

Why large forest fires may not be a big threat to some endangered animals

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A new study in *The Condor: Ornithological Applications* shows that certain endangered owls may continue to persist and even flourish after large forest fires.

Throughout western North America, longer, hotter fire seasons and dense fuels are yielding more frequent, larger, and higher-severity wildfires. Spurred by climate change, megafires in the region are often

characterized by unusually large, continuous patches of high-severity fire in mature forests.

The Great Gray Owl is an endangered species in California. The Great Gray Owl population was recently estimated at fewer than 100 pairs in the state. The 2013 Rim Fire burned 104,000 acres in Yosemite National Park and Stanislaus National Forest, making it the largest recorded fire in California's Sierra Nevada region. The fire perimeter contained 23 meadows known to be occupied by Great Gray Owls during the decade prior to the fire, representing nearly a quarter of all known or suspected territories in California at the time.

Researchers analyzed 13 years of Great Gray Owl detection data (from 2004 to 2016) from 144 meadows in the central Sierra Nevada, including meadows inside and outside the Rim Fire perimeter in Yosemite National Park and on Stanislaus National Forest.

During three years of surveys after the fire, Great Gray Owls were found at 21 of 22 meadows surveyed within the fire perimeter that were occupied during the decade prior to the fire. The researchers surveyed 144 meadows in at least one year prior to the 2013 Rim fire; 54 of these were also surveyed during at least a year after the fire. Researchers found Great Gray Owls at least once at 89 meadows, with detections at 68 of 92 meadows in Yosemite National Park, and at 21 of 52 meadows outside of National Parks.

Rather than decreasing after the fire, persistence of owls at meadows actually increased on both National Park Service and other lands, while colonization rates exhibited no significant change. Great Gray Owls appear to have been largely resilient to effects of the Rim Fire during the three years after it burned.

Stable occupancy and increased site persistence after fire suggest an

overall resilience to the effects of the fire during the three years after it burned. Any [negative effects](#) stemming from loss in nesting habitat appear to have been counterbalanced by other factors. Because Great Gray Owls most typically nest in the rotting remains of substantially deteriorated trees, fire could potentially enhance Great Gray Owl nesting habitat by killing large trees that become suitable nesting structures. Another positive effect of fire could be to enhance conditions for meadow-dwelling rodent populations that constitute the primary prey of Great Gray Owls.

Many researchers and land managers believe that forest thinning to reduce fire risk is critical to ensure the persistence of wildlife species associated with these forests. But this research suggests [forest](#) resilience treatments are not needed to protect Great Gray Owls, and conservation efforts might be better directed to other needs of the species.

"The Rim fire looked like a worst-case scenario for California's Great Gray Owls, because it was pretty much centered on the heart of the population, and affected up to a quarter of all the territories in California," said the paper's lead researcher, Rodney B. Siegel. "Our discovery that the owls remained and in many cases even continued to nest at the burned sites after the fire is good news for Great Gray Owls. We need to keep monitoring this population to find out if the owls will continue to use these burned sites over the longer-term, as the trees that were killed by the [fire](#) deteriorate and eventually fall."

More information: "Short-term resilience of Great Gray Owls to a megafire in California, USA," *The Condor: Ornithological Applications* [academic.oup.com/auk/article-1 ... i/10.1093/auk/duy019](https://academic.oup.com/auk/article-1.../i/10.1093/auk/duy019)

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