EXCLUDING NON-MIGRATORY CANADA GEESE WITH OVERHEAD WIRE GRIDS

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ABSTRACT: Non-migratory urban Canada geese present complex problems requiring innovative techniques that are effective yet acceptable to contemporary society. A grid technique was modified and developed to discourage non-migratory urban Canada geese from using water sources and thus abandoning adjacent areas. The technique is believed effective because it restricts the use of water resources for escape and reduces the required long take-off and landing zones of Canada geese. The grid successfully reduced non-migratory Canada geese from using three sites in northern Virginia. Several grid configurations and types of materials are discussed.

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Urban wildlife damage problems tend to be complex and require innovative strategies and methods for resolution. Complexities arise from the species non-response to traditional nonlethal methods, legal considerations, changing social values towards wildlife (Schmidt 1989), economic costs, and physical considerations. Finding an effective, yet social, legal, economic, and physically acceptable solution to an urban wildlife damage problem often directs the decision-making process through numerous fine-screened filters (Slate et al. 1992, USDA-APHIS 1993:2-24 to 2-31).

The Virginia Dept. of Game and Inland Fisheries reported 37,000 non-migratory Canada geese living in northern Virginia in 1993 (G. Costanzo pers. commun.). The public has complained to state and federal wildlife and agriculture agencies about the geese defecating on beaches, lawns, and golf courses; depleting vegetative cover on shorelines; acting aggressive towards people; swimming in pools; becoming a hazard to aircraft operations; blocking roadways; and contaminating water quality. Non-migratory urban Canada geese (Branta canadensis) in northern Virginia which I have worked with tend to show no response or limited short-term response to audio and visual harassment techniques (i.e., pyrotechnics, propane cannons, eye-spot balloons, mylar tape). Additionally, some county and city governments have passed noise ordinances which preclude use of audio harassment of Canada geese. Some urban residents consider certain nonlethal and lethal methods socially unacceptable (i.e., barriers, harassment, egg addling, relocation, etc.). And some effective control methods for Canada geese are economically prohibitive to landowners, businesses, and homeowner associations, or are aesthetically unappealing.

Overhead wires were developed to exclude gulls from reservoirs (McAtee and Piper 1936) and since have been used to exclude numerous other bird species (Pochop et al. 1990, May and Bodenchunk, unpublished data). The contorted decision-making process motivated me to seek an effective, economical, and practical method to the non-migratory urban Canada goose conflict in northern Virginia. This paper details my account in modifying and testing overhead wire grids to exclude non-migratory urban Canada geese from local areas.

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MATERIALS AND METHODS

Overhead "wire" grids were installed at three locations located in Fairfax, Herndon, and Alexandria, Virginia. The first site was a golf course in Fairfax were a grid made of parallel 12-gauge polypropylene lines (National Netting, Norcross, GA) spaced 8.3 m apart and overlapping perpendicular lines 16.6 m apart were erected in January 1992 over a 0.8 ha pond. Four-foot fiberglass rod posts, spaced at 8.3 m intervals around the perimeter, supported the grid and two-strand perimeter line fence. The lines comprising the two-strand perimeter fence were 20 and 35 cm

above the ground. The polypropylene line was connected to insulators using self stripping electrical tap connectors (3M Company). The maximum span over the pond was approximately 116 m.

The second site was a corporation in Herndon were two grids were erected in May 1992 using parallel and perpendicular 12-gauge polypropylene lines spaced at 8.3 m intervals. Three-foot light-duty steel fence posts supported the grid. The polypropylene line was wrapped around the post and secured with a self-stripping electrical tap connector. The maximum span over the pond was approximately 83 m. A two-strand polypropylene line fence was erected around the perimeter as at the site in Fairfax.

In April 1993 at the Herndon site a polypropylene line grid was replaced with 0.05 inch kevlar line (United Rope Works, Montgomeryville, PA) over one pond. The kevlar line was connected to heavy-duty five-foot steel fence posts by inserting a four-inch eye bolt through pre-drilled holes, sliding a 3/64 - 3/32 inch stainless steel thimble through the eye of the eye-bolt, and threading the kevlar line through the thimble and a B4 cooper sleeve which was then crushed with a Nicopress No. 17-B4 hand tool (National Telephone Supply Co.). The eye-bolts were used to adjust the tautness on the kevlar lines; 1.5-2.0 kilos for spans less than 33 m and 3.25-3.75 kilos for 66-83 m spans. The kevlar line was rated at 85.6 kilos break strength. The two-strand perimeter fence was connected to the fence posts by passing the 12-gauge polypropylene line through one and one-half inch eye-bolts placed in pre-drilled holes about 20 and 35 cm above the ground. Self-stripping electrical tap connectors were used to connect the ends of the polypropylene wires.

The third site was a golf course in Alexandria were parallel overhead kevlar lines spaced at 8.3 m intervals were installed over a 0.1 ha pond by the golf course following my instructions in the fall of 1992. A two-strand perimeter fence was not erected.

The mention of products and corporations does not constitute an endorsement by the U.S. Department of Agriculture.

RESULTS

Overhead wire grids were successful at substantially reducing the number of Canada geese grazing, loafing, and nesting proximate to water bodies.

Fairfax Site

Approximately 100 non-migratory Canada geese were aggressively harassed from the 0.8 ha. pond so that the grid could be installed. Upon completion of the grid that day, the geese returned and attempted to land on the pond but aborted their landings. The golf course reported the geese continued to try to land on the pond over the next four months but always aborted the landing. I witnessed approximately 12 geese fly over and abort a landing on the pond four months after installation. Since erection of the grid, only two geese continued to use the golf course for feeding, nesting, and loafing. No geese used the pond.

The 12-gauge polypropylene wire stretched and the fiberglass posts fatigued over four months. The wire had to be tightened to keep it from sagging into the water. The fiberglass posts initially were erect but over time bent inward towards the pond due to the weight and wind resistance of the polypropylene wire.

Herndon Site, polypropylene line

Two 0.8 ha ponds were enclosed in a 12-gauge polypropylene line grid over three days. Approximately 75 Canada geese abandoned the two ponds moving to a third pond a short distance (300 meters) away. Goose feeding and loafing activity stayed concentrated around the third pond. The corporation was satisfied to keep the goose activity at the third pond and away from the building, walkways, driveway, and outdoor cafeteria.

The polypropylene line began sagging within one month and many of the longer spans laid in the water. The perimeter fence line was broken in numerous locations due to carelessness by the landscaper. Geese (N=8) started using the gridded ponds as isolated pairs. Geese would scramble over sagging and floating grid lines. The three foot-tall steel fence posts were leaning inward towards the pond due to the weight and wind stress upon the polypropylene line.

Herndon Site, kevlar line

Approximately, 75 geese were using the corporate property at initiation of the study. Less than six geese were using each gridded pond ten months later. All polypropylene lines over 33 meters had sagged and

were laying in the water and over 75% of the three-foot steel fence posts were leaning towards the pond. The 0.8 ha pond closest to the building had the grid replaced using five-foot heavy-duty steel fence posts and 0.05 inch kevlar line. A two-strand 12-gauge polypropylene line fence was erected around the perimeter. The geese immediately stopped using the pond. When the landscaper again broke the perimeter fence some geese walked into the pond. The geese were never observed to fly into or out of the pond while the kevlar wire grid was in place.

However, after two spring floods inundated the grid and numerous windy days, the grid was still in its original condition when observed three months later. None of the kevlar line had sagged and none of the five-foot posts were leaning.

Alexandria Site

The grid over the 0.1 ha. pond was successful at keeping approximately 600 non-migratory Canada geese from using the pond. The goose activities changed, resulting in more time feeding at a nearby slough which could not be gridded (J. Meier, pers. commun.).

It took four people an average of 2.25 hours per 0.4 surface ha to set posts, grid the pond, and erect the perimeter fence. Thirty-eight to forty posts are needed per 0.4 surface-ha and five-foot heavy-duty steel fence posts with pre-drilled holes cost $2.94 each. Each fence post had two one and one-half inch eye-bolts and two four-inch eye-bolts costing $0.40 each. Approximately 1,466 m of kevlar line per 0.4 surface ha was used costing $0.15/m. The 12-gauge polypropylene line used in the grid and perimeter fence cost $0.018/m. The B4 cooper sleeves cost $0.09 each while the self-striping electrical tap connectors cost $0.15 each. The 3/64 - 3/32 stainless steel thimbles cost $0.26 each. The total cost for materials per 0.4 surface ha was $436.00 for kevlar grids and $247.10 for polypropylene grids.

DISCUSSION AND CONCLUSION

The overhead wire grids deterred non-migratory Canada geese from using water bodies. When access to water bodies was denied, the local goose population abandoned the area, was substantially reduced, or shifted activities to nearby water bodies.

Fairaizl (1992) demonstrated that polypropylene overhead wire grids could be used to greatly reduce Canada goose use of a 13 ha. lake in Nevada. Terry (unpublished data) observed significant reduction in numbers of Canada geese at a 5.8 ha sewage lagoon at Dulles International Airport in Virginia after a stainless steel overhead wire grid was installed. The above grids covered large bodies of water and were directed primarily at migratory Canada geese, but only limited numbers of non-migratory Canada geese used the water bodies. Fairaizl, Terry, and I were interested in efficacy of repelling large numbers of non-migratory Canada geese from comparatively small bodies of water. Experiences led to modifications of methodologies and identification of materials for overhead wire grids to exclude non-migratory urban Canada geese.

Terry (pers. commun.) reported difficulty handling 0.015 inch diameter stainless steel wire. The wires broke due to wind breakage, when birds struck them, and from unknown causes. The wire was also subject to kinking during erection of the grid. This breakage resulted in frequent maintenance. Polypropylene and kevlar line were tested to overcome these difficulties.

Kevlar line, an aramid fiber (United Rope Works), has virtually no stretch with a durability estimated at a minimum of 10 years. Polypropylene line (12 gauge) is a synthetic plastic that stretches, fatigues due to ultra-violet light (National Netting Inc.), and has a life expectancy estimated at 3-7 years. The higher cost of the kevlar line can be justified in its longer life expectancy, little to no maintenance, greater breaking strength, and ease of handling. The smaller diameter of the kevlar line appears to put less stress on the posts from wind due to its smaller cross-sectional surface area compared to 12-gauge polypropylene line. Polypropylene line has deficiencies for grids, but its low cost and future technological advances make it worth considering.

The two-strand perimeter fencing was found to be an integral part of the system to deter Canada geese at the Fairfax and Herndon sites and in Nevada (S. Fairaizl, pers. commun.). When the perimeter fence was broken, a reduced number of geese continued to use the pond and the area around the pond. However, Canada goose activity at the Alexandria site was significantly reduced to a few families of geese even though a perimeter fence was not used. It appears a more durable line or wire than polypropylene is

required for the perimeter fence if self-propelled lawn machinery is used proximate to the fence.

The success of the overhead wire grid system in this study is attributed to sturdy support posts and an adequate system to attach the kevlar or polypropylene line. I recommend the use of five-foot heavy-duty steel fence posts over other posts tried. The use of eye-bolts and thimbles proved ideal in attaching the lines to the posts without causing fatigue in the line, thus keeping the rated breaking strength of the line.

MANAGEMENT IMPLICATIONS

Overhead wire grids to exclude Canada geese are most applicable over small bodies of water that have limited recreational use. The most ideal ponds are those at golf courses and corporations; these ponds are water hazards and for aesthetics. Larger ponds can be covered with a grid to exclude Canada geese but this method may preclude recreational opportunities such as fishing, swimming, and boating.

LITERATURE CITED

Fairaizl, S. D. 1992. An integrated approach to the management of urban Canada goose depredations. Pages 105-109 in Proc. 15th Vertebrate Pest Conf. Univ. of CA. Davis.

May, J. A. and M. J. Bodenchuk. Unpublished data. An experimental "wire" grid for exclusion of double-crested cormorants from commercial catfish pond. USDA-APHIS-ADC. Stoneville, MS. 1 pp.

McAtee, W. L. and S. E. Piper. 1936. Excluding birds from reservoirs and fishponds. U. S. Dept. of Agriculture leaflet No. 120. 6 pp.

Pochop, P. A., R. J. Johnson, D. A. Aguero, and K. M. Eskridge. 1990. The status of lines in bird damage control-a review. Proc. 14th Vertebr. Pest Conf. 14:317-322.

Schmidt, R. H. 1989. Wildlife management and animal welfare. Trans. North Am. Wildl. Nat. Conf. 54:468-475.

Slate, D., R. Owens, G. Connolly, and G. Simmons. 1992. Decision making for wildlife damage management. Trans. 57th N. A. Wildl. & Nat. Res. Conf. 51-62p.

Terry, L. E. unpublished data. A wire grid system to deter waterfowl from using ponds at airports. Bird Damage Research Report 394. Denver Wildl. Res. Center. Denver, CO. 10 pp.

United States Department of Agriculture, Animal and Plant Health Inspection Service. Animal Damage Control Program: Supplement to the Draft Environmental Impact Statement. 1993. U.S. Depart. of Agriculture, Animal and Plant Health Inspection Service. Washington, D.C.