

Forestry Terms for the Woodland Owner

As a woodland owner, you may hear foresters use unfamiliar terms or see new terms in your forest management plan or timber sale contract. Forestry is a specialized field with its own terms and abbreviations. This guide defines many of the terms and abbreviations commonly used in forestry and woodland management.

Forestry terms

- acceptable growing stock (AGS)** Trees that now have, or could have in the future, one or more desirable characteristics making them suitable for allocation of growing space in a *stand*. See also *growing stock*.
- acre** An area of land containing 43,560 square feet. An acre can take any shape. If square in shape, it would measure about 209 feet per side.
- advanced reproduction** Young trees that are already established in the *understory* before a timber *harvest*.
- afforestation** Establishing a new *forest* on land that was formerly not forested, for example, converting a pasture into a *forest* plantation.
- age class** The intervals into which the range of tree ages are grouped, originating from a natural event or human-induced activity.
- annual ring** Annual expansion of tree *bole*, branches and roots in, normally, visible concentric rings. A combination of *earlywood* and *latewood* is one year's growth. Also called *growth ring* or annual growth ring. See also *earlywood* and *latewood*.
- aspect** The direction — north, south, etc. — that a *slope* faces.
- bare-root seedlings** One-year-old trees grown from seed in a nursery and then lifted without soil attached.
- basal area (BA)** The cross-sectional area of a tree, in square feet, at 4.5 feet from the ground, or breast height. When the basal areas of all the trees in a *stand* are summed, the result is expressed as square feet of basal area per *acre*, which is a measure of a *stand's* density.



Forestry abbreviations

| | |
|---------------|----------------------------|
| AGS | acceptable growing stock |
| BA | basal area |
| BMP | best management practices |
| CTR | crop tree release |
| dbh | diameter at breast height |
| dib | diameter inside bark |
| D-tape | diameter tape |
| FAS | firsts and seconds |
| FSI | forest stand improvement |
| IPM | integrated pest management |
| MBF | thousand board feed |
| SMZ | streamside management zone |
| TSI | timber stand improvement |
| UGS | unacceptable growing stock |

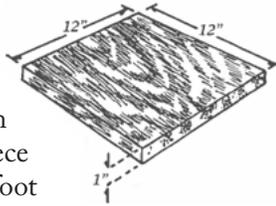
- basal spray** A method of controlling woody vegetation whereby herbicide is applied directly to the lower portion of the plant and is absorbed through the bark.
- best management practices (BMP)** Practices used to protect water quality during timber harvests and other forest management activities.
- Biltmore stick** A graduated stick used to estimate tree diameters by holding it against the tree at breast height. See also *diameter at breast height*.
- biodiversity** The richness and abundance of species and the variety of natural communities in a *forest* environment. Both the number of species and the number of individuals of each species affect the extent of biological diversity in an area.
- biomass** Plant components that are used as a raw material for processing into energy or fuels.

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board foot A unit for measuring wood *volumes*. It is commonly used to express the amount of wood in a tree, sawlog or individual piece of lumber. A piece of wood 1 foot long, 1 foot wide and 1 inch thick, or 144 cubic inches.



bole The main tree trunk.

bolt A short log or a squared timber cut from a log, usually less than 8 feet long.

browse Twigs and buds of small shrubs and trees that are eaten by deer and livestock.

buck To saw felled trees into shorter lengths.

buffer strip A protective strip of land or timber adjacent to an area requiring attention or protection, for example, a protective strip of unharvested timber along a stream.

butt The base of a tree. Once felled, the butt log is the one that was attached to the stump.

cambium The growing layer of cells beneath the bark of a tree from which develop new wood and bark, or xylem and phloem, respectively.

canopy The uppermost layer in a *forest*, formed collectively by tree crowns.

cant The interior lumber that remains after the boards are sawn from the sides of a log.

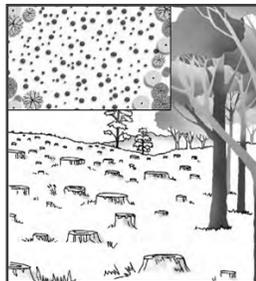
catface A scar on the *bole* of a tree that resulted from a pruning wound or natural death of a branch and is partially or fully covered over with new growth.

certified forest A *forest* enrolled in a voluntary system that promotes sustainable *forest* management that is assessed by an independent third party.

cavity tree A tree containing cavities that are used by wildlife for nesting and protection. Also called a den tree.

chain A unit for measuring land distance. A chain is 66 feet. An *acre* contains an area equal to 10 square chains.

clearcut harvest An even-aged method of harvesting trees removing all the trees in one operation. Clearcutting is commonly used to reproduce shade-intolerant species that require full sunlight to germinate and grow well. See also *even-aged management*.



Clearcut harvest (courtesy Missouri Department of Conservation).

climax forest The final stage of *forest succession*, usually composed of shade-tolerant species that are self-perpetuating without a disturbance.

clinometer An instrument for measuring vertical angles or *slopes*.

closed forest A *forest* where the tree *canopy* is dense and the branches and leaves of the trees form a continuous cover, limiting sunlight penetration to the *forest floor*. See also *forest*.

codominant trees Trees that form the general level of the *canopy* but are below the dominants, receiving sunlight from above their *crown* and some from the side. See also *crown class*.

conifers See *softwood*.

cord A stack of wood containing 128 cubic feet. A standard cord measures 4 feet by 4 feet by 8 feet of wood and air.

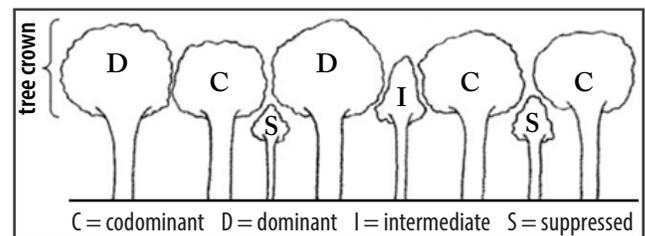
crop tree A tree selected for its desirable characteristics and potential to meet landowner goals — such as timber production, wildlife habitat or aesthetic appeal — and managed to thrive through techniques such as *crop tree release*.

crop tree release (CTR) A *thinning* technique whereby specific, desirable trees (i.e., crop trees) are favored by removing competing trees whose crowns are touching the crop trees' crowns, thus allowing the crop trees to expand their crowns and grow more efficiently. See also *thinning*.

cross-tie A *cant* used as a cross member supporting railroad rails. Also called a tie.

crown The branches and foliage of a tree.

crown class A relative designation of tree *crowns*, broken into distinct layers. See also *codominant trees*, *dominant trees*, *intermediate trees* and *suppressed trees*.



cruise Also referred to as a *forest inventory*, it is the process of sampling a *forest* or *forest stand*, used to estimate wood *volume* and value and to make *forest* management recommendations. See also *fixed-radius plot* and *variable-radius plot*.

cull A tree or log of merchantable size that, because of a defect, is useless for its intended purpose.

defect That portion of a tree or log that makes it unusable for the intended product. Defects include rot, crookedness, cavities and cracks.

den tree See *cavity tree*.

diameter at breast height (dbh) The outside-of-the-bark diameter of a tree measured at 4.5 feet above the ground on the uphill side of the tree.

diameter inside bark (dib) The diameter inside the bark of a log, measured at the small end.

- diameter tape (D-tape)** A specially graduated tape used to determine tree diameter when stretched around the circumference of the tree stem.
- dibble bar** A flat or round metal tool used to make holes for planting *seedlings*. Also called a planting bar.
- direct seeding** The process of regenerating a *forest* by sowing seed (as opposed to planting *seedlings* or allowing for *natural regeneration*).
- directional felling** Careful tree cutting to ensure that trees fall in a predetermined direction in order to protect the *residual* trees from logging damage and to allow for easier log *skidding*.
- dominant trees** Trees much taller than the general level of the *canopy*, receiving direct sunlight on all sides of their *crown*. See also *crown class*.
- dote** The early stage of tree rot having discolored and/or often soft wood.
- Doyle rule** This *log rule* underestimates lumber *volume* in small logs and overestimates *volume* in large logs. See also *log rules*.
- earlywood** Part of the annual wood *growth ring* formed early in the growing season that is differentiated from *latewood* in that the wood is often less dense and lighter in color. See also *annual ring*.
- edge** In wildlife management, the area where the variety of types of food, cover, water or terrain required by a particular species come together.
- ephemeral stream** A stream in which water flows in a diffuse manner over depressions in the *forest floor*, usually not within a well-defined channel, only in direct response to a major rainfall and only for a short period after rainfall ceases.
- epicormic branch** Spontaneous branches that arise from a tree *bole*, often after exposure to increased light or stress.
- even-aged management** *Forest* management with periodic *harvest* of all trees on part of the *forest* at one time or over a short period to produce *stands* containing trees all the same or nearly the same age or size. *Clearcut*, *seed-tree* and *shelterwood harvests* give rise to even-aged forests. See also *clearcut harvest*, *seed-tree harvest* and *shelterwood harvest*.
- exotic invasive species** A species that becomes established outside its natural range, forms a breeding population, and becomes a pest that may threaten the *biodiversity* of the local ecosystem.
- firebreak** A barrier, either existing prior to or constructed during a fire, from which all or most of the flammable materials have been removed, designed to help firefighters in stopping or slowing fire spread.
- firsts and seconds (FAS)** The highest standard grade for *hardwood* lumber.
- fixed-radius plot** See *forest inventory*.
- forest** A plant community dominated by trees and other woody plants. See also *closed forest* and *open forest*.
- forest health** A generally observed, somewhat subjective condition whereby the *forest* is evaluated according to its age, growth, diversity, existence (or absence) of injurious insects, diseases, exotic invasive pests, wildlife attributes, aesthetics, degree of resiliency, etc., all of which are weighed against the land management goals.
- forest inventory** A systematic collection of data and forest information for assessment or analysis. The data can be collected using fixed-radius plots, in which a specific radius defines a plot's boundary, and all trees within that radius are measured and tallied; or variable-radius plots, in which a prism or angle gauge determines which trees are "in" a plot based on their diameter and distance from the plot center.
- forest stand improvement (FSI)** A more encompassing cultural practice compared to *timber stand improvement* (TSI) to meet a nontimber objective, such as improved wildlife *habitat* or enhanced aesthetics. See also *timber stand improvement*.
- forest type** A group of tree species that, because of their environmental requirements, commonly grow together, for example, the oak-hickory type.
- fragmentation** The breaking up of large *forest* areas into smaller units either by natural processes or through conversion to other land uses. Natural habitats may become separated into isolated fragments or "islands."
- frill** A cut made with a hatchet or ax completely encircling the trunk of a tree through the bark and into the wood where herbicide is applied, for deadening the tree. It is shallower than a *girdle*.
- frost crack** A crack in the bark of a tree extending from near the base upward, occurring in winter when temperatures fluctuate below and above freezing.
- fully stocked** A *stand* where trees effectively occupy most of the growing space, yet space remains for further *crown* expansion and growth of developing crop trees. For example, a *stand* fully stocked at 70% can grow suitably until reaching 100% stocking. See also *stand stocking*.
- girdle** A cut usually made with a chainsaw completely encircling the trunk of a tree through the bark and into the wood where herbicide is applied, for deadening the tree. It is deeper than a *frill*.

group selection harvest

An uneven-aged method of harvesting trees in small groups, usually 1 *acre* or less. See also *uneven-aged management*.

growing stock All the trees growing in a *stand*, generally expressed in terms of number, *basal area* or *volume*.

Growing stock is often separated into acceptable or unacceptable based on species composition, health and form, and/or in reaching landowner goals. See also *acceptable growing stock* and *unacceptable growing stock*.

growth ring See *annual ring*.

habitat The type of place in which the plant or animal lives, such as *forest habitat*, *grassland habitat* and *marsh habitat*.

hardwood A term describing broad-leaved trees, usually deciduous, such as oaks, maples and ashes.

harvest The removal of some or all trees on an area. It can mean removing trees on an area to obtain income, regenerate the *forest*, or develop special wildlife *habitat*.

heartwood The inner core of a woody stem, composed of nonliving cells and sometimes differentiated from the *sapwood* by darker color.

high-grading A harvesting technique that removes only the best, most valuable trees to obtain high, short-term financial returns at the expense of reducing future growth and revenue potential.

hypometer A graduated stick used to estimate tree height. It is often combined with a *Biltmore stick*.

increment borer A hollow, auger instrument used to bore into a tree to remove a sample of wood (core) that is used to evaluate growth rate and age.

integrated pest management (IPM) A comprehensive approach to pest control that prioritizes environmentally sound and sustainable strategies, combining various techniques like biological control, *habitat* manipulation, and cultural practices to minimize pest populations and damage, while reducing reliance on pesticides.

intermediate cut Removing immature trees between the stages of *stand* establishment and final *stand harvest*, to improve the quality of or reduce competition among the remaining trees. In contrast to a *harvest* cut, an intermediate cut may or may not generate income.

intermediate trees Trees with crowns that fall below the general level of the *canopy*, receiving sunlight only from above at midday. See also *crown class*.



Group selection harvest (courtesy Missouri Department of Conservation).

intermittent stream Streams containing water within a well-defined channel and flow in response to seasonal variation in precipitation following a major rainstorm or as long as ground water is abundant.

International 1/4-inch rule This *log rule* is generally considered the most accurate *log rule* and works well across a wide range of log diameters. See also *log rules*.

j-root The shape that a *seedling* root takes when it is improperly planted by forcing it into a planting hole.

juvenile wood The first 10 to 15 years of wood growth surrounding the center, or pith, of a tree. This wood generally has poor properties compared with the “mature wood” formed subsequently.

landing A place where logs are taken to be loaded on trucks for transport to the mill.

latewood Part of the annual wood *growth ring* formed later in the growing season that is differentiated from *earlywood* in that the wood is often more dense and darker in color. See also *annual ring*.

live crown ratio A measure of vertical *crown* length relative to total tree height. Low live *crown* ratios suggest slow tree growth and may indicate that *thinning* is needed. A 100-foot-tall tree with the upper 40 feet in living branches would have a 40% *live crown ratio*.

log rules A table showing estimated amount of lumber that can be sawed from logs of given lengths and diameters. The two log rules commonly used in Missouri are *Doyle* and *International 1/4-inch*. See also *Doyle rule* and *International 1/4-inch rule*.

lump-sum timber sale When a timber buyer and a seller agree on a fixed price for designated timber that is paid in full prior to the timber being harvested. Often the timber to be harvested has been marked in advance of the sale.

marking timber The process of selecting, usually by painting, trees to be cut (or retained) in a *harvest* operation.

mast Tree fruits, either hard (hickories and oaks) or soft (persimmon and cherry).

merchantable height The height above the ground level to which the tree can be cut and sold for commercial products.

midstory The layer of vegetation existing between the smallest, or the *understory*, and tallest, or *overstory*, trees in a *forest*.

natural regeneration Trees that become established because of natural seeding or sprouting, as opposed to being planted.

noncommercial thinning Cutting, or deadening, trees to improve growth conditions of the remaining trees. The practice does not produce income, usually because the trees cut are too small for marketability. Also called *precommercial thinning*.

on the stump Standing, uncut timber. See also *stumpage*.

open forest A *forest* characterized by a relatively sparse tree *canopy*, allowing significant sunlight to reach the *forest floor*, often with a grassy or shrubby ground layer. Also called a woodland. See also *forest*.

organic matter Material produced by plants and animals — such as leaves, branches, bark, wood, hair, fur and bones — that is incorporated into the soil.

overstocked A *stand* that is overcrowded, beyond 100% stocking, thus reducing tree growth and vigor. See also *stand stocking*.

overstory That portion of the trees in a *stand* forming the upper *canopy*.

pay-as-cut sale Timber buyer agrees to pay the landowner for designated timber on a per unit basis as the timber is being harvested. This is opposed to a lump-sum sale, where the timber is paid for in full prior to being harvested.

pioneers Shade-intolerant species that are the first trees to invade a freshly disturbed or abandoned *site*. An example is eastern cottonwood.

planting bar See *dibble bar*.

plot An area where data are collected to provide information about the *forest*. Several plots constitute a *forest inventory*.

pole A tree from 6 to 12 inches in diameter. See also *size class*.

precommercial thinning See *noncommercial thinning*.

prescribed fire A fire intentionally set under appropriate weather, soil moisture, wind and supervision in order to accomplish specific silvicultural, wildlife or fire-hazard-reduction goals.

prism A small glass wedge through which light refracts that is used in a *forest inventory*. A prism wedge helps determine which trees are to be included in a variable-radius plot.

pulpwood Wood that is cut primarily for the manufacture of paper, fiberboard or other wood fiber products. Pulpwood is normally small in diameter.

punky A soft, weak, often spongy condition in wood that is caused by decay fungi.

recruitment The process of smaller trees growing into larger *size classes*.

reforestation Reestablishing a *forest* on an area where *forest* vegetation has been removed.

regeneration The process of *forest* replacement or renewal. Trees become established from seeds, sprouts, planting and/or *advanced reproduction*.

release cutting Improving the composition in young *stands* by cutting inferior trees, thereby releasing the desired trees from competition.

reproduction Young trees, *seedlings* and *saplings* in a *forest* setting.

residual Trees remaining in a *stand* after cutting.

riparian zone Pertaining to the area along the banks of a river, stream or lake, normally offering some protection from forestry activities via the use of buffers.

root collar On a *seedling*, the transition between the stem and the root, usually recognizable by a slight swelling.

rotation The number of years required to establish and grow trees to a specified size, product or condition of maturity. Oaks may have an 80-year rotation for sawlogs whereas Scotch pine may have a 10-year rotation for Christmas trees.

roundwood Wood products that are round, such as *pulpwood*, posts, pilings, utility poles and fencing material.

salvage cut Harvesting damaged trees (i.e., from tornado or fire) to gain their economic value, often benefiting the *residual stand*.

sanitation cut A *harvest* done as a precautionary mechanism to remove potentially highly susceptible trees from oncoming insects or disease before trees become infected by the pest organism.

sapling A tree from 1 to 5 inches in diameter. See also *size class*.

sapwood The light-colored section of the tree between the *heartwood* and the bark also known as xylem. Contains some living cells and conducts water to the *canopy* for photosynthesis.

sawtimber A tree greater than 12 inches in diameter. See also *size class*.

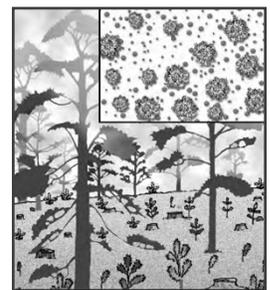
scaling Estimating the usable wood *volume* in a log or standing tree that follows fundamental rules.

scarify Disturbing the *forest floor* to expose bare ground for *regeneration*.

seed-tree harvest
An even-aged method of harvesting by removing nearly all trees from the *harvest* area at one time but leaving a few scattered trees to provide seed for a new *forest*. See also *even-aged management*.

seedling A tree, usually less than an inch in diameter, and no more than 3 feet in height, that has grown from seed. Also, trees grown in a nursery for one or more years.

seed source The location from which seeds are collected or are dispersed. An individual tree can also be a seed source.



Seed-tree harvest (courtesy Missouri Department of Conservation).

shade tolerance The capacity of a tree to develop and grow in the shade of and in competition with other trees. An example of a tree with high shade tolerance is sugar maple. An example of a tree with low shade tolerance is eastern cottonwood.

shelterwood harvest

An even-aged method of harvesting trees in a series of two or more operations. Initial harvesting allows new *seedlings* to grow and become established in the partial shade protection of older trees. Once the *seedlings* are established, the *overstory* trees are then harvested. See also *even-aged management*.



Shelterwood harvest (courtesy Missouri Department of Conservation).

silvics The study of trees, their environment and the development of forests that becomes the basis for practicing *silviculture*.

silviculture The art and science of producing and tending a *forest*.

silvicultural system A planned program of treatments during the entire life of a *stand* designed to achieve specific objectives.

single-tree selection harvest

An uneven-aged method of harvesting individual trees at intervals based primarily on their vigor and age. Trees are removed across all *age classes*. See also *uneven-aged management*.



Single-tree selection harvest (courtesy Missouri Department of Conservation).

site An area evaluated for its ability to produce a particular *forest* or other vegetation based on the combination of biological, climatic and soil factors.

site index An expression of *forest* site quality based on the average height of the dominant and *codominant trees* of a specific species in the *stand* at a specified base age, usually 50 years. For instance, when upland red oak trees are 85 feet tall at 50 years, the *site* index for that group of trees is 85.

site preparation Preparing an area of land for *forest* establishment. May include clearing, chemical vegetation control or burning.

size class A classification of trees based on their *diameter at breast height* (dbh), which is the diameter measured at 4.5 feet above the ground, to categorize trees into groups. See also *pole*, *sapling* and *sawtimber*.

skid trail A road or trail over which equipment or horses drag logs from the stump to a *landing*.

skidding Pulling logs from where they are cut to a *landing* or mill.

slash Debris left after logging, pruning, *thinning* or brush cutting. May include tree tops, branches or bark or debris left after wind or fire damage.

slope The incline of the terrain, usually expressed as the change in elevation, in feet, over 100 feet of horizontal distance.

streamside management zone (SMZ) A *buffer strip* of trees or other vegetation that is intentionally left, or disturbed lightly, around rivers, streams, lakes or other bodies of water to protect water quality.

snag A standing dead tree from which leaves and most of the branches have fallen. Used for wildlife.

softwood A term describing trees with needles or scales. Also called conifers.

soil horizons Distinct layers of the soil during soil formation that differ one from another and vary in physical, chemical and biological properties.

soil texture The proportion of sand, silt and clay in soil. High amount of sand is considered coarse soil while high amount of clay is fine soil.

stand A grouping of trees with similar characteristics — such as species, age or condition — that can be distinguished from adjacent groups. A stand is usually treated as a single unit in a management plan.

stand density A component of *stand stocking*, or the number of trees in a given area.

stave bolts Material cut from the white oak group and used in the manufacture of wooden barrels.

stand stocking The number of trees in a *stand* in relation to the desirable number of trees for best growth and management. See also *fully stocked*, *overstocked* and *understocked*.

stumpage The monetary value of a tree or group of trees while in the woods uncut, or standing *on the stump*.

succession The process of one plant community modifying the environment in such a way that favors the establishment and eventual domination of another plant community. One overtakes another, which is then overtaken by another.

suppressed trees Trees much shorter than the general level of the *canopy*, receiving only filtered sunlight. See also *crown class*.

taper The gradual reduction in diameter of a tree *bole* progressing from the base upward.

thinning Tree removal in an immature *forest stand* that reduces tree density and between-tree competition. Proper thinning encourages increased growth of fewer but higher quality trees.

thousand board feet (MBF) A standard unit of lumber and log *volume*. See also *board foot*.

tie See *cross-tie*.

timber stand improvement (TSI) Applying cultural practices to a *forest* to improve the composition,

stocking and growth of trees. Practices may include removing vines, *thinning* and pruning.

unacceptable growing stock (UGS) Trees of low quality or less valuable species that should be removed in a *thinning*. See also *growing stock*.

underplanting Planting *seedlings* under an existing *stand* of trees, often with the intent of later releasing the *seedlings* by removing/harvesting the *overstory*.

Also referred to as enrichment planting.

understocked A *forest stand* insufficiently stocked with trees. See also *stand stocking*.

understory That portion of the trees or other vegetation existing below the *midstory* and *canopy* in a *forest*.

uneven-aged management Managing a *forest* by periodically harvesting trees of all ages to maintain a broad age or *size class* distribution. *Group* and *single-tree selection harvests* give rise to unevenly aged forests. See also *group harvest* and *single-tree selection harvest*.

variable-radius plot See *forest inventory*.

veneer A thin sheet of wood sliced or peeled on a veneer machine and often used for plywood or for surfacing furniture.

veneer log A large (usually more than 18 inches in diameter), knot-free, high-quality log from which *veneer* is obtained.

volume The amount of wood in a tree, *stand* of trees or log according to some unit of measurement, such as *board foot*, cubic foot, etc.

volume table A table estimating the *volume* of wood in a standing tree based on diameter and *merchantable height*.

watershed An area of land that collects and discharges water into a single stream or other outlet.

widowmaker A limb, top, leaning tree or other material in the *forest* that is in danger of falling to the ground without warning, thus creating a safety hazard.

windthrow Trees blown over or knocked down by high wind, snow or ice.

wolf tree A living tree occupying more space in the *forest* than its economic value justifies. Usually older, larger or with more branches than other trees in the *stand*.

woodland See *open forest*.

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