EXPERIENCE OF USING BIRD HAZARD RISK ASSESSMENTS AS ONE COMPONENT IN REDUCING THE RISK FROM BIRDSTRIKES AT 7 AIRPORTS IN THE UK.

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ABSTRACT

BAA airports developed a species-specific bird hazard risk assessment methodology in 2000 jointly with Central Science Laboratory, U.K. This methodology has been used on an annual basis since that date at BAA airports, not at a group level but at an individual airport level categorising species into either high, medium or low risk categories. The risk assessment requires annual statistics of the species struck in confirmed birdstrikes at that specific airport in order to categorise the species. This annual process clearly indicates on which species resources should be targetted to have the maximum effect on reducing the risk of serious birdstrikes.

This process, combined with the constant availability of bird control staff, their training, logging of bird activity and dispersal, a detailed habitat management programme on airport, a safeguarding process to influence proposed new developments such that they do not introduce new bird attractants around the airport, and off airport monitoring of bird numbers and flight lines in the vicinity of the airport, have all contributed to a reduction in the numbers of birdstrikes involving high and medium risk species over the last 8 years across BAA airports as a whole. This is despite the fact that the number of aircraft transport movements has increased over this time period by 12% across the airports.

Such a quantified, prioritised process combined with expert independent inspection provided by CSL alongside our habitat management programme appears to be delivering the results that were hoped for when this began.

Introduction

BAA Airports Ltd owns and operates 7 airports in the UK – Heathrow, Gatwick, Stansted, Edinburgh, Glasgow, Aberdeen and Southampton.

BAA has utilised bird control techniques for many years at our airports. Historically the long grass policy was introduced to reduce bird attractions on-airport and to deter birds, especially gulls and lapwing, from the airports.

As part of the Safety Management System and assessing risks from all hazards identified at the airports it was a natural development to seek to create a species based risk assessment for each airport year on year. This uses a 5 year rolling set of birdstrike data to identify the frequency of occurrence and a severity rating for each species based on the UK national figures for damage to aircraft caused by that species. This has enabled species involved in birdstrikes to be categorised in terms of "red, amber, green" species, with the red species the highest risk. Risk is defined as a mixture of probability and the likelihood of damage being caused to an aircraft (severity).

The process began by accepting that you can never guarantee there won't be a birdstrike – so what an airport has to do is focus its efforts in the right way and demonstrate that these processes are in place to reduce the risk as far as is practicable.

The risk assessment has been updated annually since 2000.
Inspections of our bird control techniques and habitat management have been undertaken each year by CSL and BAA has been involved in objecting to, or seeking to modify developments in the vicinity of the airports to try to ensure no new bird attractant features are likely to lead to an increased overflight or risk of birdstrike.

Risk Assessment

The risk assessment table is shown below in Figure 1 and has been described in other papers at birdstrike conferences.

The definitions used are as follows;

No. Strikes per year (airport data)	>10	3-10	1-2.9	0.3-0.9	0.2-0
Probability category	Very High	High	Moderate	Low	Very Low

Percentage of strikes causing damage (national data)	>20%	10-20%	6-9.9%	2-5.9%	0-1.9%
Severity category	Very High	High	Moderate	Low	Very Low

SEVERITY	PROBABILITY				
	Very High	High	Moderate	Low	Very Low
Very High				Grey Heron	Canada Geese Cormorant
High			Large gulls	Pheasant	Oystercatcher
Moderate		Rook Woodpigeon Feral Pigeon	Lapwing	Mallard	
Low			Small gulls Stock Dove Starling Kestrel		
Very Low		Skylark Swift Swallows			

Figure 1 – an example of the risk assessment matrix used.

These are airport specific birdstrike data averaged over the most recent 5 years.

Previous papers at IBSC and Birdstrike North America/Canada have detailed the development of the risk assessment process. This has been picked up by regulators such as the UK CAA.

Reporting

For this process to work all airport staff and airline staff need to understand that reporting birdstrikes is an important part of building up data on which the correct risk can be assessed. There needs to be good reporting and also good species identification of the remains using trained staff or specialist feather identification or DNA analysis.

BAA Standard for control and management

At BAA airports a continuous bird control team is on duty involving trained staff in bird detection, dispersal techniques and recording data. This is the primary “reactive” control in scaring birds away.

Habitat Management

The key proactive aspect of reducing the risk from birdstrikes is to manage the habitat around and on the airport to be as unattractive as possible to birds. At BAA airports this involves a comprehensive grass management regime that involves

- Regular topping cuts to keep the grass between 15-20cm tall
- Regular "bottoming out" to remove the thatch that builds up on the soil surface
- Fertiliser when needed to help the grass grow
- Soil sampling
- Insecticide to reduce insects which can attract birds
- Weedkiller application to reduce weed presence which can attract birds
- Overseeding where necessary if the grass is not growing well
- Drainage of known damp areas if attracting birds

Inspection and Audit

BAA carries out internal audits of its airside operations function and also employs CSL as specialist consultants to review ;

- Efficacy of bird control by inspecting the bird controllers
- Suggestions for improving airfield grass
- Completing the risk assessment and identifying which species are "red" and any changes to the risk of individual species,
- Making recommendations for further steps to reduce the birdstrike risk

The UK national regulator, the CAA, also undertakes audits from time to time.

Recent examples

As a result of the processes described in this paper a number of examples have been undertaken in recent years at BAA Airports;

- netting areas of standing water at LGW and LHR,
- undertaking radar studies of gull movements around Aberdeen airport
- undertaking radar studies of pigeon movements around Gatwick,
- investigating geese activity at harvest time around Heathrow

Off airport risks

Off-airport data is gathered from local sites identified around the airport – to monitor flight lines and look for trends (ie increases in bird populations of flight lines in conflict with aircraft). Periodic visits are made to known sites to record bird numbers and species to enable the airport to be aware of increasing populations or changes in the surrounding environment that may attract birds.

Safeguarding Process

In the UK a safeguarding process is in place which means all planning applications for development within a large area around major airports must involve consultation with BAA to ensure there are no height issues of new buildings or cranes and no bird attractant features are built close to the airport.

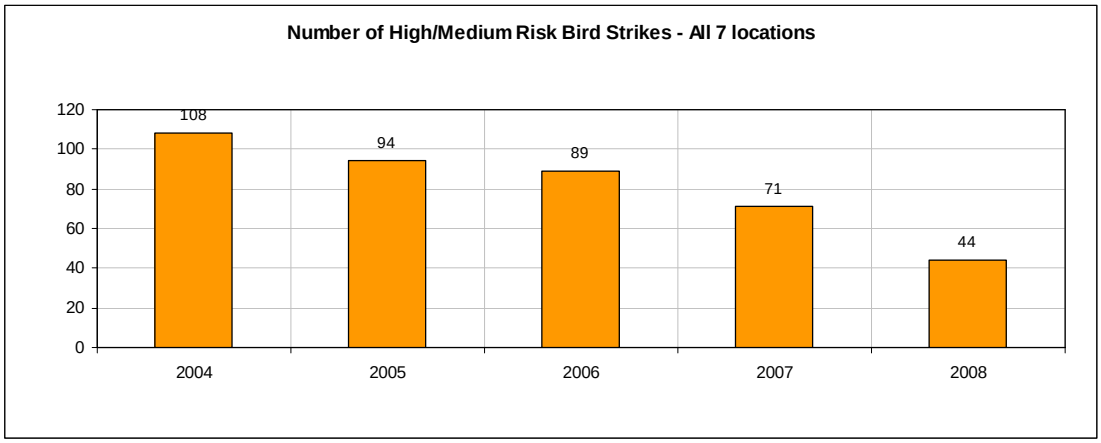
If we have concerns CSL advise us of specific suggestions concerning the birds and conditions may be sought in the development to reduce its attractiveness to birds or to give BAA staff access to monitor the birds. Many sites have had an agreed "Bird Management Plan" put in place as a Planning Condition.

Summary

One can never claim to be able to prevent birdstrikes – there is always a chance, but as is being demonstrated here steps can be taken to reduce the risk. In this case this is being achieved through prioritising efforts on to "high risk" species – ie those struck most frequently and/or species struck most likely to cause damage to aircraft.

The results of these processes are shown in Figure 2 below and reveal a reduction in the number of high and medium risk species struck over 4 years and 2008 in part.

Figure 2 Numbers of birdstrikes involving high and medium risk species at BAA airports, 2004 to August 2008.



2008 data to end of August 2008.

Changes in species populations over time make it necessary to analyse your observations and the species struck – this will ensure you are targeting your efforts and resources at the right species and not dealing with a problem that has in fact reduced. Examples are gulls and lapwings in UK which are less prevalent now, and increases in resident geese and pigeons (now the most common species struck in UK according to CAA 2007 figures)

References

CAA CAP772 – Birdstrike Risk Management for Aerodromes – UK Civil Aviation Authority

Aerodrome Bird Hazard Prevention and Wildlife Management Handbook, Airports Council International 2005

Annex 14 Aerodromes Design and Operations, International Civil Aviation Organisations.

IBSC Standards for Aerodrome Bird/Wildlife Control