

Climate change driving 'cost-of-living' squeeze in lizards

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A thorny devil in the desert. Credit: Kris Wild

Desert lizards are facing a 'cost-of-living' squeeze as global temperatures continue to rise, a new study finds. For a lizard, the 'cost-of-living' is tightly linked to its body temperature, which dictates both how much

food it needs and whether it can go outside to feed. Desert lizards are especially challenged because food is sparse, and it is often too hot to forage.

Published in *Science*, the [study found](#) climate warming can 'squeeze' desert lizard energy budgets by increasing the food they need just to survive while decreasing their time to find it.

Lead author and University of Melbourne researcher Dr. Kristoffer Wild said climate warming will affect species differently based on when they forage and illustrates the importance of tailoring conservation strategies to safeguard species populations.

"Cost-of-living is a concept humans are all too aware of, but the same concept applies to ectotherms—or cold-blooded animals—such as lizards. We just need to switch the currency from money to energy and realize that for lizards these costs and their ability to meet them depend on temperature," Dr. Wild said.

"Our study reveals that as deserts heat up, diurnal (day-active) lizards face a squeeze—needing more food while having less time to find it. On the other hand, nocturnal (night-active) lizards may benefit from warmer nights that allow more hunting time.

"In other words, it's like diurnal lizards paying higher bills with fewer work hours, while nocturnal lizards can counter high bills by gaining extra work hours during the warmer nights."

The researchers were able to predict the cost of living with a model that combines physics with biology. Co-author and University of Melbourne researcher, Professor Michael Kearney said they were able to test their model predictions against historical field data to quantify how climate warming impacts desert reptiles across continents.

"We were able to reconstruct, within two or three degrees, what a field biologist observed in the middle of the Australian and African deserts more than 50 years ago," Professor Kearney said.

"This gives us confidence to predict the direct effects of climate warming on these animals in the future.

"If we can better understand the [ecological processes](#) underpinning these cost-of-living pressures, we can better anticipate the species most at risk and act accordingly."

The researchers also found that globally, areas that have historically had more warming will face more challenges in the future.

"We can anticipate future warming impacts to be more severe in Africa than in Australia, with African [desert](#) lizards requiring more food with less time to find it," Dr. Wild said.

Researchers said the effects of warming on energy budgets are further compounded by other factors associated with climate change, including [food availability](#) and increased water requirements in arid environments.

"Importantly, we show energy pressures are greatest in summer and spring, which is the reproductive window for many species," Dr. Wild said.

"Our next steps will be to bring food and [water resources](#) into our calculations and translate the results into growth and reproduction, which will help us predict whether populations will survive further change under warming."

More information: Kristoffer H. Wild et al, Climate change and the cost-of-living squeeze in desert lizards, *Science* (2025). [DOI:](#)

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