A History of Wildlife Strikes and Bird Strike Committee-USA

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Washington, DC  17 February 2011
1903: The first powered flight
1905: The first reported bird strike

Date: 7 Sept 1905
Aircraft: Wright Flyer
Location: Dayton, OH
Phase of flight: Cruise over cornfield
Damage: None
Wildlife Species: Red-winged blackbird?
The first reported terrestrial wildlife strike
25 July 1909

Louis Bleriot's historic first flight across the English Channel from Les Baraques, France

During engine warm-up, a farm dog ran into the propeller of the Bleriot XI aircraft and was “chopped to a pulp”. 

Landing at Dover, England

Louis Bleriot
1912: The First Bird Strike Fatality

Date: 3 April 1912
Aircraft: Wright Pusher
Location: Long Beach, CA
Phase of flight: Cruise over water
Damage: Aircraft Destroyed
Wildlife Species: Gull

Bird Strike Committee USA
1939: The First Bird Strike to a Jet-powered Aircraft

Date: 27 August 1939
Aircraft: Heinkel He 178 (V1)
Location: Germany
Phase of flight: Unknown
Damage: Loss of thrust
Wildlife Species: Bird

Comment: The first test flight of a jet-powered aircraft was on 24 August 1939. Three days later, during the second flight, a loss of thrust was experienced after a bird strike.
Wildlife Strike Timeline

- 1905 - First reported bird strike
- 1909 - First reported terrestrial mammal strike
- 1912 - First plane crash & first loss of human life
- 1913-1959 (47 years) - Only 3 civil aircraft destroyed
- 1960 - Lockheed Electra crash in Boston Harbor (62 deaths)
- 1960s - First attempts to collect bird strike data by FAA
- 1960s - Bird Strike Committee - Canada & BSCE begin
- 1960s - USFWS-ADC does small amount of airport work
- 1970s-2010 (the rest of the story)
  (1960-2010 [51 years]-160 civil aircraft destroyed)
Date: 3 October 1960
Aircraft: Lockheed Electra
Location: Boston Logan Airport (MA)
Phase of flight: Climb
Effect on flight: Engine shutdown, crash
Damage: Engines, aircraft destroyed, 62 fatalities, 9 injuries
Wildlife species: European starlings
Date: 23 November 1962
Aircraft: Vickers Viscount
Location: Ellicot City, Maryland
Phase of flight: En Route (6,000’ AGL)
Effect on flight: Crashed
Damage: tail section, aircraft destroyed, 17 fatalities
Wildlife species: Tundra swan
Bald Eagle Nests in Contiguous USA (1963-2009)

BDDT

DDT Banned
Canada Goose population in North America, 1970-2010 (resident and migratory)

(Graph by R. A. Dolbeer with data from U.S. Fish and Wildlife Service)
Breeding Population of Ospreys has increased over 12-fold in USA, 1966-2007

Over 5,500 strikes were reported between raptors and civil aircraft, USA, 1990-2009
Greater & Mid-continent Snow Goose Populations (1970-2010)
(Winters: Texas-N. Carolina)

Mean annual increase = 3.4%

Body mass = 7.6 lbs
Pacific White-fronted Goose Population (1979-2010)
(Winters: Alaska to California)

Mean annual increase = 7%

Body mass = 6 lbs
Turkey vulture population increase in N. America, 1980-2007

Mean annual increase = 2.2%
Breeding Population of Sandhill Cranes has increased 8 fold in North America, 1966-2007

North American Population = >650,000
Breeding Population of Great Egrets has doubled in North America, 1966-2007
Wild turkey population in USA (1959-2010)

Penetration of wild turkey into cockpit of Canadair RJ 200 at IAD, March 2002
Breeding population of Red-tailed hawks increased 14 fold in Illinois, 1966-2006, to over 40,000 birds.
Breeding population of white pelicans has increased at a mean annual rate of 4.3% in North America, 1966-2007.
California Condor Population, 1987-2010

Body mass = 22 lbs

Captive

Wild
White-tailed deer population in USA increased from 0.3 million to ~ 25 million, 1900-2010

Over 1,000 deer-aircraft collisions reported, 1990-2009
1970s: Emergence of efforts by FAA and others in USA to mitigate wildlife strikes at airports

- Environmental initiatives set stage for recovery of bird populations
- FAA developed some guidance for airports
- FAA had no staff biologist dedicated to wildlife strike mitigation
- No airport-related research to mitigate strikes in USA
- USAF BASH team formed
- UK had research on grass management at airports
- Bird Strike Committee Europe met every 2 years (limited USA presence)
1973: Jet crash kills 7, cowbirds from nearby landfill blamed

Date: 26 February 1973
Aircraft: Learjet 24
Location: DeKalb - Peachtree (GA)
Phase of flight: Climb
Effect on flight: Crash
Damage: Engines, aircraft destroyed: 7 fatalities, 1 injury
Wildlife species: Brown-headed cowbirds
1975: Largest Commercial Aircraft to be destroyed by birds

Date: 12 November 1975
Aircraft: DC 10
Location: JFK International Airport
Phase of flight: Take-off run
Effect on flight: Aborted take-off
Damage: Engine, landing gear, aircraft destroyed
Wildlife species: Herring and great black-backed gulls
1980s: Continued emergence of efforts by FAA and others in mitigating wildlife strikes at airports

- 1980-1989: Populations of many large species of birds starting to recover
- 1983: FAA hired a staff biologist for first time (Mike Harrison)
- 1986: Wildlife Services was transferred from Interior to Agriculture
  - USDA APHIS was supportive of Wildlife Services
  - Funding improved (especially cooperator funding)
- 1989: FAA develops MOU with USDA Wildlife Services
- 1989-1990: WS develops agreements at ORD, JFK & a few other airports
1990s: BSC-USA founded; major efforts initiated to mitigate wildlife strikes at airports

- 1990-1999: Populations of many large species of birds show phenomenal growth
- 1991: USDA WS enters into agreement with PANYNJ for gull control at JFK
  - 15,000 gulls shot; brings national headlines and attention to problem
- 1991: BSC-USA is founded (10 people at meeting)
- 1991: USAF begins funding Smithsonian Feather Lab
- 1995: FAA hires Ed Cleary (USDA/WS-OH); Gene LeBoeuf to USAF BASH
- 1995: FAA enters into agreement with USDA/WS to develop bird strike database
- 1999: FAA-USDA publish first manual on mitigating wildlife strikes at civil airports
- 1999: USDA/WS provides assistance at 363 airports (40 in 1990)
- 1995-1999: Avian radar being developed for airports; USAF BAM expanded
News media coverage of JFK program-1991

Shotgun-toting feds killing sea gulls at JFK Airport

BYE, BYE BIRDIE!
BIRD STRIKE COMMITTEE-USA
Promoting Education, Professionalism and Technology to Reduce Wildlife Hazards to Aviation

Founded August 1991
WHEN AND WHERE DOES BIRD STRIKE COMMITTEE-USA MEET?

- Since 1991, BSC-USA meets annually in association with an airport.
- Since 1999, annual meetings have been held jointly with Bird Strike Committee Canada.
Bird Strike Committee-USA Meeting Attendance

<table>
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Attendees

0 50 100 150 200 250 300 350 400 450 500
Field demonstrations at BSC-USA Meetings

GODZILLA Bird Disperser!

Paint-ball gun to disperse geese, BWI

Bird Strike Committee USA
Field demonstrations at Bird Strike Committee USA Meeting at MSP, Aug 2000

PELLET GUN FOR PIGEON REMOVAL

HAWK TRAPPING AND RELOCATION

PROPANE CANNON/HUNTER SILHOUETTE
Four of 22 Vendors at BSC-USA Meeting at BWI, 2004
Pyrotechnics Training at Bird Strike Committee
USA/Canada Meeting in Sacramento, 2002

Classroom Lectures

Hands-on Field Training
Bird Strike Committee USA Meetings Receive Positive News Media Coverage

Baltimore 2004

Minneapolis 2000

Bird Strike Committee USA
1995: Worst U.S. Military Bird Strike

Date: 22 September 1995
Aircraft: E-3 AWACS
Location: Elmendorf AFB (AK)
Phase of flight: Take-off run
Effect on flight: Crashed into forest
Damage: Engines, aircraft destroyed: 24 fatalities
Wildlife species: Canada geese
Date: 15 July 1996
Aircraft: Lockheed C-130
Location: Eindhoven, Netherlands
Phase of flight: Approach
Effect on flight: Crashed short of runway
Damage: Aircraft destroyed: 34 fatalities
Wildlife Species: European Starlings
2000-2010: BSC-USA meetings grow; efforts to mitigate strikes at airports start paying off

- 2000-2010: Mitigation efforts increase exponentially at Part 139 airports in USA
  - These efforts show positive results
- 2000: Feather Lab expands services to civil aviation with funding from FAA (USN 2008)
- 2005: FAA-USDA publish revised manual on mitigating wildlife strikes
- 2007: Ed Cleary retires at FAA; John Weller hired 18 months later
- 2008: BSC-USA/Canada meeting has 450 attendees
  - Special publication of peer-reviewed papers in Human-Wildlife Conflicts
- 2008: Mar 4, Cessna Citation crashes after T/O from GA airport in OK
  - Puts focus on GA airports for first time
- 2009: FAA database has >100,000 reports (1990-2009); positive trends for Part 139 Airports
- 2009: Jan 15, Flight 1549 in Hudson River; worldwide coverage of problem
  - Puts focus on off-airport bird-strike risks
USDA Wildlife Services Biologists provided assistance at a
record 838 Airports in FY 2010

838 airports

Bird Strike Committee USA
Efforts by Bird Strike Committee-USA and others from 1990-2010 to mitigate strikes at Part 139 airports and military airbases are paying off.
News media coverage of JFK program-1991

Shotgun-toting feds killing sea gulls at JFK Airport

BYE, BYE BIRDIE!
The number of aircraft striking Laughing Gulls was dramatically reduced at JFK Airport, NY, 1991-2009

USDA SHOOTING PROGRAM

2.6/yr (-98%)
Sep 2003: Fokker 100 suffered uncontained engine failure on take-off at LGA after striking 5 Canada geese

Fuselage penetration

Bird Strike Committee USA
Main source of problem was large resident Canada goose population that gathered at Rikers Island near LaGuardia Airport.
Mitigation efforts for wildlife strikes has focused on management actions at airports and surrounding habitats, 1990-2010
Number of Canada geese removed from Rikers Island next to LaGuardia Airport, New York City, June 2004-2010

N = 1,401
Number of Canada goose strikes at LaGuardia Airport, New York City, July 2002-Dec 2010

7 strikes in 2 years
1,401 geese removed from Rikers Is; 4 strikes in 6 1/2 years
Substantial damage bird strike rate (per 1 million aircraft movements) for commercial aircraft in USA, 1990-2009
Substantial damaging strike rate (Canada Geese) for commercial aircraft in USA, 1990-2009
Conclusions

1. Outstanding job of conservation for most flocking bird species over past 40 years.

2. Mitigation efforts at airports in the USA since 1990, and especially since about 2000, have resulted in a reduction of damaging strikes in the airport environment.

3. This reduction in risk has occurred in spite of increasing populations of many hazardous wildlife species.

4. BSC-USA has played a pivotal role in these reductions in damaging strikes at airports since the early 1990s.

5. These successful efforts at airports, which must be sustained, have done little to reduce strikes outside the airport.

6. BSC-USA must continue to develop partnerships & programs to address on- and off-airport strike threats.
Our Goal:
Safer Skies for all who fly ....

Birds and People!

Thank You!

Bird Strike Committee USA