

Changes in California's bird communities due to climate change

September 2 2009

As much as half of California could be occupied by new bird communities by 2070 according to a new study by PRBO Conservation Science (PRBO) and partners. The publication entitled "Reshuffling of species with climate disruption: A no-analog future for California birds?" is to be released in the open access peer reviewed journal *PLoS ONE* on September 2nd.

As the climate changes, bird species are expected to shift their distributions independently, in some cases resulting in combinations of co-occurring species that have not been seen before. These novel (or "no-analog") communities may disrupt complex webs of species interactions, with unanticipated consequences for species and ecosystems.

"We were surprised to see such a wide range of responses across the species we studied. We know that many species may shift their distributions in response to climate change, but these results suggest that the cumulative effect on community composition may be of equal or greater importance," according to the study's lead author, Diana Stralberg, PRBO Landscape Ecologist.

Researchers at PRBO Conservation Science, in collaboration with Stanford University, UC Santa Cruz, and the Klamath Bird Observatory, took advantage of a wealth of bird survey data and newly refined regional climate model projections for California to project current and potential future statewide distributions for 60 relatively common bird species. A few species, primarily those associated with coniferous

forests, were projected to shift their distributions upslope in similar ways as the climate changes. But other species that often occur together were projected to shift in very different ways, resulting in novel species assemblages. Individual species maps may be viewed online at www.prbo.org/cadc (click on the "where will the [birds](#) be" banner on the front page).

Dr. John Wiens, PRBO's Chief [Conservation](#) Science Officer and a co-author of the novel study said, "This is more than just an interesting finding about birds. Birds are nature's barometers. If birds occur in different combinations in the future, it's likely that other organisms such as insects and plants will as well. The reshuffling of bird assemblages that we project may just be the tip of the iceberg."

Using PRBO's science to project the effects of [climate change](#) on birds into the future has implications for how our ecosystems are conserved, managed and restored today. New and novel approaches will be needed to manage and conserve biodiversity. Single-species approaches will not work well in the context of rapidly-changing climate and ecological communities. Long-term ecological monitoring, flexible management strategies, and frequent communication between scientists, managers, and decision-makers will be needed more than ever.

Dr. Terry Root of Stanford University and another co-author of the publication explained, "We know climate disruption will result in major ecological surprises. This work provides yet another wake-up call to scientists, managers and the public struggling with managing biodiversity in the face of rapid environmental change."

More information: Stralberg D, Jongsomjit D, Howell CA, Snyder MA, Alexander JD, et al. (2009) Re-Shuffling of Species with Climate Disruption: A No-Analog Future for [California](#) Birds? *PLoS ONE* 4(9): e6825. [doi:10.1371/journal.pone.0006825](https://doi.org/10.1371/journal.pone.0006825)

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Citation: Changes in California's bird communities due to climate change (2009, September 2)
retrieved 20 April 2024 from <https://phys.org/news/2009-09-california-bird-due-climate.html>

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