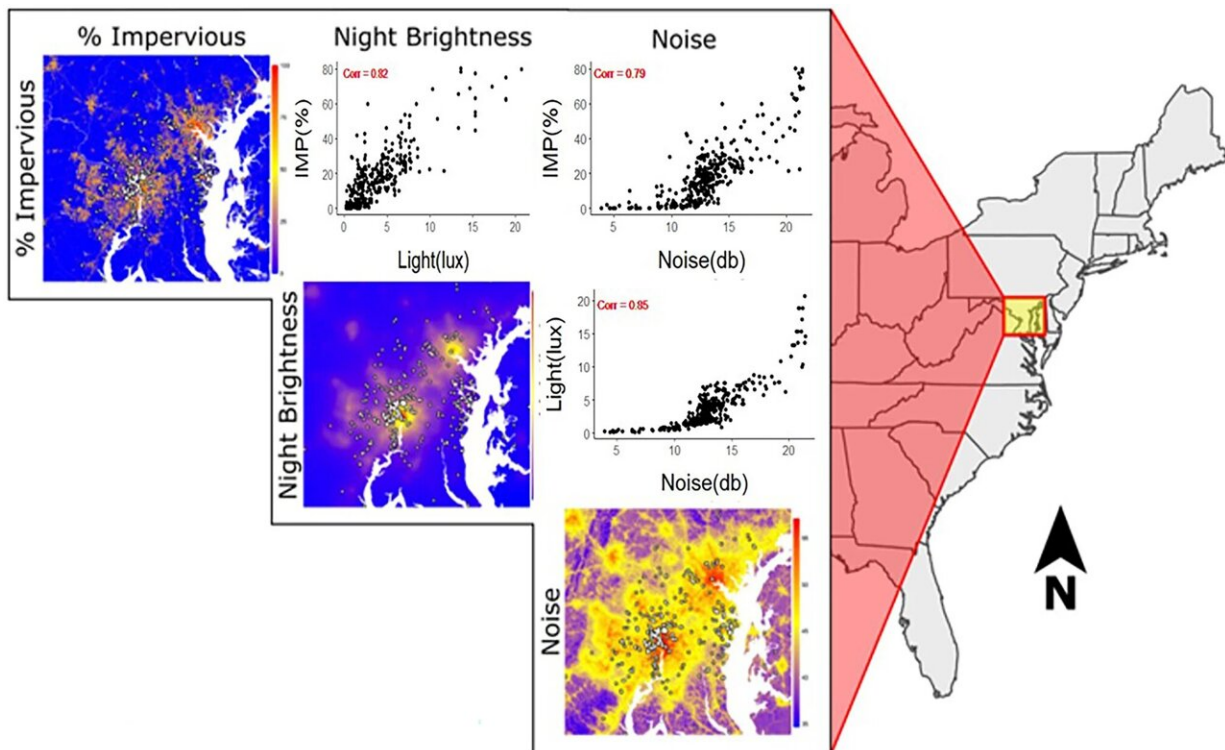


# For two backyard bird species, more light pollution is linked to lower survival

August 14 2023, by Laura Oleniacz



Inset maps and correlations of sampling sites of the Neighborhood Nestwatch Program in greater Washington, D.C., USA. Credit: *Urban Ecosystems* (2023). DOI: 10.1007/s11252-023-01403-2

Light pollution at night is known to be a deadly hazard for migratory birds, disorienting them and increasing collisions with buildings. Now a new study led by North Carolina State University researchers also finds

artificial light at night also links with lower survival for two backyard bird species living year-round around Washington D.C.

The study, which drew on 20 years of data collected by researchers and [citizen scientists](#) through a program run by the Smithsonian Migratory Bird Center, found lower survival for the gray catbird and house wren with more light pollution at night. Researchers also found survival for the American robin increased with artificial light. Researchers say the findings point to factors that that could be important to understanding whether backyard birds will thrive around cities as urbanization expands, and deserve further investigation.

"This study focused on more generalist bird species that are more abundant in [metropolitan areas](#) than others," said the study's lead author Lauren Pharr, a graduate student in NC State's Fisheries, Wildlife and Conservation Biology program. "These findings are raising awareness about our use of light, and suggest there may be things we can do to help backyard birds that live around us. When it comes to light pollution specifically, there may be things we can do as humans to increase bird survival and help them thrive."

In the study, researchers drew on data from a citizen-science study called the Neighborhood Nestwatch Program, run by the Smithsonian Migratory Bird Center from 2000 to 2020. In the study, biologists used nets to catch birds at 242 sites, mostly in the backyards of private homes across urban and rural areas of the greater Washington D.C. area.

They tagged the birds with uniquely identifiable color bracelets. Then, volunteers looked for the color-banded birds in their neighborhoods throughout the year. Researchers focused on seven species of songbirds that are some of the most common birds in the study area: the American robin, Carolina chickadee, Carolina wren, gray catbird, house wren, northern cardinal and the song sparrow.

"When it comes to urbanization, all of these birds species can persist, so far," Pharr said.

To understand factors linked to the birds' survival, researchers from NC State combined the data gathered in the citizen-science study with maps of light pollution, noise pollution and paved surface area. They didn't find links between [noise pollution](#) and survival, but they found significant associations for light for the gray catbird, house wren and robin.

"This is an important finding; it adds to our understanding that light pollution could have sub-lethal effects on birds," said study co-author Caren Cooper, professor of public science at NC State. "There is an effort in bird conservation to keep common birds common. We're lucky we have backyard birds, and we want to keep it that way. If there are things we can understand about the environment that could be affecting their survival, the sooner we can understand that, the better."

For the American robin, researchers already know that robins will start singing earlier in the morning in areas with more light [pollution](#), potentially increasing the amount of time they have for finding mates or foraging.

And although the study focused on birds that live year-round in Washington D.C., both the gray catbird and house wren sometimes migrate to states a little further south, though not into Central or South America like so-called long-distance migrants. Researchers said it's possible that some of these species' migration-related behaviors could make them more vulnerable to [light pollution](#) at night.

"There have been other studies that have reported that robins use light to their advantage to forage and find food," Pharr said. "As far as gray catbirds, some evidence has found they are vulnerable to collisions."

"There are so many factors that affect a bird's survival in an urban setting, and they're all intertwined, affecting predation, physiological harms, and the ability to find prey," Cooper said. "Detecting patterns in avian survival rates that vary with artificial [light](#) at night is important, and we need more detailed follow-up studies about why that might be happening."

The findings also demonstrate the power of citizen science.

"This was my 'wow' moment—that we can get all of these people to help us with research and make big impacts," Pharr said. "Citizen science is a wonderful and [valuable tool](#), not only to help scientists get data for their projects, and get more eyes, ears and hands on them. The participants also get a chance to understand what we're doing, why it's important and to learn alongside scientists."

The work is published in the journal *Urban Ecosystems*.

**More information:** Lauren D. Pharr et al, Using citizen science data to investigate annual survival rates of resident birds in relation to noise and light pollution, *Urban Ecosystems* (2023). [DOI: 10.1007/s11252-023-01403-2](#)

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