

Solar eclipse could scramble bird behavior

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On April 8, the shadow of a total solar eclipse will race across North America. At the same time, researchers from the Cornell Lab of Ornithology and partners will be hurrying to measure the impact of daytime darkness on the movements of birds, bats, and insects—flying creatures that are very attuned to changes in light levels.

Spring migration is underway right now and with most birds flying at night, a [solar eclipse](#) could heavily impact them.

"Light is such a fundamental and ubiquitous cue, governing so many aspects of life on Earth," said Cecilia Nilsson, lead author of a previous Cornell Lab study when she was a Rose Postdoctoral Fellow. "But it's pretty hard to manipulate light at large scales. Here we have this unique natural phenomenon setting up a huge 'experiment' for us."

Researchers will measure airborne activity using U.S. weather radar stations in the path of the eclipse, stretching from Mexico to Texas to Maine. Signals from weather events, such as rain, are removed from the radar images, leaving only biological data –birds, insects, and bats. The team will measure movements during the height of the eclipse when the moon is directly between the Earth and the sun, otherwise known as the "totality." They'll measure again at sunset for comparison.

According to NASA, most locations along the path of totality will be in darkness for 3.5 to four minutes, up to 4.5 minutes in Mexico—not a lot of time to collect data. The researchers are building upon findings from a similar study done during the [August 2017 total eclipse](#).

"During the 2017 eclipse, we saw a decrease in flying insects, flying birds—but we didn't see anything like the typical pattern of movement when it gets dark at night," said Andrew Farnsworth, a visiting researcher at the Cornell Lab, and senior author of the previous study. "At sunset, there is typically a big pulse of movement showing insects, birds and bats either going to ground to settle for the night or just beginning nocturnal activity."

There are several significant differences between the two eclipses, increasing anticipation about what the upcoming event could reveal. The 2017 eclipse was an [annular eclipse](#), meaning the moon was at its

farthest point from Earth. The moon will be a bit closer this time, making totality last longer. The last solar eclipse occurred in August at the start of fall bird migration, and its shadow followed a northwest to southeast path across North America. This time, the eclipse will travel over parts of Mexico and 13 states along a southwest to northeast path and occur during spring migration.

"The timing of this eclipse is great," Farnsworth said. "There are 13 radar stations along the route this time compared to eight during the 2017 event. There will be more birds on the move, seriously motivated to get to their breeding grounds. In theory, if there's any significant change in their behavior because of unexpected darkness and the accompanying drop in temperatures, we're much more likely to see it during this event."

Another difference: better and faster technology. In 2018, the launch of BirdCast introduced three-day migration predictions of the location and intensity of bird migration. These forecasts are generated from the Cornell Lab of Ornithology and Colorado State University. BirdCast's Migration Dashboard tool even allows users to track the number of birds migrating at night through their region, right down to the county level.

"By seeing how animals react to the [total eclipse](#) we can get clues to how they perceive and use light under normal circumstances. Birds and insects might use cues from light differently, for example," said Nilsson, a researcher at Lund University in Sweden, who is part of the team studying the April 8 event. The researchers will be producing a scientific paper detailing their findings.

Provided by Cornell University

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