
AVIAN RELATIONSHIPS WITH WILDFIRE AT TWO DRY FOREST LOCATIONS WITH DIFFERENT HISTORICAL FIRE REGIMES

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Wildfire is a key factor influencing bird communities in western North American forests. We need to understand species and community responses to wildfire and how responses vary regionally to effectively manage for biodiversity in dry conifer forests. We compared avian relationships with wildfire burn severity between two locations of Arizona and Idaho. We predicted different responses to wildfire corresponding with regional differences in historical fire regime. We conducted point-count surveys for 3 years following wildfire (Arizona: 1997–1999; Idaho: 2008–2010) and used multispecies hierarchical models to analyze relationships of bird occupancy with burn severity. Consistent with our prediction for mixed-severity fire regimes characterizing the Idaho location, we observed proportionately more positive species occupancy relationships and, consequently, a positive species richness relationship with burn

severity in Idaho. We also observed the opposite pattern in Arizona, which was congruent with our prediction for the low-severity fire regime characterizing that location. Cavity nesters and aerial insectivores occupied more severely burned sites following wildfire, corresponding with predicted increases in nesting substrate and foraging opportunities for these species. In contrast, canopy-nesting foliage gleaners and pine-seed consumers exhibited negative relationships with burn severity. Congruence with species life histories and with patterns reported in the literature suggests generality of observed patterns. We therefore suggest that optimal management strategies for maintaining avian diversity could differ regionally. Specifically, intensive fuels management may be ecologically less appropriate for promoting biodiversity in areas such as the Idaho location where mixed-severity wildfires and dense forest stands were historically more common.