spp. (evergreen) Oak

Quercus hypoleucoides Silverleaf Oak

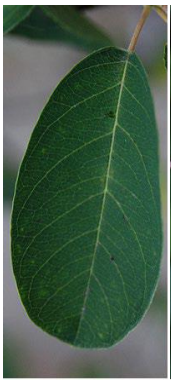
Quercus ilex Holly Oak

Quercus myrsinifolia Bamboo-Leaf Oak

Quercus suber Cork Oak

SIMPLE LEAVES, ALTERNATE |

Amelanchier spp. Serviceberry


Fagus spp. Beech



Ginkgo biloba Ginkgo



SIMPLE LEAVES, ALTERNATE |

Liquidambar styraciflua Sweetgum



Toothed 8" leaves, star-shaped with 5 lobes. Fruit looks like a spiny gumball.

Magnolia spp. Magnolia





Magnolia grandiflora Southern Magnolia

Leaves untoothed, elliptic or oblong, deciduous or evergreen. Clustered 'pickle' fruit. Fuzzy buds.

Nyssa sylvatica Black Tupelo

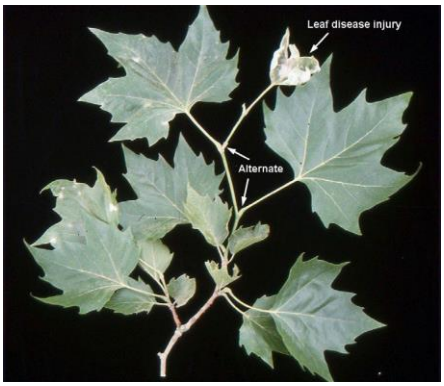



SIMPLE LEAVES, ALTERNATE |

Parrotia persica Persian Ironwood




Platanus × acerifolia London Planetree


Rhamnus purshiana Cascara



SIMPLE LEAVES, ALTERNATE |

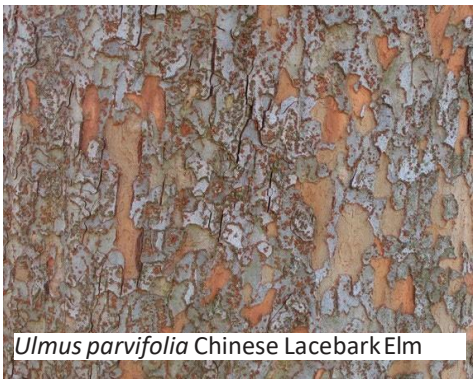
Tilia spp. Linden



Toothed leaves, heart shaped with pointed tip. Fruit small and round, attached to pale green bract.

Ulmus spp. Elm



Ulmus parvifolia Chinese Lacebark Elm

Leaves doubly serrate with an unequal sided base, sandpapery. Fruit a winged, round samara.

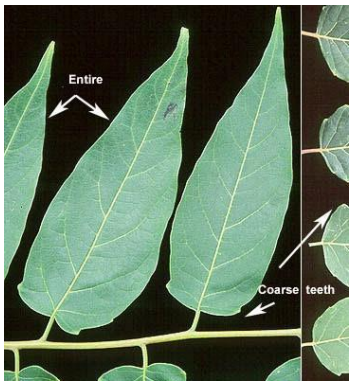
Zelkova serrata Japanese Zelkova




Leaves singly serrate. Fruit small triangular drupes close to stem. Form is vase shaped.

COMPOUND LEAVES,

Ailanthus altissima Tree of Heaven





Odd-pinnate compound leaves. 13-25 leaflets, 2-4 coarse teeth near base. Red samara. Large leaf scar.

Juglans spp. Walnut


Juglans nigra Black Walnut

Juglans regia English Walnut


Odd-pinnate compound leaves. *J. nigra* 15-23 leaflets, *J. regia* 5-9. Leaf scar vascular bundles 'smiling'.

Pistachia chinensis Chinese Pistache



Even-pinnate compound leaves. 10-12 leaflets, untoothed margins. Fruit forms in dense clusters.

COMPOUND LEAVES, ALTERNATE

Gleditsia spp. Honey locust

Even-pinnate/bipinnate compound leaves. Leaflets lanceolate to oblong. Fruit 7" brown pod.

Robinia pseudoacacia Black Locust

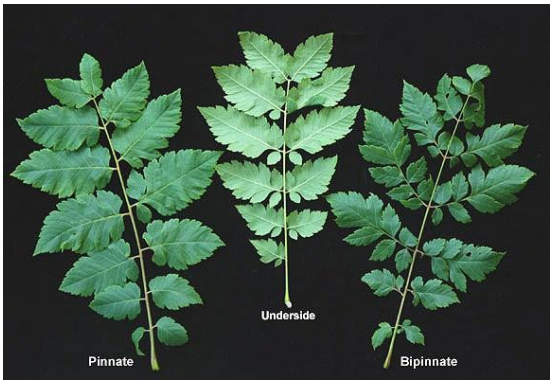
Odd-pinnate compound leaves. Leaflets rounded. Fruit 3" pod, hanging in clusters. Self sows.

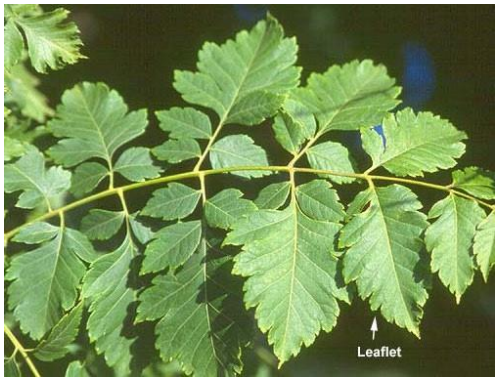
Sorbus spp. Mountain Ash

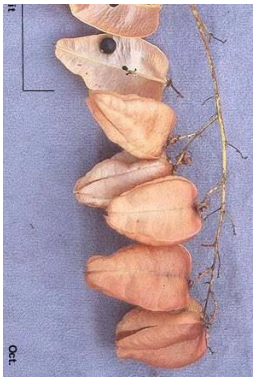
Odd-pinnate compound leaves, leaflets serrate. Clustered fruit. Some *Sorbus* leaves alternate, simple.

COMPOUND LEAVES,

Koelreuteria spp. Golden Rain Tree

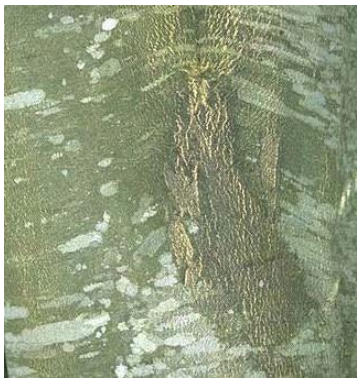






Even-pinnate or bipinnate compound leaves. Fruit are papery capsules in clusters.

Cladrastis spp. Yellowwood



Odd-pinnate compound leaves. Leaflets offset on rachis. Pendulous Pods. Petiole base encloses bud.

Maackia amurensis Amur Maackia

Odd-pinnate compound leaves. Leaflets opposite on rachis. Pods flat. Bark texture like melted plastic.

▶ *Shortlist of The Most Common Trees in Bend*

TOP 10 CONIFEROUS TREES:

- *Ponderosa pine*
- *Western Juniper*
- *Douglas fir*
- *Lodgepole Pine*
- *Scots Pine*
- *Colorado Spruce*
- *Norway Spruce*
- *Western Hemlock*
- *Incense Cedar*
- *Austrian Pine*

➢ *DECIDUOUS GENUS SHORTLIST – Pine, Spruce, Fir, Hemlock, Juniper*

TOP 15 DECIDUOUS TREES:

- *Red maple*
- *Pin Oak*
- *Silver maple*
- *Flowering Crabapple*
- *Callery pear*
- *Mountain ash*
- *Siberian elm*
- *River Birch*
- *Purple Leaf plum*
- *White or Green Ash*
- *Weeping willow*
- *Red Alder*
- *Quaking Aspen*
- *Canada Red Chokecherry*
- *Flowering Cherry*

➢ *DECIDUOUS GENUS SHORTLIST – Maple, Oak, Ash, Crabapple, Chokecherry, Willow, Elm, Alder*

> Identifying Suitable Vacant Planting Spots

A few basic rules:

- Prioritize right-of-way parkway strips between the curb and the sidewalk
- These landscaping strips should be at least 4' feet wide
- Unless the right-of-way is obvious, don't worry about trying to place planting spots in front yards where there is no sidewalk and parkway strip
- Center medians at least four feet wide are good options as well. Aim for 25' foot spacing on center, just be careful crossing traffic. You can eyeball the tree location and drop a pin from the sidewalk if the roads are busy and aren't safe to cross.
- Avoid placing planting spots right in front of pathways and entrances to private residences (see below)
- Don't place planting spots where there is distinct existing right-of-way landscaping, be it hardscaping and or plants and shrubs (see below)
- Avoid planting under overhanging trees that reach over from front yards (below)

Planting spots for trees should be spaced no less than the following distances from existing infrastructure:

- Stop signs: 35 feet
- Street lights: 25 feet
- Traffic signs: 20 feet
- Intersections: 15 feet
- Fire hydrants: 10 feet
- Non-street light utility poles: 5 feet
- Water meters, manhole covers: 5 feet
- Driveways, or alleys: 5 feet
- Bus benches and shelters: 5 feet
- Gas lines 5 feet
- Electrical and telecoms cabinets: 5 feet
- Irrigation boxes, electrical vaults: 5 feet

> Identifying Suitable Vacant Planting Spots-Continued

Electrical transformer

Electrical vault

Electrical vault

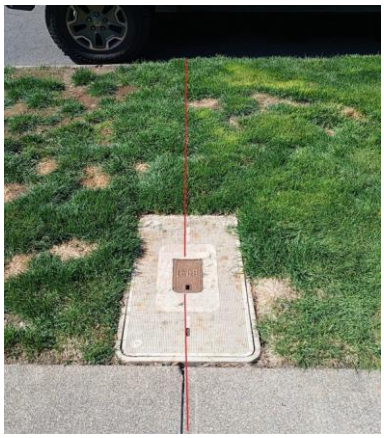
Telecoms cabinet

Telecoms boxes

Irrigation valve box

Stormwater manholes: curb intake and street intake

Bus stop



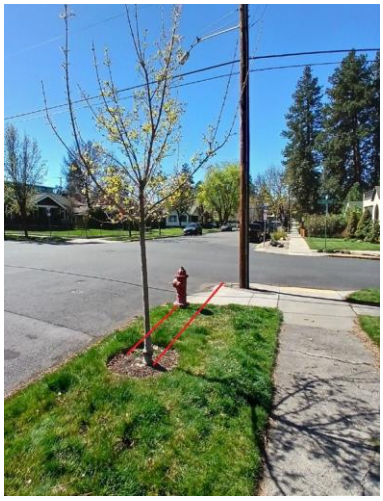
Water meter box

Water valve

Water valve

Gas lines coming from house mounted meters

Gas valve & gas line marker



Hydrants, signs, poles, proximity to intersection

Signs, transformer, telecoms