

Bird-window Collisions: A Crash Course for Duke University

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When we think of birds, we often picture free creatures that make the world seem limitless. These feathered animals spend most of their lives flying, following resources like nectar, insects and fruit, building nests, feeding chicks, and even migrating between continents when the season calls for it.

A staggering 1 billion times a year in the United States, the life of a bird ends against a window. Along with habitat destruction and predation by feral cats, bird collisions with man-made structures represent a major anthropogenic cause of bird mortality. Especially during spring and fall migration hundreds of millions of birds perish after being attracted by large artificial lights into big cities, by failing to see an obstacle in glass, or by being deceived by the seeming good forest habitat reflected in that window. While to birds the grass may look greener on the other side of the glass, the consequences are frequently fatal. Some birds fly slower, or are able to back up last minute (like hummingbirds) reducing the speed of the impact. But even for the 10% of collision victims that don't meet an immediate end, they are typically left temporarily paralyzed and in shock, making them easy targets for opportunistic predators such as free-roaming domestic or feral cats. In short, a window is often the end of a bird's life, by impact or predation, and this often happens after the bird has survived severe weather, predation, hunting, and starvation in the several-thousand mile journey between its breeding and wintering grounds.



A Common Yellowthroat killed by a window strike.



Bird death on such a massive scale is a grim subject, indeed. But in response to this dire outlook, a movement to save the birds has emerged. Bird-window collision prevention has gained many advocates that range from bird-loving citizens, ornithologists, conservation biologists, architects, and even your grandmother. Universities, governments, architects and scientists have focused on this issue to help accurately quantify the mortalities but, most importantly, to design bird-friendly glass. Cities like New York, Boston, Chicago, Raleigh, and San Francisco turn their lights off during migration to stop attracting birds as a result of advocacy led by the Audubon Society. Programs like FLAP (Fatal Light Awareness Program) involve concerned citizens in the monitoring of bird mortality at downtown buildings. At a more local scale, students at several campuses in North America study bird-window collisions. Students like us, the authors of this article.

We are both graduate students at Duke University, an institution that strives to be carbon neutral by 2024 and that “thinks green and bleeds blue.” In 2012, we noticed that several “glass box” buildings were being constructed and worried about bird safety. Our initial concern needed to be backed up by monitoring and data quantifying the magnitude of the issue and to form a basis for targeted solutions. So starting in 2014, we monitored bird-window collisions on Duke’s campus in a standardized way during peak migration seasons, and using reports by concerned students and staff from across campus year-round. During 21 consecutive days in Spring and Fall, volunteer students surveyed perimeters of 7 buildings on campus picking up dead birds. These buildings range from small to very large and all but one are certified as “green” by the US Green Building Council’s LEED (Leadership in Energy & Environmental Design). In 2014 we recorded 168 bird deaths in the entire campus, 84 of which happened during the two 21-day surveys. Of these 84 collisions, 72% occurred at the biggest building: CIEMAS (The Fitzpatrick Center for Interdisciplinary Engineering, Medicine and Applied Sciences).



Several species of birds killed by window collisions on the Duke University campus.

With this data we were convinced that if this one building could be turned bird-friendly it might prevent two-thirds of the bird mortality on campus. Armed with numbers and good intentions, we approached the administration through the facilities and management department and wrote a resolution demanding that Duke take action, which was endorsed unanimously by the Graduate and Professional Student Council, representing more than 8,000 students on campus. Our data spoke for itself: CIEMAS needed to be retrofitted with bird deterrence patterns. After conversations with architects, and coverage by local TV news and the Raleigh News and Observer, Duke bought in. As of August 2015, the deadliest building on campus is deadly no more; a dot-patterned film purchased in Canada and custom-made to prevent bird collisions has been applied to a couple glass walkways that seem invisible to birds which we identified as the most dangerous structures in the building. We will continue to monitor collisions at this building to test the efficacy of this bird deterrence mechanism to determine if this pattern could be used in other buildings that pose a threat to birds on campus and elsewhere.

Bird-window collisions are often overlooked yet represent an important threat to bird populations. Preventing collisions is easy and inexpensive. If buildings were made bird friendly from the beginning, the additional cost would be very minor. Features that help birds can also contribute to energy efficiency and fun design!

Have collision problems at home? Try closing blinds or curtains (if you have any). If you have large windows, you need to divide the empty space by placing patterns (strings, dots) no more than 3 inches apart on the outside of the glass. You can also purchase off-the-shelf stickers which are UV-reflective and help prevent collisions. You can be creative and save bird lives!

If you're interested in reading more about this project, please follow [this link](#) to our paper in the open access journal, PeerJ.



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