Study Shows Bird Window Collision Deaths 3.5 Times Higher than Previous Estimates

Dr. Daniel Klem, Jr. Director. Acopian Center for Ornithology

Each Home Can Save 80 birds, Each Low-Rise 900 Birds

Interview with Dr. Daniel Klem, Jr.
The World's Leading Bird Window Collision Expert *
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1. **Question:** What does your new study published in the Wilson Journal tell us about the seriousness of the threats to birds of window collisions?

Answer: Dr. Klem On the US country-wide level, it shows that collisions are one of the top leading causes of bird mortality nationwide.

On a building-by-building basis, deaths from window collisions are about 3.5 times higher than previous estimates. For example, previous research estimated 2.1 collision deaths per residence per year and 20 at low-rise (four-stories or less). The new research shows that bird window collisions will cause about 7 collisions deaths per residence per year. The estimate of annual deaths at low-rise buildings increases from 21.7 to 916. Of course, the exact numbers are not the point. The point is that my study shows that the previous estimates of 2 and 21annual deaths are far below the actual mortality. I would use "over 80" and "over 900" respectively.(see table below)

2. **Question**: What are the conservation implications of these findings?

Answer: Dr. Klem The previous estimates of 2.1 per home were so low many homeowners were not motivated to prevent bird window collisions. The new much higher estimates should convince far more homeowners and building managers to install a bird-window collision prevention system. The new estimates change that dynamic. It should increase the installation of collision prevention systems by several times.

Each permanent collision prevention system installed in a home will save over 80 birds and over 900 at a low-rise building. This is the case because permanent systems continue to prevent bird

window collision casualties for at least 15 years. The latest studies confirm earlier studies that prevention systems can be as effective as 95% — all approved systems save at least 70%. The estimates herein use 82.5%, splitting the difference.(see table below.)

3. **Question**: Why are your bird deaths estimates 3.5 times the previous estimate in the Loss et al paper?

Answer: Dr. Klem I want to make clear that I am not saying that the Loss et al paper was "wrong" in any sense. As discussed below, it was developed in a very different way and he did not have available to him data that we had.

4. **Question:** How was your data acquired differently from the Loss data (Loss et al., 2014)

Answer: Dr. Klem The Loss et al paper was based on a collection of existing surveys, mostly based upon carcasses found below windows. This data was carefully evaluated for soundness and certain adjustments were made, such as for scavenging. The data underlying our 2024 Wilson Journal article was developed by carefully designed field tests in which all of our data was from direct observations. It was conducted over several years. The methods are described in the Wilson Journal of Ornithology. (Daniel Klem, Jr. (01 Oct 2025): Bird-window collisions: a critical review.) Dr. Loss reviewed my analysis and concurred with it.

5. **Question:** What casualty data did you include which he did not have available to him?

Answer: Dr. Klem His data only included carcass counts and evidence left on the glass. Our direct observation of 1,356 collisions showed that only 2% of all collisions resulted in a carcass and less than 50% of collisions leave any evidence on the glass (this since has been revised to, less than 75% leave any evidence). Additionally, we used an excellent study of data from rehabilitation centers that found that 70% of the birds brought into the centers injured, but still alive, do not survive. This allowed us to be able to estimate the number of birds that hit windows, leave no trace, fly off, and later die from their injuries.

Because of the severity of the of the injuries caused by birds hitting glass at 10-30 mph, we knew that many died later from their injuries. (The severity of the injuries is described in my book (Daniel Klem, Jr. 2021. **Solid Air Invisible Killer, Saving Billions of Birds From Windows** Hancock House, Blain, Washington).

Another paper reached similar conclusions. It found that the Loss et al fatality estimates "vastly underestimate" number of deaths overall. **Samuels B,** et al. *Opening the black box of bird-window collision PeerJ* 10:e14604 https://doi.org/10.7717/peerj.14604

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in 1989 and the Journal of Field Ornithology in 1990 was the first to demonstrate the extent of avian mortality from bird window collisions.

		A	B	C	D	E
		Bird Deaths per building				Birds saved per install
Residential		7	15	105	82.50%	87
Commercial		74	15	1,110	82.50%	916
Residential Feeding		13	15	189	82.50%	156

A Annual Bird Deaths Per Building Type. See Q and A # 1.
Feeding increases bird deaths by 80%.(Kummer, Bayne & Machtans, 2016).

B - Useful Life of the collision prevention system from vendors

C - Expected Deaths over 15 years

D - Avoided deaths reflecting effectiveness of the systems See Q and A #2

E- Number of Birds Saved by Each Installation Type