

# The New Canaan Champion Tree Project

Congratulations on becoming a *citizen scientist*! You are helping to gather important information about New Canaan's largest living trees, which will help us better understand species diversity, carbon storage, and the succession of New Canaan's suburban forest. You will also be helping to identify trees that may be candidates for State or National Champion status.

**What is a Champion Tree?** A Champion Trees is the largest living individual tree of its species, as measured by height, circumference, and crown spread. A list of national champion trees is maintained by American Forests, while a number of state organizations, including Connecticut College, keep a list of Connecticut champion trees.

## What you will need:

- 1) A "Citizen Science Kit", available at the New Canaan Library, containing:
  - a. This instruction packet, including the datasheet at the end
  - b. A clipboard and a pen/pencil
  - c. A measuring tape (to measure tree circumference)
  - d. A height gauge (to measure tree height)
  - e. The Peterson Guide to Eastern Trees
- 2) A measurement of your pace: Simply measure the length (in feet) that it takes you to walk ten paces, then divide that length by ten to get the average length of your pace. This will be used when measuring tree heights and crown spread.
- 3) A smartphone, to determine tree coordinates
- 4) A computer, to upload you results after taking measurements

**For each tree, you will collect the following data points, using the provided datasheet.**

## 1. Tree Species (or your best guess):

The best way to identify a tree is to use a guide with a dichotomous key, which will ask you either/or questions to help you narrow down your options (for example, does the tree have leaves or needles). The dichotomous key in the Peterson's Guide is located on page 11, with the definitions of terms like opposite/alternate, or simple/compound explained in the preceding pages (mostly on page 2). After working your way through the key, you will only be left with a few possible options, and the guide will provide you with photos and descriptions to further hone in on your species.

Identifying the species of your tree may be the most challenging part of this project. If you are struggling to identify your tree, just give us your best guess (its ok to say "oak", if you can't determine whether it is a red or black oak). If you tree measurements make it a contender for champion status, we will go back and verify the species.

## 2. Tree Location

GPS coordinates are the best way to record an object's location. You can find your GPS coordinates using most mapping apps on your smartphone, even if you do not have good service. In Google Maps, simply zoom in to your location, tap the map to drop a pin, and swipe up to see more

information about the dropped pin. Towards the bottom of the window, you should see your coordinates, measured in decimal degrees. It should look something like (41.xxxxx, -73.xxxxx).

If you don't have a smartphone, you can also provide the trees location descriptively. Please use an address and/or other features, such as "In front of town hall, on the right side of the lawn" or "The left of the two trees in front of 58 Pine Street".

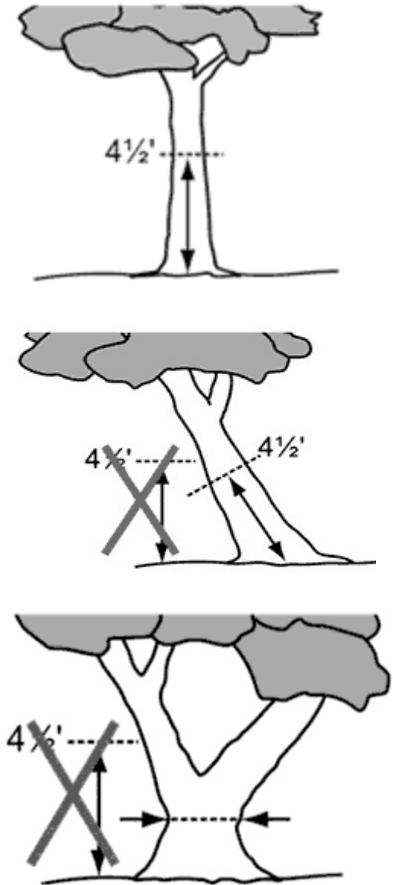
### 3. Tree Circumference, in Inches

In your citizen science kit, we have provided a tool called a "diameter tape". You'll note that there are two sets of increments on the measuring tape. One set of increments (with larger spacing) measures *linear distance* like a normal tape measure. The other set of increments (with smaller spacing) will give you the *diameter*, a common measure used in forestry. We will use the linear measure, in inches.

Tree circumference should be measured by wrapping the measuring tape around the tree's trunk, and reading the measurement to the nearest quarter inch.

*For trees with one trunk:* at a height of 4.5 feet above the ground (roughly chest height). Measuring at this height normalizes for factors like root flare that might give you an incorrectly large measurement (right, top image). If your tree has a lean, be sure that the measurement is being taken perpendicular to the trunk, and at a point 4.5 feet from the ground (right, middle image).

*For trees with multiple trunks:* Tree circumference should be measured at the narrowest part of the trunk, at or below 4.5 feet above the ground. This normalizes for the flare caused by the branches (right, bottom image).



### 4. Tree Height, in Feet

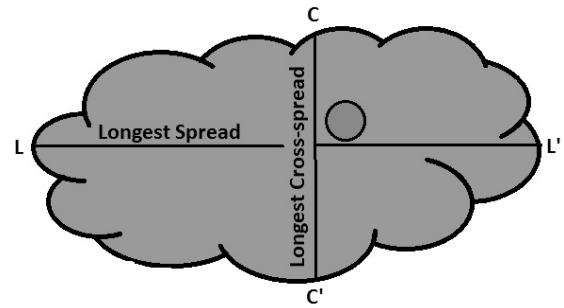
We will calculate the tree's height using the other tool provided in our kit, called a height gauge. The gauge has instructions imprinted on the side of the device, so we won't repeat them here.

To determine the tree height, you will need to know the length of your pace, which you should determine ahead of time. This will enable you to measure the distance between you and the tree (noted as "D" on the height gauge). Note that this device is most accurate on level ground, so, if possible, try not to walk uphill or downhill as you walk away from the tree you are measuring.

### 5. Quarter Average Crown Spread

The final measurement we will take is the crown spread, which we will use to calculate the "quarter average crown spread". A tree's crown, or canopy, is usually very irregular, so we will use a shortcut to get an approximate value.

First, take a look at the tree's crown, and find the direction in which it has the furthest spread. Measure that distance using your pace: stand directly under one edge of the crown (marked "L" in the image below) and walk in a straight line until you are directly under the other edge of the crown (marked "L'" in the image below). This is your *longest spread*, which you should note on the datasheet next to the "L".



The second measure is the tree's *cross-spread*. This measurement must be taken perpendicular to the *longest spread*, and should try to capture the largest possible crown spread in that perpendicular direction. Measure the *cross-spread* as earlier, using your pace, and note that value on the datasheet next to the "C".

Finally, we will calculate the Quarter Average Crown Spread. Simply add your two values, "L" and "C, together, and then divide by eight. Enter that value into the "1/4 Average Crown Spread" column.

## 6. Total Points

Champion trees are scored by simply adding together the circumference (in inches), the height (in feet), and the quarter average canopy spread (in feet). After you've taken all of the measurements above, calculate your tree's total points and enter that value on your datasheet.

## 7. Optional: a photo of the tree

A photo is optional, and will help us better identify the tree (should you be unsure of the species) or locate the tree (should we want to confirm measurements).

## How to Upload Your Data

When you are done collecting data, please visit <https://newcanaanlandtrust.org/champion-tree/> to upload your findings. Our form will enable you to submit data for one tree at a time, but you are welcome to submit data for as many trees as you would like.

## Other Things to Note

- 1) Any living tree in New Canaan can be submitted. However, we encourage you to spend time measuring exceptionally large trees of each species. Keep in mind that some species can grow much larger than others, so the term "large" is somewhat subjective. A red oak can easily have a circumference of over 200 inches, but it would be exceptionally rare to see a flowering dogwood of that size.
- 2) Do not trespass onto private property while collecting data. If your home doesn't have large trees, ask permission from friends or neighbors to measure their trees. There are a number of exceptionally large trees at Land Trust preserves, town parks, school grounds, and roadsides that you can measure.
- 3) If you have any questions, please reach out to the New Canaan Land Trust at [info@newcanaanlandtrust.org](mailto:info@newcanaanlandtrust.org).

## Datasheet for New Canaan Champion Tree Project

Name: \_\_\_\_\_ Date: \_\_\_\_\_ My Pace Length: \_\_\_\_\_ feet

Tree #	Tree Species	Location (Decimal Degrees and/or Written Description)	Circumference* (in inches)	Height (in feet)	Crown Spread Measurements (in feet)	1/4 Average Crown Spread (in feet)	Total Points (C+H+1/4 CS)
Sample	Cucumber Magnolia	41.149046, -73.506896 North of Irwin Park parking lot	150 inches	75 feet	Long) 210 feet Cross) 190 feet	$(210+190)/8$ =50 feet	275 points
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							

\*Remember to use the linear increments (larger spacing) and not the diameter measurement increments