

# Changing weather patterns throwing ecosystems out of whack

February 5 2018

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Animal species, such as the swallowtail butterfly, are shifting the timing of their seasonal activities at different rates in response to changing seasonal temperatures and precipitation patterns. Credit: Jeremy Cohen, PhD, University of South Florida

Day and night will soon align, marking the start of spring. But the timing

of nature's calendar is starting to fall out of sync.

In a study published in *Nature Climate Change*, a team of researchers from the University of South Florida in Tampa found that animal species are shifting the timing of their seasonal activities, also known as phenology, at different rates in response to changing seasonal temperatures and precipitation patterns.

"As species' lifecycles grow out of alignment, it can affect the functioning of ecosystems with potential impacts on human food supplies and diseases," said lead author Jeremy Cohen, PhD, postdoctoral researcher at the University of South Florida Department of Integrative Biology. "We rely on honeybees to pollinate seasonal crops and migratory birds to return in the spring to eat insects that are crop pests and vectors of human diseases. If the timing of these and other seasonal events are off, ecosystems can malfunction with potentially [adverse effects](#) on humans."

Dr. Cohen and his team found that cold-blooded species and those with small body sizes are breeding or aggregating earlier than warm-blooded or large-bodied species in spring. They come to this conclusion after reviewing thousands of records of phenological shifts dating back to the 1950s.

"Our research elucidates the drivers of phenological responses and the traits of organisms that influence their ability to track changing climates," said co-author Jason Rohr, PhD, professor at the University of South Florida. "We expect these findings to improve our ability to forecast the locations, systems and [species](#) that might be at the greatest risk from [climate change](#) and ideally mitigate any adverse effects that these changes might have on the services that ecosystems provide to humans."

**More information:** Jeremy M. Cohen et al. A global synthesis of animal phenological responses to climate change, *Nature Climate Change* (2018). [DOI: 10.1038/s41558-018-0067-3](https://doi.org/10.1038/s41558-018-0067-3)

Provided by University of South Florida

Citation: Changing weather patterns throwing ecosystems out of whack (2018, February 5)  
retrieved 24 April 2024 from  
<https://phys.org/news/2018-02-weather-patterns-ecosystems-whack.html>

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