



Tree Conservation Notes

Athens-Clarke County Community Tree Program

How Old Is My Tree?

Without specific information, determining the actual age of a standing, live tree is difficult. If you know when the tree was planted, you can easily and accurately determine its age. The second most accurate way to estimate tree age is to count the annual rings of wood growth.

Annual rings can be counted using two different methods. You can extract an increment core from the tree using an increment borer. Most people, however, do not have access to an increment borer, and in fact this instrument does result in an injury to the tree. For trees that are dead and have been cut down, you can count the rings on the stump. This provides an accurate estimate, but for live trees it just won't work!

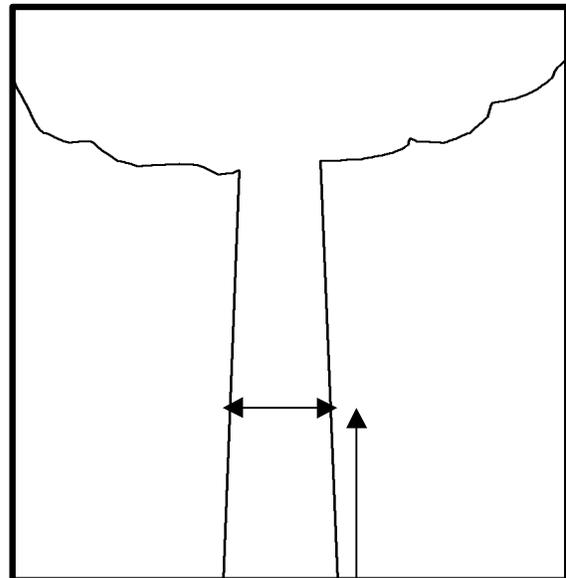
However, you can estimate the age of a living tree, without knowing when the tree was planted, by the following method. In the example below, we are measuring a very large white oak tree.

STEP 1. Measure the circumference (c) of the tree trunk using a measuring tape that measures in feet and inches. This should be done at 4.5 feet above the ground.

EXAMPLE:

Our white oak tree measures 12 feet, 10 inches in circumference.

$c = 12 \text{ feet}, 10 \text{ inches} = 154 \text{ inches}$
(multiply 12 feet x 12 inches per foot, then add 10 inches)



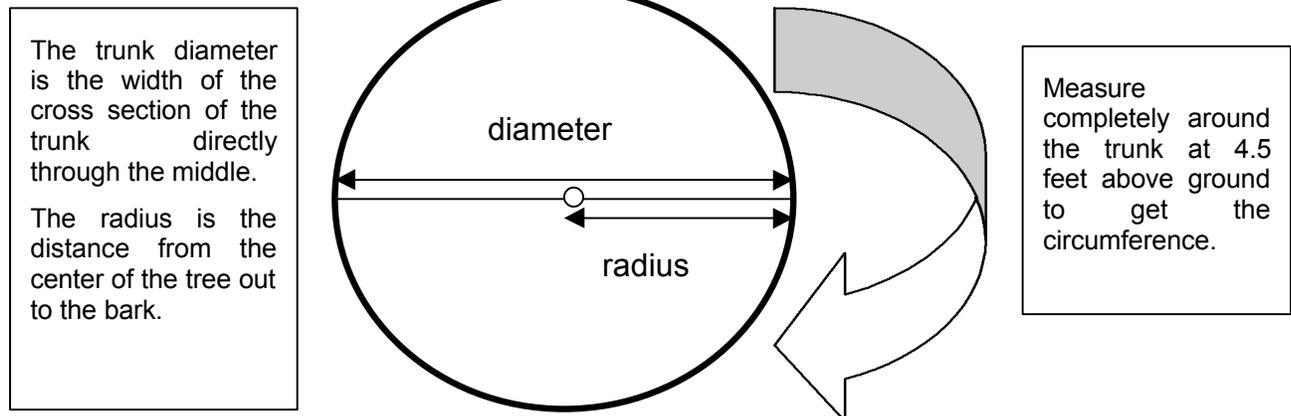
STEP 2. Calculate the diameter (d) and radius (r) of the trunk in inches.

Divide the circumference by 3.14, a constant known as “pi”.

$$c/3.14 = d \qquad 154 \text{ inches}/3.14 = 49 \text{ inches}$$

Divide the diameter by 2 to get the radius.

$$/2 = r \qquad 49 \text{ inches}/2 = 24.5 \text{ inches}$$



NOTE: You should deduct at least .5 inch from the radius for the width of the tree’s bark, and more for trees with very thick bark (1.0 inch), less for trees with very thin bark (.25 inch).

In our example, we will deduct .5 inch, for a radius of 24 inches.

While you will use the radius to calculate tree age, the trunk diameter of a tree is a commonly used measurement. The trunk diameter measured at 4.5 feet above the ground is officially known as “diameter at breast height”, or “dbh”.

STEP 3. Determine the average width (w) of an annual ring of wood for the species of tree you have measured. In ring-porous species of trees (distinct annual rings), the annual ring will contain both early or spring wood (large vessels) and late or summer wood (small vessels). In diffuse porous woods, it is much more difficult to see where the rings begin and end. A hand lens or magnifying glass is useful.

The width of an annual ring of wood for a particular species depends upon many factors, including:

- Genetic differences
- Tree age
- Height above ground
- Local site and climatic conditions
- Competition from other trees
- Water availability
- Nutrient availability
- Presence of insects or diseases
- General tree health



You can also calculate the average width of an annual ring using cross sections of wood from the same species. Measure the radius from just inside the bark to the center of the trunk, count the number of rings, and divide the radius by the number of rings. The result will be the average width per ring.

$$10 \text{ inches}/50 \text{ rings} = .2 \text{ inches/ring}$$

Conversely, if we divide the number of rings by the number of inches, the result will be the average number of rings per inch.

$$50 \text{ rings}/10 \text{ inches} = 5 \text{ ring/inch}$$

If the absence of actual data for white oak we will use in our example an assumed average of .2 inches per ring, or 5 rings per inch.

STEP 4. Divide the radius (r) by the average width (w) of one annual growth ring to get the approximate age of the tree.

$$r/w = \text{approximate age}$$

$$24 \text{ inches}/.2 \text{ inches per year} = 120 \text{ years!}$$

An age of 120 is relatively young for a white oak. Under perfect conditions, a white oak tree can live to be 300 or more years old. However, under urban conditions, most white oak trees will only live to be around 150 years old. Many of our other common oak trees, such as water, willow, northern red, and southern red oak live to be about 80-100 years old under urban conditions. Another one of our more common trees, flowering dogwood, is a very old tree when it is around 50 years old.

For more information, contact the Athens-Clarke County Community Forester at (706)613-3561 voice, (706)613-3566 fax, or by e-mail at forester@co.clarke.ga.us.