



ARTICLE

Climate Corner, December 2017

California's Nesting Birds Adapting to Climate Change

A study looking at how hundreds of the state's nesting bird species respond to temperature changes found that they shifted their ranges to stay in their preferred temperature zones, or changed their timing to reflect changes in the emergence of resources they depend upon.

The authors compared data collected for 150 bird species in California's Coast Range and 160 bird species in California's Sierra Nevada from 1911–1940 with 2003–2010 resurveys from the same sites. They found that breeding dates have shifted approximately 5–12 days earlier, which reduced the average temperature for nesting by more than 1 °C. This temperature change is about the same as average regional temperatures have warmed over the same period. The authors hypothesize that by breeding earlier the birds can meet their resource needs without having to shift their ranges. “Phenological shifts conserve thermal niches in North American birds and reshape expectations for climate-driven range shifts” is available from the [PNAS website \(http://www.pnas.org/content/114/49/12976.short\)](http://www.pnas.org/content/114/49/12976.short) or for free [from the Beissinger Lab \(https://nature.berkeley.edu/beislab/BeissingerLab/publications/Socolar_etal_2017_PNAS.pdf\)](https://nature.berkeley.edu/beislab/BeissingerLab/publications/Socolar_etal_2017_PNAS.pdf) at UC Berkeley.

Different Historical Fire–Climate Patterns in California

With the California fire season still in full swing this year, this April article from the International [Journal of Wildland Fire \(http://www.publish.csiro.au/WF/WF16102\)](http://www.publish.csiro.au/WF/WF16102) seems more timely than ever. The authors looked at 100 years of data on the relationship between annual variation in the amount of area burned and seasonal temperatures. They found the following five things (abbreviated list from the article):

1. Seasonal variations in temperature appear to have had minimal influence on area burned in the lower elevation, mostly non-forested, landscapes;
2. temperature has been a significant factor in controlling fire activity in higher elevation montane forests, but this varied greatly with season;
3. current season precipitation has been a strong controller of fire activity in forests;
4. in largely grass-dominated foothills and valleys the magnitude of prior-year rainfall was positively tied to area burned in the following year; and
5. the strongest fire–climate models were on USFS lands in the Sierra Nevada Mountains, and these explained 42–52% of the variation in area burned; however, the models changed over time, with winter and spring precipitation being the primary drivers in the first half of the 20th century, but replaced by spring and summer temperatures after 1960.



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