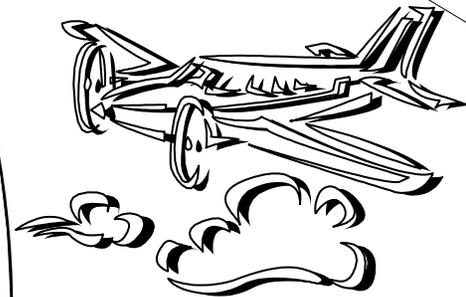


BIRD STRIKE HAZARDS

Navy Flying Club Safety Brief
September 14, 2004



Introduction

- Bird strike risk increases because of bird migration during the months of March through April, and August through November
- Bird and other wildlife strikes to aircraft annually cause over \$600 million in damage to U.S. civil and military aviation, putting the lives of aircraft crew members and their passengers at risk.
- Since 1988, over 195 people have been killed worldwide as a result of wildlife strikes.



Did You Know That...

- Over 4,300 bird strikes were reported by the U.S. Air Force in 2003.
- Over 5,900 bird strikes were reported for U.S. civil aircraft in 2003.
- An estimated 80% of bird strikes to U.S. civil aircraft go unreported.
- Waterfowl (32%), gulls (28%), and raptors (17%) represented 77% of the reported bird strikes causing damage to U.S. civil aircraft, 1990-2003.



Did You Know That...

- A 12-lb Canada goose struck by an 150-mph aircraft at lift-off generates the force of a 1,000-lb weight dropped from a height of 10 feet.
- About 90% of all bird strikes in the U.S. are by species federally protected under the Migratory Bird Treaty Act.
- At least 15,000 gulls were counted nesting on roofs in U.S. cities on the Great Lakes during a survey in 1994.
- In 1890, 60 European starlings were released in Central Park, New York City and are now the second most abundant bird in North America with a late-summer population of over 150 million birds. Starlings are "feathered bullets", having a body density 27% higher than herring gulls.

Did You Know That...

- The North American non-migratory Canada goose population increased 3.6 fold from 1 million birds in 1990 to 3.6 million in 2003.
- The North American population of greater snow geese increased from about 50,000 birds in 1966 to 700,000 birds in 2003.
- The Great Lakes cormorant population increased from only about 200 nesting adults in 1970 to over 230,000 nesting adults in 2003, a 1,000-fold increase.
- The North American white and brown pelican populations grew at average annual rates of 3.9% and 3.3%, respectively, 1980-2003.

Bird Strike Statistics

- **History:** The first fatal accident occurred in 1912. Since 1960, about 400 aircraft have been destroyed and over 370 people killed as a result of bird and other wildlife strikes.
- **Location:** Strike hazards exist throughout the world with higher threats near migration routes or favorable environments.
- **Altitude:** More than half at less than 100 feet (30 meters) above the ground, highest reported strike at 37,000 feet (11,280 meters), highest reported bird sighting at 54,000 feet (16,460 meters).

Bird Strike Statistics

- **Number of Strikes:** According to statistics from the Federal Aviation Administration (FAA), there were over 33,000 bird strikes reported to civil aircraft between 1990 and 2000.
- **Strike Rates:** The Civil Aviation Administration (CAA) of the United Kingdom estimates that UK registered aircraft of over 12,500 pounds (5,700 kilos) strike a bird about once every thousand flights.
- **Species:** Species of interest depends on area. In North America gulls, waterfowl and raptors are frequently involved in serious bird strikes. Over 450 deer-aircraft collisions were reported to civil aircraft in USA, 1990-2000.
- **Flock Size:** Bird encounters can involve over 300 birds at a time.

Bird Strike Statistics

- **Size:** Birds can weigh in excess of 40 pounds (18 kilos), but most North American bird strikes involve birds weighing 4 pounds (1.8 kilos) or less. Canada geese typically weigh 8-12 pounds.
- **Damage Rates:** According to FAA data, about 15% of all bird strikes result in aircraft damage.
- **Airports:** While any airport may have bird strikes, airports adjacent to wetlands or wildlife preserves are at higher risk of having a significant bird strike hazard.

Migratory Bird Activity

- Four major migratory flyways exist in the U.S:
 - *The Atlantic flyway parallels the Atlantic Coast.*
 - **The Mississippi Flyway** stretches from Canada through the Great Lakes and follows the Mississippi River.
 - **The Central Flyway** represents a broad area east of the Rockies, stretching from Canada through Central America.
 - **The Pacific Flyway** follows the west coast and over flies major parts of Washington, Oregon, and California.

- There are also numerous smaller flyways which cross these major north-south migratory routes.¹

Reducing Bird Strike Risks

- The most serious strikes are those involving ingestion into an engine (turboprops and turbine jet engines) or windshield strikes. These strikes can result in emergency situations requiring prompt action by the pilot.
- Engine ingestions may result in sudden loss of power or engine failure. Review engine out procedures, especially when operating from airports with known bird hazards or when operating near high bird concentrations.
- Windshield strikes have resulted in pilots experiencing confusion, disorientation, loss of communications, and aircraft control problems. Pilots are encouraged to review their emergency procedures before flying in these areas.

Reducing Bird Strike Risks

- When encountering birds en route, climb to avoid collision, because birds in flocks generally distribute themselves downward, with lead birds being at the highest altitude.
- Avoid over flight of known areas of bird concentration and flying at low altitudes during bird migration. Chartered wildlife refuges and other natural areas contain unusually high local concentration of birds which may create a hazard to aircraft.



Reporting Bird Strikes

- Pilots are urged to report any bird or other wildlife strike using FAA Form 5200-7, Bird/Other Wildlife Strike Report (Appendix 1).
 - Additional forms are available at any FSS;
 - At any FAA Regional Office;
 - Via the Internet at <http://wildlife-mitigation.tc.faa.gov>.
- The data derived from these reports are used to develop standards to cope with this potential hazard to aircraft and for documentation of necessary habitat control on airports.



Reporting Bird and Other Wildlife Activities

- If you observe birds or other animals on or near the runway, request airport management to disperse the wildlife before taking off.
- Also contact the nearest FAA ARTCC, FSS, or tower (including non-Federal towers) regarding large flocks of birds and report the:
 1. Geographic location.
 2. Bird type (geese, ducks, gulls, etc.).
 3. Approximate numbers.
 4. Altitude.
 5. Direction of bird flight path.



Pilot Advisories on Bird and Other Wildlife Hazards

- Many airports advise pilots of other wildlife hazards caused by large animals on the runway through the A/FD and the NOTAM system.
- Collisions of landing and departing aircraft and animals on the runway are increasing and are not limited to rural airports. These accidents have also occurred at several major airports.
- Pilots should exercise extreme caution when warned of the presence of wildlife on and in the vicinity of airports.
- If you observe deer or other large animals in close proximity to movement areas, advise the FSS, tower, or airport management.

U.S. Wildlife Refuges, Parks, and Forest Service Areas

- The landing of aircraft is prohibited on lands or waters administered by the National Park Service, U.S. Fish and Wildlife Service, or U.S. Forest Service without authorization from the respective agency. Exceptions include:
 - When forced to land due to an emergency beyond the control of the operator;
 - At officially designated landing sites; or
 - An approved official business of the Federal Government.
- Pilots are *requested* to maintain a minimum altitude of 2,000 feet above the surface of the following: National Parks, Monuments, Seashores, Lakeshores, Recreation Areas and Scenic Riverways administered by the National Park Service, National Wildlife Refuges, Big Game Refuges, Game Ranges and Wildlife Ranges administered by the U.S. Fish and Wildlife Service, and Wilderness and Primitive areas administered by the U.S. Forest Service.

Summary

- Check NOTAMS / ATIS for bird activity at departure and destination airports.
- Plan to fly as high as possible - most birds fly below 2,500 ft.
- Avoid bird sanctuaries and coastlines in the spring and fall.
- Pre-flight the aircraft thoroughly. Bird nests can be built (or rebuilt) overnight.
- Many hazardous species are colored so that they merge into the background.
- If you see hazardous birds on or near runways, have airport personnel move them BEFORE you take off.

Summary

- The higher the speed of an aircraft, the greater the risk of a bird strike and the greater the potential damage.
- Birds usually escape by diving, so try to fly over them, but do NOT risk a stall or spin.
- Most general aviation aircraft windshields, etc., are not required to be able to withstand bird strikes.
- If the windshield is broken, avoid distraction - FLY THE AIRCRAFT.
- Report all bird strikes using the Bird/Wildlife Strike Report. (Photos of damage are helpful.)
- If you are not certain of the bird species, there are agencies that exist to help in identifying feathers and other remains.