

# What hibernating toads tell us about climate

July 19 2016

---



24-year study of spring emergence of Fowler's Toads creates model for predicting climate-change effects Credit: David Green, McGill University

The ability to predict when toads come out of hibernation in southern Canada could provide valuable insights into the future effects of climate change on a range of animals and plants.

McGill University professor David M. Green of the Redpath Museum

and his students have been studying Fowler's Toads on the shore of Lake Erie at Long Point, Ontario, for over 24 consecutive years. Green's focus? To use weather records to predict the springtime emergence of toads from their annual eight-month hibernation—and, by doing so, determine if a warming climate is changing the toads' behaviour.

## **Timing is everything**

Green found that the toads' timing can be predicted based on environmental conditions well before the bumpy-skinned amphibians actually wake up. "

"The toads are buried up to a meter deep in the sand. What drives them to come up is when the sand below them becomes colder than the sand above," explains Green. "Year after year, on average, this has been getting earlier and earlier."

The model Green has developed could have broader applications, he says. . On the grander scale, if this approach applies to other animals and plants, too, we could generate some powerful information about what is to come as the climate warms.



What hibernating toads tell us about climate. Credit: David Green, McGill University

### **You never know, it might be useful**

The long-running project stemmed, somewhat inadvertently, from Green's PhD research into the interbreeding between Fowler's and American Toads. When he became a McGill professor, Green continued to study the toads' behaviour, "Because I needed to be at the scene for the start of the toads' breeding season, I began to note when the toads came out of hibernation," he says. "While I didn't set out to study [climate change](#) 25 years ago, the data I collected turned out to be far

more valuable and interesting than I could have imagined!"

During the nearly quarter-century that Green has been studying toads in the field at night, he's encountered his share of hardships. Once, his car got stuck in a sand drift, forcing him to "walk six kilometres with leaky boots with only a failing headlamp to get home," he recalls. But the painstaking observations have made possible the model that now enables him to predict the toads' springtime emergence.

### Going forward

And the work continues. To test his predictions and make them more precise, Green now has probes in the dunes at Long Point that are recording temperatures underground every 30 minutes. "What the temperature does and what the [toads](#) do should match," Green says. "We can also apply this information to investigate when other organisms living on, and in, the dunes wake up in spring."

**More information:** David M. Green, Amphibian breeding phenology trends under climate change: predicting the past to forecast the future, *Global Change Biology* (2016). [DOI: 10.1111/gcb.13390](https://doi.org/10.1111/gcb.13390)

Provided by McGill University

Citation: What hibernating toads tell us about climate (2016, July 19) retrieved 6 July 2024 from <https://phys.org/news/2016-07-hibernating-toads-climate.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.