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A REVIEW OF FALCONRY AS A BIRD-HAZING TECHNIQUE

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ABSTRACT: The use of trained falcons and hawks for dispersing pest birds has been mainly limited to airports in Europe and, to a lesser extent, in North America to prevent bird/aircraft strikes. The peregrine falcon (*Falco peregrinus*) and the goshawk (*Accipiter gentilis*) are the raptors used most often. These trained birds can effectively disperse gulls (*Larus* spp.) and a variety of other pest bird species, although other bird-scaring methods are often equally or more effective and economical. Because of the scarcity of trained raptors and handlers, their use is limited to special situations such as airports where the incidence of bird strikes is potentially high and all possible measures must be taken to assure aircraft safety.

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INTRODUCTION

Sport hunting of game birds and small mammals with trained falcons and hawks has been practiced since ancient times (Cooper 1970, Glasier 1978). Their use as a unique technique to disperse pest birds apparently began in the late 1940s at airbases in the United Kingdom (Wright 1963, Blokpoel 1976). Success in reducing bird numbers and bird strikes to aircraft led to subsequent trials and use at other airfields in the UK (Heighway 1969, Boulay 1977), other European countries (Milx 1969, Cooper 1970, Briott 1984), and Canada (Blokpoel 1976, 1977). Because of the need for highly trained personnel and raptors, however, falconry is a relatively expensive method of hazing birds (Solman 1973). Thus exploration or use of trained falcons and hawks in agriculture and other pest bird situations has been relatively limited (Kenward 1978, Blokpoel and Tessier 1987).

The species of falcons and hawks used to haze birds depends on several factors, including the bird pests present, surrounding terrain, and the availability of raptor species. The raptor species used preferably should be a natural predator of the pest bird species as the occasional kills it makes will help reinforce the perception of danger (Grubb 1977, Inglis 1980). The peregrine falcon is the raptor species most frequently used because of its broad geographical distribution and availability. Its hunting speed in open terrain is superb and it readily attacks seagulls, which often are the principal pest species at airports (Blokpoel 1976, 1977). With larger pest species or in wooded terrain, the more powerful goshawk or gyrfalcon (*F. rusticolus*) are occasionally used.

REQUIREMENTS AND LIMITATIONS

Although a highly appealing approach, falconry is rarely used for bird control because of its basic requirements and limitations. One or more trained, licensed falconers, assistants, and several raptors are needed, depending on the extent of the area to be hazed and the number and kind of pest birds present. Obtaining raptors may be difficult because many species are rare and protected. Special care must be provided, especially for their feeding, training, and housing (Heighway 1969). At airports a radio-equipped vehicle is needed so the patrol team can respond immediately when birds need to be dispersed. Some means of flushing birds, such as firing shell crackers or use of a dog, may also be necessary because some raptors (e.g., peregrine falcon) will not attack sitting birds (Solman 1966, Cooper 1970).

Several additional disadvantages have limited the use of falcons and hawks for bird hazing. They cannot be flown at night, when molting, during strong winds, or in rain or fog (Solman 1966, Brough 1968, Burger 1983). They can be difficult to handle and sometimes refuse to fly, especially if not hungry. Several raptors are required to ensure that one is available to fly when needed (Solman 1973). Occasional losses occur, especially if the same raptors are used for prolonged periods at the same site and become familiar with the surrounding area. At one airbase, turnover due to loss and mortality averaged two falcons per year (Heighway 1969). At most facilities where falcons or hawks have been used, other methods, including patrols, firing of shell crackers and exploders, or broadcasting loud noises, still have been necessary to supplement dispersal by raptors (Milx 1969, Heighway 1969, Briot 1987).

EFFECTIVENESS AT AIRPORTS

Trained falcons or hawks have been used with encouraging results at several airports in Europe and North America in attempts to reduce bird hazards to aircraft. The first reported use of falcons to disperse birds was at an airbase in Scotland in the late 1940s (Wright 1963, Blokpoel 1976). An experienced falconer flew peregrine falcons to disperse seagulls from runways and flight paths of landing and departing aircraft. When supplemented with firing of shell crackers and exploders, the falcons effectively dispersed the gulls. They had to be flown daily, however, to prevent gulls from returning; when falcons were not flown, gulls returned to the base within 2 days. In that situation attempts to use gyrfalcons, which also prey on gulls, were not successful. Trials were discontinued after two years because of expense and other limitations.

During the 1960s, trials were conducted at airports in Canada, the Netherlands, Spain, and Scotland. Tests were conducted at Victory and Shearwater Airports in Canada in the early to mid-1960s (Blokpoel 1976, 1977). The principal pest species were the glaucous-winged gull (*Larus glaucescens*), California gull (*L. californicus*), mew gull (*L. canus*), great black-backed gull (*L. marinus*), and herring gull (*L. argentatus*). Both peregrines and gyrfalcons were used. Gulls dispersed whenever a falcon was airborne, but they frequently returned soon after the falcon was caged. Although deemed somewhat effective, trials were discontinued because other bird-frightening methods (e.g., shell crackers,

exploders, taped distress calls) were as effective and more economical (Solman 1966, Blokpoel 1977).

The Royal Netherlands Air Force attempted dispersing gulls with trained goshawks at Leeuwarden Airbase in the mid- to late 1960s (Mikx 1969). Goshawks were used because they remain at the location where birds were flushed if an attack is unsuccessful, and they fly low to the ground and thus pose a minimal hazard to aircraft. A trained falconer, three assistants, and four hawks were used. The team patrolled the airfield in a jeep and fired shell crackers and smoke puffs to flush the gulls. The number of bird strikes decreased markedly. The effectiveness of the goshawks was difficult to evaluate, however, because of the presence of the patrol team shooting pyrotechnics.

In 1968 the United States Air Force employed a professional falconer to disperse birds at Torrejon Airbase in Spain (Cooper 1970, Blokpoel 1976). Thousands of little bustards (*Otis tetrax*) were dispersed after six peregrine falcons were flown for 3 months. Continued use of the falcons was required to prevent the return of the bustards. Because they hide in vegetation when threatened, a trained dog was used to flush the bustards and expose them to the falcons. Peregrines also were flown at a civil airport where little bustards, stone curlews (*Burhinus oedicephalus*), and mallards (*Anas platyrhynchos*) were a problem. These birds were effectively dispersed after about 6 months.

Peregrine falcons were deemed highly effective at dispersing gulls at an airbase in Scotland in the 1960s (Heighway 1969). Two falconers and eight falcons were used. Other bird-frightening methods, including shotgun patrols, taped distress calls, and visual deterrents, had not been effective in that situation. After falcons were flown for 2 years, the number of birds present and bird strikes by aircraft had decreased markedly. Because falcons could be flown only during the day, shell crackers were fired at night to disperse gulls roosting on runways. Gas exploders also were fired at the end of runways whenever aircraft were landing or departing. Although falconry entailed a considerable expense, it was deemed cost effective because of the high value of jet engines susceptible to damage by bird strikes.

Additional trials were conducted at airports in the UK, the United States, Canada, France, and likely elsewhere during the 1970s and 1980s. A falconry team was established at Boscombe Down airbase in the UK in 1976 (Boulay 1977). Pest species were the rook (*Corvus frugilegus*), lapwing (*Vanellus vanellus*), and starling (*Sturnus vulgaris*). Two falconers flew falcons for about 2 hours per day 5 days a week. Results were encouraging, but falconry was only one of several bird-scaring methods employed. Other techniques included firing cartridges to frighten and occasionally kill rooks, destruction of nearby rookeries, and whistling, arm waving, and shouting. The integrated control program resulted in a decrease in bird problems at the base.

At Vancouver International Airport in Canada a falconer flew two peregrines, two gyrfalcons, two merlin (*F. columarius*), and two prairie falcons (*F. mexicanus*) for 6 months after a 3-month training period in 1976 (Blokpoel 1977). Pest species were mainly dunlin (*Calidris alpina*), which could not be dispersed by other frightening methods, gulls, and starlings. Birds dispersed during 95% of all falcon flights. Falconry was discontinued, however, because of high costs, operational problems, and a low incidence of bird strikes in the absence of falconry. Problems occurred in obtaining the appropriate falcon species, training and housing them, and

training assistants. Some falcons also were lost, injured, or overworked.

Briot (1984, 1987) discussed the use of trained raptors at airports in France during the 1980s. In a preliminary trial, gulls were dispersed by goshawks at one airbase, and falcons dispersed gulls and crows at another base. Two falconers were subsequently employed for 6 months to disperse 6,000 to 8,000 lapwings wintering at a civil airport. Two assistants, two cross-country vehicles, and five falcons also were used. Each falcon was flown 1 hour per day and could effectively cover an area of 400 ha. Most lapwings departed after 3 months of hazing, and the number of bird aircraft/strikes decreased by 75%.

Three falconers with four peregrine falcons, seven hybrid peregrine-gyrfalcons, and four goshawks also were employed at Charles de Gaulle Airport in Paris. The peregrines were used to disperse gulls, lapwings, and pigeons, the hybrids to disperse buzzards and gulls, and the goshawks to disperse corvids. The hybrid falcons were seldom used because they were difficult to recover and problems with buzzards were few. Although the peregrines and goshawks were effective, falconry is no longer used because other less costly techniques (pyrotechnics, shotgun patrols, noise-generating devices) were found to be as effective with fewer drawbacks.

The United States Air Force has occasionally used falcons to clear airfields and aircraft hangars of roosting birds (Will 1985). One base reported that hangars could be kept free of pigeons (*Columba livia*) for 2 to 3 months if a falcon was left inside overnight. Because falcons do not attack sitting birds, it was sometimes necessary for a person to throw tennis balls or other objects to flush the birds. The use of falcons has been explored at civilian airports in the United States but there is little detailed information on this.

EFFECTIVENESS IN OTHER SITUATIONS

The use of falconry to disperse pest birds in agriculture and settings other than airports has been very limited. A falconry team with goshawks is used to deter hooded crows (*C. corone*) from roosting at the Kremlin in Moscow (Thompson 1990). The crows were seen to depart immediately upon sighting a goshawk, although they apparently returned when the hawks were not present.

Attempts were made to prevent ring-billed gulls (*L. delawarensis*) from nesting at Toronto Outer Harbor, Canada, by using a variety of bird-scaring methods, including flying and tethered raptors (Blokpoel and Tessier 1987). Tethered raptors included a ferruginous hawk (*Buteo regalis*), an eagle owl (*Bubo bubo*), and a prairie falcon. A ferruginous hawk, Harris' hawk (*Parabuteo unicinctus*), and a saker falcon (*F. cherrug*) were flown in one area by a trained falconer. Other hazing techniques included firing shell crackers, playing taped distress calls, and using dead gulls as a visual deterrent. After 3 years of hazing during the nesting season, the number of gull nests decreased from 75,000 to 80,000 to about 40,000.

A falconer using two peregrines and a prairie falcon hazed ring-billed and herring gulls for a 1-month period at a garbage dump in Ontario (Blokpoel 1977). Approximately 600 gulls frequented the dump when the trial began in 1977. Most gulls dispersed after only 1 week of hazing, but about 1,000 gulls were present when numbers were assessed 3 months after the trial ended.

Kenward (1978) examined the influence of goshawks and human activity on wood pigeons (*C. palumbus*) feeding in cabbage and brussel sprout fields in England. A trained

goshawk was flown at feeding pigeons once a day for 9 days. Some pigeons remained in the field after 44% of 61 attacks. Even when attacks were successful or repeated several times, most pigeons leaving the field returned within an hour. The goshawk was no more effective than disturbance caused by nearby pedestrians, cyclists, and horsemen. Kenward (1978) concluded that using goshawks, a principal predator of the wood pigeon, was not a promising method of crop protection.

CONCLUSION

The use of falconry as a bird-hazing technique has received considerable attention over the last 3 decades with numerous trials and evaluations, especially for use at airports to prevent potential bird/aircraft strikes. Because of its human interest appeal, exploration of the technique often catches the attention of the media, thus giving a false perception of its actual use. Although promising results have been achieved, its limitations have prevented it from becoming a practical and commonly used technique. With few exceptions, to be effective it has been necessary to use other bird-frightening techniques in conjunction with falconry. This bird-hazing approach is too costly for protecting agricultural crops as it is in most situations where pest birds must be dispersed. Compared to other commonly used bird-hazing or frightening methods, the use of falconry as an employed technique is insignificant and this is unlikely to change in the near future. The technique remains, however, a viable last-resort approach that can be put into play when needed at airports where the incidence or potential for bird-aircraft strikes is high and threatens safety.

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