Glossary of Urban Forestry Terms for Citizen Foresters

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Casey Trees®
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Dear Citizen Forester,

Under the canopy of Urban Forestry you will discover the science of botany and forestry, the art of landscape architecture, the complexity of technology, the practice of green infrastructure. The breadth of professionals and community members working in our forest covers all areas of study and expertise; some with doctorates in a chosen field and others with a passion for the trees along their street or in their child's school yard.

Reading this landscape will require you to have a vocabulary that crosses all these areas of expertise. As Citizen Foresters, we want you to have the best possible information to effectively speak for D.C.'s trees and open spaces.

We hope you find this glossary informative and useful. We consider it a work in progress and are always looking to improve it for your use. All recommendations and suggestions are welcome!

Casey Trees' mission, to restore, enhance, and protect the tree canopy of the Nation's Capital, cannot come to fruition without your efforts. We applaud you and hope you will continue to work with us to tree D.C.

Sincerely,

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Glossary

Adapted from Tree Trust, Community Tree Planting Guide, 2001

A

Absorbing roots: Non-woody roots formed at the ends of woody lateral roots that are responsible for water and nutrient absorption. Also called fine roots [Tree Biology].

Acid soil: A soil with a pH level below 6.6. Determined by a soil test [Tree Biology].

Aeration: The exchange of air in the soil. Compaction reduces and cultivation improves soil aeration [Tree Biology].

Aerial photography: A photograph of the Earth's surface taken from a plane or balloon. Used in cartography to provide geographical information for base maps [GIS & Mapping].

Air quality index: Rating system developed by EPA and used by the Metropolitan Washington Council of Governments to report daily air quality based on levels of five major air pollutants. The scale goes from "good" to "very unhealthy."

Alien: See non-native [Urban Forestry].

Alkaline soil: A soil with a pH above 7.3. Determined by a soil test [Tree Biology].

Alternate leaves: Leaves that do not meet at the stem. Helpful in identifying different tree species [Tree Biology].

Annual bud scale scar: As a twig grows, terminal buds will leave annual bud scale scars, and the distance between these scars can give us a measure of how much the twig has grown [Tree Biology].

Annual ring: The growth layer of one year. Can be seen on the cross section of a stem, branch or root [Tree Biology].

Anthocyacin: Pigment in leaves that cause red and purple fall

color [Tree Biology].

Apical bud: Located at the end of each twig where most of growth takes place. Also called terminal buds [Tree Biology].

Apical meristem: See primary meristem [Tree Biology].

Arborist: A professional who possesses the technical competence through experience and related training to provide for or supervise the management of trees and other woody plants in the residential, commercial and public landscape [Urban Forestry].

Aspect: The compass direction that a slope faces, usually measured clockwise from north. Affects which species of trees will do well in a given slope [Urban Forestry].

Attribute: Information about a geographic feature in a GIS, generally stored in a table and linked to a feature by a unique identifier [GIS & Mapping].

Attribute table: A table containing descriptive attributes for a set of geographic features, usually where each row represents a feature and each column represents and attribute [GIS & Mapping].

Auxins: Plant growth hormone concentrated in the apical meristems. If the apical meristems are damaged or removed, auxins stimulate the production of new lateral roots or buds [Tree Biology].

B

Backfill: Soil used to fill in the excavated area around the roots of a newly planted tree or shrub. May be native soil or a mixture or native soil and amendments such as compost [Urban Forestry].

Bacterial leaf scorch: An infectious chronic disease caused by Xylella fastidiosa. This bacterium, which is transmitted by xylem-feeding insects, colonizes and physically "clogs" the

tree's water conducting tissues or xylem. The bacteria also triggers a reaction in the tree that plugs the xylem, further impeding water transport and eventually killing the tree [Urban Forestry].

Ball cart: A heavy duty two wheeled dolly specially designed to move trees [Urban Forestry].

Balled and burlapped (B&B): Shrubs and trees dug from fields with a ball of dirt around the roots; the ball is wrapped in burlap and set in a wire basket to hold it together. Usually dug from late fall to early spring, during the dormant season [Urban Forestry].

Bare root (BR): Trees and shrubs dug from the field without soil around the roots. Plants are dug while they are dormant and stored in very humid, cold storage lockers until spring [Urban Forestry].

Basal area: The cross-sectional area of a tree trunk at 4½' above ground. Commonly measured in square inches or square feet [Urban Forestry].

Base data: Map data over which other information is place [GIS & Mapping].

Bedrock: Unbroken solid rock, overlain in most places by soil or rock fragments [Urban Forestry].

Biological control: Use of living organisms – parasites, pathogens, preditors – to control invasives or other pest species [Urban Forestry].

Bioretention: On-lot retention of stormwater through the use of vegetated depressions engineered to collect, store, and filter runoff [Green Infrastructure].

Botanical variety: A group of individual plants that have noticeable differences from the species and retain those differences when reproducing in nature from seed [Urban Forestry].

Branch: Lateral stem [Tree Biology].

Branch bark ridge: The raised area of bark in a strong branch crotch that marks where the branch wood and the trunk wood meet [Tree Biology].

Branch collar: Trunk tissue that forms around the base of a branch between the main stem and the branch, or a branch and a lateral (side branch). As a branch decreases in vigor or begins to die, the branch collar becomes more pronounced [Tree Biology].

Branch tissue: Tissue that grows at the point where the trunk is attached to the trunk [Tree Biology].

Buffer: A vegetated zone adjacent to a stream, wetland, or shoreline where development is restricted or controlled to minimize the effects of development [Urban Forestry].

C

CAD: Computer aided design [GIS & Mapping].

Caliper: Diameter of a young tree measured at 6" (for trees up to and including 4" caliper) or 12" (for trees over 4" caliper) above the groundline [Urban Forestry].

Callus: Tissue formed by the cambium layer of a tree that surrounds a wound [Tree Biology].

Cambium: The layer of cells between the inner bark and wood of a tree. This is where growth takes place. The cambium forms sapwood (xylem) to the inside and bark (phloem) to the outside [Tree Biology].

Canopy: The upper level of a tree and/or forest, consisting of branches and leaves of taller trees [Urban Forestry/Tree Biology].

Carbon sequestration: Processes that remove carbon from the atmosphere [Green Infrastructure/Tree Biology].

Carenoids: Pigment in leaves that cause bright yellow fall color [Tree Biology].

Cell size: The area on the ground covered by a single pixel in an image, measured in map units. Also called pixel size [GIS & Mapping].

Cell wall: A wall made of cellulose fibers that bounds each cell [Tree Biology].

Chlorophyll: The green pigment present in plant leaves and stems which captures light energy for the process of photosynthesis. [Tree Biology]

Chloroplasts: Tiny green organelles that contain chlorophyll, which helps the plant make food [Tree Biology].

Chloropleth: A thematic map in which areas are colored or shaded to reflect the density of the mapped subject or to symbolize the classes within it. Casey Trees uses these maps to depict tree canopy cover [Urban Forestry/GIS & Mapping].

Clinometer: An instrument used to estimate the height of a tree using a vertical angle and a distance determined by taping or pacing [Urban Forestry].

Clone: A plant group derived from a single individual plant through vegetative reproduction. Example: A clone of many aspen trees may sprout from the roots of a single aspen tree [Urban Forestry].

Closure: Commonly refers to a complete covering of callus over a pruning cut or other tree wound [Tree Biology].

Co-dominant stems: Each stem shares half of the trunk below [Tree Biology].

Combined sewer overflows: Type of sewer system which provides partially separated channels for sanitary sewage and stormwater runoff. This allows the sanitary sewer system to provide backup capacity for the runoff sewer when runoff volumes are unusually high, but it is an antiquated system that

is vulnerable to sanitary sewer overflow during peak rainfall events. This is Washington, DC's current system [Green Infrastructure].

Community: A collection of living organisms functioning together in an organized system through which energy, nutrients and water cycle [Tree Biology/Urban Forestry].

Community forestry: Addresses the social benefits of the urban forest: community pride, community planting and care projects, reduction of violent crimes and a sense of safety [Urban Forestry].

Compound leaf: More than one leaf develops from a single petiole. Compound leaves can be pinnate (leaves opposite on the petiole) or palmate (leave connected to the same point on the petiole). Useful in identifying tree species [Tree Biology].

Coniferous: Woody plant which produces seeds in cones. Most coniferous trees are termed "evergreen" since they keep their needles for two or more years after which the needles die and drop off the plant [Tree Biology].

Conservation: Use, management, and protection of natural resources that insures use and enjoyment for future generations [Urban Forestry/Green Infrastructure].

Containerized (potted): A tree or shrub placed in a container by the nursery. Quality containerized plants grow in the container long enough that the roots and soil ball hold their shape and stay together when removed from the container, but not so long that the roots fully circle around inside the pot, leading to girdling [Urban Forestry].

Consulting forester: A self-employed professional forester [Urban Forestry].

Cork cambium: Present on the inside of the bark and is responsible for the production of bark [Tree Biology].

Crenate: Leaf margin that is wavy. Helpful in indentifying tree species [Tree Biology].

Crotch: The angle formed at the place where a branch is attached to another branch, or to the trunk of a woody plant [Tree Biology].

Crown: Technically, the point where the tree trunk meets the roots of a tree. Commonly, it refers to the leaves and branches in the uppermost part of a tree [Tree Biology].

Crown cleaning: The removal of dead, dying, diseased, crowded, weakly attached, low-vigor branches and watersprouts from a tree's crown [Urban Forestry].

Crown elevation: Same as under-clearance or crown raising [Urban Forestry].

Crown height: The vertical height measured from the ground to the first (lowest) branch of the tree [Urban Forestry].

Crown radius: The average horizontal measurement from the trunk to the edge of the canopy (dripline) [Urban Forestry].

Crown thinning: The selective removal of tree branches to increase light penetration, air movement and reduce weight [Urban Forestry].

Cultivar: A tree variety with noticeable differences from the species, but these differences can only be retained through vegetative propagation such as cuttings or grafting [Urban Forestry/Tree Biology].

Cut: The wood exposed on a tree when a branch is removed [Urban Forestry].

Cutting back: Same as Drop-crotch pruning [Urban Forestry].

Cytoplasm: Jelly-like living material within the cell that contains an aqueous substance and insoluble constituents [Tree Biology].

Cytoskeleton: Consists of protein filaments which provide shape to the cell, giving the cytoplasm its gel-like consistency [Tree Biology].

Cytosol: Aqueous substance inside the cytoplasm which includes ions and other soluble macromolecules like enzymes [Tree Biology].

D

DC Tree Bill: A law protecting large trees on private and public property [Urban Forestry].

Decay: Deterioration of plant tissue, including wood, by biological organisms. Wood decay can reduce the strength of a tree or branch [Tree Biology].

Deciduous: A woody plant which has leaves for one growing season, sheds those leaves, then grows new ones in the next growing season [Tree Biology].

Decurrent growth: When a tree has a more rounded shape because lateral buds form branches that grow outward. Helpful in tree identification [Tree Biology].

Defoliation: The loss of leaves or foliage on a plant or tree [Tree Biology].

Detention: The temporary storage of stormwater to control discharge rates, allow for infiltration, and improve water quality [Green Infrastructure].

Diameter, breast height (DBH): The diameter of a tree at 4½ feet above ground level [Urban Forestry].

Dichotomous key: An outline that uses specific features of a plant in an organized manner to allow you to identify a specific plant [Tree Biology].

Digitize: To convert the shapes of geographic features from media such as paper maps or raster imagery into vector (x,y) coordinates [GIS & Mapping].

Dingo: A highly versatile, hydraulic machine that has a loading bucket, a fork-lift, and an auger drill for digging [Urban

Forestry].

District Department of Transportation (DDOT): DC's agency charged with constructing, managing, and maintaining the District's transportation infrastructure including streets, sidewalks, bridges, alleys, traffic signals, street lights, and street trees [Urban Forestry/Green Infrastructure].

District Urban Forestry Administration (UFA): Located within the District Department of Transportation. The agency responsible for the planting, removal and maintenance of the District's approximately 130,000 street trees. UFA also enforces the DC Tree Bill [Urban Forestry/Green Infrastructure].

Dormant: A state of inactivity. Deciduous trees are dormant from the time the leaves fall until new ones appear [Tree Biology/Urban Forestry].

Dripline: A ring around the tree canopy on the ground level that receives most of the rainwater shed from the canopy [Tree Biology/Urban Forestry].

Drop-crotch pruning: Pruning designed to make the size of a tree or a branch smaller. A branch is cut back to a side branch that is at least one-third the diameter of the removed branch. Also called heading back, cutting back, natural pruning, lateral pruning or directional side pruning. It is not topping [Urban Forestry].

Dry well: On a green roof, small excavated trenches filled with stone to control and infiltrate rooftop runoff [Green Infrastructure].

Dutch elm disease (DED): A non-native fungus that kills elm trees by clogging vascular (water conducting) tissue, preventing water movement to the crown as the tree wilts and dies [Tree Biology/Urban Forestry].

E

Ecology: The study of the relationships and interactions

between living organisms and their natural or developed environment

Ecosystem: An interacting system of living organisms, soil and climatic factors. Forests and wetlands are examples of ecosystems.

Emerald Ash Borer: An exotic metallic green beetle about ½ inch long responsible for killing tens of millions of ash trees since being discovered near Detroit in the summer of 2002 [Tree Biology/Urban Forestry].

Endomycorrhizzael fungi: Fungi present within tree roots that is beneficial in the breakdown of nutrients for the tree [Tree Biology/Urban Forestry].

Environment: The prevailing conditions which reflect the combined influence of climate, soil, topography and biology (other plants and animals) present in an area.

Epicormic buds: Buds that lie dormant until the normal buds are lost. They then produce epicormic shoots in response to stress [Tree Biology].

Epicormic shoots: A response to stress, usually formed as a result of improper pruning, disease, or insects. See water sprouts [Tree Biology].

Erosion: The wearing away of the land surface by water, wind, ice or other geologic agents, and by such processes as gravitational creep [Urban Forestry/Green Infrastructure].

Espalier A combination of cutting and training branches which are oriented in one plane, formally or informally arranged, and usually tied to a wall, fence or trellis [Urban Forestry].

Evergreen: A plant which retains living leaves or needles throughout the year or longer or until new ones appear [Tree Biology].

Excurrent growth: When a tree shows a triangular shape and

a strong central leader branch because the growing tip of the tree or apical bud is dominant over the other lateral buds. This type of growth is seen in conifer trees, helpful in tree identification [Tree Biology/Urban Forestry].

Exotic: See non-native [Urban Forestry/Green Infrastructure].

F

Fertility of soil: The quality that enables a soil to provide nutrients, in adequate amounts and in proper balance, for the growth of specified plants. Light, moisture, temperature, tilth and other growth factors are favorable [Tree Biology/Urban Forestry].

Fertilizer: Substance added to a plant or the surrounding soil to supplement the supply of essential elements needed for growth[Urban Forestry].

Filter strips: Bands of closely-growing vegetation, usually grass, planted between pollution sources and downstream receiving waterbodies [Green Infrastructure].

Final cut: A pruning cut made with a sharp tool, with no nicks or tears on the branch collar or the trunk. Also called clean cut.

Fine roots: See absorbing roots [Tree Biology].

Foliage: Leaves and other above-ground plant organs specialized for photosynthesis, respiration, transpiration, and guttation [Tree Biology].

Foreign: See non-native [Urban Forestry].

G

Geodatabase: A data storage format. A geodatabase represents geographic feature and attributes as objects and is hosted inside a relational database management system [GIS &

Mapping].

GIS (Geographic information system) A collection of computer hardware, software, and geographic data for capturing, storing, updating, manipulating, analyzing and displaying all forms of geographically referenced information [GIS & Mapping].

Geotropism: Roots growing downward into the soil as a response to the pull of gravity [Tree Biology].

Girdle: To cut through the bark and growing layer (cambium) all around the trunk of a tree [Tree Biology/Urban Forestry].

Girdling root: A root which has grown so that it encircles and constricts other roots or the main stem of a tree. May result in the decline or death of the tree [Tree Biology/Urban Forestry].

GPS (Global Positioning System): A constellation of 24 satellites, developed by US Department of Defense, that orbits the Earth. These satellites transmit signals that allow a GPS receiver anywhere on Earth to calculate its location.

Glyphosphate: A type of systemic herbicide (eg. Roundup for land, or Rodeo for wetlands or near water) [Urban Forestry].

Graft union: The place where the bud of one tree is grafted to the trunk of another tree, called the root stock. Usually located a few inches above the roots. Young trees often have a crook at the graft union, but it disappears as the tree gets older [Tree Biology/Urban Forestry].

Green infrastructure: An interconnected network of waterways, wetlands, woodlands, greenways, parks, forests, and other open spaces that support native species, maintain natural ecological processes, sustain air and water resources and contribute to health and quality of life. Includes parks, parkways, riparian buffers, residential landscaping, street trees, rain gardens, green roofs, and window boxes [Green Infrastructure/Urban Forestry].

Green roof: A specially-designed roof that incorporates plants.

Depending on the structural capacity of the building, depth and type of soil, and desired maintenance, green roofs can be planted with anything from sedums to trees. Benefits include stormwater management, energy cost savings, and reduction of urban heat island effect [Green Infrastructure].

Greenspace: Any vegetated land or water within an urban area that serves as recreation or open space. This includes neighborhood and regional parks, gardens, cemeteries, playing fields, bike and walking paths, and urban landscaping [Urban Forestry/Green Infrastructure].

Greenway: Corridor composed of natural vegetation. Greenways can be used to create connected networks of open space that include traditional parks and natural areas [Green Infrastructure/Urban Forestry].

Groundwater: Water stored underground in natural pore spaces between soil particles or rock fractures [Urban Forestry].

Growth rings: A series of concentric rings within the trunk that represent the annual growth of a tree, formed by xylem cells produced during the growing season [Tree Biology].

Guard cells: Cells that guard stomatal openings that regulate the opening and closing of stomata in response to environmental stimuli [Tree Biology].

H

Habitat: Food, water, shelter and space that supports plant or animal life [Tree Biology/Urban Forestry].

Hardiness: The ability of a plant to withstand cold temperatures without death of woody tissues and/or flower buds [Tree Biology/Urban Forestry].

Hardiness zones: The country is divided by the temperature extremes experienced during a typical year. These temperature ranges determine which species will grow [Urban Forestry].

Hardpan: A hardened or cemented soil layer. Hardpans occur naturally or are created artificially [Urban Forestry/Green Infrastructure].

Hardscape: Landscape elements like patios, walls, fountains, walkways and other structures that are not plants. [Green Infrastructure/Urban Forestry].

Hazard tree: Any tree or tree part that poses a high risk to property, powerlines, or people [Urban Forestry].

Heading: Cutting a currently growing or one-year-old shoot back to a bud, or cutting an older branch or stem back to a stub or lateral branch not sufficiently large enough to become the leader. Heading should rarely be used on mature trees [Tree Biology/Urban Forestry].

Heartwood: The inactive wood toward the center of a tree trunk, branch or root [Tree Biology].

Heat Island Effect: See Urban Heat Island Effect.

Hybrid: A cross between two parent plants that are unlike, often involving two species of the same genus [Tree Biology/ Urban Forestry].

Hydrology: The study of the waters of the earth, their distribution on the surface and underground, and the cycle involving evaporation, precipitation, flow, etc. [Urban Forestry/ Green Infrastructure].

I

I-Mod: Introduction to Trees in the Urban Landscape training module for Citizen Foresters [Urban Forestry].

Impervious surface: A hard surface (such as a parking lot or rooftop) that prevents infiltration of water into the ground, causing water to run off the surface [Green Infrastructire/Tree Biology].

Included bark: Bark embedded between opposing branches or a branch and a main steam creating a structurally weak point in the tree [Tree Biology].

Indigenous plant: See native [Urban Forestry].

Infiltration: The downward movement of water from the land surface into the soil [Green Infrastructure/Urban Forestry].

Infrastructure: The system of roads, bridges, canals, wires, pipes etc., that provide public services [Green Infrastructure/ Urban Forestry].

Internodes: Region between two nodes [Tree Biology].

Introduced: See non-native [Urban Forestry].

Invasive: Species that grow and spread rapidly, establishing over large areas, and displacing native species [Urban Forestry].

Inventory, Tree: Gathering of accurate information on the health and diversity of the community forest which can include: listing and description of trees and planting sites. Used for planning [Urban Forestry/GIS & Mapping].

L

Landscape architecture: Profession that combines art and science to research, plan, design, and manage the natural and built environment. Landscape architects often create parks, gardens, plazas, and streetscapes [Urban Forestry/Green Infrastructure].

Lateral: A branch or twig growing from a parent branch or from the tree trunk [Tree Biology].

Lateral bud: Dormant along the stem, will form new shoots if apical buds are removed by damage or pruning [Tree Biology].

Lateral meristems: See secondary meristems [Tree Biology].

Lateral root: Woody roots that grow horizontally outwards. They usually extend 2-3 times beyond the dripline and are responsible for conducting water and nutrients. Also called secondary root [Tree Biology].

LCF: Lead Citizen Forester. As part of the Request for Planting program (RFP), Citizen Foresters may take additional training to then serve as the technical assistant to the planning team on a Request for Planting project. The LCF is assigned by Casey Trees and works with a community member/project organizer to help plan and execute the planting event. The LCF then monitors the trees for two years after planting to insure that the project team waters and maintains the trees in optimum health during the establishment period [Urban Forestry].

Leader: A dominant upright stem, usually the main trunk [Tree Biology].

Leaf blade: Large flattened surface that absorbs light, a key requirement for photosynthesis to occur [Tree Biology].

Level spreader: An outlet designed to convert concentrated runoff to sheet flow and disperse it uniformly across a slope to prevent erosion [Green Infrastructure/Urban Forestry].

Lifting: The cutting/removal of lower branches for underclearance [Urban Forestry].

Limb: Large, primary branch of a tree [Tree Biology].

Line clearance: Pruning and removing trees for safe, uninterrupted electric service [Urban Forestry.

Lobed: Leaf margin that has distinct lobes that can be pointed or rounded. Helpful in tree identification [Tree Biology].

Loam: A classification of soil texture based on a certain ratio of sand, silt, and clay. Considered ideal for plant growth [Urban Forestry/Green Infrastructure].

Low Impact Development (LID): A distributed approach to stormwater management using design techniques that

infiltrate, filter, store, evaporate, and detain runoff close to its source [Green Infrastructure].

M

Map projection: A mathematical model that transforms the locations of features on the Earth's curved surface to locations on a two dimensional surface [GIS & Mapping].

Meaningful Watershed Education Experience (MWEE): Integrates field work in the Chesapeake Bay watershed with multidisciplinary classroom activities and instruction. Students share their discoveries with local schools and communities, both orally and in writing. All students from DC are required to have at least one MWEE prior to graduation from high school [Education].

Metadata: Information about a data set, such as how it was collected, derived, by whom, as well as scale, resolution and accuracy [GIS & Mapping].

Midrib: Central rib on a leaf [Tree Biology].

Mitochondrian: Where respiration takes place on a cellular level [Tree Biology].

Mulch: Any material that covers and protects the soil around a tree and does not cause the tree harm. Organic, composted material is best, spread to a depth of 2", and NOT heaped against the base of the tree trunk [Urban Forestry].

Multispectral: Related to two or more frequencies or wavelengths in the electromagnetic spectrum [GIS & Mapping].

Mycorrhizae: Beneficial fungus that helps tree roots with water and nutrient absorption [Tree Biology].

N

Native: A species that naturally occurs in a particular region, ecosystem and habitat. Species native to North America are generally recognized as those occurring on the continent prior to European settlement [Urban Forestry].

Natural area: An area of land or water with predominantly native vegetation or natural ecological features that is allowed to respond to the forces of nature with minimal human influence [Urban Forestry].

Neutral soil: A soil having a pH value between 6.6 and 7.3 [Tree Biology].

Nitrogen: Element naturally present in the soil and absorbed by the roots. Without adequate nitrogen, the cell structure can weaken making the plant more susceptible to pathogens. Nitrogen is one of the major components of fertilizer, along with potassium and phosphorous [Tree Biology].

Nodes: Points on the twig where the leaves and buds emerge [Tree Biology].

Nomenclature: The naming and qualifying of plants. Most trees have two names, a scientific and common name [Tree Biology/Urban Forestry].

Non-native: A species that due to direct or indirect human activity occurs in locations beyond its known historical or potential natural range. Refers to species from another continent, region, ecosystem, or habitat [Urban Forestry].

Nonpoint source pollution: Water pollution caused by rainfall or snowmelt moving both over and through the ground and carrying with it a variety of pollutants associated with human land uses [Urban Forestry/Green Infrastructure].

Noxious weed: Legal designation used specifically for species determined to be major pests of agricultural systems and are subject by law to certain restrictions [Urban Forestry].

Nucleus: Central body inside the cell that contains the genetic

material or information that a plant needs in order to grow, function, and reproduce [Tree Biology].

Nursery stock: Trees, shrubs, other woody plants and hardy perennial plants [Urban Forestry].

Nutrient cycling: Movement of mineral elements (sometimes called nutrients) within an ecosystem as organic matter decomposes, releasing bound nutrients back to plants [Tree Biology].

Nutrient: Any element taken in by a plant that is essential to its growth. Plant nutrients are obtained from the soil, air and water [Tree Biology].

O

Open space: Land set aside for public or private use that is not built upon [Urban Forestry/Green Infrastructure].

Opposite leaves: Leaves that meet at the same point of the stem but on opposite sides. Helpful in tree identification [Tree Biology].

Organic matter: Plant and animal residue in the soil in various stages of decomposition. Provides nutrients to trees [Tree Biology/Urban Forestry].

Organelle: A differentiated structure within a cell, such as a mitochondrion, vacuole, or chloroplast, that performs a specific function [Tree Biology].

Ornamental tree: A tree that is used for its ornamental qualities, such as: flowers, leaves, scent, fruit, stem, bark or other attractive characteristics [Urban Forestry].

Orthophotograph: A perspective aerial photograph from which distortions owing to camera tilt and ground relief have been removed. An orthophotograph has the same scale throughout and can be used as a map [GIS & Mapping].

Osmosis: On the cellular level, the movement of water from higher concentration to lower concentration through a semi-permeable membrane [Tree Biology].

P

Parenchyma: Smaller, long-lived, thin-walled cells that are found in the outer layers of the xylem and help with water transport, food storage, and defense [Tree Biology].

Particulate matter: Tiny particles of solid or liquid suspended in a gas. Sources of particulate matter can be anthropogenic or natural [Urban Forestry].

Percolation: The downward movement of water through the soil. [Tree Biology/Urban Forestry/Green Infrastructure].

Permeable: Having pores or openings that allow water to pass through [Green Infrastructure/Urban Forestry].

Petiole: Stalk that attaches leaves to the stem [Tree Biology].

Pervious surface: A surface (such as soil or vegetation) that allows water to infiltrate into the ground [Urban Forestry/ Green Infrastructure].

Pest: Plant or animal or other organism considered harmful [Urban Forestry/Tree Biology].

pH value: A numeric designation of acidity and alkalinity in soil. Soils are either acid (pH value less than 7), neutral (pH value 7) or alkaline (pH value greater than 7) [Tree Biology/ Urban Forestry].

Phloem: Inner bark tissue through which the tree moves carbohydrates (food) [Tree Biology].

Phosphorus: Element naturally present in the soil and absorbed by the roots. Without adequate phosphorus, the cell structure can weaken making the plant more susceptible to pathogens. Phosphorus is one of the major components of

fertilizer, along with nitrogen and potassium [Tree Biology/ Urban Forestry].

Photoperiodism: The change in life processes that occurs in response to changes in availability of light. [Tree Biology].

Photosynthesis: A process by which plants make food. Process uses the pigment chlorophyll, light energy from the sun, carbon dioxide from the air and water. This process produces sugar and gives off oxygen.

Planimetric: A two dimensional map showing no relief. A map that gives only the x,y locations [GIS & Mapping].

Planned Unit Development (PUD) Zoning: Planned unit development provisions allow land to be developed in a manner that does not conform with existing requirements of any of the standard zoning districts. The PUD allows greater flexibility and innovation than conventional standards because a planned unit is regulated as one unit instead of each lot being regulated separately [Green Infrastructure].

Pollarding: A training system used on some large maturing deciduous trees. From the time they are young the trees are severely headed every year or two to the same point (pollard head) from which they produce new sprouts. True pollards are rare in the United States. Pollarding is not the same as topping [Urban Forestry].

Pollution: Substances introduced into the environment by human actions that contaminate the environment [Urban Forestry].

Pre-cutting: When pruning a tree, a two-step process to remove a branch while preventing splitting or tearing the bark. The branch is first undercut, then cut from the top before the third and final cut is made [Urban Forestry].

Preservation: As it relates to trees and urban ecology, the maintenance of natural resources in an unchanged condition [Urban Forestry].

Protoplasm: In cells, the nucleus together with the cytoplasm [Tree Biology].

Phototropism: The directional plant growth of a tree or other plant towards the sun. Controlled by the levels of auxins within a plant [Tree Biology].

PIP: As part of the Request for Planting program (RFP), the Project Implementation Plan is the secondary document required for review. Once a project has been approved, the project organizer must prepare a detailed map of the planting site, which shows tree species, quantity, and event logistics for the planting event. The finished document (PIP) consists of a graphic site map and tree species list prepared according to the instructions provided by Casey Trees [Urban Forestry].

P-Mod: Planting and Care of Tree training module for Citizen Foresters [Urban Forestry].

Primary meristems: Located at the tips of roots and shoots, responsible for the growth of roots and branches. Also called apical meristems [Tree Biology].

Pruning: Removing branches (or occasionally roots) from a tree or other plant using approved practices, to achieve a specified objective (e.g., visual appearance, clearance for pedestrians, strength of the tree in maturity, etc.) [Urban Forestry/Tree Biology].

R

Rain barrels: Barrels designed to collect and store rooftop runoff [Green Infrastructure].

Rain gardens: A form of bioretention for use in courtyards, small residential lots, and parking lots. Strategic placement next to hard, impervious surfaces helps a rain garden effectively collect runoff [Green Infrastructure].

Raster: A spatial data model made of rows and columns of cells. Each cell contains an attribute value and location

coordinates [GIS & Mapping].

Recharge area: A land area in which surface water infiltrates the soil and reaches the zone of saturation or groundwater table [Green Infrastructure].

Remote sensing: Collecting and interpreting information about the environment and the surface of the Earth from a distance primarily by sensing radiation that is naturally emitted or reflected by the Earth's surface. Examples of remote sensing methods include aerial photography, radar and satellite imaging [GIS & Mapping].

Respiration: The process of food breakdown to produce energy. Respiration can be aerobic (requires oxygen) or anaerobic (in the absence of oxygen) [Tree Biology].

Restoration: The process of bringing back into existence, or reestablishing, the condition of a degraded environment [Urban Forestry].

Restoration, tree: Pruning to improve the structure, form, and appearance of trees that have been improperly trimmed, vandalized, or damaged [Urban Forestry].

RFP: The Request for Planting program is a Casey Trees tree-giveaway program. Community/neighborhood groups interested in planting 10 or more trees may apply. Applications are reviewed twice a year. Trees are planted during the spring or fall planting seasons at formal Casey Trees planting events. Approved applications lead to planting events generally within the year [Urban Forestry].

Rhizomes: Underground stems [Tree Biology].

Riparian area: Vegetated ecosystems along a waterbody through which energy, materials, and water pass. Riparian areas characteristically have a high water table and may be subject to periodic flooding [Urban Forestry/Green Infrastructure].

Root ball: Soil containing all (e.g., containerized) or a portion (e.g., B&B) of the roots that are moved with a tree or other

plant when it is transplanted [Tree Biology/Urban Forestry].

Root cap: A dome-shaped mass of cells that protects root tips [Tree Biology].

Root collar: Flared area at the tree trunk base where the roots and trunk come together [Tree Biology].

Root feeder: A device for fertilizing and watering trees and shrubs. It has a wand that goes into the ground, 12 inches or less, to place water or fertilizer in the area of root growth and to by-pass the roots of turf [Urban Forestry].

Root hairs: Modified epidermal cells of a root that absorb the majority of water and minerals [Tree Biology].

Root protection zone: Surface area of tree root concentration to be protected from construction damage, usually soil compaction damage. Best accomplished by fencing off the entire root protection zone [Green Infrastructure/Urban Forestry].

Root pruning: In transplanting, the process of pre-digging a root ball to increase the density of root development within the final root ball. In tree conservation and preservation, the process of pre-cutting roots behind the line of a planned excavation to prevent tearing and splintering of remaining roots. In tree disease management, severing tree roots to prevent disease transmission through root grafts [Urban Forestry].

Root system: Responsible for anchoring the tree as well as absorbing water and minerals [Tree Biology]

Root tip: Region of active cell growth, where new cells are produced and then differentiated to form roots with specific purposes [Tree Biology].

Root-to-shoot ratio: Relative proportion of root mass to crown mass [Tree Biology/Urban Forestry].

Runoff: Water from rain, melted snow, or irrigation that flows over the land surface [Urban Forestry/Green Infrastructure].

S

Sapwood: The active xylem (wood) found right under the cambium, that stores water and carbohydrates, and transports water and nutrients [Tree Biology].

Scaffold branches: Permanent or structural branches that form the scaffold architecture or structure of a tree [Tree Biology/ Urban Forestry].

Scaffold roots: Larger, woody roots found close to the trunk that form the root flare at the base of a tree, providing anchorage. Also help transport water absorbed by the absorbing roots to the trunk, and absorbing oxygen to be used during respiration [Tree Biology].

Scale: The ratio or relationship between a distance or area on a map and the corresponding distance or area on the ground. Also called scale bar [GIS & Mapping].

Scaly bud: Protects the primary meristem of the shoot [Tree Biology].

Secondary meristems: Responsible for the increase in diameter or girth of the trunk and branches. There are two kinds of secondary meristems: vascular cambium and cork cambium. Also called lateral meristems [Tree Biology].

Secondary root See lateral root [Tree Biology].

Sedimentation: The process of forming or depositing sediment [Urban Forestry/Green Infrastructure].

Seedling: A small, young tree, less than 3-years old [Urban Forestry].

Sepals: Bract-like or leaf-like structures below the petals of a flower [Tree Biology].

Serrate: Leaf margin that resemble an edge of a steak knife. Helpful in tree indentification [Tree Biology].

Shade tree: Any tree grown specifically for its shade. This term usually applies to large trees with spreading canopies. Some of the most popular shade trees are oaks, maples, ashes, lindens, and elms [Urban Forestry].

Shapefile: A vector file format for storing the location, shape, and attributes of geographic features. It is stored in a set of related files and contains one feature class [GIS & Mapping].

Shelterbelt: One or more rows of trees and shrubs planted upwind of an area or building to protect it from winter winds and blowing snow. Shelterbelts are also commonly known as windbreaks or hedgerows [Urban Forestry/Green Infrastructure].

Shoot system: In trees, responsible for food production and respiration. The shoot system is above ground and includes the stem, branches, and leaves [Tree Biology].

Simple leaf: A single leaf that develops from a single petiole. Helpful in tree identification [Tree Biology].

Site analysis: The evaluation of conditions, restrictions, and environment of a planting site. Also the evaluation of a construction site requiring a tree conservation or preservation plan [Urban Forestry/Green Infrastructure].

Site considerations: Factors taken into account when assessing a site for planting, tree conservation, or preservation [Urban Forestry/Green Infrastructure].

Slope: An inclined surface. A slope may be concave, straight, convex expressed in percent or degrees [Urban Forestry/GIS & Mapping].

Slow release fertilizer: Fertilizer that is at least 50 percent water-insoluble nitrogen (WIN); rate of release may vary depending upon soil moisture and temperature; compare to quick-release fertilizer [Urban Forestry].

Slowly soluble fertilizer: Fertilizer formulation that is slowly hydrolyzed in the soil [Urban Forestry].

S-Mod: Urban Environmental Stewardship training module for Citizen Foresters [Urban Forestry].

Soil amendment / soil conditioner: Material that is mixed into the soil to add organic matter, improve drainage and/or improve aeration [Urban Forestry].

Soil cells: Constructed, modular system that can be used under sidewalks, roads, and parking areas to provide tree roots with good, uncompacted soil while still providing structural integrity for foot and vehicular traffic [Green Infrastructure].

Soil texture: The relative proportions of sand, silt and clay particles in a mass of soil. Important in choosing the right tree species to plant [Urban Forestry].

Spatial analysis: Studying the locations and shapes of geographic features and the relationships between them [GIS & Mapping].

Spatial information: Describes the physical location of objects and the metric relationships between objects. The SI industry is a specialized component of the information technology sector with scientific and technical links to other disciplines (environmental science, engineering, computer science) [GIS & Mapping].

Springwood: Xylem cells produced during the spring. In a cross section of a branch or trunk, they are larger and appear lighter than those produced during the summer [Tree Biology].

Stewardship, environmental: Responsibly managing all of our resources for the benefit of present and future generations of people, plants, and animals [Urban Forestry].

Stipules: Pair of leaf-like structures at the base of the leaf stalk on some plants [Tree Biology].

Stolens: Above ground stems [Tree Biology].

Stomata: Tiny openings on the underside of a leaf that allow water to enter and exit during transpiration [Tree Biology].

Storm drain: Constructed opening in a road system through which runoff from the road surface flows into an underground system and ultimately to larger bodies of water (in DC, the Anacostia and Potomac Rivers and the Chesapeake Bay) [Green Infrastructure].

Stormwater management: Management of stormwater runoff, often using water retention facilities, to provide controlled release into receiving streams [Green Infrastructure].

Stormwater runoff: Precipitation that falls on impervious surfaces (such as roofs and roads). Because it is not absorbed by soil and vegetation, it flows into storm drains [Green Infrastructure].

Structural soil: A special mix of rock, soil and binding agent that can be used under sidewalks, roads, and parking areas. Because of the size and shape of the rock particles the soil can be compacted while still maintaining pore space for the air and water that tree roots need [Green Infrastructure/Urban Forestry].

Stub: An undesirable short length of branch remaining after a break or incorrect pruning cut is made [Urban Forestry].

Sucker: Shoot arising from the roots. Often confused with watersprout [Tree Biology].

Sunburn: Injured bark caused by extreme exposure from the sun. This happens to tender trees, like maples, when they are heavily pruned during the summer [Urban Forestry/Tree Biology].

Sunscald: Injured, usually cracked, bark caused by sudden changes in temperature. This happens to thin barked trees, like maples in the early spring, when a warm, sunny day is followed by a rapid drop in temperature after the sun goes down [Tree Biology/Urban Forestry].

Swale: An open drainage channel designed to detain or infiltrate stormwater runoff [Green Infrastructure].

Symbiotic relationship: When two or more organisms benefit from each other's functions [Tree Biology/Urban Forestry].

Systemic herbicide: An herbicide that is absorbed by a plant and carried throughout the tissues [Urban Forestry].

T

Tap root: Large main root growing down into the soil, used for storage and anchorage in young plants [Tree Biology].

Target: A person, structure or object which could sustain damage when a limbor entire tree falls [Urban Forestry].

Team leader: A Citizen Forester who has completed the Planting and Care of Trees Module ("P-Mod") training and leads volunteer work groups at tree planting and tree care events. A team leader also serves as the liaison to Casey Trees onsite staff to alert them to any problems, coordination, safety or quality control issues or any needs that may arise during the event [Urban Forestry].

Terminal bud: See apical bud [Urban Forestry].

Thinning: In pruning, the selective removal of live branches to provide light or air penetration through the tree or to lighten the weight of the remaining branches. Recommended during winter/dormant period [Urban Forestry].

Topiary: Trees sheared or pruned carefully in a formal shape. Commonly done on ornamental evergreen shrubs such as yews [Urban Forestry].

Topography: The shape or configuration of the land, represented on a map by contour lines and relief shading [GIS & Mapping/Urban Forestry].

Topology: The spatial relationship between connecting or

adjacent features in a geographic data layer [GIS & Mapping].

Topping: Cutting off branches to stubs. Cuts made without consideration of the location of side branches. Topping is no longer an acceptable practice in arboriculture. Sometimes called tipping, round over, heading, shaping capping or pollarding. See Drop-crotch pruning [Urban Forestry].

Topsoil: The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter [Urban Forestry/Tree Biology].

Tracing: Careful removal of loose bark along the edges of a wound. Tracing does not remove any bark that ishealthy or attached to the cambium of the tree [Urban Forestry].

Translocation: Movement of food occurring through the sieve tubes of the phloem [Tree Biology].

Transpiration: Loss of water as water vapor from the leaf through pores known as stomata [Tree Biology].

Tree box: Regularly-spaced rectangular openings in the sidewalk that provide the growing space for street trees. Sometimes called tree pit [Urban Forestry/Green Infrastructure].

Tree canopy: A tree's leaves and branches extending out in all directions from the trunk to the dripline [Tree Biology/Urban Forestry].

Trimming: See Pruning [Urban Forestry].

Tropism: The process by which plants grow in different directions as a response to various environmental stimuli [Tree Biology].

Trunk: Central thick stem [Tree Biology].

Twig: Very thin branches that support leaves that arise from tree branches [Tree Biology].

U

Under-clearance: The removal of the lower branches of a tree to allow clearance beneath the tree crown. The same as Crown elevation [Urban Forestry].

Underdrain: An underground pipe system intended to drain off excess water [Green Infrastructure].

Urban ecology: The study of natural systems and human constructed environments in urban areas. This study includes identifying and addressing problems related to water and air quality, wildlife and plant conservation, human life quality and other related topics [Urban Forestry].

Urban ecosystem: The community of living organisms and non-living elements that make up the whole landscape of an urban environment. This includes people and their domesticated animals, wildlife, plant life, water, geology, etc. [Urban Forestry].

Urban forest: An urban forest includes all of the natural resources in an urban area: plants, soil, water, and animals (including all of us) [Urban Forestry].

Urban Forest Effects Model (UFORE): A model developed by the US Department of Agriculture (USDA) Forest Service to estimate the composition, environmental impacts, and value of the urban forest [Urban Forestry].

Urban forestry: The management of the urban forest to maximize benefits to people without compromising the health and condition of the forest [Urban Forestry].

Urban heat island effect: A phenomenon where air temperatures in urban areas are 2-10°F hotter than surrounding rural areas due to the high concentrations of buildings and pavement in urban areas [Green Infrastructure/ Urban Forestry].

Urban planning: Profession that guides the development and redevelopment of communities by planning for land use, housing, transportation, and economic development. Urban

planners often work for cities, regional and state governments, or design firms [Urban Forestry/Green Infrastructure].

Urban sprawl: Patterns of urban growth that include large acreage of low-density residential development, rigid separation between residential and commercial uses, residential and commercial development in rural areas away from urban centers, minimal support for nonmotorized transportation methods, and a lack of integrated transportation and land use planning [Urban Forestry/Green Infrastructure].

Utility: An entity that delivers a public service such as electricity or communication [Urban Forestry/Green Infrastructure].

Utility line pruning: Selective removal of vegetation, especially tree branches, that could affect electric supply lines or other utility facilities. Also called clearance pruning [Urban Forestry].

V

Vascular cambium: Found between the inner bark of a tree and the wood. It produces phloem on the outer side and xylem on the inner side, which eventually forms the wood of the tree [Tree Biology].

Vector: A data structure used to represent linear geographic features. Features are made of x,y coordinates and represented by points, lines or polygon [GIS & Mapping].

W

Watering: Essential to help young trees overcome transplant shock; newly planted trees require approximately a 2-year watering commitment, one or two times per week of 5-10 gallons if it hasn't rained at least an inch that week [Urban Forestry].

Watershed: The topographic boundary within which water drains into a particular river, stream, wetland, or body of water [Urban Forestry].

Water sprout: Upright, epicormic shoot arising from the trunk or branches of a plant above the root graft or soil line. Incorrectly called a sucker [Tree Biology]

Weed: Objective word used to describe any plant growing wherever someone wishes it did not – to include native or non native plants.

Wet pond: A stormwater management pond designed to detain urban runoff and always contain water. Also called retention pond [Green Infrastructure].

Whorled leaves: A group of leaves that meet at the same point of the stem. Helpful in tree identification [Tree Biology].

Wood chips: Ground-up wood used for mulching trees, shrubs and planting beds [Urban Forestry].

Wound: An opening that is created any time the tree's protective bark is damaged, cut or removed. Pruning a live branch creates a wound, even when the cut is properly made [Tree Biology/Urban Forestry].

X

x,y coordinates A pair of numbers expressing a point's horizontal and vertical distance along two orthogonal (perpendicular) axes, from the origin (o,o) where the axes cross. Usually the x coordinate is measured along the east – west axis and the y – coordinate is measured along the north-south axis [GIS & Mapping].

Xylem: Wood tissue; sapwood contains active xylem; heartwood contains inactive xylem. Xylem is formed by the vascular cambium and transports water. Other functions include structural support, storage of the products of photosynthesis, and defense against the spreading of disease

and decay [Tree Biology].

Z

Zoning: Regulations or requirements that govern the use, placement, spacing, and size of land and buildings within a specific area [Urban Forestry/Green Infrastructure].

Notes

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