

# BIRD-FRIENDLY MANAGEMENT PRACTICES FOR PONDEROSA PINE FORESTS

Ponderosa pine (*Pinus ponderosa*) forests provide critical habitat for wildlife, including many birds that are uniquely adapted to these forests for foraging and nesting. Prior to European settlement, these forests were historically shaped by frequent, mixed-severity fires that promoted heterogeneity in tree age and size and maintained openings with a rich understory of grasses, forbs and shrubs.

Ponderosa pine forests have been drastically altered from their historical conditions due to fire suppression, logging pressure and changes in grazing patterns. This has led to dense overgrowth, even-aged stands, compromised ecological function and increased risk of severe wildfires and insect and disease outbreaks. As a consequence, biodiversity has also declined.

Proactive restoration of these landscapes involves reestablishing forest structure and function, improving habitat for wildlife, protecting values at risk and building long term resilience to future disturbance.

## ROLE OF DISTURBANCE

Natural disturbances such as fire, insects and diseases, storms and lightning play a crucial ecological role in maintaining forest structure and function. Before European settlement, ponderosa pine forests were shaped by frequent (1-40 years), mixed-severity fires that created a shifting mosaic of habitats by thinning dense understories, creating gaps in the canopy and promoting regeneration of fire-adapted species. This dynamic process supports biodiversity, recycles nutrients and reduces the risk of stand-replacing fires.

Wildlife, especially birds, have evolved with and depend on these habitat elements created by fire. For example, the Olive-sided Flycatcher often nests in openings with scattered snags, using them as perches to hunt insects. Similarly, the Mountain Bluebird benefits from open, grassy spaces created by low to moderate severity burns.

A primary goal of restoration is to reestablish habitat heterogeneity and enable mixed severity fires that, in turn, support diverse wildlife adapted to different successional stages and structural features. This is a win-win strategy for improving habitat and increasing resilience to wildfires.



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## SPECIES SPOTLIGHT

### PYGMY NUTHATCH

*Sitta pygmaea*



Closely associated with ponderosa pine forests, Pygmy Nuthatches nest in both dead and live trees, often adapting existing cavities. They forage for insects in bark crevices and needle clusters.

**Management Tip:** Retain diverse tree structure, snags and forest openings.

### FLAMMULATED OWL

*Psiloscops flammeolus*



Flammulated Owls prefer open, old growth ponderosa pine forests with some areas of dense foliage for nesting and foraging. As a secondary cavity nester, they often use cavities excavated by woodpeckers in both living trees and snags.

**Management Tip:** Retain large diameter snags as well as mature trees.

### MERRIAM'S TURKEY

*Meleagris gallopavo merriami*



Inhabiting the mountains of the Western U.S., Merriam's Turkeys roost in large, mature ponderosa pines and utilize grassy openings for brood rearing.

**Management Tip:** Maintain diversity in forest structure, including a robust understory.

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# MANAGEMENT CONSIDERATIONS

Ponderosa pine forests with different aged trees, varied tree spacing and flowering understories create important forest diversity that benefits birds. These management considerations can be applied on all parcels, regardless of size, and often foster co-benefits such as wildfire risk reduction and improved grazing, among others.



## INCREASE HETEROGENEITY

**Intro:** Historically, ponderosa pine forests - shaped by frequent fires - had lower tree density and a more open structure with gaps and patches of trees of various ages and sizes, which created rich habitat diversity.

**Action:** Reduce the number of trees in overgrown forests. Depending on the specific conditions, the stand should have a mix of individual trees, small groups of trees of different ages and sizes, and open spaces spread throughout.

**Benefit:** American Goshawks and many other birds rely on this patchwork of habitat for foraging and nesting. Goshawks often nest in dense stands of trees near forest openings where they can hunt their prey.

*A healthy ponderosa pine forest has trees of different ages spaced out in a patchy pattern. The open canopy allows sunlight through and promotes the growth of grasses, shrubs, and other plants. There are also standing dead trees and fallen logs on the ground. This mix of structural features provides food, shelter, and space for diverse wildlife. Illustration by: Evelyn Neel.*



## RETAIN OLD TREES, SNAGS AND DOWNED WOOD

**Intro:** Mature trees, standing dead trees and fallen logs support critical food sources and provide nesting/roosting sites for many birds.

**Action:** Prioritize the retention of large diameter trees. Old growth ponderosa pines typically self prune their lower branches and have thick, fire-resistant bark, making them well-adapted to withstand low severity fires. Retain at least 1-3 large snags per acre (when feasible, in clumps).

**Benefit:** Snags provide important habitat for cavity nesters, such as Western Bluebirds. They also provide a buffet of insects and serve as perches for raptors. Scattered downed logs and coarse woody debris provide habitat for insects, rodents, reptiles and amphibians - good prey sources for birds.



## CREATE OPENINGS TO PROMOTE DIVERSE UNDERSTORY

**Intro:** Meadows and other openings allow more sunlight to reach the forest floor, which promotes the growth of grasses, forbs and shrubs, and slow the spread of wildfire. Openings created by disturbances (i.e. fires, wind etc.) facilitate tree regeneration, leading to uneven-aged forest structure.

**Action:** Design openings that mimic those formed by natural disturbances. The size, shape and spacing of openings should be guided by site-specific conditions.

**Benefit:** Understory vegetation is critical for birds. Hummingbirds forage on flowering plants; flycatchers, nighthawks and swallows forage for insects in the openings; and tanagers feed on fruiting shrubs that thrive in open canopy forests.