

# Window Collisions and Birds

*S. Diehl, W. Mueller, N. Cutright – 2015 Updates and Edits: A. Cassini, 2017 Updates D. Lopez*



## SUMMARY

Birds face many natural and human-related threats. One of the preeminent threats for birds is window collisions. Up to 1 billion birds may be killed annually in North America alone by colliding with windows both at night and during the day. Measures such as turning lights out on skyscrapers and putting up reflective devices on house windows can greatly reduce the number of fatal impacts. Greater research is needed in this area to fully understand the magnitude of the problem and best solutions.

## INTRODUCTION

Death caused by collisions with glass is believed to be one of the foremost anthropogenic (human-caused) causes of death for birds in North America. It is estimated that between 100,000,000 and 1 billion birds are killed annually in North America by collisions with buildings – primarily by collisions with windows. Of all birds that collide with window glass, more than 50% of these experience head injuries and die outright. An additional unknown number receive injuries that may lead eventually to death.

## DISCUSSION

Birds collide with buildings both at night and during daylight hours.

*Daytime Collisions* - Birds do not see glass the way humans do - they do not realize that glass is an obstacle. Birds often see reflections of nearby vegetation or the sky on the glass and unwittingly attempt to fly into this false landscape. The resulting collision often results in serious injuries to the head/brain, bill, eyes, or other parts of their anatomy. Especially dangerous

are urban buildings with large windows within about 12m (39.37ft) off the ground, especially those surrounded by trees. In an urban setting, birds are attracted to the trees near these buildings – often with disastrous results.

Birds also collide with glass when windows align so that the bird can see into one window and out another window, creating a tunnel effect. And birds sometimes are attracted to indoor vegetation, such as large potted plants inside a corporate building atrium, visible from outside through windows, and attempt to fly to and land on this vegetation, colliding with the glass as a result.

*Night-time Collisions* - Bright lights from buildings – especially tall ones -- at night confuse birds, especially during rainy or foggy weather. In Chicago and New York City, flocks of night-migrating songbirds numbering in the hundreds have been filmed circling in confusion around lighted skyscrapers and repeatedly colliding with lighted windows and building signage. At dawn, many of the birds were found dead or injured on the streets and sidewalks below. During certain weather conditions at particular buildings, dozens or even hundreds of birds may be killed in one night.

Research done by the ornithologists at the Field Museum of Natural History in Chicago has shown that turning off bright lights, closing blinds, and otherwise reducing the number of lighted windows can lower bird mortality by more than 80%.

## **Recommended Actions (including Research Needs)**

WBCI encourages research aimed at understanding the extent of the problem of bird collisions with buildings in Wisconsin. Bird collision monitoring should be conducted at a variety of building types and across varying landscapes in the state. Bird mortalities at tall buildings in downtown Milwaukee have been monitored for several years by volunteers with the [Wisconsin Humane Society's "Wings"](#) (Wisconsin Night Guardians for Songbirds -) program, however, little is known about bird collisions with buildings at other locations in Wisconsin.

There are a variety of simple actions you can take at your home or workplace to effectively reduce the number of birds killed by collisions with windows or with lighted, tall buildings.

### **At Home**

- Hang streamers or strings of old compact disks (CDs) on the outside of a window, or apply static window clings like Whispering Windows, WindowAlerts, or homemade appliqué to the outside of your window to help divert birds away from the glass. To be most effective, such deterrents should be spaced no more than 10" apart. If collisions continue, it may be necessary to reduce the spacing to 4" apart.
- Apply an antireflective plastic film like CollidEscape to the outside of a window to reduce reflections and prevent collisions
- Install BirdScreens or plastic netting on the outside of your window. These act like a safety-barrier to prevent serious injury to birds that would have otherwise hit the glass

- If you feed birds, place your feeders either within 3 feet of your window, or more than 30 feet away from your window to minimize the risk of window collisions for your feeder patrons.
- For windows that are aligned with each other, allowing birds to see all the way through your home or a corner of your home, close the draperies or blinds on one of the windows.
- If you live in a high-rise building or along the Lake Michigan or Mississippi River shorelines, turn out exterior lights and interior lighting visible from outside your building between about 11 p.m. and 6 a.m. from mid-April through early June, and September-October.
- Join the WIngs program's Bird-Safe Homes initiative:  
<http://wihumane.org/wildlife/preventing-window-collisions#faq3>

A number of online window-collision prevention techniques and products are available at:  
<http://www.birdwatchingdaily.com/featured-stories/15-products-that-prevent-windows-strikes/>

### **At Work**

Just like at home, daytime window collisions often occur at businesses, too. Furthermore, high-rise office buildings can be a death-trap for night-migrating songbirds when the birds are attracted to the building's window, signage and decorative lights.

- Utilize one or more of the strategies described above ("At Home") to reduce the likelihood of daytime bird collisions at your place of business.
- For tall buildings, and for all buildings situated on the shoreline of Lake Michigan or the Mississippi River, ask your building or office manager to turn out unnecessary lighting visible from outside the building between about 11 p.m. and 6 a.m. during the peak migration periods of mid-April through early June and September through October. Join the WIngs program's Bird-Safe Business initiative:  
<http://wihumane.org/wildlife/preventing-window-collisions#faq4>
- If your company is planning a new building or renovating the exterior of your current building, incorporate "bird-friendly" features such as fritted (<http://www.commercialwindows.org/surfacetreatments.php>) or downward-angled glass into the building's design. For more information, see the City of Toronto's Bird Friendly Development Guidelines at:  
<https://www1.toronto.ca/wps/portal/contentonly?vnextoid=3af5196a3596c510VgnVCM10000071d60f89RCRD>



*Many birds die each year from colliding with the mirrored windows on this skywalk in Milwaukee (photos courtesy of Wisconsin Humane Society).*



### **In the Classroom**

- Advocate for bird-safe windows on school buildings
- Teach students about the hazards to birds posed by windows and by lighted tall buildings during migration. For teaching resources see the “Wings” program’s Bird-Safe Classroom initiative: <http://wihumane.org/wildlife/preventing-window-collisions#faq7>

### **On Campus**

- Apply bird-saving treatments to your dorm or classroom windows
- Participate in citizen-science by monitoring for bird collisions, rescuing injured birds (transport them to a licensed wildlife rehabilitator) and documenting mortalities on your campus during peak migration periods. For more details, see the “Wings program’s Bird-Safe Campus initiative: <http://wihumane.org/wildlife/preventing-window-collisions#faq5>
- Get your club or service group involved in the issue on campus
- Professors: incorporate this issue into ornithology, conservation biology, urban planning, architecture, ecology, and other courses.

# Resources

## Bird Collision Prevention Programs

- Wisconsin Night Guardians for Songbirds (WIngs):  
<http://wihumane.org/wildlife/preventing-window-collisions>
- Audubon Minnesota: Bird-Safe – Lights Out: <http://mn.audubon.org/lights-out-program>
- Avoiding bird/window collisions – Fatal Light Awareness Program (FLAP):  
<http://www.flap.org/>
- Chicago Bird Collision Monitors: <http://www.birdmonitors.net/>
- Chicago Audubon and “Lights Out!”:  
[http://www.cityofchicago.org/city/en/progs/env/lights\\_out\\_chicago.html](http://www.cityofchicago.org/city/en/progs/env/lights_out_chicago.html)
- Detroit Audubon Society: Project Safe Passage  
<http://www.detroitaudubon.org/conservation/project-safe-passage-great-lakes/>
- Lights Out Baltimore: <http://www.lightsoutbaltimore.org/>
- Lights Out Houston - <http://blog.chron.com/primeproperty/2014/04/lights-out-for-downtown-houston-buildings/>
- Lights Out Indy - <http://lightsoutindy.org/research/>
- MassAudubon: Lights Out Boston:  
<http://www.massaudubon.org/our-conservation-work/advocacy/protecting-land-wildlife/protecting-wildlife/lights-out-boston>
- Terrain.org - A Journal of the Built and Natural Environments - on Chicago’s “Lights Out!” Campaign <http://www.terrain.org/articles/15/kousky.htm>
- American Bird Conservancy:
  - <http://www.abcbirds.org/abcprograms/policy/collisions/index.html>
  - [http://www.abcbirds.org/abcprograms/policy/collisions/pdf/collisions\\_flyer.pdf](http://www.abcbirds.org/abcprograms/policy/collisions/pdf/collisions_flyer.pdf)
- Bird Collisions with Windows: An Annotated Bibliography:  
[http://collisions.abcbirds.org/pdf/Window\\_Collision\\_BibliographyOctober2012.pdf](http://collisions.abcbirds.org/pdf/Window_Collision_BibliographyOctober2012.pdf)
- Bird Conservation Network: Bright Lights, Big Cities: Lights and Windows are the Deadliest Hazards for Birds - <http://www.bcnbirds.org/window.html>
- Bird Deterrent Markings on Transparent Noise Barrier Panels:  
<http://www.adc40.org/presentations/summer2008/BinetteTRB08.pdf>
- Bird-Safe Building Guidelines- New York City Audubon:  
<http://www.nyc Audubon.org/our-publications/bird-safe-buildings-guidelines>
- City of Toronto’s Bird-friendly Development Guidelines –  
[https://www1.toronto.ca/City%20Of%20Toronto/City%20Planning/Environment/Files/pdf/B/BF%20Best%20Practices%20Glass\\_FinalAODA\\_Bookmarked.pdf](https://www1.toronto.ca/City%20Of%20Toronto/City%20Planning/Environment/Files/pdf/B/BF%20Best%20Practices%20Glass_FinalAODA_Bookmarked.pdf)
- Clear the Way for Birds! IMBD Explores Bird Collisions:  
<http://georgiawildlife.com/sites/default/files/wrd/pdf/brochures/clearthewayforbirds.pdf>
- The Danger of Plate Glass – Understanding and Avoiding that Painful Thud:  
<http://georgiawildlife.com/sites/default/files/wrd/pdf/brochures/dangerofplateglass.pdf>
- Summary Report on the Bird Friendly Building Program: Effect of Light Reduction on Collision of Migratory Birds: <http://digitalcommons.unl.edu/flap/5/>

# ACKNOWLEDGEMENTS

**The authors of this paper are or were members of the Wisconsin Bird Conservation Initiative Issues Committee:**

**Scott Diehl** – Manager, Wisconsin Humane Society, Wildlife Rehabilitation Center; Co-chair, WBCI Issues Committee

**William Mueller** – Director, Wisconsin Great Lakes Bird and Bat Observatory; Co-chair, WBCI Issues Committee

**Noel Cutright** (deceased)– Former Emeritus Scientist, We Energies; Former President and Historian, Wisconsin Society for Ornithology; Former President, Riveredge Bird Club.

**2015 Edits by Andy Cassini** – Conservation Chair, Wisconsin Society for Ornithology

# REFERENCES

- Klem, Daniel Jr. (1989) Bird-Window Collisions. *Wilson Bulletin* 101:606-620. Available Online: <http://sora.unm.edu/sites/default/files/journals/wilson/v101n04/p0606-p0620.pdf>
- Klem, Daniel Jr. (1990) Collisions between birds and windows: mortality and prevention. *Journal of Field Ornithology*, 61:120-128. Available Online: <http://www.muhlenberg.edu/media/contentassets/images/academics/biology/biology/faculty/klem/aco/documents/FieldJournal-Mortality1990.pdf>
- Klem, Daniel Jr. (2006) Glass: A Deadly Conservation Issue for Birds. *Bird Observer* 34:73-81.  
Top 10 things you can do to prevent window strikes. 2009. *Bird Watchers Digest* Mar/Apr:80-87. Available Online: [http://www.birdwatchersdigest.com/site/backyard\\_birds/top\\_ten/bill\\_top\\_10\\_strikes.aspx](http://www.birdwatchersdigest.com/site/backyard_birds/top_ten/bill_top_10_strikes.aspx)
- Geib, Y. and N. Delacretaz. 2006. Avian window strike mortality at an urban office window. *Kingbird* 56:190-198. Available Online: [https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0ahUKEwjYhbb99qLVAhUM\\_4MKHSDtA3kQFggmMAA&url=http%3A%2F%2Fwww.nybirds.org%2FPublications%2FKB56no3\\_WindowStrike.pdf&usq=AFQjCNEZPkJIDJanxTvkJbAhKWs7NJEfgA](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0ahUKEwjYhbb99qLVAhUM_4MKHSDtA3kQFggmMAA&url=http%3A%2F%2Fwww.nybirds.org%2FPublications%2FKB56no3_WindowStrike.pdf&usq=AFQjCNEZPkJIDJanxTvkJbAhKWs7NJEfgA)
- Klem, D., Jr., D. C. Keck, K. L. Marty, A. J. Miller Ball, E. E. Niciu, and C. T. Platt. 2004. Effects of window angling, feeder placement, and scavengers on avian mortality at plate glass. *Wilson Bulletin* 116:69-73. Available Online: <http://www.muhlenberg.edu/media/contentassets/images/academics/biology/biology/faculty/klem/aco/Wilson-feederplacement2004.pdf.pdf>
- Hager, S. B., H. Trudell, K. J. McKay, S. M. Crandall, and L. Mayer. 2008. Bird density and mortality at windows. *Wilson Bulletin* 120:550-564.  
Mueller, W. and S. Diehl. 2006. Threshold of pane. *Wisconsin Natural Resources magazine* (April). Available Online: <http://dnr.wi.gov/wnrmag/html/stories/2006/apr06/pane.htm>