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The use of border collies in avian and wildlife control programs

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Abstract: Airports attract large numbers of wildlife primarily because they offer immense tracts of foraging and nesting habitats free from the threat of predation. Border collies can serve as an effective means of wildlife control in these environments by introducing a predator into the ecosystem. Many wildlife dispersal methods seek to imitate predators or the effect of predators and become increasingly ineffective as wildlife habituate to the stimuli. However, border collies are true predators, representing an actual, not perceived, threat to wildlife thereby eliminating the problems of habituation. Six airports and military bases have initiated use of border collies at their facilities. The number of bird strikes decreased dramatically at Southwest Florida International Airport after the introduction of a border collie, and the dog humanely prevented nesting by the Florida sandhill crane (*Grus canadensis pratensis*). At Dover Air Force Base, large bird numbers decreased by 99.9% within an initial 1-month period of harassment by a border collie.

Key words: air force bases, airports, birds, border collie, deer, harassment, predators, wildlife control

Aircraft encounters with wildlife can be costly in time, money and lives. Wildlife strikes annually cost over \$400 million in damage to United States civil and military aircraft. In addition, more than 350 lives have been lost to bird strikes (Bird Strike Committee USA 1999). Traditional wildlife harassment methods at airports including auditory and visual deterrents and depredation are often impractical and/or ineffective over a long time period. Harassment techniques that deter a wide range of species, work over a long duration of time, and are time and cost effective are necessary in these environments.

Dogs are true predators, and represent an actual, not perceived, threat to wildlife. Unlike common harassment methods such as alarm calls or model predators that cannot deliver on their threat, dogs are essentially top predators and wildlife do not habituate to them. Border collies are particularly well suited for work in a wildlife harassment program. This breed has an intense drive to work, and they are extremely intelligent and adaptable. Border collies will

work in all types of weather for long hours and can be trained to harass a wide variety of wildlife from European starlings (*Sturnus vulgaris*) to white-tailed deer (*Odocoileus virginianus*). This paper reports on the use of Border collies for wildlife harassment at both a commercial airport and a United States Air Force Base (AFB).

Effectiveness of border collies in avian control

Six commercial airports and military bases have initiated the use of border collies in their wildlife harassment programs (Southwest Florida International Airport, Vancouver International Airport, Dover AFB, Augusta Regional Airport, Cold Lake AFB, and the Israeli Air Force). Initial results from the use of a border collie in wildlife harassment at two locations are presented here to demonstrate the effectiveness of a dog in different environments.

Southwest Florida International Airport

In February 1999, Southwest Florida

International Airport (RSW) became the first commercial airport in the world to employ a border collie in its airfield wildlife management program (McCormick, personal communication). In order to access the effectiveness of the border collie, an ecological study was conducted before and after the dog was introduced. In June 1997, RSW contracted with the United States Department of Agriculture (USDA) to conduct a baseline 11-month ecological study of the airport environment and its wildlife (USDA 1998). The USDA study recorded 113 wildlife species within and just outside the aircraft operations area (AOA). The majority of observed wildlife species were birds, with wading birds, waterfowl, and crows/blackbirds accounting for more than 92% of the wildlife observed.

After the employment of a single border collie on Feb. 11, 1999, RSW commissioned a comparison study to measure the effect the dog had on wildlife populations. The airport contracted with Kevin L. Erwin Consulting Ecologist (KLECE) to survey the wildlife from February to September 15, 1999 and to analyze and compare the datasets (KLECE 1998). Wildlife monitoring showed a significant overall reduction in the number of species as well as the total number of birds in each category. The 1999 survey revealed a 29% reduction in the overall number of species in the top four categories of birds (wading birds, waterfowl, crows/blackbirds, and raptors). Additionally there was an overall reduction in the number of individual birds observed. The abundance of wading birds in the 1999 survey was less than half that observed in 1997/98.

Bird counts remained low for the duration of the survey period, with the exception of two periods of moderate increase in late April and August (Figure 1). The increase in wading

birds in April was most likely caused by the absence of the border collie. After only two months of work at RSW, the dog began to herd American alligators (*Alligator mississippiensis*) when no other moving wildlife could be found. The dog was returned for additional training in alligator avoidance and the increase in wading bird numbers corresponded with his absence. The rise in blackbirds in August was primarily due to a single large flock of more than 300 individual birds on the AOA, influencing the August average.

Additionally, the border collie had a dramatic effect on the behavior of birds on the AOA. Almost all of the birds that remained on the AOA after the introduction of the border collie congregated in a large drainage ditch several hundred yards south of the runway. Due to the presence of several alligators in the habitat, the dog was not allowed to harass wildlife within the drainage swale. As a result, a small number of waterfowl and wading birds that were flushed by the dog in open areas of the AOA sought refuge in the deep-water habitat of the swale.

The border collie also prevented pairs of Florida sandhill cranes from nesting or roosting on the AOA. Prior to the dog's arrival, at least two pairs of sandhill cranes were observed nesting within the AOA each year. The border collie successfully prevented any pairs from breeding within the AOA in both 1999 and 2000, even though the dog was only introduced into the habitat a few weeks before the 1999 nesting period. Sandhill cranes pose the most significant threat to aircraft operations at RSW and the minimization of their time within the AOA (as well as the exclusion of any immature birds) represented an important accomplishment for the border collie and the management program.

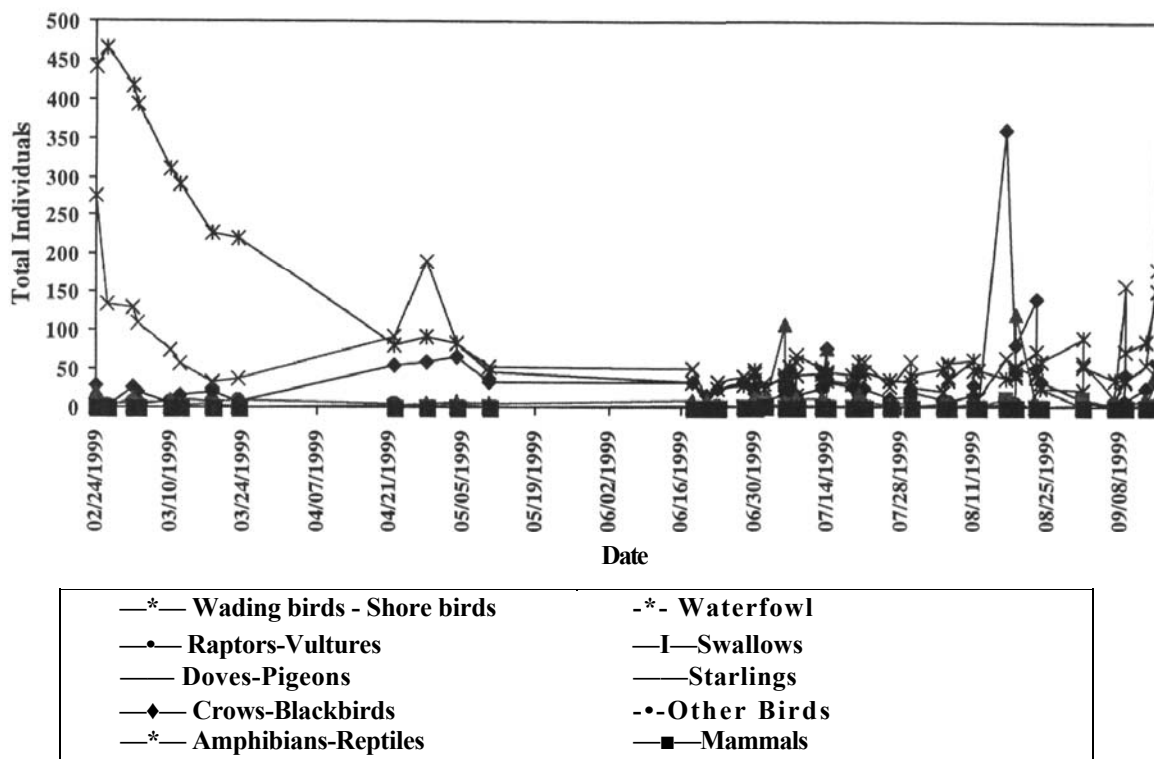


Figure 1. Bird count data for Southwest Florida International Airport after the employment of a single Border Collie on Feb. 11, 1999.

After the introduction of the border collie, the number of bird strikes to aircraft dropped to zero during the study period. Prior to the dog's introduction, RS W recorded ten strikes in 1997 and 16 in 1998 (Figure 2). Since the conclusion of the study, there were four bird strikes through February 2000 (an additional five months). Two of the birds were soaring raptors, which the border collie could not reach in his harassment work. None of the bird strikes recorded during the dog's work have resulted in damage or passenger delays. Unconfirmed strikes also dramatically fell, from 37 in 1997

and 30 in 1998, to 8 unconfirmed strikes from January to September 15, 1999.

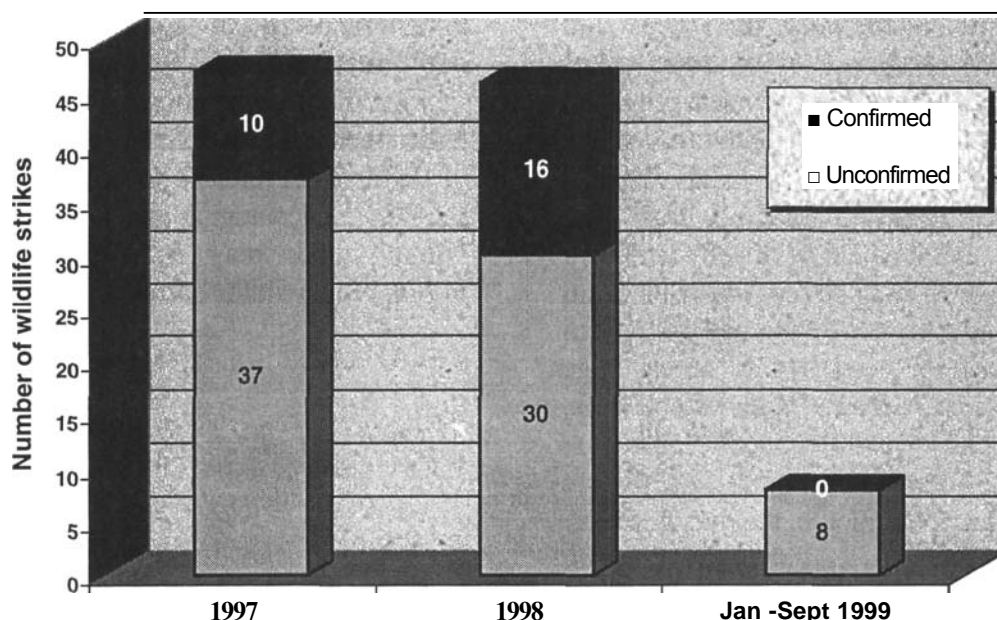


Figure 2. Comparison of bird strike data for RSW before and after the utilization of the Border Collie for wildlife harassment.

Dover Air Force Base

On February 1, 2000, Dover AFB became the first military base to employ a border collie to harass wildlife. Dover AFB's primary wildlife hazard is migratory birds. The base is surrounded by three large wildlife refuges and is located along the Atlantic migratory flyway. Additionally, land is actively farmed outside the base and the Atlantic Ocean is less than two miles away. The primary threats to flight safety are large flocks of Canada geese (*Branta canadensis*) and snow geese (*Chen caerulescens*), as well as smaller aggregates of ducks (*Anus* spp.) and gulls (*Lams* spp.). Geese are the most critical concern for aircraft operations at Dover AFB and large flocks of the birds (100 - 20,000 individuals) congregate just outside of the base perimeter fence in the cultivated fields of neighboring farms. A squadron of C-5 Galaxy cargo planes operates

out of Dover AFB and although the planes are larger and slower than most military aircraft, bird strikes have posed a significant problem for the base. In the last two years alone (1998-1999), collisions between birds and aircraft have caused more than \$ 1.2 million in damage to Dover's C-5 fleet (Wood, personal communication).

Prior to the use of the border collie, most attempts to eliminate birds from the surrounding environment were unfruitful. Pyrotechnic usage was unproductive, and an organized hunt of Canada geese resulted in damaged public relations for the airbase and no overall change in bird presence. No formal bird counts were conducted before the introduction of the dog to Dover AFB. Instead, a count was made just prior to harassment and numbers were collected daily afterwards. At the initiation of the border collie program, the weekly bird count totaled more than 50,000 snow geese and 30,000 Canada

geese within 2-km of the airbase (Figure 3). By the end of the second week, the weekly bird count for the geese within the 2-km radius dropped to a combined total (Canada geese and snow geese) of just over 20 individual birds. Overall counts within a 4-km radius dropped markedly but remained relatively high. The decrease in number could be directly attributed to the reduction in bird numbers within the 2-km radius. The area between 2-km and 4-km from the base however continued to attract large numbers of birds. At the end of the second week, harassment efforts with the border collie were extended to a 4-km radius from the base (Figure 4). By the end of the month, the overall size of the area covered by the wildlife control program encompassed approximately 46 km² and the weekly total was 20 geese, a 99.9% reduction in bird numbers in a 1-month period. All of this was accomplished with one wildlife officer, a single border collie, and a vehicle.

At the same time that the bird numbers were decreasing so dramatically around Dover's airfield, numbers of geese (particularly snow geese) were still on the rise in the state of Delaware. During the initial month of border collie harassment, figures from bird surveys by the Delaware Department of Natural Resources showed the number of snow geese in Delaware actually increased by 50.5% (F. Smith, 1999 Delaware snow goose surveys. Delaware Department of Natural Resources and Environmental Control, unpublished data). The number of geese at the nearest wildlife refuge to Dover AFB, Bombay Hook National Wildlife Refuge (between 5-10 km away), increased by more than 310% (Figure 5). This suggested that the severe reduction in the bird population around Dover AFB was not due to birds migrating out of the state, but that birds were simply leaving the area immediately surrounding the airbase. Also testament to this fact were the

observations by pilots that large numbers of birds were congregating just outside the border collie patrolled "zone". Secondary field surveys verified these observations. Though the long-term effect on the migratory populations of birds at Dover AFB remains to be seen, the initial results are encouraging and suggest the use of border collies may be a highly effective technique for wildlife harassment at Dover AFB.

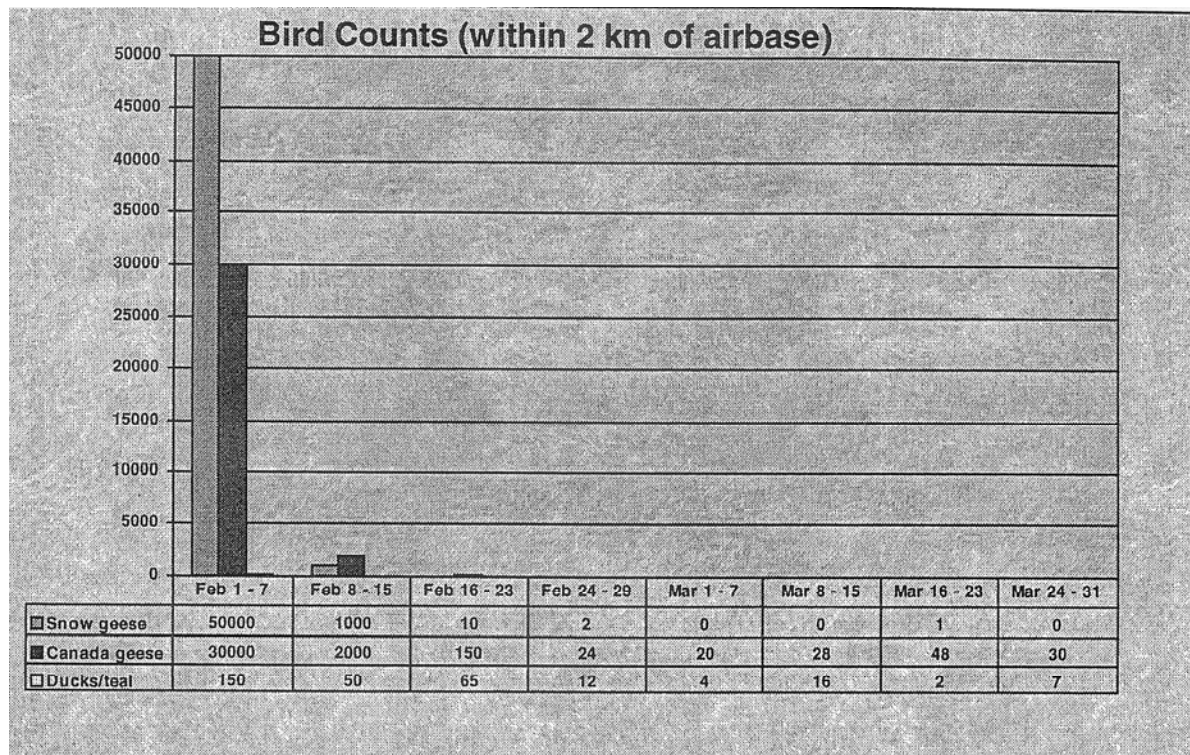


Figure 3. Weekly bird counts for Dover AFB within 2 km of the base perimeter fence after the initiation on Feb. 1, 2000 of a Border Collie for wildlife harassment.

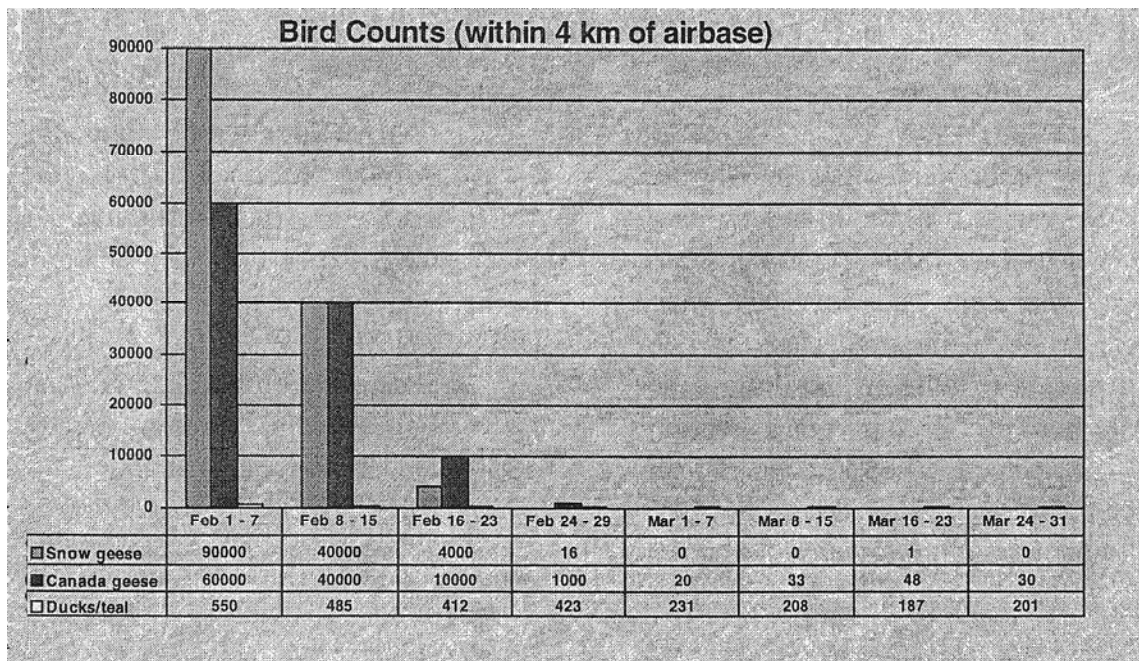


Figure 4. Weekly bird counts for Dover AFB within 4 km of the base perimeter fence after the initiation on Feb. 1, 2000 of a Border Collie for wildlife harassment.

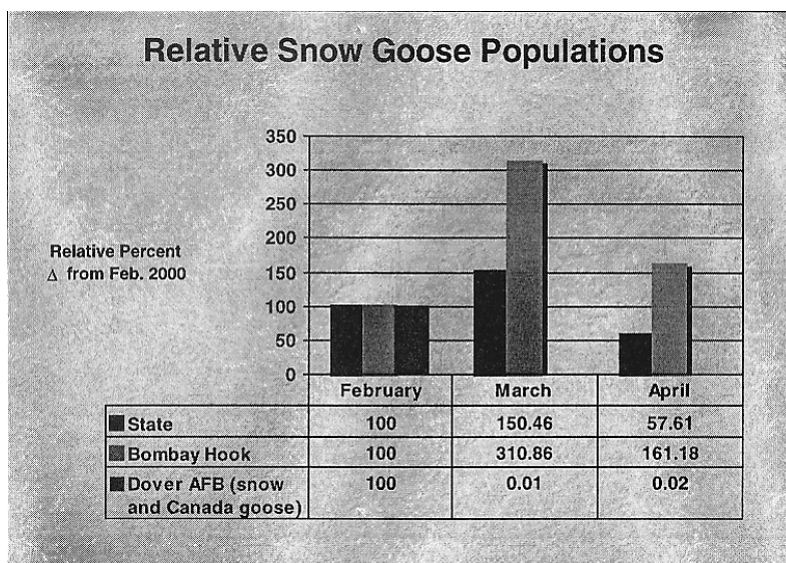


Figure 5. Relative percent change in snow goose populations in Delaware, Dover AFB and Bombay Hook National Wildlife Refuge from February-April 1999.

Conclusion

The use of border collies in wildlife harassment programs at airports and military bases is another tool for managers to consider. These dogs represent a persistent and unpredictable threat to most species and can successfully harass wildlife over a long time period. While border collies are not a solution for all harassment needs, used in concert with other control techniques, these dogs can make airport wildlife control programs far more effective.

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