

# Ponderosa Pine - Evergreen Oak Desired Conditions

**Operational Draft:** This document is prepared to provide guidance to Forest Plan revision teams. As this guidance is implemented, we expect to learn improved ways to do this work. As we learn, this document will be updated. This document was reviewed and revised as appropriate in April 2010 to conform to the requirements of the 1982 Planning Rule provisions.

## General Description

Ponderosa Pine - Evergreen Oak generally occurs at elevations ranging from approximately 5,000 to 6,500 feet. It is dominated by ponderosa pine and can be distinguished from the Ponderosa Pine Forest by somewhat more even-aged dynamics, and by one or more well-represented evergreen oak species (e.g., Emory oak, Arizona white oak, silverleaf oak, grey oak). Other species include juniper species, pinyon pine species, and Arizona cypress in some locations. Ponderosa Pine - Evergreen Oak has two subclasses; one with a more continuous layer of **perennial grasses** and a relatively minor shrub component; and one with an understory of primarily **evergreen shrubs** including manzanita, turbinella oak, sumac species, and mountain mahogany species.

## Landscape Scale Desired Conditions (10,000+ acres)

At the landscape scale, the ponderosa pine-evergreen oak perennial grasses sub-type is composed of trees from structural stages ranging from young to old. Forest appearance is variable but generally uneven-aged and open; occasional areas of even-aged structure are present. The forest arrangement is in individual trees, small clumps and groups of trees interspersed within variably-sized openings of grass/forbs/shrub vegetation associations similar to historic patterns. Openings typically range from 10 percent in more productive sites to 70 percent in the less productive sites. Shrubs occur in low to moderate densities so as not inhibit ponderosa pine regeneration. Size, shape, number of trees per group, and number of groups per area are variable across the landscape. All structural stages of oak are present with old trees occurring as dominant individuals, and small groups occurring typically within openings. Denser overall tree conditions exist in some locations such as north facing slopes and canyon bottoms.

Old growth occurs throughout the landscape, generally in small areas as individual old growth components, or as clumps of old growth. Old growth components include old trees, dead trees (snags), downed wood (coarse woody debris) and structural diversity. The location of old growth shifts on the landscape over time as a result of succession and disturbance (tree growth and mortality).

The ponderosa pine –evergreen oak perennial grasses sub-type is composed predominantly of vigorous trees, but declining trees are a component and provide for snags, top-killed, lightning- and fire-scarred trees, and coarse woody debris (>3 inch diameter), all well-distributed throughout the landscape. Ponderosa pine snags are typically 18 inches or greater at DBH and average 1 to 2 snags per acre. Large oak snags (>10 inches) are a well-distributed component. Downed logs (>12 inch diameter at mid-

point, >8 feet long) average 3 logs per acre within the forested area of the landscape. Coarse woody debris, including downed logs, ranges from 3 to 10 tons per acre.

The composition, structure, and function of vegetative conditions are resilient to the frequency, extent and severity of disturbances and climate variability. The landscape is a functioning ecosystem that contains all its components, processes, and conditions that result from natural disturbances (e.g. insects, diseases, fire, and wind), including old growth. Grasses, forbs, shrubs, and needle cast (fine fuels), and small trees maintain the natural fire regime. Organic ground cover and herbaceous vegetation provide protection of soil, moisture infiltration, and contribute to plant and animal diversity and to ecosystem function. Frequent, primarily low severity fires (Fire Regime I) are characteristic including throughout goshawk home ranges. Natural and anthropogenic disturbances are sufficient to maintain desired overall tree density, structure, species composition, coarse woody debris, and nutrient cycling.

### **Mid-Scale Desired Conditions (100 - 1000 acres)**

At the mid-scale the ponderosa pine-evergreen oak perennial grasses sub-type is characterized by variation in the size and number of tree groups depending on elevation, soil type, aspect, and site productivity. The more biologically productive sites contain more trees per group and more groups per area. Openings typically range from 10 percent in more productive sites to 70 percent in the less productive sites. Tree density within forested areas generally ranges from 20 to 80 square foot basal area per acre.

The mosaic of tree groups generally comprises an uneven-aged forest with all age classes and structural stages present. Small areas of even-aged forest structure are present. The mix of natural disturbances sustains the overall age and structural distribution.

Fires burn primarily on the forest floor and do not typically spread between tree groups as crown fire. Mixed severity fires occur at less frequency and over smaller spatial extents than low severity fires occur.

Forest structure in the wildland urban interface (WUI)<sup>1</sup> may have smaller, more widely spaced groups of trees than in the non-WUI.

Forest conditions in goshawk post-fledging family areas (PFAs) are similar to general forest conditions except these forests contain 10 to 20 percent higher basal area in the mid-aged to old tree groups than goshawk foraging areas and the general forest. Goshawk nest areas have forest conditions that are multi-aged but are dominated by large trees with relatively denser canopies than other areas in the ponderosa pine-evergreen oak type.

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<sup>1</sup> Note –each Forest needs to provide the definition for WUI that they are using.

**Fine Scale Desired Conditions ( ≤10 acres)**

At the fine scale, trees typically occur in small groups in which they are variably-spaced with some tight clumps. Crowns of trees within the mid- to old-age groups are interlocking or nearly interlocking. Openings in between tree groups are variably-shaped and comprised of a grass/forb/shrub mix. Some openings contain individual trees, including large open-grown oaks. Trees within groups are of similar or variable ages and may contain species other than ponderosa pine. Size of tree groups typically is less than 1 acre. Groups at the mid-age to old stages consist of 2 to approximately 40 trees.

**Landscape Scale Desired Conditions (10,000+ acres)**

At the landscape scale, the ponderosa pine-evergreen shrub sub-type is composed of trees from structural stages ranging from young to old. Forest appearance is variable but generally uneven-aged and open; areas of even-aged structure are present. The forest arrangement is in small clumps and groups of trees interspersed within variably-sized openings of moderate to high density shrubs and limited grass cover. Openings typically range from 10 percent in more productive sites to 70 percent in the less productive sites. Size, shape, number of trees per group, and number of groups per area are variable across the landscape. All structural stages of oak are present, with old trees occurring as dominant individuals or in small groups. Denser tree conditions exist in some locations such as north facing slopes and canyon bottoms.

Old growth occurs throughout the landscape, generally in small areas as individual old growth components, or as clumps of old growth. Old growth components include old trees, dead trees (snags), downed wood (coarse woody debris) and structural diversity. The location of old growth shifts on the landscape over time as a result of succession and disturbance (tree growth and mortality).

The ponderosa pine –evergreen shrub sub-type is composed predominantly of vigorous trees and shrubs, but declining trees and shrubs are a component. Declining trees provide for snags, top-killed, lightning- and fire-scarred trees, and coarse woody debris (>3 inch diameter), all well-distributed throughout the landscape. Ponderosa pine snags are typically 18 inches or greater at DBH and average 1 to 2 snags per acre; large oak snags (>10 inches) are a well-distributed component. Downed logs (>12 inch diameter at mid-point, >8 feet long) average 3 logs per acre within the forested area of the landscape. Coarse woody debris, including downed logs, ranges from 3 to 10 tons per acre.

The composition, structure, and function of vegetative conditions are resilient to the frequency, extent and severity of disturbances and climate variability. The landscape is a functioning ecosystem that contains all its components, processes, and conditions that result from natural disturbances (e.g. insects, diseases, fire, and wind), including old growth. Dwarf-mistletoe occurs in less than 15 percent of host trees in uneven-aged forest structures and less than 25 percent in even-aged forest structures. Limited grasses, forbs, and a moderate density of shrubs, needle cast, and small trees maintain the natural fire regime. Organic ground cover and herbaceous vegetation provide protection of soil,

moisture infiltration, and contribute to plant and animal diversity and to ecosystem function. Low to mixed severity fires (Fire Regimes I and III) are characteristic in this type, including throughout goshawk home ranges. Natural and anthropogenic disturbances are sufficient to maintain desired overall tree density, structure, species composition, coarse woody debris, and nutrient cycling.

### **Mid-Scale Desired Conditions (100-1000 acres)**

At the mid-scale the ponderosa pine-evergreen shrub sub-type is characterized by variation in the size and number of tree groups depending on elevation, soil type, aspect, and site productivity. The more biologically productive sites contain more trees per group and more groups per area. Openings typically range from 10 percent in more productive sites to 70 percent in the less productive sites. Tree density within forested areas generally ranges from 20 to 80 square foot basal area per acre.

The mosaic of tree groups comprises a mix of even-aged and uneven-aged patches with all age classes and structural stages present. The mix of natural disturbances sustains the overall age and structural distribution.

Fires are of low to mixed severity burning on the forest floor as well as in the overstory. Crown fires occur in small patches.

Forest structure in the wildland urban interface (WUI)<sup>2</sup> may have smaller, more widely spaced groups of trees than in the non-WUI.

Forest conditions in goshawk post-fledging family areas (PFAs) are similar to general forest conditions except these forests contain 10 to 20 percent higher basal area in the mid-age to old tree groups than goshawk foraging areas and the general forest. Goshawk nest areas have forest conditions that are multi-aged but are dominated by large trees with relatively denser canopies than other areas in the ponderosa pine-evergreen shrub type.

### **Fine Scale Desired Conditions (≤ 10 acres)**

Trees typically occur individually or in small groups in which they are variably-spaced with some tight clumps. Crowns of trees within mid- to old-age groups are interlocking or nearly interlocking. Openings in between tree groups are variably-shaped and comprised of shrubs and limited grass cover. Some openings may contain a high density of shrubs and/or individual trees, including large oaks. Trees within groups are of similar or variable ages and may contain species other than ponderosa pine. Size of tree groups typically is less than 0.5 acre.

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<sup>2</sup> Note –each Forest needs to provide the definition for WUI that they are using.