

**Summary of Research:
BIRDS COLLIDING WITH WINDOWS / GLASS**

**Described by Daniel Klem, Jr.
Professor, Muhlenberg College**

Types of sites with documented bird kills:

- Normal residential windows of various sizes in a variety of settings: urban, suburban and rural
- Standard transparent windows on commercial, university and residential buildings
- Reflective windows of various sizes on commercial, university and residential buildings
- Tinted glass of any color
- Windows in buildings in middle of central business district
- Windows in suburban buildings
- Windows in front of large, leafy green plants
- Windows at all building heights
- Windows facing all directions
- See-through rooms: see in one window and out another
- Transparent/clear windows set alone in natural habitat, not associated with a building type
- Mirror simulating a reflective window in natural habitat, not associated with a building type
- Wood-frame windows situated near a wooded area – spaced to simulate new construction site
- Clear and gray-tinted windows installed in a century-old barn with no previous windows
- Stationary motor vehicles
- Telephone booths
- Communication towers
- Wind turbines
- Power lines
- Windows around woodlands, fallow fields, low fields, wetlands, open water
- Vertical windows – kills decrease as window angle increases
- Sound-muting 'wings'
- Windows in front of ponds or pools
- In strict research environments and random anecdotal observations
- Windows with one or more bird strike preventive techniques, such as various objects placed on or near windows – blinking lights; wind chimes; hawk silhouettes; other silhouettes of various shapes and sizes; owl decoys; actual specimens; and, various patterns on windows consisting of various elements
- Windows with bird feeders nearby

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Analysis of birds killed through window strikes:

- All ages
- Both sexes
- Over 550 species worldwide
- Healthy and weak birds
- Very fit to least fit members of a species
- Common and rare species
- Breeding and migrating birds
- During all seasons
- During various weather conditions
- Around 'attractants' found to influence and increase the frequency of strikes – feeders, trees, shrubs, water supply, nesting sites
- At various times of day depending upon season

Additional Points

- Glass is an indiscriminate killer all year round
- Fifty percent of strikes are immediately fatal
- Birds killed or injured at windows often end up hidden in vegetation and landscaping, and thus, unseen by people
- Scavengers regularly patrol for and collect the dead or dying birds
- Research has included continuous monitoring at residential sites for as long as 1 ½ years
- Research at sites with bird feeders confirms that the safest location is right against the window
- Worldwide surveys of window-killed birds have come from museums, universities, ornithological and bird societies/organizations, and individuals who documented window strikes and kills