

WP/8

BIRD STRIKE COMMITTEE EUROPE

MILITARY AIRCRAFT  
BIRDSTRIKE ANALYSIS  
1981

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MILITARY AIRCRAFT BIRDSTRIKE ANALYSIS - 1981

TABL

DUCTION

This is the fourth analysis in the abbreviated format using only Table 3, 'Species', and Tables 7 and 7A, 'Part of Aircraft Struck' and 'Effect of Strike' from the following countries has been used in this analysis:

- a. Royal Danish Air Force (RDAF).
- b. German Air Force (GAF).
- c. Royal Air Force (RAF).
- d. Swedish Air Force (SAF).

SPECIES

Gull species again top the list of birds most frequently implicated in birdstrikes, accounting for 27.1% of the birdstrikes in which the bird was positively identified. Within the Gull species, the Common and Black-headed Gull featured prominently, accounting for 5.1% and 4.8% respectively of the total of identified strikes. Lapwings again take second place with 8.4% of the total but, if Gulls, Martins and Swifts (Hirundinidae/Apodidae Sp) are grouped together, these account for 14.5% of the identified strikes and therefore displace the Lapwing by an appreciable margin. An unusually high number of Buzzards (Buteo Sp) were hit this year, 7.5% compared with previous years (1978, 1.5%; 1979, 4%; 1980, 3.4%). Of the birdstrikes covered in this analysis, the bird involved was identified in just over 30% of the total (cf 1977-80, Av 43% identified).

EFFECTS OF AIRCRAFT STRUCK AND EFFECT

The sudden increase in strikes to a single engine noted in the 1980 analysis (from 9.7% in 1979 to 17.6% in 1980) is again reflected in the figure of 21.2% of the total reported strikes. Fortunately, the proportion of the total damaging strikes sustained by one engine is only 4.2% (cf 1979, 4.2%; 1980, 7.7%). Windscreens were damaged in 19.5% of the total known strikes and were shattered, cracked or seriously laminated in 2.6% of them. One disturbing trend is that, although the numbers of strikes resulting in no damage is reasonably static, the proportion causing structural deformation is creeping steadily upwards, and now stands at 4%.

One aircraft was reported lost during 1981; an RAF Jaguar 2-seat training aircraft sustained a strike with a Black-headed Gull (*Larus rididundus*) which shattered the canopy. Canopy debris was ingested by both engines, effectively destroying them. The 2-man crew ejected with only minor injuries. A similar accident occurred to another 2-seat Jaguar, although this one was not part of the RAF fleet and does not therefore appear in the statistics. Regrettably, in this accident one of the crew members drowned following a successful ejection over the sea. It is interesting to note one of the systems lost by an RAF Jet Provost following a birdstrike was elevator control; the bird had distorted the tailplane structure to the extent that the elevator was jammed. The pilot had to resort to flying the aircraft using elevator trim, flap and power to control pitch; a successful recovery was made.

Gull  
Lapw  
Swift  
Swal  
Comm  
Blac  
Skyl  
Pige  
Buzz  
Pass  
Star  
Buzz  
Hous  
Wood  
Herr  
Crow  
Redw  
Chaf  
Raci  
Kest  
Fiel  
Song  
Linn  
Hood  
Gold  
Mall  
Less  
Yell  
Swal  
Robi  
Mead  
Sand  
Barn  
Kite

TABLE 3 - BIRD SPECIES

1981

COMMON NAME	LATIN NAME	APPROX WEIGHT	CATEGORY	NUMBER OF STRIKES	% BASE ON 454
Gull (Various)	Larus Sp	400-1800	B	64	14.1
Lapwing	Vanellus vanellus	200	B	38	8.4
Swift	Apus apus	40	A	29	6.4
Swallow (Various)	Hirundo/Delichon Sp	20-40	A	25	5.5
Common Gull	Larus canus	400	B	23	5.1
Blackheaded Gull	Larus ridibundus	300	B	22	4.8
Skylark	Alauda arvensis	40	A	20	4.4
Pigeon (Various)	Columbiforme Sp	250-500	B	18	4.0
Buzzard	Buteo buteo	800	B	18	4.0
Passeriformes	-	18-1800	A/B	16	3.5
Starling	Sturnus vulgaris	80	A	16	3.5
Buzzard (Various)	Buteo Sp	1000	B	16	3.5
House Martin	Delichon urbica	20	A	12	2.6
Woodpigeon	Columba palumbus	500	B	12	2.6
Herring Gull	Larus argentatus	1000	B	11	2.4
Crow (Various)	Corvus Sp	500	B	11	2.4
Redwing	Turdus iliacus	60	A	10	2.2
Chaffinch	Fringilla coelebs	25	A	10	2.2
Racing Pigeon	Columba livia var	480	B	10	2.2
Kestrel	Falco tinnunculus	200	B	7	1.5
Fieldfare	Turdus pilaris	100	A	5	1.1
Song Thrush	Turdus philomelus	70	A	4	0.9
Linnet	Carduelis cannabina	30	A	4	0.9
Hooded Crow	Corvus corone	550	B	4	0.9
Golden Plover	Pluvialis apricaria	180	B	4	0.9
Mallard	Anas platyrhynchos	1000	B	3	0.7
Lesser Black-backed Gull	Larus fuscus	850	B	3	0.7
Yellowhammer	Emberiza citrinella	30	A	2	0.4
Swallow	Hirundo rustica	20	A	2	0.4
Robin	Erithacus rubecula	20	A	2	0.4
Meadow Pipit	Anthus pratensis	18	A	2	0.4
Sand Martin	Riparia riparia	13	A	2	0.4
Barnacle Goose	Branta leucopsis	1700	B	2	0.4
Kite	Milvus milvus	1000	B	2	0.4

1981

COMMON NAME	LATIN NAME	APPROX WEIGHT	CATEGORY	NUMBER OF STRIKES	% BASED ON 454
Watercatcher	Haematopus ostralegus	500	B	2	0.4
Starling	Turdus viscivorus	130	B	2	0.4
Field Sparrow	Sturnella neglecta	106	A	1	0.2
Chaffinch	Turdus merula	106	A	1	0.2
Robin	Calidris alpina	50	A	1	0.2
Linnet	Alauda Sp	40	A	1	0.2
Partridge (Various)	Plectrophenax nivalis	35	A	1	0.2
Redwing	Sylvia curruca	20	A	1	0.2
Blackbird	Prunella modularis	20	A	1	0.2
Chipping Sparrow	Carduelis spinus	20	A	1	0.2
Tree Sparrow	Motacilla alba	20	A	1	0.2
Canada Goose	Anas Sp	200-1800	B	1	0.2
Lesser Canada Goose	Branta bernicla	1400	B	1	0.2
Pheasant	Phasianus colchicus	1100	B	1	0.2
Accipitridae	-	1100	B	1	0.2
Red-tailed Duck	Aythya fuligula	750	B	1	0.2
Kinglet	Rissa tridactyla	390	B	1	0.2
Merlin	Falco columbarius	200	B	1	0.2
Hobby	Falco subbuteo	200	B	1	0.2
Sparrowhawk	Accipiter nisus	200	B	1	0.2
Common Snipe	Gallinago gallinago	130	B	1	0.2
White Stork	Ciconia ciconia	3400	C	1	0.2
Eider	Somateria mollissima	2000	C	1	0.2
Unknown	-	-	-	817	-
Total				1271	99.2

## Notes:

- 3.1 Bird weights and Latin names can be obtained from Canadian Field Note, No 51, by G Kaiser, unless there is positive evidence to the contrary, the AVERAGE weight should be assumed.
- 3.2 The bird Categories based on current Civil Airworthiness requirements are:
- CAT A below .11 kg (¼ lb)
  - CAT B .11 kg to 1.81 kg (¼ to 4 lb)
  - CAT C over 1.81 kg to 3.63 kg (4 lb to 8 lb)
  - CAT D over 3.63 kg (8 lb)

3.3 Those birds not positively identified should be tabled as Unknown.

3.4 Large (CAT C or D) birds are often not positively identified, but the Category these are assumed to be in should be stated.

3.5 Percentages should be based on the total of identified birds.

3.6 Table 3 could be repeated restricted to own country only.

## TABLE 7 PART OF AIRCRAFT STRUCK

PART	WEIGHT UNKNOWN	CAT A	CAT B	CAT C & D	TOTAL	% BASED ON 1323
Case (excluding radome and windscreen)	102	9	23	-	134	10.1
Radome	60	4	13	-	77	5.8
Windscreen	194	39	25	-	258	19.5
Fuselage (excluding the above)	145	30	54	-	229	17.3
Engine:-					281	21.2
1 engine struck	171	45	65	-	-	-
2 out of 3 struck	-	-	-	-	4	0.3
2 out of 4 struck	-	-	4	-	-	-
3 out of 4 struck	-	-	-	-	-	-
All struck (on multi-engined aircraft)	3	1	2	-	6	0.5
Wing + Air Intakes	117	18	60	1	196	14.8
Rotor/Propeller	8	-	6	-	14	1.1
Landing Gear	27	9	17	-	53	4.0
Empennage	15	1	6	-	22	1.7
Underwing Stores/Tanks	30	3	16	-	49	3.7
Part Unknown	55	2	19	1	77	-
TOTAL	927	161	310	2	1400	99.9

## NOTES:-

- 7.1 The Total in Table 7 and 7A may be higher than other tables, as one bird can strike several parts.
- 7.2 The percentages should be based on incidents where the part struck is known.
- 7.3 Multiple strikes should be counted as one strike, unless for example both wings or both landing gears are struck, when two incidents should be recorded.

TABLE 7A

EFFECT OF STRIKE

1981

EFFECT	WEIGHT UNKNOWN	CAT A	CAT B	CAT C	CAT D	TOTAL	% BASED ON 1540
Loss of Life/Aircraft			1			1	0.1
Flight Crew Injury							
Major							
Minor							
Slight							
Premature Engine Change:-							
on single engine A/C	15	1	17	-	-	27	1.8
1 on a 2 engine A/C	21	1	14	1	-	37	2.4
1 on a 3 engine A/C	-	-	-	-	-	-	-
1 on a 4 engine A/C	4	-	2	-	-	6	0.4
2 on a 3 engine A/C	-	-	-	-	-	-	-
2 on a 4 engine A/C	-	-	2	-	-	2	0.1
3 on a 4 engine A/C	-	-	-	-	-	-	-
all engines on a multi	5	1	1	-	-	7	0.5
Windscreen Cracked/Broken	23	6	12	-	-	40	2.6
Radome Changed	13	1	4	-	-	20	1.3
Deformed Structure	56	2	3	-	-	61	4.0
Skin Torn	44	5	13	-	-	62	4.0
Skin Dented	94	11	31	-	-	136	8.8
Propeller/Rotor Damaged	2	1	1	-	-	4	0.3
Aircraft System Lost	1	1	4	-	-	6	0.4
Underwing Stores/Tanks damaged	23	1	7	-	-	31	2.0
Miscellaneous	55	2	23	2	-	82	5.3
Nil Damage	745	120	153	-	-	1018	66.1
Unknown	18	5	1	-	-	24	
<b>TOTAL</b>	<b>1121</b>	<b>157</b>	<b>283</b>	<b>3</b>	<b>-</b>	<b>1564</b>	<b>100.1</b>

NOTES:

- 7A.1 Multiple strikes should be counted as one strike, unless for example both wing are damaged, or both windcreens are broken, in which case two incidents should be recorded.
- 7A.2 Definition of injury requiring medical treatment:
  - Major - causing absence of 21 days or over.
  - Minor - causing absence of 7 to 21 days.
  - Slight - injury not in above 2 categories.
- 7A.3 Injuries as a consequence of a strike, eg. ejection injuries should be included
- 7A.4 Aircraft system lost includes for example electrical, hydraulic, brake, air conditioning, de-icing.