Bird Strikes at Israel Ben-Gurion Airport 1982-1986

(Shalom Suaretz, Ilana, Agat, Eyal, Shy, Israel)

BSCE 19/WP 29
Madrid, 23-28 May 1988

BIRD STRIKES AT ISRAEL BEN-GURION AIRPORT 1982-1986

SHALOM SUARETZ, ILANA AGAT, EYAL SHY

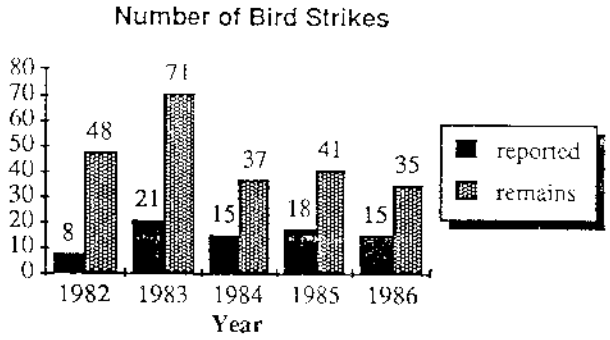
Bird Strike Prevention Unit, Nature Reserves Authority, Ben-Gurion Airport, P.O. Box 126, Israel 70100

Introduction

This report includes data about bird strikes at Ben-Gurion International Airport in Israel during a five year period. We will present the data according the various factors that may influence the number of bird strikes, and according to the effect of bird strikes on normal airplane flights. This presentation does not include statistical tests, as in many of the cases sample size are too small, but rather show trends.

Figure 1 presents the number of bird strikes in a five year period. We divided the data into two types. "Reported strikes" are those reported by pilots, engineers, or others. "Remains" are those strikes in which bird remains are found on the runways, but no other data about the strike is available. During 1982-1986, 77 reported strikes, and 232 cases in which bird remains were found, occurred at Ben-Gurion International Airport (BGA). The number of reported strikes is much smaller than the number of bird remains found.

Figure 1

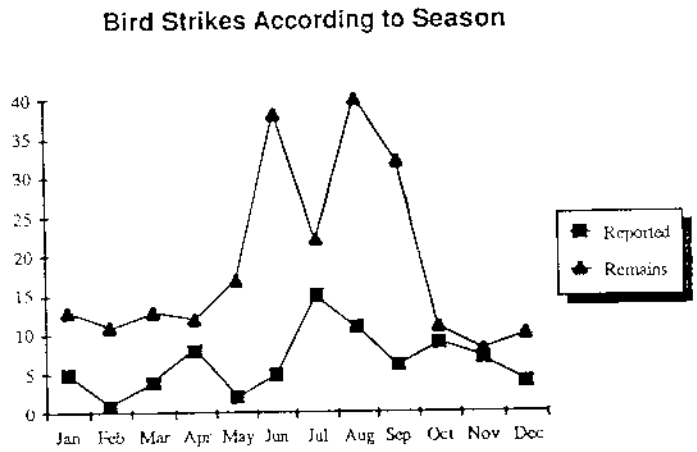


In this Figure, the number of reported strikes in the first year (1982) is much smaller than the number of strikes in each of the following years. This might be due to no reports on some strikes (notice that the number of cases in which bird remains were found that year are high).

Seasonal changes in bird strikes

In the following Figure 2 the changes in the number of strikes during the year are shown for the five year period.

Figure 2



The graph shows that the three summer months, June, July, and August, are the most problematic with regard to bird strikes. About 40% of the reported strikes occurred and 43% of the bird remains were found during this period. The least number of strikes occurred during the winter period (13% of reported strikes, and 17% of bird remains). To understand this pattern it is important to know which birds take part in collision with airplanes.

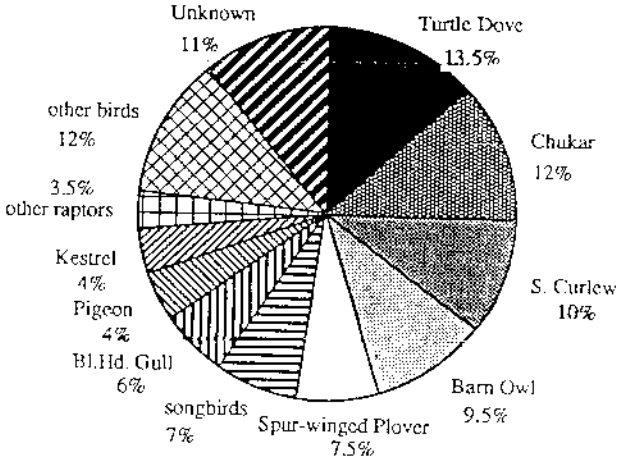
The bird species that collide with airplanes

Forty-two species of birds collided with airplanes during the five year period. However, in many of them, this occurred only once or twice. The following pie chart represents the percentage of strikes according to bird species. According to the chart, The Turtle Dove is the main species involved in bird strikes. This is due to one particular autumn (1983) in which many of them hit airplanes, during migration through Israel.

The species Chukar, Barn Owl, and Spur-winged Plover are found in Israel all year round, and with the Stone Curlew nest close to or within Ben-Gurion Airport. Their presence at the airport during the breeding season with young may well explain the highest number of bird strikes during the spring and summer. The higher number of day flights during the summer may be another factor which contributes to this high number of strikes. Songbirds were the cause of 7% of the strikes. However, this figure is low relatively to the high number of songbirds found in the airport area, especially during migration seasons.

Figure 3

Bird Strikes According to Species



Black-headed Gulls winter in Israel, and thousands of them are found in the airport area on a big garbage dump. However, only four strikes occurred above the garbage dump during the five year period, and in other 11 cases gull remains were found.

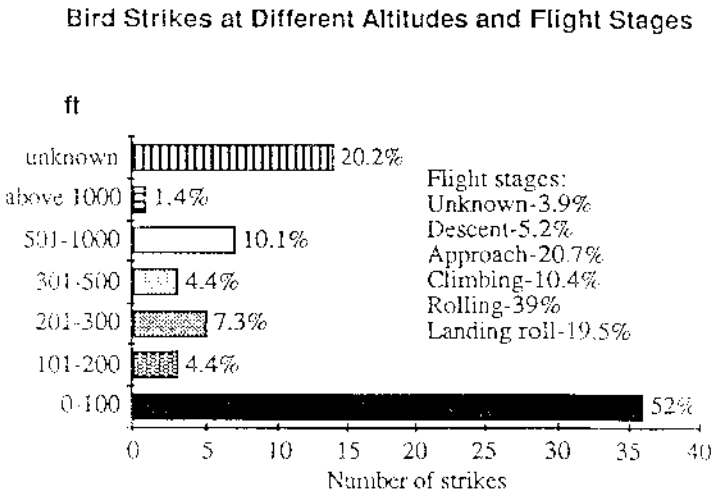
Distribution of bird strikes during the day

The majority of bird strikes occurred during the day (53% from sunrise to sunset). Another 15.6% of the strikes happened during the night. Stone Curlews and Barn Owls are active during the night and may be the main cause of the strikes. A much lower percentage of strikes occurred at dawn and at dusk (3.9% in each), in spite of the fact that birds are very active during dawn and dusk, especially during the hot season. However, this distribution of strikes may reflect the relative high number of flights during the day.

Altitude and flight stage during bird strikes

The next figure describes at what altitude and flight stages bird strikes occurred. As seen in the figure, more than half of the strikes occurred at less than 100 ft, and 64% at 300 ft and less. In analyzing the distribution of strikes according to flight stage, 60% of them occurred during rolling and landing roll. Therefore, bird strikes at BGA occur mainly at very low altitudes.

Figure 4



The effect of bird strikes on the flight, and damage caused by them to airplanes

The cost of bird strikes is measured by the influence of the strike on the schedule of the flight, by damage caused to airplanes, and sometimes to human life. Fortunately, only the first two types occurred in BGA during 1982-1986. There was no influence of bird strikes on the flight in 86% of the cases. The airplane stopped rolling in 9% and landed in 5% of the bird strikes.

In most of the flights (75%) no damage was caused to the airplane. However, in 9% of the strikes serious damage was reported, and in 4% medium damage, and in 12% light damage was noticed. We do not have data on the damage caused in terms of money. The type of damage was reported to us by people who examined the airplane after the strike.

The last figure in our report shows the effect of bird strikes on various part of the airplane.

Figure 5

The chart shows that t
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Conclusion

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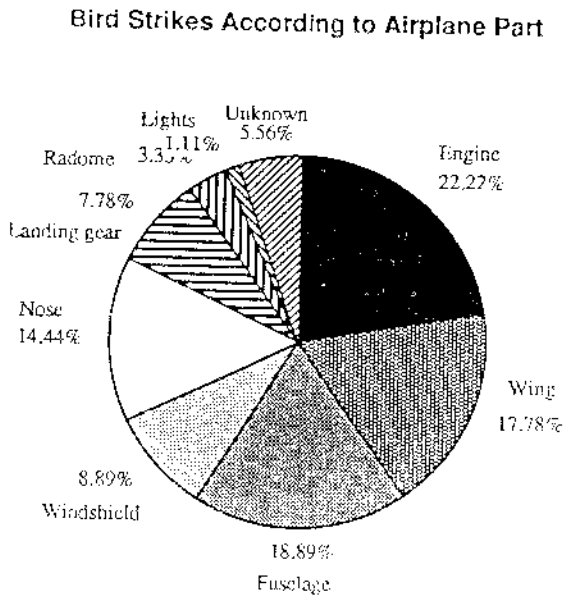
type of birds involved
strikes.

Figure 5



The chart shows that the main parts to which birds cause damage are the engine,fuselage, wing and nose in this order of magnitude.

Conclusion

We presented here some data about bird strikes that occurred at the Ben-Gurion International Airport in Israel during a period of five years. We have some ideas about the factors that might be involved in these bird strikes. It is more difficult to draw operative conclusions from this data. The trends that are seen in some of the figures should be watched carefully and compared to other factors that might be involved. For example, we hope to be able to distinguish in the future between the contribution of the type of birds involved, and that of the number of flights to the seasonal changes in bird strikes.