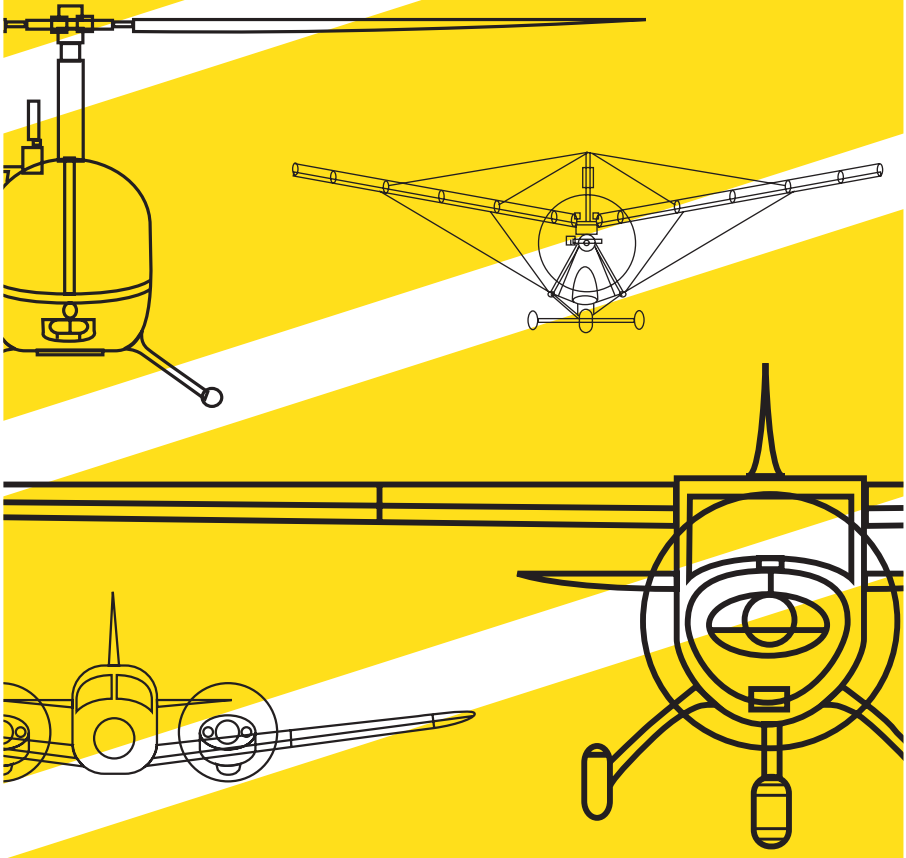
GENERAL AVIATION SAFETY SENSE

CIVIL AVIATION AUTHORITY

10A

BIRD AVOIDANCE



BIRD AVOIDANCE

1 INTRODUCTION

Many pilots do not realise that if they collide with a soft feathery bird, the effect of speed turns it into a missile capable of inflicting considerable damage. World wide there have been over 20 fatal accidents to general aviation aircraft as a result of collision with or attempts to avoid birds. This has included smashed windshields (killing pilots), blocked engine air intakes, broken pitot heads, damaged brake hoses, holed structures and helicopter tail rotor damage. Out of about 100 incidents *reported* each year by UK general aviation pilots, only 5% result in damage. The advice given in this Leaflet may provide greater awareness of the problem, and perhaps further reduce the number of collisions as well as help pilots to minimise the consequences if a birdstrike does occur.

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

2 PLANNING THE FLIGHT

a. Check aerodrome documentation *and NOTAMS* (issued by some countries as BIRDTAMS) for information about permanent or seasonal bird problems at both departure and destination aerodromes.

b. Plan to fly as high as possible, only 1% of general aviation bird strikes occur above 2500 ft (although a jet airliner struck a vulture at 37,000 ft off the W. African coast!).

c. Do not fly over bird and wildlife sanctuaries detailed in UK AIP ENR 5-6-1 or marked on aeronautical charts.

d. Avoid flying along rivers or shore lines, especially at low altitude, birds, as well as pilots, use these useful navigational features.

e. Note also that inland waters and shallow estuaries, even outside the breeding season, may contain large numbers of gulls, waders and wildfowl which make regular flights around dawn and dusk. In order to minimise the possibility of birdstrikes and unnecessary disturbance of birds, **DO NOT** fly low over such areas. Note: It is an offence to deliberately disturb nesting birds, pilots have been successfully prosecuted for doing so.

f. Avoid off-shore islands, headlands, cliffs, inland waters and shallow estuaries, so as not to disturb nesting colonies.

g. Helicopters cause more disturbance to bird colonies than fixed wing aeroplanes.

h. Bear in mind that birds *do* fly at night.

Nest on top of Grob G109 motor glider engine

i. If there are two pilots, discuss emergency procedures before departure, including those if the cockpit communications are lost.

j. Up to 80–90 kts birds have time to get out of your way but the higher the speed, the greater the chance of a strike.

k. If your flying requires lengthy periods at low level, consider wearing head protection with polycarbonate visor. Pilots lives have been saved by their helmets, particularly in helicopters. Use goggles and a head protection during air racing.

l. In July and August the risk of a strike is at its greatest because many inexperienced young birds are present. Also, the flying abilities of adults may be impaired as they moult their flight feathers.

m. Birds of Prey have been known to *attack* aircraft!

3 AT THE AERODROME AND IN FLIGHT

a. In springtime, **pre-flight** the aircraft thoroughly as birds can build a nest almost overnight. Any signs of grass etc may necessitate further investigation of hard to inspect corners. A nest under the cowling could catch fire, or one in the tail area can restrict the flying controls.

b. As you taxi out, listen for any warnings of bird activity on the ATIS e.g. a mass release of racing pigeons.

c. While you are taxying, look for birds on the aerodrome. Note that the most frequently struck birds, *gulls*, have a grey or black back which makes them hard to see on concrete or tarmac runways.

d. When flying a quiet aircraft remember that birds on the ground face *into wind* and may not hear or see you coming.

e. In general terms, the slower a bird's wingbeat, the bigger the bird and the more hazardous it could be.

Engine air intake blocked by Belgian racing pigeon. The aircraft was at 500 ft and 140 kts practising for an air race round the Isle of Wight. Aircraft force landed on the beach.

f. If birds are observed, on the aerodrome request aerodrome personnel to **disperse** them before you take-off. This is particularly important for turbo-prop and jet powered aircraft operating at aerodromes mainly used by smaller general aviation aircraft (the birds may have got used to slow aircraft).

g. **Never** use an aircraft to scare birds away.

h. Some aircraft have 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.

i. *Use* landing lights during take-off, climb, descent, approach and landing. Although there is no conclusive evidence that birds see and avoid aircraft lights, their use **will** make the aircraft more visible.

j. If you experience a bird strike during the take-off run, provided there is sufficient runway remaining – stop. Taxy off the runway and shut down. Inspect the intake, engine etc for damage/ingestion, or for bird remains blocking cooling or other airflow ducts. Several airline incidents have occurred where turbine engine damage or high vibration developed during subsequent flights because of undetected engine damage. Don't forget to check landing gear and brake hydraulic lines, downlocks, weight switches etc.

k. Where 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. It is essential to FLY THE AIRCRAFT.

l. If you see bird(s) ahead of you, attempt to pass above them as birds usually break-away downwards when threatened. Be careful when near the ground, and **never** do anything that will lead to a **stall** or ***spin.***

m. 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 helicopter tail rotor damage.

n. If the windshield is broken (or cracked), slow the aircraft to reduce wind blast, follow approved procedures (depressurise a 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 distracted by the blood, feathers, smell and windblast. Note that small general aviation aircraft and helicopter windshields are not required to be tested against bird impact and the propeller gives little protection. Gulls, pigeons, lapwings and even swifts can hole light aircraft windshields.

o. If dense bird concentrations are expected, avoid high-speed descent and approach. *Halving* the speed results in a *quarter* of the impact energy.

p. If flocks of birds are encountered during approach, go-around for a second attempt, the approach may then be clear.

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 CA 1282, available at the Briefing Room/Control Tower/Flying Club (copy on the back of this leaflet).

c. If you are unsure of the bird species send the remains (even feathers can be sufficient) for identification to the address on the back of the Report Form (Birdstrike Avoidance Team, MAFF Central Science Laboratory, Sand Hutton, York. YO4 1LZ.

d. Photograph any damage, and send to the CAA Safety Promotion Section, (Aviation House, Gatwick Airport, W. Sussex, RH6 0YR).

5 SUMMARY

- Check NOTAMS/ATIS for bird activity at departure and destination aerodrome.
- Plan to fly as high as possible, most birds fly below 2500 ft.
- **Avoid** bird sanctuaries and coastlines in spring.
- Pre-flight the aircraft thoroughly, birds nests can be built (or rebuilt) in a few hours.
- Many hazardous species are coloured such that they **merge** into the background.
- If you see hazardous birds on or near runways, get aerodrome personnel to move them **BEFORE** you take off.
- The higher the speed, the greater the risk and consequential damage.
- Birds usually escape by diving, so try to **fly over them,** but do **NOT** risk a stall or spin.
- Most general aviation aircraft windshields etc are **NOT** required to be able to withstand birdstrikes.
- If the windshield is broken, avoid distraction – **FLY THE AIRCRAFT.**
- Report **ALL** birdstrikes using the Reporting Form CA 1282. (Photos of damage are helpful.)
- If you are **NOT CERTAIN** of the bird species send feather and other remains to the address on the Reporting Form.

SAFETY IS NO ACCIDENT

Other leaflets in this series:

1C	*Good Airmanship Guide*
2B	*Care of Passengers*
3C	*Winter Flying*
5D	*VFR Navigation*
6C	*Aerodrome Sense*
7B	*Aeroplane Performance*
8D	*Air Traffic Services Outside Controlled Airspace*
9A	*Weight and Balance*
11	*Interception Procedures*
12C	*Strip Sense*
13A	*Collision Avoidance*
14A	*Piston Engine Icing*
15B	*Wake Vortex*
16A	*Balloon Airmanship Guide*
17B	*Helicopter Airmanship*
18A	*Military Low Flying*
19	*Aerobatics*
20A	*VFR Flight Plans*
21A	*Ditching*
22	*Radiotelephony*
23	*Pilots – it's your Decision*
24	*Pilot Health*

New leaflets will appear from time to time on a non-regular basis.

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If clubs, organisations or individuals wish to receive further copies, please write to Westward documedia Limited, 37 Windsor Street, Cheltenham, Glos GL52 2DG. Fax. No. 01242 584139. Telephone 01242 235151.

Suggestions and technical queries to SRG Safety Promotion Section, Aviation House, Gatwick Airport, West Sussex RH6 0YR. Telephone 01293 573225/7.

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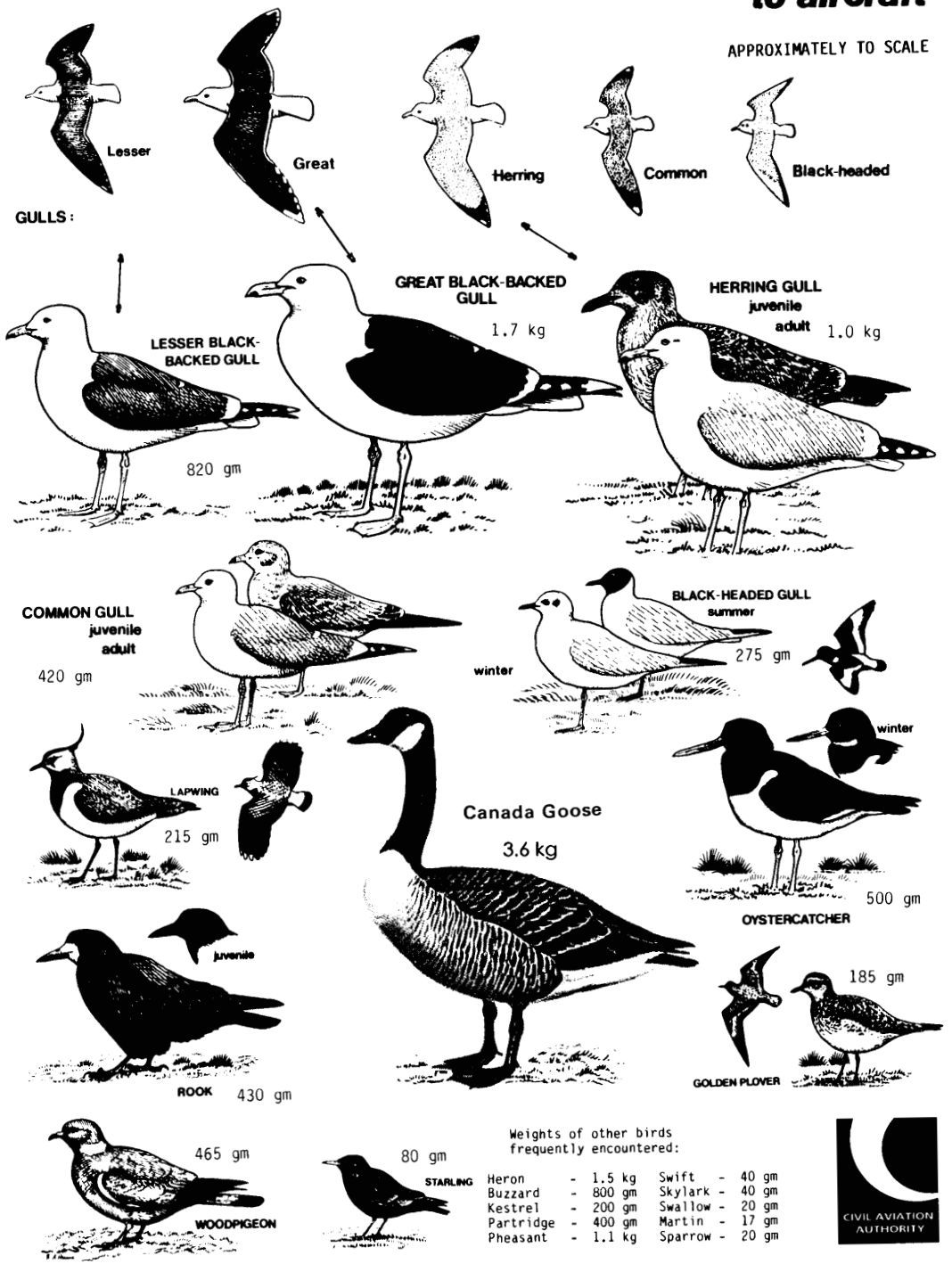
Prepared by the Safety Promotion Section and the Corporate Communications Department of the Civil Aviation Authority.

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



Weights of other birds frequently encountered:

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

CIVIL AVIATION AUTHORITY

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In the interests of flight safety, please try to complete ALL sections.

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 the ANO – see Aeronautical Information Circular on Bird Strikes.

Operator .....

Aircraft Make/Model .....

Engine Make/Model .....

Aircraft Registration .....

Date day ..... month ..... year .....

Local Time .....

dawn ☐ day ☐ dusk ☐ night ☐

Aerodrome Name .....

Runway Used .....

Co-ordinates if En Route .....

Height (agl) ..... ft

Speed (IAS) ..... kt

Phase of Flight

parked	☐	en route	☐
taxi	☐	descent	☐
take-off run	☐	approach	☐
climb	☐	landing roll	☐

Part(s) of Aircraft

	Struck	Damaged* – describe
radome	☐	☐
windshield	☐	☐
nose (excluding above)	☐	☐
engine no. 1	☐	
2	☐	*See reverse*
3	☐	
4	☐	
propeller	☐	☐
wing/rotor	☐	☐
fuselage	☐	☐
landing gear	☐	☐
tail	☐	☐
lights	☐	☐
other (specify)	☐	☐

Effect on Flight

none	☐
aborted take-off	☐
returned	☐
diverted	☐
engine shut down	☐
airframe holed	☐
other (specify)	☐

Sky Condition

no cloud	☐
some cloud	☐
overcast	☐

Precipitation

fog ☐ rain ☐ snow ☐

Bird Species* .....

(or size) *The larger the feather remains, the easier the task of identification, however, even the smallest part of a feather can be useful. If you are NOT absolutely certain of the bird species, please send remains to the address overleaf.

Remains sent: yes ☐ no ☐

Number of Birds

	Seen	Struck
1	☐	☐
2 – 10	☐	☐
11 – 100	☐	☐
more	☐	☐

Pilot Warned of Birds

yes ☐ no ☐

Remarks:

* • describe damage, photographs very welcome
  • injuries to persons
  • other relevant information

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IMPORTANT

Pilots, airport and engineering staff etc: Fold and post, or fax to:
Civil Aviation Authority
Safety Data Dept
Aviation House, Gatwick Airport
West Sussex RH6 0YR
Fax No. (01293) 573972

ATC: Use CAA internal mail or forward to Safety Data Dept

CA 1282
100397

Reporter's:

Name _____

Name of Employer _____

Occupation _____

Contactable at (Tel. & Ext.) _____

Date _____

Fold and Tuck In

Affix Stamp

Civil Aviation Authority
Safety Data Dept
Aviation House
Gatwick Airport
West Sussex RH6 0YR

*Bird remains should be sent to:–

Birdstrike Avoidance Team
MAFF
Central Science Laboratory
Sand Hutton
York YO4 1LW

First Fold

Third Fold

Second Fold

Engine Damage

	1	2	3	4	Comments/Observations
Aircrew Indications:					
fire observed	☐	☐	☐	☐	
fire warning	☐	☐	☐	☐	
vibration	☐	☐	☐	☐	
temperature shift	☐	☐	☐	☐	
noise	☐	☐	☐	☐	
thrust loss (specify estimated %)	☐	☐	☐	☐	
other (specify)	☐	☐	☐	☐	
Aircrew Actions:					
shutdown	☐	☐	☐	☐	
power reduction	☐	☐	☐	☐	
nil or other (specify)	☐	☐	☐	☐	
Maintenance Findings:					
fire uncontained	☐	☐	☐	☐	
Nº. of fan blades replaced	☐	☐	☐	☐	
estimated Nº. of birds struck	☐	☐	☐	☐	
damage, other (specify)	☐	☐	☐	☐	