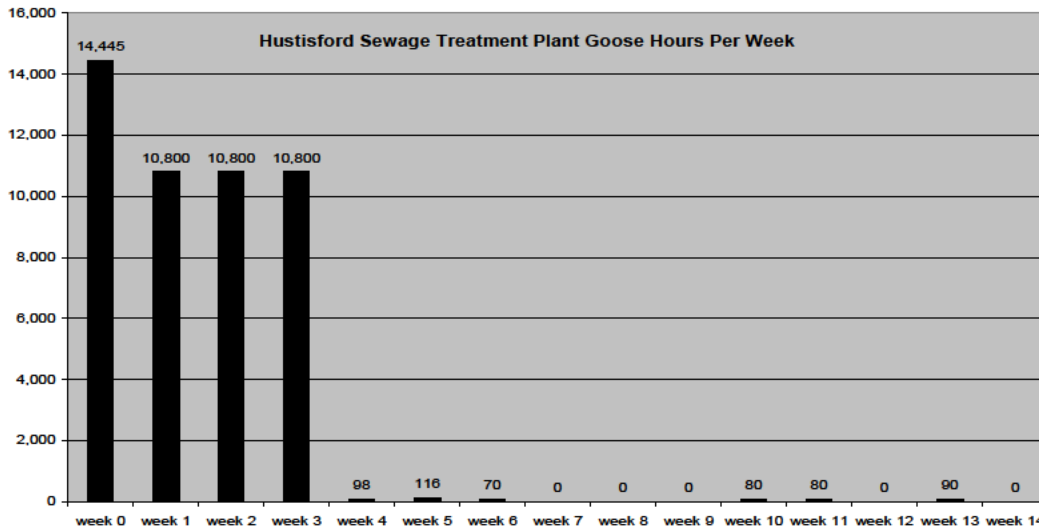


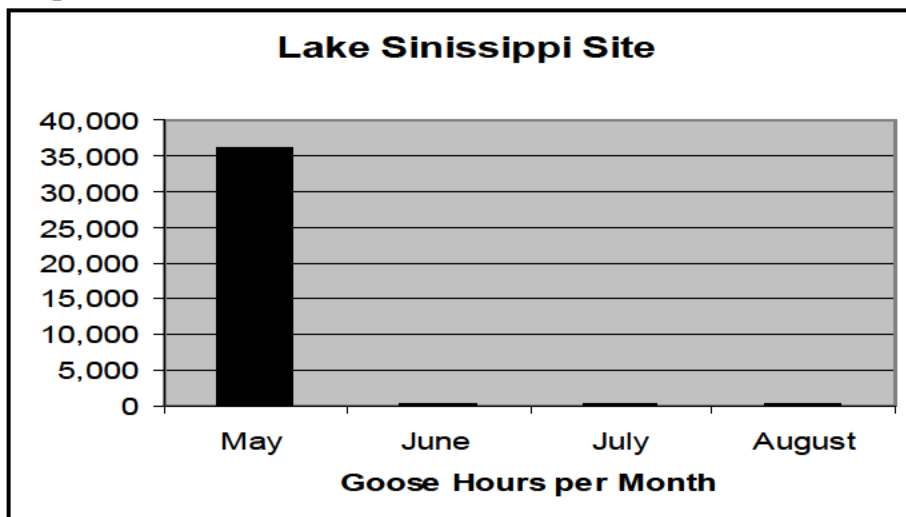
# Methods to Rapidly Disperse or Alter Behavior Of Canada Geese to Reduce Human Goose Conflicts and Potential Health Concerns

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**Newest research results; Rapid Long Term Displacement of Resident Canada Geese Via On Demand playback of Alarm Calls Reinforced with Cracker Shells**



Reduction in goose hours per week with use of alarm calls and human harassment for 45 minutes, duration and degree of reduction, and further reduction with alarm calls reinforced with screamer and banger shells. **Accomplished with only 11 uses of Calls, less than 2 hours effort for ten week test period.**



Reduction in goose hours per month by brood-rearing and molting resident Canada geese on two farms on a point in Lake Sinissippi following “on-demand alarm call playback” reinforced with screamer and banger shell use, initiated 5 June 2008. **Accomplished by 5 uses of calls, less than 1.2 hours effort in 3 months**

# Methods to Rapidly Disperse or Alter Behavior Of Canada Geese to Reduce Human Goose Conflicts and Potential Health Concerns

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Expanding resident urban Canada goose populations have led to concomitant increases in human/goose conflicts in Corporate park settings, urban and rural parks, golf courses, water reservoirs and agricultural lands bordering water. Geese in such locations have proven difficult to displace and keep away. Their preference for short, highly fertilized grass and ponds of golf courses, and parks attract geese to these environs (Smith et al. 1999). As they said in the film, Field of Dreams, "If you build it, they will come." So it is with the geese and corporate parks or golf courses with pampered lawns and picturesque water holes. They will come. And, when they do, their numbers will quickly swell to problem causing proportions, eventually decimating lawns, fouling the waters and covering the sidewalks with droppings. At this point the question becomes one of, "How do we get rid of the geese?"

Until recently, all Canada geese were protected by international treaties covering migratory bird species. As urban goose populations and problems rose those rules changed to permit egg and nest destruction to slow their population growth, and more recently lethal removal of adult geese- all of which will be discussed in detail later. Non-lethal control options are presented in "**Managing Canada Geese in Urban Environments**" Smith, et al. (1999), and shall be discussed individually in a moment. First, I feel it is essential to provide some information about the habits, annual patterns of behavior, intelligence and learning ability, and the manner of learning of Canada geese.

## Goose Behavior 101

Canada geese's lives are dominated by **learned traditions** and **instinctive annual patterns of behavior**. In migratory populations, goslings learn their migration and stopping points by flying the route with their parents. Goslings of resident Canada geese, similarly, learn where to be at each season of the year from time spent traveling with their parents. Geese are highly gregarious and gain safety from feeding and resting in large groups. Therefore, resident geese at any site will attract migrants in fall, geese will then return year after year to "winter vacation" on your property. In seasonal behaviors, geese have a strong tendency to go back repeatedly to where they hatched; nested; brooded young, were reared themselves; or where they successfully molted their feathers or spent past winters. What this means to a property owner is that, **once geese have established a tradition of use of the property for any of these activities, they will predictably attempt to return again the following years at the proper seasons**. This is especially true of geese on past, or established nest, sites and territories. where geese are most difficult to remove and keep away, for you must break them of their old traditions and force them establish new ones.

**Zero tolerance of geese is the only option for long-term success!** Prevent geese from starting to use your property if they are not there now. Geese get comfortable and are at ease on a new site within 7-10 days of arriving, and as such they attract more geese and begin establishing traditions of use. Shortly, multiple generations of birds are fighting over territories, nesting in your flower beds, raising 4-6 goslings per pair, and leaving 1.5 pounds of droppings per day per goose across your sidewalks and lawns. **To succeed, do not to let geese stay on your property for even an hour.** Chase them away immediately, for when geese first arrive on unfamiliar ground they are edgy and easily spooked into leaving and seldom return.

To effectively disperse geese from any site, it is imperative to realize that they are driven by internal clocks which determine daily and seasonal behaviors. Understanding those seasonal changes will help you minimize cost, time and effort, and maximize benefit from dispersal efforts.

## Seasons of the Goose: a very brief perspective into the life of Canada geese

### Fall behavior      September - November

Arctic nesting geese come south to join the resident geese populations. If you have gotten rid of your past resident geese, you will still have some past year migrants returning to your property, Strike fast and early to get these migrants to go someplace else. If night roosting on a nearby pond or small lake, use boats, lights and firecrackers or alarm calls at sunset and/or after dark to cause the birds to find another sleeping location. They will move, because geese like a quiet night's rest as much as we do. Keep up the effort 2-3 times per night for 1-2 weeks to get them to permanently change night roosts. Be certain to force all birds to leave during this harassment, day or night. **Any single bird that remains will serve as the nucleus for reforming of the flock** if it stays on the pond, calling to passing geese, as is the normal pattern for the species.

### Winter- December to Mid-February

Geese rest and make feeding flights to grassy areas in the south or harvested suburban fields in the north. Plowed walks and asphalt parking lots absorb heat in the sun. Geese warm their toes and cut energy use resting here, leaving copious droppings in exchange. Yet, these are great times to remove resident geese. Use alarm and alert calls, human disturbance, and for fastest results an occasional screamer or banger shell. Since there is little to attract them at this season, they quickly will find new, quiet places to live for the rest of the winter, and usually won't come back, unless they nested on that property in prior years.

### February/March

Migrants start moving north in short hops. Resident Canada geese begin squabbling over nesting territories, calling at territorial boundaries and chasing each other. After territories are established, geese become very difficult to move. Returning day after day to try to reclaim their territories, they can only be moved off by continual harassment effort.

**Concentrate all harassment on the female. If she leaves the male will go with her. If she stays, they both stay.**

### Mid-March to mid- May

Nest construction, egg laying, and incubation. Non-territorial birds and last years young move to new locations to feed and rest. They are excluded from the usual sites by aggression of territorial birds. Non-territorial birds are easily scared away within the first hours after arrival at new locations. Attempting to disperse nesting geese will prove costly and labor intensive. Daily approach to the nest and placement of large objects that prevent her from sitting in the nest will cause most females to readily abandon the site.

### Mid May to Mid June

Eggs hatch. Nests and territories are abandoned. Geese with goslings seek and congregate on short, well fertilized, open grass sites used annually as brood rearing areas. Parents and goslings are unable to fly and must stay near the safety of water, to which they can escape if people or land predators approach. Flightless birds can't move far if harassed, but having goslings makes them willing to leave areas with random alarm call playback if there is another suitable brood rearing site within a mile or two they can move to.

### June 15 to July 10

All geese are flightless due to molt of primaries and tail feathers. Birds gather near water for safety. Exclude them from water access if possible by use of low fencing or monofilament line along the shore. Since they can't climb or fly over it, geese leave to find accessible water elsewhere. **This is the only time when "roundups" of geese are possible, permitting geese to be captured, and translocated or euthanized with proper permits. Plan well in advance to get state and federal permits needed.**

### July 15 to September

Goslings begin flying. Adults regain flight. Resident geese and goslings return to their normal residence sites, and rejoin non-breeders. Daytime activities center on feeding and napping on lawns near water. If your geese have been gone for a few weeks, this is a good time to start a fresh Alarm and Alert call and harassment program to prevent them from settling back into routine use of the property. **When Alarm and Alert call use is coupled with human harassment and/or other scare techniques it greatly improves probability of success, reduces effort and time needed, and prevents recolonization of the site by new geese.**

### Options for Physically Removing Geese and/or Reducing Goose Recruitment

Gathering and removing geese from a property, referred to as lethal removal and/or translocation, can only be done during the flightless period mid-June to early July. Cost in Ohio at present is about \$50. 00/bird removed plus \$400-\$600 or more, in set up and transportation costs to take the goslings to wildlife refuges. **This is a great option to use to remove final birds from properties treated with harassment and alarm calls.** Removal gets rid of the geese that have a long-term habit of use of specific areas, making it easier to prevent new geese from setting up housekeeping in future. Permits can be gained from the State DNR only after demonstrating that you have attempted several non-lethal alternate methods to scare geese away or reduce property attractiveness to them. Special early urban hunting seasons when only resident geese are present are also used to reduce goose numbers. These have liberal bag limits and encourage local golf courses to permit restricted morning hunting to eliminate problem geese. In the last two years, in limited cases of heavy economic or crop damage, unlimited, year-round kill permits may be issued to individuals/corporations by the state and federal authorities. Such permits provide options for selective removal of nuisance geese by gun or trap. Egg addling- oiling, or shaking eggs to prevent them from hatching, requires permits from state and federal wildlife authorities and, in the long term, may reduce local populations when nests are easy to find. Another effective way to reduce gosling hatching success is by nest obstruction- putting obstacles in the nest that prevent further egg laying and incubation. Large sticks or rocks can be put in nests that

have 2-3 eggs in them. This was found to produce a 100% success at inducing nest abandonment in a past corporate park (Whitford 2004).

### **Options for Habitat Alteration to Reduce Site Attractiveness for Geese**

The cheapest and easiest way to make corporate lawns/parks less attractive to geese is to reduce the frequency of mowing and fertilizing, and set the blade height of mowers higher. Grass that is 5-6 inches tall has much less protein and is harder to digest than 1-3 inch grass. Geese avoid eating it, if possible, and so they don't hang around the lawn. Taste aversion sprays make grasses unpalatable to geese and are harmless chemical available from Bird-X, Inc. in Chicago and other suppliers listed in the back of Smith et al 1999. Drawbacks to these products include the relatively high cost per acre/treated; the need for sprayers and personnel to apply them; and the fact that they need to be reapplied after rains and mowing. Geese can also be discouraged from use of ponds and lawns in other ways. The Hershey Corporation planted extensive areas of tall, flowering prairie plants and grasses on its new campus in Hershey, Pennsylvania. Geese avoid the area for they can't see predators approaching. The company has reported extensive savings on lawn care as a side benefit. The same result can be gained by planting a 30-50 foot width of dense, perennial tall grasses and flowers around the margins of ponds or shorelines. Geese like a clear view of at least 10 meters (33 ft) and won't enter vegetation when they can't see through it or over the top.

### **Options of Techniques for Dispersal of Canada geese**

#### **Visual scaring devices:**

These are things such as black or orange plastic flags attached to fence posts to blow in the wind, reflective mylar tape strung around ponds and on fences, eyespot balloons and/or kites mounted on long poles, scare crows and flashing strobe lights. The newest reported forms of visual scaring devices consist of the use of lasers (Blackwell, et al. 2002) or million candlepower, hand held spotlights to disturb geese night roosting on ponds. A new device on the market from Bird-X, inc, Chicago, designed by Dr. Philip Whitford, has been begun receiving many good anecdotal reports of success at dispelling geese. It is a life-size, three dimensional, plastic coyote model, mounted on a single stake that permits it to "weather-vane" in the wind and change appearance to geese. A furry "fabric tail" blows in the wind and adds further realism as it alters the appearance of the model to geese.

#### **Trained Dogs, Falcons, Swans, and Radio-controlled planes and boats:**

All these methods can be very successful at removing transient geese, and migrants as long as they are available on demand on short notice. They all require specially trained personnel and often a major investment or commitment to continued control efforts. Border collie visits to parks and corporate head quarters in Columbus Ohio, begin at \$60. 00- \$75. 00/trip and often require a long term commitment to several trips weekly, making it a costly process with little incentive for the service provider to completely succeed at getting the geese to leave. Swans are more aggressive than geese and bigger, rent for as much as \$1000. 00 or more per pair/year in the Chicago area. They work for small ponds- sometimes. Hawks, RC boats and planes all need trained personnel and repeat use- but they can help get birds off the water during harassment efforts and make alarm call use work faster and better at moving geese away

#### **Noise making devices:**

A wide range of devices have been tried as means to scare geese over the past 50 years, particularly in agricultural fields. Sirens, airhorns and whistles, fireworks, or use of carbide cannons, starter pistol launched banger and whistle bombs:, screamer and cracker shells fired from other firearms all have generally had good results with transient geese but not resident geese. Such approaches are suited primarily for rural use and resident geese have shown fairly rapid habituation to them. However, summer 2008 research in agricultural and rural corporate settings of Wisconsin (Whitford, unpublished) found that when alarm call playback was used only when geese were present and was coupled with use of screamer or banger shells, very rapid, long term goose avoidance of those areas was generated. No habituation ensued. Goose hours present per day were reduced 99. 7% within 5 to 20 days, and stayed that low for more than 3 months, with minimal reinforcement

#### **Distress/Alarm/Alert Calls:**

Alarm and Alert calls are among the most recent sound production devices to be widely applied to goose problems. Alarm and Alert Calls released by Bird-X on the Goosebuster Unit, were recorded in the field under natural conditions and are part of the normal call collection of the giant Canada goose. Both calls elicit fairly predictable instinctive alert and/or escape responses from geese hearing playback of the calls. To date, only use of the Alarm and Alert call playback system has shown consistent high rates of success at dispersal of geese, and additionally offers evidence of preventing re-colonization of areas following resident geese dispersal, removal by transplanting, or lethal methods. Field trials (Whitford 2004) have demonstrated these aspects of use of alarm and alert calls on a Dayton area study site of a 24. 2 ha (60 acre) corporate park with . 2 ha (1/2 acre) pond, soccer and baseball fields, 6

buildings, and paved parking facilities for 1400 cars. Resident geese used all three properties, with 85-100 present on the central property and another 80-140 on the adjacent properties. Five year records indicated 43-45 active nests annually on the primary campus. Goose numbers required daily walk sweeping, annual re-sodding of lawns near pond margins, and extensive employee complaints about dropping contamination. Facilities records for 2001 indicated 32 reports of aggression to humans, including two cases of injury requiring hospital treatment.

A combination of human harassment and Alarm and Alert call playback using digitized forms of calls originally recorded from wild and captive giant Canada in 1981 (Whitford 1987) was used to remove geese from the central corporate park property. These calls were recorded onto microchips of three "Goosebuster" units from Bird-X, Inc. , Chicago IL 60607, and those units were used for this study. Digital adjustment of calls altered goose perception of the sound to foster the impression that several individuals were giving alarm or alert calls. Call units played 4 different randomized call series via four dispersed speakers at randomized times within base intervals of 1-3, 5-10, or 10-20 min, respectively. The volume controls for all units were set to normal goose call levels to avoid disturbing employees in the adjacent buildings or attracting attention to the call units. Call playback and harassment started 26 February, 2002 and continued until 14 May 2002. Thereafter only call playback was used until the study ended 15 August. The study began roughly three weeks after breeding territories were established. Since many geese present were nesting in territories they had used in previous years, I expected this to make these geese very difficult to permanently disperse with non-lethal methods.

Harassment consisted of one person chasing geese on foot until they left the property entirely. A combination of persistent pursuit and zero tolerance of geese on the grounds was considered essential in getting geese to abandon the site for the long term. Evaluation was based on estimates of geese/hours/day on the property, dropping counts/100 m (109 yd) on a fixed set of 10 100 m (109 yd) segments of sidewalk, and reports of goose aggression, and injury to employees in 2001 versus during the study. Goose hours/day dropped from over 1800 to zero from February to May. Goose droppings per 100 m of walks, fell from a mean of 195. 7 to 3. 28 per 100 m between 26 February and the next counts on 24 March, a 97. 88 % reduction. Pairs nesting successfully on the property declined to 0 in 2002. There were no reports of goose aggression or injury to humans from geese in the 2002 nesting season, versus 32 and 2 reports of these problems, respectively, in 2001. The combination of call playback and harassment proved successful at eliminating all geese from the property. Reduction of goose damage to lawns was evident in that new sod required to be planted annually in 2000 and 2001 around the pond and building entrances remained dense and healthy in 2002.

Additional studies, as yet unpublished, were done in summer 2008, in conjunction with the USDA , APHIS, Wildlife Damage Control personnel from the Waupun, Wisconsin office. In the first of those, a sewage treatment facility in Hustisford, Wisconsin, (where 228 resident geese/goslings had been banded the prior year in July) was selected by USDA staff to test whether Goose alarm call playback could reduce goose dropping problems resulting from presence of geese and goslings using the sewage ponds and fenced grounds of the facility as brood rearing sites. In addition these geese ventured out daily on foot to decimate adjoining emerging crops. The site had used, USDA provided, unlimited banger shells and screamer shells, and propane canons for several years to try to alleviate problems. The study ran from 16 May to 28 August. Past study protocols were altered to use only "On Demand " playback of alarm and alert calls, only turning call units on when geese were present. After 1 minute of call playback, if any geese remained a cracker or screamer shell was fired to make them leave.

Using this technique, within a week goose/hours/week on the property fell from 10800wk to an average of 53. 4 hours/week for the remaining three months of the study. A total of 11 call activations and/or shell firings interventions were used in 100 days and required less than 1. 8 hours total time investment. A 99. 45% reduction in goose hours/week was seen and goose dropping problems were completely resolved. USDA calculated crop damage on the adjacent field was reduced 97. 5 % when compared to the prior year, and all of that damage occurred prior to initiation of "On Demand " call playback at the plant.

The final study also in conjunction with USDA/ APHIS staff was done to attempt to reduce crop damage from brood rearing resident geese along the shores of Lake Sinissippi, Hustisford, Wisconsin. This region was one of the first to have resident Canada geese, and historically had one of the highest resident goose populations and thus goose crop damage histories in the state. Prior years efforts to reduce damage on these 92 acres comprised of 8 separate fields included propane cannons, banger and screamer shells, kill permits, and multiple daily chases of geese with car, golf cart, boats and shotgun. Alarm call use was exactly like that at the sewage treatment plant. Emerging crops were corn, soy bean and alfalfa, in the same proportions they had been planed in prior years. Weekly reports from the farmer about geese seen and actions taken were coupled with frequent researcher visits and extensive field searching for goose droppings or signs of plant damage. Goose hours/month on the fields, adjoining property and water were estimated to be 36000/month when goslings and adults were surveyed before start of call playback. After one week of "on demand " playback and only 5 playback episodes, coupled with 5 banger shells fired, goose hour/month estimates dropped to and stayed at less than 200/month, a 99. 7 % reduction. Minor damage occurred on roughly. 3

acre out of 92, on corn planted near the lake. It was the result of one morning's 5:00-6:30 am incursion of 30-40 geese following fireworks in Hustisford that may have driven geese out of the city park . The geese left immediately when the alarm call and banger shell were used. Other than that . 3 acre, no evidence of crop damage was found that bore evidences of geese feeding or was associated with goose droppings. Fewer than 200 goose droppings total were found in the fields in the 3 months following implementation of the study. No sign of habituation to the calls was observed in the 100 plus days of the study.

As a final comment, it should be noted that no single non-lethal dispersal method can be expected to be successful at goose removal 100 % of the time. Combining and applying several dispersal methods simultaneously improves the probability of getting all geese to leave the desired property and stay gone. As yet, only use of Alarm/Alert calls has shown real potential in preventing recolonization of attractive sites by new geese once the original geese have been dispersed, translocated, or lethally removed. Therefore these devices appear to offer the best option for keeping the property clear of geese with minimal human effort once the original problem geese are gone. Clearly, the most effective use of Goose Alarm and Alert Call playback found to date is that when it is used in "on demand" pattern and reinforced with a occasional screamer or banger shell fired toward geese after 1-2 minutes of call playback. **This combination was more effective at moving geese than either stimulus was alone, and evidenced no indication of potential for habituation, as has been observed when either are used alone. With goose/hr/day reductions of 97 % and more in only 1-5 treatments, and evidence of long term avoidance of treated areas by geese afterward, there is no question that this is one of the most effective goose dispelling techniques available at present.**

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