

**MANDATORY REPORTING OF BIRD STRIKES IN EUROPE**  
**Who will report what to who**

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**Abstract**

Much of the present knowledge of bird strikes is based on anecdotal descriptions of those cases that – because of material or personal consequences- have drawn attention. Databases typically contain only a limited proportion of the real number of strikes that occurred. This partly is related to the fact that a firm and generally accepted definition of a bird strike is still lacking. Furthermore, bird strikes are often described incompletely. Bird strike databases therefore have only limited use and analyses need the eye of an expert in order to determine their value. Much of these shortcomings are thought to be connected to the fact that reporting is voluntary. During the 26th IBSC meeting Eschenfelder –as ALPA’s representative- stated that the time has come for mandatory reporting for civil aviation. He suggests that internet reporting infrastructures already exists in some countries or that existing websites easily can be modified to report bird strikes.

This paper gives a short overview of reporting standards in military aviation, in which people are already used to detailed reporting on all aspects of flights. Experience with the European Military Bird Strike Database has learned that despite the best intention of nations the amalgamation of a set of different databases leads to loss of information. It is therefore suggested that mandatory reporting in Europe should not be national but European and structured around a uniform system. Such a system should allow accidents as well as incidents, should be able to process systematical as well as anecdotal information but should NOT contain information referring to personal liability such as names and formal legal statements. The custodian of such a European Database should preferably not be allocated to one of the member states but to an independent body.

**Key words:** Database, Reporting, Europe.

## 1. Introduction

In the search for measurements against the adverse effects of bird strikes it is always recognised that detailed information on the occurrences is of great importance. Most appealing to the imagination is the anecdotal, descriptive information of the circumstances under which serious bird strikes or bird strike related accidents occurred. John Thorpe has collected this kind of information for more than 30 years for civil aviation. From 1974 onwards he regularly updated his first list of "*Reportable accidents caused by bird strike, ingestion World Wide 1972-1973*" (Thorpe 1974). John Richardson first published his "*Serious birdstrike-related accidents to military aircraft of ten countries: preliminary analysis of circumstances*". In 1994 (Richardson 1994). Both authors are still active in this field and are presenting an update of their documentation during this meeting (Thorpe, 2005; Richardson 2005).

In addition to qualitative information, as early as the 19-sixties, reporting schemes for bird strikes were set up in order to obtain quantitative information on bird strikes in both civil and military aviation. This resulted in local (for only one airfield) or national databases. For civil aviation, in 1979, ICAO requested to report all bird strikes to their "*ICAO Bird Strike Information System*" (IBIS). This database relies on the voluntary reporting of national Aviation Authorities. Also the then BSCE, and particularly John Thorpe as Chairman of the Statistics Working Group, has since the early 1970's repeatedly put enormous effort in gathering data. Since 1979 summarised military statistics from a varying number of European Air Forces were also joined together and analysed but in most years only four Air Forces submitted usable data (Becker, 1988). This changed from 1990 onwards when the European Military Bird Strike Database has been successful in bringing together information from most European Air Forces (Dekker & Buurma, 1990, 1992; Dekker & van Gasteren, 2005). For civil aviation the ICAO system IBIS still exists but, despite large efforts, the collection of data has always been the subject of fierce discussions. Fear for benchmarking probably being the driving force behind those discussions.

Recently, the need for good quantitative information on bird strikes is once again emphasised. Eschenfelder, as spokesman of the International Federation of Air Line Pilots Associations (IFALPA) stated that not only his organisation but already in 1999 the US National Transportation Safety Board (NTSB) and in 2002 the Australian Transportation Safety Board (ATSB) made a plea for mandatory reporting of bird strikes (Eschenfelder, 2003). In the recent update (23-11-2003) of ICAO Annex 14 the article on reporting of bird strikes is upgraded. It now states that *the bird strike hazard on, or in the vicinity of, an aerodrome shall be assessed through the establishment of a national procedure for recording and reporting bird strikes to aircraft*.

In Europe, the EU in 2003 recognised that increasing air traffic without safety improvements will lead to an increase of accidents and therefore more knowledge is needed to improve flight safety. This made the EU produce a directive on mandatory reporting of all flight safety occurrences, including damaging bird strikes, to be implemented before 4 July 2005 (Anonymous, 2003).

With mandatory reporting imminent (EU) and still far off in other parts of the world (USA), attention is needed for implementation. This paper deals with the array of pitfalls that is inextricably bound up with bird strike databases in general but even more so with blending together data from different sources. Furthermore, a plea is made for the establishments of a joined European civil bird strike database.

## 2. Reporting bird strikes: why it is important and how to organise it.

The need for complete, reliable and detailed bird strike statistics has been emphasised manifold (Transport Canada 2001; Eschenfelder 2003; FAA 2004). Bird strike statistics are the main source of information for three processes.

Scientific. Using scientific techniques on bird strike databases will help understand the problem and point a way forward to new approaches with increased flight safety in the future.

Educational. Bird strike databases are of value when educating both new workers in the field and the general public using information from the past.

Quality assurance. Ultimately, bird strikes are the currency with which the effectiveness of preventive measures is settled. This applies to all aspects of the bird strike problem: improved impact resistance of aircraft, wildlife policy of airfields (and their surrounding) and operational procedures of airliners.

All bird strikes, regardless of their material or operational consequences are of equal statistical significance. Furthermore, taking into account the fact that against each accident there are multiple incidents, aviation industry could –and should- be eager to collect information on all bird strikes. This would enable them to learn in an early stage, before most accidents do occur.

There are a number of parties involved in national databases. These parties sometimes do have conflicting interests in their mutual obligation to report bird strikes. The relations are sketched in figure 1. For the simple reason that the civil aviation authorities do play a double role (condensation point for information and authority that supervises all other parties) the **relations are contaminated and dominated by juridical arguments**. This means that there is a tendency for national databases to be biased in such a way that liability is excluded. This in turn means that the existing databases do contribute only in a limited way to the scientific, educational and quality assurance goals. If mandatory reporting is to be successful it has to be organised in a different, non punitive way.

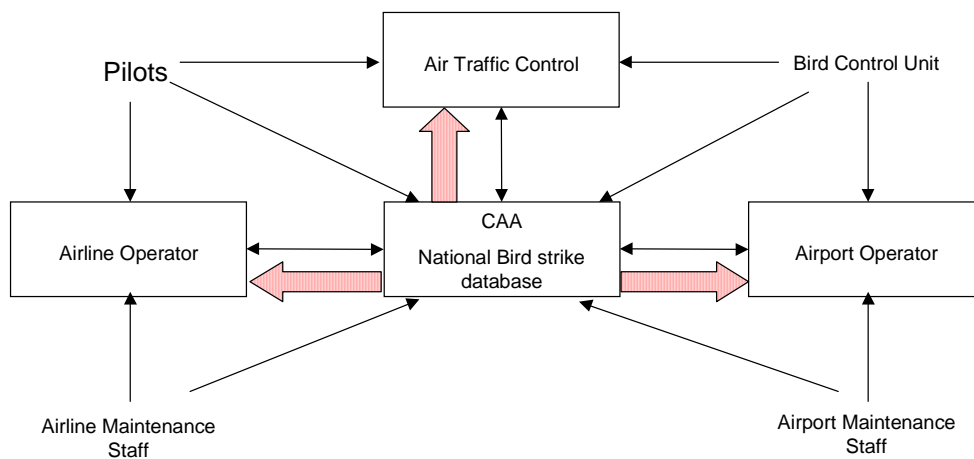


Figure 1: Parties involved in national bird strike databases, including their relations. Small arrows indicating bird strike information flow, large shaded arrows indicating supervision. (Adapted from Transport Canada 2001)

This could be realised by unlinking the national bird strike databases from the supervising authority as is sketched in figure 2. If the Aviation Industry self-organises the non-punitive reporting of all bird strikes to their database the emphasis will change from juridical to scientific and educational. Aviation Industry then can use the information contained in the database for their company policy concerning bird strike prevention. Reporting to Civil Aviation Authority then can be realised by submitting from the Aviation Industry Bird Strike Database those bird strikes that meet the criteria set by CAA. Unjustified filtering in the reporting to CAA can easily be prevented by enabling staff (pilots, airline and airport maintenance staff and bird control units) to report direct to the CAA as well.

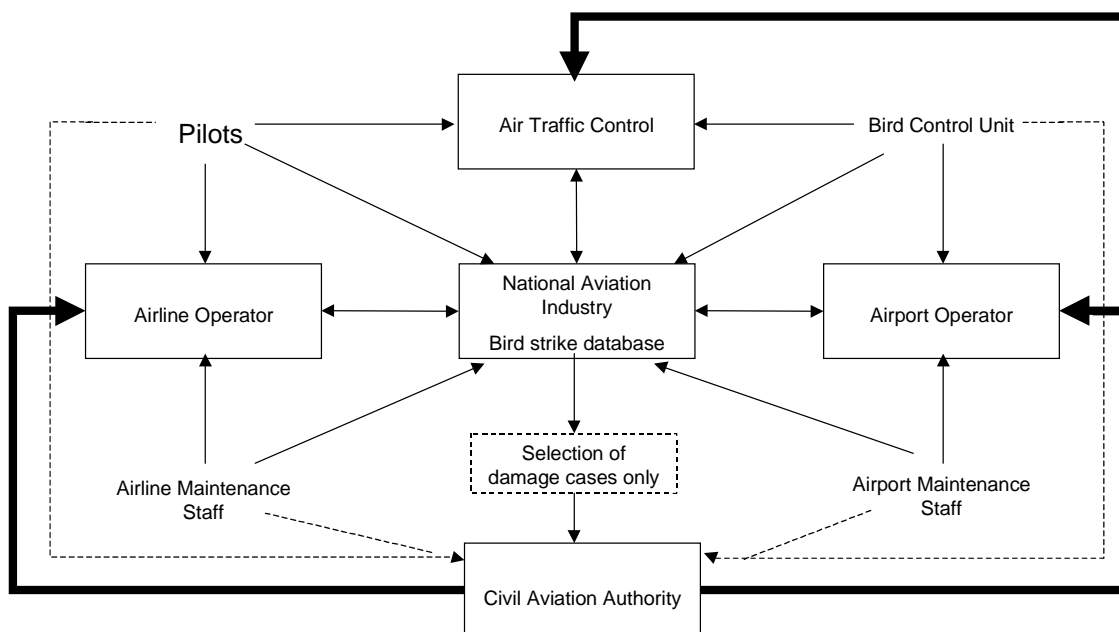


Figure 2: National aviation industry bird strike reporting system in relation to Civil Aviation Authority. Small arrows indicating bird strike information flow (dotted ones indicating the possibility for people to report direct to CAA), bold arrows indicating supervision. (Adapted from Transport Canada 2001)

### 3. Making reporting successful: involving all possible sources.

From various sources it is clear that existing official bird strike databases contain information from only a limited proportion of the bird strikes that really occurred:

- USA/FAA estimated that less than 20% of strikes are reported into its voluntary Wildlife Strike Database (NTSB, 1999);
- Linnell, on Lihue Airport (Hawaii) over 1990-1994, documented 526 bird strikes of which only 25% was reported by pilots (Linnell, 1999);
- ICAO's database IBIS is fed by only 50 of the 110 member states (Eschenfelder, 2003);
- Milsom & Horton (1995) in their extensive study on bird strikes in the United Kingdom in the period 1976–1990, stated very politely that the use of annual bird strike totals in the evaluation of aerodromes is too sensitive to *fluctuations in reporting standards*;
- Even in military aviation, where national Air Forces mostly have strict regulations on reporting, bird strike databases need not be complete. For instance, the number of bird strikes in the RNLAf database for 2004 is very much dependent on the zeal of the custodian. Along formal flight safety lines pilots reported only 8 BS. Due to parallel reporting by bird controllers, who collect information from pilots directly after a BS, the number raised to 39. Including those BS of which bird remains were identified but initially no reports were submitted formally or parallel brought the total to 55. With 9 out of 55 BS officially reported this experience supports the NTSB estimate that less than 20% of bird strikes are reported.

Note: thanks to the permanent attention of the custodian the total RNLAf reporting standard is thought to be constant through the years. Ratio's, percentage damage and species composition of birds involved all support this.

- Although supported by the Air Forces Flight Safety Committee Europe (AFFSCE) and formalised by the Military Agency for Standardisation (MAS) in a Standard Nato Agreement (STANAG), repeated formal requests for contributions to EURBASE only yielded minimal reactions. The success of EURBASE is greatly dependent on the personal contacts between custodian and national database administrators.

Apparently there are factors obstructing the complete reporting of all bird strikes. Without identifying and understanding these factors, promulgating mandatory reporting by decree will not result in reliable databases. The following categories of factors can be recognised:

- **PHYSICAL**
  - BS not noticed by aircrew and also not noticed during post flight inspection.
  - BS established later, during maintenance and not related to event.
  - BS established on the basis of carcass found on runway and impossible to relate to event or aircraft.
- **OBSCURITY / NEGLIGENCE**
  - No clear guidelines (by either airlines or airports) for personnel that discover bird strikes.
  - Bird strikes are reported but reports never reach the database because of negligence.
- **CULTURAL**
  - No active promotion of reporting of incidents by airliner and/or airport.
  - Ignorance, people do not believe in the importance of reporting.
  - Aversion to paperwork from either aircrew or airport personnel.
  - Denial of possible flight safety consequences of BS.
- **COMMERCIAL**
  - Time pressure (increasingly shorter turn-around times, especially in low cost air liners).
- **REPUTATIONAL**
  - Airports may be reluctant to show ratios in fear for a bad reputation.
  - Fear from airlines and airports for increases of insurance premiums.
  - Fear of personnel for punitive actions from either employer or authorities.

By their nature the physical factors can never be completely eliminated. But clear definitions and univocal guidelines should clarify the uncertainties and in conjunction with an intensive information campaign should rule out the more obscure and cultural factors. In addition, the commercial and reputational factors can only be dealt with when the reporting scheme is organised by the Aviation Industry itself. As stated by Eschenfelder, new safety cultures are emerging in aviation industry, characterised by co-operative, non-punitive data collection. If that really is the case, there should be a shift from fear for punitive actions that may result from reporting to fear for not reporting an event. The possibility for staff to circumvent the reporting scheme by reporting direct to the authorities could be a driving force in this direction (see figure 2).

Taking all the above considerations into account, meeting the goals of science, education and quality assurance is probably not met in a non-enforceable mandatory system organised by Aviation Authorities, especially if only damage cases are collected as is required in the EU Directive. Alternatively the voluntary collection of information of all bird strikes (including the non-damage ones) in a non-punitive system that is self-organised by Aviation Industry could well be the only alternative that does meet all the goals.

#### **4. Making reporting effective: the need for definitions and conventions.**

Before even considering making the reporting of bird strikes mandatory there has to be general agreement of what a reportable bird strike is. Is the database restricted to birds or are mammals included? Does there have to be “a significant negative effect on a flight” as suggested by Dolbeer (2000) or does the animal actually has to have hit an aircraft. Are carcasses found within a certain distance from the runway considered evidence of a bird strike, even if a link to an aircraft is impossible (Linnel, 1999; Dolbeer 2000)? Have all bird strikes to be reported, or only those that resulted in damage as is requested in the EU directive. If so, when is a bird strike considered to have resulted in damage? Is a dent in the fuselage that is not repaired considered damage or not? If spending money is decisive in categorising a bird strike as causing damage, is there a threshold? Furthermore, which costs are decisive for the question whether a bird strike is damaging or not? Only those costs that are related to the repair of the aircraft or also the costs involved in a delay due to an aborted take-off, even when the aircraft is undamaged. Undoubtedly many more questions will arise once a discussion about definitions is started. In this discussion great emphasis should be put on the practical consequences of the definitions, both for those who have to report and for the custodian of the database. Ignoring the need for this discussion means that it is left to the contributors to decide which events will be reported and which not. That surely does not contribute to the quality of the database.

Once agreement is reached on the definitions, attention should be paid to the way the BS is described in the database. This means that there has to be agreement on both the information that should be included and the conventions used to describe this information. In other words: the structure of the database and the possible entries. Furthermore, there should be quality indicators included as well. For this purpose, bird strikes reported in EURBASE using the European Military Bird Strike Form contain information on who noticed the bird strike and who identified the bird species involved. Amalgamating national databases that deviate in both structure and conventions inevitably leads to loss of information (Dekker, 1998). To ensure that no information is lost the possibility to enter a narrative is vital.

## 5. Mandatory reporting in the EU.

There are two international bodies involved in the reporting of bird strike information. In its revised Annex 14, ICAO demands a national procedure for reporting bird strikes, while the EU Directive asks the member states to implement legislation on mandatory reporting of all occurrences, among which only bird strikes that resulted in damage.

A multinational, non-punitive system for the reporting of all bird strikes, organised by Aviation Industry itself, should not be considered an extra administrative burden next to the EU mandatory system. Filtering the damage cases from its database, such a system could feed the Aviation Authorities EU mandatory system. Again, there is no fear for incomplete reporting to the EU system since there is always the possibility that people have reported direct to the Authorities system (figure 2). It is like driving on a road with speed cameras not knowing which camera is active.

Fortunately the EU Directive contains an opening for this approach since it states that “developments in the framework of ICAO should be taken into account”. This means that, since ICAO propagates national reporting procedures for all bird strikes, there is no need for two parallel systems.

Aviation operating across borders, it is obvious that on a regional level national databases should join; the formation of a European database being a matter of course.

Experiences with EURBASE (European military bird strike database) show that such co-operations can be successful. However it should be realised that amalgamating the data from various sources into one database requires the use of a uniform bird strike form and generally accepted conventions regarding the way the bird strike is described are a prerequisite (Dekker&Buurma, 1992, Dekker 1998).

Submitting bird strike information to a joined database implies a confidence from the contributors in the custodian's integrity. After all, information on individual bird strikes could be of enormous interest for all parties involved. Liability being just one possible interest, manipulated benchmarking (whether deliberate or not) another. Integrity of the custodian is also very important for persons who, for whatever reason, want their information to be submitted to the database depersonalised. It is therefore of the utmost importance that regarding the custodian even the semblance of an entanglement of interest is avoided. Therefore, great care should be given to the way the European, non-punitive system for the reporting of all bird strikes, organised by Aviation Industry itself is financed.

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