

Hawk Migration Association (HMA) Statement on Raptors and Collisions

Raptor populations are sensitive to a wide range of anthropogenic changes in their environment and many of those changes — busy roads, tall buildings, light pollution, wind turbines — lead to direct mortality by collisions (Canney et al. 2021). It has been estimated that collisions with vehicles, windows, power lines, communication towers, and wind turbines result in millions of bird deaths per year (Loss et al. 2015) with current estimates calculating the loss at more than one billion birds annually (Kornreich et al 2024). In order to reduce these numbers, it is important to understand how human behavior and landscape changes play a part. Small changes can increase bird survival significantly.

Vehicle Strikes

Raptors are particularly vulnerable to vehicle strikes because they consume roadkill and/or forage along roads and highways. Dense brush, shrubs, or tall grass along roadsides provide habitat for prey, such as small birds and mammals, which in turn attracts foraging raptors. Larger species are most likely to be hit by cars, regardless of habitat (Bates 2023). A few owl species (Great Horned Owl, Barn Owl, Short-eared Owl) forage at the same height as vehicles, consequently making them prone to vehicle collisions. Attractive perch sites often placed along roads e.g., power poles and wires attract raptors to roadsides augmenting the threat.

HMA supports the U.S. Fish & Wildlife Service's recommendations to prevent bird-vehicle collisions:

- **Use of low fences** - Low fences along highway medians, rights of way, and other areas of roads where birds are known to travel frequently at low altitudes, may encourage higher flight height and help keep owls and other birds that move frequently in and around vehicle level in these areas out of harm's way.
- **Removal of attractants** - Attraction of birds to roads can be minimized by:
 - removing carcasses from the roadways.
 - using road treatments that do not attract birds.
 - removing fruiting plants that attract birds from medians and roadsides.
- **Use of warning signs** - Using signs that urge drivers to watch their speed and stay alert in known high wildlife crossing areas can help reduce collisions.

- **Monitoring efforts** - Monitoring (searching roadsides regularly for dead/injured birds and the source of these – e.g. nearby attractants) can help identify problem areas and causes so appropriate measures can be implemented.
- **Use of wildlife crossings or underpasses** - Wildlife crossings or large underpasses give wildlife alternatives to crossing directly over a road. By protecting wildlife from collisions with vehicles, in turn, managers protect birds like raptors and corvids that will be attracted to roadkill or injured prey. However, correctly locating these crossings is important for their effectiveness.

All of us can be more sensitive to this problem and, when driving, pay attention to speed limits and signage designed to protect wildlife.

Glass Strikes

Glass windows and light pollution, working together and separately, contribute heavily to bird deaths by collision, especially during spring and fall migrations. Recent estimates are that 1.28 to 3.6 billion birds succumb to glass strikes annually in the U.S. alone (Klem, Saenger, Brogle 2024). Collisions at the sites of large, glass-covered urban buildings have been publicized, but the fact is that windows on buildings 1 - 11 stories tall, including private homes, cause the vast majority of bird collision deaths (Loss et al. 2014). Clear and reflective glass is invisible to birds, including raptors. Reflective glass on homes in rural and suburban settings that reflect yard habitat surrounding the house causes birds to believe that they are flying into fields and forests. And, excessive artificial lighting at night can contribute to collisions by attracting birds—particularly migrants—causing them to be disoriented, and pulling them off course and making them more likely to strike windows (Klem 2021).

HMA strongly supports efforts of the American Bird Conservancy (ABC) and other groups who are working with architects and manufacturers to develop bird-friendly building designs, materials, and lighting, and with legislators and local building-standard groups to develop bird-friendly rules and building codes. Importantly, ABC has also developed and compiled relatively simple solutions that homeowners can use to retrofit existing windows and make them safer for birds (Sheppard and Lenz 2023).

HMA also supports the National Audubon Society's "[Lights Out](#)" program, a national effort to turn off excess lighting to help provide safe passage for migrating birds. While most collisions with home windows occur during the day, and the impact of light reduction/elimination measures is greatest for large urban buildings, reducing unnecessary lighting around private homes and businesses can help to prevent unnecessary bird deaths and also reduce energy costs. This is especially important in migration corridors or flyways and at watchsite locations. Some "Lights Out" solutions include:

- Turn off exterior decorative lighting
- Close curtains at night
- Extinguish floodlights
- Turn off interior lighting especially on higher stories
- Down-shield exterior lighting to eliminate glare
- Install automatic motion sensors and controls
- Assess the quality and quantity of light needed and avoid over-lighting.
- Reduce lighting at cell towers and other tall structures and use blinking lights to reduce light confusion in migrating birds.

Power Lines Strikes

Raptors can collide into electrical power lines and may also be electrocuted if they make contact with two opposite polarity wires. Please refer to HMA's position statement on this important topic. HMA also endorses the U.S. Fish & Wildlife Service's recommendation of the installation of line markers on power lines and wires to increase their visibility (Colorado Birds. Vol. 37, No. 3. July 2003). Consideration of raptors and their migratory flyways should be considered when planning for new power lines to reduce mortality rates. Older power lines may need new technology that is being developed that includes lasers that increase line visibility.

Global raptor conservation relies on humans to establish interaction between human beings and wildlife that is safer for wildlife and that leads to successful coexistence. Well-planned, integrated approaches to prevention, mitigation, research, and monitoring are key.

Compiled by members of the Conservation Committee, HMA Board; reviewed by Laurie Goodrich, PhD, Director of Conservation Sciences, Hawk Mountain Sanctuary Association, and Daniel Klem, jr., Professor Ornithology and Conservation Biology, Muhlenberg College.

The Hawk Migration Association's official mission is to conserve raptor populations through the scientific study, enjoyment, and appreciation of raptor migration. As a scientific, educational, and conservation organization, HMA collects data from hundreds of affiliated raptor monitoring sites throughout the United States, Canada, and Mexico, and publishes a journal Hawk Migration Studies that includes data from participating hawk watches as well as articles on raptor conservation and other issues impacting raptors.

Visit HMA.org to learn more.

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<https://www.fws.gov/story/threats-birds-collisions> (Buildings and Glass)