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Bird Avoidance

(John Thorpe, UK)

BIRD STRIKE COMMITTEE EUROPE

BIRD AVOIDANCE

John Thorpe - UK CAA

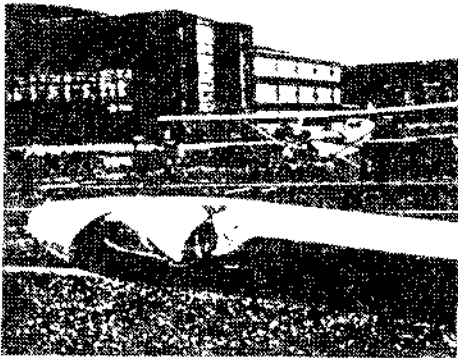
SUMMARY

The paper contains the text of a Leaflet in the CAA General Aviation Safety Sense series. This has been widely distributed to UK General Aviation and Private pilots. Other countries may wish to use the text for similar leaflets with suitable alteration to reflect their own reporting procedures, bird species, publications, etc.

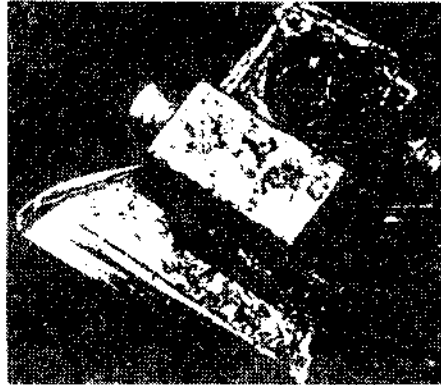
BIRD AVOIDANCE

1. Introduction

You may not realise it, but if you collide with a soft feathery bird the effect of speed may cause it to seem more like a missile capable of inflicting considerable damage. Although only 5% of bird strikes cause damage, improved pilot awareness of the problem may prevent bird strikes and to help correct handling of the situation if a strike occurs. About 95 incidents per year are reported by UK general aviation pilots and the effects include smashed windshields (injuring pilots), blocked engine air intakes, broken pitot heads, damaged brake hoses, holed structures and helicopter tail rotor damage. However, many pilots never experience a bird strike.



Damaged Piper Aztec wing after striking a Grey Heron (weight 1.5kg) at 105kts.



At 140 kts while practising for an Air Race round the Isle of Wight, the engine air intake was blocked by a Belgian pigeon. Aircraft force landed on the beach (the tide was out!).

The advice below should help to minimise bird strikes and their consequences.

2. Prior to Flight

- a. Check aerodrome documentation and NOTAMS (issued by some countries as BIRDAMS) for information about permanent or seasonal bird problems at both departure and destination aerodromes.
- b. Plan to fly above 2,500 feet; the higher the better. Only 1% of UK general aviation bird strikes occur above this altitude.
- c. Avoid flying over bird and wildlife sanctuaries detailed in aeronautical publications (UK Air Pilot Section RAC 5-1-4 para 6.6) or marked on aeronautical charts.

- d. Plan to avoid flying along rivers or shore lines in the Autumn and Spring. Migrating birds, as well as pilots, may use these useful navigational features.
- e. Bear in mind that birds do fly at night.
- f. Discuss emergency procedures before departure, including those if the cockpit communications are lost.
- g. The higher the speed, the less time birds have to get out of your way. Consider using goggles and helmet during air racing or other high-speed low-altitude operations.
- h. In late summer the risk of a strike is at its greatest because young birds are unaware that aircraft are a hazard, while the flying qualities of adult birds are impaired as they moult their flight feathers.
- i. Birds of Prey have been known to **attack aircraft!**

3. At the Aerodrome and In Flight

- a. Inspect the aircraft thoroughly for birds nests, they can build one overnight!
- b. As you taxi out, listen for any bird warnings on the ATIS e.g. a mass release of racing pigeons.
- c. When taxiing, watch for birds on the aerodrome. Note that the most frequently struck birds, gulls, have a grey or black back which is good camouflage on concrete or tarmac runways.
- d. If you are flying a quiet aircraft remember that birds on the ground face into wind and may not hear or see you coming.
- e. Note that the slower the bird's wingbeat, the bigger the bird and the more hazardous it is.
- f. If birds are observed, request that aerodrome personnel disperse the birds before take-off. This is particularly important for turbo-prop and jet powered aircraft at aerodromes mainly used by smaller general aviation aircraft (the birds may have got used to slow aircraft). Never use an aircraft to scare birds away.
- g. If the aircraft has windshield heating, remember that its use, in accordance with the Pilots Operating Handbook or Flight Manual, will make the windshield more pliable and better able to withstand bird impact. (See AIC 54/1983 (Pink 45) - Effect of Temperature on the Resistance of Glass Laminated Windscreens to Bird Impact)
- h. Use landing lights during take-off, climb, descent, approach and landing. Although there is no conclusive evidence that birds see and avoid aircraft lights, lights will make the aircraft more visible.

i. If a bird runway will engine etc cooling or airline inc vibration engine dama lines, down

j. If the tak identify th the aerodrom

k. If you see most often NEVER do an

l. If structur is holed) attempting - helicopters

m. If the wind wind blast, aircraft) us precipitation too distract small gener tested agai However, mo 900gm (2 lb light aircra

n. If dense bi approach. #

o. If flocks around, and migrate in approach co

4. After Flight

a. After landi damage.

b. Report all CA1282. Tower/Flying

c. If you are n be sufficie (Aviation B 3LQ).

d. Photograph a

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- i. If a bird strike occurs during the take-off run, stop if remaining runway will allow. Vacate the runway and shutdown. Inspect the intake, engine etc for damage or ingestion, or for bird remains blocking cooling or other airflow before attempting a second take-off. Several airline incidents have occurred where turbine engine damage or high vibration developed during subsequent flight because of undetected engine damage. Don't forget to check landing gear and brake hydraulic lines, downlocks, weight switches etc.
 - j. If the take-off must be continued, with an engine problem, properly identify the affected engine and execute emergency procedures and tell the aerodrome why you are returning.
 - k. If you see bird(s) ahead of you, attempt to get over the top, as birds most often break-away downwards. Be careful when near the ground, and NEVER do anything that will lead to a STALL or SPIN.
 - l. If structural or control system damage is suspected (or the windshield is holed) consider the need for a controllability check before attempting a landing. Be wary of unseen tail rotor damage on helicopters.
 - m. If the windshield is broken, (or cracked) slow the aircraft to reduce wind blast, follow approved procedures (depressurise on pressurised aircraft) use sunglasses or smoke goggles to reduce the effect of wind, precipitation, or debris, but remember to fly the aircraft - don't be too distracted by the blood, feathers, smell and windblast. Note that small general aviation aircraft and helicopter windshields are not tested against bird impact and the propeller gives little protection. However, most aircraft between 2,300 Kg and 5,700 Kg can withstand a 900gm (2 lb) bird. Gulls, pigeons, lapwings and even swifts can hole light aircraft windshields.
 - n. If dense bird concentrations are expected, avoid high-speed descent and approach. Halving the speed results in a quarter of the impact energy.
 - o. If flocks of birds are encountered during descent or approach, go-around, and climb before circling for a second approach. Birds can migrate in waves across a wide front, therefore a short delay in the approach could result in clear airspace.
4. After Flight
- a. After landing, if you have had a bird strike check the aircraft for damage.
 - b. Report all bird strikes on the yellow National Bird Strike Report Form CA1282. This should be available at the Briefing Room/Control Tower/Flying Club (copy on the back of this leaflet).
 - c. If you are not sure of the species send the remains (even feathers can be sufficient) for identification to the address on the Report Form. (Aviation Bird Unit, Tangley Place, Worplesdon, Guildford, Surrey. GU3 3LQ).
 - d. Photograph any damage, and send to the Safety Data and Analysis Unit.

To be completed for use if a bird strike is discovered by ground crew. For strikes which require reporting under Article 85 of the Convention on International Civil Aviation, see the Manual on Bird Strikes. (IN)

LOOK OUT FOR THESE BIRDS - they can be a hazard to aircraft

APPROXIMATELY TO SCALE

GULLS:

- Lesser (in flight)
- Great (in flight)
- Herring (in flight)
- Common (in flight)
- Black-headed (in flight)
- LESSER BLACK-BACKED GULL: 820 gm
- GREAT BLACK-BACKED GULL: 1.7 kg
- HERRING GULL: juvenile 1.0 kg, adult 1.0 kg
- COMMON GULL: juvenile 420 gm, adult 420 gm
- BLACK-HEADED GULL: juvenile 275 gm, adult 275 gm
- LAPPING: 215 gm
- GOLDEN PLEWER: 185 gm
- OYSTERCATCHER: 500 gm
- ROOK: 430 gm
- STARLING: 80 gm
- WOODPIECE: 465 gm

Weights of other birds frequently encountered:

Heron	- 1.5 kg	Swift	- 40 gm
Buzzard	- 800 gm	Sparrow	- 20 gm
Kestrel	- 200 gm	Swallow	- 20 gm
Partridge	- 400 gm	Martin	- 17 gm
Pheasant	- 1.1 kg	Sparrow	- 20 gm

Operator ...

Aircraft Make

Engine Make

Aircraft Regi

Date day .

Local Time .

dawn

Aerodrome

Runway Use

Location if E

Height (AGL)

Speed (IAS)

Phase of Fl

Part(s) of Ai

nose (exc

IMPORTAN

Pilots: A

ATC: A

Others: A

(eg: engineering staff)

A

C

W

CA 1282
030294

Civil Aviation Authority

BIRD STRIKE REPORTING FORM — CA 1282

To be completed for ALL strikes, including those where evidence is discovered by ground and overhaul personnel. Also to be used for strikes which qualify as Reportable Occurrences under Article 85 of the ANO - see Aeronautical Information Circular on Bird Strikes. (Numbers are for computer analysis.)

Operator 01/02
 Aircraft Make/Model 03/04
 Engine Make/Model 06/06
 Aircraft Registration 07
 Date day month year 08
 Local Time 09
 dawn A day B dusk C night D 10
 Aerodrome Name 11/12
 Runway Used 13
 Location if En Route 14
 Height (AGL) ft 15
 Speed (IAS) kt 16

Phase of Flight 17
 parked A en route E
 taxi B descent F
 take-off run C approach G
 climb D landing roll H

Part(s) of Aircraft

	Struck	Damaged
radome	<input type="checkbox"/> 18	<input type="checkbox"/>
windshield	<input type="checkbox"/> 19	<input type="checkbox"/>
nose (excluding above)	<input type="checkbox"/> 20	<input type="checkbox"/>
engine no. 1	<input type="checkbox"/> 21	<input type="checkbox"/>
2	<input type="checkbox"/> 22	<input type="checkbox"/>
3	<input type="checkbox"/> 23	<input type="checkbox"/>
4	<input type="checkbox"/> 24	<input type="checkbox"/>
propeller	<input type="checkbox"/> 25	<input type="checkbox"/>
wing/rotor	<input type="checkbox"/> 26	<input type="checkbox"/>
fuselage	<input type="checkbox"/> 27	<input type="checkbox"/>
landing gear	<input type="checkbox"/> 28	<input type="checkbox"/>
tail	<input type="checkbox"/> 29	<input type="checkbox"/>
lights	<input type="checkbox"/> 30	<input type="checkbox"/>
other (specify)	<input type="checkbox"/> 31	<input type="checkbox"/>

Effect on Flight
 none 32
 aborted take-off 33
 precautionary landing 34
 engines shut down 35
 other (specify) 36

Sky Condition 37
 no cloud A
 some cloud B
 overcast C

Precipitation
 fog 38
 rain 39
 snow 40

Bird Species* 41
(or size) *No bird fragments (including feathers) too small to be useful but the larger the sample available the easier the task of identification. If you are not certain of the bird species please send remains to address overleaf.

Number of Birds
 Seen 42 Struck 43
 1 A A
 2 - 10 B B
 11 - 100 C C
 more D D

Pilot Warned of Birds 45
 yes Y no N

Remarks (describe damage, injuries and other pertinent information; bird remains for identification) 46/47
 (Photographs of damage would be welcomed by SDAU.)

THIS INFORMATION IS REQUIRED FOR AVIATION SAFETY

IMPORTANT

Pilots: *Hand to ATC at first available UK aerodrome.*
 ATC: *Forward to Safety Data and Analysis Unit*
 Others: *Hand to ATC or fold and post to:*
(eg: engineering staff)
*Civil Aviation Authority
 Safety Data and Analysis Unit
 Aviation House, South Area,
 Gatwick Airport,
 West Sussex RH6 0YA*

Reporter's:

Name _____
 Name of Employer _____
 Occupation _____
 Contactable at (Tel. & Ext.) _____
 Signature _____

Fold and Tuck In

Affix
Stamp

Civil Aviation Authority
Safety Data and Analysis Unit
Aviation House
South Area
Gatwick Airport
West Sussex RH6 0YR

Second Fold

First Fold

*Bird remains should be sent to—
Ministry of Agriculture, Fisheries and Food
Aviation Bird Unit
Tangley Place
Worplesdon
Guildford
Surrey GU3 3LQ

Third Fold

Bird Strike civil aircra

(J. Thorpe and I