

What Is A Tree?

Dr. Kim D. Coder, Professor of Tree Biology & Health Care, Warnell School, UGA

Trees represent great public and private values in a community. Trees comprise an appreciating asset base as well as a risk component in managing landscapes. Trees remains symbols, icons, pillars, ceilings, and centerpieces of communities. Trees seem to be more than pets, but less than off-spring to humans. But, in all the values associated with trees, tree-filled landscapes, and tree lined streets, what is a tree? How can we define the living entity which generates values we find alluring, essential, and an integral part of our culture and quality of life?

Defining Methods

There are two methods of defining a tree. One is a realization of what the term “tree” symbolizes within language concepts. The second method is examining descriptive definitions in dictionaries, or in regulatory definitions found in a variety of tree protection and tree management ordinances. Before developing a regulatory means to advance or management trees, it is critical to define what you are trying to defend and manage. Beware of cloning or copying tree definitions which have been developed in situations which do not represent your circumstances.

Language Foundations

The language we speak is comprised of mental images of understandings. We then render a image or construct into a written word. Words, whether spoken or written, do not fully represent and transfer everything in our mental image to another person. Usually, all the subtleties, nuances and assessaries we attach to a word, based upon our personal experiences and knowledge, are stripped away from the core meaning of a word. We are then compelled to modify the word with other terms in order to more fully communicate our ideas. A definition is both a description of an object, image, or concept, as well as an agreement about how a number of humans with similar cultural backgrounds will describe something.

To arrive at our most current definition of “tree,” it is important to go back to the root concepts used over time to describe and symbolize a tree. One of the first decernable word concepts leading to the modern word tree was from ancient Sanskrit where “dru” represented a tree and any derived wood. The Indo-European language base used “derw” or “deru” to symbolize a tree, specifically an oak tree. Greeks carried forward this word concept to “drus” or “drys” meaning oak and “dendreon” meaning tree.

Roadway To Tree

From the Greek, a tree concept exploded into many European languages. Vikings and their predecessors used and spread word usage which included “tre” in old Norwegian and Icelandic, and “trae” in Danish. The Swiss used the word concept of “tra” or “trad.” Druids used “tray” or “trough.” The Irish word base for tree was “darag” or “darog,” while the Welsh used “derw.” The Russian base word for tree was “drevo.”

A major pathway to our term “tree” is most directly derived from old Saxon “treo” or “trio” meaning an oak tree. This led to the Anglo-Saxon “treow,” “treo,” or “tre” for a tree or its wood. Old French also used a word “tre” for a tree or its wood. Finally the word-journey to our modern English word “tree” came through the old English “treow,” “tre,” or “treo,” and middle English word “tree.”

Species Values

Understanding our past is important to understanding current concepts and usage of the word “tree.” Through this word history, trees were conceptualized to be relatively large, massive, branched, upright oaks (and sometimes ash) from which can be derived valuable wood.

It is interesting to note how deciduous hardwood trees were granted a significant word concept which other peoples carried forward. Common pine, spruce, and fir trees in the forests of central and northern Europe were described with highly variable and non-conserved terms primarily attached to forest concepts, not as individual trees.

Name That Tree

The next step in defining a tree is to consolidate dictionary, general knowledge encyclopedias, botanical glossaries, and ordinance definitions. The best way to accomplish this task is to record the use of specific descriptors in each definition. Figure 1 provides the relative frequency of words used in describing a tree from among 45 different definitions. For example, 20 percent of all definitions specifically state a tree is a plant. Of course this is implied in all the others, but for a significant number of definitions, the authors felt the term “plant” must be used in defining a tree.

In Figure 1 50% of all descriptors for trees included three terms: plant, woody, and single stem. The single stem concept does contain problems when defining trees with multiple trunks, trees from multiple stump sprouts, and clump plantings. As more terms are added to a definition, a clearer concept or image of a tree appears. Dividing the descriptors in Figure 1 into natural breaks within percentage values, a tall, woody, single stemmed plant accounts for a 63% fit in definition. If broad diameter, branched, and perennial ideas are added, 87% of the descriptors are represented. An elevated and distinct crown adds another 7% in tree definition, with the last 6% composed of minor descriptors of self-supporting, erect stem, and a clear lower trunk.

Form & Function

At its most basic level, a tree definition is not species based, but is a structural definition. It represents a type of plant architecture recognizable by non-technical people. The structure and architecture define the appearance and continued growth of a tree, which includes mass, height, and longevity. Care must always be taken to use “tree and tree-like” structures to define traditional tree concepts and tree-like palms, tree ferns, bananas, and bamboo.

One way to differentiate trees from tree-like plants is the relative position and growth of the vascular components and buds in a tree. A true tree has secondary vascular tissue and generates structural expansion in diameter through a vascular cambium. In addition, a true tree would contain circumferential layers of xylem and phloem built of cellulose fibrils and lignin.

Big & Tall

Height and girth / diameter are important in defining trees, especially in regulatory situations. In examining many ordinance (i.e. legal) definitions of trees, many height and diameter thresholds were delimited. Figure 2 provides a distribution various heights cited plants must exceed in order to be considered a tree (assuming other tree characters are present). Eight to twelve feet tall above ground is a critical height range where a plant stops being a shrub and enters a tree form.

Figure 3 shows the distribution of diameters a plant stem must exceed in order to be considered a tree. It is clear when diameters equal or exceed three inches, a tree definition is reached. The diameter distribution peak in Figure 3 is much less distinct and broader than is the height distribution peak in Figure 2. This suggests height is more easily appreciated when defining a tree.

One means of describing a tree is to use time effects on tree maturity. For example, if a woody plant belongs to a species which will exceed a certain height and diameter when it is mature, then it can be considered a tree. This does suggest problems associated with tree maturity concepts. Another form of defining a tree by time is the capability now or in the future of a woody plant being pruned using a crown raising to produce a clear stem distance from the ground of some given length (like 10 feet).

Referral Cheating

One interesting idea on defining a tree comes from secondary references within different ordinances. The definition of a tree here would be any species, variety, race, or cultivar listed by some widely recognized or professional reference. The four forms of references most often used to define a tree are:

- listing in the **Checklist of United States Trees** (Native & Naturalized) by E.L. Little, USDA-Forest Service Agricultural Handbook #541;
- **Atlas of United States Trees** (multiple volumes on various regions and tree types) by E.L. Little, USDA-Forest Service Miscellaneous Publications, or similar state derived product;
- appearing on a locally viable list used by professional tree appraisers (CTLA recommended methods) with a cited species value; or,
- listing as an accepted landscape reference as a tree -- (i.e. reference text, tree selection booklet from educational or government organization, or NOT listed in a reference as a shrub, vine, or perennial.

Ultimate Definition

There is no single definition for a tree. Definitions are to assist people understand the limits and constraints on word concepts. Definitions are usually targeted for specific uses and assume the user knows and understands the context of any word use, as well as the definitions of any descriptors used. Advancing to more intricate and complex definitions leads to greater confusion and more differences of opinion. A complete definition covering all likelihoods may be more of a problem than too simple of a definition, especially among non-technical people.

The most basic concepts for defining a tree are -- a large, tall, woody, perennial plant with a single, unbranched, erect, self-supporting stem holding an elevated and distinct crown of branches, which can grow greater than 10 feet in height and greater than 3 inches in diameter.

Amenity Tree

Once a tree is defined, values can be attached to this structure. In other words, what values do trees generate? The term or concept of “amenity trees” moves past a tree to its generated values. Amenity trees have three components critical to understandings. The three concepts include: the term “tree,” a definitional problem discussed above; the concept of “amenity” using traditional definitions and current professional usage; and, the recognition of generated services and values by humans.

Getting Beyond “Nice”

The word “amenity” is derived from the mental image of “pleasant.” The use of amenity followed several intellectual tracks. The definitions for current use, and use as a modifier for the word “tree,” include three lines of thought which are intertwined:

1. Amenity is a quality, feature, or attribute of being pleasant, attractive, and agreeable which is conducive to comfort, convenience, and enjoyment.
(Summarize this concept by using the word “charming.”)
2. Amenity is a physical feature or object which increases attractiveness and value of a site through contributions to the physical, psychological, or material comfort of people and which facilitates happiness, pleasure, enjoyment, and contentment.
(Summarize this concept by using the word “satisfaction.”)
3. Amenity is a physical object which is productive, useful, and practical, providing services which aid, protect, and comfort people.
(Summarize this concept by using the word “utility.”)

A “Good” Tree

Trees play four primary roles in society: trees are generators of goods and services; tree components are converted into physical products; trees are ecological controllers and modifiers of site resources; and, trees are symbols and focal points of cultural and psychological models.

The value of a tree becomes confused across all four of these constructs. The physical product component is the easiest to pull out and place a marketplace value upon. Attempts have been made to itemize and then assess ecological functions and values. The role of trees within the human mind and conceptually within society continues to be studied. What is the value of a good tree (or a bad tree)?

The value which living and dead trees generate beyond a physical tree product, is composed of both ephemeral and escalating benefits and costs. A tree as its component products must be eliminated, and the tree as a factory -- generator of goods and services -- must be celebrated in consideration of an amenity tree. A good amenity tree, one providing adequate goods and services to surrounding humans, is attractive, satisfying, and useful.

Utility Pet

Who does a tree serve? As a generator of amenity values, tree value depend upon human perceptions and expectations. For the private tree owner, a tree is asset, slave, servant, and pet. For public tree owners / managers, trees are a public resource trust generically serving the public. In addition, public trees specifically act as a springhouse of values (and liabilities) arising at some landscape point and generate values which dissipate into the environment over some distance from a tree. Value generation and dissipation distances vary by the specific value generated, by time, and by spatial aspects of the tree and site.

Most tree values are not constrained, nor recognized by, human concepts of ownership and boundaries. Public trees generate values and risks for private and public areas. Private citizens, and people using property in common, all receive values from public trees. Private trees generate values and risks which flow into public areas, with many people sharing some of these values.

The overlap of tree generated values with the diverse concepts of real property ownership and control is complex. Humans live, move and work along and around boundary constraints. Trees do not have these constraints as viewed by most people. Tree values are centered and concentrated at the tree-soil-atmosphere interface, flowing away from the site in a dilution process dependent upon the specific value or risk.

Tree Ignorance

Does being unknowing and unappreciative of a value generated diminish amenity concepts? To be unaware is to not yet have conceived of some or all of the inherent attributes present. We are all

unaware of tree values at some level. Many values are not brought into focus until diminishment or loss of these values occur. Building awareness and developing an appreciation of tree value is critical in conserving and accentuating present worth, as well as helping manage for increasing value over time. An amenity tree is allowed to occupy a site and to serve its surroundings in a useful manner which culminates in the aid, protection, and comfort of humans.

Conclusions

Trees can represent many things to people and to society. They can be owned, regulated, abused, loved, and used. Trees can be seen all across our communities in different sizes, forms, textures, and colors. Many trees will outlive us and provide a visual and ecological bridge between one generation in a community and the next. With all that trees are to us, it is important to properly define shade, street, and park trees, and have a vision of what is a tree.

| descriptor | percent | cumulative percent |
|-------------------------|------------|--------------------|
| PLANT | 20% | |
| WOODY | 16 | |
| SINGLE STEM | 14 | |
| TALL / HEIGHT | 13 | |
| ----- | | 63% |
| BRANCHED | 9 | |
| PERENNIAL | 8 | |
| GIRTH / DIAMETER | 7 | |
| ----- | | 87% |
| ELEVATED CROWN | 4 | |
| DISTINCT CROWN | 3 | |
| SELF-SUPPORTING | 3 | |
| ----- | | 97% |
| CLEAR LOWER STEM | 2 | |
| ERECT STEM | 1 | |
| ----- | | 100% |

Figure 1: Relative frequency of descriptors defining a tree.
(155 descriptors from 45 definitions)

frequency

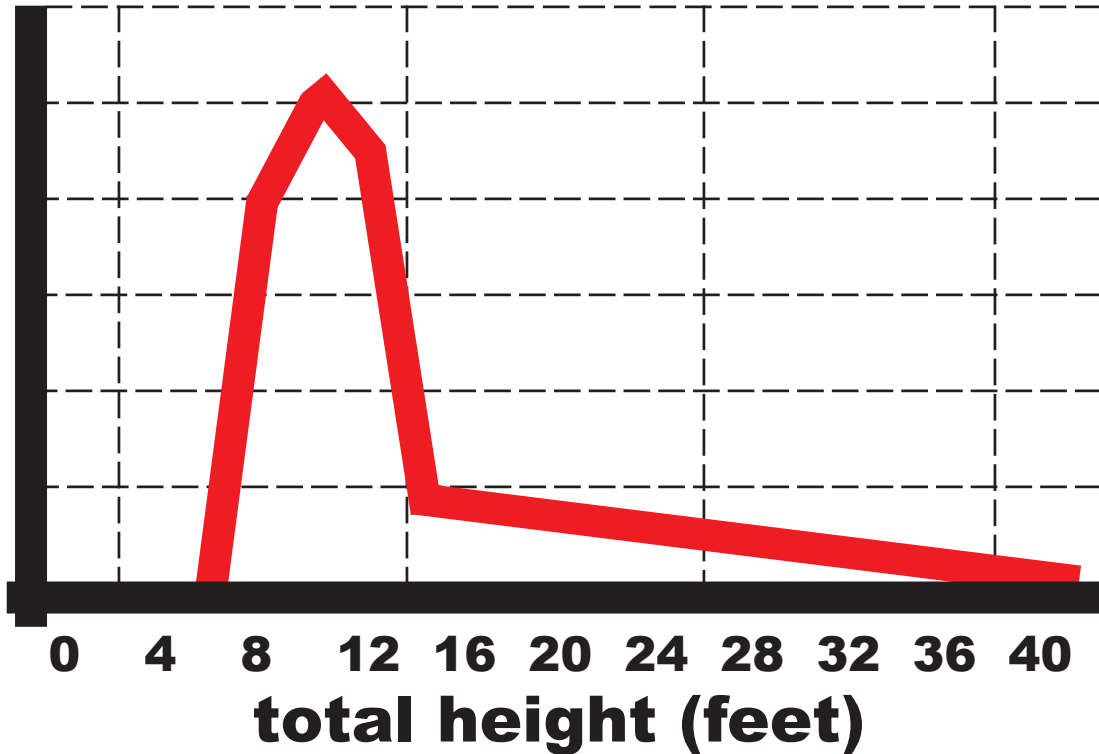


Figure 2: General distribution of heights a woody plant must exceed in order to be considered a tree. Note, larger height values may be from defining specimen, large, or street trees at maturity.

frequency

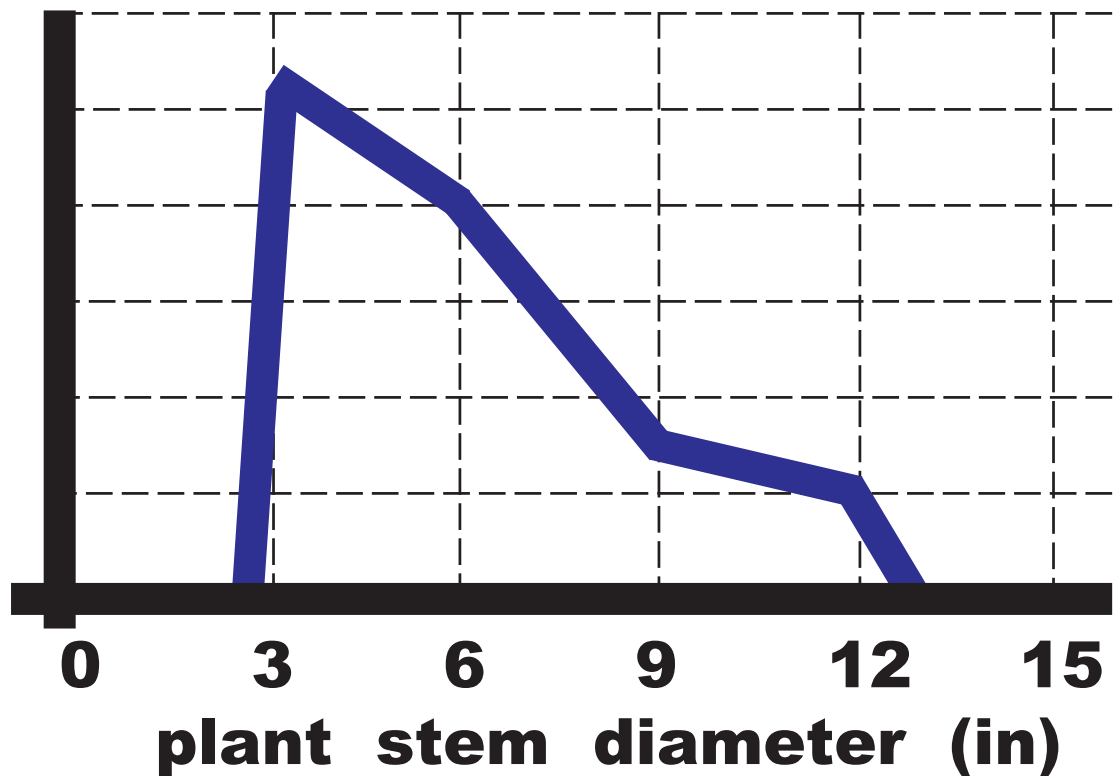


Figure 3: General distribution of diameters a woody plant stem must exceed in order to be considered a tree. Height above ground for diameter measures varied from a 6 inch caliper to 5 feet along the stem, with 4.5 feet above the ground being most common.



Outreach

Warnell School of Forestry & Natural Resources

UNIVERSITY OF GEORGIA

Thompson Mills Forest & State Arboretum of Georgia

Citation:

Coder, Kim D. 2018. What Is A Tree? Warnell School of Forestry & Natural Resources, University of Georgia, Thompson Mills Forest & State Arboretum Outreach Product. ARBORETUM-18-06. Pp.9.

ARBORETUM-18-06

July 2018

The University of Georgia Warnell School of Forestry and Natural Resources offers educational programs, assistance and materials to all people without regard to race, color, national origin, age, gender or disability.

The University of Georgia is committed to principles of equal opportunity and affirmative action.