

AIRFIELD BIRD CONTROL - APPLYING THE PRINCIPLES

by

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Summary

In the mid 1980s, after a variety of attempts to use service personnel for the task, the Royal Air Force began a programme of contractorising its Bird Control Units (BCUs). These contracts, which have now run for seven to eleven years, have shown that a bird control system which combines careful habitat management, sufficient dedicated manpower, adequate equipment, and effective management can produce a worthwhile and sustained reduction in the birdstrike hazard while remaining comparatively inexpensive. Birdstrike rates are consistently lower than non-military UK aerodromes, and multiple impact birdstrikes and birdstrikes causing damage have become a rarity. Long-term reductions in aerodrome populations of some of the larger, more hazardous species have been achieved, and the frequency of their involvement in birdstrikes has consequently fallen. Since contractorisation was completed, no RAF aircraft has been lost as a result of an airfield birdstrike when a contract BCU was on duty, but a twin-engined jet fighter was lost when a BCU was off duty.

Key Words: Hazard Management, Bird Control Team, Organisations, Habitat Management, Bird populations, Statistics

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1. INTRODUCTION

The Royal Air Force first realised that birds presented a severe hazard to its aircraft during the Second World War, when aircraft were becoming progressively faster and collisions with birds caused correspondingly increased damage. With the widespread introduction of jet engine aircraft, the problem became more acute and the unique vulnerability of the jet engine to bird damage became apparent. Many aircraft were lost to birdstrikes, and much thought and research was applied to seeking a solution.

The RAF's current bird control system has evolved over many years to its present state. A network of dedicated Bird Control Units (BCUs) has been established, operated by contractors. Airfield Wildlife Management Ltd., a specialist contractor in this field, currently provides over 60% of the RAF's BCUs.

2. THE HISTORY OF BIRD CONTROL IN THE ROYAL AIR FORCE

In the early days of bird control as a recognised duty in the RAF, the task was assigned to the fire service as a secondary duty, but this system proved less than satisfactory. A trial was launched which involved the formation of thirteen small, dedicated Bird Control Units (BCUs) manned by volunteers from a variety of trades. However, the motivation of these "volunteers" was often suspect, and many BCUs were manned by a mixture of those who were genuinely interested, those seeking an easy life, and those who had been "volunteered" by trades who wished to dispose of them. However, some of these units worked very well, and some of the original volunteers continue to work in RAF BCUs to this day. The formation of BCUs was expanded further, with over twenty BCUs eventually being formed. Manning reductions made it impossible to man these units solely with volunteers who were not required by their trades, and once again the task was attached to an existing trade, in this case Air Traffic Control. The idea seemed reasonable, with a BCU consisting of a junior NCO and two airmen existing as a cell within Air Traffic Control (ATC). However, there were drawbacks; the staff turnover was so high that (despite constant training efforts) little expertise was accumulated, the job was perceived to be a brake on promotion prospects within the ATC trade, and there was a tendency to co-opt the BCU staff into other ATC duties. Overall, the success of this system relied heavily on the degree of motivation of individuals, and the standard of performance varied greatly from unit to unit and from year to year. It eventually became clear that this strategy, like its forebears, had flaws which produced a disappointing result.

While the RAF was experimenting with organising its bird control resources, following the decommissioning of the last of the Royal Navy's conventional aircraft carriers the Royal Naval Air Station at Lossiemouth became an RAF station. Along with the station, the RAF inherited a civilian-manned BCU which had been established several years earlier when it proved impossible to train service personnel to operate the falcons upon which the RN had come to depend for their bird control strategy. This civilian unit continued to operate as a unique entity within the RAF even when the use of falcons was discontinued, and the conventional measures we depend on today were adopted. Staff turnover was lower, and the level of accumulated expertise higher than other RAF BCUs, and the performance of this unit was highly regarded by the station's executive officers.

A study into the feasibility of extending the principle of contracted BCUs across the RAF, and two trial contracts were awarded to provide bird control at RAF stations which had no existing BCUs. Concurrently, in Scotland the contract to provide bird control services at RAF Lossiemouth was extended to include the other Scottish RAF stations, in the first trial of the "clutch" system of regional contracts. All three trials were considered to be successful, and from 1987 onward regional contracts were awarded on a competitive basis to provide bird control services at all UK flying stations which operated jet or turboprop aircraft. A management and organisational structure was imposed on these contracts by the RAF which had much to commend it, as it has to date averted the problems which have or could have occurred with such small, specialised contracts.

3. ORGANISATION AND MANAGEMENT

Experience has shown us that BCUs which are required or allowed to operate in isolation tend to develop distorted priorities and strange local practices in time, and learn to rationalise their failings to themselves and others with plausible-sounding explanations. Quotes such as; "the birds are safe if we leave them over there" ... "Rooks are too intelligent to get hit by aircraft, so we leave them alone" .. "we don't go out too often because the birds will get used to us," have all been heard, and continue to be heard, at inspections of airfield bird control organisations which operate in effective isolation. Even where initial training has been given, certain parts of this training are recalled better than others, some become distorted with time and others are forgotten or discarded because they "don't work." Even now we are commonly told with great conviction that broadcast distress calls are useless, and that birds simply ignore them (which in such circumstances they commonly do, but the fault is assuredly not with the equipment..). In the long term,

bird control organisations operating in isolation and lacking experienced supervision, management and retraining tend to deliver disappointing results and such isolation is clearly undesirable. Fortunately, the RAF BCUs do not operate as isolated, individual units. They are grouped as contractual and organisational "regions" of typically three to five airfields which form a convenient geographical grouping. Staffing levels at each unit depend on operating times, but are typically between three and five staff, and there is some interchange of staff between units to cover leave or sickness or to assist in operations requiring additional manpower. There is considerable communication between units, and this (provided free of charge) is positively encouraged. Continuous management, supervision, quality control, and ongoing training are provided by a Regional Manager, who in the case of AWM will either be a graduate biologist and/or an experienced manager with considerable practical airfield bird control experience. Each BCU, however small, has a Unit Manager who is responsible to his Regional Manager and the station's Senior Air Traffic Control Officer for the day to day running of the unit, and is also required to spend a large part of his/her time working on the airfield. The regional contracts are subject to periodic internal checking by the company and external inspection by the RAF's Flight Safety organisations and the Central Bird Control Coordinating Officer. We consider such constant performance monitoring to be essential in maintaining the standard of service provided.

The BCUs have a staff of two to five personnel, who work unaccompanied for much of the time. Our staff were, and continue to be, recruited from a wide range of backgrounds. Many are former armed forces personnel, but the remainder are recruited from many walks of life. With our own recruits, initial training is "on the job," and the new staff member works alongside experienced staff for several weeks (typically three to four weeks) before he/she is allowed to operate unaccompanied. Close monitoring continues over the following months, and during this period the long-term suitability of the employee usually becomes apparent. Formal training, indoctrination and assessment of new recruits is to a large degree the responsibility of the Regional Manager.

So far this system has shown no sign of a deterioration in staff performance or the standard of service provided, and we consider it as near ideal a system of organisation as can be envisaged.

4. EQUIPMENT AND TECHNIQUES

The scale of equipment provided to our staff is probably fairly typical of airfield bird controllers everywhere. In order to prevent any possibility that contractors could be motivated to enhance their profitability at the expense of the quality of service, the RAF shrewdly provides most of the basic equipment and expendable stores free of charge. A four wheel drive vehicle with good all-round visibility, equipped with a two-way radio and bird distress call broadcast equipment, vehicle servicing and unlimited fuel are provided, along with a suitable pistol and unlimited supplies of birdscaring cartridges. The Company provides a 12-bore double barrelled shotgun, a .22" (5.5mm) calibre air rifle and unlimited ammunition for these weapons plus clothing, safety equipment etc.

Broadcast Distress Calls are the primary bird dispersal method used by all our BCUs, with birdscaring cartridges very much a secondary method, used most frequently when moving birds when time is short or when "projecting" birdscaring onto adjacent farmland (where permitted), and especially into runway approaches and climbout lanes. Typically, in the first year or so following BCU contractorisation BSC expenditure, although usually markedly lower than that of the former RAF BCU, remained fairly high. Over the next few years, however, BSC use declined steadily and now continues at a much lower level, typically around 1,000 per annum on inland airfields with normal bird problems to 2,000 per annum on coastal airfields and those with more severe bird problems such as gull flightlines. One inland airfield with a current average BSC consumption of c. 1,200 per annum formerly expended up to 12,000 per annum in a futile attempt to clear large flocks of Lapwings! The present reliance the proper use of distress calls is demonstrated by the sharp increase in BSC expenditure when the dedicated BCU vehicle is unserviceable (few airfields have any back-up distress call equipment).

Lethal measure used are largely confined to selective shooting, although occasional attempts have been made to control corvids by cage trapping. Breeding Feral Pigeons (*Columba livia*) and Jackdaws (*Corvus monedula*) inside aircraft hangars are destroyed mainly by shooting inside the buildings with the air rifle. On the airfield, the shotgun is used in clearly defined circumstances and within the confines of the Wildlife and Countryside Act 1981 and licences granted thereunder. Very few gulls and waders are shot, and only in circumstances where all other methods have failed. Rooks (*Corvus frugilegus*) are shot (or shot at!) whenever they begin to show poor response to bird control measures (failing to take flight, resettling nearby or quickly returning), and all attempts by this species to breed on RAF stations under our charge are prevented by aggressive nest destruction. Game birds, particularly the Grey Partridge (*Perdix perdix*), by nature of their weight and habit are considered to be highly hazardous and cannot be "scared off" in the usual way. They are not tolerated, and on most airfields are shot on sight. Overall, few birds are killed and unnecessary shooting is discouraged. However, we encourage an aggressive approach to bird control in our staff, the "message" conveyed to the birds being leave..... or else...!

The techniques used are the same as those taught to civil airport bird controllers at CAA approved training courses in the UK, but the results achieved, the employees' (and employers'!) view of the importance of their work and faith in the techniques used are often markedly different.

5. HABITAT MANAGEMENT

All RAF stations which operate fixed-wing aircraft maintain a "long grass policy" (LGP), with grass maintained at between 180 and 200mm for most of the year. Most operate a system where the grass is cut to ground level each spring and the cut material removed from the airfield ("bottoming out") followed by the application of fertilisers to promote strong growth. Weed control is carried out where necessary. Some experimentation has been carried out, and continues, with less intensive (expensive?) regimes, but there have been disastrous failures where attempts to cut costs have backfired. The basic system, although expensive, works well but very close supervision of contractors has proved necessary to obtain the results required. Over the years of our tenure the quality and extent of coverage of the LGP at our stations has been steadily improved, and when a good result is achieved the effect on bird numbers is dramatic and has played a major part in the virtual exclusion of the grassland plovers from the RAF stations (see below). However, constant vigilance is required, as a single, elementary mistake such as setting the mower height too low can negate the investment of a whole year.

6. EFFECT ON AIRFIELD BIRD NUMBERS

Long term reductions in the numbers of a variety of species recorded on the airfields have been achieved, but by far the most marked are the reductions in the two grassland plovers, the Lapwing (*Vanellus vanellus*) and the Golden Plover (*Pluvialis apricaria*). Indeed, the most marked change in airfield bird populations on RAF stations since the introduction of the current bird control system is the long term, sustained decline in Lapwing numbers to the point where they are a relatively scarce bird at most airfields where less than ten years ago flocks of thousands of birds were an everyday occurrence (Fig 1). There should now be few, if any, UK RAF stations which are the focal point of local overwintering populations as was noted by Milsom and Rochard (1987), although many UK civil airports continue to have large overwintering flocks.

Gull numbers observed on the airfields have not shown any clearly defined trend, and it appears that gulls do not learn to avoid visiting the airfield as a result of bird control measures although birdstrikes involving gulls have been reduced (see below). Airfields such as station A, which is close to a major winter gull roost (30,000+ overwintering gulls), continue to be affected twice daily by commuting gulls, and those more remote from the main gull dispersal highways, such as station D, continue to be visited occasionally by gulls, particularly in wet weather (Fig 2).

The only real cause for concern in recent years has been the sustained increase in Rook populations around a number of airfields, and the current rookery survey by the British Trust for Ornithology should give us an insight into the national situation.

7. TYPES OF BIRDS STRUCK

Compared to UK civil airports, gulls and Lapwings form a lower proportion of recorded birdstrikes at RAF stations, whereas pigeons, small passerines and Swifts form a much higher proportion (Fig 3). The most likely explanation for these differences is the different susceptibility of the various bird species to our control efforts. Gulls and Lapwings can be controlled very effectively by the proper use of current bird control techniques, but we have little control over crossing flocks of racing pigeons, aerial insectivores such as hirundines and Swifts, or small terrestrial passerines such as Skylarks (*Alauda arvensis*) or Meadow Pipits (*Anthus pratensis*). These differences therefore suggest a marked difference in the overall standard of bird control between UK military and civil aerodromes (Milsom, 1990).

8. BIRDSTRIKE RATES AND DAMAGE TO AIRCRAFT

Birdstrike rates (per 10,000 aircraft movements) at RAF stations (or at least those with AWM BCUs) are low in comparison with both UK and European civil aviation (Thorpe, 1990), despite the fact that RAF reporting standards are extremely high (indeed, we consider any failure to report a known or suspected birdstrike to be a serious disciplinary offence). Airfields under our jurisdiction have shown annual birdstrike rates between zero (on several occasions) and 3.5 per 10,000 aircraft movements, the latter on a coastal airfield with extremely high local bird populations, with an overall average rate of 0.99 at inland airfields and 1.77 at coastal airfields. Of course, these figures do not differentiate between the bird species struck and their potential to cause damage in the manner suggested by Milsom (1990). As described above, a much higher proportion of the birds recorded as being struck on military airfields are small passerines (<50 grammes) and so the overall reduction in the risk of damage to, or loss of, aircraft due to birdstrikes is lower than the simple rate figure suggest.

The comparatively low birdstrike rate, combined with the small size of most of the birds struck and the reduction of multiple strikes involving flocks of birds (less than 4% of the birdstrikes analysed involved more than a single bird), has led to a greatly reduced attrition rate to RAF aircraft from airfield birdstrikes. Detailed figures for damage are not available at present, but over the ten year period 1981-1990, the RAF lost aircraft at a rate of 0.6 per year to "on-airfield" birdstrikes, i.e. birdstrikes during the landing or take-off phase of flight. Since that time, no aircraft has been lost, and since the introduction of the present bird control system was completed, no aircraft has been lost as

a result of an airfield birdstrike when the BCU was on duty. However, a twin-engined jet fighter was lost when it struck a flock of gulls on takeoff when the station's BCU was not on duty.

9. CONCLUSION

The present bird control system at UK RAF stations works well, and offers clear advantages of its predecessors in producing a consistently superior service with marked cost advantages over the use of service personnel. The system is by no means perfect, and in particular the salary constraints imposed by competitive tendering have resulted in an employee age range skewed toward the upper end of the scale, and recruiting and retaining young, intelligent and ambitious staff is more difficult than we would wish. If the RAF wishes to retain or improve the current level of service then the continuing pressure to force contract costs ever downward must be kept in context with the great savings achieved by a professional service, not least in the reduction in damage and loss of aircraft resulting from airfield birdstrike incidents. Modern military aircraft are immensely expensive, and the next generation of aircraft will inevitably continue this trend. The RAF's next aircraft due to enter service, the Eurofighter 2000, has a vulnerable under-fuselage shared intake, high performance engines, nose-mounted canard control surfaces and large "bubble" canopy. With such a conformation, the birdstrike threat to the RAF's aircraft will continue to be high well into the next century.

Most of the bird control methods described above, such as growing the grass longer, broadcast distress calls etc. date from the 1950s and early 1960s in the UK. They remain in use today, albeit in modified form, and have not been superseded. Indeed, most technical progress in bird control on airfields has been in the refinement of ideas developed forty or more years ago, and there is still little sign of the scientific panacea which was anticipated in those early days of airfield bird control.

The equipment and techniques cannot work without the men and women to operate them, and only habitat modifications and man-operated bird scaring techniques appear to have long term success in the airfield context. In this respect we have made little progress from the early farmers who employed small boys to scare birds from their crops. Centuries ago it was realised that people worked where static scarecrows failed, but we continue to have difficulty learning this lesson... There is still much progress to be made in the field of airfield bird control, and research may yet produce new breakthroughs. However, we have failed to realise the full potential of the tools we already possess. This failure, I feel, partly stems from our fascination with researching new tools for the task, and the hope that technology will provide us with a solution to the bird problem. It is too easy to lose sight of the fact that tools are of no use unless we have the craftsmen to operate them. A skilled craftsman can achieve striking results with the most basic of tools, and nowhere is this clearer than in the field of airfield bird control. Aircraft, their crew and passengers are at risk from birdstrikes now, and it is our moral responsibility to make the best use of the tools and knowledge currently available to us.

10. REFERENCES

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FIGURE 1. Changes in Lapwing Numbers at UK RAF Stations, 1988-1995

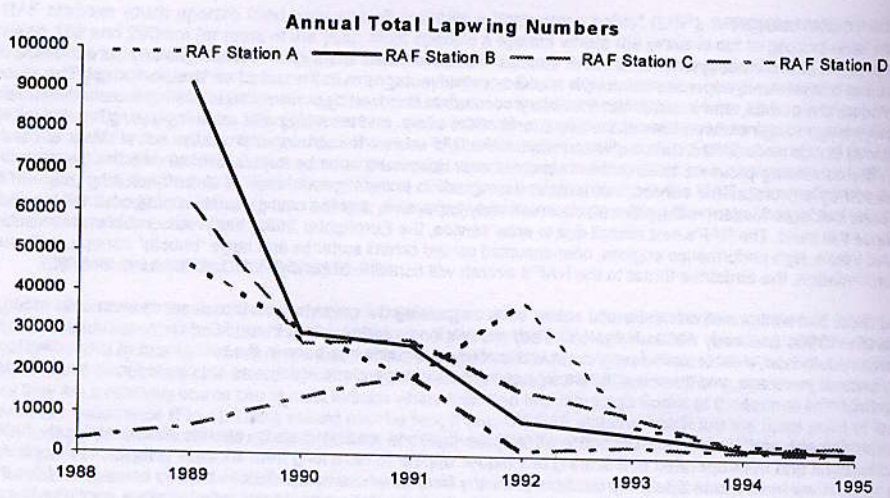


FIGURE 2. Changes in Gull Numbers at UK RAF Stations, 1988-1995

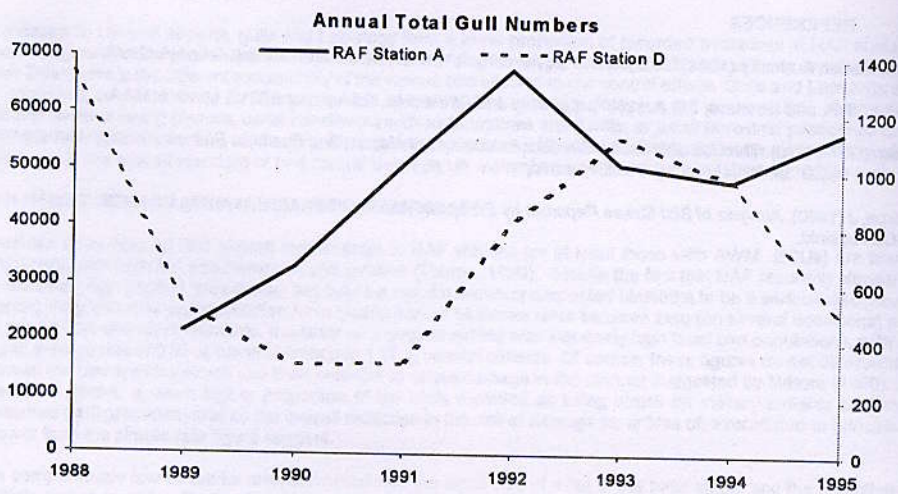


FIGURE 3. Comparison Between Bird Types Struck at UK Civil and Military Airfields.

