

Pennsylvania Woodlands

The Pennsylvania State University, College of Agriculture, Cooperative Extension Service

Forest Terminology

NUMBER 4

Because forestry is a specialized field of study, it has a vocabulary all its own. Many of the terms used in discussions of forest management may be familiar to you. Others may not.

All-aged stand: see uneven-aged stand.

Allegheny hardwood type: a portion of the Northern Hardwood Forest in Pennsylvania, of which black cherry, white ash, and tulip poplar are major components.

Altimeter: an instrument used to determine the height of a tree.

Annual rings: see growth rings.

Association: an assemblage of plants having ecologically similar requirements and including one or more dominant species from which it derives a definite character.

Basal area: a measurement of the cross-sectional area of a given tree stem in square feet at breast height. Basal area (BA) of a forest stand is the sum of the basal areas of the individual trees. It usually is reported as BA per acre.

Biltmore stick: a tool resembling a yardstick calibrated to measure the diameter of a tree at breast height. Sticks are calibrated with different scales depending upon the reach (arm length) of the person using it.

Blaze: to mark a tree, usually by painting and/or cutting the bark. Boundaries of forest properties frequently are delineated by blazing trees along the boundary line.

Blowdown: see windthrow.

Board foot: a unit of wood 1 inch thick, 12 inches long, and 12 inches wide. One board foot contains 144 cubic inches of wood.

Bole: the main stem of a tree.

Breast height: 4.5 feet above ground level. See dbh.

Broadleaf: see hardwood and deciduous.

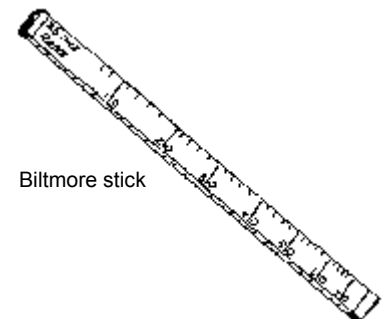
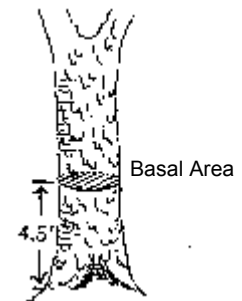
Browse: portions of woody plants including twigs, shoots, and leaves used as food by such animals as deer.

Buck: to cut trees into shorter lengths, such as logs or cordwood.

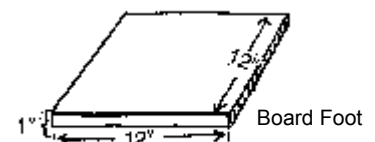
Butt log: the log cut from the section of bole immediately above a stump.

Caliper: a tool used to measure the diameter of a tree.

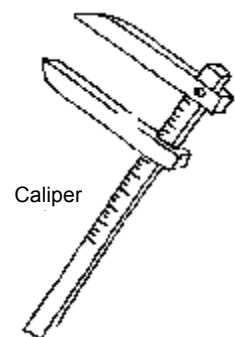
Canopy: the upper level of a forest, consisting of branches and leaves of taller trees.



Biltmore stick



Board Foot



Caliper

Chemical: see herbicides.

Clearcut: a type of regeneration or harvest cut which removes all trees from a stand. A new stand develops from stored seed, seed from adjacent stands, sprouts, or advance regeneration.

Clinometer: an instrument used to determine the height of a tree.

Codominant tree: a tree which extends its crown into the canopy, receiving direct sunlight from above and limited sunlight on its sides. One or more sides are crowded by crowns of dominant trees.

Commercial clearcut: a harvest cut that removes all merchantable timber from the cutting area.

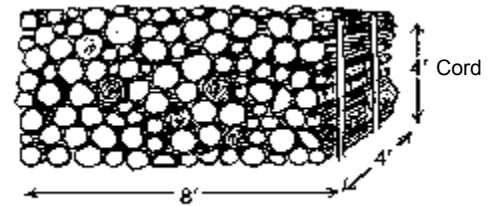
Commercial forestland: any forested area capable of producing 20 cubic feet of timber per acre per year which has not been withdrawn from such use by law or statute.

Commercial treatments: forestry operations, such as thinning or other TSI work, which generate income from sale of the trees that are removed.

Community: a collection of living organisms functioning together in an organized system through which energy, nutrients, and water cycle.

Conifer: any tree which produces seeds in cones. See softwood.

Cord: a pile of wood 4 feet high, 4 feet wide, and 8 feet long, measuring 128 cubic feet. Actual volume of solid wood in a cord will vary from 60 to 100 cubic feet, depending on size of individual pieces and orderliness of stacking. Also see face cord.



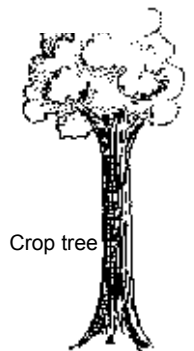
Cordwood: small diameter and/or low quality wood suitable for firewood, pulp, or chips, but not for sawlogs.

Crook: a defect of a tree characterized by a sharp bend in the main stem.

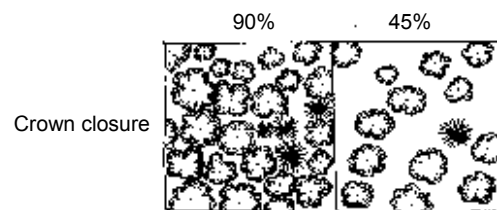
Crop tree: a tree of a desirable species, with the potential to grow straight, tall, and vigorously.

Crown: the portion of a tree above consisting of branches and foliage

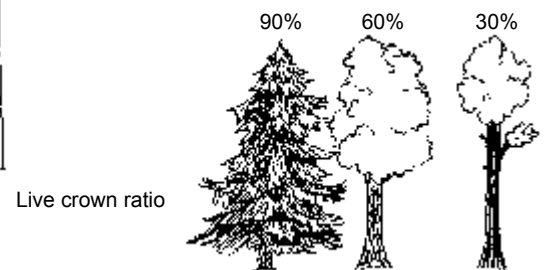
Crown classes: see dominant, codominant, intermediate, overtopped, and suppressed.



Crown cover or crown closure: the percentage of a given area covered by the crowns of trees.



Crown closure



Live crown ratio

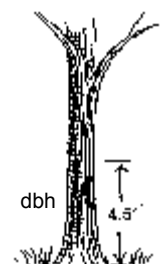
Crown ratio or live-crown ratio: the ratio of the portion of a tree height with leaves to the total tree height.

Cruise: to survey a wooded area to determine species present and to estimate volume, quality, and stocking of the stand. A cruise usually is conducted by sampling representative plots to obtain estimates.

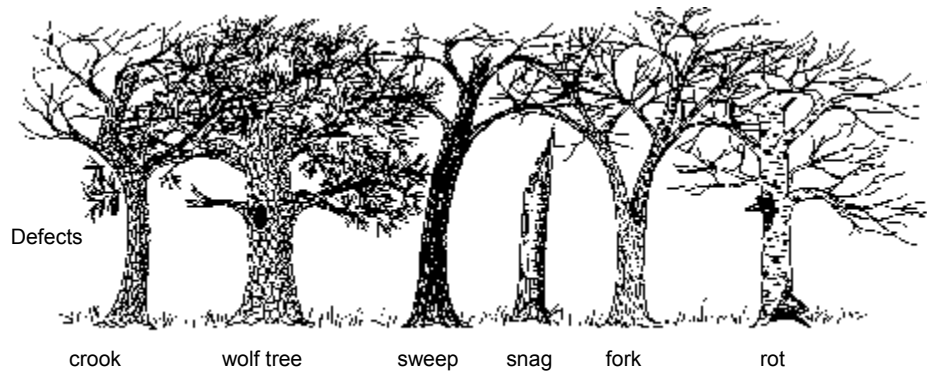
Cull: a tree of such poor quality that it has no merchantable value in terms of the product being cut.

Cutting cycle: the planned time interval between major harvest operations in the same stand.

dbh: diameter at breast height, or 4.5 feet above ground level. The abbreviation generally is written without capital letters and without periods.



Deciduous: losing leaves annually, characteristic of trees such as maple, ash, cherry, and larch.



Defects: characteristics of an individual tree which reduce its quality and utilization potential. See crook fork, rot, sweep, wolf tree.

Den tree: a tree with cavities suitable for birds or mammals to nest in.

Diameter-limit sale: a timber sale in which all trees over a specified dbh may be cut. Diameter-limit sales often result in high grading.

Diameter tape: a tape measure, calibrated to determine the diameter of a tree by measuring its circumference.

dib: diameter inside bark. Measurements for log grading are taken inside the bark at the small end. The abbreviation generally is written without capital letters and without periods.

Dimension lumber: hardwood dimension lumber is lumber processed so it can be used virtually in the sizes provided, in the manufacture of furniture or other products. Softwood dimension lumber consists of boards more than 2 inches thick but less than 5 inches thick. Such wood is used in construction and is sold by units such as 2 x 4s, 4 x 8s, or 2 x 10s.

Dominant trees: those trees within a forest stand which extend their crowns above surrounding trees and capture sunlight from above and around the crown.

Doyle Rule: one of several log rules designed to estimate the board-foot volume of lumber which can be sawn from logs of a given length and diameter. See log rule.

Ecology: the study of interactions between living organisms and their environment.

Ecosystem: organisms and the physical factors which make up their environment.

Ecotone: a transition between two distinct communities.

Edge: the boundary between open land and woodland or two other ecological communities. This transition area between environments provides valuable wildlife habitat. Consideration of edge can reduce visual impact of a timber harvest.

Epicormic branching: branches which grow out of the main stem of a tree, arising Epicormic branching from buds under the bark. Severe epicormic branching increases knottiness, thereby reducing the quality of lumber sawn.



Even-aged stand: a stand of trees in which the age difference between the oldest and youngest trees is less than 20 percent of the length of the stand rotation. Even-aged stands are perpetuated by cutting all trees within a relatively short period of time.



Evergreens: plants retaining foliage year-round.

Face cord: a unit of wood 4 feet high, 8 feet long, and less than 4 feet wide.

Felling: the cutting of standing trees.

Forest: a biological community dominated by trees and other woody plants.

Forest types: associations of tree species which commonly occur because of similar ecological requirements. See Allegheny hardwood, Northern hardwoods, Oak-hickory.

Forested wetland: an area characterized by woody vegetation over 20 feet tall where soil is at least periodically saturated with or covered by water.

Fork: a defect characterized by division of the main stem or bole of a tree into two or more stems.

Frilling: a method of killing trees by inflicting a series of cuts around the bole (stem) and applying an herbicide to the wounds. Frilling or girdling of trees may be used to reduce the density of a stand or to kill individual undesirable trees.

Girdling: a method of killing unwanted trees by cutting through the living tissues. Cuts are made around the stem.

Group selection: a process of harvesting patches of selected trees to create openings in the forest canopy and to encourage reproduction of uneven-aged stands.

Growth rings: the layers of wood laid down each growing season, also called annual rings. These rings frequently are visible when a tree is cut and may be used to estimate the age of the tree, as well as to determine the rate of its growth.

Hacks: unjoined cuts made in the bole of a tree to permit application of an herbicide to kill the tree.

Hardwood: any species of tree in the angiosperm group. These trees are characterized by broad leaves and usually are deciduous.

Harvest: a forest harvest, like the harvest of any agricultural crop, involves cutting and gathering the crop. A forest harvest includes cutting or felling of trees and skidding to a central location (landing).

Herbaceous vegetation: the low-growing, non-woody plants in a forest understory, including wildflowers and ferns.

High grading: removing all the mature, good quality trees from a stand and leaving inferior species and individuals. This should be distinguished from uneven-aged management wherein mature and immature trees are removed with consideration of the regeneration phase.

Hypsometer: any of several tools or instruments designed to measure the height of trees. The altimeter is such a tool.

Improvement cut: a weeding done in stands of pole-size or larger trees.

Increment borer: an augerlike tool designed to determine the age and growth rate of a tree. The borer is drilled into the stem of the tree and a core of wood is extracted for study of the growth rings.

International Rule: one of several log rules designed to estimate the volume of lumber which may be sawn from a given log. See log rule.

Intermediate crown class: trees with crowns extending into the canopy with dominant and codominant trees. These trees receive little direct sunlight from above and none from the sides. Crowns generally are small and crowded on all sides.

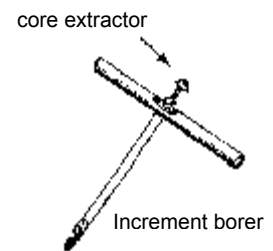
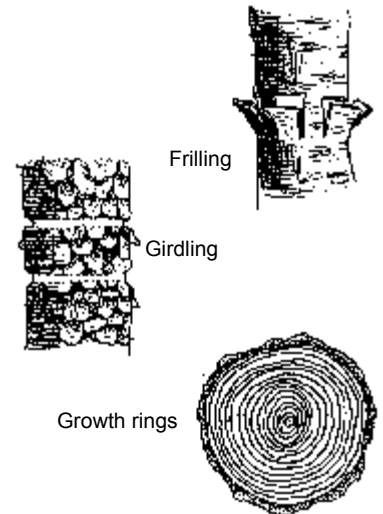
Intermediate tolerance: a characteristic of certain tree species which allows them to survive in relatively-low light conditions, although they may not thrive.

Intermediate treatments: silvicultural operations performed in existing forest stands. Such treatments, including thinning, weeding, and improvement cuts, are designed to improve quality and growth potential of the trees left in the stands.

Intolerance: the characteristic of certain tree species which does not permit them to survive in the shade of other trees.

Log: standard logs measure 16 feet long. Half logs are 8 feet long.

Log rule: a table of numbers used to estimate the amount of lumber which may be sawn from logs of various lengths and diameters. Such tables may have specific names; for example, Doyle Rule, International Rule, and Scribner Rule.



Lump-sum sale: a timber sale wherein an agreed-upon price for marked standing trees is set before the wood is removed, as opposed to a unit sale.

Main stem: the portion of a tree between ground level and the division into major branches, usually referred to as the bole.

Marking timber: the process of indicating what trees are to be cut or otherwise treated. Prior to timber sales it is advisable to mark with paint each tree to be harvested. One spot of paint at eye level and one on the stump portion will help determine whether unmarked trees have been cut.

Mast: nutlike fruits of trees, such as acorns, beech, and chestnuts. Mast is valuable as a source of food for many wildlife species.

Mature: Financial maturity is reached when growth rate of a tree (or stand) slows and decay begins to increase at a rate affecting the value. Average age at maturity varies widely between species and on different sites.

Merchantable height: the point on a tree stem at which diameter limit requirements for a certain product are not met. Limits are: the point at which a sawlog tree is less than 8 inches in diameter, measured inside the bark (dib); a pulpwood tree less than 4 inches dib; or the point on any tree at which a defect is found that cannot be processed out.

Multiple use: using and managing a forested area to provide more than one benefit simultaneously. Common uses may include, wildlife, timber, total recreation, and water.

Needle-leaf tree: any tree which has needle-like leaves.

See softwood.

Niche: the physical and functional address of an organism within an ecosystem; or where a living thing is found and what it does there.

Nonindustrial private forestland (NJPP): forestland owned by a private individual, group, or corporation not involved in wood processing.

Northern hardwood forest type: an association of tree species common to the northeastern United States, including sugar maple, yellow birch, hemlock, red maple, and American beech.

Oak-hickory forest type: an association of tree species common to the northeastern United States, including oaks, hickories, yellow poplar, and red maple.

Overmature: a quality exhibited by trees which have declined in growth rate and vigor as a result of old age.

Overstocked: the situation in which trees are so closely spaced that they are competing for resources, resulting in less than full-growth potential for individual trees.

Overstory: that level of the forest canopy including the crowns of dominant, codominant, and intermediate trees.

Overtopped: the situation in which a tree cannot extend its crown into the overstory sufficiently to receive direct sunlight. Overtopped trees lacking shade-tolerance are suppressed, lose vigor, and die.

Pole timber: trees 4 to 10 inches in diameter at breast height.

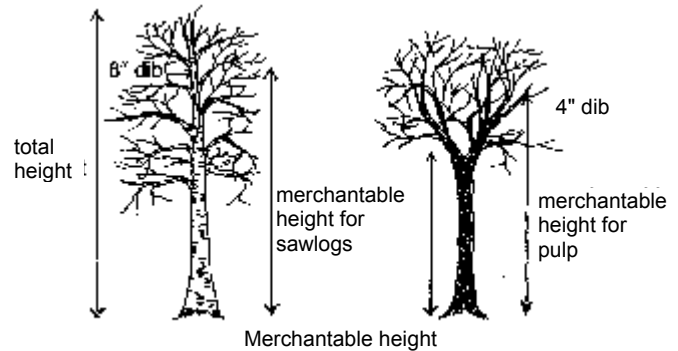
Population: a group of individuals of one species of plants or animals.

Precommercial operations: cutting conducted in forest stands which removes wood of a size too small to be marketed. Such operations usually are designed to improve species composition and increase quality, growth, and vigor of the remaining trees.

Precommercial treatments: forestry operations which require investment by the landowner such as cleaning or weeding stands to remove trees having little or no cash value. See commercial treatments.

Prospectus: a document describing the location of a property, indicating that certain trees have been marked for cutting, and stating that the timber will be sold in accordance with a suitable contract. Included is a listing of the number of trees marked, diameter class, and an estimate of volume for each species.

Pruning: removal of excessive side branches. Pruning may improve the quality of wood by reducing incidence of knots in outer layers of wood to obtain clear lumber. It also may improve the visual quality of a forest stand.



Pull: fibers pulled from the butt log of a tree when it is felled.

Pulpwood: wood suitable for use in manufacturing paper.

Regeneration: the replacement of one forest stand by another as a result of natural seeding, sprouting, planting, or other methods.

Regeneration cut: a timber harvest designed to promote and enhance natural establishment of trees. Even-aged stands are perpetuated by seed tree, shelterwood, and clearcuts. Uneven-aged stands are perpetuated by selection of individual or small groups of trees.

Release: removal of overtopping trees to allow understory or suppressed trees to grow with reduced competition.

Residual stand: trees remaining uncut following any cutting operation.

Rot: a defect characterized by decay of wood in a standing tree or log.

Rotation: the planned time interval between regeneration cuts in a forest stand.

Salvage cut: removal of dead, damaged, or diseased trees with the intent of recovering maximum value prior to deterioration.

Sapling: a tree at least 4.5 feet tall and up to 4 inches in diameter.

Sawlog: a log with a minimum diameter of 8 inches dbh, of suitable quality for conversion to lumber. See sawlog tree.

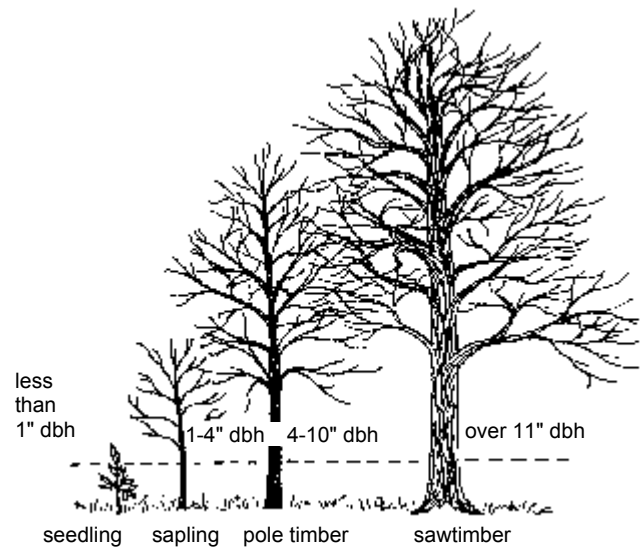
Sawlog tree: a tree suitable for conversion to lumber with a minimum dbh of 11 inches. Small sawlog trees (dbh 11 to 14 inches) and large sawlog trees (dbh over 18 inches) sometimes are distinguished.

Sawtimber: trees, or logs cut from trees, with a minimum dbh of 11 inches.

Scribner Rule: one of several log rules. See log rule.

Seed tree: a mature tree left standing in a harvest cut to provide seed for regeneration of the cut-over stand.

Selection cut: a regeneration cut designed to create and perpetuate an uneven-aged stand. Trees may be removed singly or in small groups. A well designed selection cut removes trees of lesser quality and trees in all diameter classes along with merchantable and mature high-quality sawlog trees.



Shelterwood: a cutting system designed to stimulate reproduction by removing all overstory trees. This is achieved by a series of cuts spaced several years apart. Gradual reduction of stand density protects understory trees and provides a seed source for stand regeneration.



Forest stand



Seed trees



Selection cut



Shelterwood



Clearcut

Silviculture: the art, science, and practice of establishing, tending, and reproducing forest stands with desired characteristics.

Site: the combination of biotic, climatic, topographic, and soil conditions of an area.

Site index: a measure of the quality of a site based on the height of dominant trees at a specified age, usually 50 years in the Northeast.

Site preparation: treatment of an area prior to reestablishment of a forest stand. Site preparation may include mechanical clearing, burning, or chemical (herbicide) vegetation control.

Size class: a grouping of diameter measurements used to simplify tallying of trees during a cruise. One-inch classes would group all trees with a dbh between 7.6 and 8.5 inches in the 8-inch size class. The 9-inch class would include all trees with dbh between 8.6 and 9.5 inches. Two-inch size classes are used frequently. For a 2-inch size class, all trees between 7.1 and 9.0 inches dbh would be recorded as 8-inch trees.

Skidding: the act of moving trees from the site of felling to a loading area or landing. Skidding may be accomplished by tractors, horses, or specialized logging equipment. The method of skidding can greatly affect the impact of logging on soil and the residual stand.

Slash: branches, tops, and cull trees left on the ground following a harvest. Much of this material can be used for firewood. Slash also may be arranged in brush piles to provide wildlife cover.

Snag: a standing dead tree without branches, or the standing portion of a broken-off tree. Snags may provide feeding and/or nesting sites for wildlife.

Softwood: any tree in the gymnosperm group, including pines, hemlock larch, spruce, fir, and junipers. They often are called conifers, although some, such as junipers and yews, do not produce cones.

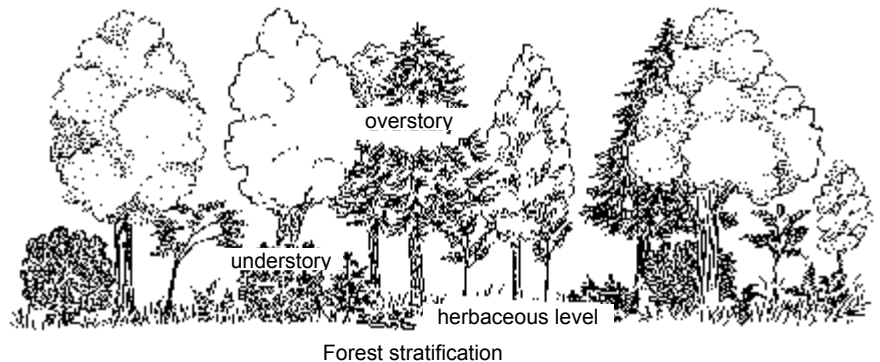
Stand: a grouping of trees of sufficiently uniform species composition, age, and condition to be distinguished from surrounding stands and managed as a single unit.

Stand density: the quantity of trees per unit area. Density usually is evaluated in terms of basal area or percent-crown cover. See basal area, crown cover, stocking.

Stem: the portion of a tree that supports the branches; also called the bole.

Stocking: a general description of the density of a forest stand as compared to the desirable density for best growth and management. Stands may be described as well stocked, under-stocked, or overstocked.

Stratification: division of a forest, or any ecosystem, into distinct layers of vegetation which provide distinct niches for various wildlife species. See canopy, understory, and herbaceous vegetation.



Stumpage: uncut trees standing in the forest. Sometimes used to mean the commercial value of standing trees.

Stump height: the distance between ground level and the top of a stump. Good logging practice dictates stumps be as low as possible (preferably less than 12 inches) to reduce waste of good wood, as well as to minimize visual impact on the logging site.

Succession: the natural series of replacements of one plant (and animal) community by another over time in the absence of disturbance.

Suppressed: the condition of a tree characterized by low growth rate and low vigor due to competition with overtopping trees. See overtopped.

Sustained yield: an ideal forest management objective at which point the volume of wood removed is equal to growth within the total forest.

Tally: a system of recording trees counted during a timber cruise.

Tally symbols:
No. of trees

•	••	•••	••••	••••	••••	••••	••••	••••	••••	••••
1	2	3	4	5	6	7	8	9	10	

The commonly used dot-tally system is illustrated.

Thinning: removal of trees to encourage growth of other selected individual trees.

Timber cruise: see cruise.

Timber stand improvement: a combination of intermediate treatments designed to improve growth and composition of the forest, often spoken of as TSI.

Tolerance: the characteristic of certain tree species which permits them to survive and grow within the shade of surrounding trees.

Trim allowance: an extra two or three inches left on a log that is being bucked, to allow the manufacture of standard lumber lengths. Lumber from logs with end checks, pulls, or slanting buck cuts must be trimmed to standard lengths necessitating the trim allowance.

TSJ: see timber stand improvement.

Understocked: a stand of trees so widely spaced that, even with full growth potential realized, crown closure will not occur. Understocking indicates a waste of resources, as the site is not fully occupied.

Understory: the lesser vegetation (shrubs, seedlings, saplings, small trees) within a forest stand which forms a layer between the overstory and the herbaceous plants of the forest floor. Uneven-aged

Uneven-aged stand



Uneven-aged stand: a group of trees stand of a variety of ages and sizes growing together on a uniform site.

Unit sale: the practice of determining the total price for trees to be sold for harvest, based on an agreed-upon value per unit of wood cut and removed (usually board feet or cords).

Veneer log: a log of high quality and desirable species suitable for conversion to veneer. Logs must be large, straight, of minimum taper, and free from defects.

Virgin forest: a wooded area with old-growth trees which never has been harvested or altered by humans.

Volume table: a table of figures used to estimate the volume of wood contained in a standing tree, based on dbh and merchantable height.

Watershed: a region or area defined by patterns of stream drainage. A watershed includes all the land from which a particular stream or river is supplied.

Weeding: removal of undesirable species or individual trees competing with sapling-sized crop trees.

Well stocked: the situation in which a forest stand contains trees-spaced widely enough to prevent competition-yet closely enough to utilize the entire site.

Wildlife habitat: the native environment of an animal, ideally providing all elements required for life and growth food, water, cover, and space.

Windthrow: a tree pushed over by wind. Windthrows (blowdowns) are more common among shallow-rooted species and in areas where cutting has reduced the density of a stand so that individual trees remain unprotected from the force of the wind.

Wolf tree: a large, excessively branchy tree which occupies more space in the forest than its economic value justifies. Wolf trees may have high noneconomic wildlife and aesthetic value.

Woodland: see forest.

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