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**SOME SIGNIFICANT WILDLIFE STRIKES TO CIVIL AIRCRAFT
IN THE UNITED STATES, JANUARY 1990 –FEBRUARY 2006**

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The U.S. Department of Agriculture, through an interagency agreement with the Federal Aviation Administration, compiles a database of all reported wildlife strikes to U.S. civil aircraft and to foreign carriers experiencing strikes in the USA. We have compiled over 66,000 strike reports from 1,565 airports, 1990-December 2005 (over 7,100 strikes in 2005), but estimate that this represents only about 20% of the strikes that have occurred. The following examples from the database are presented to show the serious impacts that strikes by birds or other wildlife can have on aircraft. These examples, from throughout the USA, demonstrate the widespread and diverse nature of the problem. The examples are not intended to highlight or criticize individual airports because strikes have occurred on almost every airport in the USA. Many of the strike examples reported here occurred off airport property during approach or departure. For more information on wildlife strikes or to report a strike, visit www.birdstrike.org. or <http://wildlife-mitigation.tc.faa.gov>.

Date:	11 January 1990
Aircraft:	Hawker Siddeley
Airport:	John Tune (TN)
Phase of Flight:	Take off
Effect on Flight:	Not reported
Damage:	Engine (aircraft damaged beyond repair)
Wildlife Species:	White-tailed deer
Comments from Report:	Several deer were struck during take off. One was completely ingested in the left engine. The impact tore the engine loose from the aircraft. The aircraft had to be replaced at a cost of \$1.4 million.

Date:	12 June 1990
Aircraft:	Fairchild Metro III
Airport:	Burke Lakefront (OH)
Phase of Flight:	Landing roll
Effect on Flight:	None
Damage:	Engine
Wildlife Species:	Gull
Comments from Report:	Ingested a gull in #2 engine during landing. Engine was replaced. Time out of service was 24 hours. Cost to replace engine was \$17,000.

Date:	09 October 1990
Aircraft:	Citation 550
Airport:	DeKalb Peachtree (GA)
Phase of Flight:	Take off
Effect on Flight:	Precautionary landing, engine shut down
Damage:	Engine
Wildlife Species:	Unknown bird
Comments from Report:	Ingested a bird in #1 engine during take off. Vibration increased and the engine was shut down. Fan and inlet guide vanes were destroyed. Time out of service was about 3 days. Cost of repairs estimated at \$105,000.

Date:	05 November 1990
Aircraft:	BAe Jetstream 31
Airport:	Michiana Regional (IN)
Phase of Flight:	Take off
Effect on Flight:	Aborted take off, engine shut down
Damage:	Engines, propellers
Wildlife Species:	Dove
Comments from Report:	Doves were ingested in both engines. Engines were destroyed. Time out of service 2 ½ days. Cost of repairs estimated at \$1 million.

Date: 28 August 1991

Aircraft: Cessna 550
Airport: Person County (NC)
Phase of Flight: Take off
Effect on Flight: Aborted take off
Damage: Engine
Wildlife Species: Dove
Comments from Report: Right engine inlet was damaged by the temperature probe being tossed back and forth prior to going through the fan. All 28 fan blades were bent, torn and chipped. Stator behind fan was damaged. Time out of service was 3 days. Cost of repairs was \$160,000.

Date: 12 November 1991

Aircraft: DC-10
Airport: Chicago O'Hare Intl. (IL)
Phase of Flight: Take off
Effect on Flight: Precautionary landing
Damage: Engines
Wildlife Species: American crow
Comments from Report: The #1 engine was shut down and the plane returned to land after ingesting a crow (or crows) on take off. Parts of the engine came out the side and damaged the #2 engine.

Date: 24 November 1991

Aircraft: Learjet 35
Airport: Sullivan County Intl. (NY)
Phase of Flight: Take off
Effect on Flight: Precautionary landing
Damage: Engine, wing, tail
Wildlife Species: Gull
Comments from Report: Struck 8 gulls. Damaged wing and #1 engine causing 80% thrust loss. Landed safely. Time out of service was 3 weeks. Cost of repairs was \$340,000.

Date: 30 December 1991

Aircraft: Citation 550
Airport: Angelina County (TX)
Phase of Flight: Take off
Effect on Flight: Aborted take off
Damage: Engine
Wildlife Species: Turkey vulture
Comments from Report: Ingested 1-2 vultures in #1 engine during take off. Engine had an uncontained failure, fire and vibration with 100% thrust loss. Wing and fuselage received damage from engine shrapnel. Time out of service was 2 weeks. Cost of repairs \$552,500.

Date: 2 February 1992

Aircraft: Piper 28
Airport: Sandstone (MN)
Phase of Flight: Approach
Effect on Flight: Impacted trees and ground
Damage: Aircraft destroyed
Wildlife Species: White-tailed deer
Comments from Report: Just prior to touchdown, a deer ran toward and collided with the aircraft. The pilot added power and aborted the landing. Loss of engine power was experienced during the climb and the aircraft crashed into trees then the ground ¼ mile south of airport. Pilot was seriously injured and the aircraft was destroyed. The NTSB found that the deer had damaged the gascolator and fuel starvation resulted.

Date: 5 June 1992

Aircraft: Starduster SA 300
Airport: Off airport at Wills Point (TX)
Phase of Flight: Low level maneuvers
Effect on Flight: Impacted ground
Damage: Aircraft destroyed
Wildlife Species: Unknown bird
Comments from Report: The pilot was viewed by several witnesses maneuvering his aerobatic airplane at a low altitude over open pasture land. It hit a large black bird. The airplane descended out of control and impacted into a field. A fire consumed the airframe. The bird's carcass was located under the cockpit of the inverted airframe. One fatality. NTSB investigated.

Date: 10 August 1992

Aircraft: Cessna 441
Airport: Lee Gilmer Memorial (GA)
Phase of Flight: Climb
Effect on Flight: Impacted ground
Damage: Destroyed
Wildlife Species: Unknown bird
Comments from Report: Immediately after take off, aircraft hit birds. Right engine lost power and aircraft would not maintain altitude. Pilot was forced to land in a residential area ¼ miles from Gainesville Airport. Both pilot and passenger were seriously injured. NTSB reported that pilot shut down wrong engine and did not follow emergency checklist. Aircraft valued at between \$690,000-\$1.7 million.

Date: 04 September 1992

Aircraft: Aero Commander S2R
Airport: Jay Kay Ranch Arpt. (TX)
Phase of Flight: Landing
Effect on Flight: Swerved to avoid
Damage: Substantial
Wildlife Species: Deer
Comments from Report: Pilot lifted off the ground to avoid a deer crossing the runway and settled into some trees. The aircraft was rebuilt.

Date: 24 October 1992

Aircraft: B-747
Airport: John F. Kennedy Intl. (NY)
Phase of Flight: Take off
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Herring gull
Comments from Report: Numerous birds were struck on departure. Gull was ingested causing vibration in the engine. Aircraft made a precautionary landing. Passengers were put on another aircraft and departed the next day. Four fan blades were bent. Replacement assembly and maintenance had to be flown from Tokyo for repairs. Cost reported to be \$750,000 which included hotel, lost revenue and repairs.

Date: 24 March 1993

Aircraft: Bell BHT-47
Airport: En route
Phase of Flight: En route
Effect on Flight: Impacted water
Damage: Aircraft destroyed
Wildlife Species: Unknown bird
Comments from Report: During cruise pilot heard a loud bang and felt vibration in rudder pedals then lost all yaw control. Pilot thought the tail rotor struck a large sea bird as many were in the area. He maintained directional control and tried to lower the helicopter so that the passenger (a ship's captain) could reach small boats being lowered by his ship nearby. The passenger jumped before the pilot gave the okay and was killed. The pilot subsequently made a running landing on the water and was hoisted on board the ship.

Date: 10 June 1993

Aircraft: Learjet 25
Airport: Port Columbus Intl. (OH)
Phase of Flight: Climb
Effect on Flight: Precautionary landing, engine shut down
Damage: Engine
Wildlife Species: Unknown bird
Comments from Report: Ingested a bird in #2 engine during climb-out. Engine shut down and was completely destroyed. Time out of service was 2 days. Cost of repairs was \$254,000.

Date: 22 October 1993

Aircraft: B-757
Airport: Salt Lake City (UT)
Phase of Flight: Climb (2,500' AGL)
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Unknown bird
Comments from Report: A bird was ingested in the #1 engine during climb-out which caused high pressure turbine damage. The engine was replaced. Cost was \$300,000.

Date: 28 October 1993

Aircraft: B-757
Airport: Orlando Intl. (FL)
Phase of Flight: Take off
Effect on Flight: Aborted take off
Damage: Engine, tires
Wildlife Species: Cattle egret
Comments from Report: Take off was aborted due to multiple bird strikes (35). Three tires on right gear were blown and aircraft was towed to the gate. Ten to twelve birds were ingested damaging fan blades and the engine cowl.

Date: 29 October 1993

Aircraft: Beechcraft 1900
Airport: En route (IA)
Phase of Flight: En route
Effect on Flight: Emergency landing
Damage: Windshield, wing
Wildlife Species: Duck
Comments from Report: A duck shattered the windshield and hit the captain who was injured from flying glass. The wing was also struck and a 1 ft square piece of aluminum was peeled off. Time out of service was 5 days.

Date: 3 December 1993

Aircraft: Cessna 550
Airport: DuPage (IL)
Phase of Flight: Climb (200' AGL)
Effect on Flight: Diverted, emergency landing
Damage: Engine
Wildlife Species: Goose
Comments from Report: Struck a flock of geese. A loud bang was followed by unstable flight. Lost power to #2 engine and had a substantial fuel leak. Emergency was declared and aircraft landed safely at Midway. Both engines had to be replaced. Time out of service was 3 months. Cost of repairs was \$800,000.

Date: 16 May 1994

Aircraft: Bell BHT-47
Airport: En route (OK)
Phase of Flight: En route
Effect on Flight: Impacted ground
Damage: Aircraft destroyed
Wildlife Species: Unknown bird
Comments from Report: Witnesses heard a loud noise and saw an object separate from the second of two helicopters. The helicopter then impacted inverted in the back yard of a residence. The pilot of the first helicopter said he had warned the second pilot of a flock of birds and that he had to bank sharply to avoid them. The NTSB reported the probable cause as loss of control due to pilot's improper use of the cyclic and collective controls when he maneuvered abruptly to avoid colliding with a flock of birds. One fatality.

Date: 18 June 1994

Aircraft: Cessna 441
Airport: Fort Frances Airport (Ontario)
Phase of Flight: Take off
Effect on Flight: Crashed on airfield
Damage: Aircraft destroyed
Wildlife Species: Ring-billed gull
Comments from Report: During take-off, the left engine ingested gulls and lost power. The pilot could not control the aircraft and crashed on the airfield. The passengers sustained minor injuries and the aircraft was destroyed. (US carrier)

Date: 15 July 1994

Aircraft: Cessna 172
Airport: En route (FL)
Phase of Flight: En route
Effect on Flight: Impacted water
Damage: Aircraft destroyed
Wildlife Species: Pelican
Comments from Report: Aircraft was seen flying about 200 ft above the water along the beach. A large bird collided with the windshield. The aircraft rolled inverted and hit the water. The pilot was fatally injured.

Date: 13 January 1995

Aircraft: Lockheed L-1011
Airport: Portland (OR)
Phase of Flight: Take off
Effect on Flight: Engine shut down
Damage: Engine
Wildlife Species: Gull
Comments from Report: Ingested a gull in #3 engine on take off. Loud booms came from the engine that was then shut down after several compressor stalls. Pilot declared an emergency and returned safely. Time lost was about 24 hours. Cost of repairs was \$300,000.

Date: 14 May 1995

Aircraft: BAe Jetstream 31
Airport: Capital (IL)
Phase of Flight: Climb (200' AGL)
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Rock dove
Comments from Report: At least two rock doves were ingested in the #1 engine. Engine lost 50% of thrust. Required a complete engine change. Time out of service was 15 hours. Cost was reported at \$1.5 million.

Date: 03 June 1995

Aircraft: Concorde
Airport: John F. Kennedy Intl. (NY)
Phase of Flight: Landing
Effect on Flight: Aircraft was towed to gate
Damage: Engines
Wildlife Species: Canada goose
Comments from Report: Aircraft ingested a Canada goose into the #3 engine which had an uncontained failure causing parts to go into the #4 engine. Both engines were destroyed. Flames and smoke were seen coming from both engines. Cost was over \$9 million. Aircraft was out of service for 5 days. Cost was over \$9 million. The NY Port Authority paid \$5.3 million in compensation for losses.

Date: 19 September 1995

Aircraft: Airbus 320
Airport: La Guardia (NY)
Phase of Flight: Landing
Effect on Flight: None
Damage: Engine
Wildlife Species: Canada goose
Comments from Report: Aircraft struck several geese that were on either side of the runway centerline. Tower reported flames coming from the engine. There were no cockpit indications of fire. Two fan blades were damaged and 12 dead geese were removed from the runway. Time out of service was 2 days. Cost was \$2.5 million.

Date: 10 October 1995

Aircraft: Dassault Falcon 900
Airport: San Francisco Intl. (CA)
Phase of Flight: Climb (800' AGL)
Effect on Flight: Engine shut down
Damage: Engine
Wildlife Species: Goose or heron
Comments from Report: One or two birds struck the #3 engine. Engine was shut down due to vibration and temperature increase. Time out of service was 2 days. Cost was estimated at \$1 million.

Date: 10 December 1995

Aircraft: B-747
Airport: John F. Kennedy Intl. (NY)
Phase of Flight: Approach (7,500' AGL)
Effect on Flight: Not reported
Damage: Engines, cowling, wing, fuselage
Wildlife Species: Snow goose
Comments from Report: As the aircraft broke through a cloudbank, it struck a flock of snow geese, which sounded like sandbags hitting. The impact destroyed one engine, damaged several fan blades on another and extensively damaged the airframe. Repairs cost approximately \$6 million.

Date: 8 January 1996

Aircraft: B-737
Airport: Sacramento Metro (CA)
Phase of Flight: Climb (750' AGL)
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Duck or goose
Comments from Report: Ingested a bird in #2 engine during climb. Vibration increased and crew throttled back and returned to land. One fan blade separated and other blades were damaged by re-ingestion of broken blade fragments. Engine was replaced.

Date: 9 January 1996

Aircraft: B-737
Airport: Reno/Tahoe Intl. (NV)
Phase of Flight: Take off
Effect on Flight: Precautionary landing & engine shut down
Damage: Engine
Wildlife Species: Snow goose
Comments from Report: Ingested a large bird during rotation. #1 engine failed and sparks were observed. Landed runway 16L because 16R had debris. Three fan blades were fractured with associated damage throughout the engine. Engine was replaced.

Date: 31 March 1996

Aircraft: B-737
Airport: Kansas City Intl. (MO)
Phase of Flight: Take off
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Medium to large bird
Comments from Report: Airport operations found a piece of inlet cooling duct on runway from a B-737 that had just taken off. Aircraft returned and landed safely. Engine had several damaged guide vanes. Time out of service was about 24 hours.

Date: 2 June 1996

Aircraft: B-737
Airport: Chicago Midway (IL)
Phase of Flight: Climb (100' AGL)
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Gull
Comments from Report: Ingested a gull during climb-out. Tower observed flames from #2 engine and advised pilot who declared an emergency and returned to land without incident. Emergency equipment was on the runway. Aircraft landed using single engine landing procedures. Core and all fan blades were damaged. Engine was rebuilt.

Date: 8 July 1996

Aircraft: B-737
Airport: Nashville Intl. (TN)
Phase of Flight: Take off
Effect on Flight: Aborted take off
Damage: Engine
Wildlife Species: American kestrel
Comments from Report: Ingested a kestrel into left engine resulting in a compressor stall and an aborted take off. Aircraft overran the runway. Fire/rescue arrived, confirmed no fire and noted tires were deflating and smoking. Evacuation slides were de-armed and cabin doors opened for ventilation. Fire erupted from right brake and was extinguished by fire personnel. Flight attendants heard fireman shout "fire" and commanded an evacuation. One passenger was seriously injured, 4 others received minor injuries.

Date: 7 August 1996

Aircraft: B-737
Airport: Orlando Intl. (FL)
Phase of Flight: Climb (20' AGL)
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Duck
Comments from Report: Ingested a duck during climb-out. The engine began a series of compressor stalls. Time out of service was 8 days. Cost was \$1,004,000.

Date: 5 October 1996

Aircraft: B-727
Airport: Washington National (DC)
Phase of Flight: Climb (2,000' AGL)
Effect on Flight: Precautionary landing and engine shut down
Damage: Engine
Wildlife Species: Gull
Comments from Report: Aircraft struck a flock of gulls just after take off, ingesting at least one bird. Engine began to vibrate and was shut down. A burning smell entered the cockpit. Emergency was declared and aircraft, carrying HUD Secretary Henry Cisneros along with 52 other passengers, returned to land at Washington National. Airport Fire and Rescue was on hand. Aircraft taxied to the ramp without incident. Engine blades were damaged.

Date: November 1996

Aircraft: B-727
Airport: Chicago O'Hare Intl. (IL)
Phase of Flight: Climb (25,000' AGL)
Effect on Flight: Precautionary landing
Damage: Window
Wildlife Species: Unknown bird
Comments from Report: Bird broke out pane of window. Aircraft returned to ORD from 70 miles south. Dumped 6,000 pounds of fuel. Landing uneventful. (exact date unknown)

Date: 22 November 1996

Aircraft: MD-80
Airport: Sacramento Intl. (CA)
Phase of Flight: Climb (75' AGL)
Effect on Flight: Precautionary landing & engine shut down
Damage: Engine
Wildlife Species: Gull
Comments from Report: Several gulls were ingested just after take off causing the engine to loose power. Engine was shut down and an emergency was declared. The plane was forced to land much heavier than usual because of a full fuel load. There were no injuries and passengers were transferred to a replacement jet. Fan blades and engine were damaged. Runway was closed for approximately ½ hour.

Date: 13 December 1996

Aircraft: Beechcraft 1900
Airport: Arnold Palmer Regional (PA)
Phase of Flight: Landing roll
Effect on Flight: Skidded to stop on runway
Damage: Landing gear
Wildlife Species: White-tailed deer
Comments from Report: Struck deer on landing causing left main gear to collapse. Propeller blades broke, underside of fuselage, wing tip and aileron flap were damaged. Aircraft was evacuated. No injuries.

Date: 7 January 1997

Aircraft: MD-80
Airport: Dallas-Fort Worth (TX)
Phase of Flight: Climb (50' AGL)
Effect on Flight: Precautionary landing
Damage: Engine, wing, radome
Wildlife Species: Blackbird
Comments from Report: Aircraft struck over 400 birds just after take off. Almost every part of the plane was hit. Pilot declared an emergency and returned to land without event. Substantial damage was found on various parts of the aircraft. The #1 engine had to be replaced. Runway was closed for an hour. Personnel were sent to disperse another large flock on the airfield. Cost of repairs was estimated at \$219,000.

Date: 26 January 1997

Aircraft: B-737
Airport: Orlando Intl. (FL)
Phase of Flight: Climb (900' AGL)
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Sandhill crane
Comments from Report: The aircraft struck a sandhill crane after departing MCO totally destroying the #1 engine. Pilot made a precautionary landing.

Date: 27 January 1997

Aircraft: DC-10
Airport: Los Angeles Intl. (CA)
Phase of Flight: Take off
Effect on Flight: Engine shut down
Damage: Engine
Wildlife Species: Gull
Comments from Report: Crew thinks they hit a gull on take off. #3 engine had a vibration with oil quantity fluctuation. When oil quantity dropped to zero, engine was shut down $\frac{3}{4}$ of the way to Japan. Crew had planned to divert to Anchorage but decided against it due to poor weather. Feathers found in engine after landing. Cost was \$1.5 million.

Date: 28 February 1997

Aircraft: Beechcraft 1900
Airport: Charleston/AFB Intl. (SC)
Phase of Flight: Approach (3,000' AGL)
Effect on Flight: None
Damage: Windshield
Wildlife Species: Egret or Heron (large white)
Comments from Report: Windshield on the right side shattered. Co-pilot received facial abrasions and needed medical attention to remove glass fragments from his eyes.

Date: 05 April 1997

Aircraft: Cessna 90 King Air
Airport: Orlando Executive (FL)
Phase of Flight: Approach (200' AGL)
Effect on Flight: Nearly stalled below 150 ft.
Damage: Radome, nose, propeller
Wildlife Species: Gull
Comments from Report: Over 1,000 gulls covered the first 1,000 ft of runway. Pilot struck between 11 and 100, which caused a low altitude stall with miraculous recovery. He could not see out of the windshield. Aircraft bounced 4 times upon landing. Pilot believes there was insufficient notification and supervision of the condition on the airport. Time out of service was 10 days. Cost of repairs was \$13,000.

Date: 19 June 1997

Aircraft: RV 6 - Experimental
Airport: Bountiful Skypark (UT)
Phase of Flight: Climb (100' AGL)
Effect on Flight: Crash landing
Damage: Entire aircraft
Wildlife Species: Homing pigeon
Comments from Report: Bird went through the canopy, which started to break apart. The pilot was forced to land in a nearby hayfield. Most of the damage occurred during landing and tip-over. The hay was 2-3 ft tall. The pilot sustained facial lacerations and required stitches. Time out of service was about 6 months. Cost of repairs was \$30,000.

Date: 17 July 1997

Aircraft: Mitsubishi MU-2
Airport: Hardin County (OH)
Phase of Flight: Take off
Effect on Flight: Aborted take off
Damage: Radome, nose, engines, propeller, landing gear, tail, wings.
Wildlife Species: Canada goose
Comments from Report: Geese were on the ground extending across the runway and about 50 ft to each side in a line. Time out of service was about 7 weeks. Costs were over \$110,000.

Date: 23 July 1997

Aircraft: Beechcraft 58
Airport: Mid-America Industrial (OK)
Phase of Flight: Landing roll
Effect on Flight: Other
Damage: Radome, engines #1 and #2, propeller, landing gear
Wildlife Species: Deer
Comments from Report: During the landing roll a small herd of deer ran across the runway, directly in front of the plane. One deer struck the nose wheel, then bounced against the nose links causing it to collapse. Both propellers struck the ground. Time out of service was 3 months. Cost of repairs was \$80,000.

Date: 21 August 1997

Aircraft: B-737
Airport: Portland Intl. (OR)
Phase of Flight: Climb (1,400' AGL)
Effect on Flight: Precautionary landing
Damage: Radome, nose, engine #1
Wildlife Species: Mallard
Comments from Report: Pilot reported striking 12-15 ducks. Aircraft returned and landed safely. Radome and all engine fan blades were replaced. Time out of service was 15 hours. Costs were over \$100,000.

Date: 20 September 1997

Aircraft: Bell 206
Airport: 12 mi SE of Houma (LA)
Phase of Flight: En route
Effect on Flight: Lost control of aircraft
Damage: Rotor blades, tail, landing gear, lights, air frame
Wildlife Species: Unknown bird
Comments from Report: Control tube was damaged causing a hard landing (at 35 mph) which made the rotor blades flex and sever the tail boom. Airframe and skid tubes were damaged. Pilot had a disc compression injury. Time out of service was over 3 months. Cost to repair aircraft was \$168,000.

Date: 26 September 1997

Aircraft: MD-80
Airport: Portland Intl. (OR)
Phase of Flight: Approach
Effect on Flight: Other
Damage: Radome, nose
Wildlife Species: Goose
Comments from Report: A flock of geese was struck on approach. One punctured the radome, which was replaced. Time out of service was 40 hours. Estimated cost was \$100,000.

Date: 08 October 1997

Aircraft: B-727
Airport: Orlando Intl. (FL)
Phase of Flight: Climb (1,750' AGL)
Effect on Flight: Precautionary landing
Damage: Windshield
Wildlife Species: Unknown bird
Comments from Report: Right cockpit window shattered. First officer had possible glass in eye.

Date: 13 October 1997

Aircraft: B-757
Airport: Logan Intl. (MA)
Phase of Flight: Take off
Effect on Flight: Precautionary landing
Damage: Engine, radome
Wildlife Species: Duck and great blue heron
Comments from Report: Aircraft departed struck bird on take off. Both wings were struck. Radome was damaged and engine nacelle had a 2-½ foot dent. Four fan blades were damaged.

Date: 15 October 1997

Aircraft: B-757
Airport: Los Angeles Intl. (CA)
Phase of Flight: Take off
Effect on Flight: Aborted take off
Damage: Engines #1 and #2
Wildlife Species: Rock dove (pigeon)
Comments from Report: Aborted take off after striking and ingesting several pigeons. Aircraft returned to the gate and inspection revealed damage to both engines.

Date: 05 November 1997

Aircraft: B-737
Airport: McCarran Intl. (NV)
Phase of Flight: Landing roll
Effect on Flight: None
Damage: Engine
Wildlife Species: Pigeon or gull
Comments from Report: Bird was ingested in #2 engine during landing while in reverse thrust. Immediate engine vibration occurred that lasted until a return to idle thrust. At least nine fan blades had significant damage. Time out of service was 3-5 hours.

Date:	15 November 1997
Aircraft:	Airbus 320
Airport:	John Wayne (CA)
Phase of Flight:	Take off
Effect on Flight:	Precautionary landing
Damage:	Engine
Wildlife Species:	Large bird
Comments from Report:	A large bird was ingested into one of the engines causing a fire. Passengers heard a loud boom, then the aircraft dropped momentarily before recovering altitude. The aircraft circled for 30 minutes before making an emergency landing. There were no injuries. Bird hit blades on starboard fan that broke or bent all blades causing damage to cowling and to system behind the fan. Engine changed. Time out of service was over 30 hrs. Cost of repairs \$300,000 and other cost \$800,000.

Date:	16 November 1997
Aircraft:	BAe Jetstream 41
Airport:	John F. Kennedy Intl. (NY)
Phase of Flight:	Approach
Effect on Flight:	Other
Damage:	Windshield, flight instruments
Wildlife Species:	Gull
Comments from Report:	Hit gulls about 20 miles from airport. Both panes of the captain's windshield were shattered, and the captain's flight instruments were knocked out. First officer took over and landed successfully, no injuries. Damage estimated at \$50,000.

Date:	30 November 1997
Aircraft:	Canard Pusher
Airport:	nearest location - Mojave Desert (CA)
Phase of Flight:	En route
Effect on Flight:	Precautionary landing
Damage:	Canopy, propeller
Wildlife Species:	Unknown bird (maybe duck - web-footed)
Comments from Report:	Aircraft was leveled off at 2500 ft AGL, speed 150 mph. Pilot looked up just in time to see a bird about 50 ft above flight path and several hundred feet ahead. Within 2 seconds, bird winged over and dived down striking the canopy head on. Canopy shattered and was completely missing from pilot's head forward. Pilot's headset was knocked off and he sustained facial injury. Pilot recovered headset, declared emergency and turned back to the airport. Glasses protected him from direct wind in his face at 100 mph. Propeller had a chunk missing from each blade and one had a split from tip toward center about 10" long. Web-footed bird weighed about 1.5 lbs.

Date:	01 December 1997
Aircraft:	B-737
Airport:	Lehigh Valley Intl. (PA)
Phase of Flight:	Take off
Effect on Flight:	Diverted to PHL
Damage:	Engines #1 and #2
Wildlife Species:	Gull
Comments from Report:	Emergency was declared and flight was diverted to Philadelphia. Both engines and cowlings were damaged. Time out of service was 20 hours. Cost of repairs \$500,000.

Date:	13 December 1997
Aircraft:	B-737
Airport:	Wilkes-Barre/Scranton Intl. (PA)
Phase of Flight:	Landing roll
Effect on Flight:	None
Damage:	Engine, nose cowl
Wildlife Species:	White-tailed deer
Comments from Report:	Captain radioed tower that he believed he hit something. Aircraft was examined at the terminal and found damage to nose cowl and engine cowl and one fan blade. Time out of service was 2 days awaiting new parts.

Date:	17 December 1997
Aircraft:	Bellanca Super Viking
Airport:	Jefferson County (OH)
Phase of Flight:	Take off
Effect on Flight:	Aircraft lost power
Damage:	Aircraft destroyed
Wildlife Species:	White-tailed deer
Comments from Report:	Aircraft hit a deer on take off and lost power, crashing into a heavily wooded area. Aircraft was destroyed. Pilot was life-flighted out, passenger had minor injuries.

Date:	04 January 1998
Aircraft:	B-737
Airport:	Salt Lake City Intl. (UT)
Phase of Flight:	Climb (200' AGL)
Effect on Flight:	Precautionary landing
Damage:	Engine
Wildlife Species:	Unknown bird
Comments from Report:	Struck large birds 10 miles west of airport. Significant damage to #1 engine. Engine ran rough until touchdown. Engine was shut down after landing.

Date:	09 January 1998
Aircraft:	B-727
Airport:	Houston Intercontinental (TX)
Phase of Flight:	Climb (6,000' AGL)
Effect on Flight:	Precautionary landing
Damage:	Engine, radome, right wing
Wildlife Species:	Snow goose
Comments from Report:	Aircraft encountered a flock of birds. Three to five birds were ingested. Engine lost all power and was destroyed, radome was torn from the aircraft and leading edges of both wings were damaged, pitot tube for first officer was torn off. Intense vibration in airframe and noise level in cockpit increased to the point that communication between crewmembers became difficult. Emergency was declared. Flight returned safely to Houston. Time out of service was 9 days. Cost was \$293,537.

Date: 23 January 1998

Aircraft: Cessna 208
Airport: Salt Lake City Intl. (UT)
Phase of Flight: Approach
Effect on Flight: Unknown
Damage: Stabilizer, elevator
Wildlife Species: Unknown bird (probably a goose)
Comments from Report: Aircraft had a bird strike, which jammed the elevator. Pilot landed safely using power and elevator trim. Bird hit the end of the left stabilizer, peeled back some skin which jammed the elevator in the neutral position.

Date: 27 January 1998

Aircraft: Cessna 340
Airport: Wagoner Airstrip (OK)
Phase of Flight: Landing roll
Effect on Flight: Other
Damage: Aircraft destroyed
Wildlife Species: White-tailed deer
Comments from Report: Aircraft struck 2 deer on landing, the gear collapsed and the fuel tank was punctured resulting in a fire which destroyed the aircraft.

Date: 29 January 1998

Aircraft: Cessna 500
Airport: Horseshoe Bay Airpark (TX)
Phase of Flight: Landing roll
Effect on Flight: Unknown
Damage: Fuel tank
Wildlife Species: White-tailed deer
Comments from Report: Aircraft struck a deer on landing. The fuel tank was punctured, spilling 200 gallons of fuel.

Date: 3 February 1998

Aircraft: Cessna Citation
Airport: Watsonville (CA)
Phase of Flight: Take off (rotation)
Effect on Flight: Engine shut down
Damage: Engines #1 and 2, wing, fuselage, tail
Wildlife Species: Gull
Comments from Report: Flew through a flock of 20 gulls and ingested 1 into right engine causing it to seize. No injuries. Replaced right engine, 4 fuselage windows, left leading edge and de-ice boot, both heated leading edges, large fuselage panel and 3 other wing/fuselage panels. Time out of service was 2 months. Cost over \$470,000.

Date:	10 February 1998
Aircraft:	Bell 206
Airport:	Nearest town - Scappoose (OR)
Phase of Flight:	En route
Effect on Flight:	Precautionary landing
Damage:	Windshield
Wildlife Species:	Mallard
Comments from Report:	A news helicopter reported a bird strike 3-5 miles southeast of Scappoose, OR. A mallard came through the windshield. No injuries.

Date:	24 February 1998
Aircraft:	B-727
Airport:	Austin Bergstrom Intl. (TX)
Phase of Flight:	Climb (1,300' AGL)
Effect on Flight:	Engines shut down, precautionary landing
Damage:	Engine
Wildlife Species:	Unknown bird
Comments from Report:	The #1 engine compressor stalled then seized after ingesting large birds. Engine was replaced. Time out of service was 15 hrs. Cost \$5 million.

Date:	24 February 1998
Aircraft:	B-747
Airport:	Nairobi Jomo Kenyatta
Phase of Flight:	Climb
Effect on Flight:	Engine shut down
Damage:	Engine
Wildlife Species:	Lappet-faced vulture
Comments from Report:	Engine had an uncontained failure. Time out of service was about 10 days. Cost \$3.7-\$4.0 million. (U.S. Carrier)

Date:	04 March 1998
Aircraft:	Piper 23
Airport:	En Route (NJ)
Phase of Flight:	En route
Effect on Flight:	Lost control of airplane
Damage:	Aircraft destroyed
Wildlife Species:	Unknown bird
Comments from Report:	Witness saw the vertical stabilizer begin to oscillate and then separate from the plane. The plane crashed into a multiple family dwelling. The NTSB investigation found an impact mark on the horizontal stabilizer which was consistent with a soft-bodied impact. Although no blood or bird remains were found, one witness reported seeing several birds flying in the area at the time of the accident. Both the pilot and a passenger were killed.

Date: 06 March 1998

Aircraft: B-727
Airport: Boise Air Terminal (ID)
Phase of Flight: Take off
Effect on Flight: Engine shut down, precautionary landing
Damage: Engine
Wildlife Species: Unknown bird
Comments from Report: Bird was ingested into engine, which had an uncontained failure. Engine was shut down and the aircraft landed without incident. Runway was closed for about 1 hour due to fan blade parts on runway.

Date: 09 March 1998

Aircraft: Merlin IV
Airport: Denver Intl. (CO)
Phase of Flight: Approach
Effect on Flight: Unknown
Damage: Windshield
Wildlife Species: Unknown bird
Comments from Report: While inbound to Denver, pilot reported a bird strike on the windshield, which shattered. Pilot reported he was okay, but had taken glass in the face.

Date: 13 March 1998

Aircraft: B-727
Airport: Valencia Intl. (Venezuela)
Phase of Flight: Climb (3,600' AGL)
Effect on Flight: Engines shut down, precautionary landing
Damage: Engine
Wildlife Species: Vulture
Comments from Report: On climb-out, pilot saw a large black bird pass over top of the cockpit (pilot ducked). It struck #2 engine causing severe vibration. Crew secured engine, dumped 12,000 pounds of fuel, declared an emergency and landed at Valencia. Engine was substantially damaged. Time out of service was 42 hours. (US Carrier)

Date: 24 March 1998

Aircraft: B-737
Airport: En route from Texas to North Carolina
Phase of Flight: En route
Effect on Flight: Unknown
Damage: Engine cowling
Wildlife Species: Goose
Comments from Report: Aircraft struck a goose at 17,000 feet. Pilot landed with an engine cowling missing. Virginia State Police were searching for the cowling.

Date: 04 April 1998

Aircraft: MD-80
Airport: La Guardia (NY)
Phase of Flight: Take off (rotation)
Effect on Flight: Precautionary landing
Damage: Radome
Wildlife Species: Canada goose
Comments from Report: Aircraft struck multiple geese at rotation. Radome had a large hole. The aircraft had an air speed problem. Flight was diverted to Newark.

Date: 06 April 1998

Aircraft: Cessna 172
Airport: Mallards Landing (GA)
Phase of Flight: Take off
Effect on Flight: Aborted take off
Damage: Aircraft destroyed
Wildlife Species: White-tailed deer
Comments from Report: Deer crossed in front of aircraft during take-off with nose gear up. Aircraft swerved to avoid a deer, ran off the runway, flipped over and was destroyed. Pilot was injured.

Date: 14 April 1998

Aircraft: B-727
Airport: Dane Co. Regional (WI)
Phase of Flight: Climb (1,500' AGL)
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Unknown bird
Comments from Report: A bird was ingested when the aircraft was 2.5-3 miles from airport. The pilot made an emergency landing without incident. Even though the C1 fan was damaged beyond limits, the engine remained operational. The engine was removed and replaced. Time out of service was 2 days. Cost of repairs was estimated at \$15,000.

Date: 28 April 1998

Aircraft: Piper Cherokee
Airport: Vandenburg (FL)
Phase of Flight: Climb (550' AGL)
Effect on Flight: Engine shut down
Damage: Aircraft destroyed
Wildlife Species: Turkey vulture
Comments from Report: During a training flight, the aircraft struck a bird, which damaged the fuel system. The aircraft experienced fuel starvation and subsequently crashed into a field. Cost was \$105,000.

Date: 03 May 1998

Aircraft: B-767
Airport: Dallas-Fort Worth (TX)
Phase of Flight: Climb (3,000' AGL)
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Unknown bird
Comments from Report: Major vibration after impact during climb power setting. Engine power reduced to idle. Immediate landing and shut down engine while exiting runway.

Date: 07 May 1998

Aircraft: B-727
Airport: Colorado Springs Muni (CO)
Phase of Flight: Climb (3,500' AGL)
Effect on Flight: Engine shut down, precautionary landing
Damage: Radome, wing, fuselage, engine
Wildlife Species: Canada goose
Comments from Report: Aircraft struck several geese just north of the airport. Crew felt moderate to severe vibration due to ingestion of one or more birds. Aircraft lost essential electrical power, which was restored by a generator. #3 engine had an uncontained failure. Shrapnel was ejected through the engine case, which severed electrical wires and punctured the anti-ice bleed air duct. Radome was cracked, and upper engine cowling and thrust reverser were also damaged. Time out of service was 4 days. Cost was \$1.4 million. NTSB investigated.

Date: 11 May 1998

Aircraft: B-747
Airport: Unknown (Buenos Aires to Miami)
Phase of Flight: Unknown
Effect on Flight: None
Damage: Radome, wing, fuselage, engine
Wildlife Species: Unknown bird
Comments from Report: Crew was unaware bird strike occurred. Damage found during maintenance post flight inspection. Damage pattern indicates bird impacted engine cone and separated into 2 parts, damaging compressor blades in 2 areas 180 degrees apart. Nose cone and 12 compressor blades were damaged. Time out of service was 14 hrs. Cost was \$132,000. (U.S. carrier)

Date: 28 May 1998

Aircraft: B-767
Airport: John F. Kennedy Intl. (NY)
Phase of Flight: Climb (900' AGL)
Effect on Flight: Precautionary landing
Damage: Engine, wing
Wildlife Species: Canada goose
Comments from Report: One goose was ingested shortly after departure. ARFF responded. The #2 engine's 1st set of fan blades was damaged and there was a hole in the right flap. Aircraft immediately returned to JFK and landed without incident.

Date: 31 May 1998

Aircraft: Piper Cherokee
Airport: Sikeston Memorial Municipal (MO)
Phase of Flight: Landing roll
Effect on Flight: Lost control of aircraft
Damage: Not reported - substantial
Wildlife Species: White-tailed deer
Comments from Report: Pilot tried to avoid striking a deer on landing, lost control and struck a group of trees. Aircraft had substantial damage and pilot had minor injuries. The NTSB investigated.

Date: 02 June 1998

Aircraft: B-747
Airport: Not reported
Phase of Flight: Climb (11,000' AGL)
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Unknown bird
Comments from Report: On climb-out, suspected bird strike on #3 engine fan cowling. The cowling broke free, damaging the wing leading edge and upper surface, pneumatic ducting, generator feeder cables and leading edge flap. Time out of service was 2 weeks.

Date: 04 June 1998

Aircraft: Cessna Citation
Airport: Jackson Intl. (MS)
Phase of Flight: Take off (rotation)
Effect on Flight: Power pulled back 100%, precautionary landing
Damage: Engine
Wildlife Species: Unknown bird
Comments from Report: Pilot declared an emergency and landed safely after ingesting a bird on take off. Time out of service was estimated at 1 week. Cost of repairs was \$200,000.

Date: 28 June 1998

Aircraft: B-737
Airport: Norfolk Intl. (VA)
Phase of Flight: Take off
Effect on Flight: Engines shut down, precautionary landing
Damage: Engine
Wildlife Species: Gull
Comments from Report: One gull was ingested causing the pilot to make a precautionary landing. There was smoke in the cockpit and engine vibration. Three pairs of fan blades were replaced in the #2 engine.

Date: 05 July 1998

Aircraft: Piper Comanche
Airport: En route (FL)
Phase of Flight: En route
Effect on Flight: Other
Damage: Windshield
Wildlife Species: Double-crested cormorant
Comments from Report: Pilot never saw bird. Cormorant penetrated the windshield. Pilot sustained facial lacerations from the windshield.

Date: 13 July 1998

Aircraft: B-757
Airport: Dallas-Fort Worth (TX)
Phase of Flight: Climb (600' AGL)
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Hawk
Comments from Report: A hawk was ingested into the left engine. Tower observed flames coming from the tailpipe. Aircraft returned and landed without incident with 54 passengers and 33,000 lbs. of fuel. Flames were extinguished quickly and the aircraft taxied to the gate without further incident. Outboard portion of at least 4 blades was damaged, two significantly.

Date: 14 July 1998

Aircraft: B-737
Airport: Nashville Intl. (TN)
Phase of Flight: Take off (rotation)
Effect on Flight: None
Damage: Engine
Wildlife Species: Unknown bird
Comments from Report: Ingested 1 bird at rotation. Caused odor in cabin. Engine ran normally. On arrival at Midway, mechanic found several damaged fan blades.

Date: 19 July 1998

Aircraft: B-737
Airport: Dallas-Fort Worth (TX)
Phase of Flight: Climb (3,500' AGL)
Effect on Flight: Reduced engine power, precautionary landing
Damage: Engine
Wildlife Species: Vulture
Comments from Report: Crew saw a flock of vultures prior to impact of 1 or more birds in the vicinity of the #1 engine. Heard impact and smelled freshly baked bird throughout entire cockpit/cabin. Retarded #1 throttle to near idle. Emergency was declared and returned to land uneventfully at DFW.

Date: 22 July 1998

Aircraft: Beechcraft 58
Airport: Antrim County (MI)
Phase of Flight: Landing roll
Effect on Flight: Not reported
Damage: Engines, propellers, landing gear, flaps
Wildlife Species: White-tailed deer
Comments from Report: Two deer came out on runway. Each propeller hit a deer cutting them in half. One was thrown into the left gear and left flap. The other deer went under the right wing striking the right flap. Time out of service was 1 month. Cost was \$33,000.

Date: 22 July 1998

Aircraft: MD-80
Airport: Burbank (CA)
Phase of Flight: Take off
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Gull
Comments from Report: An emergency landing was made after the jetliner ingested a gull into one of its two engines at lift-off. The damaged engine was shut down. All 95 passengers were re-routed. Several flights were canceled.

Date: 7 August 1998

Aircraft: Dassault Falcon 20
Airport: Sioux Gateway (IA)
Phase of Flight: Climb (1,900' AGL)
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Unknown bird
Comments from Report: Bird hit wing then went into #1 engine. Engine flamed-out and restarted after hitting 1 bird. Debris from bird packed the air tubes through the engine and caused heat distress when engine relit. Time out of service was 5 days. Cost was \$59,000.

Date: 8 August 1998

Aircraft: B-767
Airport: Philadelphia Intl. (PA)
Phase of Flight: Climb (300' AGL)
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Gull
Comments from Report: Five blades were damaged. ARFF responded. Inspection found evidence of core ingestion. Time out of service was 8 hrs.

Date: 11 August 1998

Aircraft: B-737
Airport: Philadelphia Intl. (PA)
Phase of Flight: Take off
Effect on Flight: Not reported
Damage: Engine
Wildlife Species: Canada goose
Comments from Report: The #1 engine was totaled. Time out of service was 36 hours.

Date: 15 August 1998

Aircraft: BAe Jetstream 31
Airport: Altoona-Blair County (PA)
Phase of Flight: Landing roll
Effect on Flight: Engine shut down
Damage: Engine
Wildlife Species: Mourning dove & killdeer
Comments from Report: One or more birds were ingested bird. 22 carcasses removed from runway- mostly mourning doves. Engine was removed for overhaul. Outbound flight canceled, 17 passengers displaced. Time out of service was 24 hours. Cost was \$56,000.

Date: 25 August 1998

Aircraft: ATR 42
Airport: Reagan Washington National (DC)
Phase of Flight: Approach (150' AGL)
Effect on Flight: None
Damage: Fuselage
Wildlife Species: Unknown bird
Comments from Report: Three holes found in bottom of fuselage. Landed without incident. Aircraft was ferried for repairs.

Date: 29 August 1998

Aircraft: B-747
Airport: Unknown
Phase of Flight: Unknown
Effect on Flight: None
Damage: Engine
Wildlife Species: Unknown bird
Comments from Report: Fan blades were damaged. Evidence of strike found on transit check. Flight crew was unaware of the strike. Time out of service was 2 days. Cost of repair was \$75,000.

Date: 29 August 1998

Aircraft: Beechcraft 55
Airport: Quad City (IL)
Phase of Flight: Touch and go
Effect on Flight: Aborted take off
Damage: Engines, windshield, wings, landing gear, fuselage
Wildlife Species: Canada goose
Comments from Report: Aircraft struck a flock of geese while practicing touch and go landings at night. Windshield broke and cut the pilot.

Date: 31 August 1998

Aircraft: Cessna 550
Airport: Renton Municipal (WA)
Phase of Flight: Landing flare
Effect on Flight: None
Damage: Engines, wings, landing gear
Wildlife Species: Canada goose
Comments from Report: Geese were sleeping on the runway. Several were struck. Wings and flaps were dented and punctured. Fan blades were damaged in #1 engine. Engine was removed and sent to the engine manufacturer for inspection.

Date: 01 September 1998

Aircraft: B-767
Airport: London Heathrow
Phase of Flight: Approach
Effect on Flight: Flight cancelled
Damage: Engines, radome, wings, landing gear
Wildlife Species: Canada goose
Comments from Report: The #1 engine ingested geese. Every fan blade in the #1 engine was replaced. Aircraft was grounded for several days. The radar inside the radome was smashed. 25-30 geese were removed from the runway. Cost of repairs was over \$1 million. (U.S. Carrier)

Date:	6 September 1998
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Aircraft: Saab 340
Airport: En route (CA)
Phase of Flight: En route
Effect on Flight: Precautionary landing
Damage: Engine, radome, windshield, nose, propeller, wing, tail, fuselage
Wildlife Species: Goose/duck
Comments from Report: Left window was 85% covered with blood & remains. Window pressure plate was damaged and the radome was caved in.

Date:	18 September 1998
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Aircraft: B-737
Airport: Houston Hobby (TX)
Phase of Flight: Approach (2,500' AGL)
Effect on Flight: None
Damage: Engine, fuselage
Wildlife Species: Gull
Comments from Report: Two birds were struck. One gull was ingested in #2 engine causing vibration. Entire fan assembly was replaced. Cost was approximately \$108,500. Time out of service was 6 hours.

Date:	22 September 1998
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Aircraft: Cessna 500
Airport: St. Paul Downtown (MN)
Phase of Flight: Take off
Effect on Flight: Aborted take off
Damage: Engine
Wildlife Species: American kestrel
Comments from Report: Five blades were damaged when a kestrel was ingested. Time out of service was 2 days. Cost was \$16,000.

Date:	23 September 1998
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Aircraft: MD-80
Airport: La Guardia (NY)
Phase of Flight: Climb (1,000' AGL)
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Unknown bird
Comments from Report: Hit a small flock of birds at night. One hit the clearview window. One or more were ingested in the #1 engine breaking compressor blades and damaging the shroud.

Date:	25 September 1998
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Aircraft: Dassault Falcon 20
Airport: Birmingham Intl. (AL)
Phase of Flight: Climb (4,000 AGL)
Effect on Flight: Engine shut down
Damage: Engine
Wildlife Species: Unknown bird
Comments from Report: Hit unknown number of birds at night. One or more were ingested in #2 engine causing vibration and 80% thrust loss. Aircraft returned to the airport and shut engine down after landing. Two blades damaged. Time out of service was 1 week. Cost was \$131,000.

Date: 29 September 1998

Aircraft: B-747
Airport: John F. Kennedy Intl. (NY)
Phase of Flight: Climb (900' AGL)
Effect on Flight: Precautionary landing, engine shut down
Damage: Engine
Wildlife Species: Gull
Comments from Report: Engine was shut down because of vibration. Dumped 120,000 lbs. of fuel and landed uneventfully. Uncontained engine failure. Time out of service 3 days. Cost was \$136,858.

Date: 15 October 1998

Aircraft: DC-10
Airport: John F. Kennedy Intl. (NY)
Phase of Flight: Take off
Effect on Flight: Engine shut down and precautionary landing
Damage: Engine
Wildlife Species: Herring gull
Comments from Report: One bird was ingested at rotation. Pilot heard a loud thud and was losing power in the #3 engine. A pilot on the ground saw the engine flame out. Engine parts and a carcass were recovered. There was substantial damage. About 26,000 pounds of fuel had to be dumped over the local community and a HAZMAT team was dispatched. Runway was closed for approximately 30 minutes. Over 200 passengers were inconvenienced.

Date: 19 October 1998

Aircraft: BAe Jetstream 31
Airport: Binghamton Regional (NY)
Phase of Flight: Take off (rotation)
Effect on Flight: Precautionary landing & engine shut down
Damage: Engine
Wildlife Species: Gull
Comments from Report: Pilot reported 1 bird was ingested at rotation. There was a partial loss of power. Aircraft landed safely and shut down engine on taxiway. Crew noticed smoke and flame and discharged fire bottle. No injuries during evacuation.

Date: 19 October 1998

Aircraft: Fokker 100
Airport: Dallas-Fort Worth Intl. (TX)
Phase of Flight: Climb (350' AGL)
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Turkey vulture
Comments from Report: Bird hit #2 engine. Damage was noted immediately. Reduced power to idle and made precautionary landing. Landing was made overweight which required additional inspections. Engine was replaced.

Date: 23 October 1998

Aircraft: Cessna Citation
Airport: Houston Hobby (TX)
Phase of Flight: Climb (1,000' AGL)
Effect on Flight: Precautionary landing
Damage: Wing, radome, tail, fuselage, windshield
Wildlife Species: Crane
Comments from Report: Pilot reported a flock of about 30 cranes was encountered during climb. Several birds were struck. A precautionary landing was made to inspect aircraft. Time out of service was about 1 month. Cost of repairs \$250,000.

Date: 04 November 1998

Aircraft: B-747
Airport: Louisville Intl. (KY)
Phase of Flight: Climb (1,500' AGL)
Effect on Flight: Engine shut down, precautionary landing
Damage: Engine
Wildlife Species: Snow goose
Comments from Report: A flock of snow geese caused engine damage soon after take off. Parts of the aircraft rained down on a barn at Churchill Downs, which housed several valuable racehorses. Pilot made a precautionary landing. No report was filed for this strike.

Date: 07 November 1998

Aircraft: Cessna Citation
Airport: Fort Smith Regional (AR)
Phase of Flight: Take off (rotation)
Effect on Flight: Engine shut down, precautionary landing
Damage: Engine, wing
Wildlife Species: Dove
Comments from Report: A large flock of doves flew into the aircraft at rotation speed. One engine failed. An emergency landing was made. Leading edge of right wing was also damaged. Right engine fan was destroyed. Time out of service 24 hrs. Cost of repair was \$170,000.

Date: 09 November 1998

Aircraft: B-737
Airport: Los Angeles Intl. (CA)
Phase of Flight: Take off (rotation)
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Rock dove (pigeon)
Comments from Report: A large flock of doves flew into the aircraft at rotation. At least 12 were struck. An emergency landing was made. Several engine fan blades were damaged, other parts were struck but the damage was undetermined at time of report. The cost of repair was \$63,500.

Date:	10 November 1998
Aircraft:	Aero Commander 500
Airport:	Philip Billard Municipal (KS)
Phase of Flight:	Climb (3,000' AGL)
Effect on Flight:	Precautionary landing
Damage:	Engine, windshield, tail, landing gear
Wildlife Species:	Goose
Comments from Report:	Four geese struck the aircraft over Lake Perry. Pilot declared an emergency and returned to land at Billard Airport. Copilot received injuries to hand and arm. Pilot temporarily lost control. There was major damage to the aircraft. Repair cost unknown at this time. Time out of service 2 months and counting due to unavailable parts.

Date:	13 November 1998
Aircraft:	B-737
Airport:	Albany County (NY)
Phase of Flight:	Take off (rotation)
Effect on Flight:	Precautionary landing
Damage:	Engine
Wildlife Species:	Snow bunting
Comments from Report:	A flock of buntings was ingested into the # 1 engine on rotation causing a booming sound and flames streaking from the engine. The smell of smoke entered the cabin and the aircraft made an emergency landing. Ninety-one passengers were re-booked on other flights. Time out of service was 12 hours.

Date:	17 November 1998
Aircraft:	B-737
Airport:	Western Nebraska Regional (NE)
Phase of Flight:	Take off
Effect on Flight:	Precautionary landing
Damage:	Engine
Wildlife Species:	Deer
Comments from Report:	Aircraft struck a buck deer on the runway and proceeded with take off, then returned to land. There was major damage to the engine. The flight was canceled; passengers and crew were rerouted the next day. Total cost was \$430,000, including repairs, lost revenue, meals and hotel rooms, and other transportation for passengers.

Date:	24 November 1998
Aircraft:	B-737
Airport:	Baltimore-Washington Intl. (MD)
Phase of Flight:	Climb (3,000' AGL)
Effect on Flight:	Engine shut down and precautionary landing
Damage:	Engine
Wildlife Species:	Goose
Comments from Report:	Aircraft made an emergency landing after ingesting a goose into the right engine. One passenger reported, "The plane began jerking around and vibrating and everything started to smell like smoke." The pilot had to shut the engine down and land with one engine. Emergency vehicles were standing by and an inspection was made before the aircraft was allowed to taxi to the gate. Over 100 passengers had to be rebooked on other flights. The engine was replaced.

Date: 24 November 1998

Aircraft: Lancair (experimental)
Airport: Camarillo (CA)
Phase of Flight: Climb
Effect on Flight: Precautionary landing
Damage: Windshield
Wildlife Species: Unknown bird
Comments from Report: Shortly after take off a bird went through the windshield, striking the pilot in the eye. With impaired vision, the pilot returned to land safely at airport.

Date: 6 December 1998

Aircraft: B-727
Airport: Southwest Florida Intl. (FL)
Phase of Flight: Take off (rotation)
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Mottled duck
Comments from Report: Aircraft made an emergency landing after ingesting a bird into one of three engines. Pilot circled for 30 minutes to burn off some of the 39,000 gallons of fuel because they were not at a safe altitude to dump it. Additional fire and rescue crews were called to the scene. Engine had bent blades. All 145 passengers were placed on other flights. No report was filed on this strike. Time out of service was 24 hours. Bird ID by Smithsonian, Division of Birds.

Date: 31 December 1998

Aircraft: MD-80
Airport: Chicago O'Hare Intl. (IL)
Phase of Flight: Climb (2,500' AGL)
Effect on Flight: Precautionary landing
Damage: Radome, nose, landing gear door
Wildlife Species: Canada goose
Comments from Report: Struck numerous geese shortly after take off. Pilot circled to burn off some fuel before landing overweight. Emergency equipment was at the runway. Replaced radome. Landing gear door bent. Two crew would not board another aircraft to continue the flight. Time out of service was 8 hours.

Date: 03 January 1999

Aircraft: BAe 146
Airport: Westchester County (NY)
Phase of Flight: Descent (3,000' AGL)
Effect on Flight: First officer took over flight
Damage: Engine cowl, radom, radar unit
Wildlife Species: Mallard
Comments from Report: Aircraft was over the Hudson River valley at 250 mph when it struck a flock of ducks which completely obscured the captain's window and ½ of the first officer's window. The first officer took control of the aircraft and landed. The radome was caved in and the radar unit was damaged. A duck was ingested through the engine and a 2-ft by 4-in strip of sheet metal was ripped off the top of the engine cowl.

Date:	16 January 1999
Aircraft:	Raytheon Hawker 800
Airport:	Manassas Regional (VA)
Phase of Flight:	Climb (300' AGL)
Effect on Flight:	Precautionary landing
Damage:	Engine, landing gear
Wildlife Species:	Unknown bird
Comments from Report:	Ingested a large bird after take off. The engine cowling was damaged, 12 fan blades were bent along with numerous inlet guide vanes and 2 compressor blades. The right hand stall vane was missing and 2 tires had to be replaced. Time out of service was 24 hours. Cost of repairs was \$307,000.

Date:	25 January 1999
Aircraft:	Dassault Falcon 10
Airport:	Lunken (OH)
Phase of Flight:	Climb (75' AGL)
Effect on Flight:	Engine shut down
Damage:	Engine
Wildlife Species:	Mallard
Comments from Report:	Ingested a duck shortly after take off. Engine experienced an uncontained failure and was destroyed. Aircraft was towed to the ramp. Time out of service was 2 ½ days. Cost of repairs was \$800,000.

Date:	8 February 1999
Aircraft:	Beechcraft 1900
Airport:	General Mitchell (WI)
Phase of Flight:	Approach (3,000' AGL)
Effect on Flight:	Engine shut down
Damage:	Wing
Wildlife Species:	Canada goose
Comments from Report:	Twenty miles northeast of the airport, a goose passed through the leading edge, a fuel cell and a wing spar, lodging just in front of the aileron. Bird entered the fuel tank causing a leak. The aircraft landed safely with 1 engine out. Wing damage greatly affected the flight. Time out of service was 10 days. Repair cost was \$30,000. Other costs totaled \$75,000.

Date:	22 February 1999
Aircraft:	B-757
Airport:	Cincinnati/Northern Kentucky Intl. (KY)
Phase of Flight:	Take off (rotation)
Effect on Flight:	Emergency landing
Damage:	Engine #1 and #2, wing
Wildlife Species:	European starling
Comments from Report:	At rotation a flock of starlings crossed in front of the aircraft. First officer tried to climb over them but struck several hundred. Both engines ingested birds and were damaged. There was a massive clean up of 400 birds. NTSB investigated. Cost of repairs was approximately \$500,000.

Date: 25 February 1999

Aircraft: Learjet 35
Airport: Kansas City Downtown (MO)
Phase of Flight: Approach (2,000' AGL)
Effect on Flight: Engine shut down
Damage: Engine, wing
Wildlife Species: Snow goose
Comments from Report: On approach to Kansas City Downtown Airport, a flock of snow geese was encountered over Kansas City Intl. Airport. One hit the copilot's side window, blocking visibility; another was ingested by an engine which shut down. At least 8 birds hit the aircraft. The wing leading edge was damaged severely on both sides. Five carcasses were found on Kansas City Intl. Airport runway. A single engine landing was accomplished. Aircraft was out of service 3 months. Cost totaled \$501,800.

Date: 04 March 1999

Aircraft: DC-9
Airport: Kansas City Intl. (MO)
Phase of Flight: Approach (800' AGL)
Effect on Flight: Engine shut down
Damage: Engine #1 and #2
Wildlife Species: Snow goose
Comments from Report: Aircraft struck a flock of snow geese and ingested birds in both engines. One engine shut down and the other was severely damaged but continued working. The aircraft landed without incident. NTSB investigated.

Date: 05 March 1999

Aircraft: B-737
Airport: New Orleans Intl. (LA)
Phase of Flight: Take off
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Unknown bird
Comments from Report: Ingested 1 medium-sized bird on take off. Aircraft returned to the airport with 6 damaged fan blades.

Date: 16 March 1999

Aircraft: DC-9
Airport: Greater Pittsburgh Intl. (PA)
Phase of Flight: Approach
Effect on Flight: Unknown
Damage: Engine
Wildlife Species: Canada goose
Comments from Report: Two geese were struck on final approach. One engine was destroyed. Time out of service was 17 hours.

Date: 16 March 1999

Aircraft: SA-226
Airport: Boise Air Terminal (ID)
Phase of Flight: Take off (rotation)
Effect on Flight: Precautionary landing
Damage: Nose, engine
Wildlife Species: Mallard
Comments from Report: Strange sound heard at rotation followed by a strange smell in cabin. Made a precautionary landing. The SAS Vane was removed by the strike and the bird was ingested into a compressor where it bent an impeller blade. Time out of service was three weeks. Engine repairs cost \$37,500 and lost revenue was \$27,000.

Date: 17 March 1999

Aircraft: Learjet 35
Airport: Fort Lauderdale Executive (FL)
Phase of Flight: Take off
Effect on Flight: Aborted take off
Damage: Engine
Wildlife Species: Egret or gull
Comments from Report: A flock of egrets or gulls was struck on take off. Aborted take off was uneventful. Four engine fan blades were bent and compressor also had bent blades. Time out of service was 3 days. Cost was \$87,500 for repairs and loss of revenue.

Date: 09 April 1999

Aircraft: Learjet 25
Airport: Omaha Eppley Airfield (NE)
Phase of Flight: Take off
Effect on Flight: Precautionary landing
Damage: Both engines
Wildlife Species: Gull
Comments from Report: A flock of gulls was struck on take off. Both engines sustained substantial damage. Aircraft returned and landed without incident.

Date: 07 May 1999

Aircraft: B-737
Airport: Lincoln Municipal (NE)
Phase of Flight: Take off (rotation)
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Red-tailed hawk
Comments from Report: A flock was struck on rotation. Aircraft returned and landed without incident. The #1 engine had an uncontained failure and was replaced. The flight was canceled. Engine parts were found on the runway.

Date:	11 May 1999
Aircraft:	Cessna Citation
Airport:	Long Beach (CA)
Phase of Flight:	Approach (2,500' AGL)
Effect on Flight:	Engine shut down
Damage:	Engine
Wildlife Species:	Rock dove (pigeon)
Comments from Report:	Pilot believes a pigeon was ingested. The bird hit the temperature probe, which destroyed all 28 fan blades. Time out of service was 3 weeks. Repair cost estimated at \$150,000. Company rented an engine while repairs were being made.

Date:	13 May 1999
Aircraft:	B-747
Airport:	Narita Intl. (Japan)
Phase of Flight:	Not reported
Effect on Flight:	Not reported
Damage:	Engine
Wildlife Species:	Unknown bird
Comments from Report:	Unknown number of birds ingested into #4 engine. All 38 blades were replaced. (U.S. carrier)

Date:	19 May 1999
Aircraft:	B-757
Airport:	Chicago O'Hare Intl. (IL)
Phase of Flight:	Climb (5,000' AGL)
Effect on Flight:	Precautionary landing
Damage:	Engine
Wildlife Species:	Herring gull
Comments from Report:	Unknown number of gulls was ingested into the # 1 engine 50 miles from the airport. Aircraft returned to land. Flight was canceled. Time out of service was about 23 hours. Cost of repair estimated at \$76,000

Date:	20 May 1999
Aircraft:	BAe Jetstream 31
Airport:	Kent County Intl. (MI)
Phase of Flight:	Approach (1,500' AGL)
Effect on Flight:	None
Damage:	Engine
Wildlife Species:	Unknown bird
Comments from Report:	Hit a medium sized bird. Engine change required. Time out of service was 2 days. Cost of repairs was \$200,000.

Date:	22 May 1999
Aircraft:	Saab 340
Airport:	Purdue University (IN)
Phase of Flight:	Landing roll
Effect on Flight:	None
Damage:	Engine, propeller, lights
Wildlife Species:	Canada goose
Comments from Report:	Aircraft struck at least 4 geese. The propeller on each engine was damaged. Time out of service over 3 days. Cost was \$1.2 million.

Date:	12 June 1999
Aircraft:	Beechcraft 90
Airport:	Westchester County (NY)
Phase of Flight:	Take off
Effect on Flight:	Aborted take off
Damage:	Landing gear, nose, engines, propellers, wings, fuselage, lights
Wildlife Species:	Coyote
Comments from Report:	Aircraft struck a coyote at night. Nose gear was torn from aircraft causing other parts of plane to be damaged. Time out of service was 5 months. Lost revenue was \$55,000 and cost of repairs was \$550,000.

Date:	28 July 1999
Aircraft:	B-767
Airport:	Ben Gurion Intl. (Israel)
Phase of Flight:	Climb
Effect on Flight:	Engine shut down, emergency landing
Damage:	Engine, cowling, radome, landing gear
Wildlife Species:	Yellow-legged gull
Comments from Report:	Aircraft ingested a flock of birds shortly after take off and made an emergency landing. Crew reported a fireball exiting from the exhaust and engine vibration. Engine was shut down. Engine had an uncontained failure. Large hole in engine cowl from fan blades. Overweight landing blew tires. Eight tires and brakes had to be replaced. More than 200 passengers had to be put on other flights. (US Carrier)

Date:	31 July 1999
Aircraft:	B-737
Airport:	Baltimore Washington Intl. (MD)
Phase of Flight:	Take off
Effect on Flight:	Emergency landing, engine shut down
Damage:	Engine
Wildlife Species:	Gull
Comments from Report:	Aircraft ingested a gull. The engine was shut down and an emergency was declared. The aircraft landed without incident and had to wait 4 days for a replacement engine.

Date:	5 August 1999
Aircraft:	DC-10
Airport:	Detroit Metropolitan (MI)
Phase of Flight:	Landing roll
Effect on Flight:	Engine shut down
Damage:	Engine #1 and #3
Wildlife Species:	Canada goose
Comments from Report:	Aircraft hit several geese upon landing. The #1 engine flamed out and was shut down immediately. Engines 1 and 3 were replaced. Total cost \$700,000.

Date: 13 September 1999

Aircraft: B-737
Airport: Chicago Midway (IL)
Phase of Flight: Take off
Effect on Flight: Aborted take off
Damage: Engine
Wildlife Species: Red-tailed hawk
Comments from Report: Aircraft ingested a red-tailed hawk on take off destroying the engine. Time out of service was 6 days. Cost of repairs and other costs totaled \$476,250.

Date: 19 September 1999

Aircraft: MD-83
Airport: Wichita Mid-Continent (KS)
Phase of Flight: Climb (50' AGL)
Effect on Flight: Precautionary landing
Damage: Engine, landing gear, light, windshield wiper
Wildlife Species: European starling
Comments from Report: Aircraft hit 30 starlings just after lift off. Burning smell noted. Emergency declared and aircraft returned to land. Birds found imbedded in landing gear and windshield wipers. Engine had several nicked blades. Nose gear down-lock spring broke. Taxi light lens missing. Bent windshield wiper arm. Secretary of Agriculture, Dan Glickman was on board.

Date: 15 October 1999

Aircraft: Cessna 182
Airport: Air Haven (NY)
Phase of Flight: Landing Roll
Effect on Flight: Flight delayed
Damage: Wing, landing gear, propeller, fuselage
Wildlife Species: White-tailed deer
Comments from Report: Pilot veered to avoid deer on runway and went into an embankment. Left wing snapped in half. Propeller and left landing gear were destroyed and the fuselage was damaged. Time out of service was 3 months. Cost to repair was \$90,000.

Date: 15 October 1999

Aircraft: B-767
Airport: John F. Kennedy Intl. (NY)
Phase of Flight: Landing Roll
Effect on Flight: Other
Damage: Engine
Wildlife Species: Osprey
Comments from Report: Osprey holding fish on centerline was ingested into #1 engine. Seven fan blades were damaged. The flight was delayed 1 hour. Cost of repairs was \$35,000.

Date: 20 October 1999

Aircraft: MD-80
Airport: Philadelphia Intl. (PA)
Phase of Flight: Climb (200' AGL)
Effect on Flight: Engine shut down
Damage: Engine
Wildlife Species: Gull or goose
Comments from Report: Burning smell in cabin after bird was ingested. Plane started to shake. Emergency landing was made. Captain reported #2 engine a complete loss.

Date: 07 November 1999

Aircraft: American AA-1B
Airport: Lake Viking (MO)
Phase of Flight: Landing flare
Effect on Flight: Left runway
Damage: Nose landing gear, wing (maybe more)
Wildlife Species: Deer
Comments from Report: Aircraft struck a deer during the landing flare at night. A 12-point buck hit the front and right wing of the plane. Aircraft veered off the runway and stopped nose down 50 ft off the runway. Nose strut was found near deer on runway. Damage was substantial. The NTSB investigated.

Date: 15 November 1999

Aircraft: Beechcraft 65
Airport: Alpine-Casparis Muni (TX)
Phase of Flight: Take off
Effect on Flight: Emergency landing
Damage: Wing, landing gear
Wildlife Species: White-tailed deer
Comments from Report: Pilot attempted to rotate the aircraft in order to avoid the deer, but the landing gear hit the deer. Ground personnel could not tell if there was any damage during a flyby. The tower could not see the right main landing gear. The pilot elected to land gear up however, the right main landing gear had not retracted. There was substantial damage to the right wing spar, landing gear and wheel assembly.

Date: 17 November 1999

Aircraft: Learjet 60
Airport: Truckee-Tahoe (CA)
Phase of Flight: Take off
Effect on Flight: Other
Damage: Not reported
Wildlife Species: Mule deer
Comments from Report: Aircraft struck a deer on take off. Fire ensued causing substantial damage. Out of service 2 weeks. Cost of repairs \$82,000. Other costs, \$120,000.

Date: 23 November 1999

Aircraft: Bell 206
Airport: 4 miles NE of Addison Airport (TX)
Phase of Flight: En route (1,200' AGL)
Effect on Flight: Emergency landing
Damage: Windshield
Wildlife Species: Duck
Comments from Report: A traffic helicopter pilot saw 3-4 ducks. One hit the windshield shattering it and leaving an 18" hole. Duck entered cockpit, hit pilot on left arm then hit rear seat passenger, knocking his headset off. Passenger was taken to the hospital. No serious injuries. Time out of service was 36 hours. Cost of repairs was \$1,500.

Date: 01 December 1999

Aircraft: B-727
Airport: Philadelphia Intl. (PA)
Phase of Flight: Climb (5,000' AGL)
Effect on Flight: Engine shut down, precautionary landing
Damage: Engine, wing
Wildlife Species: Snow goose
Comments from Report: While climbing, aircraft hit 2-10 birds. Location was 5-8 miles west of airport. The engine was shut down and the aircraft returned to land. There was a hole in the wing and the engine was destroyed. Time out of service was 3 days. Cost of repairs was \$449,000.

Date: 03 December 1999

Aircraft: Beechcraft 58
Airport: Festus Memorial (MO)
Phase of Flight: Take off (rotation)
Effect on Flight: None
Damage: Landing gear, wing, engine, propeller
Wildlife Species: Deer
Comments from Report: During rotation, a deer collided with the landing gear. Indicators showed no problem. Upon landing, the left main gear collapsed damaging the left wing, engine and prop.

Date: 11 December 1999

Aircraft: B-747
Airport: Toledo Express (OH)
Phase of Flight: Take off
Effect on Flight: Engine shut down, precautionary landing
Damage: Engine
Wildlife Species: Red-tailed hawk
Comments from Report: A hawk hit the nose bullet, which shattered and entered the engine. Caller to sheriff reported hearing a large boom and seeing one of the engines on fire as aircraft took off. Fuel was dumped and aircraft returned to land. Pieces of fan blades put large holes in the nose cowling. The engine was shut down due to vibration. Time out of service was 3 ½ days. Cost to repair was \$1.3 million.

Date: 02 January 2000

Aircraft: Hawker 800
Airport: Fort Myers Intl. (FL)
Phase of Flight: Approach (200' AGL)
Effect on Flight: None
Damage: Engine
Wildlife Species: Unknown, suspect gull
Comments from Report: Engine ingested at least 1 gull. No abnormal engine indications. Maintenance found damaged stator vanes and compressor blades. Time out of service was 4 days. Cost was \$90,000.

Date: 07 February 2000

Aircraft: DC-10-30
Airport: Subic Bay (Philippines)
Phase of Flight: Climb (250' AGL)
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Fruit bat
Comments from Report: Engine ingested at least 1 bat. Vibration was felt. Five damaged fan blades had to be replaced. Time out of service was 3 days. Cost of repairs was \$61,000. Other related costs totaled \$3,008,400. (U.S. Carrier)

Date: 19 February 2000

Aircraft: B-737
Airport: Chicago Midway (IL)
Phase of Flight: Climb (10' AGL)
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Red-tailed hawk
Comments from Report: Just after rotation on take off, a large bird was ingested and the engine vibration was high. Fan blades were damaged. The engine was operated at reduced thrust for the remainder of the flight. The landing was uneventful.

Date: 21 February 2000

Aircraft: Airbus 320
Airport: San Diego Intl. (CA)
Phase of Flight: Take off
Effect on Flight: Aborted take off
Damage: Engine, landing light
Wildlife Species: Gull
Comments from Report: Engine had several bent fan blades and a landing light was broken from striking a flock of gulls. The take off was aborted and the aircraft returned to the gate. About 30 gull carcasses were removed, closing the runway for 15 minutes and causing 7 departure delays. The airline cancelled two flights inconveniencing 110 passengers. Cost for repairs and lost revenue was \$157,000.

Date:	22 February 2000
Aircraft:	Airbus 320
Airport:	Philadelphia Intl. (PA)
Phase of Flight:	Climb (1,000' AGL)
Effect on Flight:	Engine shut down, precautionary landing
Damage:	Engine
Wildlife Species:	Goose
Comments from Report:	Two geese were ingested, destroying the #1 engine. Overweight landing was made and emergency equipment was standing by. Time out of service was 2 days. Cost estimated at \$2.5 million.

Date:	24 February 2000
Aircraft:	BAe 125-800
Airport:	Floyd Jones Memorial (MO)
Phase of Flight:	Landing
Effect on Flight:	None
Damage:	Engine, wing, airbrakes
Wildlife Species:	Deer
Comments from Report:	Deer strike damaged the left wing flap which struck and damaged the engine cowling. Time out of service was 1 month. Cost to repair was \$200,000.

Date:	25 February 2000
Aircraft:	B-737
Airport:	Sacramento Intl. (CA)
Phase of Flight:	Take off
Effect on Flight:	Precautionary landing
Damage:	Engine
Wildlife Species:	Unknown bird
Comments from Report:	Aircraft returned to airport after a bird strike on take off. Pilots hear a loud bang and the plane suddenly yawed. Damaged 7 fan blades and plugged the air cooler.

Date:	02 March 2000
Aircraft:	Beechcraft 350
Airport:	Ryan Field (MN)
Phase of Flight:	Descent (3,000' AGL)
Effect on Flight:	None
Damage:	Horizontal stabilizer
Wildlife Species:	Canada goose
Comments from Report:	Goose strike damaged the left horizontal stabilizer leading edge. Time out of service was 17 days. Costs for repairs and lost revenue were \$225,000.

Date:	05 March 2000
Aircraft:	B-747
Airport:	Forbes Field (KS)
Phase of Flight:	Climb (2,500' AGL)
Effect on Flight:	Engine shut down, precautionary landing
Damage:	Engine
Wildlife Species:	Unknown bird
Comments from Report:	Ingested bird caused a compressor stall and flameout at 2500 feet AGL. The flight was diverted to Minneapolis St. Paul Airport. Engine was removed and replaced, also replaced nose cowl. Cost of repairs was \$445,990.

Date: 29 March 2000

Aircraft: B-767
Airport: Dulles Intl. (DC)
Phase of Flight: Take off
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Bonaparte's gull
Comments from Report: Ingested a flock of gulls and returned to the airport. Fan blades were damaged. Passengers were put on later flights. Cost of repairs was \$65,000.

Date: 12 April 2000

Aircraft: Cessna 500
Airport: Southeast Texas Regional (TX)
Phase of Flight: Climb
Effect on Flight: Engine shut down
Damage: Engine, landing gear
Wildlife Species: Laughing gull
Comments from Report: Ingested a flock of gulls just at lift-off. Left engine fan a total loss. Right main landing gear heat shield broke. Time out of service was 3 days. Cost \$247,000.

Date: 19 April 2000

Aircraft: Piper 28
Airport: Cedar City Regional (UT)
Phase of Flight: Climb (2,000' AGL)
Effect on Flight: Precautionary landing
Damage: Windshield, fuselage
Wildlife Species: Golden eagle
Comments from Report: An eagle shattered the windshield and injured the passenger (instructor) who was taken to the hospital with serious injuries. The eagle also hit the avionics bay, elevator control horn which pitched the aircraft into a dive. The pilot was able to gain control and landed safely at Provo Municipal.

Date: 25 April 2000

Aircraft: Saab 340
Airport: Houghton Memorial (MI)
Phase of Flight: Take off
Effect on Flight: Aborted take off
Damage: Engine, prop
Wildlife Species: White-tailed deer
Comments from Report: Aircraft collided with two deer during take off just before V1. The left engine was substantially damaged.

Date: 28 April 2000

Aircraft: B-727
Airport: Kansas City Intl. (MO)
Phase of Flight: Climb (150' AGL)
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Canada goose
Comments from Report: The #1 engine was destroyed when a goose was ingested. The flight returned safely. Seven flights were cancelled. Cost including repairs and lost revenue was \$250,000.

Date: 19 May 2000

Aircraft: Learjet 25
Airport: Allen County (OH)
Phase of Flight: Take off
Effect on Flight: Engine shut down, precautionary landing
Damage: Engine
Wildlife Species: Unknown bird
Comments from Report: The #2 engine was destroyed when a bird was ingested. Pilot declared emergency. The aircraft was diverted to another airport. Cost for repairs and lost revenue was \$113,000.

Date: 25 May 2000

Aircraft: Cessna 310
Airport: L M Clayton (MT)
Phase of Flight: Climb (600' AGL)
Effect on Flight: Lost control
Damage: Aircraft destroyed
Wildlife Species: Canada goose
Comments from Report: Aircraft collided with geese shortly after departure. Windshield shattered, right wing and fuel tank ripped off on impact. The aircraft was destroyed in a post-crash fire. Pilot was hospitalized with burns and lacerations.

Date: 01 June 2000

Aircraft: B-747
Airport: John F. Kennedy Intl. (NY)
Phase of Flight: Take off
Effect on Flight: Engine shut down, precautionary landing
Damage: Engine, wing
Wildlife Species: Canada goose
Comments from Report: Aircraft hit 3 Canada geese on departure and returned to land. One goose was ingested in the #2 engine which was shut down. Emergency team responded but aircraft taxied to the ramp without incident. Damage was estimated at \$1.5 million.

Date: 06 June 2000

Aircraft: Hawker Siddeley HS.125
Airport: Burke Lakefront (OH)
Phase of Flight: Take off
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Gull
Comments from Report: Aircraft ingested a gull. Engine was replaced.

Date: 11 June 2000

Aircraft: B-737
Airport: Boston Logan (MA)
Phase of Flight: Climb (800' AGL)
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Unknown bird
Comments from Report: Large birds were ingested by the #1 engine damaging several fan blades and the booster. Pilot made a precautionary landing. Engine was changed because it could not be repaired on the wing. Time out of service was 24 hours. Estimated cost was \$158,000.

Date:	26 June 2000
Aircraft:	Saab 340
Airport:	Dallas-Fort Worth (TX)
Phase of Flight:	Take off
Effect on Flight:	Aborted take off
Damage:	Engine #1 and #2
Wildlife Species:	Unknown bird
Comments from Report:	Take off was aborted after birds were ingested in both engines. The runway was closed for cleaning. Aircraft returned to the gate. Inspection found damage to both propellers.

Date:	26 June 2000
Aircraft:	DC-10
Airport:	Osaka International (Japan)
Phase of Flight:	Take off
Effect on Flight:	Aborted take off
Damage:	Engine
Wildlife Species:	Unknown bird
Comments from Report:	Take off was aborted after a large bird was ingested in the #3 engine. Ten fan blades were replaced. Time out of service was 36 hours. Cost of repairs was \$195,000 and lost revenue was estimated at \$3 million. (U.S. carrier)

Date:	27 June 2000
Aircraft:	BAe Jetstream 32
Airport:	W.B. Hartsfield Atlanta Intl. (GA)
Phase of Flight:	Landing
Effect on Flight:	None
Damage:	Engine
Wildlife Species:	Unknown bird
Comments from Report:	Two medium sized birds were ingested. The compressor blades were bent. Cost of repairs was \$300,000.

Date:	18 July 2000
Aircraft:	Cessna 650
Airport:	Teterboro (NJ)
Phase of Flight:	Climb (10' AGL)
Effect on Flight:	Precautionary landing
Damage:	Engine #1 and #2
Wildlife Species:	European starling
Comments from Report:	Just after take off, the aircraft struck a flock of starlings. Both engines ingested birds and were damaged. Emergency equipment was standing by as the plane made an immediate return to the field. Over 40 carcasses were removed from the runway. Time out of service was 3 days. Costs totaled \$85,000.

Date: 23 August 2000

Aircraft: B-747
Airport: Philadelphia Intl. (PA)
Phase of Flight: Take off
Effect on Flight: Aborted take off
Damage: Engine, wing
Wildlife Species: Canada goose
Comments from Report: The aircraft flew through a flock of about 30 Canada geese and ingested 1 or 2 in the #1 engine. The high-speed aborted take off resulted in 9 flat tires. The aircraft was towed to the ramp. Time out of service was 3 days. Engine was a total loss. Cost \$3 million.

Date: 27 August 2000

Aircraft: B-747
Airport: Los Angeles Intl. (CA)
Phase of Flight: Climb (500' AGL)
Effect on Flight: Emergency landing
Damage: Engine
Wildlife Species: Western gull
Comments from Report: At least one western gull was ingested just after take off. Bystanders on a beach heard a giant backfire and saw the jet spewing 8- 10-ft flames. Three pieces of the engine fell to the ground, one 5-ft piece landed on a beach where people were having a cookout. No one was injured. The pilot dumped 83 tons of fuel over the ocean for over an hour and then made an emergency landing. The flight had 449 people who were not able to get another flight to Amsterdam until the next day. The costs reported do not include room and board. Time out of service was 3 days. Cost of repairs was \$400,000.

Date: 31 August 2000

Aircraft: B-737
Airport: LaGuardia (NY)
Phase of Flight: Descent (10,000' AGL)
Effect on Flight: Depressurized cabin
Damage: Windshield
Wildlife Species: Canada goose
Comments from Report: Middle and inner panes were shattered when a bird hit the windshield, spraying glass all over the cockpit. The captain was cut. Windshield was making a creaking sound and glass shards were still coming off so pilot slowed the aircraft and depressurized the cabin. Both pilots had ringing in their ears for several hours. Time out of service was 2 days.

Date: 08 September 2000

Aircraft: B-727
Airport: Piedmont Triad Intl. (NC)
Phase of Flight: Climb (3,000' AGL)
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Unknown bird
Comments from Report: A medium sized bird was ingested into the #3 engine causing the suppression liner to pass through the engine. The aircraft returned to the airport. Time out of services was 3 days. Cost totaled \$160,000.

Date: 22 September 2000

Aircraft: Hawker Siddeley HS.125
Airport: Birmingham Intl. (AL)
Phase of Flight: Climb (20' AGL)
Effect on Flight: None
Damage: Engine
Wildlife Species: Unknown bird
Comments from Report: A flock of small birds was ingested on climb. The engine had to be replaced due to damaged blades. Time out of service was 5 days. Cost not reported.

Date: 23 September 2000

Aircraft: Beechcraft 58
Airport: Greenville-Spartanburg Intl. (SC)
Phase of Flight: Approach (2,500' AGL)
Effect on Flight: Precautionary landing
Damage: Windshield
Wildlife Species: Vulture
Comments from Report: Bird was soaring above aircraft, then folded its wings and dived. It made a 1 ft sq. hole in windshield, ripping off the headset and cutting the pilot. Blood and remains splattered throughout the plane, odor was awful and wind noise was extreme. Cost was about \$80,000.

Date: 24 October 2000

Aircraft: Hawker Siddeley HS.125
Airport: Detroit City (MI)
Phase of Flight: Climb (200-4,000' AGL)
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Unknown bird
Comments from Report: Bird went through the right engine. The compressor stalled but continued to run. Declared emergency and made single engine landing. The engine fan assembly had 18 damaged blades. Time out of service was 1 week. Cost estimated at \$84,000

Date: 25 October 2000

Aircraft: DC-9-50
Airport: Detroit Metropolitan Wayne County (MI)
Phase of Flight: Take off
Effect on Flight: Aborted take off
Damage: Brakes, tires
Wildlife Species: Unknown bird
Comments from Report: A flock of birds was struck during take off, which damaged the brakes and tires. Take off was aborted. All 4 brakes and tires were replaced

Date: 03 November 2000

Aircraft: B-737
Airport: La Guardia (NY)
Phase of Flight: Climb (400' AGL)
Effect on Flight: Engine shut down, precautionary landing at JFK
Damage: Engine
Wildlife Species: Herring gull
Comments from Report: The engine must be replaced due to extensive damage after ingesting gulls. Bird ID by Smithsonian, Division of Birds. The engine shut down and then restarted in flight. Aircraft was diverted to JFK for emergency landing.

Date: 08 November 2000

Aircraft: Saab 340
Airport: Aberdeen Regional (SD)
Phase of Flight: Approach (400' AGL)
Effect on Flight: Aircraft was grounded
Damage: Fuselage, wiper, propeller
Wildlife Species: Snow goose
Comments from Report: A flock of snow geese was struck. The windshield wiper broke off, hit the prop which broke it into several pieces and threw it through the fuselage. One passenger received a leg injury with a piece of metal and was taken to the hospital.

Date: 09 November 2000

Aircraft: Airbus 319
Airport: Memphis Intl. (TN)
Phase of Flight: Climb (1,000' AGL)
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Unknown bird
Comments from Report: Ingested a bird into #2 engine. Returned to airport. Replaced first stage fan blades and forward and aft spinners.

Date: 03 December 2000

Aircraft: RV-6
Airport: Santa Maria (CA)
Phase of Flight: Approach (2,000' AGL)
Effect on Flight: Aircraft was grounded
Damage: Windshield, stabilizer, wing
Wildlife Species: Red-tailed hawk
Comments from Report: Hawk broke the windshield and pieces of it dented the leading edge of the stabilizer and rudder and cut the passenger. Medical expenses totaled about \$1000. Time out of service was 2 months. Cost estimated at \$3,000 to \$5,000.

Date: 06 December 2000

Aircraft: Embraer EMB-120
Airport: Yeager Airport (WV)
Phase of Flight: Landing roll
Effect on Flight: None
Damage: Propeller, fuselage
Wildlife Species: White-tailed deer
Comments from Report: Aircraft collided with 2 deer just after landing. The tip of a propeller blade (4" x 3") had separated and punctured the fuselage, injuring a passenger, who later died.

Date: 05 January 2001

Aircraft: B-757
Airport: Miami Intl. (FL)
Phase of Flight: Climb (100' AGL)
Effect on Flight: Precautionary landing, engine shut down
Damage: Engine
Wildlife Species: Turkey vulture
Comments from Report: The number 2 engine ingested one or more turkey vultures just after lift off. There were at least 20 circling vultures. The engine failed and the captain returned to land without incident. Time out of service was 1 week. Cost estimated at \$1.1 million.

Date: 14 January 2001

Aircraft: Learjet 60
Airport: Troy Municipal (AL)
Phase of Flight: Landing
Effect on Flight: Lost control, ran off runway
Damage: Aircraft destroyed
Wildlife Species: White-tailed deer
Comments from Report: The Learjet collided with two deer and ran off the end of the runway into a ditch because the thrust reversers would not operate. The aircraft burst into flames. Rescuers kept the fire from reaching the pilots for about 40 minutes until they could be removed. The pilot and first officer had serious injuries and were flown to a hospital. Cost to replace aircraft \$9.5 million. Other costs \$25,000.

Date: 21 January 2001

Aircraft: MD-11
Airport: Portland Intl. (OR)
Phase of Flight: Take off
Effect on Flight: Aborted take off, engine shut down
Damage: Engine, landing gear
Wildlife Species: Herring gull
Comments from Report: The #3 engine ingested a herring gull. The engine stall blew off the nose cowl that was sucked back into the engine and shredded. The engine had an uncontained failure. The pilot aborted take off and blew two tires. 217 passengers were safely deplaned and rerouted to other flights. Bird ID by Smithsonian, Division of Birds.

Date: 25 February 2001

Aircraft: Beechcraft 95
Airport: San Antonio Intl. (TX)
Phase of Flight: Approach (150' AGL)
Effect on Flight: None
Damage: Windshield, radio
Wildlife Species: Black vulture
Comments from Report: Pilot saw bird overhead. Bird tucked and dove at aircraft shattering the right windscreen. Two passengers received minor injuries. Pilot could not contact tower because the radios were inoperable due to the bird strike. The plane landed without incident. Time out of service was 5 ½ months. Cost for repairs and hospital totaled \$20,400.

Date: 04 March 2001

Aircraft: Bombardier de Havilland Dash 8
Airport: Portland Intl. (OR)
Phase of Flight: Climb
Effect on Flight: Precautionary landing
Damage: Engine, wing, prop, cone
Wildlife Species: Rock dove
Comments from Report: A rock dove was struck while departing. Aircraft returned to PDX without incident. The engine was replaced. Aircraft was out of service 2 days. Estimated cost of repairs was \$752,500.

Date: 08 March 2001

Aircraft: Bell 206
Airport: Barnes-Jewish Hospital Helipad (MO)
Phase of Flight: Approach (500' AGL)
Effect on Flight: None
Damage: Windshield
Wildlife Species: Duck
Comments from Report: Aircraft was transporting a heart patient to Barnes-Jewish Hospital, when a duck crashed through the windshield. Pilot was slightly injured and was partially incapacitated. The duck ended up in the patient's lap.

Date: 08 March 2001

Aircraft: Eurocopter AS 350
Airport: En route (NJ)
Phase of Flight: En route (1,100' AGL)
Effect on Flight: None
Damage: Windshield
Wildlife Species: Gull
Comments from Report: A gull crashed through the right front window and exited through the right door. The passenger seated in the right front seat received minor scratches to the head. Aircraft was out of service 1 week. Cost of repairs was \$12,000.

Date: 02 April 2001

Aircraft: B-767-300
Airport: Charles de Gaulle
Phase of Flight: Climb (14,000' AGL)
Effect on Flight: Precautionary landing
Damage: Nose, radome, wing, fuselage, tail
Wildlife Species: Northern shoveler
Comments from Report: Aircraft struck a flock of shovelers causing dents and 11 punctures. One bird penetrated the cockpit, resulting in depressurization. The flight crew was splattered with bird debris and insulation. The windshield was covered with blood. The pilot had to use an oxygen mask. Aircraft returned safely to the airport. Cost of repairs estimated at over \$1 million. Bird ID by Smithsonian, Division of Birds. (U.S. carrier)

Date: 03 April 2001

Aircraft: Bombardier de Havilland Dash 8
Airport: Portland Intl. (OR)
Phase of Flight: Take off
Effect on Flight: Precautionary landing
Damage: Engine, prop, wing,
Wildlife Species: Rock dove
Comments from Report: Aircraft struck 8 birds on departure and returned, landing without incident. Damage included the leading edge of one wing, prop, cone, and #1 engine. Engine was replaced. Time out of service was 2 days. Estimated cost of repairs was \$752,500.

Date: 09 April 2001

Aircraft: B-737-300
Airport: Cleveland-Hopkins Intl. (OH)
Phase of Flight: Climb
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: American wigeon
Comments from Report: Aircraft made an emergency landing after ingesting a bird shortly after take off. Fan blades were damaged and pilot reported smoke in the cockpit and damage to the canopy. Time out of service was 8 hours. Cost of repairs \$360,000. Bird ID by Smithsonian, Division of Birds.

Date: 22 April 2001

Aircraft: Edge 360
Airport: Barksdale AFB (LA)
Phase of Flight: En Route
Effect on Flight: Precautionary landing
Damage: Destroyed
Wildlife Species: Unknown bird
Comments from Report: During an air show, aircraft was flying at 200mph and about 30 feet above the ground when a bird hit the propeller. The aircraft hit the grass infield, bent the landing gear then bounced back into the air. Pilot had 2 cracked vertebrae and was hospitalized. The plane was severely damaged and will likely never fly again. NTSB report does not mention bird strike

Date: 26 April 2001

Aircraft: B-757-200
Airport: Detroit Metropolitan (MI)
Phase of Flight: Climb (300' AGL)
Effect on Flight: Precautionary landing, engine shut down
Damage: Engine
Wildlife Species: Snow goose
Comments from Report: After take off, flight crew saw several bird strikes to left engine. Engine made loud rumbling noise, EGT rose above 700 degrees and smoke entered the cabin. An emergency was declared and the engine was shut down. Landed without incident.

Date: 03 May 2001

Aircraft: Airbus 319
Airport: San Diego Intl. (CA)
Phase of Flight: Climb (700' AGL)
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Gull
Comments from Report: Engine ran rough following bird ingestion. Pilot declared an emergency and returned to land. Eight fan blades were replaced. Cost was \$125,000 and time out of service was 16 hours.

Date: 16 May 2001

Aircraft: DC-10
Airport: Dayton Intl. (OH)
Phase of Flight: Climb (50' AGL)
Effect on Flight: None
Damage: Engine
Wildlife Species: Gull
Comments from Report: 2-10 birds were ingested which damaged several compressor blades. The engine was removed and several sets of fan blades were replaced. The wing flap track canoe fairing had a large dent and a 4-inch crack. Time out of service was 4 days.

Date: 08 June 2001

Aircraft: Airbus 300
Airport: Newark Intl. (NJ)
Phase of Flight: Approach (150' AGL)
Effect on Flight: None
Damage: Engine, wing
Wildlife Species: Canada goose
Comments from Report: Geese (2-10) were ingested damaging many fan blades. Engine was removed and several sets of fan blades were replaced. Time out of service was 4 days. Cost \$2.8 million.

Date: 09 June 2001

Aircraft: Airbus 300
Airport: Dayton Intl. (OH)
Phase of Flight: Climb (200' AGL)
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Canada goose
Comments from Report: Canada goose was ingested into the #2 engine shortly after lift off. Engine had an uncontained failure; parts of the engine were found on the runway. A precautionary landing was made. Time out of service was 4 days. Cost to replace engine was \$2 million.

Date: 30 June 2001

Aircraft: Cessna 152
Airport: Warrenton-Fauquier (VA)
Phase of Flight: Take off
Effect on Flight: Aborted take off
Damage: Horizontal stabilizer, elevator
Wildlife Species: White-tailed deer
Comments from Report: During take off from a touch and go landing, a deer was hit which buckled the left horizontal stabilizer and tore off the left elevator. Student pilot made an uneventful emergency landing in a field adjacent to the airport. Aircraft was substantially damaged.

Date: 15 July 2001

Aircraft: Beechcraft 90
Airport: Ashe County (NC)
Phase of Flight: Take off
Effect on Flight: Precautionary landing
Damage: Propeller, engine, wing, gear door
Wildlife Species: White-tailed deer
Comments from Report: During take off, a deer was struck. The pilot made a precautionary landing. Damage included a bent prop blade, dented nacelle and wing, and the main gear door was partially sheared off. Time out of service was 1 month. Cost \$160,000.

Date: 18 July 2001

Aircraft: B-737-200
Airport: Elko Municipal (NV)
Phase of Flight: Take off
Effect on Flight: Aborted take off
Damage: Engine
Wildlife Species: Unknown bird
Comments from Report: During take off a bird was ingested. The engine was replaced due to damaged compressor blades. Time out of service was about 4 days. Cost of repairs \$895,000.

Date: 31 July 2001

Aircraft: B-737-500
Airport: Dulles Intl. (DC)
Phase of Flight: Approach (100' AGL)
Effect on Flight: None
Damage: Engine
Wildlife Species: Canada goose
Comments from Report: A Canada goose was ingested during approach. The oil cooler was plugged with bird remains. A set of fan blades and the oil cooler were replaced. Time out of service was 6 days. Cost of repairs was \$430,000. Bird ID by Smithsonian, Division of Birds.

Date: 03 August 2001

Aircraft: DC-8
Airport: Orlando Intl. (FL)
Phase of Flight: Climb (800' AGL)
Effect on Flight: Diverted flight
Damage: Engine #1 and #2
Wildlife Species: Unknown bird
Comments from Report: Plane struck multiple birds. Two of the three engines were damaged. The flight was diverted to land at another airport. The fuel line was broken causing loss of fuel on one engine and compressor blades were damaged on the other. Pilot declared a fuel emergency.

Date: 03 September 2001

Aircraft: B-737
Airport: New Orleans Intl. (LA)
Phase of Flight: Climb (14,000-20,000' AGL)
Effect on Flight: Precautionary landing
Damage: Radome, wing, fuselage, tail
Wildlife Species: Blue-winged teal
Comments from Report: Plane struck multiple birds and returned to airport. Significant damage occurred to the radome, fuselage, leading edges of right wing and right horizontal stabilizer. Bird ID by Smithsonian, Division of Birds.

Date: 29 October 2001

Aircraft: B-737-400
Airport: Buffalo Niagara Intl. (NY)
Phase of Flight: Approach (100' AGL)
Effect on Flight: Engine shut down
Damage: Engine, radome, wing
Wildlife Species: Canada goose
Comments from Report: Aircraft hit a flock of geese and ingested some into both engines. The left engine was shut down and later replaced. The radome and wing were also damaged. Time out of service was 3 days. Bird ID by Central Science Lab.

Date: 01 November 2001

Aircraft: Beechcraft 1900
Airport: Hancock County (ME)
Phase of Flight: Landing roll
Effect on Flight: None
Damage: Engine, prop
Wildlife Species: White-tailed deer
Comments from Report: Struck a deer just after touchdown. One of the composite propeller blades was missing and had separated from the hub. It was found 300 feet from the collision site. The firewall was cracked and one remaining prop blade was bent. Time out of service was 2 weeks. Cost of repairs and lost revenue \$292,000.

Date: 03 November 2001

Aircraft: Cessna Citation II
Airport: Lakefront (LA)
Phase of Flight: Climb (1,200' AGL)
Effect on Flight: Precautionary landing
Damage: Engine, wing
Wildlife Species: Duck
Comments from Report: Aircraft flew into a flock of ducks shortly after take off and ingested some. The temperature probe broke off and went through the fan. Inlet fan blades broke damaging the inlet. Right wing was dented. Time out of service was 1 month. Cost of repairs \$605,000.

Date: 20 November 2001

Aircraft: B-727
Airport: Memphis Intl. (TN)
Phase of Flight: Approach (1,700' AGL)
Effect on Flight: None
Damage: Windshield, nose, wing
Wildlife Species: Snow goose
Comments from Report: Approximately 25 birds were seen. One bird penetrated the cockpit, spraying the pilot with blood and bird remains. Nose was damaged below the captain's windshield. Two other birds penetrated the right wing near the leading edge slats. Time out of service was 1 week. Cost of repairs and lost revenue was \$700,000.

Date: 30 November 2001

Aircraft: Airbus 300
Airport: Logan Intl. (MA)
Phase of Flight: Take off
Effect on Flight: Diverted to JFK
Damage: Engine
Wildlife Species: Herring gull
Comments from Report: Aircraft ingested a herring gull on take-off from Boston. One engine had bent fan blades. Flight was diverted to JFK due to bad weather in Boston. Bird ID by Smithsonian, Division of Birds.

Date: 06 December 2001

Aircraft: B-737
Airport: Detroit Metropolitan (MI)
Phase of Flight: Climb
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Gull
Comments from Report: Aircraft struck a flock of gulls and ingested one after take off. Engine rolled back, then started compressor stalls. Pilot pulled throttle back to idle. An emergency landing was made due to engine flame out. The engine was replaced. Cost estimated at \$2.3 million.

Date: 25 January 2002

Aircraft: Learjet 60
Airport: Naples Municipal Airport (FL)
Phase of Flight: Landing roll
Effect on Flight: None
Damage: Engine
Wildlife Species: Muscovy duck
Comments from Report: Duck was ingested into #1 engine. Bird remains were evident throughout the core and bypass sections of engine. Time out of service was 5 days. Cost of repairs was \$443,000.

Date: 26 January 2002

Aircraft: B-757
Airport: Denver Intl. (CO)
Phase of Flight: Take off
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Great horned owl
Comments from Report: Engine ingested a great horned owl which caused engine vibration. Aircraft returned to land at DEN. Many fan blades were damaged. Remains were removed for ID. Maintenance thought there was fur and feathers in the engine. Time out of service was 3 days. Cost \$500,000. Bird ID by Smithsonian, Division of Birds.

Date: 21 February 2002

Aircraft: Beechcraft 1900
Airport: Phoenix Sky Harbor Intl. (AZ)
Phase of Flight: Climb (400' AGL)
Effect on Flight: Precautionary landing
Damage: Wing, fuel tank
Wildlife Species: Northern pintail
Comments from Report: Bird penetrated right wing and fuel was rapidly leaking out. Emergency landing made. Passengers safely deplaned. Bird ID by Smithsonian, Division of Birds.

Date: 24 February 2002

Aircraft: Fokker-100
Airport: Dallas-Fort Worth (TX)
Phase of Flight: Climb (6,000' AGL)
Effect on Flight: Precautionary landing
Damage: Engine, nose, wing
Wildlife Species: Greater white-fronted goose
Comments from Report: Aircraft struck a flock of geese and ingested one after take-off. Engine vibration caused crew to reduce power to idle Aircraft nose was damaged. Several blades were deformed. Engine was replaced. Cost of repairs and lost revenue totaled \$654,000. Time out of service was 8 days. Bird ID by Smithsonian, Division of Birds

Date: 09 March 2002

Aircraft: Canadair RJ 200
Airport: Dulles Intl. (DC)
Phase of Flight: Take off
Effect on Flight: Aborted take off
Damage: Engine, windshield, fuselage
Wildlife Species: Wild turkey
Comments from Report: Aircraft struck wild turkeys. One shattered the windshield spraying the cockpit with glass fragments and remains. Another hit the fuselage and was ingested. There was a 14 inch by 4 inch section of fuselage skin damaged below the windshield seal on the flight officer's side. Time out of service was at least 2 weeks. Estimated cost of repairs was \$200,000.

Date: 27 March 2002

Aircraft: MD-83
Airport: Lambert-St. Louis Intl. (MO)
Phase of Flight: Climb (2,500')
Effect on Flight: Precautionary landing
Damage: Engine, windshield
Wildlife Species: Mallard
Comments from Report: While climbing out at 2,500' AGL, the aircraft hit at least 2 ducks. One hit the captain's windshield covering the entire area with remains. The other hit the right wing leading edge and left a hole the size of a "melon". Flight returned to St. Louis. Time out of service was 19 hours. Estimated cost of repairs was \$60,000. Bird ID by the Smithsonian, Division of Birds. Birds were first reported as geese.

Date: 11 April 2002

Aircraft: Cessna 208
Airport: Baltimore-Washington Intl. (MD)
Phase of Flight: Approach (2,500' AGL)
Effect on Flight: Other
Damage: Windshield
Wildlife Species: Horned grebe
Comments from Report: Bird came through the windshield, injuring the pilot. Bird ID by Smithsonian, Division of Birds. Time out of service was 3 days. Cost of repairs \$18,000.

Date:	18 April 2002
Aircraft:	Piper 23
Airport:	Blue Grass (KY)
Phase of Flight:	Descent (3,000' AGL)
Effect on Flight:	Slowed airspeed
Damage:	Fuselage
Wildlife Species:	Common loon
Comments from Report:	Bird was seen just prior to impact in full dive configuration. It hit directly over pilot's head. The overhead reading light and air vent were discharged from the panel, striking a passenger. Aircraft was slowed to 100 kts. After landing, the aircraft was escorted by fire and emergency equipment. ID by Smithsonian, Division of Birds. Time out of service was 3 months. Cost of repairs was \$6,000.

Date:	23 April 2002
Aircraft:	Piper 32
Airport:	George R. Carr Memorial (LA)
Phase of Flight:	Take off
Effect on Flight:	Aborted take off
Damage:	Wing, fuel tank, horizontal stabilizer
Wildlife Species:	White-tailed deer
Comments from Report:	During take off, the aircraft's left wing hit a deer that crossed in front of it. The pilot aborted take-off and returned to the hangar. The left wing spar, left flap and horizontal stabilizer were damaged and the left fuel tank was ruptured. Time out of service was 11 weeks. Estimated cost was \$42,000. NTSB investigated.

Date:	08 May 2002
Aircraft:	Beechjet 400
Airport:	Burke Lakefront (OH)
Phase of Flight:	Take off
Effect on Flight:	Aborted take off
Damage:	Engines
Wildlife Species:	Gull (ring-billed and herring)
Comments from Report:	Pilot revved engines to move gulls from runway. The gulls lifted off, then as the aircraft took off, returned to the runway and were struck. Both engines ingested gulls and were damaged beyond repair. One had an uncontained failure. Aircraft was towed to the hangar. Airport operations recovered 14 carcasses. Estimated cost was \$1 million for repairs and \$0.5million in lost revenue. ID by Smithsonian, Division of Birds. NTSB investigated.

Date:	01 June 2002
Aircraft:	Cessna 172
Airport:	Navajo Dam Airport (NM)
Phase of Flight:	Approach
Effect on Flight:	Avoidance maneuver
Damage:	Wings
Wildlife Species:	Unknown bird
Comments from Report:	Student pilot, doing touch and go landings, executed an abrupt right turn to avoid striking a bird. A wind gust pushed the plane to the right. The aircraft touched down and then veered off the runway. The right wing hit a tree and the left wing hit the ground.

Date:	06 June 2002
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Aircraft:	Cessna 172
Airport:	Orlando-Sanford Intl. (FL)
Phase of Flight:	Descent (1,100' AGL)
Effect on Flight:	Precautionary landing
Damage:	Windshield
Wildlife Species:	Turkey vulture
Comments from Report:	Vulture smashed through the windshield and the right side door blew open. The instructor's headset flew out the open door. Bird ended up in baggage compartment. Student pilot was cut on face and arms, instructor cut on face and arm. Time out of service was 2 days. Cost of repairs was \$1,000.

Date:	08 June 2002
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Aircraft:	Cessna Citation
Airport:	John F. Kennedy Memorial (WI)
Phase of Flight:	Landing roll
Effect on Flight:	Avoidance maneuver
Damage:	Wing, fuselage, nose
Wildlife Species:	White-tailed deer
Comments from Report:	Pilot was warned of deer on airfield. Deer was chased away but as the aircraft landed, a second deer ran onto the active runway. The pilot swerved to avoid the deer but it hit just below the pilot's window, scraped against the static ports, and hit the left wing root fairing. The aircraft was ferried to a maintenance base for repairs. Time out of service was 6 weeks. Cost was at least \$125,000.

Date:	08 July 2002
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Aircraft:	Cessna 560
Airport:	Santa Barbara Municipal (CA)
Phase of Flight:	Approach (500' AGL)
Effect on Flight:	None
Damage:	Engine
Wildlife Species:	Unknown bird
Comments from Report:	Hit a medium-sized black bird on short final. Landing was uneventful. After shutdown, found excessive amount of oil draining from engine. Time out of service was 9 days.

Date:	08 July 2002
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Aircraft:	Canadair RJ 200
Airport:	South Bend Michiana Regional (IN)
Phase of Flight:	Landing roll
Effect on Flight:	Not reported
Damage:	Wing
Wildlife Species:	White-tailed deer
Comments from Report:	Hit deer during landing roll. Right inboard flap and flap actuators had to be replaced. Time out of service was 2 days. Cost of parts was \$195,000.

Date: 10 July 2002

Aircraft: B-737
Airport: Sarasota/Bradenton Intl. (FL)
Phase of Flight: Climb
Effect on Flight: Diverted, precautionary landing
Damage: Engine, tail, nose cowl
Wildlife Species: Unknown bird
Comments from Report: Strike occurred at rotation. Aircraft made an overweight landing. There was a golf ball-sized hole in some of blades. Four pairs of blades were replaced. The nose cowl was punctured in two places. Horizontal stabilizer was dented. Time out of service was over 24 hours.

Date: 26 July 2002

Aircraft: B-757
Airport: San Francisco Intl. (CA)
Phase of Flight: Climb
Effect on Flight: Engine reacted
Damage: Engine #1 and #2, radome
Wildlife Species: Unknown bird
Comments from Report: The aircraft hit 40-50 large birds. Engines reacted but continued running with no abnormal indications. Upon landing, found both engines had fan blade and acoustic damage. Several sets of fan blades were replaced. Cost of repairs was \$300,000.

Date: 04 August 2002

Aircraft: Airbus 310
Airport: Changi Intl. (Singapore)
Phase of Flight: Take off
Effect on Flight: Aborted take off
Damage: Engine
Wildlife Species: Unknown
Comments from Report: Large bird was ingested during take off. Engine damage included fan blades, compressor blades, exit guide vanes and bases, and a dented nose inlet cowl. Aircraft was out of service 40 hours. Estimated cost of repairs was \$570,700. (U.S. Carrier)

Date: 05 August 2002

Aircraft: B-757
Airport: Portland Intl. (OR)
Phase of Flight: Take off
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Red-tailed hawk
Comments from Report: Normal take-off. At 300 feet, vibration and flutter started in right engine. As climb continued, vibration got worse, power was reduced on the engine and vibration stopped at idle. Declared precautionary emergency and returned to airport. Made a single engine landing without incident. Upon inspection, found blade damage due to bird ingestion. Replaced 6 pairs of fan blades. Flight was delayed 18 hours.

Date: 07 August 2002

Aircraft: B-757
Airport: San Francisco Intl. (CA)
Phase of Flight: Climb (100' AGL)
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Rock dove
Comments from Report: Shortly after rotation, a flock of 40-45 pigeons flew into the aircraft. Multiple bird strikes. At least two were ingested into left engine. Engine surged and vibrated briefly. Declared emergency and returned to airport with both engines running. Taxied to gate after fire chief cleared the aircraft. Several fan blades were damaged.

Date: 10 August 2002

Aircraft: C-500
Airport: Griffing Sandusky Airport (OH)
Phase of Flight: Take off
Effect on Flight: Precautionary landing
Damage: Nose gear, fuselage, forward pressure bulkhead
Wildlife Species: White-tailed deer
Comments from Report: At rotation, a deer hit the nose gear. Pilot diverted to Toledo Express Airport. He made passes over rescue personnel who verified the nose gear was not fully extended. Pilot burned additional fuel, shut down engines, fuel and generators then landed and came to rest on fork of nose gear and gear doors. Substantial damage to bottom of fuselage, forward pressure bulkhead and nose gear. Cost of repairs was \$2000 and cost of rental aircraft was \$40,000. Aircraft out of service at least 3 months.

Date: 12 September 2002

Aircraft: Hawker Mark 20
Airport: Orlando Executive (FL)
Phase of Flight: Climb (700' AGL)
Effect on Flight: Precautionary landing
Damage: Windshield, canopy
Wildlife Species: Egret
Comments from Report: Hit 2 egrets with bubble canopy, slightly aft of pilot's head. Canopy disintegrated, departed aircraft along with most of the frame rails and emergency escape panel. Canopy debris struck and damaged both sides of the horizontal stabilizer and damaged the vertical fin. Debris landed in a residential area. Time out of service was 8 weeks. Estimated cost of repairs was \$20,000 - \$30,000 with estimated other costs at \$80,000.

Date: 13 September 2002

Aircraft: BA - 41
Airport: Dayton Intl. (OH)
Phase of Flight: Climb (50' AGL)
Effect on Flight: Precautionary landing
Damage: Engine, propeller
Wildlife Species: European starling
Comments from Report: Aircraft returned after ingesting 24-30 starlings. One turbine blade bent beyond limits. The engine was replaced. Time out of service was 30 hours. Estimated cost \$172,000.

Date: 17 September 2002

Aircraft: DC-9-30
Airport: La Crosse Municipal (WI)
Phase of Flight: Take off
Effect on Flight: Aborted take off
Damage: Radome, engine
Wildlife Species: Canada goose
Comments from Report: Hit 4 geese during take off. Aborted take off at 100 knots. The radome was cracked. One bird was ingested causing damage to the 3rd stage engine fans. The engine was removed and replaced.

Date: 23 September 2002

Aircraft: MD-83
Airport: San Diego Intl. (CA)
Phase of Flight: Climb (14,000' AGL)
Effect on Flight: Precautionary landing
Damage: Radome, wing
Wildlife Species: Northern pintail
Comments from Report: Hit 2-10 ducks. Plane was rerouted to Los Angeles and made a precautionary landing. Radome and bulkhead were penetrated. Remains found in landing gear compartment. Leading edge of wing was also penetrated. Bird ID by Smithsonian, Division of Birds.

Date: 6 October 2002

Aircraft: B-737
Airport: Newark Intl. (NJ)
Phase of Flight: Approach (10' AGL)
Effect on Flight: None
Damage: Engine
Wildlife Species: Canada goose
Comments from Report: Hit at least 8 geese on landing flare. Two birds were found in the engine (1 in core). Nose cowling and 9 blades were damaged. Engine was removed. Cost for repairs \$1.4 million. ID by Smithsonian, Division of Birds.

Date: 6 October 2002

Aircraft: Canadair RJ 200
Airport: Salt Lake City Intl. (UT)
Phase of Flight: Approach (1,700' AGL)
Effect on Flight: None
Damage: Radome, wing, engine
Wildlife Species: Canada goose
Comments from Report: Hit 5 geese on final approach. Damage included radome, left wing root and #1 engine and nacelle. Time out of service was 3 days.

Date:	13 October 2002
Aircraft:	B-737-300
Airport:	Piedmont Triad Intl. (NC)
Phase of Flight:	Approach (10' AGL)
Effect on Flight:	None
Damage:	Engine #1 and #2, wing
Wildlife Species:	Canada goose
Comments from Report:	Hit flock of Canada geese on landing flare. Geese were ingested in both engines. No immediate effect. There was an odor in the cabin. Both nose cowls were replaced as well as a full set of fan blades on the left engine and 3 pairs of fan blades on the right engine. Bird ID by Smithsonian, Division of Birds.

Date:	14 October 2002
Aircraft:	Bombardier de Havilland Dash 8
Airport:	Albany Intl. (NY)
Phase of Flight:	Approach (3,000' AGL)
Effect on Flight:	Disconnected auto pilot to avoid flock
Damage:	Tail, wing, engine
Wildlife Species:	Canada goose
Comments from Report:	Pilot saw a large flock of birds and disconnected the autopilot to try to avoid them but several hit with a big thud. Aircraft handled normally and landed without incident. At the gate, a bird was found protruding from the wing with fuel leaking out. Another hole was found in the horizontal stabilizer. Fire and rescue were called when the engine began to smoke. Bird ID by Smithsonian, Division of Birds.

Date:	19 October 2002
Aircraft:	B-767
Airport:	Boston Logan (MA)
Phase of Flight:	Climb (200' AGL)
Effect on Flight:	Engine shut down, precautionary landing
Damage:	Engine, landing lights
Wildlife Species:	Double-crested cormorant
Comments from Report:	Encountered a flock of over 20 birds. At least one was ingested. There were immediate indications of engine surging on the right side, compression stall and smoke came from engine. The engine was shutdown. Overweight landing with one engine was made without incident. Aircraft was towed to the gate. Nose cowl was dented and punctured. There was significant fan blade damage with abnormal engine vibration. One fan blade was found on the runway. Because pieces of the engine exited through the front it was considered a contained failure. Aircraft was towed to the ramp. Hydraulic lines were leaking and several bolts were sheared off inside the engine. Many pieces fell out when the cowling was opened. Time out of service was 3 days. Cost of repairs was \$1.7 million NTSB investigated.

Date:	12 November 2002
Aircraft:	Eurocopter/Kawasaki BK 117
Airport:	near Tequesta FL
Phase of Flight:	En route (800' AGL)
Effect on Flight:	Emergency landing
Damage:	Unknown
Wildlife Species:	Vulture
Comments from Report:	Emergency medical helicopter hit a flock of vultures. One medical technician was struck and received minor injuries. The helicopter was forced to make an emergency landing due to damage. This was a back-up aircraft so the county's emergency service was without any helicopters for about a day. (Strike not reported to FAA, so information is missing.)

Date:	3 December 2002
Aircraft:	Learjet 36
Airport:	Astoria Regional (OR)
Phase of Flight:	Take-off
Effect on Flight:	Aborted take-off, ran off runway
Damage:	Aircraft destroyed
Wildlife Species:	Elk
Comments from Report:	A Learjet was destroyed after collision with multiple elk and subsequent runway overrun. Impact forces and post crash fire destroyed the airplane. Crew believes a piece of the animal was ingested into the left engine causing it to catch fire. No one was injured. Fire was fanned into the aircraft by fire dept helicopter which drove burning fuel into the airframe. Cost was \$5 million. NTSB investigated.

Date:	13 December 2002
Aircraft:	Bombardier de Havilland Dash 8
Airport:	Charlotte/Douglas Intl (NC)
Phase of Flight:	Landing roll
Effect on Flight:	Aircraft towed off runway
Damage:	Landing gear
Wildlife Species:	White-tailed deer
Comments from Report:	The impact with the large buck caused the nose gear to collapse. The deer was cut in two. Time out of service was 38 days. Cost was \$224,960.

Date:	8 January 2003
Aircraft:	Bombardier de Havilland Dash 8
Airport:	Rogue Valley Intl. (OR)
Phase of Flight:	Approach (1,300' AGL)
Effect on Flight:	First officer took over controls after pilot was injured
Damage:	Radome, windshield, propeller, operating systems
Wildlife Species:	Lesser scaup
Comments from Report:	Aircraft collided with a flock of lesser scaup. The windshield was shattered, seriously injuring & incapacitating the pilot who turned control over to the first officer for landing. Partial loss of electrical power rendered primary navigational flight & avionics displays inoperative. Numerous red fail lights and engine fire lights illuminated. Crew also found there was no elevator trim and the nose wheel steering did not work after touchdown. Birds had penetrated the radome and damaged the DC power and instruments systems. Emergency was declared. The pilot was treated for cuts and glass in his eyes. Time out of service was 3 weeks. Bird ID by Smithsonian, Division of Birds. NTSB investigated.

Date: 9 March 2003

Aircraft: PA-34
Airport: Lakefront Airport (LA)
Phase of Flight: Approach (800' AGL)
Effect on Flight: None
Damage: Windshield
Wildlife Species: Red-breasted merganser
Comments from Report: Aircraft struck two mergansers over Lake Pontchartrain. One penetrated the right windshield; the other shattered the left windshield.

Date: 11 March 2003

Aircraft: B-757
Airport: Newark Intl. (NJ)
Phase of Flight: Climb (400' AGL)
Effect on Flight: Engine shut down, precautionary landing
Damage: Engine
Wildlife Species: Canada goose
Comments from Report: Engine ingested a goose causing an uncontained failure. Engine was replaced. Bird ID by Smithsonian, Division of Birds. Time out of service was 2 days. Cost \$740,000.

Date: 30 March 2003

Aircraft: Beech A36
Airport: Tavernaero Park (FL)
Phase of Flight: Take-off run
Effect on Flight: Evasive action
Damage: Aircraft destroyed
Wildlife Species: Dog
Comments from Report: Pilot saw the dog during take-off run. He pulled up to avoid it and rolled left. The wing hit the ground and the aircraft impacted trees. Minor injuries were reported.

Date: 31 March 2003

Aircraft: Embraer ERJ 135
Airport: John F. Kennedy Intl. (NY)
Phase of Flight: Climb (400' AGL)
Effect on Flight: Precautionary landing
Damage: Wing
Wildlife Species: Double-crested cormorant
Comments from Report: Bird collided with the right wing. Aircraft returned to the airport for inspection. The leading edge had a large dent.

Date: 24 May 2003

Aircraft: DC-10
Airport: Oakland Intl. (CA)
Phase of Flight: Climb (4,000' AGL)
Effect on Flight: Emergency landing
Damage: Engine
Wildlife Species: Great egret
Comments from Report: Engine ingested a great egret causing an emergency landing. Substantial damage to the #3 engine resulting in NTSB and FAA investigations. The engine was replaced. Costs totaled \$1,840,800. Bird ID by Smithsonian, Division of Birds.

Date: 10 June 2003

Aircraft: Aerostar 601
Airport: Martin State Airport (MD)
Phase of Flight: Climb (1,500' AGL)
Effect on Flight: Precautionary landing
Damage: Windshield, side window
Wildlife Species: Black vulture
Comments from Report: Aircraft hit the vulture about 1 mile west of airport. Pilot saw bird just prior to strike. Bird came through the windshield on right side and slightly injured the co/pilot. An emergency was declared. Windshield was destroyed along with right side forward window. Time out of service was 2 weeks. Cost of repairs was \$8,000.

Date: 08 July 2003

Aircraft: Cessna 172
Airport: near McKinney, TX
Phase of Flight: En route (800' AGL)
Effect on Flight: Crashed in field
Damage: Wings, engine, (possibly more)
Wildlife Species: Unknown bird (suspect vulture)
Comments from Report: Pilot made Mayday call to DFW tower after hitting a bird with the left wing. He said he could not keep the aircraft straight with the power on. He thought they were going to be all right and wanted someone to pick them up after they landed in a field. The plane came to rest upright with the engine partially separated from the firewall. The left wing was separated at the wing attach points and both wings had leading edge damage. Someone on the ground saw the plane hit with left wing first and found two people had been killed. The fuel tanks had ruptured and were leaking but no fire was evident when the Fire Department arrived. Although the pilot did not say what kind of bird had been struck, the Air Safety Inspector said it was possibly a buzzard.

Date: 13 August 2003

Aircraft: Airbus 310
Airport: Memphis Intl. (TN)
Phase of Flight: Landing roll
Effect on Flight: None
Damage: Engine
Wildlife Species: Unknown bird
Comments from Report: The aircraft struck a flock of small birds at touchdown. The # 2 engine ingested 4-5 birds. Eight fan blades were replaced. Time out of service was 29 hours. Estimated cost of repairs was \$106,000.

Date: 14 August 2003

Aircraft: B-737-300
Airport: Indianapolis Intl. (IN)
Phase of Flight: Approach (500' AGL)
Effect on Flight: None
Damage: Engine
Wildlife Species: Unknown bird
Comments from Report: The aircraft ingested a large bird. The #2 engine vibration monitor increased but all other indications were normal. Eleven fan blades were replaced. Time out of service was 24 hours. Estimated cost of repairs was \$84,700.

Date:	16 August 2003
Aircraft:	MD-80
Airport:	Leon, Mexico
Phase of Flight:	Climb
Effect on Flight:	Engine shut down, precautionary landing
Damage:	Engine
Wildlife Species:	Unknown bird
Comments from Report:	The aircraft struck a flock of birds just after rotation. Passengers heard multiple banging sounds and an explosion as the plane lurched, struggling to gain altitude. Smoke came from the engine and was noticed in the cabin. One engine was shut down because of fire danger. An emergency landing was made. Time out of service was 2 days. Cost of repairs was \$243,000. (USA Carrier)

Date:	19 August 2003
Aircraft:	BE-1900
Airport:	Muskegon County Airport (MI)
Phase of Flight:	Landing roll
Effect on Flight:	Engines shut down
Damage:	Engine
Wildlife Species:	White-tailed deer
Comments from Report:	After touching down, the aircraft was decelerating when two deer crossed the runway. The smaller of the deer hit the right engine propeller. The crew shut down both engines. The right engine and mounts received substantial damage. The NTSB investigated.

Date:	04 September 2003
Aircraft:	Fokker 100
Airport:	LaGuardia Airport (NY)
Phase of Flight:	Climb (125' AGL)
Effect on Flight:	Engine shut down, emergency landing
Damage:	Engine, nose, fuselage
Wildlife Species:	Canada goose
Comments from Report:	The aircraft struck a flock of geese shortly after take off. Engine had an uncontained failure. Pilot was unable to shut it down with the fuel cutoff lever so the fire handle was pulled. The engine shut down, but vibration continued. The aircraft would neither climb nor accelerate. Vibration increased with speed so they kept the speed below 180 knots. The flight was diverted to JFK where an uneventful landing was made. The NTSB found a 20 by 36-inch wide depression on right side of nose behind radome; maximum depth was 3-4 inches. Impact marks on right wing. A fan blade separated from the disk and several fan blades were deformed. Holes were found in the engine cowling and the fuselage was penetrated by a fan blade. Remains were recovered and identified by Wildlife Services. Both the Captain and First Officer received prestigious awards for their superior airmanship under extremely challenging circumstances.

Date:	29 September 2003
Aircraft:	Airbus 320
Airport:	Dulles Intl. (DC)
Phase of Flight:	Approach (2,500' AGL)
Effect on Flight:	Smoke and bad odor in cockpit
Damage:	Engine
Wildlife Species:	Great blue heron
Comments from Report:	Three great blue herons appeared in front of the aircraft then we heard a thump. Pilot smelled smoke and a bad odor which spread to cabin. Engine system indicators were normal. Found remains of 1 or 2 birds in the engine. The engine was removed. One flight was cancelled. Time out of service was 3 days. Cost of repairs \$1.3 million. Bird ID by Smithsonian, Division of Birds.

Date:	22 October 2003
Aircraft:	Cessna 152
Airport:	Pierson, FL
Phase of Flight:	En Route (1,000' AGL)
Effect on Flight:	Crash landing
Damage:	Windshield, landing gear, nose, fuselage, tail
Wildlife Species:	Black vulture
Comments from Report:	The aircraft struck a black vulture while doing maneuvers during a student pilot lesson near Lake Disston. The windshield was missing and the pilot could not maintain altitude after applying full throttle and called Mayday. Aircraft hit nose first in a field and came to a stop inverted. Instructor and student received minor injuries. FAA Inspector recovered part of the windshield. Nose gear and main landing gear were broken. Vertical stabilizer and bottom of fuselage were buckled. Bird ID by Smithsonian, Division of Birds.

Date:	03 November 2003
Aircraft:	Bushby Mustang II
Airport:	Buckingham Field (FL)
Phase of Flight:	Descent (1,000' AGL)
Effect on Flight:	None
Damage:	Windshield, nose
Wildlife Species:	Unknown bird
Comments from Report:	Damage to forward fuselage in front of windshield and to instrument panel on right side. Passenger was hit in face and received a split lip, black eyes and 3 broken teeth. Time out of service was about 25 hours. Replacement for windshield and canopy was \$6,000. Medical and dental costs totaled \$5,900.

Date:	12 November 2003
Aircraft:	Learjet 24
Airport:	St. Louis Downtown Airport (IL)
Phase of Flight:	Climb (500' AGL)
Effect on Flight:	Engines shut down, forced landing in a field
Damage:	Aircraft destroyed
Wildlife Species:	Blackbird (suspected)
Comments from Report:	The pilot heard a loud thump on the right wing as he flew through a flock of small blackbirds shortly after take-off. Both engines lost power, the plane crashed into a field and caught on fire. At least two on board were injured. NTSB preliminary report does not indicate anything about birds. No carcasses were found on the airport runway or in adjacent fields. Cost was \$750,000.

Date:	12 November 2003
Aircraft:	Saab 340
Airport:	Minneapolis St. Paul Intl. (MN)
Phase of Flight:	Approach (3,200' AGL)
Effect on Flight:	None
Damage:	Vertical stabilizer, wing
Wildlife Species:	Canada goose
Comments from Report:	The aircraft struck a flock of geese on approach. Vertical stabilizer had two large holes and the left wing leading edge was dented. NTSB investigated. Bird ID by Smithsonian, Division of Birds. Time out of service was 22 days. Estimated costs totaled \$173,000.

Date:	15 November 2003
Aircraft:	MD-82
Airport:	Newark Intl. (NJ)
Phase of Flight:	Approach (3,000' AGL)
Effect on Flight:	Lost control, engine shut down
Damage:	Radome, bulkhead, fuselage, wing, window, nose cowl, nose gear,
Wildlife Species:	Snow goose (suspected)
Comments from Report:	The aircraft struck large birds followed by an explosion from the right engine. Pilot lost then regained control and landed without incident. Evidence of ingestion found in both engines. Engines were borescoped and determined to be serviceable. Significant damage to radome, nose gear and leading edge of left wing. Time out of service was 2 weeks.

Date:	22 December 2003
Aircraft:	B-747-400
Airport:	John F. Kennedy Intl. (NY)
Phase of Flight:	Take-off
Effect on Flight:	Precautionary landing
Damage:	Engine
Wildlife Species:	Herring gull
Comments from Report:	Pilot hit 2 birds upon take-off. Aircraft circled about 2 hours to burn off fuel before returning to the airport. Three fan blades were damaged. Airline had to provide overnight accommodations and meals for 308 passengers. Repair time was 11 hours with an additional 9 hours of downtime for crew rest.

Date:	26 December 2003
Aircraft:	B-737
Airport:	Lambert-St. Louis Intl. (MO)
Phase of Flight:	Climb (2,900' AGL)
Effect on Flight:	Precautionary landing
Damage:	Radome, nose, wing, tail, lights
Wildlife Species:	Snow goose
Comments from Report:	The aircraft struck approximately 3 geese on climb at night and returned to land. Engine ingested at least part of a bird with no damage. Radome was dented and nose peeled up. Horizontal stabilizer was dented. Several passenger windows had feathers stuck in them. Aircraft was ferried to Texas for repair. Bird ID by Smithsonian, Division of Birds. Time out of service was 11 days. Costs totaled \$502,000.

Date: 22 January 2004

Aircraft: Augusta Westland Helicopter
Airport: Palm Beach Intl. (FL)
Phase of Flight: Approach (500' AGL)
Effect on Flight: Precautionary landing
Damage: Windshield
Wildlife Species: Osprey
Comments from Report: An osprey crashed into the windshield, forcing the pilot to land at Palm Beach Intl. Airport. The windshield shattered and caused minor injuries to the pilot, the only person on board. Most of the windshield departed the aircraft. Interior was quite a mess. Time out of service was 3 weeks. Cost was \$16,000.

Date: 29 January 2004

Aircraft: Diamond DA 20
Airport: Baltimore (MD)
Phase of Flight: En Route (2,000' AGL)
Effect on Flight: Precautionary landing
Damage: Tail, horizontal stabilizer, prop, wing
Wildlife Species: Tundra swan
Comments from Report: Aircraft encountered about 10 swans. The pilot tried to avoid them but hit one. It cracked the prop, bounced off right wing and entire swan lodged in the tail. Pilot returned to Baltimore-Washington International. Bird ID by Smithsonian, Division of Birds. Cost was \$15,000.

Date: 8 February 2004

Aircraft: Eurocopter BO 105
Airport: Baton Rouge (LA)
Phase of Flight: En Route (700' AGL)
Effect on Flight: Precautionary landing
Damage: Windshield
Wildlife Species: American bittern
Comments from Report: Approximately 3 miles south of Baton Rouge Metropolitan Airport, a helicopter hit an American bittern which broke out the copilot's windshield. The body came into the cockpit on short final, before that it was wedged into the windshield. Time out of service was about 3 days. Cost of repairs was \$5,000.

Date: 17 February 2004

Aircraft: B-757-200
Airport: Portland Intl. (OR)
Phase of Flight: Take-off
Effect on Flight: Engine shut down, precautionary landing
Damage: Engine
Wildlife Species: Mallard
Comments from Report: The aircraft hit 5 mallards and returned with one engine out. At least 1 bird was ingested and parts of 5 birds were collected from the runway. Engine was not repairable and had to be replaced. Time out of service was 3 days. Cost was \$2.5 million.

Date: 19 March 2004

Aircraft: Helicopter
Airport: Oklahoma
Phase of Flight: En Route (3,000' AGL)
Effect on Flight: Precautionary landing
Damage: Windshield
Wildlife Species: Duck
Comments from Report: Duck crashed through the windshield of a medical center helicopter. Paramedic suffered only bruises to chest and arms. A safe landing was made and the patient was taken by ambulance to a hospital along with the helicopter crew.

Date: 26 March 2004

Aircraft: RV-6
Airport: Adams Field (AR)
Phase of Flight: Approach (2,500' AGL)
Effect on Flight: Precautionary landing
Damage: Windshield
Wildlife Species: Lesser scaup
Comments from Report: Duck crashed through the windshield at night, momentarily blinding pilot who was covered with duck blood. Pilot increased speed for landing due to increased drag from hole in windshield. Time out of service was about 3 weeks. Cost to repair was \$1,000.

Date: 30 March 2004

Aircraft: B-747
Airport: Louisville Intl. (KY)
Phase of Flight: Climb
Effect on Flight: Precautionary landing
Damage: Engines
Wildlife Species: European starling
Comments from Report: Just after take-off, about 60-100 starlings were struck and ingested into the #3 and #4 engines. The engines lost power but were not shut down. An emergency was declared and the aircraft returned to the airport safely. Several blades had to be replaced.

Date: 15 April 2004

Aircraft: A-319
Airport: Portland Intl. (OR)
Phase of Flight: Climb (800' AGL)
Effect on Flight: Engine shut down, precautionary landing
Damage: Engine
Wildlife Species: Great blue heron
Comments from Report: Heron was ingested causing extensive damage to the right engine. Pilot shut the engine down as a precaution and made an emergency landing. Runway was closed 38 minutes for cleaning. Flight was cancelled. Engine and nose cowl were replaced. Time out of service was 3 days. Damage totaled \$388,000.

Date:	14 June 2004
Aircraft:	B-737-300
Airport:	Greater Pittsburgh Intl. (PA)
Phase of Flight:	Landing roll
Effect on Flight:	Ran off runway
Damage:	Landing gear
Wildlife Species:	Great horned owl
Comments from Report:	The aircraft struck an owl with the front main gear severing a cable. The steering failed, the aircraft ran off the runway and became stuck in mud. Passengers were bused to the terminal. They replaced 2 nose wheels, 2 main wheels and brakes. Time out of service was 24 hours. Cost was estimated at \$20,000.

Date:	14 July 2004
Aircraft:	B-737-500
Airport:	San Francisco Intl. (CA)
Phase of Flight:	Take off
Effect on Flight:	Precautionary landing
Damage:	Engine
Wildlife Species:	Barn owl
Comments from Report:	The #1 engine ingested a barn owl on take-off run. Engine vibration went to full scale and a precautionary landing was made. Four pairs of fan blades were replaced. Time out of service was 8 hours. Repair cost was \$16,000, other costs totaled \$54,000.

Date:	2 August 2004
Aircraft:	B-747-400
Airport:	Bangkok Intl. (Thailand)
Phase of Flight:	Take off
Effect on Flight:	Aborted take-off
Damage:	Landing gear
Wildlife Species:	Spotted dove
Comments from Report:	The #2 engine ingested a dove causing an aborted take-off. Pilot ordered an evacuation for safety because a tire had blown and the brake caught fire. Four passengers received minor injuries. The engine was not damaged. Bird ID by Smithsonian, Division of Birds Time out of service was 4 days. Repair cost was \$47,310; hotel costs estimated at \$36,100. Medical bills and meals were not included in costs (U.S. carrier).

Date:	20 August 2004
Aircraft:	BE-58
Airport:	Groveton-Trinity County (TX)
Phase of Flight:	Landing roll
Effect on Flight:	Avoidance maneuver, ran off runway
Damage:	Aircraft destroyed
Wildlife Species:	White-tailed deer
Comments from Report:	Not a strike, but effected the flight. Pilot saw 3 deer on the left side of the runway at touchdown. When the pilot tried to avoid the deer, the aircraft left the runway, hit trees in a ravine and was consumed by fire. Tall grass on both sides of the runway hid the deer. The airport was not fenced. Published airport information remarked that deer were on and in vicinity of the airport. The NTSB investigated.

Date: 31 August 2004

Aircraft: B-737-800
Airport: Chicago O'Hare Intl. (IL)
Phase of Flight: Climb (4,800' AGL)
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Double-crested cormorant
Comments from Report: One engine ingested a large bird about 5 miles from the airport. A precautionary landing was made due to engine vibrations. Fluid was leaking from the aircraft. Six fan blades were replaced. Bird ID by Smithsonian, Division of Birds. Approximate time out of service was 6 hours. Cost of repairs was estimated at \$61,000; other costs \$7,000.

Date: 16 September 2004

Aircraft: B-747-400
Airport: Gander Intl. (Newfoundland, Canada)
Phase of Flight: Take off
Effect on Flight: Engine shut down, precautionary landing
Damage: Engine
Wildlife Species: Ring-billed gull
Comments from Report: Immediately after take-off rotation, flight crew reported a loud bang followed by aircraft yaw to left. Flight engineer advised captain of engine failure. Fuel was dumped and the aircraft made a 3-engine landing at the airport. Extensive fan blade damage. Bird ID by Smithsonian, Division of Birds (U.S. carrier).

Date: 16 September 2004

Aircraft: MD-80
Airport: Chicago O'Hare Intl. (IL)
Phase of Flight: Climb (3,000' AGL)
Effect on Flight: Engine shut down, precautionary landing
Damage: Engine
Wildlife Species: Double-crested cormorant
Comments from Report: The aircraft struck a flock of cormorants. Several birds were ingested causing an engine failure and fire. Debris fell from the engine onto a neighborhood in suburban Chicago. Aircraft made an emergency landing. Bird ID by Smithsonian, Division of Birds. Estimated cost of damage was \$179,000; other costs \$6,885.

Date: 16 September 2004

Aircraft: A-300
Airport: San Antonio Intl. (TX)
Phase of Flight: Climb (1,200' AGL)
Effect on Flight: Precautionary landing
Damage: Radome, bulkhead
Wildlife Species: Unknown birds
Comments from Report: Aircraft had major damage due to a large bird strike. Major damage to radome and forward pressure bulkhead. Flight cancelled. Time out of service was 17 days. Cost of repairs was \$142,000. Other costs totaled \$300,000. One flight was cancelled.

Date: 13 October 2004

Aircraft: Rockwell AC 690
Airport: Winder Barrow (GA)
Phase of Flight: Climb (50' AGL)
Effect on Flight: Engine shut down
Damage: Engine, propeller, wing, fuselage, landing gear, tail
Wildlife Species: Canada goose
Comments from Report: The aircraft struck at least 17 geese on climb. The #1 engine failed due to ingestion. Aircraft diverted to another airport and landed safely. 14 carcasses found on departure runway. Remains of 3 other geese found on engine inlet. Time out of service was over 6 days. Cost of repairs was \$600,000 and other costs totaled \$2,000. Bird ID by Smithsonian, Division of Birds.

Date: 19 October 2004

Aircraft: Canadair Regional Jet
Airport: Bishop Intl. (MI)
Phase of Flight: Take off
Effect on Flight: Aborted take-off
Damage: Wing, landing gear
Wildlife Species: White-tailed deer
Comments from Report: The aircraft struck 2 deer on take-off run. The landing gear door and left inboard flap were damaged. Passengers had to be put up over night as this was the last flight of the day. Time out of service was 2 days. Cost of repairs was estimated at \$100,000.

Date: 24 October 2004

Aircraft: B-767
Airport: Chicago O'Hare Intl. (IL)
Phase of Flight: Take off
Effect on Flight: Engine shut down, precautionary landing
Damage: Engine
Wildlife Species: Passerine
Comments from Report: The aircraft struck a flock of birds on take-off run. A compressor stall caused the engine to flame out. Local residents reported seeing flames coming from the plane. Approximately 11,000 gallons of fuel were dumped over Lake Michigan before returning to land. (Conflicting information about fuel dump on strike reports.) Feathers were sent to the Smithsonian, Division of Birds for identification. Could only identify species as passerines. Time out of service was about 4 days. Cost of fuel lost was \$15,000.

Date: 02 November 2004

Aircraft: MD-80
Airport: Chicago O'Hare Intl. (IL)
Phase of Flight: Climb (200' AGL)
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Ring-billed gull
Comments from Report: The aircraft made an emergency landing after ingesting a bird in the #2 engine. Oil and fuel were leaking from the engine. Smears of remains from two impact areas were sent to the Smithsonian, Division of Birds for identification. Feathers could only be identified as gull. DNA sample provided a positive ID to species.

Date: 04 November 2004

Aircraft: C-310
 Airport: Sundance Airpark (OK)
 Phase of Flight: Landing roll
 Effect on Flight: Propellers hit runway
 Damage: Landing gear, propellers, engines, nose
 Wildlife Species: White-tailed deer
 Comments from Report: The aircraft hit a deer upon landing. Deer hit left prop, then went into lower nose cone where it took out the front landing gear causing the plane to drop onto its nose. Both propellers hit the runway. Initial estimates are \$50,000 to \$70,000. Three deer were removed from the private airport.

Date: 07 November 2004

Aircraft: EMB-145
 Airport: Kalamazoo/Battle Creek Intl. (MI)
 Phase of Flight: Climb
 Effect on Flight: Engine shut down, precautionary landing
 Damage: Engine, wing
 Wildlife Species: Trumpeter swan
 Comments from Report: Multiple bird strike. Pilot shut the right engine down and made an emergency landing. Leading edge of wing was dented. Engine was replaced. ID by Smithsonian, Division of Birds. Cost of repairs was estimated at \$450,000.

Date: 19 November 2004

Aircraft: B-757
 Airport: San Francisco Intl. (CA)
 Phase of Flight: Approach (100' AGL)
 Effect on Flight: Engine shut down
 Damage: Engine
 Wildlife Species: Brown pelican
 Comments from Report: Bird flew into left engine. Numerous fan blades damaged beyond repair. Pilot shut the engine down. Landing was normal. All fan blades were replaced. ID by Smithsonian, Division of Birds. Time out of service was 4 days. Cost of repairs was \$216,000.

Date: 08 December 2004

Aircraft: MD-80
 Airport: Sacramento Intl. (CA)
 Phase of Flight: Climb (5,500' AGL)
 Effect on Flight: Precautionary landing
 Damage: Radome, wing
 Wildlife Species: Northern pintail
 Comments from Report: Passengers reported seeing a flock of geese at time of strike. Radome was dented over 1/3 of surface and wing was punctured and dented. ID by Smithsonian, Division of Birds. Cost of repairs estimated at \$200,000.

Date:	13 December 2004
Aircraft:	BE-90
Airport:	Monroe-Walton County (GA)
Phase of Flight:	Climb (3' AGL)
Effect on Flight:	Other
Damage:	Engines, propellers, wing, landing gear, nose, fuselage
Wildlife Species:	White-tailed deer
Comments from Report:	Struck a deer during the landing flare. The nose gear collapsed, both prop assemblies and engine nacelles were condemned. Both engines had substantial damage. Right flap and fuselage were damaged. Time out of service was 6 months, cost was \$710,000.

Date:	07 January 2005
Aircraft:	Hawker 1000
Airport:	Bowerman (WA)
Phase of Flight:	Climb
Effect on Flight:	Precautionary landing
Damage:	Engine #1 and #2
Wildlife Species:	Dunlin
Comments from Report:	Area is a wildlife refuge with known hazards but no specific warning was issued. Pilot pulled up to avoid birds. Core ingestion in both engines. Aircraft was not flyable. Company had to rent two engines while the damaged ones were being torn down for inspection and repair. The landing gear was covered with small birds. Airport personnel believes the birds were dunlins.

Date:	12 January 2005
Aircraft:	B-747
Airport:	Tokyo Intl.
Phase of Flight:	Take off
Effect on Flight:	Aborted take-off
Damage:	Engine, wing
Wildlife Species:	Hooded crow
Comments from Report:	Flight crew saw 2 birds on centerline. They also saw a large crane-like bird pass under the nose and a crow passing off to the left. They heard a loud bang and the aircraft yawed left. They aborted take-off. Two fan blades broke through the cowl, others were damaged. All fan blades were replaced. A leading edge flap panel was damaged by broken fan blades. ID by Smithsonian, Division of Birds. (U.S. carrier)

Date:	02 February 2005
Aircraft:	PA-28
Airport:	Brandywine (PA)
Phase of Flight:	Climb
Effect on Flight:	Precautionary landing
Damage:	Propeller, wing
Wildlife Species:	Canada goose
Comments from Report:	Significant damage to the wing at the point where it attaches to the fuselage. Although there was minor propeller damage, the engine had to be torn down for inspection. Time out of service was 1 month. Cost of repairs, \$15,000.

Date:	18 February 2005
Aircraft:	MD-10
Airport:	Oakland (CA)
Phase of Flight:	Climb (1,500' AGL)
Effect on Flight:	Precautionary landing
Damage:	Engine
Wildlife Species:	Unknown bird
Comments from Report:	Bird was ingested in the #2 engine which caused a major vibration to the tail. After landing, discovered the inlet fan had lost 2 blades, 1 exited from the side, punching a hole in the acoustic panel. Fan blades were replaced and panel was repaired. Time out of service was 2 weeks. Cost of repairs, \$59,000 and other costs totaled \$105,000.

Date:	20 February 2005
Aircraft:	Cessna Citation Ultra
Airport:	Miami Intl. (FL)
Phase of Flight:	Climb
Effect on Flight:	None
Damage:	Tail
Wildlife Species:	Turkey vulture
Comments from Report:	Hit a turkey vulture after departure. Impact did not appear to be that hard. No indications on the controls of any major damage. Reduced speed as a preventive measure. After landing, found a hole about 1 foot in diameter in the tail. The tail was replaced. ID by Smithsonian, Division of Birds. Time out of service was 2.5 months. Cost of repairs estimated to be \$25,000.

Date:	27 February 2005
Aircraft:	B-737-300
Airport:	Orlando Intl. (FL)
Phase of Flight:	Take off
Effect on Flight:	None
Damage:	Engine
Wildlife Species:	Gull
Comments from Report:	Strike had no effect on engine operation. After landing, they found several N1 stage blades dented. Eight pairs of blades were replaced. Cost \$160,000.

Date:	4 March 2005
Aircraft:	B-757-200
Airport:	Mineta San Jose Intl. (CA)
Phase of Flight:	Climb (5' AGL)
Effect on Flight:	Engine shut down, precautionary landing
Damage:	Engine
Wildlife Species:	Gull
Comments from Report:	A flock of gulls and other small birds landed on the runway as the aircraft was rotating for take-off. The left engine ingested at least 1. The aircraft returned to the airport on the right engine while emergency vehicles stood by. The plane taxied to the gate. Several fan blades were bent. No major engine parameter variations reported. Remains were not saved for ID.

Date: 30 March 2005

Aircraft: SA 227
Airport: Dade-Collier Training and Transportation Airport (FL)
Phase of Flight: Landing roll
Effect on Flight: Not reported
Damage: Propeller, fuselage
Wildlife Species: White-tailed deer
Comments from Report: During landing, while engines were in reverse, last deer in a group of 8, hit the prop causing it to detach and puncture the fuselage. Also damaged were the nose wheel steering and right engine nacelle. Aircraft was a write-off due to cost of repairs \$580,000 being close to the plane's value of \$650,000.

Date: 1 April 2005

Aircraft: B-757-200
Airport: Oakland Intl. (CA)
Phase of Flight: Climb (600' AGL)
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Common loon
Comments from Report: Common loon was ingested into the engine core during climb-out. An emergency was declared and the aircraft diverted to SFO. Aircraft landed safely. Engine was not shut down. Vibration and burning smell reported by flight attendant. Bent fan blades and damaged nose cowl. Engine was replaced. ID by Smithsonian, Division of Birds. Costs reported at over \$1.5 million.

Date: 9 April 2005

Aircraft: B-737-300
Airport: Chicago O' Hare Intl. (IL)
Phase of Flight: Climb (1,500' AGL)
Effect on Flight: Precautionary landing
Damage: Radome, horizontal stabilizer, engine
Wildlife Species: Unknown bird
Comments from Report: Hit several birds. core ingestion on #2 engine. Engine was removed for repair. Also damaged were radome, left wing, vertical fin and pitot static probe. Aircraft was ferried out for repairs. Time out of service was 15 days. Cost of engine repairs \$40,000.

Date: 17 April 2005

Aircraft: Bell 407
Airport: near Brentford (SD)
Phase of Flight: En Route (1,000' AGL)
Effect on Flight: Emergency landing
Damage: Windshield
Wildlife Species: Blue-winged teal
Comments from Report: On the way to the scene of an auto accident at night, a helicopter was hit by 3 ducks. The windshield shattered and blood from the ducks temporarily blinded the pilot. His crew helped direct him to a safe landing spot on a road. The helicopter was then moved to a nearby farm. Time out of service was 8 hours. Cost of repairs \$1,440.

Date:	20 April 2005
Aircraft:	B-777
Airport:	Unknown (DEN-SFO)
Phase of Flight:	En Route
Effect on Flight:	None
Damage:	Engine
Wildlife Species:	Unknown bird
Comments from Report:	Engine was replaced due to blade damage found in three stages. Time out of service was 9 days. Cost of repairs at least \$2 million.

Date:	24 April 2005
Aircraft:	B-747
Airport:	John F. Kennedy Intl. (NY)
Phase of Flight:	Take off
Effect on Flight:	Engine shut down, precautionary landing
Damage:	Engine
Wildlife Species:	Great black-backed and herring gulls
Comments from Report:	The aircraft hit several gulls at rotation and shut down the #2 engine due to vibration. Aircraft returned to land after dumping 18,700 pounds of fuel. Several fan blades had to be replaced, others repaired. Passengers were delayed about 3 hours. Several great black-backed gulls were found on the runway and the Smithsonian identified the remains sent by the engine manufacturer as a herring gull.

Date:	9 May 2005
Aircraft:	Rockwell NA 265
Airport:	Brownwood Regional (TX)
Phase of Flight:	Take off
Effect on Flight:	Aborted take-off, overran runway
Damage:	Engine
Wildlife Species:	Unknown bird
Comments from Report:	A loud bang was heard followed by plane swerving left as aircraft was about to take-off. Captain aborted take-off due to rapidly losing directional control. Plane overran runway, hit a fence and trees, crossed a road and came to rest in a plowed field. Fuel was leaking from left wing. Evidence of bird residue was found in the left engine. No serious injuries to those on board. NTSB report was source for this strike. Expert on birds in engines suggested that it would be unusual to find remains in the hot section of an engine and not find any on the 1 st stage blades.

Date:	31 May 2005
Aircraft:	B-757
Airport:	Lihue Intl. (HI)
Phase of Flight:	Take off
Effect on Flight:	Engine shut down, precautionary landing
Damage:	Engine
Wildlife Species:	Barn owl
Comments from Report:	Pilots saw bird go by right side of aircraft then felt a vibration in right engine. A precautionary landing was made at a nearby airport. Found damage to acoustic liner, several fan blades and LPC and HPC. Engine was removed for repairs. ID by Smithsonian, Division of Birds. Time out of service was 4 days; cost was over \$1 million.

Date: 10 June 2005

Aircraft: DC-9-30
Airport: Kansas City Intl. (MO)
Phase of Flight: Climb (10' AGL)
Effect on Flight: Emergency landing
Damage: Engine
Wildlife Species: American kestrel
Comments from Report: First officer saw small bird fly in front of the aircraft and disappear to the left. At rotation, the aircraft began to vibrate, yawed to the left and made several loud banging noises as the compressor stalled in the left engine. Pilot notified the tower and made an emergency landing that was uneventful. The engine was run at idle until after landing. Several fan blades were damaged along with the fan case. The flight was cancelled. ID by Smithsonian, Division of Birds. Cost of repairs estimated at \$800,000.

Date: 24 June 2005

Aircraft: A-310
Airport: Subic Bay (Philippines)
Phase of Flight: Take-off
Effect on Flight: Aborted take-off
Damage: Engine, cowling, wing
Wildlife Species: Philippine duck
Comments from Report: Engine had multiple birdstrikes on take-off roll. A loud bang was heard followed by vibration and pull to right. Fan blades badly damaged. Large section of nose cowl was torn from nacelle. Fan cowling was damaged. #3 flap fairing was damaged by engine shrapnel. Engine and cowling were replaced. ID by Smithsonian, Division of Birds. Time out of service was 4 days. Cost of repairs estimated at \$9,456,000 (U.S. carrier).

Date: 4 August 2005

Aircraft: C-421
Airport: Rooke Field (TX)
Phase of Flight: Landing roll
Effect on Flight: Separated nose gear
Damage: Nose landing gear, propellers
Wildlife Species: White-tailed deer
Comments from Report: Aircraft hit a deer while landing which caused the nose gear to collapse. Both propellers were damaged. Cost of repairs estimated at \$100,000.

Date: 17 August 2005

Aircraft: C-421
Airport: Merritt Island (FL)
Phase of Flight: Descent (2,000' AGL)
Effect on Flight: Emergency landing
Damage: Wing, tip tank, electronics
Wildlife Species: Black vulture
Comments from Report: Collision with a black vulture ripped the wing and punctured the fuel tank causing fuel to spray out. The strike also damaged the light that confirmed the landing gear was down. Pilot not sure if gear was down and called for an emergency landing. State Secretary of Transportation was on board along with other dignitaries. Bird ID by Smithsonian, Division of Birds.

Date:	23 August 2005
Aircraft:	MD 520
Airport:	near Phoenix (AZ)
Phase of Flight:	En Route (400' AGL)
Effect on Flight:	Emergency landing
Damage:	Windshield, rotor blades
Wildlife Species:	American coot
Comments from Report:	Bird hit windshield and shattered left side injuring the pilot. A precautionary landing was made at the Coliseum. Rotor blades were scratched and will be replaced. Time out of service estimated at 3-4 weeks. Cost for windshield was \$30,000. Bird ID by Smithsonian, Division of Birds.

Date:	1 September 2005
Aircraft:	Falcon 20
Airport:	Lorain County (OH)
Phase of Flight:	Climb (15' AGL)
Effect on Flight:	Overran runway
Damage:	Engines, tail, wings, fuselage, landing gear
Wildlife Species:	Mourning dove
Comments from Report:	Shortly after rotation, aircraft hit a flock of birds causing the #1 engine to flame out. As the gear was retracted, they hit another flock which caused the #2 engine RPM to roll-back. The pilot was not able to sustain airspeed or altitude and crash-landed, sliding through a ditch and airport perimeter fence, crossing a road and ending in a corn field. Aircraft sustained major structural damage beyond economical repairs. Both pilots were taken to hospital. Only the copilot sustained minor injuries. The NTSB investigated.

Date:	3 September 2005
Aircraft:	B-757
Airport:	Cleveland Hopkins Intl. (OH)
Phase of Flight:	Climb (100' AGL)
Effect on Flight:	Avoidance maneuver
Damage:	Engines
Wildlife Species:	European starling
Comments from Report:	Pilots saw large flock of starlings just after rotation. First officer pulled up trying to avoid major part of the flock. They heard birds hit and immediately a foul smell entered cockpit. Engine instruments remained normal and flight continued to ORD. Both engines sustained damage. Approximately 50 starlings were found on the runway 3 hrs after the strike. Time out of service was approximately 2 days and cost was estimated at \$425,000.

Date:	12 September 2005
Aircraft:	Piper Aztec
Airport:	Anoka County (MN)
Phase of Flight:	Landing roll
Effect on Flight:	Not reported
Damage:	Engine, prop, wing, landing gear
Wildlife Species:	White-tailed deer
Comments from Report:	Deer was cut in two by propeller. Photos show significant damage to landing gear. Time out of service was 3 days and cost totaled \$50,000.

Date:	13 September 2005
Aircraft:	DC-10
Airport:	Forth Worth Meacham Intl. (TX)
Phase of Flight:	Landing roll
Effect on Flight:	Engine shut down
Damage:	Engine
Wildlife Species:	Rock pigeon
Comments from Report:	Ingested about 15-20 pigeons in the #3 engine on landing. Engine change required. ID by Smithsonian, Division of Birds. Aircraft was out of service for 1 week. Cost estimated at \$1.5 -\$2 million.

Date:	30 September 2005
Aircraft:	DC-10-10
Airport:	Unknown
Phase of Flight:	Unknown
Effect on Flight:	None
Damage:	Engine
Wildlife Species:	Wood duck
Comments from Report:	During maintenance inspection evidence of strike was found on the #1 engine. Spinner had a large dent and some fan blades were bent. Engine was borescoped. Complete set of fan blades was replaced. ID by Smithsonian, Division of Birds. Cost of repairs was \$40,000. Aircraft was out of service for 2 days.

Date:	16 October 2005
Aircraft:	BE-1900
Airport:	Ogdensburg Intl. (NY)
Phase of Flight:	Take off
Effect on Flight:	Nose gear collapsed
Damage:	Engine #1 and #2, propellers, landing gear, nose, fuselage
Wildlife Species:	Coyote
Comments from Report:	Aircraft struck a coyote during take-off run. The nose gear collapsed causing the plane to skid to a stop on the runway. Propeller blades went through the skin of the aircraft. Insurance declared aircraft a total loss. Cost of repairs would have been \$1.5 million.

Date:	17 October 2005
Aircraft:	BE-400
Airport:	Nut Tree (CA)
Phase of Flight:	Landing roll
Effect on Flight:	None
Damage:	Engine, landing gear, fuselage, pitot tube
Wildlife Species:	Wild turkey
Comments from Report:	Aircraft struck approximately 20 wild turkeys on landing rollout. One engine had to be replaced after a bird was ingested. The other engine had evidence of a strike and was borescoped. A tire had a 1" strip of tread missing and the right wing stall strip was dented. Pitot tube was replaced. Aircraft was out of service for 4 days and costs totaled over \$76,000.

Date:	1 November 2005
Aircraft:	A-300
Airport:	Joe Foss Field (SD)
Phase of Flight:	Climb (6,000' MSL)
Effect on Flight:	Precautionary landing
Damage:	Engine
Wildlife Species:	Mallard
Comments from Report:	While climbing through 6,000 ft the #2 engine sustained a bird strike from a single large bird. Flight crew reported engine vibrations and considerable noise. They kept the engine running at idle, declared an emergency and returned to the airport, landing uneventfully. Several fan blades were damaged along with the acoustic liner and inlet guide vanes. Flight was delayed about 3 hrs. Aircraft was substituted and engine and inlet cowl were replaced. ID by Smithsonian, Division of Birds. Cost was \$518,000.

Date:	30 November 2005
Aircraft:	B-747
Airport:	Denver Intl. (CO)
Phase of Flight:	Approach (1,200' AGL)
Effect on Flight:	Precautionary landing
Damage:	Engine, wing
Wildlife Species:	Canada goose
Comments from Report:	On approach, both the number 1 and 2 engines were struck by geese. No abnormal engine parameters were noted. The #1 engine was shut down after landing. Two fan blades on the #1 engine and 9 fan blades on the #2 engine were damaged. Inspection found core ingestion in both engines. Number 3 and 4 engines had no evidence of any strikes. The left outboard mid-flap had a 6 inch hole. The right outboard flap inboard canoe was also penetrated. A leg with webbed foot was protruding from the hole. ID by Smithsonian, Division of Birds. Cost \$194,000.

Date:	13 December 2005
Aircraft:	Embraer 145
Airport:	Harrisburg Intl. (PA)
Phase of Flight:	Approach (5,000' AGL)
Effect on Flight:	Compressor stalls
Damage:	Engine
Wildlife Species:	Canada goose
Comments from Report:	During approach crew saw a streak out the left window followed by a jolt. A smell was immediately detected. Crew turned off the LH pack and reduced power to idle to slow the plane. Engine experienced violent compressor stalls when power was increased. ID by Smithsonian, Division of Birds.

Date:	28 December 2005
Aircraft:	B-737-300
Airport:	Chicago Midway Intl. (IL)
Phase of Flight:	Climb (300' AGL)
Effect on Flight:	Precautionary landing, flight diverted to ORD
Damage:	Engine
Wildlife Species:	Snowy owl
Comments from Report:	One large bird was ingested into the #2 engine. A precautionary landing was made at Chicago O'Hare. One engine was destroyed. Passengers were put on other flights. ID by Smithsonian, Division of Birds. Aircraft was out of service at least 24 hours.

Date:	28 December 2005
Aircraft:	B-737-500
Airport:	Sacramento Intl. (CA)
Phase of Flight:	Climb (800' AGL)
Effect on Flight:	Precautionary landing
Damage:	Engine
Wildlife Species:	Unknown bird
Comments from Report:	Pilot saw a large white bird fly by left and heard a loud pop and the left engine began vibrating. Aircraft returned to the airport. All fan blades were replaced. Passengers were put on other flights. Cost of repairs was \$210,400.

Date:	30 December 2005
Aircraft:	Bell 206
Airport:	Near Washington, LA
Phase of Flight:	En Route (500' AGL)
Effect on Flight:	Precautionary landing
Damage:	Aircraft destroyed
Wildlife Species:	Vulture
Comments from Report:	Pilot looked up from instruments to see a large vulture crashing into the windshield. He was temporarily blinded by blood and wind. After regaining control, the pilot tried to land in a bean field nearby but blood was hampering his vision and the left skid hit the ground first causing the aircraft to tip on its side. Pilot was taken to the hospital and had several surgeries to repair his face, teeth and eye. Cost of repairs was \$1.5 million.

Date:	1 January 2006
Aircraft:	B-757
Airport:	Portland Intl. (OR)
Phase of Flight:	Take-off
Effect on Flight:	Precautionary landing
Damage:	Engine
Wildlife Species:	Great blue heron
Comments from Report:	Bird was ingested during take-off. Engine was shut down and a one-engine landing was made. Fan section of the engine was replaced. ID by Smithsonian, Division of Birds. Time out of service was 15 hours. Cost was \$244,000.

Date:	21 January 2006
Aircraft:	C-210
Airport:	Orlando Executive (FL)
Phase of Flight:	Approach (2,000' AGL)
Effect on Flight:	Precautionary landing
Damage:	Windshield
Wildlife Species:	Black vulture
Comments from Report:	Bird crashed through the windshield. The instructor was cut by Plexiglas on head and face. Aircraft landed safely. Time out of service was 24 hours. Cost was \$3,500.

Date:	1 February 2006
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Aircraft:	Bombardier de Havilland Dash 8
Airport:	Boise Air Terminal (ID)
Phase of Flight:	Approach (1,500' AGL)
Effect on Flight:	None
Damage:	Tail
Wildlife Species:	Bald eagle
Comments from Report:	Birdstrike took out the leading edge of the tail. Aircraft was ferried out for repairs. ID by Smithsonian, Division of Birds.

Date:	28 February 2006
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Aircraft:	C-172
Airport:	near Titusville, FL
Phase of Flight:	En Route
Effect on Flight:	Emergency landing off airport
Damage:	Windshield
Wildlife Species:	Gull
Comments from Report:	While on traffic enforcement detail, the windshield was shattered by a gull. The pilot was forced to make an emergency landing in a cow pasture. During the landing, the aircraft clipped a fence. Pilot was taken to the hospital, treated and released.