FINNISH AIR FORCE BIRD STRIKE SUMMARY 1981- 1989

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Introduction

The Finnish Air Force recorded 199 bird strikes during 1981 - 1989. These strikes caused neither aircraft losses nor injuries, but 30 strikes resulted in damages of various degree to aircraft.

During the period covered by this summary, annual number of bird strikes has varied between 10 and 30, the figure approaching 30 around the mid-decade. Although the increase in the number of strikes has been modest during the past few years, damages caused by strikes have increased markedly, due to fast low-level flights which have increased significantly after the introduction into service of Hawk trainer.

1 Bird Strikes by Impact Location

Table 1 shows the percentage of bird strikes by various parts of aircraft. Almost every third bird that strikes an aircraft hits the windscreen or cockpit area, while in 85% of the strikes wings and other frontal surfaces are affected; yet no windscreen has been completely destroyed.

TABLE 1 Bird strikes by impact location 1981–1989

Impact location	Percent of total
Windscreen/canopy	31.1
[illegible] wing [illegible] air intake	25.2
Wing	17.9
Radome/nose	10.5
Fuselage	5.0
Landing gear, external tanks, pods	7.8
Other	2.5

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6 Birds In

2 Bird Strikes by Aircraft

Figure 1 shows the percentage of bird strikes by aircratf type. Trainers were involved in 60 % of the strikes; for example, during 1989 the number of strikes suffered by trainers was three-fold per each flying hour when compared with fihgters. This is partly explained by the fact that trainers fly more at low altitudes, ie. at the same height with birds.

3 Bird Strikes by Phase of Flight

Figure 2 shows the percentage of bird strikes by phase of fligth. A difference from civil flight operations is evident: most (57,5%) of the strikes suffered by Air Force aircraft occur during cruise outside the vicinity of aerodromes. This fact is related to the nature of operations, ie. military aircraft fly relatively low and fast. Just impacts at high speeds have the most devastating effects.

4 Bird Strikes by Altitude

Figure 3 shows the percentage of bird strikes by altitude. Two thirds of all strikes occur at below 500 ft (150 m), this figure includes strikes during take-off, approach and landing at the foregoing altitude. Of the strikes that occur below 500 ft (150 m) 45% take place in the vicinity of aerodromes and 55% during cruise. The highest altitude at which a bird has been encountered is 3,600 ft (1,100 m).

5 Times of Day and Year when Bird Strikes Occur

Figure 4 shows the percentage of bird strikes by month. More than two thirds of the strikes occur during summer months (ie. June, July and August), the peak month being August, in which one third of all strikes are recorded. Only a few strikes are recorded in winter.

Only 2% of strikes occur at night, for two reasons: relatively few low-level flights are made in the dark, and the number of birds flying at operating altitudes at night is small compared with daylight hours.

6 Birds Involved in Strikes

The most common birds involved in strikes are swallows, gulls and lapwings. Of these, gulls have been the most troublesome, owing to their relatively great size. Gulls are met in the vicinity of bodies of water, because low-level flights are frequently directed into these rather sparsely inhabited areas, with no respect of the bird strike hazard. Also, individual strikes by birds belonging to more than ten other species have been recorded.

7 Damages Caused by Bird Strikes

In approximately 30 % of the bird strikes, the power plant or air intake has sustained damages and in some cases strikes have entailed repairs of engines or engine components (modules). The most severe damages, however, have been various internal and external penetrations of the air intake -in one case, a frame between the air intake and fuselage was ripped. Damages always result in significant repair and other costs, too. Other impacts with frontal surfaces and aircraft have caused windscreen replacements and dents of various kinds in the nose, fuselage or wings.

Conclusion

Finnish Air Force bird strike summary in 1981 -1989 should be deemed satisfactory, because strikes have not caused any fatalities or aircraft losses. None-theless, the most worrying trend that is evident in the summary is the fact that the severity of damages is growing, due to increases in low-level flights and flying speeds. The year 1989, in particular, highlighted the growing probability of having an aircraft accident caused by a bird strike; an accident of this kind is almost in the offing, unless the trend is reversed.

As early as late 1989 and early 1990 the Finnish Air Force Headquarters has issued directives aimed at reducing the number of bird strikes and ensuing damages. To this same end, the Finnih Air Force is also continuing co-operation with the National Board of Aviation of Finland.

FIGURE 1

BIRD STRIKES BY AIRCRAFT TYPE 1981 – 1989

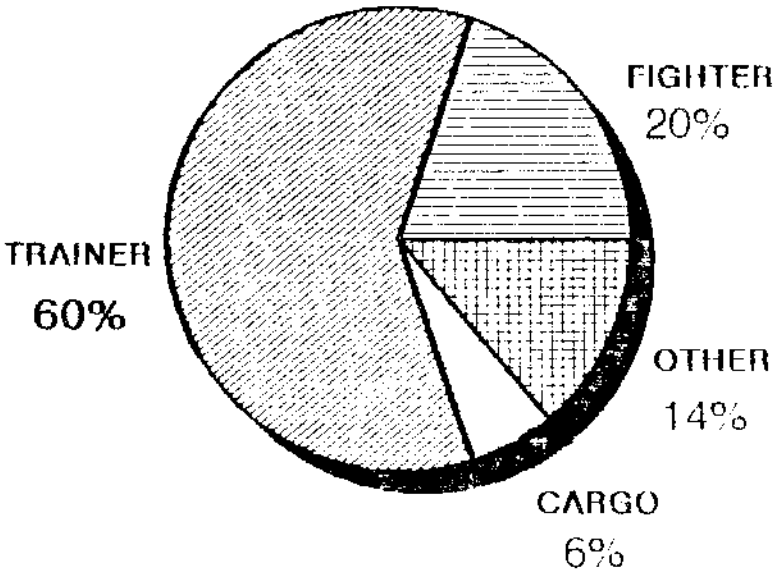


FIGURE 2

BIRD STRIKES BY PHASE OF FLIGHT 1981 – 1989

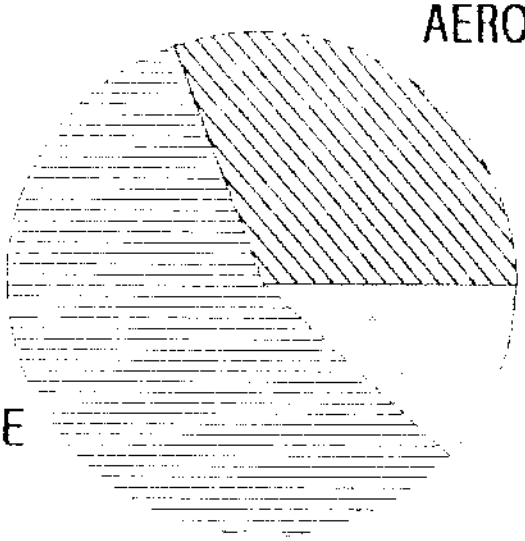


FIGURE 3

BIRD STRIKES BY ALTITUDE

1981 – 1989

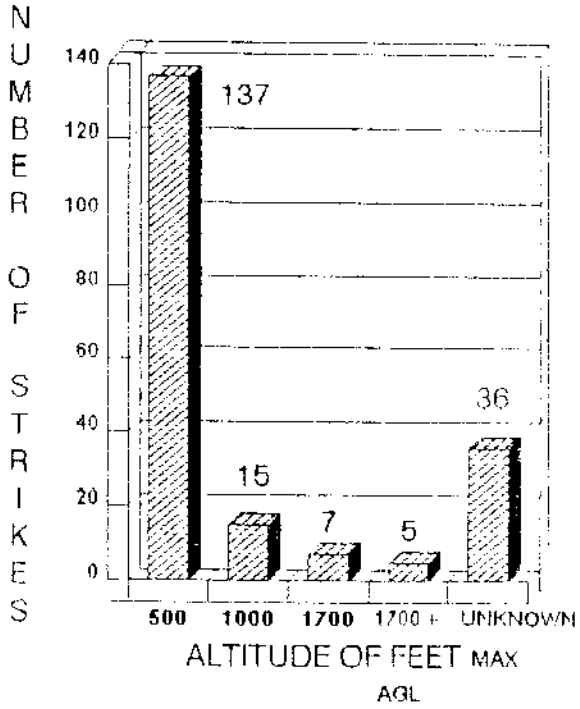
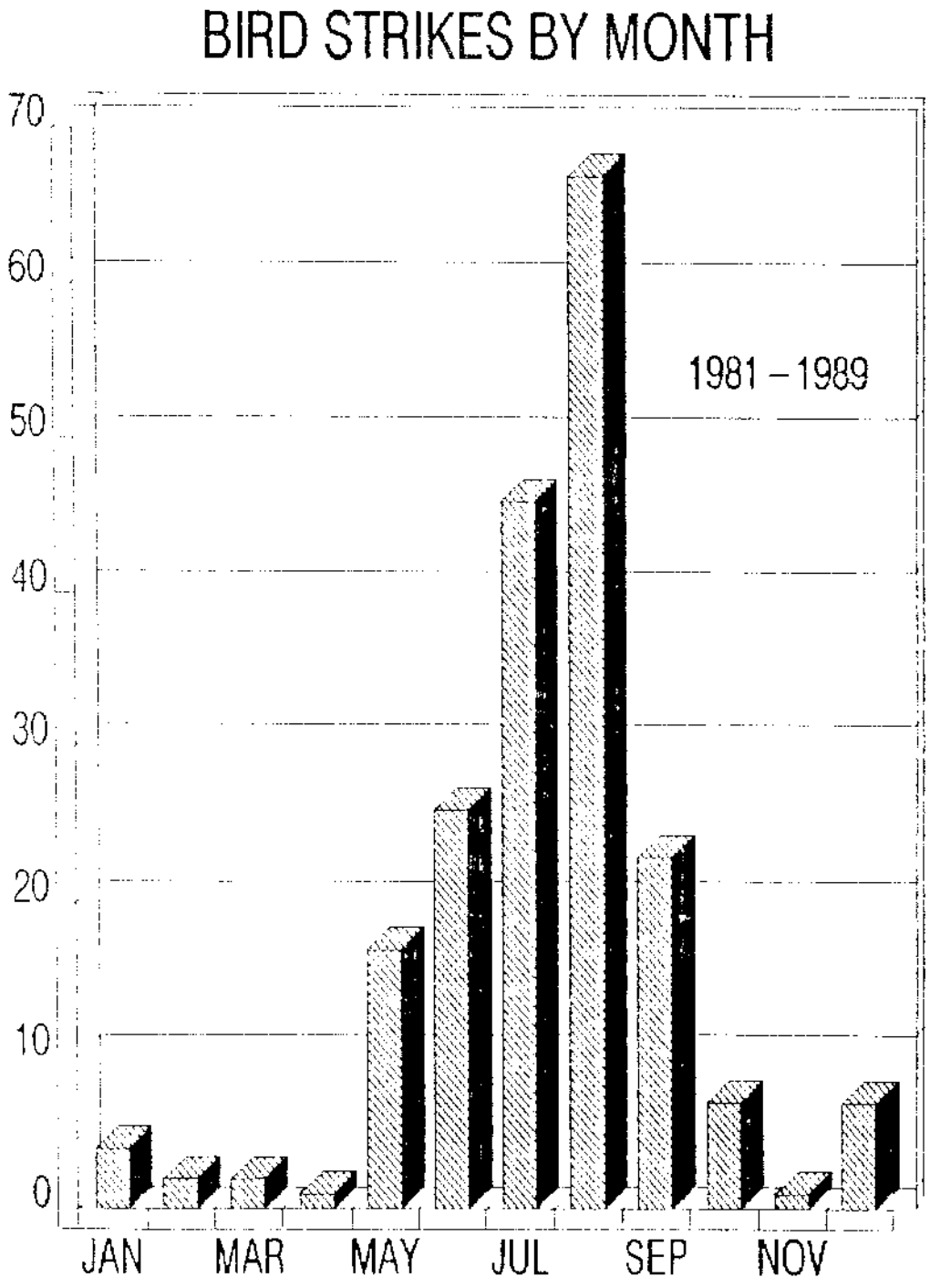


FIGURE 4


BIRD STRIKES BY MONTH
70
60
50
40
30
20
10
0
1981 – 1989
JAN
MAR
MAY
JUL
SEP
NOV