Utah Forest Facts

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Forestry Terms

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This fact sheet contains a selection of terms helpful for understanding forests and forest management. Terms are arranged in the categories of general forestry, measurement of forest resources, silviculture, timber harvest, and taxation.

General Forestry

Disturbance – a natural or human-induced environmental change that affects species and structural composition in a stand (i.e., fire, harvest, insect outbreaks, etc.).

Forest types – associations of tree species that occur commonly due to similar site requirements; sometimes referred to as forest cover types.

Forest Water Quality Guidelines – Utah's voluntary set of standards applicable to forest practices (harvesting, chemical application, etc.), intended to minimize site damage, control erosion, maintain productivity of the forest and protect water quality on- and off-site.

Forestland – land that supports tree species of commercial value (i.e., spruce-fir stands, ponderosa pine, etc.); also referred to as timberland.

Reforestation – the re-establishment of forest cover through natural regeneration or artificial site preparation and tree planting.

Regeneration – the process of forest renewal through the establishment and development of young trees.

Residual stand – trees that remain following a cutting operation.

Riparian zone – an area adjoining a body of water, such as a lake or stream. These areas have special value and warrant careful management to protect their function as a buffer zone for controlling flooding and the input of nutrients, sediment, and other pollutants.

Sapling – a small tree between 2-4 inches DBH.

Sawlog, sawtimber – a log or standing timber large enough to produce lumber.

Seedling – a young tree less than 2 inches DBH or shorter than 4.5 feet.

Silviculture – the science of tending forest stands.

Slash – the debris that remains following a cutting operation, including branches, tree tops, and trees that were felled but not removed.

Properly-treated slash can provide wildlife habitat and protect developing tree seedlings. Improperly-treated slash can intensify insect or disease outbreaks or wildfire.

Snag – a standing dead tree or tree with a dead top, often used by wildlife as feeding or nesting sites.

Stand – a group of vegetation similar in species, age, and condition that is distinguishable from surrounding vegetation and manageable as a unit.

Stand density – the quantity of trees per unit area, usually described in terms of basal area per acre.

Stocking – a general description of the density of a stand as compared to the density that would optimize stand health and growth. Stands may be described as well stocked, understocked, or overstocked.

Succession – the natural process of replacement of one plant community by another over time.

Sustained yield – a timber management concept in which the volume of timber removed equals growth of the forest.

Watershed – all land and water within the boundaries of a drainage area.

Woodland – land that supports tree species that are not valuable commercially (i.e., pinyon, juniper, gambel oak, etc.).

Measurement

Basal area – a measurement in square feet of the cross-sectional area of a tree trunk at breast height; well correlated with a tree's crown size. Basal area (BA) of a stand is the sum of the basal areas of the individual trees per acre. Stand basal area is useful because it integrates the number of trees and their size.

Board foot – a unit that contains 144 cubic inches of wood, such as a board 1 inch thick, 12 inches long, and 12 inches wide.

Cruise – a survey or inventory process to determine species present and to estimate volume, quality, and stocking of a timber stand. A cruise usually is conducted by sampling representative plots to obtain estimates applicable to the entire stand.

DBH - diameter of a tree trunk at breast height or at 4.5 feet above ground level; the dbh and merchantable height of a tree are used to determine the volume of timber (board feet) in the tree.

Log rule or scale – a system used to estimate the amount of lumber, in board feet, which may be sawn from logs or trees of various lengths and diameters. There are several different rule systems (Doyle, Scribner, etc.), but Scribner is the scale most commonly used in Utah.

To avoid misunderstandings regarding timber volume and payment, the landowner and logging contractor should be certain they are using the same scale or rule.

Merchantable height – the point on the tree trunk above which the trunk diameter is too small to produce merchantable products. Merchantable height determines the number and length of logs that can be sawn from the tree and is a key factor in determining the volume of timber (board feet) available from a tree.

Thousand board feet (m.b.f.) – a unit of measure commonly used to determine the stumpage price or value of standing timber for its subsequent sale (i.e., $100 per m.b.f.).

Most timber species are measured using board foot volume, with the exception of aspen, which is sometimes measured and paid for by the ton.

Silviculture

Climax – refers to a stand at the final stage in the successional process. The species composition of climax stands remains stable in the absence of disturbance. For example, subalpine fir is considered climax on many sites as conditions required for regeneration – shade and a seed source – remain constant once the species becomes established.

Even-aged – refers to a stand of trees of relatively uniform age (within 10-20 years) that generally develop in response to a disturbance such as a stand-replacing fire or a clearcut.

Pioneer – refers to species that are adapted to establishment in disturbed areas; become established following fire, flooding, harvest, or other disturbances and often are intolerant of shade. These species are early-successional, subject to replacement by other species as succession proceeds.

Regeneration cut – a timber harvest intended to create conditions that favor the natural establishment of trees. There are several types of regeneration cuts, including clearcut, seed tree, selection, and shelterwood.

- *Clearcutting* – a harvesting and regeneration technique that removes all trees from a site. This method is used for species that require full sunlight for regeneration (aspen, lodgepole pine) and results in an even-aged stand.

- *Seed tree cut* – a regeneration cut in which mature, seed-bearing trees are left on site to provide seed for natural regeneration. This type of cut results in an even-aged stand structure, as seed trees usually are removed once the understory trees become established.

- *Selection cut* – a regeneration cut in which selected trees are removed individually or in small groups to create openings for natural regeneration, resulting in an uneven-aged stand structure.

Selection cut should not be confused with "selective" cutting, or high-grading. A well-designed selection cut removes both lesser quality trees and quality sawtimber, but leaves behind quality trees to provide seed for the future forest.

- *Shelterwood* – a regeneration cut that removes the overstory incrementally over a series of harvest entries. Gradual reduction of overstory trees provides protection and a seed source for the developing understory. Once complete, the residual stand has an even-aged structure.

Release – decreasing competition for trees in the residual stand following a thinning or harvest operation.

Rotation – the time interval required to establish and grow trees to a specified size, product, or condition of maturity.

Seral – early-successional; refers to a species or stand that occupies a site only intermittently, as one stage in a progressive succession of species. For example, pioneer species such as aspen often are seral, eventually replaced by more shade-tolerant species like subalpine fir in the absence of disturbance.

Shade-intolerant – species that prefer or require full sun for establishment, often pioneer species that cannot compete successfully in the understory of a mature stand; early-successional.

Shade-tolerant – species that prefer or require shaded conditions for establishment, often establishing in shelter provided by an established overstory; late-successional.

Thinning – removal of trees to encourage growth of the residual stand, sometimes referred to as intermediate cutting. Thinning may be considered pre-commercial (for trees less than merchantable size) or commercial (for trees large enough to have commercial value).

Timber stand improvement (TSI) – a treatment or combination of treatments intended to improve the growth and composition of a forest stand.

Uneven-aged – refers to a stand of trees of a variety of ages and sizes that generally developed at differing times following minor disturbances and changes in site conditions (i.e., some trees may become established in openings created by the removal of overstory trees, other shade-tolerant trees develop in the shade of the overstory, etc.).

Timber Harvest

Diameter-limit cut – a harvesting method in which all trees over a specified diameter are cut. This method usually results in high-grading – removing the biggest and best quality trees and leaving less desirable, malformed, and diseased trees to perpetuate the forest.

High-grading – harvesting the biggest, best quality trees from a stand without regard for the future stand productivity. Trees of poor quality and less desirable species are left on site to provide seed for stand regeneration.

Lump-sum sale – a timber sale in which a total price is agreed upon for the timber to be harvested before any timber is cut.

Salvage cut – the removal of dead, damaged, or diseased trees for commercial use.

Sanitation cut – the removal of dead, damaged, diseased, or infested trees in an effort to improve forest health.

Skidding – moving trees from where they fall after cutting to a loading area or landing. Skid trails are the paths created by this movement. Skidding methods include the use of tractors, horses, or cables.

Designating skid trails prior to felling and choosing a skidding method appropriate to site conditions are necessary to minimize damage to the soil and the residual stand.

Stumpage – often used in reference to stumpage price or commercial value of trees standing in the forest. Stumpage prices may be offered in reference to board foot volume ($100 per m.b.f.) , weight ($7 per ton), or truck loads ($40 per load). Stumpage price depends partly on species, log quality, market demand, and logging costs, which are determined by accessibility, volume per acre, total volume, ground conditions, harvesting method, and hauling distance.

Per ton and per load methods of determining payment do not take into account differences in value between species. If you are paid a set price per ton or per load for mixed loads of aspen, subalpine fir, and Engelmann spruce, you likely are not receiving fair market value for your timber.

Unit sale – a timber sale in which payment is based on an agreed upon price per unit to be removed (i.e.,$100 per m.b.f.).

Taxation

Amortization – the process by which the basis of an asset, such as the purchase cost of forestland, is recovered.

Basis – the capital investment in income-producing property; held in capital accounts until property is sold.

- *Original basis* – the total cost of acquiring the property (not its fair market value). In the case of inheritance, the basis of the property generally is "stepped-up" to the fair market value on the date of the death of the grantor. In the case of a gift of property, basis becomes the lower of the donor's basis or the property's fair market value.

- *Adjusted basis* – alteration of capital account balances to reflect changes in capital investment. For example, following expenditures to replant a portion of forestland, the timber account may be increased to reflect that expenditure as a capital investment in the timber resource. Conversely, the timber account would be decreased after recovery of some of that investment through income generated by a timber sale.

Capital account – an account used to keep track of the basis and quantity of certain assets; capital accounts related to forestlands often include a land account, timber account, equipment account, and building account.

Capital gains – profit on the sale of an asset intended for long-term investment. Timber sale income treated as a capital gain has tax advantages over treating the same income as a short-term gain or ordinary income.

Capitalize – the process of adding the amount paid for property and additional qualifying expenditures to a capital account.

Casualty loss – the complete or partial loss of property due to an identifiable event of sudden, unexpected, and unusual nature.

Depletion – the process of decreasing the value of a taxable natural resource. In the case of timber, it is the recovery of the owner's basis in timber following a sale or conversion.

Depreciation – the process by which the basis of assets, such as equipment and buildings, is recovered as the assets are used to produce income.

Form T – a federal tax form used to establish and report changes in basis to the IRS.

Income – money gained by an individual. The rate at which income is taxed is determined in part by the type of income.

- *Active income* – income generated by an activity in which the taxpayer materially participates.

- *Ordinary income* – income received in the form of wages, salary, rent, etc.

- *Passive income* – income generated by an activity in which the taxpayer does not materially participate.

Materially participate – participating in the operations of a trade or business activity on a regular, continuous and substantial basis. Material participation often results in substantial tax benefits.

One effective way to illustrate material participation is to develop and implement a forest management plan.

Present use valuation – property tax classification based on the land's present use or productivity for agriculture, horticulture, or forestry rather than for market value, which may be substantially higher.

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