

SERIOUS BIRD STRIKES TO CIVIL AIRCRAFT 1992-1993

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ABSTRACT

The Paper contains a sample of summarised accidents and more serious incidents due to bird strikes in the years 1992-1993. The Paper is divided into three sections:

- Transport aeroplanes over 5,700 kg and business jets
- Aeroplanes of 5,700 kg and below
- Helicopters

The data sample is too small for any in-depth analysis, but engine ingestion is clearly the critical area of transport aeroplanes. The windshield appears to be the vulnerable area of general aviation aircraft and helicopters. An Appendix contains new information now available about incidents before 1992.

The Author would welcome any new or additional information which has not been included within the Paper.

1 Introduction

A number of serious bird strike accidents and incidents occur each year throughout the world. This paper attempts to detail these events obtained from the following major sources:-

- UK Reporting System 1992 and 1993
- Flight Safety Foundation Bulletin 1992 and 1993
- Lloyds List June to December 1993
- European Reporting Systems
- ICAO IBIS Significant Bird Strike List 1992
- National Transportation Safety Board Data on Bird strike Accidents 1983-1990

2 Scope

The term 'serious' for the purposes of this paper includes:

- loss of life
- injury to occupants
- destruction of aircraft
- loss of, or damage to, more than one engine
- damage to one engine, together with ingestion in another engine
- uncontained engine failure
- fire
- significant sized holes, eg windshield, nose, radome
- major structural damage
- particularly unusual or dangerous features, eg complete obscuring of vision, multiple or significant system loss, propeller damage, helicopter rotor or transmission damage.

The paper has been divided into three sections:

- Transport aeroplanes over 5,700 kg and business jets
- Aeroplanes of 5,800 kg and below
- Helicopters
- Newly received information about fatal accidents/write offs prior to 1993.

Fatal accidents have a box at the end of the first line.

3 Points of Note

In general the data sample, which contains a high proportion of UK information, is too small for any in-depth analysis, however a number of points from this sample are noteworthy:

- in airliners; flocks affecting more than one engine continue to cause a major threat
- damage to metal propellers is almost unknown, the long term record for composite blades will need to be examined
- both helicopter and light aircraft windshields are particularly vulnerable; even to birds the weight of a Swift (*Apus apus*, 40 gm)
- the 'new' accident information in Attachment 1 shows that a number of fatal general aviation accidents were the result of attempting to avoid birds.

4 Previous Papers

Similar papers covering earlier years have been published as follows:

- 1912 to 1982 WP16 and 16A BSCE 16, Moscow August 1982
- 1981 to 1984 WP27 BSCE 17, Rome October 1984
- 1984 to 1985 WP4 BSCE 18, Copenhagen May 1986
- 1985 to 1987 WP22 BSCE 19, Madrid May 1988
- 1987 to 1989 WP BSCE 20, Helsinki May 1990
- 1989 to 1991 WP31 BSCE 21, Jerusalem May 1992.
- 1912 to 1992 World Wide Fatal Accidents due to Birds, ICAO Workshop, Santiago March 1993

The source of data is indicated, if not shown it is the UK Reporting System.

TRANSPORT AEROPLANES OVER 5,700 KG AND BUSINESS JETS

DATE	AIRCRAFT	REGISTRATION	LOCATION	INJURY
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30 Jan 92 IL76 (D30) - Kabul, Afghanistan Nil

Just on lift off the aircraft struck a flock of Pigeons (Columba sp 450 gm). Three engines suffered damage such that they had to be changed. (Source: ICAO)

29 Jul 92 L188 Electra (Allison 501) G-FIJR Belfast, UK Nil

Flock of Lapwings (Vanellus vanellus 215 gm) rose from runway at rotation. Engine 2 ran down and was shut down, engine 1 oil temperature rose. Returned. Bird remains in engine 2 compressor and engine 1 oil cooler intake. 10-12 Lapwings on runway.

12 Aug 92 Lear 24 (CJ610) D-CFVG Sytt, Germany Nil

In the climb, at about 800 ft, 190 kts, struck a flock of Gulls (Larus spp), made a precautionary landing. Both engines were damaged. (Source ICAO)

13 Aug 92 B737 (CFM56) LN-BRE Sola, Norway Nil

At about 25 ft, 140 kts while landing the aircraft struck a flock of Gulls (Larus spp) causing damage to the radome and both engines. (Source: ICAO)

16 Aug 92 DC8-61 (JT3D) TC-MAB Antalya, Turkey Nil

At 50 ft, 160 kts, just after take-off, the aircraft passed through a flock of up to 100 Herring gulls (Larus argentatus 1 kg). The flight continued to Paris, Orly, where the following was found:

- Engine 2 fan cone and 5 fan blades bent, acoustic panels and air intake damaged,
- Engine 3 air intake damaged,
- Engine 4 fan cone dented, fan blades bent, acoustic panels damaged.

Aircraft out of service for 22 days. (Source: ICAO)

13 Nov 92 A320 (CFM56) F-GJVD France Nil

At about 100 ft, 140 kts the aircraft passed through a flock of up to 100 Lapwings (Vanellus vanellus) causing damage to 7 fan blades in engine 2 and 3 fan blades in engine 1.

18 Nov 92 BAe ATP (PW100) G-BTPM Stornoway, UK Nil

During the take-off run, struck a flock of birds causing extensive splitting of the outer surface of No 6 blade of engine 2 propeller. Heavy vibration resulted.

3 Jan 93 B747 (RB211) G-BDXI Gatwick, UK Nil

Just after rotation the aircraft struck a number of Gulls. severe vibration from engine 1 and it was shut down. Fuel dumped before returning. Fan blade damage in engines 1 and 2.

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The fully loaded cargo aircraft was taking off, when shortly after V1 there was a bird strike in engine 2. Take-off was abandoned and the aircraft over-ran by 450 metres striking the ILS antenna. Engine 2 had severe bird strike damage, engine 1 suffered damage from the ILS antenna, with brake and lower fuselage damage. The bird was identified as a Buzzard (*Buteo buteo* 800 gm). (Source: BSCE)



At 400 ft, 175 kts in climb, struck large bird. Engine 2 shut down, aircraft returned. During incident on hydraulic system failed due to loss of fluid from a loose 'B' nut. Gear extended manually and nosewheel steering lost. One fan blade broken with fragment impacts to other blades, fan case and inlet nacelle.

22 Jun 93 BAe ATP (PW126) G-BTPG Stornoway, UK Nil

During landing run at about 85 kts, both left-hand and right-hand propellers were damaged by a flock of Gulls. Right-hand propeller had large section of trailing edge separated which struck left-hand propeller, damaging 2 blades.

7 Oct 93 SAAB 340 (CT7) G-GNTC Dundee, UK Nil

Multiple bird strike on take-off. Subsequently right-hand propeller blade tip found cracked. Blade changed.

AEROPLANES OF 5,700 KG AND BELOW

Believed 92	Beech 90 King Air (PT6)	-	Unknown	2 killed
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The pilot was cleared by ATC to climb from 10,000 ft to 21,000 ft. At 17,000 ft radar contact was lost and there was no further communication. Weather at the time of the crash was 7,000 ft broken, 25,000 ft overcast, with visibility 7 miles. Witnesses told investigators that the aircraft emerged from clouds in a vertical attitude, with parts falling behind the fuselage. A large section of the right wing was found about 2 miles away from the crash site. The right engine was found about 1,200 ft from the wreckage. An investigation found no pre-impact failure that could have caused the crash, although organic material was found on the left engine inlet screen. The source could not be determined, but the accident occurred along a bird flyway. There was no indication of what caused the aircraft to descend out of control. The investigation concluded that once in a dive, load factors resulted in structural failure of the wing. (Source: Flight Safety Foundation Bulletin)

21 May 92 Piper PA28 Cherokee F-GHZP Nr Sarlot, France Nil

While en-route at 2,500 ft, 140 kts, a 20 cm hole was punched in the windshield after striking a Swift (Apus apus 40 gm). A precautionary landing was made.

13 Sep 92 Piper PA38 Tomahawk G-BSBW Nottingham, UK Nil

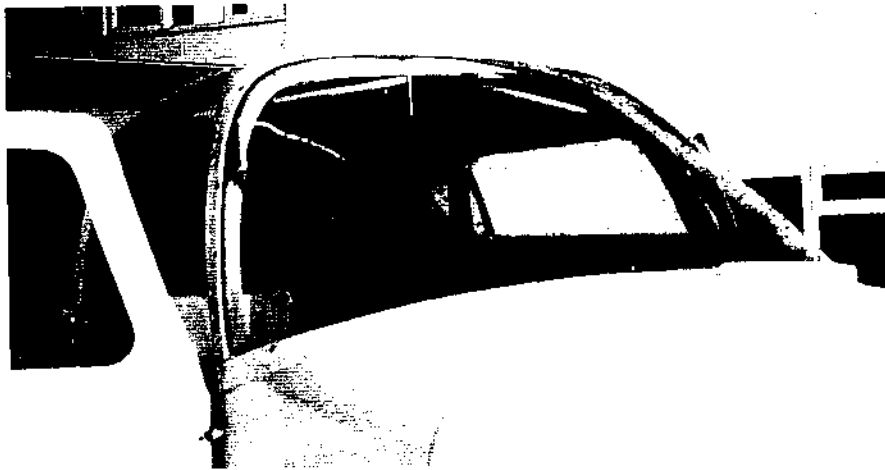
At about 800 ft on approach a large bird damaged wing leading edge.

18 Oct 92 Denney Kitfox G-RSSF Comber, UK Nil

Perspex roof believed to have been holed by a bird strike.

24 Jul 93 Beech 76 Duchess G-WACI Wycombe, UK Nil

After morning rain, the weather improved and the aircraft lined up for the first flight of the day. The student was doing the take-off, at about 65 kts a flock of birds rose from puddles on the runway. As there wasn't room to stop on the 750 metre long runway, the take-off was continued. At about 80 ft a bird smashed the left-hand side windshield. A slow circuit and safe landing were made. The birds were identified as Lapwings. (For photograph see over page.)



30 Oct 93 Gulfstream AA5 G-PROP Biggin Hill, UK Nil

On landing a flock of Lapwings rose from the runway causing damage to the wing leading edge skin.



HELICOPTERS

24 Sep 92 MI 8 CCCP-24661 Nr Igol, Russia Nil

The helicopter suffered engine failure due to suspected bird strike. It was substantially damaged during the emergency landing.

19 Nov 92 S76 Spirit G-BNSH Over North Sea, UK Nil

After landing on an unmanned rig, a number of Gulls flew into the rotors causing some blade damage.

12 Jul 93 Bell 206 C-GFSA Nr Fort McKay, Canada Nil

While flying at 120 kts, 1500 ft agl the helicopter hit a Loon (Gavea immer kg). It struck the windshield centre post, broke part of the windshield and entered the cockpit. Continued 10 miles to destination at reduced speed. Pilot did not see bird before impact. (Source: Transport Canada)

20 Aug 93 SA332 Puma G-PUME Over north Sea, UK Nil

At 500 ft and 100 kts in the climb from a rig struck a large Gull centre screen cracked and holed, upper perspex panel broken, pieces entered cockpit. Returned.

AEROPLANES OF 5700 KG AND BELOW

11 Jul 83 Boeing Stearman N59085 Webb, Texas, USA 1 Serious

Just before flying under wires during a dusk agricultural spray run, a bird struck and broke a plastic fuel gauge located under the centre section of the upper wing. Fuel sprayed on to the windshield and pilot's face, restricting his forward visibility. In an effort to miss the power lines, the aircraft struck trees. The pilot suffered serious injuries and the aircraft was destroyed. (Source NTSB)

21 Jul 84 Piper PA18 N9276D Seboomook Lake, 1 Minor

On final approach for a water landing a bird, believed Cormorant (*Phalacrocorax* sp up to 2.4 kg) holed the windshield causing cuts to the pilot's face as a result of his glasses impacting his eyebrows. The stunned pilot came to in the water and after releasing himself he escaped from the inverted, submerged aircraft. A nearby boat rescued the pilot. (Source NTSB)

30 Aug 84 Boeing Stearman N5183N Kalispell, Minnesota, USA 1 Fatal

The pilot was completing a turn on to an agricultural spray run when at 15 ft and 65 mph he struck a bird, believed Red tailed hawk (*Buteo jamaicensis* 1.1 kg). The force of impact broke the canopy and distracted the pilot. The aircraft struck the ground and overturned killing the pilot. (Source NTSB)

25 Nov 84 Ercoupe 415 N2047H Wixom, Minnesota, USA 1 Fatal 1 Serious

Flying into a low sun as the aircraft turned final a large flock of birds flew in front of the aircraft, the pilot dived to avoid them and collided with power lines. The aircraft crashed killing the pilot whose blood alcohol level was 0.11%. (Source NTSB)

29 Jan 87 Cessna 150 N50922 Vancouver, Washington, USA 2 Fatal

While returning from an instructional flight the aircraft passed through an area of heavy bird activity and the student made a nose down avoidance manoeuvre. The instructor took control with a rolling pull-up which over-stressed the right wing. (Source NTSB)

17 Sep 87 Schweizer 164 N36328 Weiner, Arizona, USA 1 Fatal 1 Serious

During an agricultural flight to chase birds from a rice field, the aircraft struck a large flock of birds. The pilot allowed the wheels to contact the crop and the aircraft overturned. Both occupants were unrestrained, the passenger, of the single seat aircraft, was found dead outside the cockpit. Several dead birds were found at the accident site. (Source NTSB)

11 Feb 88 Cessna 172P N52535 East Hampton, NY, USA 1 Fatal

Shortly after departure the pilot radioed that he had struck some birds and couldn't maintain control. The aircraft crashed in the sea about 1 mile off shore killing the pilot. (Source NTSB)

HELICOPTERS

29 Jan 83 Bell 47 Riverview, Florida, USA 1 Minor

The helicopter was flying at about 50 mph, 15 ft above the water, when a bird came through the door opening, striking the pilot on the right temple. The pilot lost control and it crashed into the ocean, the pilot was uninjured, the passenger suffered minor injuries. The helicopter was written off. (Source NTSB)

21 Jan 85 Hughes 369

N121JP

Honolulu, USA

Nil

While flying over the water at about 400 ft, 1/2 mile from the shore, the pilot saw a large flock of birds, but was unable to avoid them. An extreme vibration developed, the pilot ditched the helicopter whereupon it rolled over and sank. The pilot was able to swim ashore. (Source NTSB)

30 May 90 Schweizer 269C

N431MS

Tallulah,
Louisiana, USA

Nil

While en-route at 800 ft a flock of birds was struck. There was severe vertical vibration and the pilot made a precautionary landing. During the flare the main rotor blade flexed and struck the tail boom causing the helicopter to become uncontrollable. The helicopter rolled on to its side. (Source NTSB)

ABSTRA

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