

Frequent, low-severity fire supports habitat for threatened owls: Study yields insights for wildlife habitat management

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An adult Mexican spotted owl (*Strix occidentalis lucida*) on the Lincoln National Forest in southern New Mexico, USA. Credit: USDA Forest Service / *Fire Ecology* (2024). DOI: 10.1186/s42408-024-00271-1

Walking through the dappled light of a southwestern forest at dusk, scientists focus their eyes aloft. Their quarry? A Mexican spotted owl perched high in the overstory. New research from a collaborative group of scientists from the USDA Forest Service, Bird Conservancy of the Rockies, and the U.S. Fish and Wildlife Service found that frequent, low-severity fire supported owl habitat, but high-severity fire was detrimental.

The study is [published](#) in the journal *Fire Ecology*.

This finding suggests a potential win-win: forest management activities that can help to return historic low-frequency fires to the landscape and reduce risk of more severe wildfires will likely benefit Mexican spotted owls too.

The Mexican spotted owl is a Threatened species that inhabits forests and canyonlands in the southwestern United States. These owls often live in forests that are at high risk of stand-replacing fire—and yet at the same time, there is concern that forest management projects that can reduce wildfire risk, like thinning or prescribed fire, could remove or alter important habitat characteristics that owls depend on for their survival.

Understanding how these owl populations respond to different fire regimes and how climate is altering fire regimes is helping wildlife and forest managers develop more robust conservation strategies that include these short-term and long-term tradeoffs.

Lead author Gavin Jones, a research ecologist with the Forest Service Rocky Mountain Research Station, began studying spotted owls over a decade ago. "We have very little hard data showing us how Mexican spotted owls respond to fire, which is a need-to-know piece of information for managers in the Southwest. This study is the first to do it

with long-term, robust population monitoring data."

As part of this long-term, collaborative study, Jones and his co-authors collected and analyzed eight years of monitoring data from Mexican spotted owl breeding pairs. They found owl pairs occupied sites at higher rates when these sites experienced more frequent fires in the previous three decades to the study. In contrast, they found owl pairs persisted at lower rates at sites that experienced more extensive high-severity fire.

Rebecca Kirby, regional wildlife ecologist with the Forest Service Southwestern Region, sees this project as an opportunity to support knowledge transfer between scientists and land managers.

"We really value this long-term partnership with Bird Conservancy of the Rockies and the U.S. Fish and Wildlife Service. It's enabled us to track the trends of these Threatened owls over time," Kirby said.

"Our collaboration with the Rocky Mountain Research Station leverages this long-term, ongoing dataset to generate new information about owls and fire, which is crucial to making management decisions on our national forests and grasslands."

Overall, this research implies that management activities that are intended to reduce megafire risk—like prescribed burning and mechanical thinning—will likely promote both Mexican spotted owl conservation and more resilient [forest](#) landscapes.

Jones concludes, "What we found is almost exactly what we expected: Mexican spotted owls appear to be well-adapted to historical frequent-fire regimes. If we can get that type of [fire](#) back on the landscape, it should bode well for the species and its recovery."

More information: Gavin M. Jones et al, Frequent burning and limited stand-replacing fire supports Mexican spotted owl pair occupancy, *Fire Ecology* (2024). [DOI: 10.1186/s42408-024-00271-1](https://doi.org/10.1186/s42408-024-00271-1)

Provided by USDA Forest Service

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