

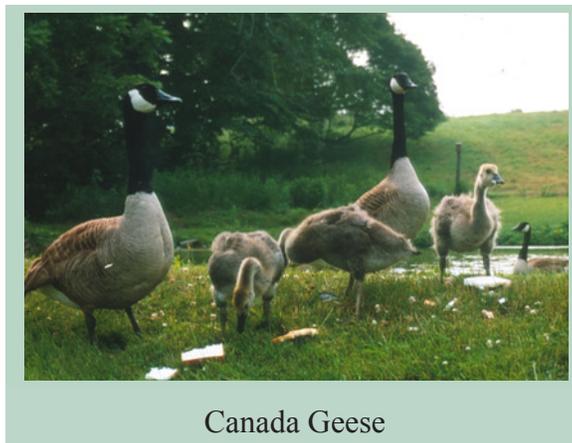
MANAGEMENT OF CANADA GOOSE NESTING

Canada geese are one of the most readily recognized birds in the United States, and they are enjoyed by birdwatchers, sportsmen and women, outdoor enthusiasts and citizens. However, in some areas, Canada geese can damage property, impact agriculture, pose disease threats, and present public safety problems. An integrated damage management program which includes a variety of safe, practical, and effective techniques usually provides the best relief from Canada goose damage. The integrated approach should include banning the feeding of waterfowl, habitat modification, harassment, control of nesting, and in some cases, legal sport harvest (goose hunting), and humanely implemented removal of geese. The purpose of this document is to describe the techniques and methods associated with management of Canada goose nesting. The information is applicable to all areas of the lower 48 states where resident population Canada geese occur. For additional State-specific recommendations and guidance on Canada goose damage management methods, contact the [APHIS Wildlife Services \(WS\) office in your State](#) or call 1-866-4USDAWS.

Canada Goose Populations

Two behaviorally distinct types of goose populations exist in most parts of the country: resident and migratory. Resident, or non-migratory Canada geese, are those that nest within the lower 48 states and the District of Columbia during March-June, or that reside there during the months of April-August. However, some resident geese will migrate short distances during the summer prior to molting while others may migrate during the fall/winter depending upon the

severity of the weather. There are an estimated 3.6 million resident Canada geese in North America (2008). Migratory Canada geese move between breeding grounds in Canada and overwintering areas in the US, but do not nest in the lower 48 states.



Canada Goose Nesting – The Basics

Resident Canada geese are well-adapted to human dominated landscapes, and they nest in a wide variety of locales – some in very close proximity to people. Goose nests occur near sidewalks and entryways of homes and other buildings, adjacent to paths and roadways, and

on rooftops and porches. They are also found in more traditional areas, including parks, farmlands, and other open space. The resident goose nesting season occurs as early as late February through mid-May, with most eggs hatching during early May. Both birds of the pair attend the nest. Once all eggs have been laid (approximately 1 egg per day is laid with 2-12 eggs in a complete clutch and 5 eggs as the average), incubation begins and the mate remains close by. Eggs are incubated for 28 days. In southern states, goose nesting may occur slightly earlier than in northern areas. As the nesting season passes, geese gather into flocks and congregate in open areas for the molting period. During the molt resident geese lose their flight feathers and remain flightless during mid-June to early July. Molting geese generally prefer areas that provide food (grass or crops) and water. During this time, the goslings are also flightless since they have not yet developed their adult feathers that will enable them to fly.

Legal Status and Authorities

The Canada goose is a migratory bird species that is afforded the protections of the Migratory Bird Treaty Act, Federal regulations, and State laws. Handling and lethal management of Canada geese for damage management purposes, such as capturing and euthanizing birds, or shooting birds outside of established hunting seasons, require depredation permit(s). However, there are flexibilities in the regulations that permit management of resident Canada geese in order to limit damage, especially when associated with human health and safety and agriculture. One such provision is the resident [Canada Goose Nest and Egg Depredation Order](#), issued by the US Fish and Wildlife Service (FWS) in 2006 (50 CFR 21.50). The Depredation Order was developed after the FWS, in cooperation with APHIS WS, completed an environmental impact statement (EIS) for the management of resident Canada geese. Wildlife Services' [Record of Decision](#) for that EIS supports a preferred alternative of integrated damage management and population control. The Depredation Order authorizes landowners and local governments who register with the FWS to destroy resident Canada goose nests and eggs on their property from March 1-June 30, when necessary, to resolve or prevent injury to people, property, agricultural crops, or other interests.

In order to conduct these activities, landowners must register online anytime between January 1 and June 30 of the year in which the activity will take place (<https://epermits.fws.gov/eRCGR>). After registering, landowners can print confirmation of their registration and immediately begin their nest treatment activities. The registration must be renewed annually, following submission of an annual report of the number of nests with eggs destroyed. There is no fee for the registration. The process requires the application of appropriate nonlethal methods to minimize the extent to which eggs must be destroyed. Although a Federal permit is no longer required for this process,

landowners must continue to comply with State and local laws. Refer to the [State Wildlife Agency Contacts and Information](#) on Resident Canada Goose Nest and Egg Destruction on the FWS website to determine if your State participates in the program and if an additional State permit is required in your area.

Management of Nesting Can Reduce Goose-Related Problems

Management of Canada goose nesting through destruction of nests and eggs, or through treatment of eggs, can ease damage problems. When geese are aggressively defending nests near doorways, on playgrounds, at schools, and other high-traffic areas, destruction of the nest and eggs along with nesting area habitat modifications can sometimes cause the geese to move elsewhere. Treatment of goose eggs so that they do not hatch will reduce or eliminate the presence of goslings. This will reduce goose feces accumulations and other damage such as overgrazing of lawns and crop depredation. Control of goose nesting will increase the effectiveness of nonlethal methods, especially use of noise-making devices, since adult geese that are not tending to flightless goslings are more inclined to leave an area when they are harassed.



Canada Geese Nesting

Although nest and egg treatment/destruction is useful to curb population growth at a local scale, it should not be relied upon for immediate population reductions. Geese are long-lived birds (10-25 years in the wild) and they have a single, defined nesting season. Research indicates that elimination of nesting in a large scale regional effort would have to be conducted over many years before population stabilization would even occur. Regardless, management of goose nesting can be an important part of an overall integrated management approach to living with Canada geese in your community.

Timing of Canada Goose Egg Treatment

Initial goose nest searches should occur during March and April, depending on your location: Southern US (March 10-25), Mid latitudes (March 25-April 10), and Northern US (April 10-25). The best option is to harass geese before they set up a nest; however, if nests have already been established, the most efficient time to treat eggs is after the entire clutch is laid and incubation has started. Warm eggs in the nest indicate that incubation has started and that all eggs have been laid. At least 2-3 subsequent nest visits are usually required to ensure that all eggs and re-nest attempts are treated. The final nest search/egg treatment typically occurs during early-mid May. Treatment of goose eggs in the cooler early morning hours is recommended to reduce stress on the birds.

Finding and Approaching the Nest

In natural areas, look for goose nests near water, particularly on islands and peninsulas, as well as along shorelines. Elsewhere, nests occur where there is a good view of the surrounding area with relative security from nest predators. The adult goose pair remains together throughout the nesting season. A single goose that appears to be “patrolling” an area may indicate that a nest is in the vicinity. As the hatching date nears, the incubating goose will be reluctant to leave the eggs, and will flatten out and extend the neck to “hide” when the nest is approached. In searching for the nest, it is useful to key in on the goose’s distinctly-colored head with highly contrasting cheek patch. Otherwise, the bird’s drab coloration easily blends into the surrounding environment.

The behavior of nesting geese to humans varies tremendously. Some nesting geese readily flee when approached by humans whereas other geese will stand their ground to defend the nest; some geese will actually attack approaching humans by running or flying at them. Goose behavior during nest defense consists of geese standing erect and/or spreading their wings to make themselves appear larger while loudly hissing. The defense behavior can be daunting. Attacking geese will often try to strike their perceived nest predators with their wings and/or will bite. The

male or gander, which is usually the bird standing guard near the nest (as opposed to the incubating goose) is the bird most likely to attack. As a general rule, geese in rural or natural settings are less likely to attack humans than geese in suburban or urban habitats. When geese are habituated to people and have little fear of them, they often attack viciously. For these reasons, goose nests should be approached carefully. It is best to conduct these activities with a partner. Some individuals experienced in treating goose nests use a life jacket, boat paddle, or trash can lid to deflect goose attacks at nest sites.

Nest defense behavior by Canada geese is encountered after the nest is located and during the process of moving the adult goose off the nest. Geese must be moved to effectively treat the eggs.



Nest Management is Best Done by a Team of Two People-- One To Treat The Eggs and One To Keep The Geese Away From The Nest

Geese may naturally leave the area as you approach the nest, or you may need to encourage the geese to back away from the nest with slow steady pressure from a broom, canoe/kayak paddle, or a branch. Geese tend to be increasingly tenacious to the nest/eggs as the hatching date nears. Approach the nest in a manner that creates an escape route for the geese.

Canada Goose Nesting Management Approaches

Two general approaches exist for goose nesting control, and both are allowed under the Depredation Order: destruction and treatment. The selection of approaches will depend on a number of factors, including the location of the nest, overall number of nests, logistics, and capabilities/preferences of the individual conducting the work. It typically takes no more than 5 minutes to destroy or treat a goose nest. In many cases, when a nest is destroyed, geese may renest in the same or nearby area. For this reason, periodically conduct searches of the property to locate and destroy/treat newly-found nests. Similarly, geese return to traditional nest sites and areas in subsequent years. It is likely that you will need to continue to monitor and treat goose nests on an ongoing basis.

Do Not Move Goose Nests

Relocation of goose nests from one spot to another is ineffective, since the adult geese do not recognize the nest in a new location as their own. The nest will be abandoned, the exposed eggs will die or be predated, and the adult pair will establish a new nest in the original or nearby location. Moving nests is not an authorized activity under the Depredation Order for these reasons.

Physical Destruction of Nests and Eggs

Where goose nests are located in very close proximity to people, near areas of high traffic, and in situations where geese are particularly aggressive, landowners may desire to completely destroy and remove the nest and modify the area to deter renesting attempts. This method is applicable where nests occur on rooftops, sidewalks, doorsteps, entryways, enclosed courtyards, picnic areas, playgrounds, and near paths and roadways. Destroyed nest material and eggs can be left in the field, buried on site, incinerated, or placed in outgoing trash, in accordance with local ordinances. The nest location should be cleared of all nest materials and can be covered with

objects (overturned garbage can, wood, branches, etc.) so that its attractiveness as a nesting area is diminished. Destruction and removal of the nest is intended to cause the pair of geese to abandon the area. However, there are times when the pair does not leave and instead initiates a new nest nearby. If this occurs, destruction of the new nest is necessary. Integrated harassment activities after nest destruction may provide further reinforcement for the geese to leave the area altogether.

Three Egg Treatment Techniques

Three egg treatment techniques authorized by the Depredation Order are oiling, puncturing, and shaking and are most useful when the presence of adult geese can be tolerated but goslings are not desired. Treated eggs remain in the nest, and geese will continue to tend to the nest and incubate the eggs. Be careful not to handle treated eggs in subsequent visits to the nests since eggs become putrid. Contents of eggs build up with gas and may burst if they are disturbed or knocked together. Nest sites should be marked with flagging tape or other material to facilitate follow-up visits and reduce time spent having to search for previously-treated nests. When eggs fail to hatch, the adult geese gradually cease incubation and will leave the immediate area as the time to molt approaches. This can be hastened toward the end of the nesting season (May) through use of harassment activities. Destroyed nest material and eggs may be left in the field or disposed of by burial, incineration, or placement in outgoing trash, in accordance with local ordinances.

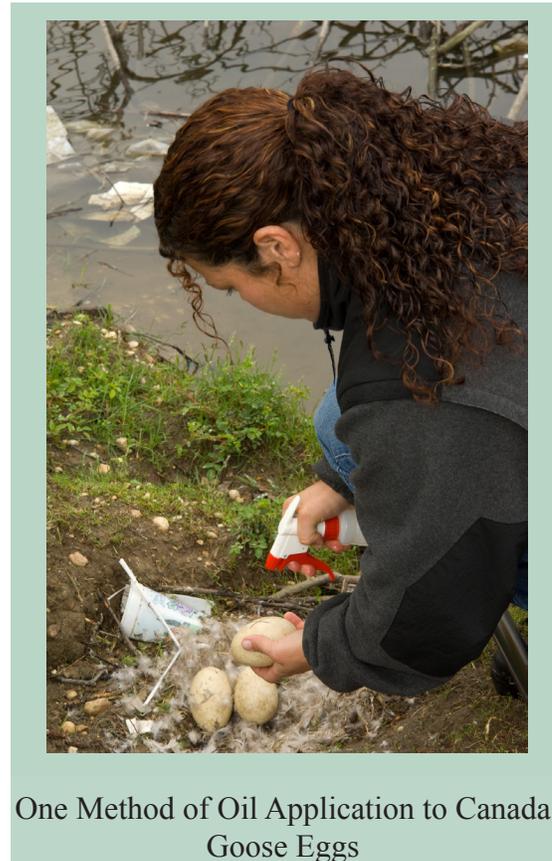
Essential Tools

The following materials are needed to destroy or treat goose nests and eggs: data sheet, pen/pencil, state permit (if necessary), FWS registration document (includes the registration number, individuals permitted to conduct work, and the location), treatment equipment (puncturing tool, corn oil, sprayer, cloth, rake, shovel, permanent marker to mark the eggs if oiling is the method used), and latex gloves (if desired).

When to Treat Eggs

In general, treatment should commence once incubation has begun. If the eggs feel cool to the touch, incubation has not commenced and additional eggs will be laid. In that situation, it is best to mark the nest location and revisit the nest within the next week to initiate treatment. On larger properties with multiple nests, it might be useful to initiate egg treatment as soon as eggs are found.

- Spray oil on each egg with a hand-held pump action sprayer
- Spray oil on each egg with a pressurized backpack sprayer



One Method of Oil Application to Canada Goose Eggs

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Mark Eggs Prior to Treatment

Two small marks on opposite sides of the eggs' shell (indelible marker) will indicate which eggs have been treated. This will save time and minimize unnecessary handling of treated eggs during future visits.

Oiling—Use 100% food-grade corn oil. The oil blocks the pores in the eggs' shell, and prevents further development of the contents. Some States require a pesticide license to use this method, so check State regulations before proceeding. Prior to oiling, remove the eggs from the nest and mark each egg with a permanent marker on both sides. For best results, coat the entire egg with a thin layer of oil and place it back in the nest. Oil may be applied by a number of methods:

- Dip each egg in oil and wipe to remove excess
- Wipe the eggs with a cloth soaked in oil

Puncturing—It is not necessary to mark the eggs to be punctured; however, an individual may prefer to mark the eggs so they do not need to be handled during subsequent visits. To puncture the egg, hold it securely in your hand, braced against the ground. Insert a long, thin metal probe into the pointed end of the egg. Best results are attained by placing slow steady pressure. Once the probe passes through the shell, place its tip against the inside of the shell, and swirl with a circular motion. The puncturing tool may be an awl, ice pick, chicken/turkey basting tools, a turkey lacer, or any sturdy, thin metal probe. It is advisable to connect the tool to a lanyard or string with a piece of bright-colored flagging tape attached to assist in keeping track of it while you are working and traveling from nest to nest.

Goslings

In some areas where nests and eggs have been treated on one property, goslings may suddenly appear during May and June. This occurs when goslings walk in from adjacent properties where nests and eggs have not been treated, especially where properties are connected by stream corridors or other greenways. This can be managed in future years by coordinating with your neighbors to treat eggs on multiple properties in a community-based approach. Also, fencing can be installed to control movements of goslings and molting geese, since they cannot fly.

Shaking/Addling—Remove all eggs and place them on the ground near the nest. Mark one egg, shake it, put the shaken egg back in the nest and repeat the process until all of the eggs have been shaken. Shake each egg forcefully, one at a time, for 5-10 minutes, and place it back in the nest. This technique is very time consuming and requires a lot of physical effort although some homeowners prefer it if they have only one nest with a few eggs, and if they do not want to deal with the potential messiness of puncturing and oiling. However, it is difficult to determine with certainty when the egg is shaken enough. This treatment is the most problematic due to the time and effort required, and the uncertainty of its effectiveness.

Record-Keeping

Note-taking and record-keeping should be done away from the nest and immediately after the work at each nest is conducted. This will ensure accuracy in recording the number of nests and eggs and will increase safety/reduce stress. Maintain records of your activities and submit the annual report to the FWS that identifies the number of nests with eggs destroyed or treated, by month, and county. This report is required by October 31 each year, even if no nests or eggs were handled. Individuals are encouraged to report their activities soon after they have completed nest work activities. The annual report must be submitted electronically to the FWS by going back to the registration website and entering

the report data. Comply with your State's reporting requirements and maintain your records in a safe location. Keep records of nest locations for your future use, since geese will frequently nest in traditional locations in subsequent years.

Egg Aging Techniques

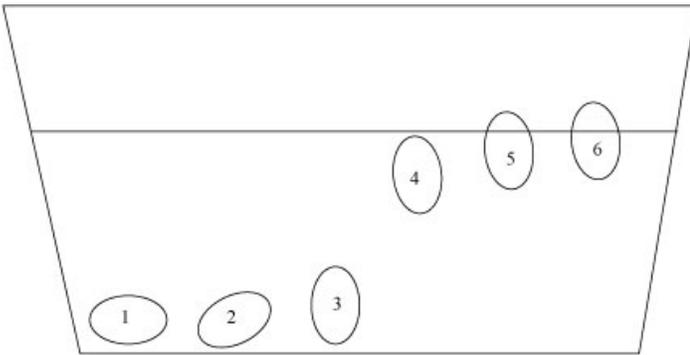
Although the Nest and Egg Depredation Order allows treatment at any point during the 28 day incubation period, some individuals may prefer to restrict egg treatment to the first 14 days of incubation. The Canada goose "egg float test" can be used as a guide to determine the age of the incubating eggs. Below is a diagram that illustrates how eggs will act in water at different developmental stages, counting from the beginning of incubation (not from laying). Be sure you have a container of water with enough room and enough water so that eggs can float freely. At many sites, you can fill a bucket from the pond next to the nest but at some sites you may need to bring water with you. Place a minimum of two or three eggs in the water and use the diagram to determine their age.

Remove eggs from the water and proceed based on the results. If you intend to oil the eggs, it is recommended that you wipe the eggs dry with an absorbent cloth before oiling or wait until the next day (after the "egg float test") to ensure that the egg is completely dry.



Egg is Floating and is Nearing its Hatching Date

Egg Float Test Diagram



Days of incubation:

- Egg 1: 0-3 days
- Egg 2: 4-8 days
- Egg 3: 9-13 days
- Egg 4: 14-18 days
- Egg 5: 19-23 days
- Egg 6: 24-27 days

This diagram depicts a cross-section through a large container of water with eggs of various ages floating inside. The line across the container represents the water level. Eggs at the start of incubation (number 1 on the left), generally lie on the bottom of the container, clearly not floating. Thirteen days after incubation has started, eggs usually turn upright in the water (as number 3 on the Chart shows) but will remain at the bottom of the container. Around 14 to 18 days of incubation, most eggs will begin floating near the top of the water, although they may not break the surface of the water.

OvoControl™ G

An additional goose reproduction management method involves the use of OvoControl™ G to reduce the hatchability of eggs. It was developed by scientists at the US Department of Agriculture's Wildlife Services' National Wildlife Research Center (NWRC) and Innolytics, LLC. The active ingredient, nicarbazin, was originally used as a drug to control disease in chickens and has now been developed

for hatch control technology in resident Canada geese and other birds. OvoControl™ G interferes with the development of the vitelline membrane separating the egg white and yolk. This membrane is vital to the viability of the egg and without it the egg cannot develop or hatch. When OvoControl™ G is fed to Canada geese for the duration of their breeding season (8-10 weeks total), the nicarbazin effectively reduces the hatching success of eggs. When nicarbazin is withdrawn from the diet, egg production and hatchability return to normal within a few days.

Because OvoControl™ G is regulated by the US Environmental Protection Agency (EPA) and is a restricted use chemical, only licensed wildlife specialists or pest control operators are permitted to buy and use OvoControl™ G. Additionally, each State must register for, and have approved, the use of this product on Canada geese. Several states currently prohibit the use of fertility drugs in wildlife. Further, a [depredation permit](#) issued by FWS is necessary prior to use of the product. The bread-like bait is similar in shape and size to a large corn kernel and can be distributed with broadcast bait feeders or by hand. Once OvoControl™ G is digested and absorbed by the goose, it is no longer biologically available to a secondary species and is not harmful to geese, birds, other waterfowl, or people. While OvoControl™ G may reduce hatching rates, it has no effect on the current number of adult or juvenile resident geese. In addition, not all geese may consume the bait. Another concern may be associated with providing food/ bait over several weeks in areas where this could exacerbate safety problems and increase the number of birds already utilizing the area (near roadways, at airports, etc.). In this manner, OvoControl™ G is contrary to the integrated wildlife damage management approach because this method involves the feeding of wildlife and therefore may attract some nontarget species to the area who also consume the bait. Depending on where OvoControl™ G is purchased, the cost of this program is approximately \$12.00/goose/season.

Additional Information

For more information, visit the Web site at http://www.aphis.usda.gov/wildlife_damage/ or contact WS/APHIS/USDA at 4700 River Road, Unit 87, Riverdale, MD 20737. The telephone number is (301) 734-7921.



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