

Glossary excerpt from
Western Mogollon Plateau Landscape Assessment
Report Appendices¹

Accuracy assessment: An accuracy assessment is an effort to determine the quality of a data layer using statistical measures. Assessments may be either internal or external in nature. An internal assessment is undertaken using data that was also used to build the model (training data), while an external assessment involves data that were not used to build the model (independent data). We provide several statistical measures of accuracy and these are described below.

Adaptive management: Implementing policy decisions as an ongoing process that requires monitoring the results. It applies scientific principles and methods to improve resource management activities incrementally as the managers and scientists learn from experience and new scientific findings and adapt to social changes and demands.

Adaptive environmental analysis (assessment): The process steps that result in collaborative development of a set of goals and objectives that allows for the ability of new information and additional scientific information to be incorporated into the assessment process at any time.

Biodiversity (biological diversity): The variety of life and its process, including the variety in genes, species, ecosystems, and the ecological processes that connect everything in the ecosystem.

Coarse-filter analysis: An analysis of aggregates of elements such as cover type or plant community.

Commodity output: The supply of goods and services taken from or supplied by a resource area.

Community protection: Actions or programs undertaken for the purpose of protecting human lives, property, and infrastructure.

Conservation: The careful protection, utilization and planned management of living organisms and their vital processes to prevent their depletion, exploitation, destruction, or waste.

Critical habitat: According to federal law, the ecosystem upon which endangered and threatened species depend.

Crown fire: A fire that travels from one crown (or tree top) to another in dense stands of trees, killing most trees in its path. However, even in intense crown fires, unburned

¹ Definitions are from the following sources, *An Ecological Basis for Ecosystem Management, USDA GTR 246, May 1994, Society for Ecological Restoration Science & Policy Group. 2002 and Guiding Principles for Forest Ecosystem Restoration and Community Protection, Arizona Forest Health Advisory Council, September 2003*

strips may be left due to powerful, downward air currents. A passive (or dependent) crown fire relies upon heat transfer from a surface fire burning below crowns. An active (or independent) crown fire does not require transfer of heat from below the crowns.

Cumulative effects: The effect on the environment that results from the incremental impact of a proposed action when added to other past, present and reasonably foreseeable future actions.

Defensible space: The area around a structure where fuels and vegetation are treated, cleared or reduced to slow the spread of wildfire towards the structure. It also reduces the chance of a structure fire moving from the building to the surrounding forest. Defensible space provides room for the firefighters to do their jobs. Many communities are taking a more holistic approach of creating defensible neighborhoods rather than just individual properties.

Disturbance: A discrete event, either natural or human induced, that causes a change in the existing condition of an ecological system.

Disturbance pattern: Arrangement of disturbances over space and time.

Ecological approach: Natural resource planning and management activities that assure consideration of the relationship among all organisms (including humans) and their environment.

Ecological principles: The biological basis for sound ecosystem management through which ecosystem sustainability is ensured.

Ecological process: The actions or events that link organisms (including humans) and their environment such as disturbance, successional development, nutrient cycling, carbon sequestration, productivity, and decay.

Ecological unit: An assessment area based on vegetation, soils, geology, and geomorphology.

Ecology: The study of interactions between organisms and their environment, to include humans.

Eco-region: A continuous geographic area over which the macroclimate is sufficiently uniform to permit development of similar ecosystems on sites with similar properties. Eco-regions contain multiple landscapes with different spatial patterns of ecosystems.

Ecosystem: Living organisms interacting with each other and with their physical environment, usually described as an area for which it is meaningful to address these interrelationships.

Ecosystem function: The process through which the constituent living and nonliving elements of ecosystems change and interact, including biochemical processes and succession.

Ecosystem / ecological integrity: The completeness of an ecosystem that at a multiple geographic and temporal scales maintains its characteristic diversity of biological and physical components, spatial patterns, structure, and functional processes within its approximate range of historic variability.

Ecosystem process: The actions or events that link organisms and their environment, such as predation, mutualism, successional development, nutrient cycling, carbon sequestration, primary productivity, and decay. Natural disturbance processes occur with some periodicity.

Fire frequency (fire return interval): How often fire burns a given area; often expressed in terms of fire return intervals (e.g. fire returns to a site every 5-15 years).

Fire regime group: A generalized description of the role fire plays in an ecosystem. It is characterized by fire frequency, predictability, seasonality, intensity, duration, and scale (patch size), as well as regularity, or variability.

Ecological restoration: The process of assisting the recovery of an ecosystem that has been degraded, damaged, or destroyed

Ecosystem sustainability: The ability to sustain diversity, productivity, resilience to stress health, renewability, and/or yields of desired values, resource uses, products, or services from an ecosystem while maintaining the integrity of the ecosystem over time.

Exotic (non-native) species: A species introduced into an ecosystem through human activities.

Fine filter analysis: An analysis of components of aggregates such as plant communities in a cover type or species in a plant community.

Forest ecosystem health: A condition where the parts and functions of an ecosystem are sustained over time and where the system's capacity for self-repair is maintained, allowing goals for uses, values, and services of the ecosystem to be met.

Greater ecosystems: A regional complex of ecosystems with common landscape-level characteristics linked by wide ranging wildlife, landscape scale disturbance regimes, and, yes, human communities as keystone citizens among the community of organisms.

Healthy ecosystem: An ecosystem in which structure and functions allow the maintenance of the desired condition of biological diversity, biotic integrity, and ecological processes over time.

Hazardous fuel: Excessive live and dead trees and other vegetation and organic debris that increase the potential for uncharacteristically intense wildland fire and decrease the capability to protect life, property, and natural resources.

Human impact or influence: A disturbance or change in ecosystem composition, structure, or functions caused by humans.

Independent data: Independent or test data is data that is used to assess the accuracy of a model, but was not used in the creation of the model.

Invasive or Noxious weed: Any species of plant which is, or is liable to be, detrimental or destructive and difficult to control or eradicate and shall include a species and through investigation and hearing, shall be determined to be a noxious weed.

Landscape: An area composed of interacting ecosystems that are repeated because of geology, land form, soils, climate, biota, and human influences throughout the area. Landscapes are generally of a size, shape and pattern which are determined by interacting ecosystems.

Natural disturbance regime: A natural disturbance (e.g. fire, insect outbreak, flood) with a characteristic frequency, intensity, size, and type that has influence on an ecosystem over evolutionary time.

Old growth tree: An old tree, one that exhibits the complex structural characteristics associated with the oldest age class of trees in a group, clump or stand. In today's forests, an old growth tree is one that has been present since before the onset of commercial logging and fire exclusion. These trees are sometimes referred to as pre-settlement trees. These trees typically have orange or yellow platy bark.

Prescribed fire: A management fire ignited to meet specific fuel reduction or other resource objectives. All prescribed fires are conducted in accordance with prescribed fire plans.

Range of natural variability: The spectrum of possible natural conditions in ecosystem composition, structure, and function considering both temporal and spatial factors that would have existed if the dominant Euro-American culture had never arrived.

Risk to communities: The risk associated with adverse impacts to communities resulting from unwanted wildfire.

Reference conditions: Conditions characterizing ecosystems composition, structure, and their variability.

Remote sensing: Any technique for analyzing landscape patterns and trends using low altitude aerial photography or satellite imagery. Any environmental measurement that is done at a distance.

Resilience: The ability of an ecosystem to maintain the desired condition of diversity, integrity, and ecological processes following disturbance.

Restoration: Actions taken to modify an ecosystem in whole or in part to achieve a desired condition.

Scale: The degree of resolution at which ecological processes, structures, and changes across space and time are observed and measured.

Sustainability: The ability of an ecosystem to maintain ecological processes and functions, biological diversity, and productivity over time.

Training data: Data that are used to create a model. In the case of ForestERA data layers, training data is normally data from ground measurements that are used along with predictive variables to create our vegetation or wildlife data layers. Training data can also be used for the purpose of internal accuracy assessments.

Watershed: An area of land with a characteristic drainage network that contributes surface or ground water to the flow at that point: a basin or a major subdivision of a drainage basin.

Wildland fire use: The management of naturally ignited wildland fires to accomplish specific pre-stated resource management objectives in pre-defined geographic areas outlined in Fire Management Plans.

Wildland-urban interface: The area or zone where structures and other human development meet to intermingle with undeveloped wildlands or vegetative fuel.

Glossary excerpt from
GUIDING PRINCIPLES FOR FOREST ECOSYSTEM
RESTORATION AND COMMUNITY PROTECTION
Arizona Forest Health Advisory Council
September 2003

Glossary

Adaptive Management

A type of natural resource management in which decisions are made as part of an ongoing process. Adaptive management combines planning, implementing, monitoring, research, evaluating, and incorporating new knowledge into management approaches based on scientific findings and the needs of society. Results are used to modify future management methods and policy.

Biodiversity

The variety of life forms and processes including complexity of species, communities, gene pools, and ecological functions.

Biodiversity Bottleneck

A bottleneck in this context is the assemblage of environmental and/or human-caused factors or ecological “threats” that hamper the ability of ecosystems to support biodiversity at its current level through time. The bottleneck analogy is that fewer organisms (and their genes) in the bottle (current conditions) may be able to emerge on the other side (future conditions) due to resource limitations. (Source: this council.)

http://www.usembassy.it/file2001_04/alia/a1041704.htm;

<http://www.clat.psu.edu/biodiversity/defined/populations/populations-p04.html>

Community Protection

Actions or programs undertaken for the purpose of protecting human lives, property, and infrastructure. (Source: this council)

Crown fire

This is a fire that travels from one crown (or treetop) to another in dense stands of trees, killing most trees in its path. However, even in intense crown fires, unburned strips may be left due to powerful, downward air currents. A passive (or dependent) crown fire relies upon heat transfer from a surface fire burning below the crowns. An active (or independent) crown fire does not require transfer of heat from below the crowns.

Source: Barnes, Burton V., Donald R. Zak, Shirley R. Denton, and Stephen H. Spurr. 1997. *Forest Ecology* (4th Edition). John Wiley and Sons, Inc. New York, NY. p. 282. (See also Surface Fire)

Cumulative Effects

Individual actions when considered alone may not have a significant impact on the quality of the human environment. Groups of actions, when added together may have collective or cumulative impacts that are significant. Cumulative effects that occur must be considered and analyzed without regard to land ownership boundaries.

Consideration must be given to the incremental effects of past, present, and reasonably foreseeable related future actions of the Forest Service, as well as those of other agencies and individuals. Source: CEQ Regulations applied to US Forest Service regulations

<http://www.fs.fed.us/emc/nepa/includes/epp.htm#c151>

Defensible Space

This is an area around a structure where fuels and vegetation are treated, cleared or reduced to slow the spread of wildfire towards the structure. It also reduces the chance of a structure fire moving from the building to the surrounding forest. Defensible space provides room for the firefighters to do their jobs.(New Mexico State Forestry) Many communities are taking a more holistic approach of creating defensible neighborhoods rather than just individual properties.

Ecosystem

A spatially explicit, relatively homogeneous unit of the earth that includes all interacting organisms and components of any part of the natural environment within its boundaries. An ecosystem can be of any size - a log, pond, field, forest, range or grassland, or even the earth' s biosphere. (Society of American Foresters,1998.)

Ecosystem Function

The process through which the constituent living and nonliving elements of ecosystems change and interact, including biogeochemical processes and succession.

Ecosystem/Ecological Integrity

The completeness of an ecosystem that at multiple geographic and temporal scales maintains its characteristic diversity of biological and physical components, spatial patterns, structure, and functional processes within its approximate range of historic variability. These processes include: disturbance regimes, nutrient cycling, hydrologic functions, vegetation succession, and species adaptation and evolution. Ecosystems with integrity are resilient and sustainable.

Ecosystem Process

The actions or events that link organisms and their environment, such as predation, mutualism, successional development, nutrient cycling, carbon sequestration, primary productivity, and decay. Natural disturbance processes often occur with some periodicity (From Webster's dictionary, adapted to ecology).

Ecosystem Resilience

The ability of a system to respond to disturbances. Resiliency is one of the properties that enable the system to persist in many different states or successional stages.

Fire Frequency (Fire Return Interval)

How often fire burns a given area; often expressed in terms of fire return intervals (e.g., fire returns to a site every 5-15 years). (see also Fire Regime Group).

Fire Regime Group

A generalized description of the role fire plays in an ecosystem. It is characterized by fire frequency, predictability, seasonality, intensity, duration, and scale (patch size), as well as regularity or variability. (See also Fire Frequency)

Forest Ecosystem Health

A condition where the parts and functions of an ecosystem are sustained over time and where the system's capacity for self-repair is maintained, allowing goals for uses, values, and services of the ecosystem to be met.

Forest Ecosystem Restoration

Holistic actions taken to modify an ecosystem to achieve desired, healthy, and functioning conditions and processes. Generally refers to the process of enabling the system to resume acting, or continue to act, following the effects of a disturbance. Restoration management activities can be active (such as control of invasive species, thinning of over-dense tree stands, or redistributing roads) or more passive (more restrictive, hands-off management direction that is primarily conservation oriented). Frequently, a combination or number of actions is used sequentially to achieve restoration goals.

Hazardous Fuel

Excessive live or dead trees and other vegetation and organic debris that increase the potential for uncharacteristically intense wildland fire and decrease the capability to protect life, property, and natural resources.

Invasive or Noxious Weed (also applies to animals and other organisms)

Any species of plant which is, or is liable to be, detrimental or destructive and difficult to control or eradicate and shall include any species that the director, after investigation and hearing, shall determine to be a noxious weed. Arizona Revised Statutes 3-201
<http://www.azleg.state.az.us/ars/3/00201.htm>

Landscape

An area composed of interacting and inter-connected patterns of habitats (ecosystems) that are repeated because of the geology, landform, soils, climate, biota, and human influences throughout the area. Landscape structure is formed by patches (tree stands or sites), connections (corridors and linkages), and the matrix. Landscape function is based on disturbance events, successional development of landscape structure, and flows of energy and nutrients through the structure of the landscape. A landscape is composed of watersheds and smaller ecosystems. It is the building block of biotic provinces and regions.

Natural Disturbance Regime

A natural disturbance (e.g. fire, insect outbreak, flood) with a characteristic frequency, intensity, size, and type that has influence on an ecosystem over evolutionary time.

Old Growth Tree

This is an old tree, one that exhibits the complex structural attributes associated with the oldest age class of trees in an old growth stand. In today's forests, an old-growth tree is one that has been standing since before the onset of commercial logging and fire exclusion. These trees are sometimes referred to as presettlement trees. Old-growth ponderosa pine trees typically have orange, platy bark. Source: Schubert, G.H. 1974. Silviculture of southwestern ponderosa pine: the status of our knowledge. USDA Forest Service General Technical Report RM , <http://www.ancienttrees.org/cfogqa.php#1>

Prescribed Fire

Any fire ignited by management actions to meet specific objectives. All prescribed fires are conducted in accordance with prescribed fire plans. (See also Wildland Fire Use)

Risk to Communities

The risk associated with adverse impacts to communities resulting from unwanted wildland fire.

Surface fire

A fire that burns over the forest floor, consuming litter, killing aboveground parts of herbaceous plants and shrubs, and typically scorching the bases and crowns of trees. Source: Barnes, Burton V., Donald R. Zak, Shirley R. Denton, and Stephen H. Spurr. 1997. Forest Ecology (4th Edition). John Wiley and Sons, Inc. New York, NY p. 281 (See also Crown Fire)

Sustainable (Sustainability)

Meeting the needs of the current generation without compromising the ability of future generations to meet their needs. Ecological sustainability entails maintaining the composition, structure and processes of a system, as well as species diversity and ecological productivity. The core element of sustainability is that it is future-oriented. (Committee of Scientists Report, 1999.)

Wildland Fire Use

The management of naturally ignited wildland fires to accomplish specific pre-stated resource management objectives in pre-defined geographic areas outlined in Fire Management Plans. (See also Prescribed Fire)

Wildland-Urban Interface

The area or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuel.

Unless noted, all definitions come from: "RESTORING FIRE-ADAPTED ECOSYSTEMS ON FEDERAL LANDS - A COHESIVE STRATEGY FOR PROTECTING PEOPLE AND SUSTAINING NATURAL RESOURCES" USDI/USDA Draft unpublished document, pp. 74-78, 12/19/2001.