



Strategy Habitat: Ponderosa Pine Woodlands

Ecoregions:

Ponderosa Pine Woodlands are a Strategy Habitat in the Blue Mountains, East Cascades, and Klamath Mountains ecoregions.

Characteristics:

The structure and composition of ponderosa pine woodlands varies across the state, depending on local climate, soil type and moisture, elevation, aspect and fire history. In Blue Mountains, East Cascades and Klamath Mountains ecoregions, ponderosa pine woodlands have open canopies, generally covering 10-40 percent of the sky. Their understories are variable combinations of shrubs, herbaceous plants, and grasses. Ponderosa woodlands are dominated by ponderosa pine, but may also have lodgepole, western juniper, aspen, western larch, grand fir, Douglas-fir, incense cedar, sugar pine, or white fir, depending on ecoregion and site conditions. In the Blue Mountains, ponderosa pine habitats also include savannas, which have widely-spaced trees (canopies of <10 percent) that are generally more than 150 years old. The structure of a savanna is open and park-like with an understory dominated by fire-adapted grasses and forbs. In the Blue Mountains and East Cascades ecoregions, ponderosa pine habitats generally occur at mid-elevation and are replaced by other coniferous forests at higher elevations. In the Klamath Mountains ecoregion, pine or pine-oak woodlands occur on dry, warm sites in the foothills and mountains of southern Oregon. Here, pine woodlands are usually dominated by ponderosa pine, but may be dominated by Jeffrey pine, depending on soil mineral content, fertility, and temperatures. The understory often has shrubs including green-leaf manzanita, buckbrush, and snowberry. Pine-oak woodlands are found primarily in valley margins and foothills on rolling plains or dry slopes. The structure is park-like with an open grassy understory, but may also have a shrubby understory. Throughout Oregon, the open structure of ponderosa pine habitats were historically maintained by frequent, low-intensity surface fires.

Conservation Overview:

Ponderosa pine habitats historically covered a large portion of the Blue Mountains ecoregion, as well as parts of the East Cascades and Klamath Mountains. Ponderosa pine is still widely distributed in eastern and southern Oregon. However, the structure and species composition of woodlands have changed dramatically. Historically, ponderosa pine habitats had frequent low-intensity ground fires that maintained an open understory. Due to past selective logging and fire suppression, dense patches of smaller conifers have grown in the understory of ponderosa pine forests. Depending on the area, these conifers may include shade-tolerant Douglas-fir, grand fir and white fir, or young ponderosa pine and lodgepole pine. These dense stands are vulnerable to drought stress, insect outbreaks, and disease. The tree layers act as ladder fuels, increasing the chances that a ground fire will become a forest-destroying crown fire. Many of these mixed conifer forests are located in Fire Regime Condition Class II or Condition Class III areas where the risk of loss of key ecosystem components is moderate or high.

Of particular concern is the loss of large-structured pine habitats. Based on a comparison between historic (1850) and current vegetation maps, less than 1 percent of the historic large-structured ponderosa pine is estimated to remain in the Blue Mountains and East Cascades ecoregions and approximately 7 percent remains in the Klamath Mountains (Source: Oregon Natural Heritage Information Center spatial data sets). Most of these large-structured ponderosa pine stands are greatly reduced in size and connectivity, occurring in a patchwork with much younger forests that are managed with shorter rotations to generate timber products. The younger forests still maintain their capacity to become older forests, and they often support many of the same wildlife species. However, large-structured ponderosa pine forests support some species, such as the white-headed woodpecker, that require large-diameter trees and an open understory and are sensitive to changes in the forest seral stage.

On federal land, ponderosa pine habitats are increasingly being restored or managed consistent with wildlife conservation goals through fuel reduction treatments and retention of large-diameter trees and high snags densities.

Ponderosa pine habitats are important for wildlife that prefer open, dry forests. In addition to the white-headed woodpeckers, other Strategy Species associated with ponderosa pine habitats include flammulated owl, Lewis' woodpecker, and several bats.

Limiting factors to Ponderosa Pine woodlands:

Factor: Altered fire regimes and addressing risk of uncharacter-

istically severe wildfire: Past forest practices and fire suppression have resulted in either dense growth of young pine trees with greater shrub cover or dense, young mixed-conifers stands, depending on local site conditions and natural climax species. These dense stands are at increased risk of uncharacteristically severe wildfires, disease, and damage by insects. Over time, some stands will convert to Douglas-fir and grand fir forests, which do not provide adequate wildlife habitat for species dependent on open ponderosa pine habitats. Particularly in the Blue Mountains and East Cascades, dense understories and insect-killed trees make it difficult to reintroduce natural fire regimes.

Efforts to reduce wildfire danger and improve forest health may help restore wildlife habitat but require careful planning to provide sufficient habitat features that are important to wildlife (e.g., snags, down logs, hiding cover for big game.) Hiding and thermal cover for deer and elk can be lost as a result of thinning ponderosa pine habitats. Loss of hiding cover can increase vulnerability to illegal hunting and other disturbances. It can also contribute to redistribution of elk to private property, potentially creating an unwanted situation for landowners.

In parts of the East Cascades and Klamath Mountains, increasing home and resort development in forested habitats makes prescribed fire difficult in some areas and increases risk of high-cost wildfires. Although many urban-interface "fire proofing" measures can be implemented with minimal effects to wildlife habitat, some poorly-planned efforts have unintentionally and unnecessarily harmed habitat.

Wildfire reforestation efforts should be carefully planned to create stands with tree diversity, understory vegetation and natural forest openings.

Approach: Use an integrated approach to forest health issues that considers historic conditions, wildlife conservation, natural fire intervals, and silvicultural techniques. Evaluate individual stands to determine site appropriate actions, such as monitoring in healthy stands or thinning, mowing, and prescribed fire in at-risk stands. Implement fuel reduction projects to reduce the risk of forest-destroying wildfires. Reintroduce fire where feasible. Thin stands where appropriate, and develop markets for small-diameter trees. Maintain historic native understory conditions.

Implement fuel reduction projects and (where appropriate) prescribed fire to reduce the risk of forest-destroying wildfires, considering site-specific conditions and goals. Fuel reduction strategies need to consider the habitat structures that are needed by wildlife (snags, down logs, and hiding cover). Design frequency and scale of prescribed fire to improve regeneration and establishment of native shrubs. However, lower log and shrub densities may be desirable in priority white-headed woodpecker areas, so sites need to be evaluated for appropriate understory vegetation management. Maintain areas of multi-species, dense woody plant hiding cover in patches. Maintain vegetation to provide screening along open roads, prioritize roads for closure based on transportation needs and wildlife goals, and/or manage road use during critical periods.

Monitor forest health initiatives efforts and use adaptive management techniques to ensure efforts are meeting habitat restoration and forest-destroying fire prevention objectives with minimal impacts on wildlife.

Work with homeowners and resort operators to reduce vulnerability of properties to wildfires while maintaining habitat quality. Highlight successful, environmentally sensitive fuel management programs.

In the case of wildfires, maintain high snag densities and replant with native tree, shrub, grass, and forb species. Manage reforestation after wildfire to create species and structural diversity, based on local management goals.

Factor: Loss of size and connectivity of large-structure ponderosa

pine habitats: Particularly in the Blue Mountains and East Cascades ecoregions, large-structure ponderosa pine habitats have been greatly reduced in size and connectivity by timber harvest, conversion to rural residential uses, and other activities. Few large blocks remain.

Approach: Maintain large blocks of large-structure ponderosa pine habitat. Plan reforestation to allow for corridors between habitat blocks. In areas of the East Cascades experiencing rapid development, work with local communities to minimize development in large blocks of intact habitat.



Photo © Wallowa Resources

Factor: Invasive species:

In parts of the Blue Mountains and East Cascades, invasives such as diffuse and spotted knapweed, Dalmatian and common toadflax are invading and degrading some ponderosa pine woodlands. Also in the Blue Mountains, the annuals cheatgrass and medusahead rye can result in an invasive vegetative understory that is highly susceptible to burning and

provides a “high-fuel” content that carries wildfire more easily than the native vegetation. Armenian (Himalayan) blackberry,

Scotch broom and several grasses are an issue in the Klamath Mountains.

Approach: Emphasize prevention, risk assessment, early detection and quick control to prevent new invasives from becoming fully established. Prioritize efforts and control key invasives using site-appropriate methods. Control wildfires in cheatgrass-dominated areas of the Blue Mountains. Fortunately, many areas of the Blue Mountains and East Cascades still have few invasives currently threatening ponderosa pine habitats. In these areas, invasive plants should be monitored and controlled as they first arrive when control is more efficient, practical, and cost-effective. Reintroduce site-appropriate native grasses and forbs after invasive control. Prescribed burning may be useful for management of some invasive species in the Klamath Mountains.

Collaborative Conservation Project: Restoring ponderosa forests, reviving the wood products industry

In the western United States, historical fire exclusion, livestock grazing and timber management practices have led to unhealthy forest conditions characterized by dense, diseased stands left vulnerable to intense wildfires. The warm-dry and hot-dry ponderosa pine forests of Wallowa County in the Blue Mountains are no exception. Based in the town of Wallowa, Community Smallwood Solutions (CSS) is helping to restore

Gentner’s Fritillary (*Fritillaria gentneri*) Habitat Restoration

Old cemeteries provide a taste of Oregon’s history, both cultural and natural. In addition to honoring Oregon’s early citizens, historic cemeteries often have healthy native plant communities. The Jacksonville Oregon Cemetery is the home for a rare lily and is the site of innovative conservation efforts. The recovery plan for the endangered Gentner’s fritillary identifies the need for “rehabilitation of habitat, restoration of sites of historical occurrence, and augmentation of existing populations.” The goal of population augmentation is to expand the geographic extent of existing populations, while simultaneously maintaining their natural densities and genetic integrity. The U.S. Fish and Wildlife Service, Oregon Department of Agriculture, the City of Jacksonville, the Jacksonville Woodlands Association, and the

Herbert Stone Nursery are some of the partners working together to achieve this goal. In 2002, over 3,000 fritillary bulblets were collected Jacksonville Oregon Cemetery and two other populations. The bulblets were transported to Oregon State University for propagation trials. By 2004, the initial bulblets had grown to full-sized bulbs, and were producing their own bulblets. Many of these large bulbs and bulblets have



Photo © Oregon Department of Agriculture

now been planted back out at the original collection sites, and appear to be establishing successfully. At the Jacksonville Oregon Cemetery, additional efforts to improve the fritillary habitat include planting other native plant species and controlling invasive plants. These efforts promise new life for Gentner’s fritillary populations.

ponderosa pine and mixed conifer forests in northeastern Oregon by buying underutilized species and small diameter trees that contribute to overstocked, fire-prone stands.

For many years it was standard practice to remove the larger, more valuable timber from the forest. This form of timber management reduced the amount of large-structure habitat for wildlife. Combined with active fire suppression, this has led to an abundance of smaller trees, which increased fuel loads and the likelihood of a severe fire event. Ponderosa trees are covered by bark that is well-adapted to low-grade fires, a type of disturbance that is a normal and necessary component of ponderosa pine ecosystems. However, wildfires made intense by the build up of fuel loads like underbrush and an excess of small trees can



Photo © Wallowa Resources

damage soil, destroy habitat utilized by wildlife and put people and property at risk. CSS encourages the practice of thinning by creating a financial incentive to remove trees of comparatively lower value. Thinning overcrowded forests enhances the gradual diversification in species composition and wildlife habitats and fosters a fire regime that is more in balance with historical conditions and ecosystem requirements.

Community Smallwood Solutions, a business venture of Community Solutions, Inc., the wholly owned for-profit of Wallowa Resources, exemplifies a commitment to forest restoration and economic development by utilizing small diameter trees from fuel-laden stands, resurrecting jobs in the battered wood products industry and increasing the overall value of forest property in northeastern Oregon.

Cooperative Conservation Project: Sustainable Logging Advances Forest Health on Tribal Lands

Forestry officials from around the world visit the Confederated Tribes of the Warm Springs Reservation to study one of the state's best examples of sustainable forest management. The tribes have adopted an integrated, holistic approach to managing their forests because they recognize that maintaining the ecological, cultural, spiritual and economic values of this resource is central to present and future tribal prosperity. With 15 to 20 percent of the tribes' operating budget and programs funded

Ponderosa Pine and Wildlife

Butterscotch or vanilla? On a warm summer day, the bark of ponderosa pine smells of butterscotch to some people and vanilla to others. Valuable to people and wildlife alike, ponderosa pine is an icon of the American West. Ponderosa pine, also called "yellow pine," is one of the most widespread and abundant tree species in the western United States. It grows on warm, dry sites with a short growing season and low summer precipitation. The distinctive bark is dark on young trees, but over time becomes cinnamon-tinged with deep furrows and scales resembling a jigsaw puzzle. Oregon's ponderosa pines have 5-10" long needles in bundles of three, although subspecies in other areas have two or five needles. The oval cones are three to six inches long and two to four inches wide and take two years to develop. Depending on site conditions, ponderosa pine trees generally grow 100-160 feet tall and two to five feet in diameter. Yet, they can grow even larger. The current state champion ponderosa pine, nicknamed "Big Red," is 162 feet tall, almost 29 feet in circumference, and nine feet two inches in diameter. "Big Red" may be over 500 years old and can be seen at LaPine State Park.

Ponderosa pine trees greater than 80 years old are well adapted to withstand fire, especially frequent, low intensity fires. Thick, scaly bark

protects the tender inner bark, the self-pruning growth habit reduces ladder fuels, and an open-crown structure reduces intensity of crown fires. The ponderosa pine is truly a tree of many uses, for people and wildlife. Native Americans ate the seeds and sweet inner bark and used the resin as a salve for rheumatism and backaches. Ponderosa pine has long been valued for lumber because it has clear, knot-free wood that is low-resin and resistant to splitting. It is used for a variety of purposes, but is currently especially prized for cabinetry and furniture.

Ponderosa pine trees provide food and shelter for many wildlife species. Mule deer browse on young buds. The seeds provide food for gray jays, white-headed woodpeckers, Clark's nutcrackers, Cassin's finch, red crossbills, evening grosbeaks, mice, chipmunks, and tree squirrels. Chipmunks and nutcrackers cache the seeds for later meals, which helps seed dispersal. An even wider variety of species use pine bark, leaves, and cavities for foraging, nesting and hiding. Currently many ponderosa pine stands are considered "unhealthy" due to fire suppression and past management practices, which has affected pine-dependent wildlife populations. However, current efforts to restore ponderosa pine forests include innovative approaches that could potentially benefit both wildlife and people.

by timber sales and 10 percent of their workforce employed by the forestry industry, the tribes have a significant stake in the future of their forests. Grounded in sustainability, the tribes' strategy for maintaining their forests prescribes best management practices that reduce the threat of disease and devastating wildfires while generating income for the tribe and protecting wildlife diversity.

The tribes have divided their forested lands into two types, unreserved and reserved. Within these, different land use designations and levels of protection apply. For instance, unreserved lands are split into timber, wildlife and riparian zones. In the timber zone, commercial tree harvest is permissible but priority is given to high value, diseased or overstocked stands. Sensitive species and habitat for game and non-game are also protected in the timber zone. The wildlife zone is managed for deer and elk habitat and a higher percentage of tree canopy is left intact. The riparian zone buffering streams is off limits to any timber harvest, although limited harvest may occur outside of these zones. Reserved lands are strictly managed for recreational, cultural and ecological values and human meddling in natural processes is discouraged.

Striving for forest health by carefully managing the resource base for a range of values has turned into an opportunity for the tribe. In 2003,

the tribes had their forests certified by Smartwood, an organization accredited by the Forest Stewardship Council (FSC), which is the gold standard in sustainable forest management. Smartwood determined that the tribes' responsible management of timber, wildlife and recreational resources and their solid standing with local stakeholders qualified for FSC certification. To become 'certified' under FSC means that a forestry operation must meet FSC's high environmental, social and economic standards and be vetted by an approved third party like Smartwood.

While the tribes have been committed to forest stewardship for some time, certification is a market-based incentive that guides like-minded consumers towards products and brands they wish to support. With its logo, FSC gives tribes brand recognition that in turn helps consumers identify wood products made from well-managed forests.

"By choosing to have our forests certified by FSC we are reinforcing the priorities of our integrated resource management plan," says Robert Brunoe, Director of the Natural Resources Branch for the Confederated Tribes of the Warm Springs Indian Reservation. "We are also maximizing the visibility and value of our wood products in a marketplace that rewards sustainable practices."

Snags: Wildlife Condos



Photo © Bruce Newhouse

Also known as snags, dead trees provide food and shelter for a remarkable variety of wildlife. Carpenter ants and termites colonize dead trees and are food for woodpeckers and bears. Bats use crevices behind bark for roosting, and brown creepers use

them for nesting. Using especially adapted skulls and bills, woodpeckers drill holes and carve cavities in wood. The cavities provide shelter and a place to raise young for the woodpeckers, and later provide homes for owls, songbirds, squirrels, bats, and martens. Landowners and land managers

can provide snag habitat by retaining snags during management activi-

ties and creating snags by topping, girdling or inoculating trees with certain fungi. The diameter of snags should vary across the landscape, but large-diameter snags are particularly important to some wildlife



species. Because snags frequently last only 10-30 years, depending on species and climate, snag management should plan for future as well as