Southern Oregon forest restoration may take precedence over spotted owl habitat

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Credit: Oregon State University

Restoring parts of the Fremont-Winema National Forest in southern Oregon to withstand a warmer, more fire-prone future may require thinning young trees and promoting the growth of large, old ponderosa pine.

However, such activities may not maintain habitat for northern spotted owls, which surveyors have detected in these forests over the past several decades, researchers say in a recent study.

The owl, which is listed as threatened under the Endangered Species Act, tends to prefer dense forests with older trees for nesting and foraging purposes. That presents forest managers with a challenge—in the drier part of its range, more dense forests may also increase the likelihood of severe fires or drought-induced mortality. This could destroy large old trees as well as owl habitat.

To shed light on historic conditions in owl habitat and other forest characteristics, researchers studied changes in density, tree size and other aspects of a 98,000-acre forest near Chiloquin in Klamath County. They found that, since the 1920s, the density of relatively small trees—ponderosa pine as well as white fir and Douglas fir—has increased by 600 percent across the study area

Inspiration for the study came from K. Norman Johnson, professor in the College of Forestry at Oregon State University. He discovered detailed tree inventories done between 1914 and 1924 for the part of the Fremont-Winema National Forest that was in the Klamath Reservation.

With Keala Hagmann and Debora L. Johnson of Applegate Forestry in Corvallis, the researchers compared the inventories to modern records and published their findings in *Forest Ecology and Management*.

The forest on the east side of the Cascades is not considered prime owl habitat. It comprises "an isolated island," the researchers said, on the eastern edge of spotted owl habitat in a fire-prone environment. Northern spotted owls have been known to reproduce and forage in these forests, although at lower rates than in areas west of Klamath Lake or on the west side of the Cascade Range.

Since the forest is somewhat removed from higher-quality spotted owl habitat in the Cascades, the researchers considered whether restoring the forest to a more open condition dominated by fire- and drought-tolerant

trees—which would be more resilient to fire—would impede survival and recovery of the northern spotted owl population.

They found that, in the past, these predominantly open-canopy forests featured a complex mosaic of trees, shrubs and open grasslands dominated by large ponderosa pine. Such conditions are inconsistent with northern spotted owl habitat as currently defined.

However, the researchers said such a landscape provides other desirable values. Large pines and predominantly open-canopy forests with fine-scale variability in patterns of tree density and openings provide unique ecological functions.

A number of areas that are a high priority for northern spotted owls are also high priority for restoration, given the abundance of old fire- and drought-tolerant trees, creating a potential conflict.

"The analysis stems from fundamental questions about prioritizing single species management, even at-risk species, over forest restoration in areas where desired future conditions are consistent with historical conditions," said Hagmann. "Northern spotted owl habitat, as measured by current metrics, was lacking historically, and the forest is now vulnerable to disturbance processes like fire and drought that historically maintained this area as predominantly open-canopy forest."

The decision to prioritize restoration over habitat may depend on whether the area contributes to owl survival and recovery and the degree to which habitat, created as an unintended consequence of public policy, is at risk of loss to uncharacteristic stand-replacing fire or extensive drought-induced mortality.

"Forest restoration generally considers historical conditions as a starting point," said Norm Johnson. "Landscape context matters."

The presence across the landscape of many large, old ponderosa pines and the absence of large, treeless areas in the historical record, said Hagmann, suggests that such severe fires were uncommon.

"Historically, frequent fire strongly influenced this landscape, resulting in open-canopy ponderosa pine and mixed-conifer forests dominated by fire- and drought-tolerant trees," she said. Since then, fire suppression and other management actions have allowed trees to fill in areas that had been open. As a result, more densely packed trees fuel uncharacteristically severe fires.

"Large and old fire- and drought-tolerant trees are the structural backbone of dry, fire-prone forest ecosystems and make many unique contributions to ecological function," Hagmann added. "If the remaining, substantially reduced population of large and old fire- and drought-tolerant trees are lost to fire, drought, or competitive stress, it would take centuries, if ever, to replace them and their ecological functions."

Provided by Oregon State University

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