Reducing Bird Deaths From Window Collisions: A Recommendation to UNC Facilities Planning, the Buildings and Grounds Committee, and the Biology Department

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Introduction

Wilson Hall houses many of UNC's biology classrooms, offices, and labs, and exists to promote students' curiosity and appreciation of life. However, certain elements of its design and landscaping have had the unintentional consequence of killing life. Just this month (January 2007), a total of four dead cedar waxwings have been found on two separate occasions near Wilson Hall's windowed breezeway, which is next to a row of berry-bearing holly trees. Dr. R. Haven Wiley, an ornithologist residing in Wilson Hall, states that every winter:

> "…the waxwings are decimated by the large windows in the breezeway between new and old Wilson. Can we get somebody to buy venetian blinds for those windows? The waxwings show up every January-March, to feed on the berries of the big hollies that grow near and next to the windows. Often some robins share the same fate, but the waxwings seem especially vulnerable…Every winter there are about 100 in the trees between Wilson and Coker."[1]

These bird deaths are likely not limited to Wilson Hall, as there are numerous holly trees around campus. Many have also been recently planted around newly constructed buildings. Sadly, this is just a small picture of a much larger problem, which is an unfortunate intersection of birds, food, and windows.

Dr. Daniel Klem of Muhlenburg College has studied bird-window collisions for 20 years, and has concluded that glass is the #1 human-related cause of bird mortality. The number is likely higher than cats, cars, and hunting combined, at 100 to 900 million birds or more.[2] Approxiately 25% of bird species in the US and Canada, which includes both residents and migratory birds, have suffered losses from window collisions.[3]

This brief article will review previous and ongoing studies on bird mortality from collisions, and present some recommendations for improving both the safety of birds and our enjoyment of them at UNC.

Previous and Ongoing Studies on This Issue

Bird-window collisions happen for two reasons: 1) because birds perceive a landscape in reflective windows that they attempt to fly into, or 2) they do not notice a transparent window and attempt to fly through it to the other side.[4] The farther away the window is from the bird, the more momentum it can accumulate before impacting with it.

[1] http://www.bio.unc.edu/Biol565/Announcements.htm
[2] http://www.currykerlinger.com/birds.htm
[3] http://www.wildbird.com/content/project_prevent_collision
[4] http://www.wildbird.com/content/ppc_protocol

While many techniques have been proposed to reduce bird-window collisions, it is clear that some of them are not very effective, such as installing dark bird decals on Wilson Hall's windowed breezeway. Thus, interest has been raised in finding more effective methods. An article was recently published on January 12 detailing some significant progress into solving the problem of bird deaths due to window collisions. Dr. David Horn[5] of the Millikin University Department of Biology in Decatur, Illinois has supervised several research projects focusing on ways to reduce bird deaths due to window collisions.[6] This is their second year gathering data from both Millikin's campus and around the country.

Millikin's campus study focused on learning which birds were most susceptible to bird-window collision deaths (migrating warblers, in their case), and which times of year were the worst (the peak of fall migration was the worst, followed by the peak of spring migration). Students found 87 dead birds of over 30 species around 9 buildings their first study year. This is compared to 4 dead birds at just one month at one building at UNC, which has a much larger campus than Millikin. Thus, UNC has the potential for having many more bird deaths than are currently recognized.

Millikin also has a national data-gathering project being funded by Wild Bird Centers of America, Inc. Over 200 surveys have already been returned, collecting data on collisions at residential structures in hopes of learning what architectural designs reduce and enhance collisions. The project will run from spring 2006 to winter 2008, and hopes to compile thousands of surveys on residential architecture, landscaping, and bird collisions.[7] It would be ideal if a similar program existed at UNC to gather similar data on collisions at university buildings, but to my knowledge, UNC does not have such a program. This would be something that could be headed by students and faculty in the Biology Department, in collaboration with UNC Facilities Planning and the Buildings and Grounds Committee.

Swarthmore has already conducted such a study that could provide a model for . Their study specifically looked for correlations between bird deaths and window design. However, due to too few bird deaths recorded, they found only a non-significant correlation between window frame size and number of collisions.[8] However, they did relate a number of suggestions by Dr. Daniel Klem on reducing bird deaths from window collisions, which I reviewed in order to come up with recommendations that would work for this campus.

How to Prevent Bird Deaths from Window Collisions at UNC

Klem suggested that since collisions are closely correlated with the bird density in the surrounding area, reducing the number and kind of attractants near windows could save many lives. Thus, to resolve the bird death problem with the Wilson Hall breezeway, an alternative to installing blinds on the windows would be to relocate the holly trees and any other trees that are reflected by the windows. Since this neither feasible nor desirable, the windows must be dealt with.

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[5] http://www.wildbird.com/content/drhorn
[6] http://www.millikin.edu/media/news_release_detail.asp?ID=961
[7] http://www.wildbird.com/content/project_prevent_collision
[8] http://www.swarthmore.edu/NatSci/es/birdcollisions.html

Wilson Hall already has hawk decals on its windows, but the density of decals necessary to guard against bird collisions would likely be too unsightly. As Dr. R. Haven Wiley noted, Venetian blinds could be installed for the Wilson Hall breezeway windows. Or, as Klem noted, a film of closely-spaced vertical bars (2.5 cm wide strips spaced 5-10 cm apart) installed on the windows would also work. Both these methods would limit visibility, but if enough faculty in Wilson Hall agree to it for the sake of the birds and funding exists, then this should be a viable option. Blinds or barred films also would not be difficult or costly to install in other areas where windows and popular bird routes intersect.

If full visibility is desired, then installing UV-blocking film may be a viable option that should be tested. The Swarthmore article suggested that "recent advancements in glass industry suggest the use of window films that specify obstructions to birds, possibly reflecting in the UV spectrum." Birds, unlike humans, can see light in the ultraviolet end of the spectrum in addition to the blue, green, and red that we see. A normal window looks transparent because it passes all colors of light, but if UV is blocked, then the window will look partly opaque. UV-blocking films could be installed on the Wilson Hall breezeway windows in time for next winter's visit by cedar waxwings. A decrease in bird deaths would be a positive result, but even if no decrease is noted, these films would have the side benefit of reducing interior UV exposure.

Recommendations for Existing Construction

Not all building windows may need to be retrofitted with blinds or films. If bird flight patterns were well-known throughout campus, as well as which buildings killed the most birds, decisions could be made as to which buildings actually need retrofitting. So far, the only building we know of that requires a solution is Wilson Hall. Since it would be time-consuming to collect data on bird deaths and bird flight patterns, a more favorable option might be to grade windows on the first two floors of buildings for their danger of causing bird deaths. If, standing at ground level, a window produces a reflection of the landscape or allows a view of the landscape on the other side, it should be retrofitted with either blinds or a film of vertical bars. This visual assessment should be performed on the ground from every potential food source, looking in all directions to spot any problematic windows.

Recommendations for New Construction

Klem recommended that new buildings be designed to accommodate recognized bird flight patterns. However, since UNC does not have any data on campus bird flight patterns, this is not a feasible option at this time. Furthermore, due to lack of data, it is unknown whether these patterns will remain the same or change over the lengthy period of building construction, due to the noise and physical disturbance involved. New patterns may form, depending on the landscaping surrounding the new building and how much its presence disturbs existing flight patterns. Instead, landscaping around new buildings could be designed to keep birds far from breezeway and landscape-reflecting windows. Any food-bearing vegetation (such as hollies) should be planted a far enough distance so that they cannot be seen through the windows, or as an image reflected from

them. The Swarthmore study suggests a minimum distance of 10 meters from potentially problematic windows. Orienting the windows downward so that they reflect the ground is also another option suggested by Klem, which would need to be incorporated into the design of new buildings beforehand.

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