Strategies for Resident Canada Goose Control and Management in New Jersey

Fact Sheet FS1217

Cooperative Extension

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The overabundance of resident Canada geese (*Branta canadensis*) in the eastern U.S. has significant negative impacts on both ecosystem and human health. Intolerable levels of negative human-goose interactions, including agricultural damage, habitat degradation, aircraft strikes, and environmental contamination, make managing resident goose populations a necessity. In New Jersey, the resident Canada goose population exceeds 80,000 individuals (based on 2012 surveys), far greater than historic numbers. A lack of natural predators and high-quality food resources have greatly increased survival, throwing the population out of balance with the ecosystem that supports it. While Canada geese do contribute to our state's biodiversity and are part of our cultural heritage, reducing the population size to historic levels has many benefits for both humans and wildlife. Here we present several strategies for the regulation of the New Jersey resident Canada goose population. No strategy is completely effective; therefore, combining these methods in an integrated approach will maximize effectiveness.

Legal Status of Canada Geese

Canada geese are traditionally migratory waterfowl; however, release of captive geese in the 1930s led to the formation of a non-migratory group in the eastern U.S. (see Rutgers Cooperativ Extension fact sheet FS1214, "Canada Goose Ecology and Impacts in New Jersey" (njaes.rutgers.edu/pubs/fs1214/) for further details). These *resident* Canada geese remain in New Jersey year-round and breed in the early spring. Despite the behavioral differences between the two groups, all Canada geese are protected under the federal Migratory Bird Treaty Act and regulated in the state by the N.J. Division of Fish and Wildlife (NJDFW). Permits for goose population management are available from both the U.S. Fish and Wildlife Service (USFWS) and NJDFW, depending on which strategy is being employed.

Non-Lethal Methods

The USFWS, United States Department of Agriculture (USDA), and the NJDFW recommend that non-lethal methods be attempted first as part of an integrated Canada goose management plan. Lethal methods are suggested in some cases to reinforce non-lethal measures.

Avoid Attracting Geese

One of the most straightforward management strategies is to avoid attracting to an area. Municipal ordinances, educational materials, and signage can help to dissuade people from feeding geese in public spaces. Removing this reliable food source will help reduce Canada geese flocks in public areas. An important point to convey to the public when implementing waterfowl feeding prohibitions is that aggregations of goose feces may pose both a human and an environmental health risk. In addition, bread and other human foods are nutritionally inadequate for geese and may cause them health problems.

Habitat Modification

In general, geese are grazing animals that prefer open spaces adjacent to water bodies with unvegetated shorelines. Understanding goose behavior and habitat preferences can help landowners manage their properties to reduce their attractiveness to Canada geese. See Rutgers Cooperative Extension Fact Sheet FS1214 "Canada Goose Ecology and Impacts in New Jersey" (njaes.rutgers.edu/pubs/fs1214/) for detailed information.

Because geese prefer to forage on short, nutrient-rich vegetation in open areas, the well-manicured and fertilized lawns typical of corporate campuses, residential properties, and golf courses are extremely attractive and rewarding. Where possible, replace turf lawn with tall native vegetation, such as warm-season grasses (e.g., switchgrass, *Panicum virgatum*; Indian grass, *Sorghastrum nutans*) or a mix of perennial wildflowers.

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Geese will generally avoid tall vegetation because they cannot detect predators easily. If tall vegetation is not feasible, planting a native groundcover (e.g., shrubby fivefingers, *Sibbaldiopsis tridentata*; creeping phlox, *Phlox subulata*; wild blue phlox, *P. divaricata*) instead of mowed turf will reduce the quality of the landscape as a food resource.

Appropriate management of shorelines and can also deter occupancy by geese. Open areas along water bodies provide good foraging habitat (geese consume aquatic vegetation), and geese can quickly seek refuge from danger by fleeing to the water. Vegetated shorelines are unattractive to geese because they cannot see potential predators when swimming and they cannot quickly access the water from the land. Water edges should be planted with native riparian vegetation (those that are tolerant of moist to wet conditions). Some candidate species include willows, sedges, and rushes.

While vegetated shorelines may reduce flocking behavior, some goose pairs may choose to nest along them. In early spring, vegetated shorelines should be surveyed for Canada geese nests and additional strategies implemented.

Nest and Egg Treatment

The main objective of nest treatments is to prevent new geese from entering the population. Canada geese have a long life span (up to 25 years) and become reproductively mature at around 2 years. These factors lead to near exponential population increases where geese are not managed. Therefore, reproductive control is a critical component of successful Canada goose management plans.

Where nests are located in close proximity to humans and goose aggression is heightened, physical destruction of the nest and eggs will provide short-term relief. However, geese will lay an additional clutch of eggs if the first is destroyed early in the breeding season, and the problem will soon reappear.

As a population control strategy, leaving the eggs intact but treating them so that they are inviable (known as *addling*) is a more effective approach. By placing the eggs back in the nest after treatment, the adult geese will continue to incubate the eggs for the full term (25–30 days). By this time, it is too late in the breeding season for the pair to make a second nesting attempt. There are three approved addling techniques-shaking, oiling, and puncturing. Shaking involves shaking the eggs vigorously to destroy the embryo. Oiling involves covering the egg with 100% food-grade corn oil, which will disrupt gas exchange through the eggshell and prevent further embryonic development. Oil can be applied with an oil-soaked cloth or spray bottle, or by dipping the egg in oil and wiping the excess. Puncturing involves penetrating the tip of the egg with a thin metal probe and swirling the contents of the egg (Figure 1). For a detailed methodology, consult the Animal and Plant Health Inspection Service (APHIS) fact sheet on managing Canada goose nesting (aphis.usda.gov/wildlife_damage/downloads/canada_goose.pdf).



Figure 1. Canada goose (Branta canadensis) eggs being punctured to prevent maturation. Photo credit: USDA APHIS Wildlife Services.

Because Canada geese are federally protected as a migratory species, one must register online (epermits.fws.gov/eRCGR) with the USFWS between January 1 and June 30 *prior to* employing egg treatments. Registration is free and must be renewed annually. Participants are required to submit a report documenting the number of nests treated by October 31 of the same nesting year. There are no additional state permits required in NJ.

While there are no restrictions on when in the incubation cycle eggs can be treated, treatments should occur as early in the embryonic development as possible. The age of eggs can be determined by floating them in water. Early in the incubation cycle (up to 13 days) will not float, while eggs close to hatching (19–27 days) will float at or near the surface. In addition, egg treatments should occur in the cooler parts of the day to minimize stress on the adult geese.

Chemical Fertility Control

The only chemical fertility control agent approved for use in Canada geese is OvoControl™ G (active ingredient: nicarbazin). This contraceptive is administered to targeted individuals through consumption of a bread-like bait. Once the appropriate dosage is consumed, any eggs laid will not hatch. Purchase and use of this drug is restricted to licensed wildlife specialists or pest control operators with a

proper depredation permit. To be effective, geese must consume at least 1 oz. of bait every day beginning 21 days prior to nesting through the entire 8–10 week nesting period. Bait may also attract additional geese or other nontarget species. OvoControl™G is not currently approved for use in New Jersey.

Exclusion

Preventing goose access to certain areas can be effective on a small scale, particularly when geese are molting (and cannot fly) or rearing goslings (Figure 2). Fencing (i.e., chicken wire, heavy plastic fencing) should be supported by sturdy posts and installed to a height of approximately 3–5 feet. Install fencing in February or March to exclude geese prior to nesting. Overhead grids, consisting of monofilament line or wire can be constructed over small bodies of water or agricultural crops to prevent geese from landing. Parallel lines supported by sturdy posts should be installed between 0.5–1 feet above the surface being protected (high water line or crop height) approximately 50 feet apart; additional lines placed perpendicular may also be necessary. Overhead grids should be clearly visible and adorned with colored flagging to prevent injury to geese, people, and other animals.



Figure 2. Fencing, mylar tape, and monofilament line are used in conjunction to exclude Canada geese (Branta canadensis) from a restored wetland. Photo credit: USDA APHIS Wildlife Services.

Mylar tape (shiny silver on one side and red on the other) stapled to wooden posts can also be used to direct geese away from certain areas, but this method may not be effective if no alternative suitable resting or feeding area exists in close proximity. Tape should be strung in a single line 1–2 feet above the ground. When installing mylar tape, leave some slack in the line and twist it once every approximately 30 feet to allow movement. Reinforce the ends (where stapled to posts) with strapping tape to reduce shredding and tearing. For small perimeters, 1/2-inch wide tape is customary. Effectively fencing off large areas requires 6-inch wide tape.

Harassment and Deterrents

Several harassment and deterrent techniques are effective as a relatively short-term management tool, and they require no special permit provided there is no intent to injure, harm or lethally remove geese. Passive harassment measures include: flagging (garbage bags fastened to posts driven into the ground), "eye-scare" balloons (tethered helium balloons with decals that resemble eyes), and predator decoys (dog silhouettes or coyote replicas). While these tactics may elicit an immediate response, geese will soon habituate to them and re-inhabit the area. Moving the devices every few days may slightly extend their effectiveness.

Noise-making devices or other active measures, including pyrotechnics, trained dogs, remote controlled vehicles, lasers, horns, and recorded goose distress calls, can be more effective than passive harassment measures. Pyrotechnics typically are screamer or banger shells shot from a firearm. A federal license and/or permit may be required to purchase or use pyrotechnics. In addition, local ordinances may prohibit the use of pyrotechnics; therefore, consult with local police before use. Propane cannons are devices that ignite propane gas to create a loud explosion. State permits are required for propane cannon deployment. Trained dogs are most effective on properties that contain no bodies of water, and they require no permit (however, the dog handler is held liable for any goose injury or mortality that may occur).

The success of these methods varies by site. To maximize effectiveness, harassment techniques should commence as soon as geese arrive. Combining tactics and varying the timing and location of disturbances will improve results. However, results are often temporary and limited to the location of the disturbance. Scaring geese away may transport the problem elsewhere, or geese may return to the location once the disturbance passes. Therefore, additional measures should be incorporated as part of an integrated management strategy.

Repellents

Two chemicals are approved for use by the Food and Drug Administration as Canada goose repellents: methyl anthranilate (MA) and anthriquinone. MA is a non-toxic taste aversion agent derived from grapes. Treatment of vegetation with MA makes it unpalatable to Canada geese. MA is safe for human consumption, so it can be used on crops where necessary. Products with MA as the active ingredient include RejeX-it®, Bird Shield®, Goose Chase™, and Fruitshield.

Anthriquinone acts as both a taste aversion agent and a visual deterrent. Vegetation treated with anthriquinone

changes color within the ultraviolet portion of the spectrum (birds can detect ultraviolet colors). This color change alerts Canada geese that this vegetation is unpalatable, and they will avoid it. Anthriquinone is the active ingredient in the product Flight Control®, and it is considered non-toxic when applied in accordance with the manufacturer's guidelines.

Lethal Methods

Regulated Hunting

Sport hunting does not specifically target resident Canada geese; therefore, the effectiveness of this strategy as a population management tool is variable. In addition, Canada geese often take refuge on private lands or other open spaces where hunting is prohibited. Where hunting is permissible, hunters serve a predatory role in regulating overall goose populations. Geese subjected to hunting also may be more responsive to other management techniques, such as scare devices and harassment.

New Jersey has three separate Canada goose harvest seasons. The regular season occurs for one week in late November and late December/early January in three statewide zones, and the special winter season occurs from mid-January through mid-February in two separate hunting areas. Normal hunting regulations apply. See the NJDFW website (state.nj.us/dep/fgw/njregs.htm) for actual dates, regulations, and bag limits. All Canada goose hunters must obtain a N.J. Hunting License, Federal Migratory Bird Hunting and Conservation Stamp, N.J. Waterfowl Stamp, and Harvest Information Program certificate.

Depredation Permits

Depredation permits target resident Canada geese on private properties, including farms, airports, and golf courses, where they are causing damage. Because Canada geese are federally regulated as a migratory species, landowners wishing to manage Canada geese on their property must apply for a federal Migratory Bird Depredation Permit. Permits can be requested from USFWS (fws.gov/forms/3-200-13.pdf) and must be accompanied by a recommendation from USDA-APHIS Wildlife Services.

Where Canada geese are causing significant damage to agricultural crops, farmers can request a free state depredation permit from NJDFW. Under this permit, control measures can be implemented between May 1 and August 31. Contact NJDFW Bureau of Wildlife Management for more information.

Capture & Euthanasia

With a federal Migratory Bird Depredation Permit, resident Canada geese also can be captured and euthanized. Goose capture is permitted year-round; however, capture is most successful from mid-June through early July when geese are undergoing their seasonal molt (loss and replacement of flight feathers) and cannot fly. Geese can be captured with cannon or dip nets, netted panel traps, swim-in traps, decoy traps, or by hand. Captured geese are euthanized according to American Veterinary Medical Association (AVMA) protocols, and then buried or incinerated, or donated to local food banks or other charity organizations. Capture and euthanasia should be conducted by trained wildlife specialists.

Particularly where hunting is prohibited, capture and euthanasia can be an effective strategy for reducing resident Canada geese populations. However, as with any lethal means of wildlife management, securing public support may be a significant challenge. This strategy also may be cost-prohibitive in the longer term, as new individuals will continually immigrate to the site. Relocating captured geese is not permissible in most states because of the possibility of disease transmission; however, in some instances geese may be relocated to another portion of a private property to alleviate localized damage.

References

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