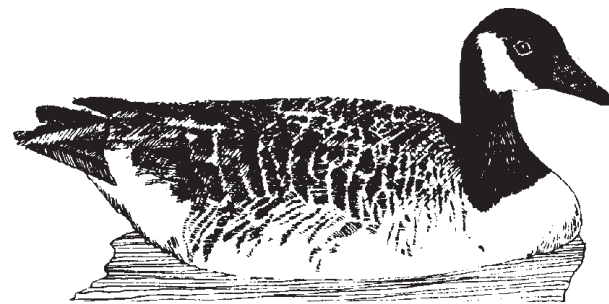


Destroying nests and eggs can slow the growth of local Canada goose populations. Eggs are made non-productive by shaking them vigorously as soon as possible after a full clutch is laid and incubation begins. This process is called "addling." After the eggs are shaken, they are returned to the nest and the geese are allowed to incubate them for at least three weeks. Because the eggs are returned to the nest seemingly unharmed, the geese are tricked into thinking nothing is different (if the eggs were removed entirely, the female would promptly lay more eggs). After three weeks of incubating their eggs, geese will usually not try to re-nest. Removal and disposal of the nest and eggs can then be done. This discourages continuation of nesting effort and defense of the nest territory.

Egg shaking and nest destruction requires a permit from the U.S. Fish and Wildlife Service (USFWS), or from the U.S. Department of Agriculture (USDA). It is important to note that if the eggs have begun to hatch they may not be disturbed, even if you have a permit for egg shaking. Another method for destroying eggs involves oiling eggs with mineral oil. This technique is more effective than addling but does not require a permit. Detailed guidelines on destroying nests are available from USDA and USFWS.



### For further information...

PA Game Commission  
Bureau of Wildlife Management  
2001 Elmerton Avenue  
Harrisburg, PA 17110-9797  
(717)787-5529  
www.pgc.state.pa.us

Partners for Wildlife  
U.S. Fish and Wildlife Service  
315 South Allen Street, Suite 322  
State College, PA 16801  
(814) 234-4090  
www.fws.gov

US Fish & Wildlife Service  
300 Westgate Center Drive  
Hadley, MA 01035-9589

## Water Pollution Solutions



### Canada Geese and Our Lakes and Ponds



The Canada goose (*Branta canadensis*) is a familiar and popular game bird. They are instantly recognizable in a field or on a lake, and their distinctive V-shaped flying formations overhead herald the changing of seasons. Canada geese figure strongly in tales and folklore: their heroic migration jaunts and devotion to their mate (they bond for life) make them good animal models for humans.

Canada geese also are a success story in wildlife management. By the early 1940s, heavy hunting had reduced migrating Canada goose populations close to extinction. A concerted effort by federal agencies, particularly the U.S. Fish and Wildlife Service, has brought the Canada goose back to levels where hunting is again allowed—and has been for more than 25 years. All in all, the Canada goose has enjoyed a reputation as a proud, respectable bird.

Until now. People tell tales about trying to drive a Canada goose from their yard with savage screams that catch the attention of everything but the goose. Headlines are full of proposals to kill Canada geese and donate them as food for the homeless. Companies have sprung up that specialize in keeping Canada geese off of ponds and property. Why all the fuss about this seemingly harmless creature? Quite simply, the problem lies not with the majestic migrating flocks, but with their resident cousins – those Canada geese that have been born and bred in our own backyards.

There are three distinct populations of Canada geese in Pennsylvania. Two of these are migrants that nest in northern Canada (the Southern James Bay and Atlantic populations) and fly south for the winter. The third is the local resident bird, which is essentially non-migratory. Resident Canada geese are the products of birds released by sportsmen organizations and state wildlife agencies in the east, along with bird releases when live decoys were outlawed in the early part of this century.


Unlike the migratory Canada goose, whose numbers are again in decline due to poor survival and reproductive rates, the population of resident Canada geese residing in suburban America has skyrocketed in the last ten years.

These birds are full-time residents who don't fly away with the first chill. They are big and intimidating, hissing and charging in defense of their territory. There are so many of them that even their ordinary honking can become irritating. They have been known to eat turfgrass down to a nub and then leave uncountable piles of slimy green droppings. And, they can contribute to the spread of water-borne diseases, such as giardia and cryptosporidiosis, which have the potential to affect humans.

Canada geese have 11 subspecies. These subspecies range in size from 29 to 38 inches in length and 6 to 12 pounds in weight, with the smaller populations generally living further north. In 1965, a biologist found a population of the subspecies *Branta canadensis maxima*, the giant Canada goose, which had been thought to be extinct. Since its rediscovery, the giant Canada goose has recovered more quickly than any other subspecies and now makes up the bulk of our resident goose populations. There are estimated to be as many as 1 million giant Canada geese in the Atlantic flyway, as many as all other Canada geese subspecies in the flyway combined.

For the Canada goose, "paradise" might be defined as acres of short tender grass, a freshwater pond for drinking water and security, and no predators. It would look much like a public park, corporate office campus, golf course, cemetery, or waterfront yard. However, while other Canada goose subspecies are wary of humans, giant Canada geese are predisposed to ignore people. The biologist who rediscovered the giant Canadians noted that the "placid disposition of the giant Canada goose sets it apart from all others."

Placid disposition or not, the giant Canada goose has adapted well to living among us. They have a weak migratory instinct and will stay in place as long as there is ice-free water and available food. Since people are willing to feed them and often keep their ponds ice-free in the winter, the geese are truly at home in suburbia. They have become accustomed to autos, planes, and other



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The objective of the series is to provide watershed residents with a greater understanding of environmental cause-and-effect relationships and what actions can be taken to protect Pennsylvania's lakes, ponds and streams.

For more information about other publications in this series visit the PACD website or contact the Pennsylvania Association of Conservation Districts, Inc. at 25 North Front Street, Harrisburg, PA 17101 (717) 238-PACD (7223) or your county conservation district.

Special Credit is given to *Lake Notes*, October 1996, (Prepared by the Northeastern Illinois Planning Commission with financial support provided by the Illinois Environmental Protection Agency) which served as a model for this publication.

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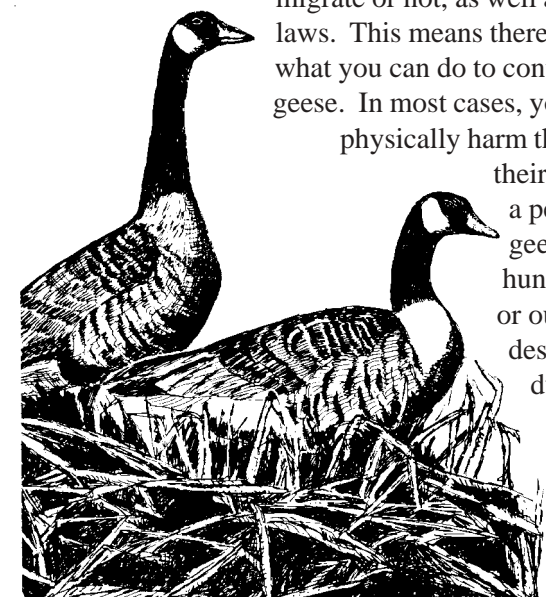


noises of modern life. In fact, they are so used to cars that they are willing to walk out in front of oncoming traffic, secure in the knowledge that the cars will stop for them.

The suburban landscape contains enough food and space to support a few geese without causing too much difficulty for people. Whereas migratory Canada geese may layover at a site on their way to and from their hatching sites, giant Canada geese are true homebodies, generally staying where they are hatched. Further, the lack of predators and abundance of food near urban and suburban lakes allows giant Canada geese to lay more eggs and have more goslings survive to adulthood than their migrating cousins, so a small population can quickly grow into a large population. The presence of geese and goslings (as well as ducks) also is an attractant to other giant Canada geese who might have been displaced from another area.

In addition to being a nuisance to people living around lakes, excessive populations of giant Canada geese are as much or more of a problem for the lakes themselves. Geese eat plant material on land, but are frequently out on the water or ice when they defecate. This material is high in nutrients derived from the plants they eat. These nutrients are the same ones used for growth by algae and plants in the lake. When the geese are year-round residents, the nutrient loading can become significant, contributing to algal blooms and excessive plant growth. In fact, one Canada goose can contribute about a half pound of phosphorus to the lake each year. If you have 20 resident geese on your lake, that is the same as dumping a 100-pound bag of fertilizer with a “10” phosphorus number into the lake each year!

The problem of resident Canada geese exists on a national scale, and some of the best population control efforts should be approached regionally or nationally. It also is important to know that all Canada geese are protected by the federal Migratory Bird Treaty Act, whether they



migrate or not, as well as by state laws. This means there are limits to what you can do to control Canada geese. In most cases, you cannot physically harm the geese or their eggs without a permit. Killing geese outside of hunting seasons, or outside of designated areas during hunting seasons, is a federal crime and may violate state and

local laws as well. With these restrictions in mind, there are still several approaches you can take to control your local resident Canada goose population.

Habitat changes caused by people have encouraged the population explosion of resident Canada geese. As a landowner, one of the most effective ways of reducing these permanent populations is to change that habitat. There are six techniques that can be employed in and around many lakes: 1) discourage feeding; 2) modify the shoreline vegetation; 3) erect man-made barriers; 4) implement scare tactics; 5) allow the lake to freeze over in winter and 6) use repellents.

The key to the success of these measures is persistence. Established resident Canada geese populations are reluctant to leave and can be undeterred by control methods if not consistently applied. A combination of methods works best since geese can quickly become accustomed to any single technique.

**Discourage Feeding.** This sounds simple but it can be very difficult to implement on a lake-wide basis, especially without educating the human population. People aren't feeding the geese in order to cause trouble; on the contrary, they think they are assisting in wildlife survival. Yet, geese gain little nutrition out of bread, crackers, and other processed grain products. And, while feeding geese corn or other grains is better nutritionally, it will quickly make the geese dependent on handouts and unable to forage for themselves. Feeding also creates overcrowding, making it more likely that the geese will transmit diseases to one another.

People who feed Canada geese in their yard quickly learn the drawbacks of having a flock of geese living with them. It is harder to convince people feeding geese in a public area, like a park, that their actions are having a negative effect since they leave the consequences behind when they leave the park. A ban on waterfowl feeding is the first step in any public campaign to control problem goose populations.

**Modify Shoreline Vegetation.** Canada geese don't like to nest in or walk through tall grasses, plants, or shrubs. They would prefer to be able to see around themselves at all times, to watch for predators. One good method for discouraging geese from your yard is to keep your turfgrass from going all the way to the lake edge. Establish a buffer strip between your yard and the lake (see the “Shoreline Buffer Strips” publication in this *Water Pollution Solutions* series). This buffer strip will inconvenience the geese, and they may avoid your yard as an entry/exit point to the lake. Extending a buffer strip around the whole lake will make the entire lake less desirable as Canada goose habitat.

If your pond or lake is small enough, you also can impair the flight paths into and out of your waterbody by planting trees along the shore (as well as on any islands within the lake). The idea is to make the approach to the water too steep to be comfortably negotiated by the geese. The down side of this is that the trees must be rather tall and thus will not provide results until the planted trees mature.

**Erect Man-Made Barriers.** Man-made physical barriers fall into two general categories: fences and grids. A common design for a goose fence has two strands of either poly-twine wire (a type of temporary fence wire), polyurethane bailing twine, heavy monofilament fishing line, nylon cord, or even ordinary string strung between short posts. The first strand is placed about 6 inches above the ground, while the second is placed at about 12 inches. Another design uses five strands spaced at 6, 8, 12, 18, and 24 inches above the ground. These barriers are not impossible for geese to cross, but it is inconvenient—and Canada geese dislike being inconvenienced. This type of barrier works best when strung at the water's edge or around an area that you want to exclude geese. To be effective, the geese should not be able to walk around the fence. If your lake is surrounded by turfgrass, then the fence will have to be strung all the way around the lake.

Grids are made from the same materials as the fences, but strung in a grid pattern over the pond or area from which you wish to exclude geese. The grid pattern should be set up with 20-foot spacing between the lines. Grids are most effective when they are strung a foot or so above the surface of the water, although they can be set higher if access to the area is required. In order to keep the geese from landing nearby and walking into the lake, a fence also will be needed around the perimeter. Grids need to be visible to overflying geese, so bright objects or streamers (e.g., aluminum foil, pie pans, Mylar tape) should be attached to the lines.

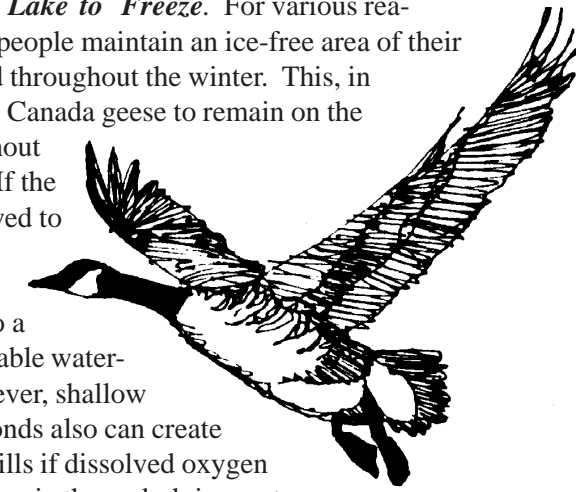
**Implement Scare Tactics.** Scaring is a traditional method for controlling nuisance bird populations. Scare tactics usually involve loud noises, or real or imitated threats to the birds. However, the effectiveness of most scaring techniques on giant Canada geese generally has been disappointing. They seem to be able to adjust to the noise and quickly see through imitation predators. The best option is to be prepared to change methods often and keep the geese from becoming adjusted to any one method.

Scare tactics include:

- Visible repellents, such as flags, helium balloons and scarecrows;
- “swan family” decoys (Canada geese are discouraged by the presence of swans, which aggressively protect their young);
- recorded Canada goose distress calls;
- propane cannons that make a loud noise without discharging a projectile;
- pyrotechnics, such as shellcrackers, whistle bombs, screamer rockets, and noise bombs; and
- trained dogs, especially herding dogs like border collies (either free running, on slip wires, tethered, or under the control of a herder).

Before employing scare tactics, take into consideration all applicable laws, especially those concerning loud noises, firearm and pyrotechnic use, and local animal ordinances. And, don't forget the potential reaction of your neighbors.

**Allow Your Lake to Freeze.** For various reasons, many people maintain an ice-free area of their lake or pond throughout the winter. This, in turn, entices Canada geese to remain on the lake throughout the winter. If the lake is allowed to ice over, the geese will move to a more hospitable waterbody. However, shallow lakes and ponds also can create winter fishkills if dissolved oxygen concentrations in the underlying water are low. If you are not concerned about winterkills degrading the fishery in your lake or your lake is not susceptible to winterkills, there may be no need to keep it ice-free all winter. Consultation with a lake expert can help you determine if you need to maintain open water during the winter. In most cases, the lake can be allowed to ice-over in early winter (forcing the geese to move on), and then opened up later in the winter.



**Use Repellents.** There is only one repellent currently licensed for use against Canada geese: methyl anthranilate, currently marketed under the trade name ReJeX-iT. Methyl anthranilate is a substance found in Concord grapes and used as flavoring in grape bubblegum. Birds, including Canada geese, dislike the taste and will avoid eating material that has been treated with it. Methyl anthranilate is commercially available in spray form, but requires repeated applications and can become cost prohibitive.

In the past, concentrated geese populations were rounded up and transported to a different area. Translocation of geese in Pennsylvania and in many eastern states is no longer practiced. The Pennsylvania Game Commission has a policy against translocation because it is ineffective; Canada geese are quick to repopulate vacated habitats.

It appears that the ultimate method for giant Canada goose control is population reduction. Hunting may be an option in some areas, especially on larger bodies of water or in less densely populated areas. The U.S. Fish and Wildlife Agency permits special hunting seasons before and after the traditional season. These periods are designed to reduce flocks of non-migratory Canada geese, and are scheduled when few migrant geese are present. These special hunting seasons protect declining numbers of migrant Canada geese populations while controlling the ever-increasing resident Canada geese population. Even if there are laws currently prohibiting hunting in your area, it might be worthwhile to talk to state and local officials about an exception.