



## Glossary

**adaptation:** a trait of an organism that helps it survive and reproduce; an aspect of its form, function, or behavior that changes over many generations that helps it out-compete other organisms. *Example:* If plants have deep roots, they are more likely to survive and reproduce during dry years. In this way, future generations are more likely to have the adaptation of deep roots, as well.

**alternate:** leaf pattern in which one leaf grows from each node on alternating sides of the stem

**animal:** organism that eats or absorbs nutrients from other organisms, which typically has specialized sense organs and can respond quickly to stimuli

**annual:** a plant that completes its life cycle in one year

**bark:** the outermost layer of the stems and roots of woody plants (shrubs and trees)

**biodiversity:** the variety of life in a community, habitat, or ecosystem

**biological soil crust:** a combination of living organisms including algae, bacteria, lichens, mosses, liverworts, and fungi that grow on or just below the surface of the soil

**biology:** the study of living things

**biome:** the world's major ecological communities which cover large areas; examples are sagebrush steppe, desert, forest, and grassland

**branch:** a stem of a tree or shrub; the main stem of a tree is called the trunk-

**bud:** the cells that will grow next year's leaves and branches. Located at the tips of branches in trees and shrubs, as well as a tree's top. Similar cells occur at the tips of roots.

**Bunchgrass:** native grasses most often found in the sagebrush ecosystem that grow in bunches. Like all grasses, they are herbaceous with narrow leaves (blades) and their flowers are hard to see.

**cambium:** a thin layer of living cells beneath a tree or shrub's bark. The cambium layer produces two kinds of cells: those that carry water and minerals from roots to leaves (xylem), and those that carry sugars and other nutrients from leaves throughout the plant (phloem).

**climate:** the average weather conditions of a place, such as temperature and rainfall levels, over a long period of time

**common name:** a name by which a species is known, rather than its scientific name; can vary by region or country, unlike scientific names

**community:** all the organisms in a habitat, which interact in a complex food web

**cone:** the part of plants in the conifer family that protects the reproductive structures, such as seeds

**contiguous:** connected; meeting or joining at the border

**controlled burn:** a fire set intentionally, with specific vegetation and weather prescriptions, in order to achieve a specific resource objective

**controlled experiment:** a scientific test (an experiment) in which only one variable at a time is changed and others are held constant so they will not affect the experiment's outcome; this lets researchers isolate the results

**crown:** the top of a tree, which holds most of its leaves, or the part of a shrub above the ground.

**crown fire:** fire that spreads in the crowns (tops) of trees and shrubs. Crown fires are usually ignited by surface fire. They are common in coniferous forests and shrublands.

**decompose:** when organic matter (matter that was once living) breaks down

**diversity:** a variety of different things; the number of different species, communities, or habitats; can also apply to human communities

**duff:** the layer of soil that is made up of decomposing plant and animal matter. Duff is below litter and above mineral soil. Deep duff can protect a tree or shrub's cambium and roots from fire until it dries out.

**ecological community:** all of the living things in an area including plants, animals, fungi and microorganisms

**ecosystem:** a community of organisms (living things such as animals, plants and fungi) and nonliving things (such as soil, water, air, sunlight), which interact with one another through a flow of energy and cycling of materials in the environment

**fauna:** the animal life of an area

**fineness:** the quality of being very thin, light, or soft; the finer the fuel, the more quickly it can ignite and allow fire to spread

**fire behavior:** the manner in which fuel ignites, flames develop, and fire spreads. Fire behavior changes with the interaction of fuels, weather, and topography.

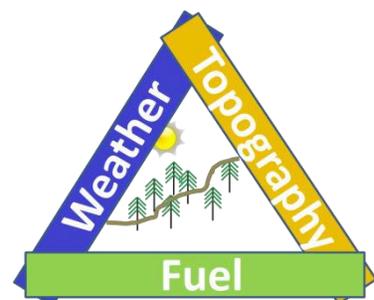
**fire suppression:** when natural or prescribed burning is not allowed

**fire triangle:** a model for understanding the three things most fires need to burn: heat, fuel, and oxygen

**fire behavior triangle:** a diagram (shown to the right) used by fire professionals to describe the complexities of wildland fire behavior; it includes weather, topography of the land, and fuel

**flora:** the plant life of an area

**flower:** the reproductive part of some plants; used to help make seeds



**fluffiness:** the measure of how light, soft, and/or puffed up something is; the more fluffy the fuel, the more quickly it can ignite and allow fire to spread

**forage:** food available to grazing animals

**forb:** a non-woody, broad-leaved plant (wildflower)

**fuel continuity:** the degree or extent of how uninterrupted fuels (vegetation) are, which affects a fire's ability to sustain combustion and spread

**fuels reduction:** using management techniques such as thinning, brush removal, and controlled burns to reduce the amount of surface fuels and prevent or lessen the severity of wildfires

**fuel moisture:** the measure of the amount of water in fuels (vegetation), expressed as a percent or fraction of oven-dry weight. (For example, a completely dry fuel has a fuel moisture content of 0%.) Fuel moisture is the most important fuel property controlling flammability.

**germinate:** when a plant starts to grow from a seed

**ground fire:** fire that burns fuels under the ground, mostly by smoldering combustion. These fires include duff like peat moss and dead roots.

**habitat:** the place or type of site where an organism lives

**herbaceous:** plants that do not have woody stems

**heartwood:** inner wood of trees and shrubs which gives strength and resists decay. It is often darker than the outer **sapwood**.

**hypothesis:** a prediction of what might happen in a scientific experiment

**insulation:** material that absorbs heat slowly and releases it slowly, so it can be used to protect an object from rapid heating or cooling

**invasive species:** a species, usually nonnative, that spreads and crowds out native species, causing harm to the environment, economy, and/or human health

**ladder fuels:** shrubs and small trees that fill the space between the forest floor and tree crowns with flammable material, so a fire might be able to “climb the ladder” from surface fuels into the treetops

**landscape:** the visible expanse of an area of land, made up of physical elements (landforms, water bodies), living elements (dominant flora and fauna), and human elements (buildings, roads, farms)

**leaf:** flattened, above-ground piece of a plant attached to a stem, which is usually green during the growing season; uses sunlight to make food for the plant through photosynthesis

**leaflet:** a division of a compound leaf that is similar to a leaf but is attached to a leaf vein instead of the plant's stem

**litter:** accumulation of dead plant material on the soil surface

**microscopic:** so small as to be invisible without a microscope

**mineral soil:** soil that has no plant or animal matter, so it cannot burn. It can help roots and burrowing animals survive fire.

**monoculture:** area consisting almost entirely of a single plant species

**mutation:** a rare change in the DNA of genes that creates genetic diversity

**natural selection:** the process in which organisms better adapted to their environment survive to produce more offspring

**noxious:** harmful, poisonous, or very unpleasant

**observation:** the act of noticing or paying attention using one's senses

**opposite:** a leaf pattern in which two leaves grow across from each other at the same node on the stem

**organic matter:** material such as plant leaves or animal waste that was recently part of a living thing; Many organisms such as worms and bacteria can eat it, helping it **decompose**, and it can burn when it is dry.

**organism:** individual living thing that can react to stimuli, reproduce, and grow

**perennial:** a plant that lives for more than two growing seasons

**phloem:** the outer layer of cells produced by a woody plant's cambium. Phloem cells carry sugars and other nutrients from photosynthetic tissue (mainly leaves) to other parts of the plant.

**photosynthesis:** the process of using energy in sunlight to convert water and carbon dioxide into carbohydrates and oxygen

**pioneer species:** plant species that grow first in an area without vegetation

**resprouting:** an adaptation of some plants which lets them regrow from the top of their roots when the part above ground is killed (usually by fire)

**root:** the part of a plant that collects water and minerals from the soil—and keeps it firmly planted in the soil. If the roots are buried deep in mineral soil, they may be able to survive a ground fire.

**sagebrush ecosystem:** an interconnected community dominated by sagebrush with 350+ species; a landscape with shrubs, grasses, and forbs (wildflowers) with few trees; receives most of its water from snow melt

**sagebrush steppe:** a shrub community dominated by sagebrush; a landscape with shrubs, grasses, and forbs with few trees which is generally flat and found at higher elevations

**sapwood (xylem):** layer of hollow wood cells inside the cambium that pumps water from roots to leaves

**scientific control:** group in an experiment that is not changed so it can be compared with a similar group that is changed

**scientific name:** the two-part Latin name assigned to a species; system established by botanist Carl Linnaeus in the 1700s

**seed:** a very tiny, living plant—just waiting to grow—plus a package of nutrients and a protective covering; used by plants to reproduce

**seed dormancy:** seeds of some plants can remain **dormant** (alive but not **germinating**) for long periods of time until their outside is damaged, causing them to **germinate** (start to grow)

**seed wing:** part of a conifer seed that helps it float away from the parent tree when it falls

**shrub:** woody plants that are usually smaller than trees and have multiple main stems instead of one large trunk

**shrub steppe:** a landscape that is a mixture of shrubs, grasses, and forbs with few trees

**slope:** the measure of how much an area of land rises (its steepness). Fires usually spread more quickly on steep slopes.

**soil:** fine rock particles mixed with decayed organic matter and tiny living organisms which cover Earth's surface

**species:** a particular kind of living thing; the populations of organisms whose members interbreed under natural conditions and produce fertile offspring

**snag:** a dead standing tree, often with a broken top; provides good habitat for wildlife, but also good fuel for fires

**stand density:** the amount of vegetation in a particular area

**standing fuels:** any combustible material that is arranged vertically, such as brush, trees, etc.

**stem:** the part of a plant that supports the leaves and buds

**steppe:** an area of grass- and/or shrub-covered plains, generally without trees and found at higher elevations. The climate of steppe ecosystems are semiarid and dry.

**succession:** the process of change in a community. After a severe fire, this is the way succession often works: Grasses and wildflowers may be the most obvious plants for a few years; then shrubs dominate, and finally trees (in forest ecosystems). In sagebrush ecosystems, shrubs can continue to dominate.

**surface fire:** a fire that burns in the litter, duff, grasses, and wildflowers on the forest floor but does not burn in the crowns of trees. In *FireWorks*, we use the term to describe fires that usually do not kill the mature trees in a forest. (Big sagebrush in the sagebrush ecosystem can also sometimes survive surface fires.)

**taproot:** a large root that grows straight down and is important for tapping groundwater

**trunk:** the central stem of a tree

**variable:** the part of an experiment that changes during the investigation

**wildland:** an area where the species present and the processes occurring are relatively unchanged from times before settlement by European Americans. Wildlands are often contrasted with agricultural and urban lands.

**wildland fire:** any fire, other than prescribed fire, occurring in a wildland (large natural area)

**xylem:** the inner layer of cells produced by a woody plant's cambium, also called sapwood. Xylem cells carry water and nutrients (mainly minerals) from roots to leaves.

**Simplified Trunk/Branch Cross Section**

