

Successful Use of Alarm/Alert Call Playback to End Canada Goose Problems

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Abstract

Burgeoning continental resident Canada goose populations have led to concomitant increases in aircraft strikes. Once on or near airfields geese have proven difficult to move and keep away. Playback of naturally recorded alarm and alert calls of the species was coupled with multiple harassment techniques to determine whether it would prove effective at removal of long term resident geese from a 24.2 hec business park in Dayton, Ohio. The study began 26 Feb, 2002, following territorial establishment by the geese, and harassment continued until the last few geese had abandoned the property as of 14 May 2002, with continued call playback and observation of the property to 18 August 2002. At inception geese present were reusing nest territories they had used in multiple previous years at the site, and thus strong nest site fidelity made these perhaps the most difficult of all urban geese to remove in a non-lethal manner for that reason. Call playback used three “GooseBuster” units from Bird-X Corp. Inc., Chicago IL 60607. Daily harassment consisted of, chasing geese on foot, placing objects such as owl decoys, sticks, or balloons in nests. Sporadic use of two Chesapeake Retrievers over 7 mornings, in addition to other harassment was used, but not considered essential, to discourage return by geese. Reports of goose aggression, and injury to employees fell from 32 and 2 cases, respectively, in 2001 to zero in 2002. Employee time spent in harassment declined from 3-4 hours/day at the start to under 15 minutes/day. Goose droppings per 100 m of walks dropped significantly $F(3,24) = 30.048, P < .0001$, from a mean of 195.7 to 3.28 per 100 meter between 2/26 and the next counts on 3/24/02, a 97.88 % reduction, and has remained low ever since. Daily cleaning of sidewalks was suspended by week 2 of the study, more than offsetting employee time in harassment activities. Continued alarm call playback at random 10-20 minute settings appeared to help prevent return of resident and/or recolonization of the property by other geese. Goose use of the property dropped from an estimated 1600-1800 goose hours per day before testing to fewer than 150 goose hours/day by week three and to zero hours by May. Similar techniques may prove useful as a nonlethal means to permanently remove geese from areas on or near airports where they constitute a threat to air traffic



INTRODUCTION

Recent increases in continental resident Canada goose populations have led to concomitant increases in aircraft strikes, with 35 geese being reported as struck by aircraft in Ohio 1990-1999 (Barras and Wright 2002). Geese on or near airfields have proven difficult to move and keep away. Given their preference for

short, highly fertilized grass (Conover and Kania 1991), abundant golf courses, ponds and parks, and protection from hunting it is easy to understand why geese are drawn to urban environs where most airports are located.

Numerous non-lethal techniques have been tried, largely with limited long-term success as means to disperse Canada geese in both agricultural and urban settings. A recent summary of such techniques has been collected and published ("Managing Canada Geese in Urban Environments: A Technical Guide, Smith, et al 1999). Live trapping and relocation or euthanasia programs have provided some respite or reduction in problems (Cooper and Keefe 1997) Recently, lasers were tested for dispersal potential on this species, among others, (Blackwell, et al 2002).

Mott and Timbrook (1988) and Whitford (1987) had both indicated preliminary success at Canada goose dispersal using alarm call playback but attempted no long-term studies of the efficacy of this technique at the time.

To date, no consistently successful dispersal technique has been found that also prevents re-colonization of areas once resident geese have left or been removed. In an effort to devise techniques that might be applicable to removal of Canada geese from sites near airports, this study used playback of naturally recorded alarm and alert calls of the Canada geese coupled with multiple harassment techniques to determine whether it would prove effective at removal of long term resident geese from a business park in Dayton, Ohio. Several major questions were to be addressed by the study. 1) Could geese be moved off established territories by these techniques once nesting season began? 2) Could the geese be taught to avoid the central property if no effort was permitted to attempt to displace them from the adjacent holdings? 3) Would simply the playback of calls continue to keep geese away from the property once major harassment efforts ceased?

STUDY SITE

The study site was a 24.2 hec corporate park with .2 hec pond, soccer and baseball fields, 6 buildings, and parking for 1200 cars. It lay between two other properties, also with large numbers of resident geese, all of which used all three properties at the onset of the study. The other properties included a 12 hec corporate park with .5 hec pond roughly 120 meters across open, undeveloped land from the study property, and an apartment complex with >1 hec manmade lake lying just across the highway from the primary corporate campus. Roughly 85-100 resident geese, on average, were present at any one time, and spent 16-20 hours per day on the central property prior to the beginning of the study. Another 80-100 geese were resident upon the adjacent holdings.

METHODS

Alarm and Alert call playback used digitized forms of natural calls recorded by Dr. Philip Whitford, and etched onto microchips of three "**GooseBuster**" units from Bird-X Corp. Inc., Chicago IL 60607. Two of the **GooseBuster** units deployed used AC power sources and a third used a 12 volt marine battery and solar panel for recharging. The latter unit was portable, used where AC outlets were not available, and moved regularly to where problem geese were located. AC powered units were on 24 hour outdoor timers to control hours of operation. Each **GooseBuster** also had three internal settings for time between call playback- a "test" setting, a "short" setting and a "long" setting, providing the option of play at random times within base intervals of 1-3, 5-10, or 10-20 minutes, respectively.

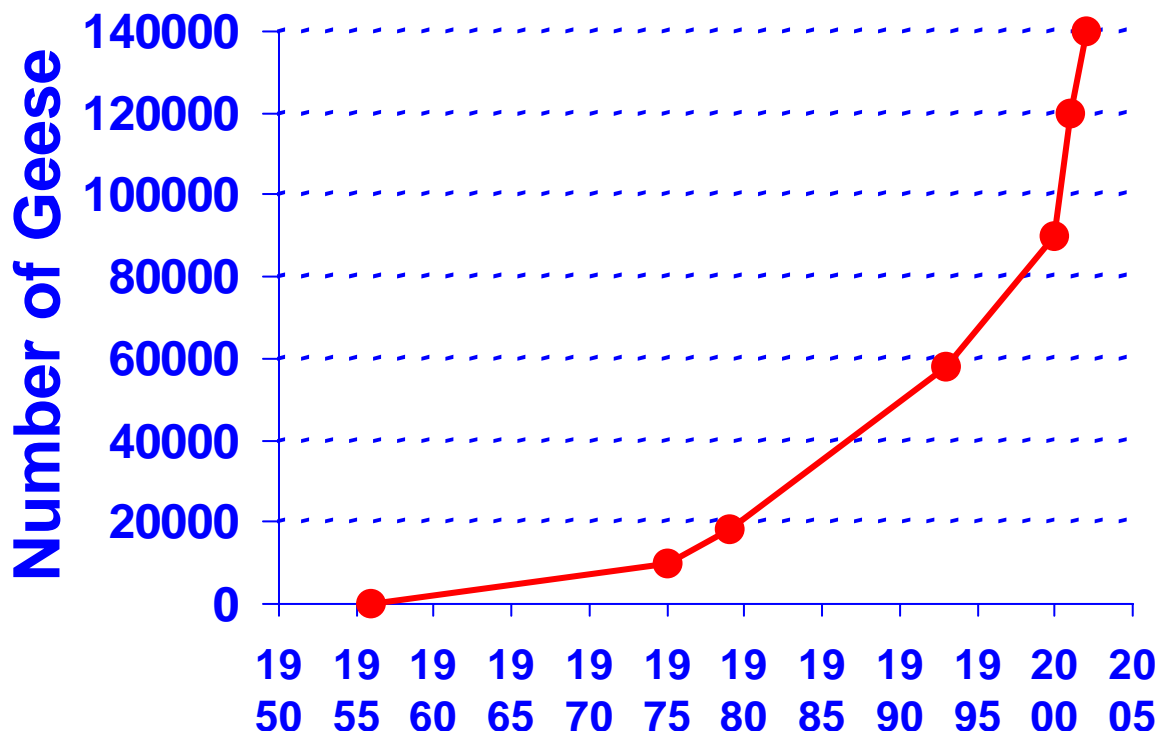
The study began with the AC units placed in areas of greatest goose concentrations and goose/human interaction. They were set for shortest settings and on 24 hours/day for the first week. These units were then reduced to the "short settings and set for 6:00-18:00 hours for daily operation for the next two weeks. They were finally reduced to the longest intervals and set to play only from 6:00-10:00 and 17:00-20:00 hours for the remainder of the study.

Lacking a DC timer, the DC unit was set for sunrise to sunset operation using an internal light sensor, and beginning on short and then later longest settings.

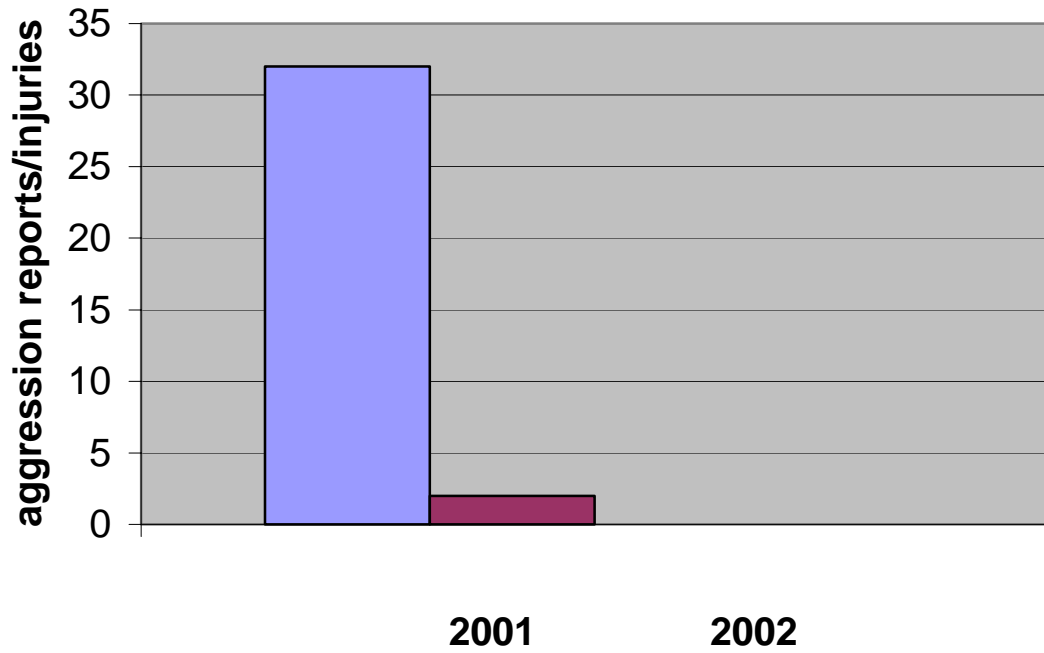
Call playback and harassment for the study began 26 February, roughly three weeks after territories had been established for the spring 2002 breeding season. This period is one I would consider the worst possible time of year to attempt to move geese. Most geese present were reusing nest territories they had used in multiple previous years at the site. Their strong nest site fidelity made these perhaps the most difficult of all geese to remove with non-lethal methods. Call playback and harassment was continued until the last few geese finally abandoned the property 14 May 2002. Call units were left on after that date until 18 August to determine whether geese returned once harassment ended. Human harassment consisted primarily of chasing geese on foot and waving arms to encourage geese to fly. Geese were chased until they left the property entirely, even if they landed several times at different locations before leaving. Persistent pursuit was considered essential to getting the geese to abandon the property for the long term.

Sporadic use of two Chesapeake Retrievers 7 mornings between 5 March and 1 May helped reduce human chasing effort. In addition, a 22 caliber powered decoy dummy launcher (normally used for retriever training) was used to scare geese off of building roofs on several mornings in March. Once egg laying began, in addition to chasing the geese on foot, we also resorted to placing objects such as owl decoys, sticks, or balloons in nests as soon as they were located. This forced the geese to either abandon the area or to construct another nest near the first and begin egg laying again. Evaluation of success was based on estimates of numbers of geese/hours spent on the property per day, made by periodic sunrise to sunset observations, and by counts of droppings (any goose feces portion exceeding 1 inch) on sidewalks. Also used to evaluate success were comparisons between the prior year and the study year on numbers of nests hatched, and reports of goose aggression and/or injury to employees. Reduction in time needed daily to clear geese from the property by harassment provided another measure of success of the techniques used.

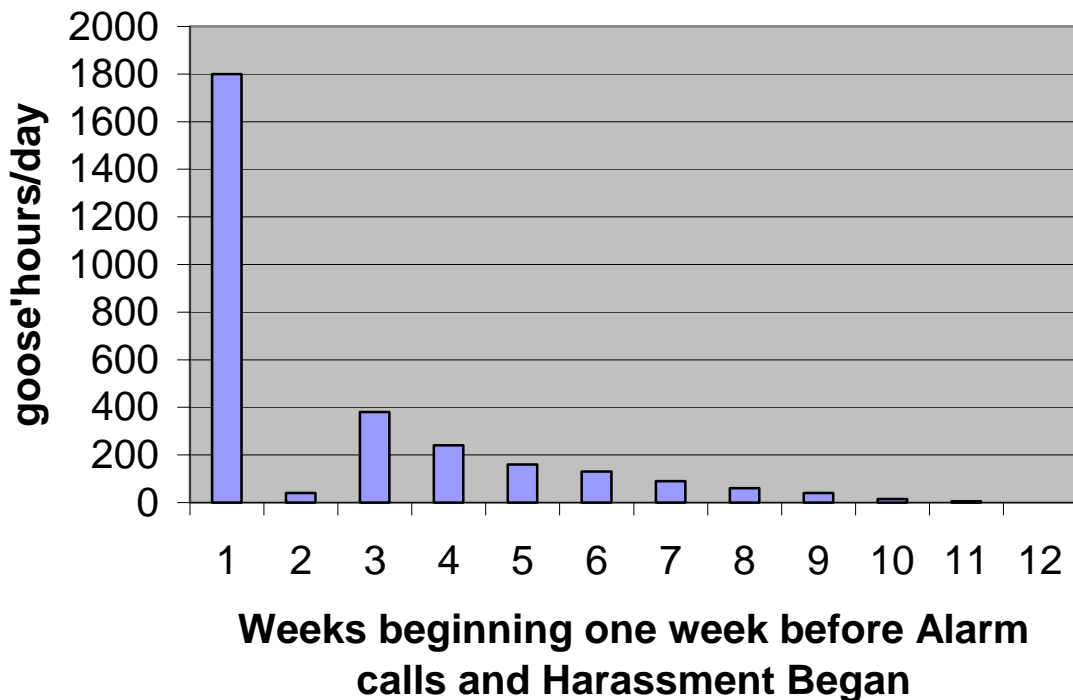
**RESIDENT CANADA GOOSE POPULATION IN OHIO
INCREASED FROM 20 BIRDS INTRODUCED IN 1956 TO
ABOUT 140,000 IN 2002.**



Goose aggression to humans (blue), human injuries (red) 2001 vs 2002



Estimated Goose Hours on Study Site Per Day



RESULTS

Estimated goose hours per day on the study property declined from 1600-1800/day before the study began to fewer than 150 hours/day by the third week of harassment, with a continual decline to zero hours by 12 May. Time spent in harassment fell from 3-4 hours/day at the start to under 15 minutes/day by 20 April with the peak decline occurring in the first three weeks of effort. Goose droppings per 100 m of walks, based on the same 10 sample units (1km), fell significantly $F(3,24) = 30.048$, $P < .0001$, from a mean of 195.7 to 3.28 per 100 meter between 2/26 and the next counts on 3/24/02, a 97.88 % reduction. They remained below that level until the goose buster units were shut off in August, even though concerted harassment efforts had been terminated in May.

No nests hatched on the property in 2002. No nest advanced to more than 2 days of incubation before termination and abandonment, and only one reached a full clutch of 6 eggs before abandonment. Reported instances of goose aggression and serious injury to employees at this complex fell from 32 and 2 cases, respectively, in 2001, to zero in 2002. This decline occurred in spite of the fact that no aggressive geese were euthanized in 2002 versus destruction of two aggressive males in 2001.

Grass planted around the pond and building entrances remained dense and healthy and did not require replanting as in previous years when goose numbers on the property were high. Twice daily cleaning of walks done prior to the study was deemed unnecessary by the second week of the study, more than offsetting

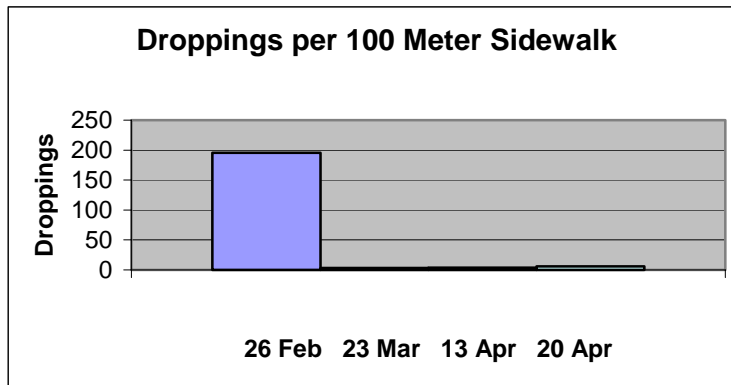
employee time in harassment activities. Geese did not re-colonize the property following the end of harassment, during the two month period when the **GooseBuster** units were turned on and functioning. Judged from these results, continued alarm call playback at random 10-20 minute settings appeared to prevent return of resident and/or re-colonization of the property by other geese

DISCUSSION

Time spent per day in harassing geese was quite variable at the beginning of the study, impacted strongly by weather and reproductive condition of the female, as dominant variables, as judged by observed patterns of behavior of the geese. The head of security for the business park assisted extensively with the harassment of the geese. He reported only 8-10 geese present on the property at any time on day 4 and none present on the fifth day after the study began. This coincided with a period of intense cold, wintery weather with sleet and high winds that reduced goose tendencies toward both territorial behavior and feeding movements. Geese returned in large numbers on the first 50 degree plus day that followed and attempted to reestablish territorial claims and/or initiate nest construction.

Numbers of geese present/day dropped steadily in for the following two weeks as non-breeders and numerous of the original 42 pairs abandoned territories and the property to seek other accommodations away from harassment and alarm calls. The last 8-12 pairs appeared to have the highest site fidelities and returned again and again to construct nests or lay eggs. The regular multiple daily returns of the most persistent pairs made simple tallies of numbers of geese observed on/chased off the property/day unreliable indicators of effectiveness of the goose removal effort. The last 4-6 pairs resorted to residing on the rooftops of the corporate buildings and only coming down to quickly attempt nest construction or egg laying 10 or more times a day. They flew back to the roof abruptly at approach of cars and humans, yet these few birds accounted for the great majority of the 100-120 goose/hours of use of the property per day throughout late March and much of April.

Geese were not observed to develop the strong aggressive tendencies towards humans reported in past years. I think this change largely occurred because the geese were not permitted to invest more time and energy in incubation before being forced to abandon nests. Current logic for the species suggests that increased energy investment results in greater levels of defense as incubation approaches completion. This stage was never reached for any nest in this study.



CONCLUSIONS

All evidence from this study indicates that it is possible to teach geese to avoid even very attractive specific large grassy sites associated with corporate office centers using alarm calls coupled with harassment. This implies that it should also be possible to make this combination work near/on airports if sufficient and consistent effort is initially made to harass the birds, using multiple techniques in concert with broadcast of alarm and alert calls. Leaving **GooseBuster** call units on and in place after geese abandon the area should help prevent geese from reestablishing themselves at those sites, as it did at the study site.

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