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ACCIDENTS AND SERIOUS INCIDENTS TO
CIVIL AIRCRAFT DUE TO BIRD STRIKES

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Summary

This paper is a revised and updated second issue of two papers presented at the BSCE 14 in The Hague in October 1979. The paper contains brief details of accidents and serious incidents due to bird strikes world wide up to and including 1980. It is divided into three parts

- Transport aircraft over 5700kg and executive jets
- Light Aeroplanes (below 5700kg)
- Helicopters

No attempt has been made to analyse the information although it is apparent that for transport aircraft the critical area is engines and for light aircraft the windscreen is the critical area.

(Additions since Issue 1 are shown by a marginal line)

at 1982

6/WP16

Editorial Note

'Serious' has been defined as

- (a) Loss of life
- (b) Injury to occupants
- (c) Destruction of aircraft
- (d) Damage/loss/shutdown of more than one engine
- (e) Uncontained engine failure
- (f) Fire
- (g) Significant sized hole eg shattered radome, holed windscreen, holed wing
- (h) Major structural damage
- (i) Particularly unusual or dangerous features eg complete obscuring of vision, multiple loss of system, damage to helicopter blades or transmissions.

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area.

ACCIDENTS AND SERIOUS INCIDENTS TO TRANSPORT AIRCRAFT DUE TO BIRD STRIKES
(Aircraft over 5700kg and Executive jets)

Date	Aircraft	Regn.	Operator	Location	Nature of Flight	Total Aboard	Injury to Occurants			Damage Aircraft	
							F	S	F/S		
17.4.51	Ford 5AT Trimotor		CV-FAI	-	Near Allahabad India					Serious	Def
Near Benares the aircraft was attacked by an eagle. One wing sustained a large hole. The aircraft crash landed and caught fire. The crew and passengers were burnt and severely wounded.											
12.12.47	DC3	VH-BFW	Mandated	India/ Australia		7	Crew Pass.	0 0	0 0	7 7	Sub
During a flight from India to Australia the aircraft suffered damage to the starboard wing as the result of inflight collision with a vulture.											
22.1.49	CV240		American	Near Columbus, Ohio	Scheduled Passenger	28	Crew Pass.	0 0	0 0	3 25	Sub
Struck a small duck while in flight. Landed safely.											
23.9.50	DC6	SE-BDO	SAS	Calcutta	Scheduled Passenger	37	Crew Pass.	0 0	0 0	10 27	Sub
Substantially damaged after colliding with a vulture shortly after takeoff. There were no casualties amongst the 27 passengers and 10 crew on board.											
6.11.51	DC4		National	Near New York	Non Revenue	3	Crew Pass.	0 0	0 0	7 0	Sub
While descending on an approach to the airport, the aircraft struck two seagulls at 1500 feet altitude.											
1.2.52	DC3	AP-ABC	Orient Airways	Tejgaon Airport	Scheduled Passenger	7	Crew Pass.	0 0	0 0	7 7	Sub
Sustained considerable damage to the front windscreen and nose after colliding with a vulture shortly after takeoff. The pilot was slightly injured.											
16.5.53	DC3D	N-37469	Pacific Northern	Anchorage, Alaska	Passenger	12	Crew Pass.	0 0	0 0	3 9	Sub
Aircraft encountered a flock of ducks in flight, damaging leading edge of wing.											
23.8.54	BEA		G-AIVE	-	Glasgow, Renfrew						
At 100ft during a night landing aircraft struck a large flock of gulls, which was so dense that all runway lights vanished. Aircraft damage consisted of buckling of all flaps, nose section almost flattened, one landing lamp and both taxiing lamps smashed, the landing gear, both oil coolers and engine cowlings almost completely blocked-up with dead birds. Also all propeller de-icer boots and leading edges of all surfaces were damaged. Approximately 300-400 dead birds found at runway threshold.											
16.9.54	DC3	XY-ADD	DAB	30 miles from Calcutta	Scheduled Passenger	24	Crew Pass.	0 0	1 0	1 21	Sub
During flight two vultures struck the aircraft, smashed the windscreen, and landed in the cockpit. The pilot and radio officer were injured. A safe landing was made. There were 21 passengers and 3 crew on board. No other injuries.											
2.4.55	Viking	ZS-DKI	Trek Airways	Monina, Transvaal	Passenger	32	Crew Pass.	0 0	0 0	5 27	Sub
During a flight to Johannesburg the aircraft collided with a bird causing damage to the starboard wing. An emergency landing was made at Monina. No injuries to the 27 passengers and 5 crew.											
19.10.55	Dakota	AP-AAC	PIA	Tejgaon, Near Decca	Passenger	7	Crew Pass.	0 0	0 0	7 0	Sub
Shortly after takeoff the aircraft was hit by a vulture which badly damaged the starboard wing. A safe landing was made and there were no injuries to passengers and crew.											

0A.56 Viscount N7413 Capital Chicago Midway USA

En route bird hit side of nose, tearing skin about 2ft long and 6" to 8" wide. Bird remains in cockpit.

0.56 CV240 N94214 American Fort Worth, Texas Scheduled Passenger 44 Crew 0 0 4 Substantial
Pass. 0 0 4C

While cruising at 4,000 feet the crew felt a hard thud in the floor under their feet. On the landing approach, the nose gear could not be extended and a landing was made with it retracted. Evidence indicated that a large bird had collided with the airplane, damaging the left nose gear door and preventing wheel extension.

0.59 DC3 Ozark St. Louis, Missouri Scheduled Passenger 15 Crew 0 1 2 Minor
Pass. 0 0 12

While in normal cruise at an altitude of 3,300 feet, IAS 140 knots, the aircraft collided with a mallard duck which penetrated the sliding window located on the left side of the cockpit. The Captain was seriously injured about his face and eyes. The flight returned to its point of takeoff and landed safely.

0.59 DC3 D-CADE Deutsche Lufthansa London 2 Crew 0 0 2 Substantial
Pass. 0 0 0

During takeoff for a flight to Dusseldorf the aircraft collided with birds. The nose section was dented and the windscreen broken. There were 2 crew on board, no injuries.

0.59 Douglas Medellin Airport, Columbia 7 Crew 0 0 7 Substantial
Pass. 0 0 7

Shortly after takeoff a four-engined Douglas aircraft collided with a vulture. The impact made a deep hole in the wing tank causing a heavy loss of petrol. The aircraft returned and landed safely back at Medellin Airport. No injuries to the occupants.

0.6 Lockheed L-188 N-5533 Eastern Boston, Mass. Scheduled Passenger 72 Crew 3 1 1 Destroyed
Pass. 59 8 0

A few seconds after becoming airborne, the aircraft struck a flock of starlings. A number of these birds were ingested in engine No. 1, 2 and 4. Engine No. 1 was shut down and its propeller was feathered. Nos. 2 and 4 experienced a substantial momentary loss of power. This abrupt and intermittent loss of recovery of power resulted in the aircraft yawing to the left and decelerating to the stall speed. As speed decayed during the continued yaw and skidding left turn, the stall speed was reached; the left wing dropped, the nose pitched up, and the aircraft rolled left into a spin and fell almost vertically into the water. An altitude of less than 150 feet precluded recovery. Birds were *Sturnus vulgaris* of 85gm.

Probable Cause: The Board determines that the probable cause of this accident was the unique and critical sequence of the loss and recovery of engine power following bird ingestion, resulting in loss of airspeed and control during takeoff.

0 DC8 SAS Copenhagen, Denmark
Just after a night take-off struck flock of gulls. Fog prevented return and affected other Scandinavian airports. Pilot circled for 4 hours. Found engine 2 (JT4A) had damaged, to IGV's, and first stage rotor. Engine 3 had similar damage, and engine 4 had cowling and IGV damage.

0 L1049 VH-EAM Australia
Descending between 3000' and 2000' struck large bird on wing leading edge. Fuel tank badly holed with rib damage.

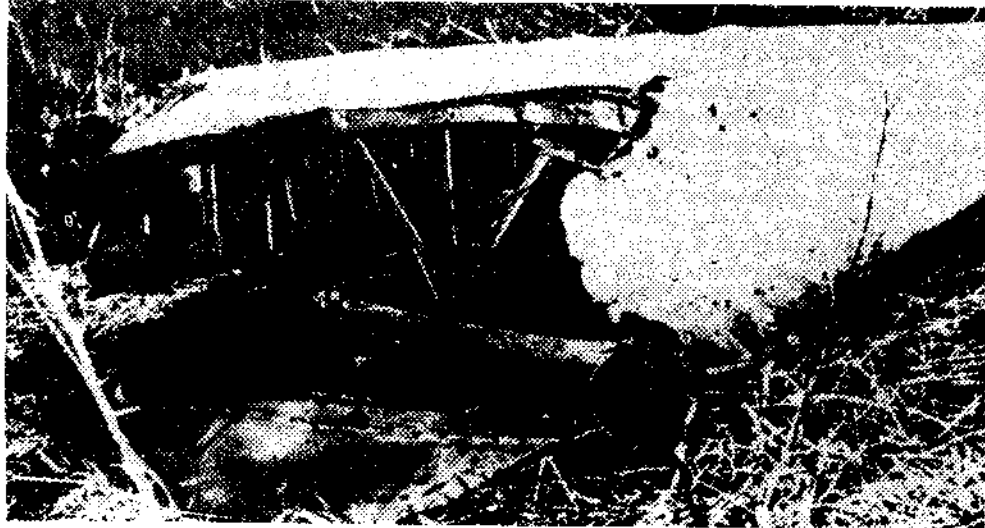
0 Viscount G-APTD British United Khartoum
During climbing turn after take-off at 1500 ft struck a large bird. Wing leading edge badly damaged, needing repairs to three fuel tanks.

0 DC6 N-37530 United Near Elgin, Ill. Scheduled Passenger 46 Crew 0 0 5 Substantial
Pass. 0 0 41

During climb from 4,000 to 5,000 feet following takeoff from O'Hare Field, the aircraft struck four geese. Two struck the plane glancing blows and caused little damage; however, the others hit the plane directly and caused substantial aircraft damage and a potentially serious situation. One shattered the co-pilot's windshield but did not penetrate it. The other penetrated the nose section of the plane at fuselage station 47, and penetrated the pressure bulkhead at station 64 causing immediate depressurization. Damage to instrument static and pressure lines affected the Captain's flight instruments. Seriously hampered by obstructed visibility, the pilots landed the plane without further incident.

Probable Cause: In-flight bird strike.

Date	Aircraft	Regn.	Operator	Location	Nature of Flight	Total Aboard	Injury to Occupants			Damage to Aircraft	
							1	2	3/4		
29.8.61	DC3	-	-	Guyana Airways	Letham, British Guiana	-	-	-	Minor	-	
At 600ft and 95kts both windscreens were smashed by birds causing temporary incapacity of the captain.											
30.1.62	Britania	EI-ALB	Aer Lingus	Istanbul	-	-	-	-	-	-	
Shortly after take-off birds (believed gulls) were struck engine 4 was shutdown, engine 3 suffered high JPT and reduced torque. Fuel dumped and aircraft returned. Remains of 3 birds found in eng 4, 2 in eng 3 and a 10" wing in eng 2. Two cowling leading edges, tailplane and radome damaged.											
15.7.62	DC3	VT-AUS	Indian Airlines	Near Lahore, West Pakistan	Non Scheduled Freight	3	Crew Pass.	1 0	0 0	2 0	Minor
While operating a freight service from Kabul to Amritsar the aircraft was struck by a vulture near Lahore. The windscreen was smashed and the co-pilot was fatally injured.											
11.9.62	Vanguard 953	G-APET	BEAC	Edinburgh Airport	Scheduled Passenger	76	Crew Pass.	0 0	0 0	8 68	Substantial
During a takeoff from runway 13 at night, in conditions of low cloud and heavy rain, the aircraft flew through a flock of gulls immediately after leaving the ground. Large number of birds struck the aircraft and forward vision was obliterated. No. 4 engine failed almost immediately and the other three engines were also affected. The climb was continued on the power available in order to position the aircraft for an ILS approach. At 3,800 ft. No. 2 engine failed and the propeller was feathered. The stage of No. 3 engine also became critical and preparations were made for an emergency landing, but after an ILS approach, a successful landing was made on runway 13. When the aircraft returned to the apron 30 minutes after departure it was found to be severely damaged and oil coolers and engine cowlings were seen to be almost blocked with dead birds.											
24.10.62	Convair 340	N-90857	North Central	Pierre, South Dakota	Scheduled Passenger	47	Crew Pass.	0 0	0 0	3 44	Substantial
About 35 miles northeast of Pierre, South Dakota, the aircraft sustained multiple bird strikes, two of which caused penetration of the right wing structure of the aircraft. The occurrence was at night while the flight was cruising at an indicated altitude of 4,500 feet m.s.l., in VFR conditions. Although the right wing sustained appreciable damage externally and internally in the areas of penetrations, no adverse flight characteristics resulted, and the pilot continued the flight to destination without further incident. Inspection revealed that the aircraft had encountered a flock of wild geese, at least four of which had struck the aircraft. The two which penetrated the wing weighed about 14 pounds each. One penetrated into a fuel cell of the right wing, another to a depth of 18 inches in the right wing tip cap.											
23.11.62	Viscount 745	N-7430	United	Baltimore City, Maryland	Scheduled Passenger	17	Crew Pass.	4 13	0 0	0 0	Destroyed
En route from Newark N.J. to Washington, D.C. at an assigned altitude of 6,000 ft., the aircraft penetrated a flock of whistling swans, at least two of which were struck by the aircraft. One swan, which was struck penetrated the leading edge of the left horizontal stabilizer and egressed from the rear surface causing damage to the elevator as it did so. This no weakened the structure that failure occurred which rendered the aircraft uncontrollable. Thereafter, N-7430 descended and struck the ground in a nose-low inverted attitude.											
<u>Probable Cause:</u> The board determines that the probable cause of this accident was a loss of control following penetration of the left horizontal stabilizer which had been weakened by a collision with a whistling swan. (Cygnus columbianus of 8kg)											



6.12.62 CS-A 5N-AFC Pan African Kano, Nigeria 7

Crew	0	0	7
Pass.	0	0	7

 Substantial

Shortly after takeoff from Kano the aircraft was in collision with a bird. The bird penetrated the leading edge of the port wing No. 1 fuel tank. A safe landing was made at Kano. No injuries to the occupants.

30.4.63 DC8 CF- Trans Canada Prestwick, UK

No 2 engine ingested gulls on take-off and caught fire. The fire was extinguished and the aircraft diverted to London as the Prestwick weather had deteriorated.

22.9.65 Douglas DC-6B N-3759 DAL Mr. Des Moines, Iowa. Scheduled Passenger 74

Crew	0	1	4
Pass.	0	0	69

 Substantial

In clear night weather conditions, at 2235, the Captain of Flight 551, Norfolk, Va., to Des Moines, Iowa, cancelled his IFR flight plan in preparation for a VFR approach and landing at Des Moines. Four minutes later while descending through 5,000 feet at an airspeed of 200 knots, the aircraft struck a flock of Mallard ducks. The aircraft hit at least 12 of the birds, one of which hit and penetrated the cockpit's windshield panel while another hit but did not penetrate the Captain's windshield panel. The crew members were hit with broken glass about the face and one received serious cuts. The aircraft received strike damage but was landed safely at Des Moines by the Captain. Examination of the broken windshield by the aircraft manufacturer revealed the vinyl properties were normal with no measurable loss of plasticity. The manufacturer reported that the fact the 7-inch hole in the windshield was sharp edged with no perceptible bulging or stretching of the vinyl layer indicated that the vinyl temperature was below the desired range to maintain its optimum impact resistance.

-1.66 HS 125 G-ATKM BSA Hatfield UK

During test flight at about 300 kts when it struck a pigeon on the nose skin between radome and front pressure bulkhead. The skin between radome and front pressure bulkhead was holed and bulkhead frame pushed back. Slight instrument panel damage.

17.5.66 VC 10 G-ARVA BOAC Mr. Bombay Scheduled Passenger 7

Crew	0	0	7
Pass.	0	0	7

 Substantial

The aircraft was operating on a scheduled flight from Colombo to Bombay. During the approach to land on runway 27 and at an altitude of approximately 1,000', the aircraft passed through a flock of 50 to 60 large birds (believed vultures). A bump was felt and vibration was experienced together with a rise in No. 4 exhaust gas temperature. The engine was shut down approximately 3 seconds later. On investigation after landing, it was found that one or more of the birds had been ingested into the No. 3 engine. This caused all the blades of the first stage of the L.P. compressor to fall at the root, and as a consequence the L.P. compressor casing came adrift from the intermediate casing, all retaining bolts having sheared. The Godfrey compressor case adrift from the engine together with its oil tank and cooler. The constant speed drive was also partially adrift from the engine. Some debris from this engine appears to have been projected forward, and was ingested by the No. 4 engine.

15.9.66 L-188 N6111A American Montezuma New York Scheduled Passenger 11

Crew	0	0	6
Pass.	0	0	5

 Substantial

Right horizontal stabilizer struck by Mallard drakes during normal cruise.

8.3.67 B727 N-4611 National New York USA

At 4500 ft shortly after a night take-off the aircraft hit a flock of Canada geese. The right hand wing suffered a 6" x 12" hole, fuselage skin was holed, and wing leading edge flap had 12" x 4" hole. There was no handling difficulty. Birds were on migration.

25.7.68 Jet Falcon N367E Jet Aviation Lake Erie Executive 3

Crew	0	0	3
Pass.	0	0	0

 Destroyed

During takeoff from Burke Lakefront Airport the aircraft struck a flock of gulls, collided with a vehicle and boundary fence and crash landed in the lake. The 3 crew were picked up by a fire-boat and the aircraft was later lifted by crane out of approximately 21' of water.

A total of 315 dead sea gulls was found in the area after the July 25 accident. General Electric Technical representatives stated that one engine compressor unit was 20% filled with bird debris the other 17%.

Probable Cause: Bird ingestion and failure of Air Traffic Personnel to advise Airad given just before takeoff. Hazards notice not posted in operations.

25.7.69 DC 3 F-DCNT Air Djibouti Off Kbor Anbadu 4

Crew	0	0	2
Pass.	0	0	2

 Destroyed

Ditched in the sea nine miles west of Djibouti whilst operating a flight from Tadjoura to Djibouti. 4 occupants were rescued.

Aircraft struck number of cranes whilst flying at 300' suffering multiple propeller strikes causing blockage of the carburettor air intakes and L.H. failure of both engines. (Grus sp. of up to 5kg)

11.5.69 B737

CP Air

New Winnipeg,
Canada

82

18.6.70

At 3000ft at night collided with a flock of snow geese (*Anser coerulescens*). Seven birds struck causing rupture of fuselage.

1.12.69.	Boeing 707-321B	N892FA	Pan American World Airways	Sydney, Australia	Scheduled Passenger	136	Crew Pass.	0 0	0 0	11 125	Substantial
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18.8

The takeoff was being carried out by the First Officer from the right hand seat and, after the first Officer had applied take-off thrust, the Captain took control of the throttles while the Flight Engineer made fine adjustments to the throttle settings to balance the power. As the aircraft accelerated at an apparently normal rate the Captain called progressively "100 knots your steering", "one hundred" and "two one". Almost immediately after the "two one" call the aircraft struck a flock of snow geese and there were two sharp reports from outside the aircraft. The Captain observed a decay in Number 2 engine EPR and aborted the takeoff. The Captain's recollection of the sequence of events was that the power loss occurred shortly after the aircraft attained 100 knots and below V_1 speed and the recollection was shared by other crew members.

The Captain was scanning the engine instruments at the time the aircraft struck the birds and loss of power from Number 2 engine occurred. He saw the Number 2 EPR drop from its setting of 1.85 to about 1.55 and this initiated his decision to abandon the takeoff. The Flight Engineer also saw the EPR drop to about 1.55 and called that there was a power loss. The Captain has stated that he applied considerable braking simultaneously with the selection of speed brake and reverse thrust and full braking almost immediately afterwards. During the early stages of the deceleration, the Flight Engineer saw several flickers of the anti-skid lights on the brake panel, he noted that the hydraulic pressure was normal and saw that the four reverse lights were illuminated and that the N_2 values on all engines was about 110% with EPR indications "well up". When the Captain took control of the aircraft the first Officer assisted by maintaining the nosewheel on the ground and keeping the wings level and, when reverse thrust was applied, he also placed his feet on the brakes and found that the pedals were fully depressed.

The aircraft overran the runway and struck sections of the approach lighting installation which caused the nose landing gear assembly and then the port main landing gear assembly to be removed. Finally, the nose of the aircraft came to rest partially embedded in soft ground 560 feet beyond the end of the runway and the crew and passengers then evacuated the aircraft.

30.10.

Probable Cause(s) The probable cause of the accident was that, in the circumstances of an abandoned takeoff the aircraft could not be brought to a stop within the nominally adequate runway length because of an error in the calculation of load, a reduction in wind velocity from that forecast and the use of rolling start and braking techniques which would not ensure most effective use of the available runway length. D.C.A. Australian Special Investigation Report 69-1.

6.1.70	DC8-63						Vancouver				Substantial
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On take-off for Tokyo the aircraft rotated, it passed through several large flocks of Dunlin (*Erolia alpina* 50 gms) which had returned to the runway shortly after a runway patrol. There were no untoward engine indications, but the Maintenance Chief advised a return. After jettisoning fuel the aircraft returned after over an hours flying. One engine had eight bent fan blades, seven in another and minor damage to the other two engines. Two engines were changed, and nearly three hundred dead birds were found on the runway.

7.2.70.	F27		IAC	Nr.Bhopal	Scheduled Passenger	40	Crew Pass.	0 0	0 0	40	Substantial
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Collided with a vulture shortly after takeoff causing damage to the wing and fuel tank. The aircraft returned and made a safe emergency landing with fuel streaming from the damaged tank.

10.4.70.	Trident	AP-AUJ	P.I.A.	Lahore	Scheduled Passenger	?	Crew Pass.	0 0	0 0	?	Substantial
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6.11.72

Made emergency landing back to Lahore after the aircraft struck a vulture after takeoff. The vulture penetrated the nose section and instrument panel and struck the Captain. The co-pilot took over control and a safe emergency landing was made. Estimated weight for the vulture was 20 lb.

26.5.70	Super VC10	G-ASGO	BOAC	Calcutta	Scheduled Passenger	?	Crew Pass.	0 0	0 0	?	Substantial
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15.12.7

During a climb at 3500ft. the aircraft flew through a number of large birds one of which was ingested by No. 3 engine. There was a sharp noise at impact and the engine developed severe vibration. Fire/severe failure drill was carried out on No. 3 engine and the first shot fire bottle was discharged.

After the fire warning system had been checked No. 4 engine was seen to be losing power and the HP cock lever was vibrating. The fire/severe failure drill was carried out on No. 4 engine and the vibration decreased. No. fire warning was indicated on either engine and no fire developed.

The starboard main gear was lowered by its emergency system and the aircraft returned to Calcutta where an overweight landing (129 000 kg) was carried out. The maximum landing weight is 107 500 kg.

During the landing run normal braking was used until the hydraulic pressure decreased and then standby braking was selected. As a result No. 4 rear tyre scuffed and burst. The aircraft was stopped when clear of the runway and the passengers disembarked in the normal manner.

Examination of No. 3 engine showed evidence of a large bird strike in the form of a large dent at the bottom of the intake leading edge. There was severe damage to the entry guide vanes and the compressor rotor and stator blades as far as was visible through the engine. The CSD and the CSD oil tank had broken away from their mountings and both wheelcases were partially adrift due to attachment point failures.

No. 4 engine had suffered severe HCV and LP compressor damage which is thought to have been caused by ingestion of blading from No. 3 engine. In addition vibration had caused failures of mounting points of the CSD and CSD oil tank.

18.6.70 DC3 - Private Filton
Bristol UK

At 50 ft and 90 kts just after take-off struck flock of gulls. The RH windscreen was shattered and bird remains ended up in passenger cabin.

18.8.71. DC 9 N3316L Delta Savannah Scheduled 60 Crew 0 0 4 Substantial
Passenger Pass. 0 0 56

Aircraft departed Savannah Ga. on IFR flight plan for Atlanta, Ga. While climbing through 2000 feet altitude at an indicated airspeed of 200 kts, a buzzard was struck.

Parts of bird penetrated radome, pressure bulkhead at fuselage station 41 and entered cockpit in area of co-pilots feet.

All DC power was lost. Crew switched to emergency power and landed at Savannah without further incident.

Pressure bulkhead found to have break approximately 10 inches long vertically and 4 inches wide laterally.

Four DC circuit breakers are located on the back side of pressure bulkhead.

On resetting four circuit breakers all electric systems functioned satisfactorily.

A circuit breaker of the same type as used in N3316L was obtained from Stack. By holding the breaker in one hand and striking it sharply with the palm of the hand from the side that would be forward as mounted in the aircraft, it was found that it would trip open. By pressing the reset button the breaker could be closed.

The pressure bulkhead at station -41 is .040 inch CLM 2014-T6 metal.

30.10.72 DC 10 N106AA American Tulsa Scheduled 57 Crew: 0 0 10 Minor
Airlines Oklahoma Passenger Passes: 0 0 47

The aircraft took off from Runway 17 at Tulsa International Airport. Soon after rotation and during initial climb at approximately 200 feet altitude, the aircraft flew through a large flock of birds later identified as gulls. There was an immediate loss of engine No 1 RPM and roughness was felt on engine No 3. Power on both the affected engines was reduced to near idle and take-off power maintained on the No 2 engine until landing approximately ten minutes later on the same runway.

Examination of No 1 engine revealed severe fan damage. All blades mostly outboard the shroud were heavily gouged. Seven blades had segments missing outboard the shroud as large as 5 x 3 inches. The fan tip abrasible seal was heavily damaged and M 1 sensors rubbed. Bird remains were evident in the engine core, the extent of damage, if any, will be determined during engine teardown. The nose cowl internal acoustical material one foot forward of fan around 360° circumference contained numerous shrapnel type holes up to 2 x 5 inches in size. The fan access cowl was penetrated 2 x 5 inches, at 2.30 clock position, rear view, eight inches forward the nose cowl trailing edge. There was no visible damage to the turbine. The No 3 engine damage was similar to No 1 engine but to a lesser degree and the nose cowl was not completely penetrated. Both the No 1 and No 3 engines were replaced. The No 2 engine was not affected. The weather was 700 feet overcast, seven miles visibility with light rain.

Bird remains were evident on the three landing rear linkages, in the right ram air intake and underside left wing root area. The right landing light lens was shattered and the left inboard aileron contained a 5 inch slash on the bottom side. (Source - ICAO Summary No 44).

6.11.72 DC8 CF- Vancouver, Canada

On take-off several engines were affected by striking Dunlins.

15.12.72 Boeing 747 N602DS Northwest Miami Scheduled 160 Crew: 0 0 11 Substantial
Airlines Passenger Passes: 0 0 149

A Northwest Airlines B747 ran off the end of Runway 27L while landing at Miami International Airport, Miami, Florida on December 15, 1972 at 1714 eastern standard time. The nose landing gear collapsed, which resulted in substantial damage to the aircraft structure in that area. During take-off from Runway 27R a few minutes earlier, the aircraft had collided with a flock of gulls. The crew had shut down the No 4 engine, which was believed to have been causing vibration, and then had requested clearance to return to Miami. The local weather at the time of the accident was 1500 ft broken, 3000 ft overcast, visibility 2 1/2 miles, wind 130° at 9 knots. A thunderstorm was southwest of the airport and moving eastward. The National Transportation Safety Board determines that the probable cause of this accident was the ineffective braking capability of the aircraft on the wet runway because of the low coefficient of friction of the new runway surface and insufficient engine reverse thrust to decelerate the aircraft. The combined effects of the lack of the No 4 engine reverse thrust and malfunction of the No 3 engine reverser resulted in a directional control problem and restricted the use of Nos 1 and 2 engine reversers. In view of the potential hazard involved in overrun accidents, the Board recommends that the Federal Aviation Administration expedite its research program to determine the friction characteristics of wet runways, not only for its effect on the landing certification requirements for aircraft, but also for the certification of runway surfaces under the new Airport Certification Regulations. On April 10, 1973, Runways 9R/27L and 9L/27R were grooved to increase the coefficient of friction and improve the wet-runway landing conditions. (Source NTSB-AAR-73-13)

26.3.73	Gates	N454N	Machinery	Atlanta	Executive	7	Crew: 2	0	0	Destroyed
	Lear 24		Buyers Corp	Georgia			Pass: 5	0	0	
							Others: 0	1	0	

A Gates Learjet Model 24, N454RN crashed at 1012 eastern standard time on February 26, 1973, following the take-off from De Kalb-Peachtree Airport, Atlanta, Georgia. The two crew members and five passengers were fatally injured, and one person on the ground sustained serious burns. The aircraft was destroyed by impact and ground fire. An apartment building was damaged, three parked vehicles were destroyed and another vehicle damaged by impact and fire. The aircraft departed from Runway 20L to Miami, Florida. Ground witnesses observed smoke trailing from the aircraft as it crossed the field boundary. The DeKalb-Peachtree Tower controller advised the crew of N454RN that the aircraft's left engine appeared to be emitting smoke, whereupon the crew of N454RN responded that they had 'hit some birds'. The tower controller inquired whether N454RN was returning to land, and N454RN responded 'Don't believe we're gonna make it'. The aircraft initially collided with the roof of a three-story apartment building approximately 2 miles south-southwest of the airport. The aircraft came to rest in a ravine adjacent to a highway, 165 feet southwest of the damaged apartment building.

About 30 minutes after the crash the remains of 15 cowbirds were found within 150 feet of the Runway 2R (the departure end of Runway 20L) threshold. A municipal garbage dump is located adjacent to the airport just east of Runway 2R/20L. During the investigation, large flocks of birds were observed on the airport and birds numbering in the thousands were seen swarming over the dump area.

The National Transportation Safety Board determines that the probable cause of this accident was the loss of engine thrust during take-off due to ingestion of birds by the engines, resulting in loss of control of the aircraft. The Federal Aviation Administration and the Airport Authority were aware of the bird hazard at the airport; however, contrary to previous commitments, the airport management did not take positive action to remove the bird hazard from the airport environment.

Note: The left engine showed 14 separate strikes, and the right showed at least 5 strikes; the engine intake diameter is approximately 16 in, and area 182 sq in. The weight of a cowbird (*Molothrus ater*) is approximately 45 gm, compared with a starling (*Sternus vulgaris*) which is 85 gm. (Source NTSB-AAR-73-12)

30.4.73	Boeing 747	VH-EBB	Qantas	Sydney Airport	Scheduled Passenger	366	Crew: 0	0	?	?
							Pass: 0	0	?	

Just after take-off the aircraft flew through a flock of sea gulls causing power loss on one engine and external damage to another. A third engine is reported to have failed completely. After dumping fuel a safe emergency landing was made back at Sydney.

12.12.73	Falcon 20	LN-FOE	Fred Olsen	Norwich Airport	Executive	9	Crew: 0	0	3	Destroyed
							Pass: 0	0	6	

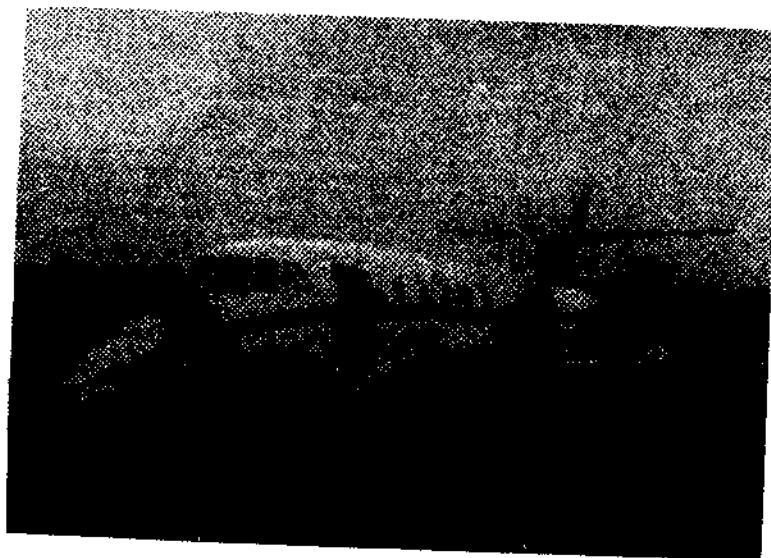
The aircraft was taking-off at 15:37 hours (dusk) from Norwich airport and on becoming airborne, just over half-way along the 1840m long runway the crew saw a flock of birds ahead flying just above the ground. The pilot slightly increased the aircraft's climb attitude and the flock passed underneath. A few seconds later a second flock was seen at a higher level directly in the aircraft's flight path. The pilot lowered the nose and the flock passed overhead. On re-establishing the climb a third flock was seen directly ahead, extending from ground level to well above the aircraft with no possibility of avoiding it. Almost immediately the crew heard the sound of multiple bird strikes on the aircraft. On both engines the RPM ran down very fast and EPR and TGT instrument readings also dropped. A bang was heard from the engines, followed by the sound of engines running down in a rough and abnormal manner. By this time the aircraft was at a height of 300 ft, still with the gear down. The speed had been 150 kts prior to impact. The pilot saw a field ahead and slightly to the left which he considered suitable for a forced landing, the pilot made a left turn and lined up the aircraft for an approach to the selected field avoiding trees at the approach end in spite of poor visibility and approaching darkness. A positive touchdown was made, the stall warning having sounded just before the aircraft hit the ground. All three landing gear legs were torn off and the aircraft came to rest after sliding for 135 metres on the fuselage belly. All occupants were evacuated through the main cabin door. There was no fuel leakage.

A total of approximately 35 dead Herring Gulls (*Larus argentatus*) and Black-Headed Gulls (*Larus ridibundus*) were found towards the end of the runway. The largest complete bird weighed 450 gm (1 lb). There was evidence of two firm and one glancing strikes on the airframe and each engine showed evidence of having ingested at least one bird. The left engine had suffered a hard strike on the fan, which is situated to the rear of the engine, eleven complete fan blades were broken off and eight others were partially broken off and bent. Some of the broken fan blades penetrated the shroud casing and other parts were driven forward and ingested into the core engine causing compressor damage sufficient to make it stall and thus cause the whole engine to run down. In the right core engine a group of three first stage rotor blades and ten second stage blades had been "feathered" with further damage and bird remains through the compressor. There were also bird remains in the bleed air ducting. The damage would have led to repeated compressor stalls and/or surging with subsequent loss of power.

6.3.74	-	N896OTL	Loftleidair	Keflavik, Iceland	105	-
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At or shortly after take-off No 4 engine was seen to emit smoke and fire. Crew reported that they had struck birds. Aircraft returned, passengers evacuated and fire extinguished by airport personnel.

estroyed



6.10.74 Douglas PH-MBG Martinsair Amsterdam Crew: 0 0 ? Minor
 DC10-30CF Pass: 0 0 ?

During night take-off from Amsterdam using full power from runway wet with light rain, birds were struck at approx 140 knots. After rotation but before gear-up vibration felt and flight engineer stated "maximum vibration engines 2 and 3" and that engine 3 N₁ had touched 114%. Thrust was decreased on engine 3 but vibration remained at maximum and engine was shut down. During shut-down Tower reported seeing flames, there was no fire warning but one extinguisher shot was used. Fuel jettisoned and made radar monitored ILS approach with 2 engines procedure. During the initial approach with flaps 22°, power on engine 2 had to be increased to MCT in order to keep flying level. On the glide path engine 2 kept at 75% N₁ with varied power on engine 1. Automatic approach down to 100 ft, reverse idle on engine 1 and 2. Approx 20 dead gulls found on runway, the only complete gull weighed 450 gm (1 lb). The core of engine 3 showed blade rub on compressor stages 2, 3, 4 and each stage had a few blades with nicks or a curled tip. Damage was only slight and operationally insignificant. The core of engine 2 was not damaged, but fan debris caused dents and punctures of inlet duct, and bellmouth seal was pierced near fan speed sensor. No debris passed outside engine cowls. (Source Netherlands DoT).

25.9.74 Lear Jet Business Västerås Crew: 0 0 ? Minor
 24D Air Service Pass: 0 0 ?

During early morning take-off struck gulls at 135 kts, 30 ft, both engines were damaged such as to be unserviceable. (Source - Swedish Reporting System)

16.10.74 Cessna Citation Newhaven 3 Crew: 0 0 0 Substantial
 Connecticut Pass: 0 0 0

During take-off from Tweed-Newhaven airport, the aircraft ingested gulls in Engine 1. Take-off was abandoned, but the aircraft hydroplaned and left the runway, and struck a ditch. There were no injuries to occupants. (Source - FAA)

12.12.74 SN 601 Air Alpes Chambery Crew: 0 0 0 Minor
 Corvette Pass: 0 0 0

During take-off struck jackdaws (*Corvus monedula*) at 50 ft, 120 kts. Both engines were damaged and both pitot tubes required replacement (total cost of incident 60,000 US dollars). (Source -)

28.1.75 Lear 23 In US Crew: 0 0 ? Minor
 Pass: 0 0 ?

Believed struck starlings (passenger report) at 1,500 ft on take-off. At 21,000 ft right engine suffered complete compressor stall and was shutdown. Continued on one engine. On descent to destination, at 17,000 ft the left engine also stalled. Left engine re-started at 7,500 ft on base leg to airfield, right engine started on finals. Found IGVs and several first stage blades severely bent. (Source - Flight Safety Foundation)

14.6.75 Sabreliner N67KM Kerr-McGee Watertown 6 Crew: 0 2 0 Destroyed
 NA265-80 S Dakota Pass: 0 1 3

Whilst taking off from 7,000 ft long runway aircraft struck gulls during rotation. Both engines immediately "banged" and lost power, and aircraft was crash landed in a field beyond the end of the runway. The wings were torn off and caught fire and the fuselage came to rest approx 750 ft beyond the end of the runway. Both pilots, and one of the 4 passengers sustained serious injuries (the pilots were not using their shoulder harnesses). A total of 13 dead small inland type gulls (Franklin's gull - *Larus pipixcan*) were found on the runway, they were estimated to weigh somewhat less than 450g (1 lb), and to have a wingspan of 2 to 2½ ft. There was light rain, cloudbase 1,000 ft, visibility 1½ miles. The two CF700 2D-2 engines were inspected, No 1 core had severe damage and compressor was not rotatable, several variable IGVs and stator vanes were torn from inner and outer bands. The fan was undamaged. Bird feathers were found in a number of locations and charred remains were found in combustion and turbine area. No 2 engine had suffered damage, probably as a result of the crash landing, however bird debris was found in the combustion area. The airport is surrounded by lakes, but gulls are rare on the airport except in spring and autumn. (Source - ICAO Subsequent Notification)

19.6.75 Grumman En-Route Business Crew: 0 0 ? Minor
 Gulfstream 1 Pass: 0 0 ?

Struck "plover" whilst at 3,500 ft on approach to Cologne/Bonn airport whilst flying above cloud. Hole 7in x 5in just above front centre of radome. (Source - UK Bird Strike Reporting Scheme)

1.7.75 BAC 1-11 7Q-YKG Air Nairobi Crew: 0 0 ? Minor
 Malawi Pass: 0 0 ?

Struck Marabu Stork (*Leptoptilos crumeniferus*) on approach to Nairobi. A 10 inch square hole was made in port side of fuselage forward of front passenger door. Skin was damaged for approx 6 feet. Manufacturer's assistance required for repair. (Source - CAA Reporting Scheme)

3.7.75 Lear 25 N428JX Dana Boston/ Executive 8 Crew: 0 0 2 Substantial
 Corp Richmond Airport Pass: 0 0 6

During take-off from Boston/Richmond Municipal Airport the flight crew heard a "bang". The co-pilot, who was operating the aircraft from the left seat, retarded the throttle to idle and applied the brakes. The pilot-in-command deployed the drag chute and assisted the co-pilot with the brakes. However, the aircraft overran a grass area, severed several trees and a pole 30 cm (12 in) in diameter. It finally came to rest against a wire fence 410 m (1,350 ft) from the end of the runway with the gear collapsed and half of the left wing severed.

Investigation revealed black skid marks on the last 580 m (1,900 ft) of the 1,676 m (5,500 ft) long runway. Both pilots observed birds in front of the aircraft at the time the "bang" was heard. Reverse thrust was not applied during the aborted take-off. Both engines were shipped to General Electric for disassembly and inspection. (Source - ICAO Summary No 1/76)

17.10.75 Boeing 747 Crew: 0 0 ? Minor
 Pass: 0 0 ?

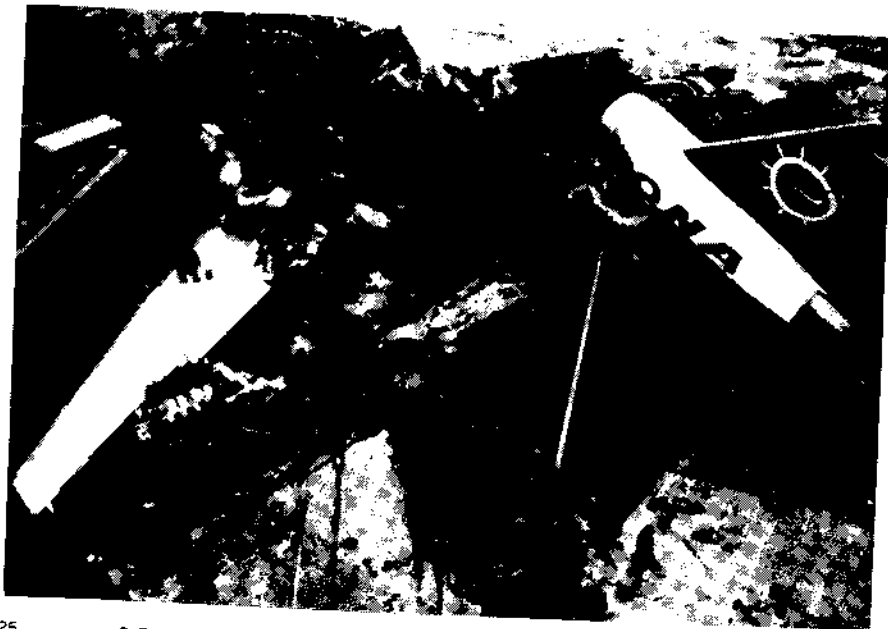
Aborted take-off on cargo flight due to hitting 30 or 40 birds at 155 kts (aircraft weight 772,000 lbs and V1 of 161 kts). Birds rose from the runway directly in front of aircraft (flight was first to use runway 13R). No 2 engine was shutdown because of over-temp condition and failure to go into reverse. No 1 was shutdown after taxiing off runway. No severe vibration was felt. No 1 engine had severe fan blade damage, one blade tip approx 8 in long had separated and exited through inlet cowl at 4 o'clock position making 2 holes in outboard flap canoe fairing. No 2 engine also had severe fan blade damage, one blade tip approx 8 in long separated from fan, but was recovered, no tips exited through cowl. Airport Manager stated birds would not be scared away due to rain and low ceiling. (Source - Flight Safety Facts and Reports October 1975)

12.11.75 DC10-30 N1032F Overseas Kennedy A/P Ferry 139 Crew: 0 0 11 Destroyed
 National New York Pass: 0 0 128

The aircraft was taking off from a different runway from that in use by other aircraft when, shortly after passing 100 knots the captain saw a flock of approx 100 birds rise off the runway ahead of the aircraft. The captain alerted the crew to "watch the EBT's". The aircraft struck the flock of birds, and No 3 engine disintegrated, scattering parts around a wide area, and setting fire to a nearby vehicle maintenance store. The flight data recorder ceased to record soon after the aircraft attained an indicated airspeed of 168 knots (V was 178 knots). The take-off was abandoned, but was affected by the loss of No 2 brake system and braking torque reduced to 50%. No 3 thrust reversers were inoperative, at least three tyres disintegrated, No 3 spoiler panels on each wing could not deploy and the runway surface was wet. The wing was on fire due to rupture of the No engine fuel supply line, and the aircraft finally came to rest on the grass beyond the last taxiway at the end of the runway. The landing gear collapsed and ultimately most of the aircraft was consumed by fire. All 139 persons on board, who were employees of Overseas National, successfully escaped from the aircraft.

Approximately 20 dead gulls were found on the runway, identified as Herring gulls (*Larus argentatus*), Ring-billed gulls (*Larus delawarensis*) and Great black-backed gulls (*Larus marinus*). The largest bird weighed 5 lbs and the average weight of the other birds was between 3 and 4 lbs. There was evidence of at least six significant bird strikes on the lip assembly of No 3 engine inlet cowl. The ingestion caused massive fan blade damage to the GE CF6-50 engine and, ultimately, fan rotor imbalance. When the fan rotor assembly became unbalanced the epoxy abrasion rub shroud around the inside of the cowling began to pulverize and entered the HP compressor. It then exploded, the overpressure within the compressor section caused the compressor cases to separate and structural integrity of the engine to be lost. A number of recommendations were made concerning bird control measures and engine modifications. All CF6-6 and -50 engines have now been modified in that the epoxy rub shroud has been replaced by alloy honeycomb material. (Source - NTSB Aircraft Accident Report NTSB-AAR-76-19)

estroyed



20.11.75

HS125

G-BCUX

Hawker
Siddeley

Dunsfold
Surrey

Demo

9	Crew:	0	0	2
	Pass:	0	0	7
	Others:	6	0	0

Destroy

ntial

The aircraft took off with two pilots and seven passengers on board, becoming airborne shortly before the half way point. At a height of between 50 and 100 feet and after the undercarriage had been retracted, at a speed of approx 150 kts the aircraft encountered a flock of lapwings (*Vanellus vanellus*). Both engines ingested birds and although there were no instrument indications the aircraft commander sensed an immediate loss of power on both engines. Ground witnesses saw balls of flame of varying length behind each of the engines. The aircraft was forced straight ahead with undercarriage and flaps lowered, touching down with only 180 metres of runway remaining at a speed of approx 120 kts. It overran the end of the runway and continued across grass fields and through three hedges before crossing a main road at a speed of approx 85 kts. In so doing it struck and demolished a passing car killing the driver and five children. The undercarriage was torn off and the aircraft continued for a further 150 metres before coming to rest. Fire broke out, but all nine occupants safely evacuated the aircraft before it was largely destroyed by the fire.

A total of 11 dead lapwings were found on the aerodrome, the largest of which weighed 303 grams and had a wingspan of 670 mm. The accident took place 5 minutes after sunset and the aircraft's landing and high intensity supplemental strobe lights were in use. Approximately 40% of the aerodrome had "long grass", but there were many birds uniformly abundant in the short grass areas. Subsequent examination showed that both engines had ingested birds, causing a surge condition, however the damage was such that both engines were capable of being test run.

(Source - Accidents Investigation Branch Aircraft Accident Report 1/77)



29.12.75	Boeing 707	4X-ATX		Tel Aviv Airport		Crew: 0 0 ? Pass: 0 0 ?	Minor
<p>During a daylight landing on runway 12, with landing lights ON, struck a flock of black-headed gulls (<i>Larus ridibundus</i>) average weight 300 gms. Two engines and both wings were damaged. (Source - Lloyds List and BSCE Member)</p>							
1.1.76	DC10-30	LN-RKA	SAS	Copenhagen Denmark	Ferry	13 Crew: 0 0 13 Pass: 0 0 0	Substantial
<p>During a night take-off with 13 on board from runway 22L when aircraft was at 100 ft and 175 kts it struck flock of gulls. Pilot heard loud bang and No 1 engine lost power. Aircraft returned safely. A total of 28 black-headed gulls (<i>Larus ridibundus</i>) were found on runway. It is believed that between 9 and 15 birds went through No 1 and 3 engines. The weight of the birds was between 240 and 340 grams. There was severe damage to No 1 engine, including failure of the casing which had started to open up. There was also minor damage to No 3 engine and the left wing. The weather conditions were 7/8 cloud, base 500 ft, slight rain, and due to aerial damage two ILS approaches were made. The cost of repairs are estimated to be approx 1 1/2 million US dollars. (Source - Bird Strike Committee Denmark and ICAO Subsequent Notification)</p>							
23.1.76	Boeing 747		Fan American	Istanbul Turkey		Crew: 0 0 ? Pass: 0 0 ?	Minor
<p>During take-off birds were ingested into No 3 and 4 engines, aircraft returned but neither engine was shutdown. Bird struck were gulls and "hawks", and a dead bird was found in No 8 canoe fairing. Seven fan blades were replaced on No 3 engine and six on No 4, and there were cuts in cowlings. (Source - Aviation Week, February 2, 1976 and correspondence)</p>							
6.2.76	Lear 24	I-AMME		Bari Italy	Business	2 Crew: 0 0 2 Pass: 0 0 0	Destroyed
<p>The aircraft was at an altitude of 450 ft, and speed of 125-130 kts when it encountered a flock of gulls. Both engines, fuselage, wings and gear were struck, and it came to rest in a small field. The 2 occupants were uninjured. (Source - Italian Reporting System)</p>							
-.2.76	Fokker F28			Nigerian A/W	Oron, Nigeria		Minor
<p>While climbing the aircraft struck a vulture penetrating the windscreen and injuring the co-pilot's face. The aircraft returned.</p>							
13.2.76	B747		Air France	Paris Orly		Crew: 0 0 ? Pass: 0 0 ?	Minor
<p>During the take-off run at 165 kts struck flock of black-headed gulls (<i>Larus ridibundus</i>). Fifty three tonnes of fuel were jettisoned before landing. It was found that engine 1 was badly damaged, and engine 4 required replacement fan blades. (Source - French Reporting System)</p>							
10.3.76	Boeing 747	G-AWNI	British Airways	Prestwick		Crew: 0 0 ? Pass: 0 0 ?	Minor
<p>At approx 110 kts during the take-off on runway 13 aircraft struck flock of birds, engine 4 had high vibration and ran down, and take-off was abandoned. All fan blades were damaged, nose cowl extensively damaged with 2 holes in outer case, fan blade tips missing. The weather was 8/8 cloud at 1,300 ft with rain. (Source -</p>							
10.3.76	B727				Toronto, Canada	144	
<p>During gross weight take-off with limited runway and weather 600ft and viz 1 1/2 miles with thunderstorms, at V1 there were multiple bird strikes. Captains ASI dropped to zero, radome and aerials damaged, weather radar and radio lost. First officers ASI and all three engines fluctuating. Wing slats struck and possibly damaged. Crew made visual circuit at 500 ft but lost runway in rain and reduced visibility. No time to dump fuel so overweight landing was made by first officer as captain's windscreen was obscured. Transponder code 7700 had been seen so runway was clear. Runway was wet and numerous dead pigeons were seen.</p>							
14.4.76	Boeing 747	G-AWNK		Prestwick	Training	Crew: 0 0 ? Pass: 0 0 ?	Minor
<p>At 50 ft, 160 kts during take-off on a training flight the aircraft struck a flock of gulls (believed Herring gulls - <i>Larus argentatus</i> or Lesser black-backed gulls - <i>Larus fuscus</i>). There was a loud bang, power loss, fire warning and tower reported 200 ft long flame and pieces falling. Engine was shutdown and fire bottles fired. Vibration with engine shutdown even at 165 kts. Inspection showed 2 fan blades broken and all other blades damaged, one foot square hole right through nose cowl outer skin. Cowlings displaced, pylon panels and exhaust cone missing, reverser sleeve displaced, leading and trailing edge flaps holed. Weather was 3/8 at 4,000 ft, visibility greater than 10 Km. There were 6 crew on board. (Source - UK Reporting System)</p>							
27.8.76	Boeing 747		British Airways	Hong Kong		Crew: 0 0 ? Pass: 0 0 ?	Minor
<p>At 400 ft after take-off two large birds seen to go under right wing. Found 13 x 6 inch hole in flap canoe fairing outboard of engine 3. Remains of small hawk (<i>Falconiformes</i>) removed. (Source - UK Reporting System)</p>							

12.11.76	Falcon 20	N27R	Reynolds Tobacco	Naples Florida	Business	11	Crew: 0 Pass: 0	2 9	0 0	Destroyed
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Before the accident airport employees had dispersed a flock of gulls from the runway. Most of the gulls departed but about 30 returned. The radio normally carried by the bird scaring team was unserviceable. By this time (8.55 local, daylight) the aircraft had started its take-off run. Shortly after becoming airborne it passed through the flock, both engines failed and the aircraft crashed. The fuselage was severely damaged, a wing separated and all eleven occupants were seriously injured. The gulls were ring-billed gulls (*Larus delawarensis*). (Source - ICAO Subsequent Notifications and US Sources)

12.1.76	Antonov 24	-	-	-	Guinea, Africa	-	-	-	-	Minor
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The windscreen was smashed, wounding the co-pilot.

14.1.77	DC8-63	KLM	Amsterdam Netherlands	-	-	300	Crew: 0 Pass: 0	0 0	? ?	Minor
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At 160 kts on take-off struck flock of gulls (*Larus spp*). Engine 2 was shutdown, fuel jettisoned and aircraft returned. Engines 1 and 2 were damaged. (Source - Netherlands Reporting System)

15.7.77	Lockheed 188 Electra	-	-	-	-	300	Crew: 0 Pass: 0	0 0	? ?	Minor
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Engine 2 suffered bird strike prior to landing, shutdown. During subsequent inspection found engine 3 also damaged. Both engines changed. (Source - US FAA Service Difficulty Reports)

11.7.77	Boeing 747SP	Japan Air Lines	Tokyo Haneda	Scheduled Passenger	-	300	Crew: 0 Pass: 0	0 0	? ?	Minor
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At approximately 2700 ft several sharp explosion and airframe jolts were heard. Flames in vicinity of engine 1 were observed by the Captain as birds had been ingested through the engine. He shutdown No 1 engine, at the same time as the Flight Engineer observed a rapidly climbing EGT on engine No 2, and shut it down as the EGT reached 920°. The aircraft continued to climb (TOW was 523,300 lbs) and was passing 3800 ft at 220 kts when a return was requested from ATC. An attempt was made to start No 2 engine, but was abandoned when the N2 was seen to be zero. No 1 engine was restarted but cabin crew reported smoke in the cabin and the engine was again shutdown when the EGT was increasing rapidly beyond 700°. The aircraft landed 13 minutes after take-off 70,000 lbs above maximum landing weight. The No 2 engine failure was caused by a bearing failure, but no fault was found in No 1 engine. (Source - Air Safety from Pakistani International Airlines)

13.8.77	Convair 440	Linjeflyg	Nr Oernsköldavik Sweden	-	-	-	Crew: 0 Pass: 0	0 0	? ?	Minor
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At approximately 1700 ft during the descent at 240 kts the aircraft struck a buzzard (*Buteo sp*). A hole about 8 inches wide was made in the wing leading edge just outboard of the engine. (Source - Swedish Reporting System).

19.8.77	Boeing 707	TWA	San Francisco	-	-	-	Crew: 0 Pass: 0	0 0	? ?	Minor
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Struck birds on take-off, No 1 engine stalled, aircraft returned. Found engine 1 compressor damaged, and engine 4 fan blades damaged. Engine 1 changed, No 4 fan damage dressed out. (Source - US FAA Service Difficulty Reports)

19.8.77	Comet	Dan-Air	En-Route	Scheduled Passenger	-	-	Crew: 0 Pass: 0	0 0	? ?	Minor
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Found on arrival that engines 1 and 4 were damaged such as to require replacement. No birds seen en-route and no sign of problems from engine indications. (Source - UK Reporting System)

15.9.77	Boeing 737	-	Near Honolulu	-	-	-	Crew: 0 Pass: 0	0 0	? ?	Minor
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Aircraft was three miles from the outer marker at 240 kts, and had just broken out of the overcast when a large black bird thought to be a frigate (*Fregata sp*) appeared in front of the aircraft. The First Officer was flying the aircraft, the Captain shouted a warning, but the bird struck the First Officer's windscreen, completely shattering all panes. Both crew members were covered with broken glass, the screen bowed in, but did not fail completely. The Captain landed the aircraft. (Source - Flight Safety Foundation)

16.8.77	Gates Lear 24	N56LS	-	Baton Rouge Louisiana	Pleasure	8	Crew: 0 Pass: 0	0 0	2 6	Substantial
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When near rotation the aircraft struck a large flock of birds. Birds were ingested in the left engine which flamed out. The pilot aborted the take-off, but could not stop the aircraft on the wet runway. The aircraft overran and collided with a ditch. The concrete runway was 6900 ft long (Source - ICAO Summary 2/78)

3.11.77	Boeing 747	United Airlines	Newark Airport New York			Crew: 0 0 ? Pass: 0 0 ?	Minor	4.4.
Bird strike just after take-off on engine 3, followed by power loss and vibration. Engine was shutdown. One fan blade had detached and made 7 x 8 1/2 inch hole in nose cowl, extensive LP and HP compressor damage. Bird believed to be gull (Larus spp). (Source - US FAA Service Difficulty Reports)								
9.1.78	Falcon Fan Jet		Merced California			Crew: 0 0 ? Pass: 0 0 ?	Minor	
Aircraft descending through 2,000 feet and in the clouds struck a goose. The bird penetrated the right wing leading edge, damaging wing spars and puncturing the fuel cell. Aircraft made a successful landing. (Source -								
23.1.78	Boeing 707	Air Carrier	Ben Gurion Tel Aviv			Crew: 0 0 ? Pass: 0 0 ?	Minor	
During take-off, the aircraft hit a flock of gulls with an unknown number of birds entering the No 2 engine, causing an engine fire. Aircraft returned and landed. Loss of engine caused by fan and compressor failure. (Source -								
26.1.78	Boeing 707	TWA	Tel Aviv Israel			Crew: 0 0 ? Pass: 0 0 ?	Minor	
During take-off a flock of gulls (Larus spp) caused an engine fire and the aircraft's return. (Source - Lloyds List)								
11.2.78	Boeing 727	Air Carrier	San Diego California			Crew: 0 0 ? Pass: 0 0 ?	Minor	
On approach to Lindbergh Field, the aircraft struck a golden eagle, destroying the radome. Aircraft made a successful landing. The bird was found lodged in the pressure bulkhead behind the radar antenna. (Source - FAA)								
18.2.78	Boeing 747	Air France	Lyon (Satolas) France	Scheduled Freight	3	Crew: 0 0 3 Pass: 0 0 0	Substantial	
The aircraft was taking off when it struck two very dense flocks of gulls (Larus spp). The take-off was abandoned at 152 kts (V1 was 154 kts). No 3 engine had failed, and No 4 was surging, and the windscreen was totally obscured by bird remains. The runway was wet and the aircraft was stopped only 150m from the end of the 3900 metre runway, with 3 tyres deflated. In addition to changing engines 3 and 4, engine 1 needed 12 replacement fan blades, and engine 2 four fan blades. (Source - ICAO ADREP Report 4/78 and French sources)								
20.2.78	Boeing 720			Sharjah, Egypt				7.6.7
During the take-off a flock of gulls was struck, one engine was shutdown and an immediate return made. All four engines, wing, fuselage, landing gear and tail were damaged. 600 dead birds were found on the runway.								
29.2.78	DC-10	Air Carrier	San Francisco			Crew: 0 0 ? Pass: 0 0 ?	Minor	11.6.7
On take-off, the aircraft struck a flock of gulls, breaking the nose radome and ingesting birds into the No 1 engine. The aircraft returned and landed. Inspection of the CF-6 engine revealed that 20 fan blades had failed. (Source - FAA)								
15.3.78	VC10	Air Malawi	Nairobi Kenya	Scheduled Passenger		Crew: 0 0 1 Pass: 0 0 ?	Minor	9.7.7
At approximately 400 ft just after take-off the aircraft struck a large bird, later identified as a Marabou Stork (Leptoptilos crumeniferus, average weight 4 kg). The co-pilot's windscreen was crazed, but not penetrated, however particles from the inner pane caused minor injuries to the co-pilot's face. The aircraft jettisoned fuel and returned. (Note:- On this date at Nairobi an Alitalia B707, and two British Airways B747s suffered engine damage). (Source - UK Occurrence Reporting System)								
16.3.78	Falcon Fanjet 20		Newark N Jersey			Crew: 0 0 ? Pass: 0 0 ?	Minor	---7
At 200 feet on take-off climb, the aircraft struck a flock of birds. One bird tore a hole in the right flap while another bird entered the right engine resulting in failure of the blades in the first, second, and third stage compressor. (Source - FAA)								

4.4.78 Boeing 737 OO-SDH Sabena Gosselies Training 3 Crew: 0 0 3 Destroyed
 Pass: 0 0 0

A trainee pilot was making a touch and go landing under the supervision of an instructor, and was about to become airborne again when the aircraft struck a flock of wood pigeon (Columba palumbus). The take-off was abandoned at a speed higher than V₁ and the aircraft could not be stopped before it overran the runway. The right main gear collapsed and the right engine was torn from the aircraft. The aircraft stopped 300 metres beyond the runway after crossing a road having spun through 180°. The aircraft was destroyed by fire. Examination of the left-hand engine found that several birds had been ingested. (Source - ICAO ADREP Report and Belgium sources) Bird weight 450gm



19.4.78 Lear 24 Pal Waukee Chicago Crew: 0 0 ? Minor
 Pass: 0 0 ?

On take-off roll, birds were ingested into both engines. Take-off aborted when both engines flamed out. (Source - FAA)

7.6.78 Boeing 737 Air Carrier Stockton California Crew: 0 0 ? Minor
 Pass: 0 0 ?

Climbing through 2,000 feet, the aircraft hit a single bird, bending the inboard trailing edge flap. Damage was sufficient to jam the flaps in a split flap configuration, affecting aircraft performance. (Source - FAA)

11.6.78 DC8 - Finnair Helsinki - -
 During take-off struck a flock of gulls causing damage to two engines costing 250,000 US dollars.

9.7.78 Boeing 747 KLM Amsterdam Netherlands Crew: 0 0 ? Minor
 Pass: 0 0 ?

During take-off roll, engine 4 suffered bird ingestion and fire warning. Take-off abandoned. Found two fan blades broken, causing severe imbalance. The pieces were contained, although the HP compressor casing suffered a burn-through at 10th stage manifold. (Source - Netherlands and UK Defect System)

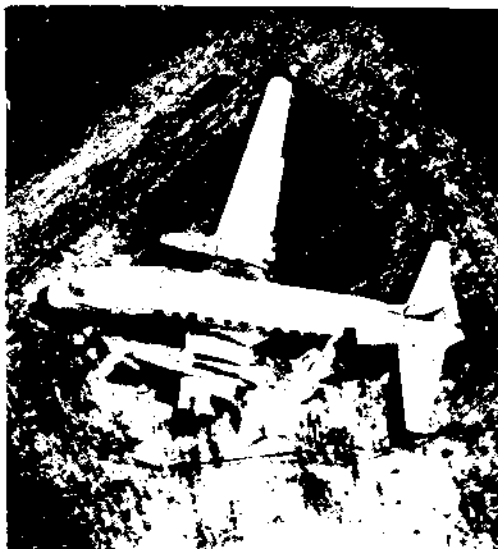
---.78 Boeing 747 Crew: 0 0 ? Minor
 Pass: 0 0 ?

During take-off at approximately 150 kts, a small bird crossed in front of the aircraft. Soon afterwards there was a loud compressor stall, and engine 4 fire warning came on. The take-off was abandoned at 144 kts, the fire check list completed and the warning stopped after approximately 15 seconds. The aircraft stopped safely, but the runway had to be closed because of engine debris, including the tailcone. The bird (estimated to weigh one pound), broke two solid-type fan blades, causing imbalance and titanium fire. The engine casing was burned through near the 10th compressor stage, the engine was described as "a total loss". (Source - PIA Air Safety, June 1978)

25.7.78 Convair 580 N4825C North Kalamazoo Scheduled 43 Crew: 0 1 2 Destroyed
 Central AL USA Passenger Pass: 0 2 38

At 0702 hrs EDT, just as the aircraft passed V1, a sparrow hawk (Accipiter nisus) struck the left engine, and the left propeller auto-feathered as the aircraft lifted off. The aircraft turned to the left and flew for 1 minute 39 seconds before it crashed into a cornfield.

The National Transportation Safety Board determines that the probable cause of this accident was the failure of the captain to follow the prescribed engine-out procedures during instrument meteorological conditions, which allowed the aircraft to decelerate into a flight regime from which he could not recover. Contributing to the accident were inadequate cockpit co-ordination and discipline. (Source - NTSB-AAR-79-4) Bird weight 200gms



26.7.78 DC3 TG-ATA Aviataca Peten 10 Crew: 0 0 2 Substantial
 Guatemala Pass: 0 0 8

During take-off struck flock of birds, force landed with no injuries to 10 occupants. (Source - Lloyds List)

13.8.78 Boeing 727 Air Carrier Nr Houston 7 Crew: 0 0 7 Minor
 Texas Pass: 0 0 7

While holding at 10,000 feet MSL, aircraft hit a flock of ducks. Two access doors were torn loose on the left side of the aircraft. On post flight inspection, three fuselage dents and one three-inch diameter hole in the fuselage were also found. (Source -

3.9.78 DC-8 Air Carrier Tampa 7 Crew: 0 0 7 Minor
 Florida Pass: 0 0 7

Immediately after landing, the aircraft rolled through a flock of gulls that were rising off the runway. Birds were ingested into engines No 3 and No 4, the fire warning lights flickered, and the engines were shut down immediately. Maintenance inspection revealed no engine damage. (Source - FAA)

9.9.78 Boeing 707 Pacific Western Vancouver 7 Crew: 0 0 7 Minor
 Canada Pass: 0 0 7

Gulls (Larus sp) were struck during take-off, engine 3 was severely damaged and failed, while engine 4 sustained damage and had to be shutdown. A total of 29,000 lbs of fuel was jettisoned before the aircraft could return for a two-engined landing. Engines 3 and 4 were changed. (Source - Canadian Bird Committee)

21.9.78 DC-3 Oakland 7 Crew: 0 1 7 Minor
 California Pass: 0 0 7

Immediately after take-off, the DC-3 collided with a large bird, possibly a hawk, shattering the co-pilot's windshield. Glass fragments cut the co-pilot's face and eyes causing permanent vision impairment. Second officer received cuts about the face and hands. Pilot landed aircraft without further incident. (Source - FAA)

22.9.78 Boeing 737 Air Carrier Flint 7 Crew: 0 0 7 Minor
 Michigan Pass: 0 0 7

On take-off roll, aircraft ingested gulls in both engines, an immediate power reduction was made and aircraft aborted the take-off. The engines were cleaned and released for service with no damage. (Source - FAA)

2.10.78

7.10.78

28.10.78

30.10.78

2.11.78

24.11.78

11.12.78

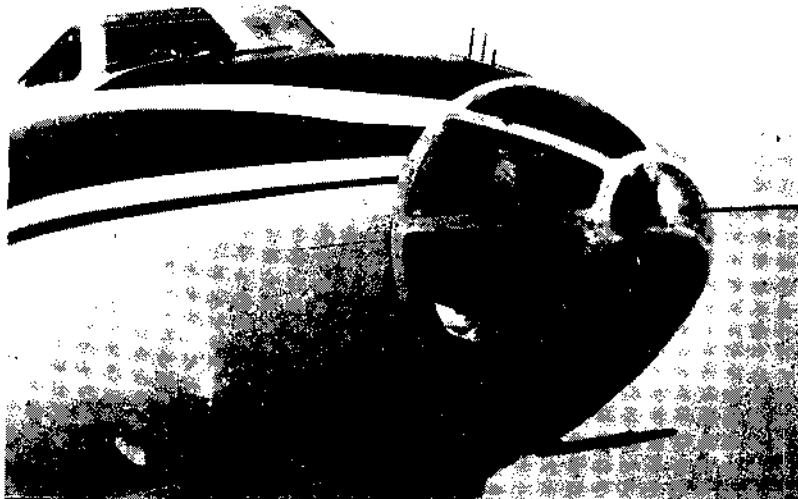
19.3.79

10.4.79

1.5.79

2.10.78	Boeing 747	Air Carrier	San Francisco	Crew: 0 0 ? Pass: 0 0 ?	Minor
On take-off roll, aircraft experienced two compressor stalls following ingestion of domestic pigeons into two engines. Aircraft aborted the take-off. Engines were checked and no damage was found. Two tyres were replaced because of the high-speed abort. (Source - FAA)					
7.10.78	Boeing 707	British Airways	Prestwick	Crew: 0 0 ? Pass: 0 0 ?	Minor
During a training flight a touch and go landing was made, during which engine 1 throttle was closed between V ₁ and V ₂ to simulate an engine failure. At 50 ft the aircraft passed through a large flock of Lapwings (Vanellus vanellus) causing engines 2, 3 and 4 to surge. No 1 was opened up, while No 4 continued to surge, and had to be shutdown. After landing damage was found to engine 4. (Source - UK Reporting System)					
28.10.78	Boeing 737	Air Carrier	Cleveland Ohio	Crew: 0 0 ? Pass: 0 0 ?	Minor
Descending through 8,000 feet at 250 knots, the aircraft struck a flock of ducks. One duck passed through the right side fuselage. Remains were found in the forward baggage hold. (Source - FAA)					
30.10.78	Falcon Fanjet 20		Fort Lauderdale Florida	Crew: 0 0 ? Pass: 0 0 ?	Minor
At 800 feet on take-off climb, the aircraft struck a brown pelican. The right engine nacelle was destroyed, the bird was ingested, destroying the right engine, and the engine mount was bent, tearing the fuselage skin aft of the engine mount. The pelican weighed about eight pounds. (Source - FAA)					
2.11.78	Boeing 727	Air Carrier	Portland Oregon	Crew: 0 0 ? Pass: 0 0 ?	Minor
Aircraft aborted take-off after hitting a hawk. The hawk broke the stall warning sensor resulting in stall warning stick shaker activation just prior to V ₁ . (Source - FAA)					
24.11.78	Fairchild FH27	Air Carrier	Des Moines Iowa	Crew: 0 0 ? Pass: 0 0 ?	Minor
During the approach to Des Moines Airport, the aircraft struck a goose at 2,500 feet, causing damage to the nose gear door. The nose gear could not be lowered requiring a nose gear up landing. No injuries were reported; however, extensive damage was done to the forward undercarriage of the aircraft. (Source - FAA)					
11.12.78	Cessna Citation		Lebanon New Hampshire	Crew: 0 0 ? Pass: 0 0 ?	Minor
During landing, the aircraft hit a snowy owl that was hunting by the light of the approach lights. The bird made a large hole in the leading edge of the left wing, rupturing the fuel cells. (Source - FAA)					
	Fokker F27		Africa		Serious
The aircraft was descending at 200 kts. when passing through 4000ft a 20lb vulture struck and penetrated the right-hand cockpit windscreen. The co-pilots arm was wounded and the cabin attendant suffered severe facial cuts and eye damage. The nosewheel steering, radio and autopilot became unserviceable.					
	Ilyushin 12	Aeroflot	Near Kazan river Volga, Russia		Destroyed
At 900ft the aircraft struck a duck causing the windscreen to shatter. This resulted in the engine magneto switches being turned off and both engines stopped. The aircraft crashed into the river and sank. The passengers and crew were rescued.					
	DC3		Queensland, Australia		Minor
On the final approach to Kowanyama a number of hawks were seen over the end of the runway (a common sight). At touchdown one bird broke the right-hand windscreen showering the pilots with glass. One of them required medical treatment for a cut above his eye.					
8.3.79	B747	SRMPT Air France	Marseilles, France	122	
During landing, at 50 feet, aircraft ingested Herring gulls (Larus argentatus) into engines No 1, 2 and 3. Engine No 1 was changed (4 fan blades torn) and engines 2 and 3 (Source: French Reporting System).					
11.79	DC9	HB-IST Swissair	Zurich, Switzerland		Slight
Abandoned take-off at about V ₁ due to running into a flock of birds. Runway was wet and aircraft over-ran by 20 metres. There was slight damage. (Source: Lloyds List).					
1.79	A300B		Indian Airlines New Delhi, India		
During flight from Bombay to New Delhi struck bird causing extensive damage to left-hand wing. Plane landed safely at New Delhi. (Source: Lloyds List).					

5.9.80	B737	CF-	Eastern Provincial Airways	Stephenville Newfoundland	-	Nil	Substantial	14.12.80
<p>Just after take-off from Stephenville, Newfoundland at about 300ft struck gulls. No 2 engine suffered massive failure and caught fire. Fire went out with first shot, but re-ignited and required second shot to put it out before landing. Aircraft had suffered few strikes in previous 5 years. The engine was a total write off, nothing even the cowl or shroud were usable. The engine cost was 1.1 million dollars. (Source - BSCE Representative).</p>								
16.9.80	B737	-	-	Fairbanks, USA	-	Nil	Minor	18.12.80
<p>During take-off a number of mallard (Anas platyrhynchos) were struck. The aircraft returned and the radome and left-hand stabilizer were replaced at a cost of 300,000 dollars.</p>								
16.10.80	B707	-	-	Dakar, Senegal	-	Nil	Minor	
<p>During take-off engines 2 & 4 ingested birds. Engine 4 was changed as three fan blades were bent</p>								
---	B747	-	-	New York JFK, USA	-	Nil	Minor	
<p>During the approach two large birds holed the radome and forward pressure bulkhead. The repair cost was 50,000 US dollars.</p>								
-.10.80	TU134	-	Aeroflot	Near Mineralnye Vody USSR	-	Nil	Minor	
<p>At 3800ft struck flock of geese at night when in the climb at 200 kts. The wing leading edge was damaged, fuselage skin dented and one of the navigators nose mounted windows holed. (Source - BSCE Representative).</p>								



17.11.80	B727	F-GCDE	Air France	Paris, Orly	74	Nil	Minor	
<p>At 150 ft during the approach the aircraft struck a flock of a hundred gulls (Larus spp). The radome and two engines were struck, resulting in the radome cracking and momentary loss of power on engines 1 and 2. The aircraft landed safely. Because of a strong crosswind the aircraft had used an alternative runway. (Source - BSCE Representatives).</p>								
19.11.80	B727	-	-	USA	-	Nil	Minor	
<p>In the descent snow geese (Chen caerules cens) struck the radome, wing and fuselage. Pressurisation and pilots airspeed indication was lost. Damage cost was 10,000 dollars.</p>								
20.11.80	Falcon 10	N223FJ	Private	Near Kansas City USA	3	Nil	Substantial	
<p>The aircraft was descending through 7100 ft at 250 kts when it struck several geese (Anser sp), causing substantial structural damage to the nose and left-hand tailplane. The incident occurred at night under bright moonlight. The windscreen was obscured necessitating an ILS approach. (Source - ICAO ADREP system).</p>								
13.12.80	TU 134	-	LOT	Istanbul, Turkey	76	Nil	Minor	
<p>The aircraft encountered a flock of gulls (Larus spp) at 650 ft shortly after take-off. one engine was shutdown and the aircraft returned safely. The other engine was subsequently found to be damaged. (Source - 'Flight International').</p>								

Substantial	14.12.80	B747	-	-	San Francisco, USA	-	Nil	Minor
								Fan blades were bent on engines 3 & 4 when birds were struck during the take-off run.
	17.12.80	B737	G BJFH	Air Europe	Manchester UK	-	Nil	Minor
Minor								During take-off at about 30 ft and 160 kts struck flock of black-headed gulls (<i>Larus ridibundus</i>). There was a severe jolt but all engine parameters were normal. Returned for over-weight landing using normal power setting and full reverse thrust on wet runway. Found damaged fan blades necessitating change of both engines. No metal was lost and thrust loss was thought to be minimal. Thought that 3 or 4 birds went down each engine. Both air conditioning intakes were blocked and landing lamp and flaps damaged.
Minor	18.12.80	B727	G-BAFZ	Dan-Air	Over NE Coast of UK	-	Nil	Minor
Minor								While cruising at 20,000 ft over St Abbs Head VOR at 294 kts the outer pane of the First Officers's windscreen shattered. After carrying out appropriate check list, normal descent and landing made. Blood deposits on remains of windscreen. (Source - UK Reporting System).

Minor

Minor

Substantial

Minor

ACCIDENTS AND SERIOUS INCIDENTS TO GENERAL AVIATION AIRCRAFT
DUE TO BIRD STRIKES

<u>Date</u>	<u>Aircraft</u>	<u>Regn</u>	<u>Location</u>	<u>Total Aboard</u>	<u>Injury</u>	<u>Damage</u>
<u>3 April 1912</u>	Model EX Wright Pusher	-	Long Beach, California	1	1 killed	Destroyed
	Bird strike hazard history was made on this date with the crash of the Wright Flyer and the death of Calbraith Perry Rodgers. This first reported crash and fatality occurred as Cal Rodgers was flying low along the beach and hit a gull, causing the aircraft to plunge into the ocean. The pilot was pinned under the wreckage and drowned.					
<u>10 February 1929</u>	Arado Aircraft	-	Madras, India	2	2 killed	Destroyed
	Shortly after take-off struck large bird. Pilot and passenger killed when aircraft crashed.					
<u>About 1955</u>	Cessna Aircraft	-	Aberdare Mountains, Kenya	1	1 killed	Destroyed
	Aircraft hit a vulture during en-route phase of flight and crashed. Pilot tried to avoid bird, but hit it with wing causing damage that jammed ailerons.					
<u>10 January 1959</u>	Light Aircraft	-	Serengeti National Park, Tanganyika	1	1 killed	Destroyed
	Aircraft struck a Griffon vulture (Gyps fulvus weight 5.4kg) and crashed.					
<u>March 1963</u>	Beechcraft 35	N-	Near Bakersfield, California	1	1 killed	Destroyed
	Aircraft struck Common Loon (Gavia immer weight 1.6kg) and crashed due to loss of stbd tailplane.					
<u>1 February 1964</u>	Turbulent	G-APMZ	Belfast, Northern Ireland	1	1 killed	Destroyed
	Pilot killed when the aircraft spun at low altitude possibly while attempting to avoid or following a collision with a gull. Dead gull with impact injuries consistent with having been struck found 63 yards from wreckage.					
<u>5 October 1965</u>	Cessna 310	-	Sokode, Togo	-	-	-
	At 1500 ft aircraft encountered 15-20 vultures, the wing leading edge suffered an 8" x 4" hole causing aircraft to fly to the right.					
<u>2 November 1966</u>	Piper PA23	-	Nr Lagos, Nigeria	-	-	-
	At 1500ft and 150 kts struck a hawk causing a 1" diameter hole in the wing leading edge.					
<u>17 November 1968</u>	Beechcraft 95	N-	Hamilton, Illinois	-	-	-
	Aircraft collided with a goose, breaking windshield. Pilot made a forced landing.					
<u>20 November 1968</u>	Beechcraft 95	N-	Cairo, Illinois	-	-	-
	En-route aircraft hit a flock of geese with substantial damage to the vertical stabilizer. Aircraft made a safe landing with no injuries.					
<u>13 October 1969</u>	Piper PA23	N-	Des Moines, Iowa	-	-	-
	Aircraft struck a flock of large birds at 3,500 feet MSL. Pilot made a forced landing at Des Moines after aircraft experienced flight control difficulties and substantial structural damage.					
<u>12 March 1970</u>	Cessna 150	N-	Opalocka, Florida	-	-	-
	On student Pilot's first solo, the aircraft struck a flock of gulls on take-off. The windshield was broken and pilot attempted a forced landing resulting in substantial aircraft damage.					
<u>9 October 1970</u>	BN2A Islander	G-	Uast, Scotland	-	-	-
	While on short finals a flock of Greylag Geese (Anser anser 3.5kg) rose from flood water into the aircraft path. One struck the landing gear causing substantial damage to the wing structure, nacelle and engine mount.					

<u>Date</u>	<u>Aircraft</u>	<u>Regn</u>	<u>Location</u>	<u>Total Aboard</u>	<u>Injury</u>	<u>Damage</u>
12 November 1970	Bellanca 14	-	Santa Rosa, California	-	-	-
	Aircraft's right wing hit a Turkey Vulture, causing substantial damage to wing. Aircraft landed without further incident.					
<u>2 July 1971</u>	Cessna 180	C-	British Columbia	3	3 killed	Destroyed
	An en-route bird strike with a Bald Eagle (<i>Haliaeetus leucocephalus</i> weight 5 kg) caused the aircraft to crash.					
9 September 1971	Cessna 180	N	Minot, North Dakota	-	1 Minor	Destroyed
	On landing approach, aircraft hit two gulls diverting attention of pilot resulting in hard landing, gear collapse, and ground loop.					
26 March 1972	Piper PA28	N-	Lower Lake, California	-	-	-
	On final approach, aircraft hit an owl, puncturing leading edge of right wing resulting in loss of fuel. Aircraft landed with no further incidents.					
<u>16 April 1972</u>	Mitsubishi MU-2	N-	Atlantic City, New Jersey	3	3 killed	Destroyed
	On climb, the aircraft hit a flock of geese, breaking the windshield and incapacitating one or both pilots. Aircraft entered an uncontrolled descent and crashed in the Atlantic Ocean.					
22 October 1972	Cessna 175	N-	Miami, Florida	-	-	-
	On descent for landing, aircraft hit a black vulture causing damage to the wing. Airflow over wing was altered sufficiently to cause a significant increase in stall speed.					
7 June 1973	Cessna 310	-	Munnalary Australia	-	-	-
	At 300 ft during initial climb struck Magpie Goose (<i>Anser anas semipalmata</i> weight 2.5kg) with underside LE of left wing. Area 18" x 24" was pushed back with associated crushing of ribs.					
31 July 1973	Aerial Spray Callair A-9A	-	Grygla, Minnesota	1	1 Serious	Destroyed
	Aircraft struck a Sandhill Crane (<i>Grus Canadensis</i> weight 4 kg) during a spray swath, damaged the right aileron, and the pilot was unable to maintain aircraft control. Aircraft was destroyed and pilot seriously injured.					
10 August 1973	Cessna 182	5Y-KEL	5 miles W of Nairobi	-	-	-
	At 6800 ft during the approach (airport is at 5000ft) pilot saw a large bird above and to his left, which he thought was a Marabu Stork (<i>Leptoptilox crumeniferus</i> weight 7kg). There was no risk of collision but as the aircraft passed below the bird it dived across the front of the aircraft and struck the right wing leading edge. The leading edge was crushed, upper and lower skins buckled and main spar buckled inboard of the strut attachment. Aileron cable pulley attachment was bent but aileron movement was retained. The aircraft could not be controlled laterally below 100 mph and a high speed landing was made.					
14 August 1973	Cessna 206	N4805F	6 miles N of Nairobi, Kenya	-	-	-
	During the approach a Griffon Vulture dived and shattered the windscreen injuring both the pilot and passenger. The pilot suffered cuts on the face, blindness in the right eye due to glass from his sunglasses penetrating the cornea and a dislocated jaw, which upset his sense of balance. He made a forced landing in open scrubland. (<i>Gyps fulvus</i> weight 5.4 kg).					
6 September 1973	Beech Queen Air	-	Arvika, Sweden	-	-	-
	During landing roll aircraft struck two gull, and shortly afterward the nose gear collapsed. It was found that the mechanism had been damaged.					
12 September 1973	Cessna 182	5Y-KTN	Near Nairobi, Kenya	-	2 injured	Substantial
	At 7300 ft and 140 mph pilot saw a large bird ahead and above so he turned to the left. The next thing he saw was the bird spiralling rapidly towards the aircraft (although it could have been a different bird). The bird shattered the right-hand side of the windscreen causing a cut to the passengers head. The pilot suffered a cut head and right arm. Both occupants required stitches. The aircraft required full power to maintain 90 mph, and elevator control on landing was impaired. The pilot had trouble hearing the radio (no headphones) and his sunglasses acted as goggles in spite of his half of his half of the windscreen being intact. There was severe damage where the bird struck the cabin rear bulkhead, with broken fuselage attachments, and skin ripples as far as the fin. The bird was an immature White Backed Vulture (<i>Gyps africanus</i> weight 5.5 kg).					



7 November 1973	Piper PA32	N-	Corpus Christi, Texas	-	-	-
Aircraft collided with large flock of birds while climbing through 4,000 feet above ground requiring an emergency landing. Aircraft sustained substantial airframe skin damage.						
11 February 1974	Cessna 402A	-	Between Keekorok & Narok, Kenya	-	-	-
While climbing through 8500ft (3000ft agl) a large bird probably a vulture, struck the leading edge of the left hand wing about 4 ft inboard from the wing tip tank. The pilot found he had difficulty turning the aircraft and the wing tip was seen to be flexing considerably. An emergency landing was made on a road. The wing leading edge and spar were ruptured over a length of two feet.						
22 August 1974	American AA5	N-	En-route near Homstead, Florida	-	-	-
Aircraft hit a bird at 500 feet above ground level and the aircraft hit a tree after momentary loss of control. Aircraft damaged during crash landing.						
26 January 1975	Pushpak Trainer	VT-	Patiala, India	-	-	Destroyed
Aircraft was in the traffic pattern when it struck a vulture. The wing strut was damaged causing loss of control. The aircraft was destroyed on impact.						
12 April 1975	Piper PA30	N	Iowa City, Iowa	-	-	-
Aircraft was in the traffic pattern, hit a flock of ducks causing substantial airframe damage.						
2 July 1975	Cessna 402	5Y-AUZ	Ngorongoro, Tanzania	-	-	-
While in the circuit the aircraft struck a Tawney Eagle (Aquila rapax weight 3.8 kg) which initially hit the LH engine leaving a wing in the intake, before striking the LH tailplane causing damage to tailplane spar, ribs and skin.						
19 August 1975	BN2A Islander	-	Sambura Air Strip, Kenya	-	-	-
On the approach a large bird dived onto the aircraft causing severe damage, bending leading edge of wing back to the main spar. Control difficult at landing speeds.						
26 January 1976	Cessna 150	N	Bath, South Carolina	2	2 minor	-
While en-route, aircraft hit a hawk, shattering the windshield. Pilot made a forced landing in an open field and hit tree stumps causing substantial damage to aircraft. Pilot and passenger sustained minor injuries.						
15 May 1976	Piper PA28 Cherokee	G-	Near Biggin Hill, UK	-	-	-
Whilst cruising at 150 kts at 1,800 ft struck one of a pair of crows (Corvus spp). The stabilator (combined tailplane and elevator) was severely damaged and had to be replaced. The leading edge was torn and structure penetrated such that the spar was damaged.						

12 June 1976	Cessna 210	N	McMinnville, Oregon	-	-	-
	During cruise, bird impacted nose gear doors and jammed the doors in the closed position. Aircraft landed gear-up causing substantial damage to lower nose cowling.					
30 August 1976	Saab MFI-15	ET-AFQ	Nr Awassa, Ethiopia	-	2 killed	Destroyed
	While climbing through 2000 ft agl the aircraft collided with a vulture. It went out of control and crashed almost vertically into the ground killing the two occupants.					
4 September 1976	Cessna 150	G-	Luton, UK	-	-	-
	At 200 ft hit a flock of pigeons. Propeller and windshield struck. Pilot made a forced landing without damage following engine shutdown.					
6 November 1976	Cessna 172	C-	Windsor, Ontario Canada	-	1 injury	-
	One occupant was injured when a duck penetrated the windscreen					
10 February 1977	Piper PA28	G-	Nottingham, UK	-	1 minor	-
	During climbout, aircraft struck a flock of Lapwings (Vanellus vanellus weight 250 gm) breaking the windshield and causing facial lacerations to the pilot. A safe landing was made.					
7 April 1977	Piper PA23	G-	Glasgow, UK	-	-	-
	At 3,000 feet above ground level and 160 knots, the aircraft struck a Lesser Black-Backed gull (Larus fuscus weight 800 gm) causing a 12-inch diameter hole in the wing leading edge. Aircraft landed without further incident.					
14 April 1977	Cessna 150	N	Atlanta, Georgia	-	1 Serious 1 Minor	-
	On a local flight, aircraft hit a hawk, windshield was destroyed, and aircraft landed without further incident. One crewman seriously injured, other crewman received minor lacerations.					
15 April 1977	Aero Commander 690A	N-	Chicago, Illinois	4	4 killed	Destroyed
	Pilot was advised of birds on the runway at Meigs Field. Pilot took off into a flock of birds, ingesting gulls in one engine. Aircraft emergency procedures were improperly executed and aircraft entered a spin and crashed in the water, killing the pilot and three passengers.					
August 1977	Beech 18	N-	Sioux Falls, South Dakota	-	1 minor	-
	During a night flight, aircraft hit a bird with impact occurring on the windshield dividing bar, breaking the left windshield. Pilot received minor injuries.					
August 1977	Victa Airtourer	G-	Glasorgan, UK	-	-	-
	Windscreen holed when a pigeon (Columba sp) was hit at 70 kts and 300 ft on the climb out.					
August 1977	Cessna 170B	N-	Golovin, Alaska	-	3 minor	-
	On take-off climb, aircraft hit a bird which penetrated the engine cowling and struck the ignition system lead wires causing partial power loss. Aircraft was forced to ditch resulting in substantial water damage to aircraft. Pilot and four passengers survived with only minor injuries.					
September 1977	Callair A-6	N-	Cedar City, Utah	-	1 serious	Destroyed
	A Mourning Dove (Zenaidura Macroura) was ingested blocking airflow to the engine. Engine failed and aircraft was destroyed in crash. The pilot was seriously injured.					
November 1977	Cessna 182	TW-ABE	Near Ekvata, Libreville, Gabon	-	1 minor	-
	While in cruise at 1000 ft the aircraft struck a sea eagle (weight 3kg). It smashed the windscreen causing injury to the pilots face and right arm from windscreen fragments.					
November 1977	Piper PA25	VH-	Victoria, Australia	-	-	-
	While crop spraying the pilot saw two large eagles which appeared to be attacking the aircraft, but the pilot could not avoid them because of trees. One struck the outer wing causing severe damage. The remaining spray was dumped and a strip landing made. The bird was a wedge tailed eagle.					

<u>Date</u>	<u>Aircraft</u>	<u>Regn</u>	<u>Location</u>	<u>Total Aboard</u>	<u>Injury</u>	<u>Damage</u>
10 January 1978	Cessna 172	N-	Sacramento, California	-	2 minor	-
	Aircraft climbing through 3,000 feet struck a goose causing windshield failure and injury to the pilot and one passenger. Aircraft made an emergency landing and both the pilot and passenger were treated for lacerations on the face and hands.					
25 January 1978	Beech Aircraft	N-	USA	-	-	-
	The aircraft carrying cargo, encountered a flock of birds whilst on a circling approach. Power was lost on the right engine, but the approach and landing were continued. Just after touchdown another flock was struck, causing the left-hand engine to lose power. The aircraft was towed to the parking area.					
8 February 1978	Piper PA31 Navajo	G-	Near Edinburgh, UK	-	-	-
	During the descent at 2,700 ft and 180 kts struck a bird believed to be a herring gull (<i>Larus argentatus</i> , weight 1.1 kg). The RH windscreen disintegrated, and the Captain's was cracked. The bird hit the top of the screen where it joins the roof, causing the roof to buckle and split. The electrical panel in the roof containing the magneto switches was damaged. The bird was flying above 4/8 cloud at 1,500 ft.					
13 February 1978	Cessna 210	VH-	Brunette Downs, Australia	-	-	-
	Shortly after take-off the left wing struck a large bird and was substantially damaged. The pilot had control difficulties, but landed the aircraft safely.					
23 February 1978	Beech 35 Bonanza	N-	Sacramento, California	-	-	-
	During descent at night, aircraft encountered a flock of ducks with one duck hitting the wing leading edge, tearing the aircraft skin, and rupturing the fuel tank. Aircraft declared an emergency and landed, all fuel was lost from the wing.					
7 March 1978	Piper PA31	N-	Sacramento Executive Airport, California	-	2 minor	-
	During a night flight, the aircraft struck a flock of ducks, two ducks broke through the windshield injuring the pilot and his passenger. A successful emergency landing was made.					
29 March 1978	Piper PA28	N-	Tweed-New Haven Airport, Connecticut	-	-	-
	On approach to the airport, the aircraft hit a gull at 2,000 feet. The bird passed through the right side of the windshield, no injuries					
4 April 1978	Commuter Skyvan SC7	N-	Nr Philadelphia Pennsylvania	-	-	-
	During level flight at 3,500 feet, the right front windshield was destroyed by a bird. No injuries reported.					
22 April 1978	Grumman AA5B	N-	Near Stonesville, Ohio	-	1 injury	-
	During a night flight at 2,500 ft, the aircraft hit a hawk. The bird passed through the windshield injuring the passenger in the right seat.					
19 May 1978	Piper PA28	N-	Peace River Alberta DSA	-	-	-
	The wing was badly damaged when it was struck by a duck.					
14 June 1978	Piper PA25 Pawnee	G-	Near Manston, Kent, UK	-	-	Destroyed
	While apraying, birds flew out of the wheat crop directly in front of the windscreen. The pilot's attention was distracted and the wheels entered the crop. The aircraft pitched forward and the pilot was unable to avoid striking the bank of a canal. The landing gear was torn off and wings, propeller and fuselage damaged. The pilot was uninjured.					
26 June 1978	Piper PA31 Navajo	N-	Walla Walla, Washington	-	-	-
	On take-off, aircraft struck a bird that jammed in the nose gear, causing a gear retraction problem. Aircraft landed without incident. Bird was removed and gear retraction tests showed no damage.					

<u>Date</u>	<u>Aircraft</u>	<u>Regn</u>	<u>Location</u>	<u>Total Aboard</u>	<u>Injury</u>	<u>Damage</u>
31 July 1978	Piper PA28	N-	Madison, Wisconsin	-	-	-
During cruise at 5,500 feet, aircraft encountered a flock of ducks; a bird broke the underwing fuel drain causing complete loss of wing tank fuel. Aircraft made an immediate landing with the engine quitting on landing roll due to fuel starvation.						
6 August 1978	GAF22 Nomad	-	Townesville, Australia	-	-	-
When descending through 2000 ft struck a kite hawk on wing leading edge. 140 cm of skin and four wing ribs required replacement. Birds attracted to grass fire.						
7 August 1978	Piper PA23 Aztec	OY-	Esbjerg, Denmark	-	-	-
During training flight struck a flock of gulls during touchdown at about 80 kts. All parts of the aircraft were struck, and the wing leading edge was severely damaged, grounding the aircraft for two weeks. The weather was clear and landing lights were used.						
23 August 1978	Cessna 150	N-	Danburg, Connecticut	-	-	-
At 100 feet in the take-off climb, the aircraft struck a Canada goose (<i>Branta canadensis</i> weight 4 kg) puncturing a three-inch hole in the wing leading edge.						
28 August 1978	Piper PA24	-	Portland International Airport, Oregon	-	-	-
On take-off, aircraft ingested Starlings (<i>Sturnus vulgaris</i> weight 85 gm) into the heat muff, resulting in a fire in the duct.						
September 1978	Cessna 402	N-	Honolulu, Hawaii	-	-	-
Cruising at 1,000 feet over the water, the aircraft struck a Frigate bird, shattering the windshield and destroying some flight instruments.						
28 September 1978	Cessna 310R	-	Majir, Northern Kenya	-	2 serious	-
During landing aircraft struck a vulture (<i>Falconiformes</i>). The windscreen was shattered and the two passengers seriously injured.						
27 October 1978	Piper PA32	-	Location unknown	-	1 minor	-
At 6,000 feet, aircraft struck a bird at night resulting in failure of the right windshield, lacerating the passenger's face and hands.						
20 November 1978	Cessna 172	N-	Birmingham, Alabama	-	-	-
On take-off climb, the aircraft hit a large bird, blocking off airflow landing. No injuries reported.						
6 December 1978	Beagle 206 Series 2	G-	Corfu, Greece	-	2 minor	Destroyed
Shortly after the aircraft became airborne, a flock of gulls flew up in front of the aircraft, several being struck. The gear was raised, and as the aircraft passed the end of the runway the manifold pressure started to decrease. Full power was applied and the aircraft climbed to approximately 200 ft, the other instruments being normal. The manifold pressures continued to fall and when they had reached 26" the aircraft could not maintain height and at 50 ft and 80 kts during a slow left turn back towards the airport, the left engine failed, causing the wing to strike the water. The aircraft plunged into the sea, and both occupants escaped with minor injuries through the smashed windscreen. The aircraft sank in approximately 50 seconds, and the crew were successfully rescued.						
	C182	-	Africa	-	-	-
The aircraft was circling at 700 ft and about 90 kts for landing when it struck a Wedge Tailed Eagle (<i>Aquila quax</i> weight 3.4 kg). The wing leading edge was badly damaged, the main spar was bowed and full aileron was needed to keep level. A forced landing was made straight ahead.						
19	Piper PA28	VH-	Walge H, Australia	-	Nil	Substantial
Just after becoming airborne the aircraft flew through a flock of Galahs (<i>Cacatus roseicapillus</i> weight 340 gm) there were numerous strikes but everything was normal until the engine lost power just past the upwind end of the runway. A forced landing was made with considerable damage but no injury. It was found that the fuel filter drain had suffered a strike, loosened the bowl and allowed the fuel to leak out. A total of 22 dead galahs were found on the runway.						
April 1979	Beech 99	N-	Lafayette, USA	-	1 injury	Minor
While descending through 2000 ft 5 miles from Lafayette the aircraft collided with a flock of ducks. The co-pilot's windshield was broken causing the co-pilot to be hospitalized overnight.						

<u>Date</u>	<u>Aircraft</u>	<u>Reg</u>	<u>Location</u>	<u>Total Aboard</u>	<u>Injury</u>	<u>Damage</u>
15 April 1979	Grumman AA5B	N-	Nr Kentland, USA	-	-	-
A goose was struck during the approach phase breaking the windscreen. There were no injuries.						
19 October 1979	Swearingen SA26AT Merlin	N65103	Palo Alto, California USA	-	2 killed 1 serious	Destroyed
The aircraft was seen to make a normal approach but just at or before touchdown the aircraft started to climb, accelerated and banked to the left. It continued to roll to the left, became inverted at an altitude of 75 to 100 ft. It then crashed in the airport parking area where seven parked aircraft were destroyed or damaged. The two passengers were killed and the pilot seriously injured. It was that one of the Garrett TPE 331 engines was clogged with bird remains causing blockage of the airflow. The engine itself was not damaged.						
	Piper PA28 Cherokee	VH-	New Menindee, Australia	-	-	Minor
While at 1000 ft the pilot noticed large birds ahead. One dived at the aircraft, the pilot dived to avoid it but it hit the top of the windscreen and cabin roof causing pieces of perspex to enter the cabin and damaging the trim control structure. The pilot landed at a nearby strip. The bird was thought to be a Pelican (Pelecanidae).						
23 February 1980	Cessna 152	N-	Stockton, USA	-	Minor	-
During the approach a hawk (Falconiform) broke the windscreen breaking pilots nose and cutting his face. (Source ICAO).						
2 March 1980	Beech 90	N-	Daugherty, Long Beach USA	-	-	-
Although advised of the presence of gulls the pilot elected to take-off. The take-off was abandoned after damage to both engines, radome, wing and tail. (Source ICAO).						
28 March 1980	Cessna 172	C-	Nr Vancouver, Canada	-	1 minor	-
A duck smashed the windscreen causing facial injuries to the pilot and passenger.						
7 May 1980	Cessna 172	N-	Nr Monterey, USA	-	-	-
While in the cruise several birds caused a 1 ft x 2 ft hole in the windscreen. (Source ICAO).						
20 May 1980	Mitsubishi MU2G	N-	Teterboro, USA	-	-	-
During the climb birds penetrated the windscreen, and damaged the wing and a propeller. An engine was shutdown. Repairs cost 10,000 US Dollars. (Source ICAO).						
26 September 1980	Beech 76	N-	Near Rome, Georgia, USA	-	-	-
While in cruise hawks penetrated the windscreen. (Source ICAO).						
18 October 1980	Partenavia P68	F-	St Gatien, France	-	-	-
During the approach a Black headed gull (Larus ridibundus weight 300 gm) penetrated the windscreen. There were no injuries. (Source ICAO).						
21 October 1980	Grumman AA5	N-	Laurens, USA	-	-	-
A bird broke the windscreen, the pilots head set was blown off. (Source ICAO).						
26 October 1980	Beech 33	N-	Des Moines, USA	-	-	-
While in the climb ducks (Anas sp) broke the windscreen, damaged the frame and radio aerial. (Source ICAO).						
1 November 1980	Mitsubishi MU2F	N-	Roswell Industrial, USA	-	-	-
A curlew (Numenius arquata weight 800 gm) was struck during the descent, 10" of the wing leading edge were destroyed, the spar web and top spar cap were broken. (Source ICAO).						
17 December 1980	Piper PA60	N-	Near Barton Rouge, USA	-	1 serious	-
While in cruise ducks (Anas sp) holed the windscreen, the pilot made an emergency landing at Lake Charler, Louisiana. The pilot required stitches in his chest.						

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<u>Date</u>	<u>Aircraft</u>	<u>Regn</u>	<u>Location</u>	<u>Total Abroad</u>	<u>Injury</u>	<u>Damage</u>
31 December 1980	Piper PA28	N-	Amarillo, USA	-	-	-
	The left-hand side of the windscreen was holed after striking birds on the approach.					
	Cessna 310	N-	Greater Rockford, USA	-	Minor	-
	Ducks (Anas sp weight 300 to 1.5 kg) penetrated the windscreen during the approach causing minor injury. (Source ICAO).					

ACCIDENTS AND SERIOUS INCIDENTS TO HELICOPTERS
DUE TO BIRD STRIKES

<u>Date</u>	<u>Aircraft</u>	<u>Regn</u>	<u>Location</u>	<u>Total Aboard</u>	<u>Injury</u>	<u>Damage</u>
11 March 1969	Bell 45	N-	Tularosa, New Mexico	-	-	Substantial
	Tail rotor separated in flight after hitting eagle. Autorotative landing made, no injuries, aircraft substantially damaged.					
8 August 1970	Hughes 269B	N-	Big Rock, Virginia	-	1 serious	Destroyed
	The helicopter hit a bird and while the pilot was checking for damage, he allowed the helicopter to descend and strike a powerline. The helicopter crashed and the pilot sustained serious injuries.					
2 February 1973	Bell 206B	N-	Lake Charles, Louisiana	-	-	Substantial
	During cruise the helicopter hit a black vulture which jammed between the transmission and the swash plate, and the cyclic control tube was broken. A power-off autorotative landing was made resulting in substantial damage because of a hard landing.					
21 September 1975	J2 Autogyro	G-	South Coast of England	-	-	Destroyed
	Ditched in sea one mile off South Coast of England after very heavy vibration occurred. Pilot rescued, aircraft sank. Pilot believed loss due to bird strike, as numerous gulls in area at the time.					
18 May 1976	Hughes 369	N-	Elkhart, Kansas	-	-	Substantial
	During a spray swath run, a bird struck the spray boom brace, and the brace hit the tail boom. Aircraft crashed causing significant damage. Pilot was not injured.					
25 April 1977	Hiller 1100	N-	Near Watson Island, Florida	-	-	Substantial
	Tail rotor separated following impact with bird. Forced landing resulted in substantial damage to helicopter. Pilot and four passengers escaped injury.					
9 February 1978	Bell 206	N-	Lake Arthur, Louisiana	-	-	Minor
	Helicopter approaching the coast at 300 feet hit a duck with the bird penetrating the lower right front bubble.					
24 February 1978	Bell 206	N-	Newark, New Jersey	-	1 injury	Minor
	At 500 feet and 100 knots, helicopter hit a bird at night, breaking the windshield and cutting the pilot's face and arm.					
16 June 1978	Hughes 300	N-	Washington State, USA	-	3 minor	Minor
	During the approach at approximately 1100 ft, the pilot noticed some small birds. Before he could attempt to avoid them, one hit the canopy to the left of the pilot, causing the quarter panel to shatter. The helicopter landed safely. There were minor injuries to the three occupants.					
18 August 1978	Hiller 12	G-	Near Crosby, UK	-	1 minor	Substantial
	During a spray run the pilot's attention was distracted when a pheasant flew up into the main rotor, and the helicopter collided with power cables. Some controls became inoperative, but the pilot was able to move the helicopter clear of the cables using rudder and throttles. The pilot suffered minor injuries, the helicopter suffering considerable damage.					
-- 1979	AS315 Lama	HB-	Swiss Alps	-	-	Substantial
	Pilot saw bird in front, tried to avoid it but it struck the rotor. Very heavy vibration occurred in the cabin and through the cyclic pitch, and a successful autorotation was made onto a glacier. A dead eagle was later found with impact damage. The helicopter required a new set of blades and tail structure.					
- - -	Turbine Helicopter	N-	United States	-	-	Minor
	While cruising at 150kts windscreen was holed by a swallow.					
- - -	Hughes 500	N-	San Francisco, USA	-	-	Minor
	The lower left chin bubble screen was shattered by a duck which ended up flapping around the cockpit. When landing the pilot found the collective was jammed by pieces of plexiglass.					

<u>Date</u>	<u>Aircraft</u>	<u>Regn</u>	<u>Location</u>	<u>Total Aboard</u>	<u>Injury</u>	<u>Damage</u>
12 July 1980	Bell 206	N-	United States	-	-	Minor
During powerline patrol the left hand windscreen was broken by a Turkey Buzzard (Buteo sp about 3kg), which landed in the observers lap. The airspeed was 60 - 70 mph.						
15 July 1980	Bell 206	-	Brookville, Indiana USA	-	-	Minor

While en-route a buzzard broke the left windscreen.

Moscow, August 1982

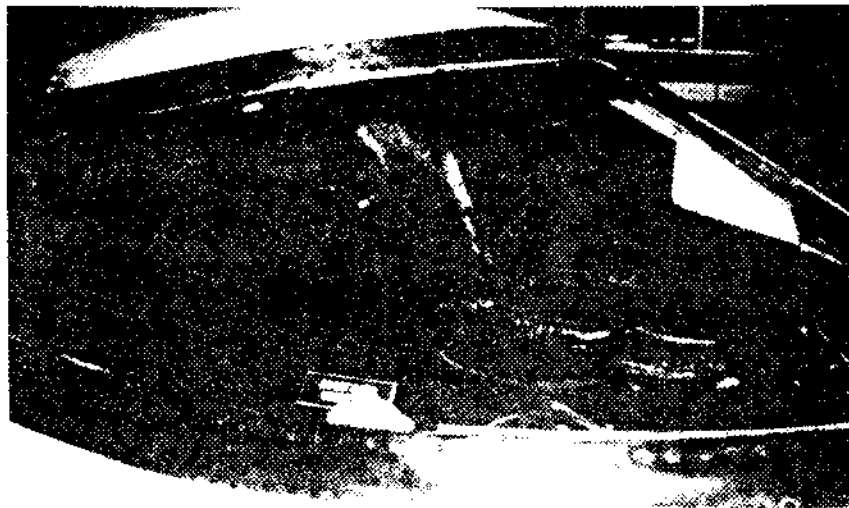
BSCE 16/WP16A

SERIOUS BIRD STRIKE INCIDENTS TO CIVIL AIRCRAFT 1981 AND 1982

J Thorpe - UK

<u>Date</u>	<u>Aircraft</u>	<u>Regn</u>	<u>Operator</u>	<u>Location</u>	<u>Total Aboard</u>	<u>Injury</u>	<u>Damage</u>
7.4.81	Lear 23	N400PG	Private	Lunken Executive Cincinnati, USA	2	1 killed	Minor

The aircraft was in a climbing turn at about 4000 ft when the aircraft struck a Loon (Gaviidae). The bird penetrated the right windscreen and killed the co-pilot. Windscreen debris damaged No 2 engine which had to be shutdown. The pilot's arm was badly cut but a safe landing was made using the emergency brake chute and with no flaps. The weather was good, the flight being at 11.35 local time. The pilot did not see the bird. A loon weighs up to 9lbs and migrates singly or in pairs. In the US the speed must be below 250 kts up to 10,000 ft. The Lear 23 is of an age such that the windscreen may not have been required to withstand a bird of even 4lbs. (Source - ADREP and BSCE Member).



24.5.81	B737	-	-	Johor Bahru, Malaysia	-	Nil	Minor
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Both engines were damaged during the take-off run.

21.6.81	B737	G-BMHG	Air Europe	Naples, Italy	-	Nil	Minor
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During the take-off run a flock of birds was seen to land on the runway about 100 yds ahead of the aircraft. The birds, pigeons (Columba sp) took off just before the aircraft reached them at about 120 kts (V, 125). Several impacts were felt so the take-off was successfully abandoned using reverse thrust and brakes. Later some fusible plugs blew. There was birdstrike damage to the nacelles, nosewheel steering cables and to both engines. Six LP compressor blades were damaged in No 1 engine and 5 in No 2 engine. Both engines were changed.

6.7.81	DC10-30	N112WA	World Airways	Gatwick UK	-	Nil	Minor
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At rotation on take-off flames and smoke were seen from engine 3 and the aircraft returned with the engine shutdown. The runway was inspected and 80 or more pieces of engine were found, together with some bird remnants. The bird remains were identified as either Feral or Wood Pigeon. (Columba sp of weight 400 to 500 gms). The engine was seriously damaged with holed casing. (Source - UK Reporting System).

20.7.81	DC8-62	-	-	Thessalonika, Greece	-	Nil	Minor
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Take-off was abandoned after striking pheasants (Phasianus colchicus 1.2 kg) on take-off. There was severe damage to engines 2 and 3. Repair cost was 145,000 US dollars.

8.8.81	L1011	G-BEAK	British Airways	Larnaca Cyprus	347	Nil	Minor
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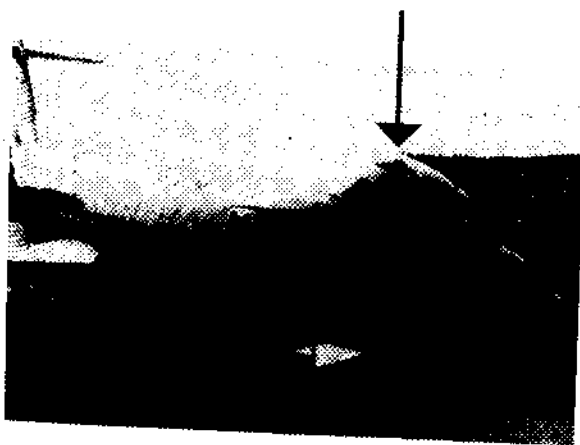
On take-off there was a loud bang at 90 kts, so the take-off was abandoned. Evidence of bird ingestion in engines 1 and 3. Ground run revealed power loss on engine 3. Aircraft ferried to base. (Source - UK Reporting System)

Date
19.8.81
1.9.81
24.3.82
11.7.82
15.4.81
18.7.81
18.81

<u>kts</u>	<u>Aircraft</u>	<u>Regn</u>	<u>Operator</u>	<u>Location</u>	<u>Total Aboard</u>	<u>Injury</u>	<u>Damage</u>
9.8.81	DC3	ET-ABY	Ethiopian Airlines	Jimma	-	-	-
Aircraft suffered a birdstrike causing wing leading edge skin damage and five broken or cracked ribs. (Source - Lloyds List).							
9.8.81	Fokker F28	SE-DGC	Linjeflyg	Near Ornskoldsvik Sweden	-	Nil	Substanti
While flying at 8000ft and slightly above 300 kts the aircraft struck an Osprey (Pandion haliaetus, weight 1.5 kg). The bird penetrated the skin above the windshield damaging frames, looms etc and entered the flight deck causing considerable mess. (Source - Swedish: ESCE representative).							

Damage

Minor



1.82	B747 (JT9D-7)	VT-EFU	Air India	Jeddah	-	-	-
During the approach the aircraft passed through a flock of birds causing the pilot to shutdown No 1 engine and bring No 2 back to idle. After touchdown No 2 was shutdown due to vibration. Both engine nose domes and all fan blades were damaged. There were holes in the nose cowl of No 2 engine and the tail cone was missing. (Source - Boeing Aircraft Co).							
1.82	B747 (JT9D)	G-AWNA	British Airways	Melbourne, Australia	91	-	-
At 500 ft just after take-off struck flock of birds which were ingested in engines 3 and 4. The aircraft sustained engine fan damage. (Source Lloyds List).							
1.81	C182	C-FTRQ	Near Cooking Lake Alberta, Canada	-	Minor	-	Substantial
Aircraft struck a duck (Anas sp) which jammed in carburettor intake causing loss of power. Aircraft forced landed into trees. (Source - Lloyds List).							
1.81	C152	G-BIOM	Near Lerwick, UK	1	Minor	-	Minor
While descending through 1000 ft at about 90 kts the aircraft struck a gull breaking the windscreen. The pilot suffered a cut nose. (Source - UK Reporting System).							
1.81	Cessna 402	5Y-ATU	Near Mugiara, Kenya	1	1 killed	-	Destroyed
Suffered birdstrike with a Marabou Stork (Leptoptilon crumeniferus, weight 7kg) which penetrated the windscreen killing the pilot instantly. The pilot, the sole occupant was killed and the aircraft destroyed. (Source - CAA Office Nairobi).							

Minor

Minor

Minor

Minor

Minor

<u>Date</u>	<u>Aircraft</u>	<u>Regn</u>	<u>Location</u>	<u>Total Aboard</u>	<u>Injury</u>	<u>Damage</u>
January 1982	Microlight	G-	Nr Bolton, England	-	Nil	Minor
A flock of gulls were encountered and the engine exhaust was knocked off (falling near a house and going 3" deep into the frozen ground). The pilot glided to a safe landing. (Source - Guardian 15 January 1982).						
2 February 1982	Beech 200	EI-	Nr Nairobi, Kenya	-	-	Significant
While on final approach the pilot attempted to avoid a large flock of birds, but shortly afterwards the pilot felt a large thump at the back end of the aircraft and it pitched up. After recovering a normal landing was made. The bird, a Marabou Stork (Leptoptilos Crumeniferus weight up to 7 kg) struck the fin leading edge, crushing the whole fin leading edge back to the front spar. The fin attachment was not damaged. (Source - CAA Area Office).						
3 April 1982	Cessna 172	F-	Sarre Union, France	-	Nil	Minor
Just before touchdown the pilot noticed two buzzards (Buteo sp) on the beginning of the runway so the pilot overshot and made a circuit. On his second approach both birds were in the air and the pilot took evasive action to miss one of them. The aircraft landed too fast, bounced and the landing gear and propeller were damaged. The bird damaged the left-hand wing leading edge. (Source - BSCE French Representative).						
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2 March 1981	Bell 206	CF-	Vancouver State Canada	4	Four killed	Destroyed
The helicopter went missing on a low altitude sheep count and was not found till June 8. When found at least one raven (Corvus corax, weight 1.3 kg) had struck the plexiglass front windscreen and probably entered the cockpit area. The helicopter crashed as a result, killing all 4 on board. (Source - Dept of Transport Canada).						
3 June 1981	Bell 47	G-	Redhill, UK	-	-	Minor
While in the hover the rotor was damaged when a crow flew into it.						
2 January 1982	Bell 206	G-BAUM	3 miles from Kelso Scotland	-	-	Minor
While cruising at 600 ft at 90 kts the pilot felt a slight yaw and simultaneous severe vibration. He shut down the engine and made an autorotative landing in a field. The tail rotor had been struck by a bird (leaving three small feathers) bending the leading edge of a blade out of alignment, and resulting in tail rotor drive shaft damage.						
13 April 1982	Westland Gazelle	G-	New Seaton, UK	-	-	Minor
At 1800 ft, 125 kts a gull was seen to pass over the rotor, no impact was heard or felt. On landing the stabilizer "fibreglass" fin skin was found to be cracked and had to be renewed.						

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