

**FLIGHT SAFETY, INTERNET AND EDUCATION - A LEADING TOOL
FOR GLOBAL AWARENESS**

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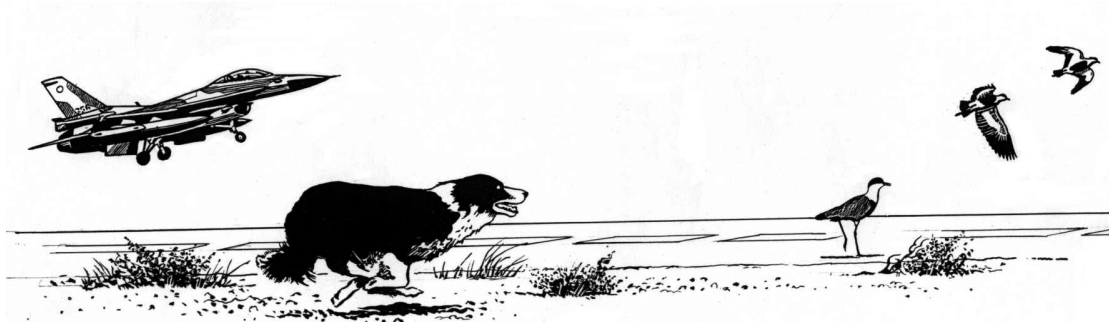
Abstract

The frequency of civil and military flight is expected to increase dramatically during the new millennium. In addition, air forces cooperate and perform training and missions together in different countries and even continents. Consequently, the transfer of knowledge regarding birds and flight safety must be developed between countries to broaden education and public awareness. Without a doubt, the Internet will become the most significant vehicle to achieve this goal.

This article will discuss how during the last two decades, an education and public awareness campaign that accompanied all the activities within and outside the IAF played a significant role in our project, which significantly decreased the air collisions in the Israeli Air Force. Regional activity in the Middle East is being developed between the Turkish, Hellenic, Royal Jordanian, Israel and United States Air Forces, some of which were enemies until recently, to establish regionally coordinated bird and flight safety activities. This program can be a model for regional cooperation around the globe.

The "Migrating Birds Know No Boundaries" website (www.birds.org.il) was developed and has proved to be a very successful tool for regional research and education. The site is being expanded to include the issue of flight safety. We propose that the IBSC adopts the Internet as the main tool for global exchange of information, education and awareness.

Key Words: Middle East, Satellite, Radar, Migration, Internet



Introduction

In order to drastically decrease the conflicts between birds and flight safety, a wide range of activities that compliment one another should be implemented: basic research, application of the results in the field, research follow-up, multi-year examination, creation of a database and its analysis, development of an education and public awareness framework for all the groups. Most of the civilian and military organizations dealing with the bird and flight safety conflict focus on specific issues such as aerodrome management, low navigation flight, remote sensing, etc., while generally overlooking the overall concept. We believe that education and awareness is crucial in reducing the bird hazard to flight safety, however, until recently the subject has been neglected and only in the last few years, the Public Relations working group was established. In this paper, we will describe our success with the Israeli Air Force (IAF), where public relations and awareness programs played a leading role. These efforts are being expanded regionally in the Middle East. The Internet is an essential tool for transferring knowledge in Israel and the Middle East. We are presenting a concept where the Internet will become the platform for global information exchange, education and awareness, research and its application, in a near real-time system. We propose that the IBSC will lead the change in embracing what the information age has to offer. Unfortunately, the field of birds and flight safety is far behind the information technology front. For example, "Internet" is not even one of the IBSC paper keywords.

The Israel Air Force Bird and Flight Safety Program

Eighteen years ago, in 1983, we approached the IAF regarding bird hazards and learned that migratory birds caused 74% of the severe collisions, mainly because of Israel's unique location at a junction of three continents. The IAF in cooperation with the Society for the Protection of Nature in Israel (SPNI) and Tel Aviv University started a long-term research program, which was part of the first author's Doctoral Thesis, the results were presented at several

IBSC meetings (Leshem 1990, 1992, Leshem & Yom-Tov 1996, 1998). From 1984, the research results were immediately integrated into the IAF flight regulations. The changes in flight regulations led to a reduction of 76% in bird strikes (Figure 1), saving the IAF an estimated 480 million US dollars, between 1984-1999.

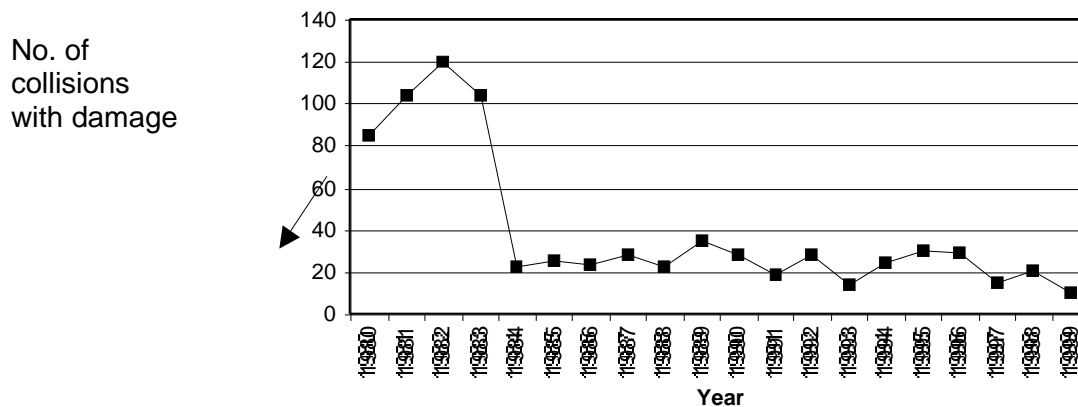


Figure 1: The number of air collisions with damage during the last two decades (1980-1999), before and after applying the research results (in 1984).

The program was extremely successful in the IAF, in part due to our concept of incorporating education and awareness with the applied research from the beginning. Although the contract and funding with the IAF only specified research, we initiated an education and awareness program as an integral part of the research and its application.

A. Education and Awareness Program in the IAF:

- 1. Lectures and presentations** – Presentations included a lecture, slides and videos, which were presented to all levels of the IAF from each air squadron (air crew and technical staff) to the board and commander of the air force. Once a year a different IAF base hosts a seminar on birds and flight safety issues.
- 2. Publications** – A wide variety of publications, including a new poster every year, car stickers, explanatory leaflets, etc., are published regularly in the IAF, in cooperation with the SPNI and Tel Aviv University. It is essential to produce publications that are both original and of high quality, in order to keep the audience interested (see color plates for examples). These publications received a great deal of interest and can be seen all over the air force.

3. **Films and videos** – In cooperation with the IAF flight safety division, we produced an enormous number of short videos including original VTR's of bird collisions and near collisions from the aircraft, as well as top flight performances of birds. These videos always have an educational message focused on flight safety and it is mandatory for pilots to watch these movies.
4. **Traveling Exhibits** – Once in three to five years an exhibit was produced and shown at each of the air bases, followed by lectures and other activities with the IAF staff.
5. **Guided Tours** – Most of the aircrew were taken to the field to teach and interest them in migrating and nesting birds.
6. **Documentation and database development** – The IAF has a database including only the technical information on bird strikes, without any organized system to store and document other essential information on the bird strikes such as pictures of the damage, VTR's, interviews with the pilots involved in the air collisions, media clips and information on the birds involved. We initiated and are presently developing a documentation system for the IAF, to create a more complete bird strike database.
7. **Feather remains** - In addition to feather remains identification, which we initiated in 1992, we developed a campaign to improve awareness on the issue (Shamoun-Baranes 1998). It quickly became clear that there is a significant difference in the collection and reporting efforts of different bases, reflecting their awareness and involvement in the program (figure 2). Unfortunately, the IAF is still far behind the Royal Netherlands Air Force in bird remains collection.

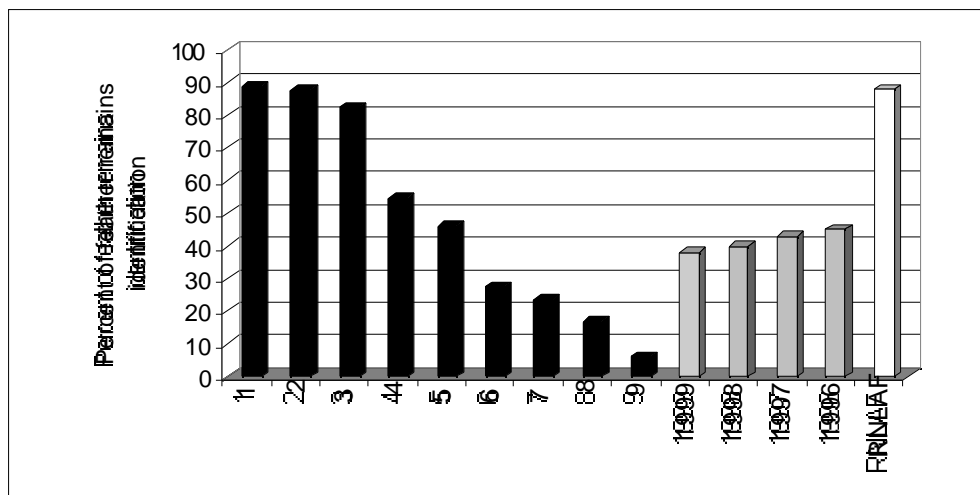


Figure 2: Comparison of feather remains collection between different IAF bases in 1998 and annual IAF feather remains collection effort from 1996-1999.

B. Public Education and Awareness Program

Although the IAF staff was our main target audience, our program covered a large and varied audience outside of the IAF. The aim of this approach was to expose the Israeli nation to the subject, in order to teach them about our work with the IAF. Public support of the issue could in turn, affect decision makers in the IAF. To achieve this goal we developed the following activities:

- 1. Media** – The subject was intensively published in all forms of media, which was much more successful than we expected. The combination of saving lives of both pilots and birds, saving the national budget millions of dollars, and the fascination with migration, proved to be a winning formula, spurring thousands of national and international articles on the subject throughout the years.
- 2. Involving politicians and decision makers** – Involving politicians and decision makers in the subject has a significant impact on public and military awareness. Our constant efforts to involve such people in our project over the years have been worthwhile. Following are several examples: President Ezer Weizman, a former Commander of the IAF, always agreed to participate in events, Shimon Peres, a former Prime Minister of Israel, agreed to act as the Chairman of our regional activities in the Middle East. Her Majesty Queen Noor of Jordan, the President of BirdLife International, was approached regarding involvement in these issues. The Speaker of the Knesset (Israel's parliament) and the new Commander of the IAF inaugurated one of the exhibits displayed in the Knesset.
- 3. Publications: "Flying with the Birds"** - A 30 minute commercial film "Flying with the birds" was produced in 1987 and was shown in 32. The book "Flying with the Birds" was published in album format, describing the project with the IAF and its success, in four Hebrew editions and one English edition. The IAF chose the book as an official gift to their guests.

C. Using Border Collies to chase birds as a test case:

In May 1999 at the joint BSC USA/Canada Meeting in Vancouver, we were impressed by the performance of border collies on aerodromes led by Dr. Nicholas Carter. We recommended implementing this original system in the IAF. In order to convince the IAF to adopt the technique, we invited Dr. Carter with his dog to Israel for five days. His visit included a performance with dog at three of the largest air bases. Rather than simply presenting the ability of the dog and his trainer we devised a campaign in and out of the IAF:

1. Information on the technique was downloaded from the Internet from Carter's website (<http://birdstrike.bcrescue.org>) and presented in advance to all the IAF decision makers.
2. We brought the dog and his trainer to the weekly IAF board meeting with the Commander of the IAF and his generals. (This was the first time a dog was ever invited to the board meeting).
3. Tel Aviv University and the IAF held a seminar to interest and involve the

organizations working with dogs in Israel (blind assistant dogs, military and security dogs, pets owners, etc.). 4. The media was invited to all these events and the story received a great deal of positive publicity (5 TV programs, 20 newspaper articles and many radio programs). This amount of exposure helped persuade the IAF to accept the new idea.

Cooperation in the Middle East as a Regional Model

During the last decade, the political situation in the Middle East has been changing significantly. We believe that the issue of birds and flight safety can play a leading role in the peace process. Migrating birds know no political boundaries and can be a vehicle to help countries join forces and develop a real time warning system in the Middle East. In the last decade we followed different species of migrating birds with transmitters accepted by satellites and learned that some of the birds cross several countries in the Middle East in one day. With this information, we developed a concept presented to the Turkish, Hellenic, Royal Jordanian and US Air Forces to develop a regional system designed to warn each other about the movement of migrating birds in almost real time. Only the Egyptian Air Force refused to join this effort. This system could be based on data from a network of radars along the migration routes, use of the Internet to access the satellite and radar data in real time and incorporating this and other information into a GIS-based Bird Avoidance Model (Shamoun-Baranes 1999). In addition, we proposed to develop a regional working group in which air force and academic representatives from each country will participate to exchange data and experience in the different fields of bird and flight safety, such as feather remains identification, aerodromes etc. Following several meetings with regional air forces, the decision was made to hold an international seminar on birds and flight safety in the Middle East, which was conducted in Israel in April 1999. Leading experts were invited to the seminar to present their research and how they were applied (Leshem et. al. 1999). The Royal Jordanian, Turkish and Hellenic Air forces were exposed to these issues. The seminar provided a new platform for regional cooperation. Various publications such as telephone cards, posters, etc., were produced for the seminar to increase its publicity and initiate the momentum for cooperation by promoting the issue with the air forces, the public and decision makers.

The Internet – today’s tool for data exchange and analysis, education and awareness.

Within the framework of the research of satellite tracking of migration, a website was developed, www.birds.org.il, in order to enable the IAF, students and the general public to track, in real-time, storks, pelicans, vultures, eagles and cranes. The website became a great success in Israel and was expanded to include Palestinians and Jordanians. Recently, the RSPB in England and BirdLife International, decided to expand the project, which began in the Middle East, to a global website. This site includes a broad range of subjects related to birds, part of which is devoted to flight safety.

The authors believe that the Internet is an excellent tool to improve flight safety around the world through a wide range of activities. Presently, different air forces and civilian authorities, as well as leading organizations (such as ICAO, IBSC) have each developed their own websites independently. We feel that there is a lack of coordination and overall strategy as to what type of information should be available on the Internet to improve flight safety, because each organization focuses on their own field. The authors will perform a demonstration of their website during the oral presentation and would like to propose several issues for development through the central IBSC website (www.int-birdstrike.com) with links to all other relevant sites.

1. Bird Strike Database

Presently, several large databases of bird strikes have been developed such as the EURBASE maintained by the RNLAf, including data 17 air forces, with over 35,000 records (Dekker 1998), ICAO has collected 19 years of civilian data bird strike information system – IBIS (Pinos 1996), as well as private databases (Thorpe 1994, Richardson 1996). Compilation of this data and its availability to interested parties is essential for proper bird strike analysis, particularly when both civil and military aircraft often cross international borders (Leshem et. al. 1998). Though some of this data has security limitations, a more limited database that can be accessed by the general public can be designed and made available through the Internet.

2. Demonstration of test cases

It is proposed to provide full documentation of approximately 100 civilian and 100 severe military bird strikes, including the bird strike investigation report, set of photographs, interview with the pilot and others involved in the event, media coverage of the event (newspaper, TV, etc.) and relevant technical details of the event. This can be a crucial tool for educators, and everyone involved in flight safety for increasing awareness and affecting decision makers.

3. Documentation of birds and flight safety references

- All the articles from all the BSCE, IBSC and BSC USA/CANADA meetings as well as other conferences on flight safety and birds, should be made available for downloading. This is important, as proceedings from these meetings are not always available or easily accessed, particularly by parties not yet involved in these forums.
- A reference list of all papers available should also be included (Short 1996).
- A database of photographs of civilian and military bird strikes.
- A database of all films, videos and media reports available on the subject.

4. Real-time bird strike information

One of the main attractions to the Internet is the wealth of constantly changing information available. From our experience with the migrating birds website, real time information is the most powerful tool of the Internet, keeping the users constantly interested in the website. It is crucial that users of this website will be able to learn about birds strikes almost as soon as they happen. We propose that part of the site be updated by users (such as a bulletin board for members only) who can provide a report of the bird strike, including text, images and video when available.

5. Biological information

Hundreds, if not thousands, of sites exist on the Internet providing invaluable biological information which can be used by people involved in birds and flight safety, such as: satellite tracking of bird movements in real time, nesting information, bird ringing data, ground survey data, radar data (Kelly et. al. 1999), etc. It is proposed to create a reference list including links to all the sites as well as guidelines as to how the data available can be used in near real-time or integrated into Bird Avoidance Models (Defusco 1999, Shamoun-Baranes 1999).

6. Anecdotes

Intriguing and unusual stories and anecdotes should be concentrated together for easy access, such as unbelievable collisions, for example at high altitudes or extreme situations, "world records", etc. This kind of information can help captivate any audience and make the site more attractive.

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