

Addressing Aircraft/Wildlife Hazards at General Aviation Airports

In January 2009, a US Airways flight made an emergency landing into the Hudson River after colliding with a flock of Canada geese following takeoff from New York City's LaGuardia Airport. The now famous Miracle on the Hudson and similar incidents have raised public awareness of the potential hazards of wildlife to aviation. Wildlife inhabiting areas in and around airports can pose a very real threat to the integrity of airport facilities and to aircraft safety.

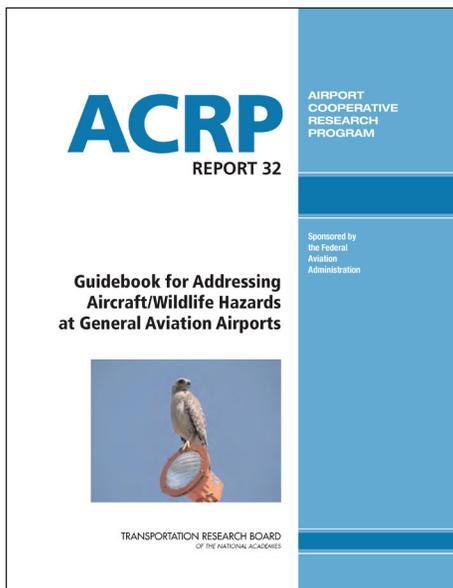
Between 1990 and 2008, the FAA reported that more than 10,000 civil aircraft were damaged by wildlife strikes. Eighty-seven human injuries and most of the nearly 50 aircraft destroyed from such strikes occurred at general aviation airports. In response to these concerns, *ACRP Report 32: Guidebook for Addressing Aircraft/Wildlife Hazards at General Aviation Airports* was developed to help airport employees identify and manage wildlife hazards.

from being planted near airports or limiting fish-bearing water sources. The guidebook also outlines how to create an airport wildlife hazard management program in accordance with various federal regulations, such as designing new stormwater management facilities and employing auditory wildlife repellants.

Pat O'Brien, airport operator for Sterling Municipal Airport (KSTK) in Colorado, utilized *ACRP Report 32* to manage a swallow population that had been causing aircraft strikes. Swallows are a small species of bird known to inhabit all parts of the globe and, as noted in the guidebook, possess a relative hazards ranking of 16. Species rankings are given in relation to deer, which inflict the greatest potential aircraft damage and thus have a relative hazards ranking of 100. Compared to other bird species, swallows have a fairly low relative hazards ranking (gulls and geese, by comparison, have rankings of 95 and 69 respectively). However, relative hazards rankings are only given to animals that are known to have been involved in 10 or more general aviation aircraft strikes from 1990 to 2008, indicating that swallows do pose a potential danger to aircraft safety.

Designed to be used by general aviation personnel, *ACRP Report 32* provides information on the types of wildlife seen at airport facilities, what attracts wildlife to these facilities, and how to identify the best method of controlling animal populations. Many animals do not pose a threat or can be deterred through simple measures, such as prohibiting certain crops

In 2010, the KSTK airport runway was extended over a drainage culvert. Swallows, which had not previously posed a problem for the airport, began inhabiting the culvert and congregating on the runway by the summer of 2011. While no plane damage was reported, airport employees did find several swallow remains, suggesting that the birds had struck planes during takeoff or landing. In response to this threat to aircraft safety, KSTK personnel utilized what *ACRP Report 32* refers to as an exclusion technique to



Above: Cliff swallow with the early markings of a nest. Cliff swallows commonly nest in culverts such as those found at airports and can pose a safety hazard for aircraft. Image source: Ingrid Taylor (www.flickr.com/photos/49503118795@N01/4597349950), licensed under CC BY 2.0 (creativecommons.org/licenses/by/2.0).

Aircraft/Wildlife Hazards at General Aviation Airports—*continued*

control the swallow population. Exclusion techniques involve the use of physical barriers such as screenings, nettings, and grid wires to prevent animals from accessing a particular area.

Inspired by the guidebook's suggestions, airport employees installed curtains made of heavy-duty plastic strips at each end of the culvert to discourage birds from entering the openings. A year after the installation, KSTK personnel modified the technique slightly by using nylon rope to keep the plastic strips closed, which helped to keep the curtains closed and enhanced deterrence of the birds. O'Brien reported that the technique was a success, stating, "I have found no dead swallows since installing the strips."

The approximate cost to KSTK for materials and labor to install the plastic strips was \$750. While this may be considered a relatively steep upfront cost for the simple control of a small bird popu-

lation, the technique is both permanent and environmentally friendly. This type of wildlife control strategy also does not require the physical eradication of a species population and is generally considered more humane, and is better accepted by the public. In the case of swallows, certain species in Europe and North America migrate, which also poses a legal obstacle to an airport if the birds must be killed as a means of population management. Not only must the birds be eliminated by a trained professional, but a federal migratory bird depredation permit must also be acquired.

KSTK airport personnel utilized the guidance in *ACRP Report 32* to successfully prevent the swallows' inhabitation and congregation on its runway area. Aircraft at KSTK are now better protected from bird strikes, increasing the safety of passengers and airport personnel.



Above: A curtain made of heavy-duty plastic strips is installed over a drainage culvert beneath the runway at Sterling Municipal Airport. The curtain prevents swallows from nesting inside the culvert and congregating on the runway, reducing the risk of wildlife strikes to aircraft during takeoff and landing. Image courtesy of Pat O'Brien/KSTK.

ACRP Report 32 recommends five basic control strategies to help airport managers manage hazardous wildlife:

- Repelling techniques—audio, visual, and chemical repellants;
- Habitat modification—elimination or reduction of food, water, or shelter;
- Exclusion—use of physical barriers;
- Population management—live capture, relocation, and controlled extermination; and
- Notes to Airmen (NOTAM) —delaying or advancing takeoff and landing times, or changing and closure of active runways.

ACKNOWLEDGMENT OF SPONSORSHIP: This work was sponsored by the Federal Aviation Administration and was conducted in the Airport Cooperative Research Program, which is administered by the Transportation Research Board of the National Academies.

DISCLAIMER: The opinions and conclusions expressed or implied in ACRP publications are those of the research agencies. They are not necessarily those of the Transportation Research Board, the National Research Council, or the program sponsors.