

Solid Air

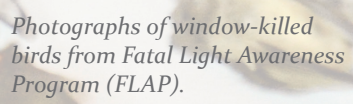
Invisible Killer:
Saving Billions of Birds from
Windows



with foreword by
Dr. David M. Bird

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Chapter 1

Humans Make Glass, Birds Hit Glass

GLASS WINDOWS HAVE EXISTED SINCE as long ago as 290 CE, if only in a limited supply of small sheets. It seems fair to say that window glass has enriched human aesthetic, cultural, physiological, and psychological well-being for at least 16 centuries. Even one small pane is enough to admit a bit of the sun's light and warmth into an enclosed space. The tendency of builders, and the willingness of their clients, to use this product in large quantities apparently resulted from the need of human society to seek safety within the solid walls of dwellings away from the reach of marauders. Sheet glass permitted viewing the out-of-doors from the comfort and protection of indoors. In the Middle Ages, ecclesiastical interests led to the lavish use of both tinted and clear panes. These windows were used in the cathedrals of Europe and then in the domestic dwellings of the rich, especially in Tudor England. The technical ability to manufacture large sheets of glass was developed at the turn of the 20th century. With the building boom that followed World War II, 1945 to the present, flat glass has become a prominent, even dominating, construction material used in the majority of human dwellings and other structures. In 2009, 6.6 billion m² (6,600 km² = 2,548 mi²) of flat glass was manufactured worldwide, about the area of the U.S. state of Delaware, at a value of \$23.54 billion. The amount of glass used in construction has continued to increase annually.

The history of window glass as a source of bird fatalities is similarly ancient and progressive. The confirming obituaries, however, do not begin to appear in the literature until well after 1800, with the development of modern ornithology in Europe and North America. Thomas Nuttall published the first scientifically documented window fatality in his 1832 *A Manual of the Ornithology of the United States and Canada*. He described how a hawk in pursuit of prey flew through

two panes of greenhouse glass only to be stopped by a third. The next account was by Spencer F. Baird and his colleagues Thomas M. Brewer and Robert Ridgeway in volume one of their 1874 three-volume work *A History of North American Birds*. They described how a shrike struck the outside of a clear pane while attempting to reach a caged canary.



Cartoons are copied from Bird-window Collision Presentation Toolkit, Version April 10, 2019, with permission from Bird-window Collision Working Group (BCWG).

Three decades passed before the next detailed bird-window collision report. Charles W. Townsend, writing in the fourth issue of the 1931 ornithological journal *Auk*, published the first account of a series of fatalities for a single species. This was the first suggestion that avian vulnerability to windows may be more marked in some species than in others, and that a single window may claim a succession of victims. His account suggested that he had records of a number of window-killed species. The following quote highlights what he believed was a particularly vulnerable one: "The Yellow-billed Cuckoo seems especially prone to run its head against windows if I may judge by five instances that have come to my attention. The first one to do so, whose skin is still in my collection, killed itself on June 13, 1876, by flying against a window in Jamaica Plains, Massachusetts, as did also another at the same window on June 9, 1878. A third committed suicide on June 10, 1904, against a window of Mr. William Brewster's museum in Cambridge." These records are historically interesting in that Townsend's language describing window strike victims as "tragedies" suggests that he regarded them as

rare, self-destroying incompetents, or “cuckoos” in the human sense of the word. As noted, sheet glass was relatively rare at the turn of and early 20th century, and it is likely there seemed to be little reason for concern about the relationship between windows and birds. Today, with the ever-growing presence of sheet glass in the human-built environment, it is common to find modern buildings that are entirely surfaced with glass, and the fatal consequences for birds are increasingly imposing.

From 1974 through 1979, I found 88 reports in books and journals from North America, South America, the West Indies, Europe, and Africa that described birds striking windows and documented species-specific accounts. Most were from the United States, but others were from Canada, England, Germany, Luxemburg, Norway, Netherlands, Rhodesia, and Switzerland. Remarkably, textbooks and encyclopedia treatments about birds presented little, if any, description of the fatal hazards that windows pose to birds. The sheet glass industry and its commercial allies to this point appeared to be unaware of the problem. By contrast, my personal inquiries to individuals repeatedly revealed that bird strikes at windows were common knowledge among those who were attentive, even with only a modest familiarity with birds.

From these early recordings to the present, scientific research papers and accompanying popular articles have continued to grow. Current publications document extensive details that include: (1) quantitative studies revealing species, building, and environmental conditions; (2) individual injuries and causes of death among strike victims; (3) the level and composition of mortality as a species-specific conservation concern; (4) means to prevent bird-window collisions; and (5) a number of reviews updating the latest body of collective knowledge. This growing body of literature has resulted in increased awareness and action among conservation-minded constituencies that now include saving birds from windows as part of their mission.

From the very beginning, the evidence I compiled and subsequent reinforcing and validating study results of others made it clear that the killing was taking place at the windows of commercial, residential, and institutional buildings in urban, suburban, and rural settings. Hundreds of birds a day kill themselves flying into the first few stories of prominent glass-covered high-rise buildings in cities during migratory periods. These dramatic accounts, documented by organized volunteers, often

appear in newspapers and have attracted national and international publicity. Far more dramatically, several reinforcing investigations reveal that most victims, hundreds of millions of common birds as well as species of conservation concern, are dying by striking clear and reflective windows in every season, under all kinds of weather conditions, at panes of all sizes, by the ones and twos at houses throughout human-occupied lands. Most of the total deaths in any calendar year result from hitting sheet glass in various sizes of residential and small commercial buildings, and school buildings of all types. Study after study documents and validates the claim that lethal collisions occur wherever birds and windows coexist.



*Distant and close-up images of a window-killed female Northern Cardinal.
Photographs by Peter G. Saenger.*

Yet most of the conservation community is still to be convinced that the sheet glass threat to birds is real, substantial, and merits their commitment and action; this includes educators, scientists, citizen-scientists, and wildlife law-enforcement. Members of the building industry—glass manufacturers and fabricators, structural and landscape architects, developers, and building managers—require persuading that there is a market for creating and employing bird-safe windows in residential and commercial structures and in noise barriers along highways and railways. Among the diverse public, there are those who will be moved to make windows safe for birds because they are mortified at the thought

of these attractive animals suffering and dying from a preventable cause. These people need no convincing. Others accept that suffering and death is part of life, and though saddened to see a healthy individual cut down in its prime, they need convincing that this source of avian mortality is actually reducing and threatening the survival of species populations. A third category of people are those who do not care, no matter what, for a number of unpleasant and irrational reasons. These people cannot be convinced. This book is written for those who can be convinced.

The primary purpose of this book is to stop the unintended and unwanted killing of the defenseless innocent, those that have no voice or other means to protect themselves from an invisible killer. I hope to enlist the power of citizens everywhere to help solve this problem. The goal is to inform, persuade, and incite a change in human behavior to produce a life-saving change in bird behavior.



Window-killed adult Sharp-shinned Hawk.

Photograph by Peter G. Saenger.

The public needs information to act meaningfully to stop this senseless loss of attractive and useful life. However you view yourself and your place in society, your help is desperately needed to stop the slaughter. We know enough already about how to stop it. Our collective efforts will not be comprehended by those we seek to protect and save. But without acting to save the birds that provide us with recreational joy, at minimum, we weaken and damage our hopes for a healthy world to pass onto our children. We even damage our economy. Making windows safe for birds will reward all humans, whether they care about birds or not, with their continued survival and the many benefits they provide.