

Changing wildfires in California's Sierra Nevada may threaten northern goshawks

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Wildfire is a natural process in the forests of the western US, and many species have evolved to tolerate, if not benefit from it. But wildfire is changing. Research in the journal *Biological Conservation*, published by Elsevier, suggests fire, as it becomes more frequent and severe, poses a substantial risk to goshawks in the Sierra Nevada region.



How Northern Goshawks respond to fire is not well understood. The single study to date examined the effects of fire on nest placement and found that the birds avoided nesting in areas burned at high severity. The effects of fire on the birds' roosting and foraging <u>habitat</u> however may be more complex, because prey populations may temporarily increase in burned areas and improve their quality as a foraging habitat.

"To effectively manage and conserve wildlife, we need to understand how animals use the landscape across their life cycle," noted corresponding author Dr. Rachel Blakey at The Institute for Bird Populations and UCLA La Kretz Center for California Conservation Science.

Dr. Blakey and her colleagues at the institute wanted to better understand the habitat preferences of Northern Goshawks. In collaboration with scientists at the US Forest Service and the US Geological Survey Missouri Cooperative Fish and Wildlife Research Unit at the University of Missouri, the research team looked specifically at how goshawks use burned areas in the Plumas National Forest, California.

Twenty Goshawks were fitted with solar-powered global positioning system (GPS) tracking devices that monitored the habitats the goshawks chose for foraging and night-time roosting. Goshawks preferred forest stands with larger, more <u>mature trees</u> and higher canopy cover-also called "late seral" forest-for both roosting and foraging.

"While there was individual and sex-based variability in selection of habitat at the finest scales, at the larger spatial scales that are arguably most important for management, goshawks consistently selected for lateseral forest," added Dr. Blakey.

Unfortunately, late-seral forest is already in short supply in the western US and the attributes that make it attractive to Northern Goshawks also



put it at a high risk of large and severe wildfires. Further analysis of the study area showed that 80 percent foraging habitat and 87 percent of roost sites were designated a "High Wildfire Potential Hazard" by the US Forest Service.

Rodney Siegel, Executive Director of The Institute for Bird Populations and co-author of the study said "A lot of work by our organization and others over the past decade has shown that some wildlife species are quite resilient to forest fire and can even thrive in recently burned forests.

"But habitat selection by the Northern Goshawks we studied suggests that these birds, with their strong preference for late seral forest attributes like big trees and closed forest canopy, are jeopardized by changing fire patterns that reduce forest cover," added Dr. Siegel.

Dr. Siegel also notes that reducing wildfire risk in <u>goshawk</u> habitat will be a major challenge for forest managers. "The treatments to reduce risk of high-severity fire, including forest thinning and prescribed fire, may also reduce goshawk foraging and roosting habitat quality if they decrease canopy cover and fragment late-seral <u>forest</u>," said Dr. Siegel.

Dr. Blakey expects that the <u>foraging</u> and roosting habitat preferences seen in goshawks in this study are probably common to goshawks throughout the Sierra Nevada region, and perhaps western montane forests in general. Likewise, this preferred habitat is likely at risk of high severity fire across the region as well.

"Given that <u>fire</u> regimes are changing across the range of the Northern Goshawk, both in the US and across the species' distribution globally, the use of burned habitats by this species should also be investigated more broadly," concluded Dr. Blakey.



More information: Rachel V. Blakey et al, Multi-scale habitat selection by Northern Goshawks (Accipiter gentilis) in a fire-prone forest, *Biological Conservation* (2019). DOI: 10.1016/j.biocon.2019.108348

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