

# Airport

M A G A Z I N E

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## Wildlife Management

baggage handling  
ramp security  
spotlight: palm springs



Increased reporting and better technology are giving industry unparalleled intelligence on bird strike trends.



KANSAS CITY AVIATION DEPARTMENT

# Striking Developments

By Barbara Cook

Airports now have access to an improved wildlife management tool, thanks to the recent completion of a bird DNA library that can pinpoint the exact species of bird that caused an aircraft strike.

Armed with that specific information, airports can develop tailored habitat management programs to alleviate the potential for dangerous, and often deadly, aircraft-bird collisions.

Using a five year, \$500,000 grant from FAA's William J. Hughes Technical Center, the Smithsonian Institution's Feather Identification Lab in the Bird Division of the Museum of Natural History, in collaboration with the University of Guelph in Canada, mapped the DNA barcode for 96 percent of the bird species that reside in the U.S. and Canada.

"We consider this a major breakthrough for identification that doesn't involve feathers," commented Smithsonian Institution research scientist Carla Dove. The program to develop the DNA library was finished in fall 2006 and Dove's team of three immediately began using it for bird strike identifications. Co-workers with Dove on the team are DNA lab specialist Nancy Rotzel and feather lab technician Marcy Heacker.



More than 800 bird strike samples were submitted to the Smithsonian last fall for DNA testing and 67 percent of those samples contained viable DNA that resulted in a positive species identification, Dove explained. The remaining 33 percent of samples, which didn't contain usable DNA, were identified using the feather lab's traditional methods such as microscopy and whole feather comparisons with the Smithsonian's vast stuffed bird collection.

Using microscopic methods, "We can only get the identification to the group of birds, for example duck, but we cannot say if it is a mallard or a pintail duck," Dove said. "Until now, we could not get these minute samples to the species level and, therefore, were not as accurate with our IDs. Sometimes, we could only say 'songbird.' Now we can nail it all the way to the most obscure sparrow."

Many of the samples sent to Dove's lab by airports and airlines consist of paper towels containing a smear of bird blood or tissue. This collection method can result in a degradation of the DNA before the specimen reaches the lab, making it unusable for identification by the new DNA library.

"Another goal of our FAA project, in addition to developing the DNA library, was to improve the [bird sample] collection procedure," Dove said. Her team is now testing chemically treated sample cards that are easier and more sterile for airport and airline operations personnel to use. "We'll probably recommend using the cards," Dove said. "We'll come up with a bird strike shopping list and where you can buy the products, so each airport can obtain the materials." She noted that, "Probably the biggest thing keeping people from sending in samples is that it takes time." The new sample cards (pictured, top left), plus a report form that can be accessed on-line, could alleviate that problem, she said.

For Dove, the next step in the process of improving the bird strike information that is available to airports and airlines would be to expand the scope of the DNA library beyond the U.S. and Canada. The focus would be on identifying heavy birds, which are the most dangerous to aircraft, she explained.

FAA for years has had a voluntary system for reporting civil aircraft wildlife strikes, including bird strikes. In 1995, the agency, through an interagency agreement with U.S. Department of Agriculture (USDA), Wildlife Services, developed a National Wildlife Strike Database to better define the civil aircraft wildlife strike problem. About 72,000 strike records involving civil aircraft are now in the database and provide the foundation for FAA policies and guidance on wildlife management programs. Most are bird strike reports.

To expand airport and airline usage of the database, in 1999 FAA awarded a grant to Embry-Riddle Aeronautical University in Prescott, Arizona, to establish a Wildlife Hazard Mitigation website. This tool, available at <http://wildlife.pr.erau.edu/public/index1.html>, allows users to pull up their entire strike history. The same data is available at FAA's own site, <http://wildlife-mitigation.tc.faa.gov>. Other helpful material on the FAA website includes a manual for airports, Wildlife Hazard Management at Airports. The latest edition of the manual, which can be downloaded, has English and Spanish versions.

FAA wildlife biologist Ed Cleary explained that airports and airlines can request a password from FAA, using instructions contained in AC 5200-32A, to access their own strike history in the Wildlife Hazard Mitigation database. The information in the



database is protected so that one airport or airline can't pull up another's strike reports. "We do this because there was some reluctance at first to submit this information, and it might become misquoted and misinterpreted," Cleary said. He emphasized, however, that, "Because of the way data is collected, you cannot compare airports and airlines in any meaningful way because the information is submitted voluntarily, and every airport is different. The habitat is different for each."

Information that is automatically displayed by the database for Part 139 airports provides them with the number of strikes per 100,000 aircraft movements over the past five years. It also provides airports with a comparison of their strike rate with the statistical mean strike rate for similar size airports in their region, as well as with all airports of their size in U.S. "They can see how they stack up against other airports," Cleary explained.

The database also provides users with a risk analysis, which is a list showing all the species of birds and other wildlife that have caused damage to an aircraft at their facility over the last five years. In this way, officials have a record of the species posing the greatest risk to aviation safety at their airport. "Which birds cause damage to aircraft is the most important thing to know," Cleary said. "The database can help airports evaluate their wildlife hazard management program."

Aircraft engine manufacturers can access the database for all strike reports involving their engines but not for engines made by other companies. Further, the general public can obtain statistics on the number of strikes by year, month, state and wildlife species, but not by a specific airport, engine manufacturer or airline.

Despite the valuable information that airports and airlines can obtain from the database, only a small percentage of wildlife strikes at airports are reported to FAA and are reflected in the database. USDA employee and database manager Sandra Wright recently analyzed strike information in the database against internally maintained information provided by U.S.-based airlines and airports. She found that only 21 percent of known civil aviation strikes had been reported to FAA. The number actually could be as low as 11 percent, she stated.

Cleary pointed out that while the percentage of reports isn't increasing, the total number of reports

submitted by airports and airlines is steadily climbing. "I can't say why the percentage [of reports] isn't increasing," Cleary said. "But we are raising the consciousness of the aviation community. Airports are coming to realize that reporting a strike is to their benefit."

Richard Dolbeer, USDA's national coordinator for the airport wildlife hazard program, described the Smithsonian, FAA and USDA as a "three-part team" in their efforts to mitigate aircraft-wildlife accidents.

The team's workload is increasing steadily, he said. At USDA last year, the staff provided 674 airports with some type of wildlife management assistance. In 1990, by comparison, the department worked at only 42 airports. Airports' need for wildlife management assistance is increasing for a



number of reasons, Dolbeer said. These include: the U.S. is doing a better job of protecting birds by banning certain pesticides; wildlife refuge areas are bigger; the Clean Water Act has benefited wildlife; wetlands are receiving greater protection, and migratory bird treaties have been strengthened. Another factor is that aircraft are quieter and faster, making birds less able to detect them.

All of these factors have resulted in a major increase in many bird populations that are hazardous to aviation, Dolbeer said. "As a country, we should be proud that we have done such a great job. But, as a result of all this protection,

many of our bird species that are hazardous to aviation are increasing, and they have adapted to urban environments. They love airports because there is lots of grass there. And, if there is water, they like that, too."

Dolbeer added, "Managing wildlife on an airport is like mowing your grass. You are never going to stop having to do it. Wildlife will fill in a vacuum."



## Report All Wildlife Strikes to KCI Airport Operations 243-5248 or 243-5219

Report the Following Information...

- Date
- Time
- Airline
- Flight Number
- Aircraft Number
- Aircraft Type
- Engine Type
- Altitude
- Speed
- Phase of Flight
- Place of Impact
- Damage to Aircraft

\*Please Save Any Remains of Wildlife




Robert Johnson, assistant operations manager at Kansas City International Airport (KCI), frequently uses the Smithsonian's resources for bird identification. "It's extremely important that we know what is struck instead of just guessing," he explained. He said that a problem with bird strikes at the approach to KCI's runway 19L was resolved when Dove's lab identified the birds involved, which enabled the airport to find the correct nesting area. Airport personnel put netting over the grates of a culvert and removed the birds' habitat, which resulted in a decline in strikes.

At KCI, "It's a pretty well established practice for operations and airline people to collect (wildlife) remains," Johnson said. He uses posters to remind airport personnel to be on the lookout for wildlife remains involved in strikes and to collect a sample for identification.

Dolbeer pointed to a number of promising technologies that could aid airports in their wildlife management programs in the future. These include:

— Development of bird detecting radar. "Just like radar can see weather patterns, certain radar can detect birds," Dolbeer explained. The technology now is being used at airports on an experimental basis.

— Making aircraft more visible to birds. Since birds can see light in the ultraviolet range, aircraft might be equipped with lights that also emit ultraviolet frequencies as well as visible frequencies. This light would catch birds' attention and help them recognize the approach of an aircraft. Another possibility is the use of ultraviolet reflecting paint on the nosecone of an aircraft. "Birds do try to get out of way of aircraft; they aren't suicidal," Dolbeer said.

— Use of grasses that are unpalatable to geese and other birds that feed on grass. These entophytic fescue grasses have a fungus associated with them that doesn't harm the grass, but gives a bad taste. USDA currently is testing types of fescue for use on airports. "Over the next few years, I think we'll see specific recommendations on types of grasses to plant on airports that are wildlife unfriendly," Dolbeer said. 

Barbara Cook is Airport Magazine's deputy editor.

## Posters remind KCI employees to report wildlife strikes

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