

National 4-H Forestry Invitational Glossary

<http://www.4hforestryinvitational.org/>

N4HFI Information

The National 4-H Forestry Invitational is the national championship of 4-H forestry. Each year, since 1980, teams of 4-H foresters have come to Jackson's Mill State 4-H Conference Center at Weston, WV, to meet, compete, and have fun. Jackson's Mill is the boyhood home of General Thomas "Stonewall" Jackson, Confederate General during the American Civil War, and a historic setting for the Invitational. Jackson's Mill State 4-H Conference Center is the first and oldest 4-H camp in the United States and is operated by West Virginia University Extension.

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CONTENTS

	Page
Trees	2
Forests & Forest Ecology	7
Forest Industry	11
Forest Measurements & Harvesting	12
Tree Health (Insects, Diseases, and Other Stresses)	17
Topography & Maps	18
Compass & Pacing	19

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Trees

Angiosperms - tree species are split into two broad categories, Angiosperms and Gymnosperms. Angiosperms are a taxonomic class of plants in which the ovule (which upon fertilization becomes the mature seed) is contained inside an ovary. The term hardwood is commonly used in reference to angiosperms, even though the wood is often softer than softwoods. Some major hardwood genera include oak, maple, hickory, birch, poplar, sweetgum and eucalyptus. "Angiosperm" translates as "hidden seed". Trees in this group are also often referred to as deciduous. Deciduous trees shed all their leaves during or before the onset of winter. However, some angiosperms (e.g. rhododendron, southern magnolia) hold green leaves all winter and recall some "evergreens" lose their leaves.

Annual ring growth - layer of wood-including springwood and summerwood - grown in a single year.

Artificial reproduction - means of reproducing trees asexually through the use of cuttings or budding and grafting.

Axis - main line of growth.

Bark - the tough outer covering of the woody stems and roots of trees, shrubs, and other woody plants. It includes all tissues outside the vascular cambium. Tree bark can vary greatly throughout the life of a tree, often becoming rougher as a tree grows. Examples:

- Beech bark stays smooth its entire life.
- Shagbark hickory shreds its bark in long strips as it gets older.
- Pitch pine has large plates. Epicormic sprouting is also common.
- Tulip-poplar bark displays a pattern of interlacing ridges and furrows that form a diamond shaped pattern.
- Persimmon has small blocky plates and often looks like charcoal briquettes.
- Yellow birch has a very fine shreddy bark that peels into small strips.

Bole - trunk of a tree.

Bracts - a modified leaf from the axis of which a flower or floral axis arises; portion of Douglas-fir cone also.

Broadleaf - trees having broad leaves instead of needles, often called hardwoods.

Bud scale scars - scar left where terminal bud scale formed, often visible for several years. Can be used to determine growth of a twig in a given year.

Buttressed roots - area swellings at the base of some shallow-rooted species that increase the tree's ability to withstand high winds and aid in the aeration of submerged root systems. Excellent examples include water tupelo and baldcypress.

Cambium layer - one cell thickness of tissue between the bark and wood that repeatedly divides to form new wood and bark cells.

Conifer - tree that is a gymnosperm, usually evergreen, with cones and needle-shaped or scale-like leaves, producing wood known commercially as softwood.

Crown - the head of foliage of a tree or shrub-part of a tree bearing limbs or branches, including twigs, leaves, flowers and fruit.

Crown Class - tree crowns are classified as to the position in which they are found. The following are the main generally recognized classes:

- **Dominant** - Trees with crowns that extend above the average of the tree crowns and receives light from directly above and some from the sides.
- **Co-Dominant** - Trees with crowns that form the general level of the crown cover and receive full light from the top, but very little from the sides.
- **Intermediate** - Trees that are shorter than the two preceding classes but with some branches extending into the general crown cover. Receives little light from above and none from the sides.
- **Suppressed** - Trees with crown entirely below the general crown level and receiving no direct light either from above or below.

Cuttings - short piece of vigorous branch or stem of the past season's growth used in artificial reproduction of trees.

Deciduous - trees that lose their leaves in the fall. Trees such as maple, ash, cherry, and larch are deciduous.

Dendrology - the "study of trees" leading to their identification.

Determinate growth - growth whose structures are initiated by a meristem in one year but do not complete development until the meristem resumes growth in the following year, tree forms buds for next year before the growing season is over.

Dicots - are a subdivision of angiosperms including plants (both tree and non-trees) that have two cotyledons or seed leaves that emerge following seed germination. Most trees are dicots. Plants in the other subdivision of angiosperms are referred to as monocots. These include a few trees such as palm trees. The older portions of palm tree trunks do not grow in diameter over the course of their lives.

Dioecious - Having unisexual cones or flowers with only one sex per plant, thereby having separate male and female plants.

Drupe - A one-seeded fruit which remains closed at maturity (cherry, for example)

Epicormic branching - branches that grow out of the main stem of a tree from buds produced under the bark. Severe epicormic branching increases knottiness and reduces lumber quality.

Evergreens - plants that retain foliage year round. These trees retain some of their leaves for at least one winter. Most evergreens do drop foliage in the fall, they simply do not drop all of them. The term evergreen includes most gymnosperms and some angiosperms growing in warm climates. Some gymnosperms (e.g., larch and baldcypress) drop all their needles each fall.

Exotic Species - those organisms introduced into habitats where they are not native.

Foliage - the mass of leaves of a plant.

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

Form - trees are often divided into two classes based on their form. Excurrent trees have a terminal leader that does not fork and grows consistently faster than lateral branches, resulting in a crown of conical shape. Examples include most conifers and some hardwoods, including yellow-poplar, sweetgum, and pin oak. Trees with decurrent branching patterns have a spreading crown shape that is the result of multiple forking of the terminal leader and growth of lateral branches that is as fast or faster than the terminal leader such as American elm or sycamore.

Genus - level of classification between species and family; closely related species form a genus.

Genera - plural of genus; all genera make up a family.

Germinate - to begin to grow, refers to the seed sprouting or growing.

Germination - the beginning of growth of a seedling from a generally dormant seed — characterized by rupture of the seed coat, and the emergence of a radicle or root.

Girdle - to chop or remove a strip of bark or a section of wood containing the food-carrying tissue of a tree in an even strip around the perimeter of the tree or twig

Glabrous - free from hair or down, smooth.

Glaucous - covered with a whitish powder or waxy coating.

Graft - method of reproducing a tree by joining the scion from one plant to the root-stock of a like plant called the host tree.

Growth (annual) rings - the layers of wood a tree adds each season; also called annual rings. These rings frequently are visible when a tree is cut and can be used to determine its age and growth rate.

Gymnosperms - tree species are split into two broad categories, Angiosperms and Gymnosperms. Gymnosperms are a taxonomic class that includes plants whose seeds are not enclosed in an ovary. Gymnosperms (which translates as "naked seeds") have an exposed ovule at the time of pollination. Gymnosperms include pine, juniper, hemlock, spruce, cypress, fir and ginkgo to name a few. Gymnosperm trees, with the exception of ginkgo, are also called conifers because they bear their seeds in cones. Gymnosperms are often referred to as softwoods, because of their relatively light weight but high strength wood which makes them very valuable for use in the construction industry.

Hardwoods - a general term encompassing broadleaf, deciduous trees.

Heartwood - the inner core of a woody stem composed of nonliving cells and usually differentiated from the outer wood layer (sapwood) by its darker color.

Host - the root-stock to which the scion is grafted.

Hybrid - the offspring of two different species or genera. Often has greater vigor than the parent stock.

Indeterminate growth - develops only lateral buds and never a terminal bud. Keeps on growing until cold or drought stops growth.

Intolerant (shade) - describes trees that need full sunlight to grow well and which cannot live in full shade.

Invasive exotic species - organisms not native to a region and whose introduction causes economic or environmental harm or harm to human health.

Lateral roots - roots of nearly equal size growing from the bottom of the trunk at ground level or just below.

Leader - the primary or terminal shoot above the topmost whorl. Shows growth during most recent growing season.

Legume - trees with bean-like seed pods such as black locust.

Lenticels - a pore in the stem of woody plants that is the path of exchange of gasses between the atmosphere and stem tissues.

Mast - nuts and seeds, such as acorns, beechnuts, cherries, and chestnuts, of trees that serve as food for wildlife.

Meristems - places of cell division in trees. Meristems are zones of rapid cell division and expansion that differentiate to form new tissues or organs. After meristematic division, expansion and differentiation, cell maturation occurs. Cell maturation is usually what results in actual plant growth.

Monoecious - having unisexual cones or flowers with female and male reproductive structures on the same plant.

Natural reproduction - the reproduction or growing of trees from seed.

Naval stores - resin products such as tar, pitch, turpentine, pine oil and rosin obtained from pines and other coniferous trees.

Over winter - period of time required for some seed coats to reach a point where moisture can penetrate to start growth.

Phloem - inner bark, the main tissue which carries food or sugar made in the leaves

Photosynthesis - process through which plants manufacture carbohydrates in the chlorophyll cells of leaves from carbon dioxide, water, and enzymes in the presence of light as the energy source

Pith - small core of soft, spongy tissue at the growth center of the stem.

Pome - fleshy fruit consisting of a central core with usually five seeds enclosed in a capsule and an outer fleshy layer.

Pubescent - with a hairy surface.

Radial - wood growth rings developing around a central axis.

Resin blisters - lumps or blisters of a yellowish to brown natural organic substance formed by plant secretions.

Rugose - wrinkled, typical leaves of the mint family.

Samara - one-seeded, winged fruit (e.g., ash, elm, maple, yellow-poplar).

Sapling - a young tree's period of growth from the time it reaches one inch in diameter until it is three inches in diameter measured at DBH.

Scion - a vigorous twig or cutting used in grafting to artificially reproduce trees

Sessile - not stalked.

Seed - a ripened ovule consisting of an embryo, food store, and protective coat.

Seedling - a tree grown from seed. Used to define a young tree before it reaches sapling size, less than 1" in diameter at DBH.

Sheath - annual layering of wood over the entire tree added by growth activity of the cambium. Top of each sheath shows height of the tree at the end of a given growing season.

Softwood - any tree in the gymnosperm group, including pines, hemlocks, larches, spruces, firs, and junipers. Softwoods are often called conifers although some, such as junipers and yews do not produce cones.

Species - a grouping of similar plants or animals having similar characteristics, showing close relationship to each other, and capable of reproducing fertile offspring, typically using sexual reproduction.

Springwood - the part of the annual growth ring formed during the early part of the season's growth.

Stomata - plural for stomate. The pores in plant leaves that control the gas exchange (CO₂ and O₂) and transpiration (H₂O) of a plant

Stratify - to store seeds in layers, alternating with moisture holding materials such as earth or Peat.

Sucker - new growth from buds hidden in the bark and previously shaded by other growth may occur as a result of severe trimming of the crown.

Summerwood - the portion of the annual growth ring formed after springwood formation has stopped, often called latewood.

Tap root - a deep central or primary root growing vertically downward.

Terminal bud - the bud at the apex or tip of the twig. Buds below or behind are referred to as lateral buds.

Tree - for our purposes, a tree is a woody plant that will be 20+ feet tall at maturity, with a single trunk that is unbranched for several feet, and with a more or less well defined crown. Trees are the tallest and most massive plants in the world. Trees not only survive seasonal changes, but also have to cope with long-term climatic changes.

Tolerant (shade) - a tree species capable of becoming established and growing in the shade beneath overtopping vegetation.

Umbo - protuberance or swollen part of a cone scale.

Whorl - the layering or grouping of branches at the beginning of each year's growth.

Xylem - plant tissue whose basic function is to transport water. Xylem tissue is wood which strengthens branches, stems, and roots.

Forests & Forest Ecology

Anemometer - an instrument for measuring the speed or force of wind.

Aspect - compass reading taken facing down a slope in the direction water would run, the compass direction a slope faces.

All-aged stand - all, or almost all, age classes of trees are represented.

Artificial regeneration - a group or stand of young trees created by planting seedlings or cuttings.

Backfire - fire intentionally set, backing into the wind or downslope, in front of an advancing fire in an effort to control the prescribed burn or wildfire by cutting off its fuel supply.

Blaze - to mark a tree, usually by painting or cutting the bark. Forest properties often are delineated by blazing trees along the boundary lines.

Canopy - the continuous cover formed by tree crowns in a forest.

Carnivores - flesh-eating animals.

Climate - all air and weather, such as temperature, moisture, wind and evaporation.

Climax forest - the final stage of a tree and plant community which has stabilized its population; this community stays the same as long as the climate and soil remain unchanged by nature or people.

Coppice - a stand of trees originating from the stumps or roots of trees previously cut. Most hardwood species sprout readily when cut young. Very few conifers will sprout from the stump or coppice.

Decomposers - bacteria, fungi and micro-organisms that live in the soil and help break down dead plants and animals.

Duff - often referred to as litter which is made up of materials of the upper layer of the forest floor, includes freshly fallen leaves, twigs and slightly decomposed organic matter.

Erosion - the wearing away of the soil and minerals by climatic agents such as wind and water.

Evaporation - water vapor passing back into the atmosphere.

Even-aged stand - a stand of trees composed of a single age class in which the range of tree ages is usually no greater than 10-20 years. Even-aged stands are perpetuated by cutting all the trees within a relatively short period of time.

Exposure - the portion of a slope that is directly in the path of wind, rain, sun, etc. The part of a slope open to action by the elements. Southern exposure faces south, northern exposure faces north.

Firebreak - a strip of land maintained clear of trees and other fuel, used to stop or control the spread of fire.

Food chain - the energy cycle where one species feeds on another, fixing or releasing energy in the process.

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

Forest land capability classes - the productivity of the land for growing trees as it relates to soil depth, slope percent, aspect, and slope position: Class 1 = Excellent; Class II = Good; Class III = Fair; Class IV = Poor.

Forest types - classification of forest land indicating the majority of the tree species represented in an area.

Habitat - place or type of site (including food, cover, water, and space) where an animal, plant or population naturally lives and develops.

Herbivores - animals that feed only on plants.

Hormone - a substance that is formed in a living cell and that influences the activity of other cells.

Hydrologic or water cycle - Provides a continuous supply of water to us. Water evaporates from solar-heated oceans, lakes, rivers, and other water surfaces in the form of water vapor. Water vapor is small droplets of water suspended in air and carried inland by air currents to higher and colder air. When the air has cooled to the point where it can hold no more water vapor, it condenses to form fog, rain or snow. This precipitation, upon reaching the ground, either directly evaporates or becomes runoff that flows to large bodies of water, and the cycle is repeated.

Microorganisms - organisms that are so small they are microscopic (invisible to the naked eye). Often decomposers living in the soil are microorganisms.

Monoculture - a stand of a single species, often planted, generally even-aged.

Multiple-land-use - term used to indicate the management of timber, wildlife, water, and recreation in an integral, consolidated program.

Natural regeneration - a group or stand of young trees established by natural seeding, sprouting, suckering, or layering

Non-timber forest products - any product or service, other than timber, that is produced in forests, includes such things as fruits and nuts, vegetables, fish and game, medicinal plants, resins, and syrups.

Old-growth forest - a wooded area that has attained great age, usually greater than 200 years, and that has never been altered or harvested by humans. An old-growth forest often has large individual trees, a multi-layered crown canopy, and a significant accumulation of coarse woody debris including snags and fallen logs.

Omnivore - an animal that feeds on both plants and animals.

Overstory - the level of forest canopy that includes the crowns of dominant, codominant, and intermediate trees.

Pioneer Species - plants in the early stages of succession capable of invading bare sites (e.g., newly exposed soil) typically in large numbers and over considerable areas.

Plantation - forest stand originating from planted seedlings; regenerated artificially either by sowing or planting.

Porous - said of a substance that allows water or other liquids to flow through it.

Predator - a species that feeds on another species.

Prescribed Fire - A management tool which can be used to manage competing vegetation, prevent fuel accumulation, and improve wildlife habitat without damaging crop trees, also known as a controlled burn.

Preservation - in natural resources, other than wood preservation, this term is related to land use. The meaning stems from 19th century land reserves wherein areas and resources were set aside for limited or restricted use and development. Preservation often restricts

land to recreation or scientific study. Preservation may be contrasted to the principle of multiple use which rather intensively develops one or more of an area's resources.

Regeneration - the beginning of a new forest's life cycle, established either naturally or artificially. Regeneration usually is done promptly after the previous stand or forest was removed.

Reproduction - Trees grown from seed and sprout origin, less than 1 inch in diameter

Runoff - the portion of water from rain, snow and fog that flows over land and eventually reaches streams.

Site - the habitat or environment in which a plant or plant community lives.

Slope percent - the number of feet of rise or fall in 100 feet of horizontal distance.

Snag - a dead tree that is still standing. Snags provide important food and cover for a wide variety of wildlife species.

Soil - a natural body developed from weathered minerals and decaying organic matter covering the earth in a thin layer; a natural medium on the surface of the earth in which plants may grow.

Soil compaction - when soil particles are crushed together eliminating pore spaces, the soil becomes denser and loses its ability to allow air and water to pass through.

Soil Depth - distance from the soil surface down to unweathered rock or an impermeable layer which restricts water movement and root penetration.

Sprout - a tree originating from a root or stump; a tree growing from a cut stump or previously established root system.

Stand - a group of trees sufficiently uniform in age, species composition, and structure, and growing on a site of uniform quality, to be a distinguished and managed as a unit

Subclimax species - a species in a temporary stage in nature's movement toward climax.

Succession - the natural progression from pioneer plants to climax forest as one plant community is replaced by another over time in the absence of disturbance. Primary succession (by pioneers) occurs on sites that have not previously held vegetation (e.g., bare rock), secondary succession occurs after the original vegetation has been disturbed.

Temperate zone - either of two climatic zones (the north or south temperate zone) between the tropics and the polar circles.

Understory - the level of forest vegetation beneath the canopy.

Uplands - Terrain not affected by water table or surface water or else affected only for short periods so that riparian (hydrophilic) vegetation or aquatic processes do not persist.

Urban trees - an essential part of the landscape in cities. Trees not only beautify their surroundings, but also improve the quality of life for urban dwellers in many other ways including: 1) Beautification; 2) Pollution Control; 3) Temperature Moderation; 4) Windbreaks; 5) Snow Fences; 6) Highway Safety; and 7) Wildlife Food & Cover.

Watershed - an area of land defined by patterns of stream drainage. A watershed includes all the land that contributes water to a particular stream or river. *Urban sprawl and development, poor agricultural practices, careless logging and wildfires* are sources of damage to watersheds.

Wilderness - In the strictest sense, this means that an area that has never been developed by man. The 1964 Wilderness Act defined it as: "A Wilderness, in contrast with those areas where man and his own works dominated landscape, is hereby recognized as an area where the earth and its community of life are untrammelled by man, where man himself is a visitor and does not remain." In some cases man-made items are dismantled to reduce the area to a primitive state. Some roadless areas are considered wilderness when the access is limited to hiking, canoeing, or horseback riding and the use is set aside for recreation. To most of the general public, wilderness experiences are gained in a number of settings involving wild but not necessarily true Wilderness areas.

Wildfire - Fires burning out of control regardless of how or why they were started.

Wolf tree - a large older tree with a spreading crown and little or no timber value, but often great value for wildlife. A tree that occupies more than its fair share of growing space.

Forestry Industry

Best management practices (BMPs) - a practice, or combination of practices, determined by a state to be the most effective, practicable means of preventing or reducing the amount of pollution generated by nonpoint sources (such as managed forests) to a level compatible with water quality goals.

Conservation - Gifford Pinchot, a turn of the century forester closely associated with President Teddy Roosevelt, applied the word to describe a natural resource philosophy. It meant "wise use." Through the years it has taken on an extended meaning that really says "wise use over a period of time." The time factor forces us to consider the consequences of current use compared to future use.

Drip torch - firefighters use these torches that drip a flaming liquid mixture of diesel fuel and gasoline to ignite fires in burnout operations and prescribed fires.

Extension forester - a Cooperative Extension Service professional who educates woodland owners and natural resource professionals on how they can effectively manage forests.

Fire shelter - firefighters use this personal protection as a last resort if a wildfire traps them and they cannot escape. Firefighters can get into the tent-like shelter, made of heat reflective material, in about 25 seconds.

Forester - a degreed professional trained in forestry and forest management.

Forestry - the art and science of tending forests and woodlands. Profession embracing the science, art, and practice of creating, managing, using, and conserving forests and associated resources for human benefit and in a sustainable manner to meet desired goals, needs, and values.

Geographic information system (GIS) - a computer system that creates maps using GPS. The maps are linked to a database that stores important information about the map.

Global positioning system (GPS) - a computer that uses satellites in space to pinpoint where you are on the earth.

National Forests - managed by the United States Forest Service, part of the United States Department of Agriculture, focusing on multiple uses including; conservation, timber harvesting, livestock grazing, watershed protection, wildlife, and recreation. Differ from National Parks in that recreation is not their only use. They are managed for productive and sustained yields according to the land's capability.

National Parks - managed by the National Park Service, of the United States Department of the Interior. The National Park Service was established by Congress to promote and regulate the use of national parks, monuments, and reservations and to conserve the scenery and the natural and historic objects and the wildlife therein. The Service manages some areas for historical or recreational uses. Each of the 35 national parks was established to preserve a unique natural area for our enjoyment and study.

Natural Resources Conservation Service (NRCS) - the branch of the U.S. Department of Agriculture that coordinates and implements soil conservation practices on private lands. The NRCS can provide woodland owners with detailed information on his or her soil.

Sustainable Forestry Initiative (SFI) - a comprehensive program of forestry and conservation practices designed to ensure that future generations of Americans will have the same abundant forests and wildlife that we enjoy today. SFI is sponsored by the American Forest & Paper Association (AF&PA). AF&PA member companies have agreed to use sustainable forestry practices on the forestland they manage and to promote sustainable forestry on the forestlands of others.

TIMO - Timberland Investment Management Organization.

Forest Measurements & Harvesting

Abney Level - an instrument used to determine the percent of slope of a site.

Acre - unit of measurement equivalent to 43,560 square feet, measures one chain wide and one furlong, or 10 chains in length. An area of land equivalent to 10 square chains.

Basal area (of a tree) - the cross-sectional area of the trunk measured 4 1/2 feet above the ground; **(per acre)** the sum of the basal areas of the trees on an acre; used as a measure of forest density.

Biltmore stick - a tool calibrated to measure the diameter of a tree at breast height. Biltmore sticks can be calibrated with different scales depending on the users' arm length.

Biomass - total woody material in a forest. Refers to both merchantable material and material left following a conventional logging operation.

Board foot - a unit for measuring wood volume in a tree, log, or board. A board foot is commonly 1 foot by 1 foot by 1 inch, but any shape containing 144 cubic inches of wood equals one board foot.

Butt rot - Decay or rot characteristically confined to the base or lower bole of a tree.

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

Butt log - a log cut from the bole or stem immediately above the stump.

Chain or Gunter's chain - a measuring device designed and introduced in 1620 by English clergyman and mathematician Edmund Gunter (1581-1626). Gunter used an actual measuring chain of 100 links marked off into groups of 10 by brass rings which simplify measurement. Each link is 7.92 inches long, with 10 links making slightly less than 6 feet 8 inches. The full length of the chain is 66 feet.

Chip-n-saw - trade name for small timber, usually 8 to 12 inches d.b.h., of which the outer part is chipped away for use in papermaking and the inner part is sawn into lumber.

Clearcutting - a regeneration method that involves the removal of the entire stand in one cutting to create an even-aged stand. Regeneration is provided for naturally or artificially through planting.

Clinometer - an instrument used to determine tree height and slope percent.

Convertible - Refers to land that can be efficiently converted to a pine plantation.

Cord - a stack of fuelwood, pulpwood, or other material that measures 4 × 4 × 8 ft, or 128 cubic feet including wood, bark, and empty space within the stack.

Cordwood - small diameter or low quality wood suitable for firewood, pulp, or chips. Cordwood is typically not suitable for sawlogs.

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

Cruise - collecting information about timber volume, growth and other factors used to make management decisions about the forest. Typically the first step of a timber sale.

Cull - tree or log of merchantable size, but no market value.

Cutting cycle - the period of time between major harvests in a stand.

Defects - characteristics of an individual tree or board that reduce its quality and utility.

Diameter at breast height (DBH) - standard measurement of a tree's diameter, taken at 4 ½ feet above the ground on the uphill side of the tree (if the tree is on a slope).

Diameter tape - tape measure specially graduated so that diameter may be read directly when the tape is placed around the circumference of a tree stem or log.

Dibble - A tool used to make holes in the ground for planting tree seedlings.

Feller-buncher - A tractor equipped with hydraulic shears or a saw designed to fell standing trees and arrange them in bunches on the ground for pickup by a skidder

Felling - the cutting of standing trees.

Forest Mensuration - the science of measuring the contents of standing or felled timber, and estimating growth and yields.

Harvest - the removal of marketable products from the forest.

High grading - removing all mature, high quality trees from a stand and leaving inferior species and individuals. Also referred to as select cutting and diameter limit cutting. Not to be confused with "selection" harvesting or uneven-aged management.

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

Increment borer - an auger-like tool with a hollow bit designed to extract wood cores from trees for determination of age and growth rate.

Kerf - width of the cut made by a saw blade.

Log - section of the main stem of a harvested tree. A standard log is a 16-foot long tree segment.

Log rule - a formula for estimating the volume (usually in board feet) of lumber that may be sawed from logs by using small end diameter and length (e.g., Doyle rule, International 1/4-inch rule, and Scribner rule).

Mature tree - a tree that has reached a maximum growth that the forest manager decides is a merchantable product.

MBF - abbreviation for thousand board feet.

Merchantable - wood that is saleable.

Merchantable height - the distance from the stump height to the top of the merchantable material in the tree and varies depending on the products to be made from the tree, implies the ability to cut lumber, veneer, or other products from the logs.

Merritt hypsometer - a scaled instrument used for measuring heights of trees.

Mixed stand - a stand composed of two or more tree species.

Overstocked - the situation in which trees are so closely spaced they compete for resources and do not reach full growth potential.

Pacing - an expedient, but crude, method of determining ground distances. A pace is two steps. On level, open ground, pacing can become fairly accurate with practice. But, on slopes, and in brushy or rocky areas, its accuracy diminishes.

Partial cut - method of cutting mature trees such as shelterwood cut, selection cut, or seed tree cut where some trees are left standing.

Peelers - logs that are used to make plywood or veneer.

Plot - a carefully measured area laid out for experimentation or measurement.

Plylogs - logs that are used to make plywood.

Pole timber - trees 4 to 10 inches in diameter at DBH.

Prism - an optical instrument used as an angle gauge, consisting of a thin wedge of glass which establishes a fixed (critical) angle of projection in a point sample.

Pulp - soft, moist mass of wood fiber used in paper manufacture. Pulp is made by reducing wood chips to fibers, either mechanically or chemically, then mixing with water. Mechanically ground or chemically digested wood used in manufacturing paper and allied products.

Pulp mill - mill that converts pulpwood to wood pulp.

Pulpwood - trees or logs used to make purified cellulose, oleoresin and paper. Typically pulpwood is too small or too low in quality to be used for lumber.

Release - to remove overtopping trees that compete with understory or suppressed trees.

Residual stand - that portion of trees left after any partial cut.

Rotation - the number of years required to grow a stand to a desired size or maturity.

Rut - a depression in access roads made by continuous passage of logging vehicles.

Salvage - the removal of dead, damaged, or diseased trees to recover maximum value prior to deterioration.

Sanitation harvest - the removal of dead, damaged or susceptible trees; essentially to prevent the spread of pests or pathogens and so promote forest hygiene.

Sapling - trees from 1 to 3 inches in diameter at DBH

Sawlog - a log large enough to be sawed economically on a sawmill. Sawlogs are usually at least 8 inches in diameter at the small end.

Sawtimber - Trees more than 10 inches in diameter at DBH

Section - an area normally one square mile, containing 640 acres, with 36 sections making up one survey **Township** on a rectangular grid. One reason for creating sections of 640 acres was the ease of dividing into halves and quarters while still maintaining whole number of acres. A section can be halved seven times in this way, down to a 5 acre parcel. This system was of great practical value on the American frontier, where surveyors often had a shaky grasp on mathematics and were required to work quickly.

Seed tree - a mature tree left uncut to provide seed for regeneration of a harvested stand.

Seed-tree harvest - a regeneration method designed to create an even-aged timber stand. The initial harvest removes the mature stand leaving only a few trees to drop seed on the area. Seed is typically wind dispersed.

Seedling - a tree grown from seed; used to define a young tree before it reaches sapling size, less than 1" in diameter at DBH.

Selection harvest - a regeneration method used in uneven-aged stands, or to create uneven-aged stands, in which individual trees or groups of trees are removed. Some trees in each age class are removed including mature trees, poorly-formed trees, and trees of undesirable species.

Shelterwood harvest - a regeneration method designed to create an even-aged timber stand. The initial harvest removes the mature stand leaving only a few trees to shelter the new stand. Years later, the remaining overstory trees are removed.

Silviculture - art and science of controlling the establishment, growth, composition, health, and quality of forests to meet the diverse needs and values of landowners and society on a sustainable basis.

Site index - a measure of the quality of a site based on the height of dominate trees at a specified age (usually 25 or 50 years), depending on the species.

Skidder - machine designed to transport trees or logs by trailing or dragging.

Skidding - the act of moving trees from the site of felling to a loading area or landing. Tractors, horses, or specialized logging equipment can be used for skidding. Skidding methods vary in their impact on soils and the residual stand.

Slash - branches and other woody material left on a site after logging.

Stocking - A measure of the proportion of the area actually occupied by trees, used to describe how well the trees in a stand utilize the available space. Stands are often classified as understocked, well-stocked or overstocked.

Streamside management zone (SMZ) - a strip of land adjacent to a water body or stream channel where vegetation is managed to protect the quality of surface water

entering the water body during forestry operations. An SMZ also may be called a "filter strip" or "buffer zone."

Stumpage - the value of standing trees in a forest.

Sustained yield - Management of a forest stand to provide a constant supply of timber and revenue.

Sweep - a tree defect characterized by a gradual curve in the main stem.

Thinning - a partial cut in even-aged timber stands designed to improve future growth by regulating density. Thinnings can be commercial, where some or all of the wood harvested is put to use, or precommercial, where no wood is utilized.

Timber stand improvement (t.s.i.) - any practice designed to improve a stand of timber by removal of vines, culls, and undesirable species. Pruning and thinning are considered t.s.i. practices.

Top - to cut off the unmerchantable top and limbs of a tree.

Tree scale stick - a calibrated stick used to estimate wood volume in a tree.

Understocked - a stand of trees so widely spaced that even with full growth potential realized, crown closure will not occur.

Variable plot radius - a method of timber cruising commonly used for industrial timber cruising in which sampling area (plot size) varies with tree diameter.

Veneer log - a high-quality log of a desirable species suitable for conversion to veneer.

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.

Tree Health (Insects, Diseases and Other Stresses)

Caterpillar - common name for the larvae of butterflies and moths.

Chlorosis - blanched or yellowish coloring in plants caused by nutrient or light deficiency.

Cocoon - protective covering around the pupa of some insects, especially moths. The cocoon is made by the larval stage before pupation.

Crawler - the mobile, first nymphal growth stage of scale insects.

Fusiform rust - a fungus-caused disease which produces spindle-shaped swellings or cankers on the boles and branches of pines. Infections sometimes kill young trees and deform older trees, resulting in wind breakage or reduced value at harvest.

Larva - the immature stage of an insect. Usage of the term is limited to those insects that undergo complete metamorphosis (i.e. pass through the pupa stage before becoming adults). The larval form is often markedly different in appearance to the adult.

Lichen - any of a number of plants made up of algae and fungus growing together on a solid surface, such as a rock.

Metamorphosis - the series of changes through which an insect passes in its growth from the immature stage to an adult. Insects that undergo incomplete (or simple) metamorphosis pass through three distinct life stages: egg, nymph, and adult. Insects that undergo complete metamorphosis pass through four distinct life stages: egg, larva, pupa, and adult.

Nymph - the immature stage of an insect. Usage of the term is limited to those insects that undergo incomplete (or simple) metamorphosis. Unlike a larva, the nymph does not pass through a pupa stage before becoming an adult. The nymphal form is often similar in appearance to the adult.

Pest - any organism that interferes with human activities.

Prolegs - fleshy, foot-like structure on the hind region of a caterpillar.

Pupa - stage of development between larva and adult. During this life stage the larval body is rearranged into the adult form.

Topography & Maps

Abney level - an instrument used to determine the percent slope of a site.

Aspect - the compass direction toward which a slope faces.

Compass - an instrument used to determine the direction of magnetic north.

Contour - an imaginary line on the surface of the earth connecting points of the same elevation. A line drawn on a map connecting the points of the same elevation.

Latitude - a measure of distance north and south of the Equator

Elevation - height above sea level.

Intermittent stream - a watercourse that flows in a well-defined channel only in direct response to a precipitation event, it may be dry for a large part of the year.

Perennial stream - a watercourse that flows throughout a majority of the year in a well-defined channel.

Slope position - a particular location on a slope defined as: upper, middle, or lower slope; ridge top; or bottom land. A specific topographic location.

Topography - the shape or form of the land surface, such as flat lands, hills and mountains

Compass & Pacing

Azimuth compass - compass dial is divided into 360 degrees. North is 0 degrees or 360 degrees. Angles are measured clockwise from North, therefore East is 90 degrees, South is 180 degrees and West is 270 degrees.

Bearing tree - tree marked to identify the nearby location of a survey corner, also known as a witness tree.

Compass - instrument used to determine the direction of magnetic north.

Quadrant compass - compass dial is divided into four quadrants, namely NE, SE, SW and NW. North and South are at 0 degrees and depending on the quadrant, angles (up to 90 degrees) are measured away from the north or south (whichever is nearer) toward East and West directions.