

Appendix 5. Glossary of Forestry Terms

Advanced Regeneration: regeneration that is already in place in the understory before the canopy is removed. For our studies we classify a tree as advanced regeneration if it is taller than 4.5 feet and has a dbh less than 2 inches.

Age Class: a group of trees which are all roughly the same age and usually belong to a single cohort.

Basal Area: the area of the cross section of a tree bole at 4.5 feet from groundline (DBH). A 12 inch diameter tree for example, has a basal area of 113 square inches or 0.79 square foot. Unless otherwise indicated, basal area units are in square feet.

Basal Area per Acre: the total area of the cross sections of all trees occupying a given acre of land. This measurement is used because it offers the forester the best estimate of how well any given forest site is stocked, and whether or not the site is achieving its optimum growth potential compared to its site quality. Unless otherwise indicated, basal area units are in square feet.

Best Management Practice: forest management practices that reduce erosion and prevent or control water pollution.

Biodiversity: the variety of life forms in a given area; can be categorized in terms of number of species, variety of plant and animal communities, genetic variability or some combination of these categories.

Board Foot: a unit of measure equal to a board that is 1 inch thick, 12 inches long and 12 inches wide, or 144 cubic inches.

Canopy: the general level of the tree crowns in any given forest stand. This zone may be well-defined and unbroken, such as with plantations and classic even-aged forest, or it may be multileveled and weakly defined, such as with multi-stage and uneven aged forests.

Canopy Closure: the canopy is considered to be “closed” if the crowns are touching and the forest floor is fully shaded.

Chestnut Blight: a fungal disease introduced from Asia in the early 1900’s that attacks American chestnut trees. The disease eventually killed nearly all mature chestnut trees by 1940. Most of the chestnut trees were harvested before or shortly after the blight killed them. Fortunately, the root system is fairly resistant to the blight and the chestnut persists as shoots from the old root systems. Unfortunately they are only able to grow for several years before the blight attacks them.

Clear-cut: a harvesting and regeneration method that removes all trees within a given area.

Cohort: an aggregation of trees that begins growth as the result of a single disturbance.

Competition: The struggle between trees to obtain sunlight, nutrients, water and growing space. Every part of the tree, from the roots to the crown, competes for space and food.

Coppice: Trees which have regenerated from shoots formed at the stumps of the previously cut trees.

Cover Type: a stand or group of stands which has been designated to one category (i.e. Montane Oak-Hickory) because of similarities such as species composition, age, structure, or site characteristics.

Crop Tree Release: competing trees are removed whose crowns are impeding growth of a crop tree. The crop tree is selected usually based on species, form, superior health, and/or larger size. It is similar to a crown thinning, but usually applied to younger stands of trees still in the Stem Exclusion phase.

Crown: the branches and foliage at the top of a tree.

Crown Class a definition of tree position within the forest canopy. The basic four tree positions are defined as follows:

Dominant Tree- tree is above the general level of the canopy, and receives full sun from above and from one or more sides of the crown.

Co-dominant Tree- tree is level with the general level of the canopy, receiving full sun from above but only partial sun from the sides of the crown.

Intermediate Tree- tree is generally below the general level of the canopy, but occupies the lower canopy levels. Crown receives partial sun from above, but no sun from the sides.

Suppressed Tree- tree is generally below the level of the canopy, does not occupy the canopy layer and is fully shaded from the top and sides.

Crown Thinning: trees are removed from the upper crown classes in order to open up the canopy and favor the development of the most promising trees of the same canopy position.

DBH (diameter at breast height): measured diameter of a tree at 4.5 feet from groundline. In hilly or mountainous terrain 4.5 feet is measured from the highest side of the stump (uphill side on a slope). Certain rules for exceptions are used for trees with forks butt swell or cankers at normal 4.5 feet bole height.

Edge: the transition between two different types or ages of vegetation.

Even-Aged: trees are of that are of the same age or at least the same cohort.

Even-Aged Management: a forest management method used to produce stands that are all the same age or nearly the same age by harvesting all trees in an area at one time or in several cuttings over a short time.

Grade: a system for judging the quality of timber in a tree. In forest service grading rules, grade 1 is greater than 16 inches dbh and with only minor sweep or defects. Grade 2 is greater than 14 inches dbh or greater than 16 inches and with moderate sweep or defects. Grade 3 is greater than 12 inches or greater than 14 inches and with significant sweep or defects. A tree designated as a cull has no timber value due to defects, size, or species.

Group Selection: the removal of small groups of trees to regenerate shade-intolerant trees in the opening (usually at least 1/3 acre).

Growing Space: a reference to the amount of resources (water, sunlight, soil nutrients) available to allow for tree growth. Growing space decreases and becomes very limited as competition between trees increases.

Hemlock Woolly Adelgid: Native to southern Japan, this bug was introduced to the U.S. in the 1920's and has now been established in eleven eastern states, from Georgia to Massachusetts. Appearing as a small cottony pinhead, the insect feeds on the sap of hemlocks, attaching themselves at the base of the needles. After infestation, in the southern Appalachians 90% mortality of all hemlocks can be expected within several years.

High-Grading: a harvesting technique that removes only the biggest and most valuable trees from a stand and provides high returns at the expense of future growth potential. Poor quality, shade-loving trees tend to dominate in continually high-graded sites.

Hydric: a site having or characterized by excessive soil moisture.

Low Thinning: trees are removed from only the lower crown classes.

Mast: fruits or nuts used as a food source by wildlife. Soft mast includes most fruits with fleshy coverings, such as persimmon, dogwood seed or black gum seed. Hard mast refers to nuts such as acorns and beech, pecan and hickory nuts.

Mesic: a site that generally has moderate or generally well balanced soil moisture levels.

Natural Regeneration: the growth of new trees in one of the following ways without human assistance: (a) from seeds carried by wind or animals, (b) from seeds stored on the forest floor, or (c) from stumps that sprout.

Prescribed Burning: the practice of using regulated fires to reduce or eliminate material on the forest floor, for seedbed preparation or to control competing vegetation. Prescribed burning simulates one of the most common natural disturbances. Also called controlled burning.

Salvage Cut: the harvesting of dead or damaged trees, or the harvesting of trees in danger of being killed by insects, disease, flooding or other factors in order to save their economic value.

Selective Thinning: dominant trees are removed in order to stimulate the growth of the trees in lower crown classes. This method of timber harvesting is useful in order to favor shade tolerant

species. However, in forests, such as most of the southern Appalachian forests, that are dominated by shade intolerant or intermediate species, selective thinning degenerates into the practice of harvesting the best trees and leaving the poorest, also known as high-grading.

Shade Intermediate: trees that can survive in partial shade, but generally do best in full sun.

Shade Intolerant: trees that require full sunlight to thrive and cannot grow in the shade of larger trees.

Shade Tolerant: trees that have the ability to grow in the shade of other trees and in competition with them.

Shelterwood Cut: removing trees in the harvest area in a series of two or more cuttings so that new seedlings can grow from the seeds of older trees. This method produces an even-aged forest.

Site, Site Quality: the inherent productivity of a given piece of forest land. Soil type, soil depth, slope aspect, general terrain, elevation, position on slope, local climate and local precipitation patterns all affect the site quality of a forest stand. Site quality determines the limits of any given piece of land to produce volume and tree growth, and it normally influences the tree species occupying this piece of land.

Site Index: a measurement used to quantify site quality for any given piece of forest land. Site Index is normally expressed, in the southern Appalachian forest types, by the total height of the dominant trees in the stand at 50 years of age. Site Index is always expressed for specific species or species type, as the Site Index value varies between tree species (i.e. White Pine versus Upland Oak).

Silviculture: the art, science and practice of establishing, tending and reproducing forest stands of desired characteristics. It is based on knowledge of species' characteristics and environmental requirements.

Snag: a standing dead or dying tree.

Stand: a delineated portion of forest land that shares similar characteristics in such a way that this portion of the forest can be separated from adjoining forest lands. These shared characteristics can include tree species (conifer, hardwood, mixed oaks, cove hardwoods, etc.), age of the trees, stand structure (even-aged or uneven-aged), site index or site quality, elevation, slope aspect, or special site conditions (swamp, wetlands, rocky, heavy clay soils, special wildlife habitats, etc.). This concept always needs to be used with some care, because natural diversity is such that forest land cannot be completely pigeonholed or defined fully by what is essentially a broad brush approach.

Stem Injection: a method of injecting herbicide directly into the cambium layer of a tree to induce mortality. This method insures the herbicide only impacts the desired tree and does not spread unintentionally. It is commonly used in crop tree release.

Stocking: a measurement or calculated number that expresses the number of trees found on a tract or on a given unit of area (acre, hectare). This is most often expressed by actual number counts of trees (i.e. trees per acre, stems per hectare) or in Basal Area per unit area (i.e. square feet per acre, square meters per hectare). Total number of trees on a tract is meaningful and normally calculated for a timber sale bid offering, but Total Basal Area on a tract is meaningless and is never calculated.

Succession or Stand Development: a given aggregation of trees of a single age class or cohort proceeds from birth to death in a sequence of developmental steps. The steps in the following model were developed by Oliver and Larson, 1996:

Stand Initiation: after a lethal disturbance has created a unit of vacant growing space, the trees that become established in it do not fully occupy the space. Until they do there is opportunity for additional plants to fill the empty spaces such as herbaceous annuals.

Stem Exclusion: when canopy closure is reached and trees begin to compete with each other for limited resources. The more vigorous trees usurp the growing space and weaker ones die. This competition also limits regeneration of a younger cohort of tree species.

Understory Reinitiation: scattered trees that have previously been successful in competition with other trees begin to be lost to pests or other damaging agents. The surrounding tree crowns do not fully close again and the vacancies of growing space thus allow for the growth of new trees. These trees are often advanced regeneration of shade tolerant species.

Old Growth: this occurs when the process of Understory Reinitiation is complete and the initial older cohort has been completely replaced by younger cohorts. Forests in this stage are usually dominated by shade tolerant species. Because there are many age classes of trees, structural and biological diversity is increased. The forest is heavily stratified with foliage extending from tree tops to the forest floor in some places. Biodiversity is also enhanced by a large number of standing and fallen dead trees. Production of wood and organic matter tend to be balanced by loss and decay. (Note this is a unique definition of old growth and there are many others which are based on other factors such as forest structure or tree age.)

Two-aged: a stand that contains only two cohorts.

Understory: the area below the forest canopy that comprises shrubs, snags and small tree. Because the understory receives little light, many of the plants at this level tolerate shade and will remain part of the understory. Others will grow and replace older trees that fall.

Uneven-aged: a stand that contains three age-classes intermingled intimately on the same area.

Xeric: a site that is regularly deficient in moisture.