

ANIMALS

## Climate change brings new neighborhood birds

As winters have warmed, some species have moved north



Some warm-adapted species, such as these cardinals, have recently become increasingly common winter inhabitants of the northeastern United States.

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By **Sarah Zielinski**

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To get a good look at the impacts of global warming, you may need to look no farther than your own yard. Some unexpected species may perch in a local tree or stop by your bird feeder. These newcomers have been lured north by winter's warmer temperatures, a new study finds. Birds such as cardinals and Carolina wrens are now wintering farther north than they did as little as 20 years ago.

Since 1970, the average winter low temperatures have risen by about 0.38 degree Celsius (0.68 degree Fahrenheit) in eastern North America. Global warming, also known as climate change, is the cause.

For several decades now, the planet has been slowly warming. The world's animals and plants have responded. Many have begun to move north or south to keep pace with the conditions they're used to. Such movement is considered one of the best fingerprints of climate change.

## **Explainer: Global warming and the greenhouse effect**

Benjamin Zuckerberg and Karine Princé are wildlife biologists at the University of Wisconsin-Madison. They wanted to look for evidence that Earth's warming had been affecting bird behaviors — such as where they settle for the winter. To do this, they analyzed two decades of data from a program called Project FeederWatch. This citizen-science project at the Cornell Lab of Ornithology in Ithaca, N.Y., collects reports of sightings at bird feeders from early November to late April.

There are currently more than 10,000 participating sites in the United States and Canada. Many of the studied feeders sit in people's yards.

For the project, volunteers have been identifying and counting birds at a feeding station for two-day periods throughout the winter. Zuckerberg and Princé focused on data from 1989 to 2011 at sites in eastern North America. They limited their analysis to reports from the “core winter” period: December 1 to February 8. For each site, the researchers tracked down the yearly average low temperature for that core period. The northern boundary for many North American birds is determined by that minimum winter temperature. The scientists restricted their counts to 38 of the more common species.

From the 22 years of data that they mined, the scientists detected a gradual increase in the minimum winter temperatures. Over that time, the birds didn't all collectively begin moving northward. But many warm-adapted species began to spend the colder months of the year farther north, the data show. Warm-adapted birds are species that decades ago wintered solely in the South.

“The winter bird communities of eastern North America are increasingly dominated by warm-adapted species,” the researchers note. Some areas of the North now host wintering Carolina wrens, cardinals, purple finches, eastern bluebirds or red-bellied woodpeckers.

The birds are getting an assist from the feeders that people keep full throughout the winter. But Zuckerberg and Princé don't think the seeds that people are supplying account for the change in the birds' ranges. Indeed, the number of bird feeders in the United States has changed little since 1991. Throughout, the total has hovered at around 53 million.

This Baird's sparrow was photographed in 2013 near the Rattlesnake Springs Picnic Area in Eddy County, N.M. The species could be driven out of the country by 2075, says a new study.

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Habitat loss could be driving some change in where various bird species spend the winter. But habitat changes — such as cutting down forests or paving over fields — tend to be local. The observed change in where birds are wintering, by contrast, has been seen across eastern North America. The researchers conclude that climate change is the most likely cause.

The movement of certain species may prove to be a positive trend for some of the species. But that's not been confirmed yet. And scientists can't assume that the species that move northward will not encounter problems. The shuffling of bird communities "could alter the interactions between bird species, possibly with some northerly species being outcompeted by new arriving species," Princé says. That may lead to the formation of new communities of birds that didn't exist in the past. Scientists don't yet know what those communities will look like, or how the birds will interact with each other. "We still have to explore the consequences of such changes."

And more community shuffling may be in the birds' future, according to a study published November 5 in *PLOS ONE*. Terry L. Sohl of the U.S. Geological Survey in Sioux Falls, S.D., looked at what might happen to 50 U.S. bird species by 2075. He found that many would change where they live because of global warming and because of changes in how land is used. Some species, such as the cactus wren and Gambel's quail, would have more land suitable for them to live on. But others, such as the Baird's sparrow, could be driven out of the country.

## Power Words

**citizen science** Scientific research in which the public — people of all ages and abilities — participate. The data these citizen “scientists” collect help to advance research. Letting the public participate means that scientists can get data from many more people and places than would be available if they were working alone.

**climate** The weather conditions prevailing in an area in general or over a long period.

**climate change** Long-term, significant change in the climate of Earth. It can happen naturally or in response to human activities, including the burning of fossil fuels and clearing of forests.

**global warming** The gradual increase in the overall temperature of Earth’s atmosphere due to the greenhouse effect. This effect is caused by increased levels of carbon dioxide, chlorofluorocarbons and other gases in the air, many of them released by human activity.

**habitat** The area or natural environment in which an animal or plant normally lives, such as a desert, coral reef or freshwater lake. A habitat can be home to thousands of different species.

## CITATIONS

A. Pearce Stevens. [“How people have been shaping the Earth.”](#) *Science News for Students*. October 17, 2014.

C. Gelling. [“When a species can’t stand the heat.”](#) *Science News for Students*. April 9, 2014.

S. Ornes. [“The certainty of climate change.”](#) *Science News for Students*. October 16, 2013.

S. Ornes. [“Climate change: The long reach.”](#) *Science News for Students*. August 22, 2013.

N. Ross-Flanigan. [“Animals on the move.”](#) *Science News*. June 15, 2012.

S. Ornes. [“Mammals feel the heat.”](#) *Science News for Students*. June 5, 2012.

Project Feederwatch: <http://feederwatch.org/>

**Original Journal Source:** K. Princé and B. Zuckerberg. [“Climate change in our backyards: the reshuffling of North America's winter bird communities.”](#) *Global Change Biology*. Published online October 16, 2014. [doi: 10.1111/gcb.12740](#).

**Original Journal Source:** T.L. Sohl. [“The relative impacts of climate and land-use change on conterminous United States bird species from 2001 to 2075.”](#) *PLOS ONE*. Published online November 5, 2014. [doi: 10.1371/journal.pone.0112251](#).