

# Researchers find evolutionary 'tipping point' linked to climate change

June 7 2018

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Researchers studying the impact of extreme climate conditions on biodiversity found a "tipping point" at which species, under pressure from dwindling food supplies due to climate change, must either evolve

to take advantage of different food supplies or face extinction.

Adam Siepielski, an assistant professor in the Department of Biological Sciences at the University of Arkansas, and Seth Haney, a [postdoctoral researcher](#) at the University of California, San Diego, created a model to test how events like drought, flooding and [heat waves](#) affect adaptive evolution.

"There is the perception, and ample evidence, that extreme events seem to be increasing—things like heat waves, drought, heavy rain, etc.," Siepielski said. "What are the consequences of those events for how organisms might adapt and the resulting abundances of species?"

Their study used a mathematical model and variables including density of competitors for a [resource](#), how fast competitors consumed the resource, how quickly the resource replenished itself, and the abundance of the resource. They ran tests to determine how a theoretical species would respond to such changes.

The researchers found that moderate changes in resource abundance had little effect on the evolution of traits among competitors for a single resource. But when resource scarcity became extreme, for example during an extended drought, species were forced to develop new traits. The newly developed traits remained even when the scarcity was reversed, resulting in permanent changes.

"There is a threshold level where if you lower resources a tiny bit more, it causes the population to diverge and then evolve to use the other distinct resource," Siepielski said.

Their results were published in May in the journal *The American Naturalist*.

**More information:** Seth D. Haney et al. Tipping Points in Resource Abundance Drive Irreversible Changes in Community Structure, *The American Naturalist* (2018). [DOI: 10.1086/697045](https://doi.org/10.1086/697045)

Provided by University of Arkansas

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