NPMA LIBRARY UPDATE

Update

AUG/SEPT
2009

Insert this update into the NPMA Pest Management Library, which can be purchased from the Resource Center. Phone: 703-352-NPMA (6762); Fax: 703-352-3031

Bird and Wildlife Strikes

Pest Management at Airports and Surrounding Areas

Experts within the Federal Aviation Administration (FAA), U.S. Department of Agriculture (USDA), and U.S. Air Force recognize that the threat to human health and safety from aircraft collisions with wildlife (called wildlife strikes) is increasing, and they expect the risk, frequency, and potential severity of wildlife-aircraft collisions to grow over the next decade.

The events involving the US Airways flight 1549 crash into the Hudson River following take off from LaGuardia airport in January, 2009 illustrates this point. A mid-air collision after takeoff with a flock of Canada geese put the pest management of birds at airport facilities front and center in the news headlines. Most of the listening and reading public had never before considered the importance of pest management at and around neighboring areas to airports. Few had ever heard of the term "snarge" used to describe the birds' remains left on the plane that are analyzed after a bird strike. Fortunately, no deaths (except to the birds) occurred and few injuries resulted. This is not always the case with a mid-air plane bird strike. Pest management at airports and surrounding areas is hugely important, and not just for managing birds, but for urban wildlife as well, to prevent pests from straying onto tarmacs or runways with potentially disastrous consequences.

The National Transportation Safety Board (NTSB) confirmed that the birds that brought the plane down into the Hudson River were Canada geese. Researchers determined that they were not migratory geese from Canada, but, instead, resident birds from the surrounding New York area. Migrating Canada geese typically weigh from six to 11 pounds, the safety board said, but non-migrating geese are typically heavier. Most airplane engines can handle only a four pound bird entering it. The identification of bird remains from the US Airways flight was made by the bird lab at the Smithsonian's National Museum of Natural History; microscopic analysis of feathers found inside the engines and DNA tests on bird tissue also found there were used in the diagnosis.

Airports where planes have struck birds are required to take measures to scare birds off, but the plane that crashed in the Hud-

After a mid-air collision with a flock of Canada geese, US Airways flight 1549 crashed into the Hudson River in January, 2009.

son, flown by US Airways, hit the birds nowhere near the La Guardia Airport, from which it took off. It was at 3,200 feet. Non-migratory geese commonly fly at that altitude when traveling from their feeding grounds to their roosting grounds.

A Growing Problem

Globally, wildlife strikes have killed more than 219 people and destroyed over 200 aircraft since 1988. Three major factors contribute to this increasing threat: 1) populations of wildlife species commonly involved in strikes have increased and are now well-adapted to living in urban environments like those around airports; 2) air traffic has increased substantially since 1980; and 3) commercial air carriers are replacing their older three- or four-engine aircraft fleets with more efficient, quieter, two-engine aircraft that wildlife do not perceive easily.

The FAA has initiated several programs to address this important safety issue. Among various programs are the collection and analysis of data from post plane-wildlife strikes. FAA has collected wildlife strike data since 1965. In 1995, the FAA, through an interagency agreement with the USDA, Wildlife Services, (USDA/WS), initiated a project to obtain more objective estimates of the magnitude and nature of the national wildlife strike problem for civil aviation. Such analyses are critical to determining the economic cost of wildlife strikes, the magnitude of safety issues, and most important, the nature of the problems (e.g., wildlife species involved, types of damage, height and phase of flight during which strikes occur, and seasonal patterns of strikes). The information obtained from these analyses provides the foundation for refinements in the development, implementation, and justification of research and integrated pest management (IPM) efforts to reduce wildlife strikes at and near airports.

Pest Wildlife Facts

Thirteen of the 14 bird species in North America with mean body masses greater than eight pounds include: the more frequently encountered Canada geese, turkeys, turkey vultures, American white pelicans, sand hill cranes, double-crested cormorants and bald eagles. All of these bird species have shown significant population increases over the past three decades *(Dolbeer and Eschenfelder 2003)*.

The white-tailed deer population increased from a low of about 350,000 in 1900 to over 17 million in the past decade (McCabe and McCabe 1997, Hubbard et al. 2000).

The first annual report on wildlife strikes to civil aircraft in the United States, covering 1994, was completed in November, 1995. Since then, annual subsequent reports have been published. These reports cover an 18-year period, 1990-2007. During this time frame, 79,972 bird strikes were reported; 63,973 provided some indication as to the nature and extent of any damage. Of these, 86% indicated the strike did not damage the aircraft; 8% indicated the aircraft suffered minor damage; 4% indicated the aircraft suffered substantial damage; 3% reported an uncertain level of damage; and less than 1% indicated the aircraft was destroyed as a result of the strike.

Of the 1,737 terrestrial mammal strikes reported, 1,176 reports provided some indication as to the nature and extent of any damage. Of these, 39% indicated the strike did not damage the aircraft; 27% indicated the aircraft suffered minor damage; 27% indicated the air-

Nuisance bird and wildlife management is the fastest growing sector of the pest management industry. In response to this growth, NPMA has developed a one-of-a-kind meeting – The Nuisance Bird and Wildlife Management Conference & Marketplace, November 18-20, 2009 in Indianapolis, Indiana. Geared toward the needs of pest management professionals and wildlife management professionals, this program will include educational sessions (avian species track and ground wildlife track), a Marketplace, and networking opportunities. For more information, visit npmapestworld.org/events.

Photo — http://www.100ambiente.it/uploads/birdstrike_02.jpg

craft suffered substantial damage; 5% reported an uncertain level of damage; and 2 percent indicated the aircraft was destroyed as a result of the strike. As would be expected, a much higher percentage of terrestrial mammal strikes (61%) resulted in aircraft damage than did bird strikes (14%). Deer were involved in 44% of the reported terrestrial mammal strikes. In 13% and 54% of the bird and terrestrial mammal strike reports, respectively, an adverse effect-on-flight was reported. Three (3%) percent of bird strikes resulted in an aborted takeoff compared to 17% of terrestrial mammal strikes. In addition to birds and mammals, large reptiles, including alligators and iguanas, have also accounted for some wildlife strikes in semitropical to tropical geographical areas of the United States.

The most deadly civil (62 human fatalities, Massachusetts, 1960) and military (34 fatalities, Netherlands, 1996) bird strikes were caused by flocks of starlings. But, 166 identified bird species have been reported as causing airplane damage. These include: gulls (20%), doves/pigeons (14%), raptors (13%), and waterfowl (9%) as the most frequently struck bird groups. Gulls are responsible for the greatest number of bird strikes (27%) that had a negative effect-on-flight.

The most frequently struck terrestrial mammals are deer (46%) and coyotes (32%). Deer are responsible for 92% of the mammal strikes that result in damage and 80% of the mammal strikes that have a negative effect-on-flight. In all, 36 identified species of terrestrial mammals and eight identified species of bats were reported struck; 19 identified species of terrestrial mammals and two identified species of bat caused damage.

To address the problem, airport managers must work with wildlife pest management professionals to assess wildlife hazards at their airports. They then must take appropriate actions, under the professional's guidance in cooperation with that of local professional biologists trained in wildlife damage management, to minimize the risks posed by wildlife. The pest management professional must educate the aviation community to widen its view of wildlife management to consider habitats and land uses in proximity to the airport. Wetlands, dredge spoil containment areas, landfills, waste-disposal facilities, and wildlife refuges can attract hazardous wildlife. Such land uses are often incompatible with aviation safety and should either be prohibited near airports or designed and operated in a manner that minimizes the attraction of hazardous wildlife.

Wildlife Management Hazard Plan (WMHP)

A variety of pest management methods may be employed at airports including all of the basic IPM (integrated pest management) steps. If birds, mammals or reptiles cannot locate food, water or harborage (shelter), then these pests will not be found on airport grounds. The basic IPM steps include Sanitation, Exclusion, Mechanical Alteration or Modification, Non-Chemical and Chemical methods all integrated into an overall Wildlife Management Hazard Plan (called a WMHP) scheme. Examples of sanitation measures at airport grounds might include frequent mowing, standing water abatement and proper trash management to prevent the presence of food, water, and shelter. Examples of exclusion might include fencing and netting and ditches to prevent wildlife from entering airport areas. Mechanical alteration measures might include things like proper grading and drainage systems to remove water; pruning of vegetation, removal of weeds, tree and plant or fruit removal or alternative plantings to be less attractive to wildlife, or removal of eggs and/or nests from roosting areas. Non-chemical measures might include trapping and removal of problem wildlife; or scare techniques such as canons and pyrotechnics to remove wildlife

Air Travel Facts

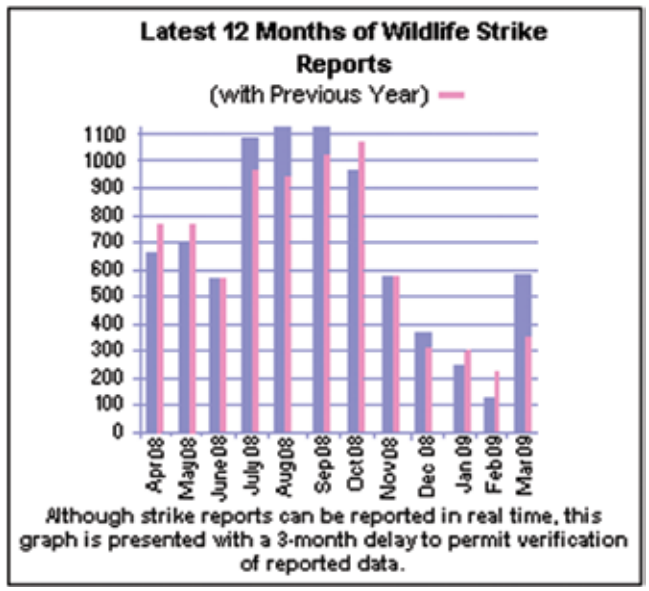
Passenger enplanements in the United States increased from about 310 million in 1980 to a record 749 million in 2007 and commercial air traffic increased from about 18 million aircraft movements in 1980 to over 28 million in 2007, according to the FAA.

United States commercial air traffic is predicted to continue growing at a rate of about 2% per year to more than 36 million movements by 2020.

In 1969, 75% of the 2,100 United States passenger aircraft had three or four engines. In 2005, the United States passenger fleet had grown to about 8,200 aircraft *(Department of Transportation 2007),* and only about 10% have three or four engines *(Cleary and Dolbeer 2005).* This reduction in engine redundancy increases the probability of life-threatening situations resulting from aircraft collisions with wildlife, especially with flocks of birds. Research has indicated that birds are less able to detect and avoid modern jet aircraft with quieter engines.

from airport areas. Chemical measures might include repellents and baits and pesticide/herbicide usage.

The Wildlife Management Hazard Plan must be established for each airport and developed in conjunction with the pest management professional, the airport management and any biologists and other wildlife specialists. Special considerations for local hazardous and rare or endangered species of concern must be given. The manual, Wildlife Hazard Management at Airports, (see: http://wildlife-mitigation.tc.faa.gov) provides guidance to airport personnel in developing and implementing wildlife hazard management plans. Adobe Acrobat© PDF versions of the manual are available online in English, Spanish, and French at http://wildlife-mitigation.tc.faa.gov.



Ref — http://wildlife-mitigation.tc.faa.gov.

Airport operator personnel with FAA approved Wildlife Hazard Management Plans must have certified annual training; there is no reason why wildlife biologists and pest management professionals actively involved in the implementing of the plan could not also attend wildlife management techniques courses such as a recent one offered by the AAAE (American Association of Airport Executives). (See www.aaae.org/meetings.)

Collecting a variety of whole feather material is helpful in the identification process.

When collecting small samples (tissue, blood, feather fragments, etc.) send as much material as possible.

Photos — http://wildlife.pr.erau.edu/BirdIdentification.htm

Identification

In addition, pilots, airport operations, aircraft maintenance personnel, and pest management professionals having any knowledge of a wildlife strike should report the incident to the FAA using FAA Form 5200-7. Strikes can be reported electronically via the Internet (http://wildlife-mitigation.tc.faa.gov) or downloaded from this online site and mailed in. It is important to include as much information as possible on FAA Form 5200-7. The identification of the exact species of wildlife struck (e.g., ring-billed gull, Canada goose, mallard, mourning dove, or red-tailed hawk as opposed to gull, goose, duck, dove, or hawk) becomes especially important. This species information is critical for professionals as they develop and implement Wildlife Hazard Management Plans at various airports. Bird strike remains that cannot be identified by airport personnel or the pest professional can often be identified by a local biologist trained in ornithology or by sending feather and other remains in a sealed plastic bag (with FAA Form 5200-7) to:

Feather Identification Laboratory at the Smithsonian Institution
c/o Dr. Carla J. Dove, Program Manager
Smithsonian Institution
Division of Birds
PO Box 37012, MRC 116
Washington, DC 20013-7012
Phone: (202) 633-0787
Fax: (202)633-8084
E-mail: dovec@si.edu

Whole feathers should be sent whenever possible, as diagnostic characteristics are often found in the downy barbules at the feather base. Wings, as well as breast and tail feathers should be sent whenever possible. Beaks, feet, bones, and talons are also important.

Conclusion

The role of wildlife pest management at airports and surrounding areas is an ever increasing need; this need will grow as populations of urban wildlife and of the air travelling public also increase in the years to come. When the two populations intermingle, there can often be disastrous consequences, but proper wildlife pest management can help to reduce and prevent this.

References Used:
http://www.nytimes.com/2009/02/13/nyregion/13plane.html
http://wildlife-mitigation.tc.faa.gov
http://www.birdstrike.org/commlink/collectguide.htm
http://www.faa.gov/airports_airtraffic/airports/
http://www.aaae.org/meetings