

A mountain bird's survival guide to climate change

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Researchers at Yale University have found that the risk of extinction for mountain birds due to global warming is greatest for species that occupy a narrow range of altitude. In fact, a species' vertical distribution is a better predictor of extinction risk than the extent of temperature change they experience, the researchers report in the June 9 issue of the *Proceedings of the Royal Society B: Biological Sciences*.

"Birds allow us to do the first global assessment of the health of a whole large chunk of biodiversity at high altitudes in the face of global warming," said Walter Jetz, professor of ecology and [evolutionary biology](#) and co-author of the study along with colleague Frank La Sorte. "High-elevation species are essentially living on islands where every incremental increase in temperature is dramatically shrinking. Our global projections pinpoint hundreds of [bird species](#) in peril and often with nowhere to go."

As temperatures warm, scientists have found that mountain species respond by shifting to higher and cooler elevations. La Sorte and Jetz estimated the vulnerability of mountain species to [climate change](#) by looking at a variety of factors, including the birds' ability to move to higher elevations or to neighboring mountain systems.

The Yale team studied all one thousand species of birds living in high-elevation environments. The team then assessed how the distribution of these species across the mountain systems of the world coincided with projected temperature changes.

Under a scenario where the range of temperatures contract and species are unable to shift their ranges to higher elevations, the analysis showed that a full third of mountain bird species were severely threatened.

In a scenario where species have the option to shift their ranges to higher elevations, the number of mountain bird species threatened is halved, with species located on the tallest mountain systems receiving the greatest benefits.

While some species can move to neighboring mountains, bird species on isolated mountain systems were the most threatened.

The study highlights Africa, Australia, and North America as regions of particular concern for mountain biodiversity, where dispersal opportunities overall are the most limited.

Besides offering another call for action to prevent [global warming](#), La Sorte and Jetz said the study suggests that more effort should be placed on documenting species' vertical distributions and placing reserves in highland locations and along key elevational corridors to promote new habitat opportunities for [mountain](#) species.

"Understanding the biological consequences of climate change is one of the most pressing scientific challenges of our day," La Sorte said. "This is particularly true for mountains and the species that inhabit them, which are considered to be especially susceptible to climate change."

Provided by Yale University

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