National Quail Symposium Proceedings

Volume 9 Article 23

2022

Avian Abundance and Diversity on Knoxville Wildlife Area in California Following the County Fire of 2018

Katherine S. Miller
California Department of Fish and Wildlife

Stacy Martinelli
California Department of Fish and Wildlife

Levi E. Souza
California Department of Fish and Wildlife

AVIAN ABUNDANCE AND DIVERSITY ON KNOXVILLE WILDLIFE AREA IN CALIFORNIA FOLLOWING THE COUNTY FIRE OF 2018

Katherine S. Miller[1]
California Department of Fish and Wildlife, Wildlife Branch, 1010 Riverside Parkway, West Sacramento, CA 95605, USA

Stacy Martinelli
California Department of Fish and Wildlife, Region 3, 3633 Westwind Boulevard, Santa Rosa, CA 95403, USA

Levi E. Souza
California Department of Fish and Wildlife, Wildlife Branch, 1010 Riverside Parkway, West Sacramento, CA 95605, USA

ABSTRACT

Wildfires can have negative impacts on wildlife during and immediately after a burn event, yet these fires are also necessary for plant succession and biodiversity. Knoxville Wildlife Area (KWA) in Napa County, California, USA is a diverse environment that contains oak woodlands, chaparral, grasslands, and riparian corridors. In July 2018, the County Fire burned 36,353 ha in the Northern California Interior Coast Ranges, including 2,429 ha on KWA. California Department of Fish and Wildlife employees used this opportunity to monitor avian abundance and diversity as the burned area revegetates. From 10 June through 14 June 2019, we began a pilot season of distance-based point counts on KWA. We conducted 5-minute point counts at 80 points spaced 1 km apart. Twenty points were within the burned area. We used the half cosine model in Program Distance version 7.2 to determine density for the 5 most frequently detected species. We detected 47 avian species; the most frequently detected species were California quail (*Callipepla californica),* acorn woodpecker *(Melanerpes formicivorus),* mourning dove *(Zenaida macroura),* California scrub-jay *(Aphelocoma californica),* and oak titmouse *(Baeolophus inornatus)*. California quail populations were slightly denser in the burned area (0.22 birds/ha, 95% confidence interval [CI] = 0.11–0.44), compared to the nonburned area (0.19 birds/ha, 95% CI = 0.12–0.31). Acorn woodpecker density was similar in the burned (0.59 birds/ha, 95% CI = 0.34–1.02) and nonburned areas (0.58 birds/ha; 95% CI = 0.42–0.80). Mourning dove, California scrub-jay, and oak titmouse populations were slightly denser in the nonburned area; however, 95% CIs overlapped. We conducted approximately approximately 1 year post-burn, and revegetation had started, due in part to the wet winter and spring. Birds were using the burned area, though not at significantly higher densities compared to the rest of the wildlife area. The coronavirus pandemic and a second fire prevented us from surveying the site in 2020 and 2021, but we intend to conduct point counts for at least 2 more years to further monitor avian response to wildfire.

Citation: Miller, R. S., S. Martinelli, and L. E. Souza. 2022. Avian abundance and diversity on Knoxville Wildlife Area in California following the County Fire of 2018. National Quail Symposium Proceedings 9:74. https://doi.org/10.7290/nqsp09RKk5

Key words: abundance, California quail, *Callipepla californica*, distance sampling, diversity, wildfire

---

[1] *E-mail: katherine.miller@wildlife.ca.gov*