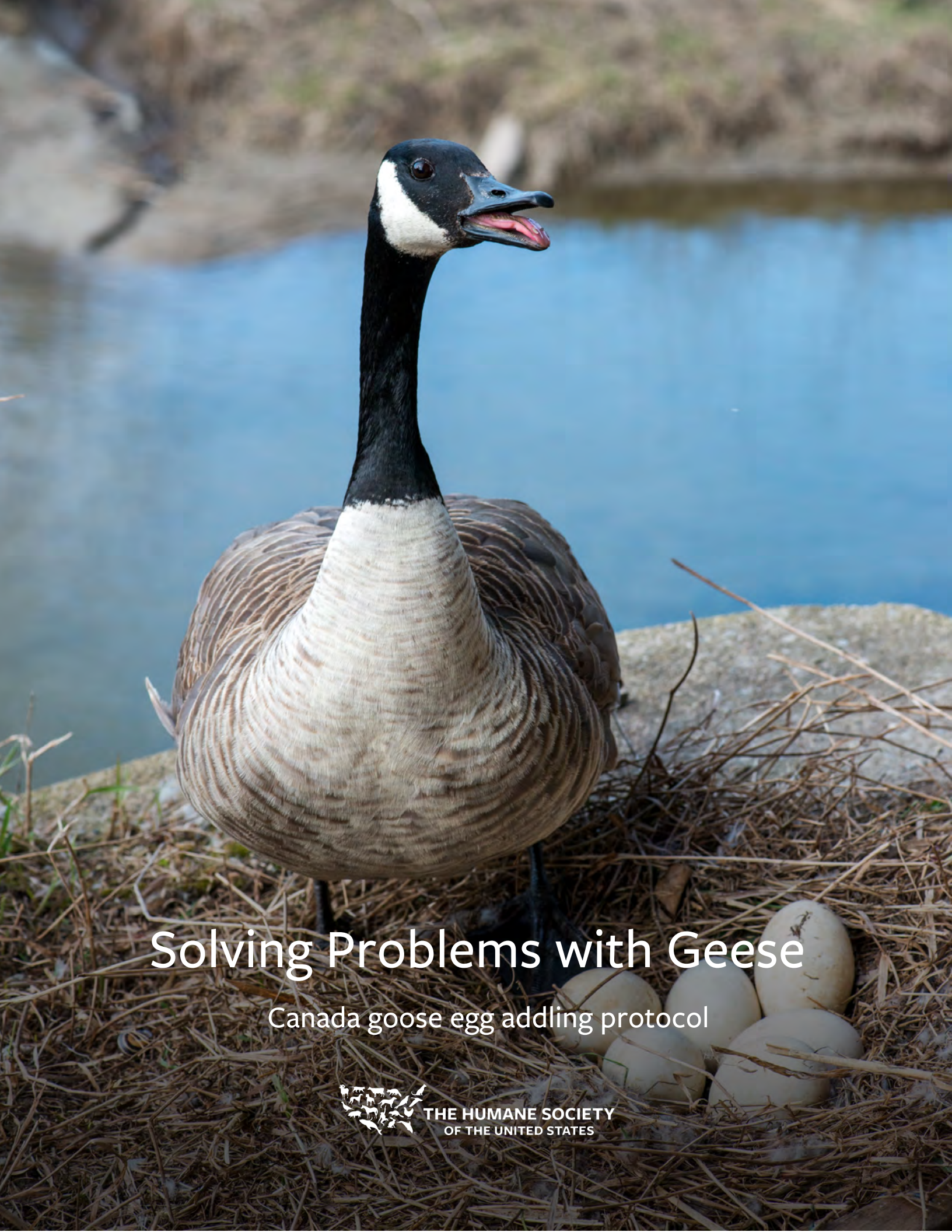

Solving Problems with Geese

Canada goose egg addling protocol

THE HUMANE SOCIETY
OF THE UNITED STATES

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Introduction

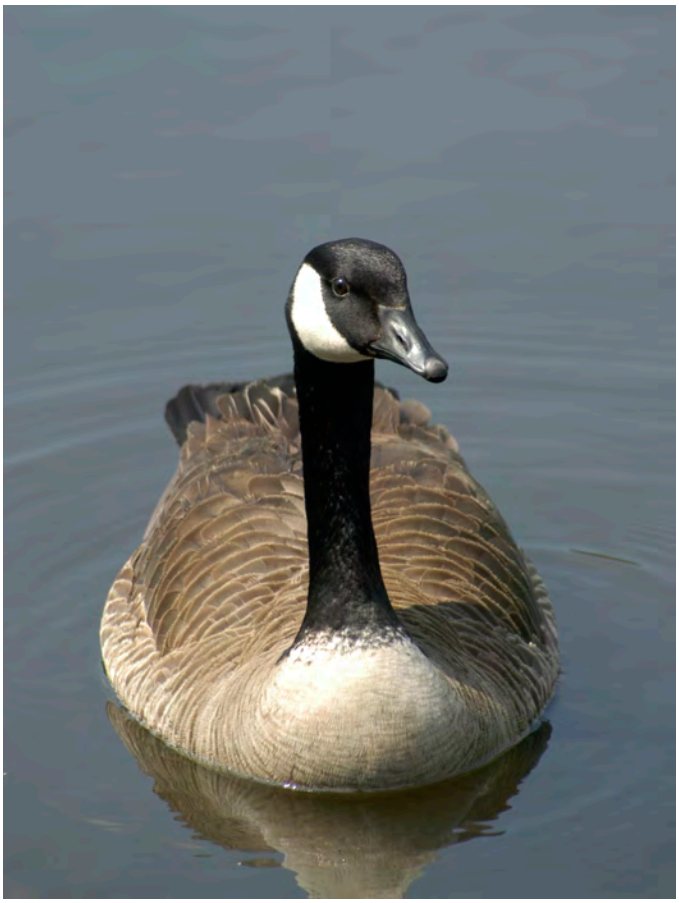
Adling means "loss of development." It commonly refers to any process by which an egg ceases to be viable. Addling can happen in nature when incubation is interrupted for long enough that eggs cool and embryonic development stops. People addle eggs where they want to manage bird populations. Keep in mind that population management should be only one component of a comprehensive, integrated, humane program to resolve conflicts between people and wild Canada geese (see *Solving Problems with Canada Geese: A Management Plan and Information Guide* available online at *humanesociety.org/geese*).

A contraceptive drug (nicarbazin, sold under the brand name OvoControl (ovocontrol.com)), reduces hatching to manage populations humanely. Geese who consume an adequate dose during egg production lay infertile eggs. Managing populations with OvoControl requires less labor than addling because you do not have to find and treat individual nests. The Environmental Protection Agency has registered this drug in the United States. A U.S. Fish and Wildlife Service permit is required to use it. Potential users should also check to see whether their state wildlife agencies require an additional permit. You'll find complete contact information for the supplier at the end of this document.

This protocol is for Canada geese (*Branta canadensis spp.)* only. Other species of birds have different nesting chronologies and incubation periods that make appropriate addling different. Addling for any other species requires a protocol developed for that species.

Information and training are essential for a successful egg-addling program. Program organizers and addlers must learn how to addle effectively, humanely and legally. Understanding goose behavior and what works for other addling programs will help. Although this protocol covers much of this information, program organizers and addlers may need to refer to additional sources for specific information on some topics. In particular, this protocol only covers legal authority in the United States. It does not cover the legal status of Canada geese and legal requirements or permissions needed in any other country.

This document provides general guidance to assist in stabilizing Canada goose populations where they cause conflicts. However, this document is not exhaustive or all-inclusive. Instead, it contains suggestions as to addling procedures. It is open-ended and subject to revision and amendment as we learn more about humane approaches to solving problems with Canada geese. **As with all potential interactions with wildlife, it is your responsibility to exercise care and caution when attempting any procedure described here.**



Legal authority

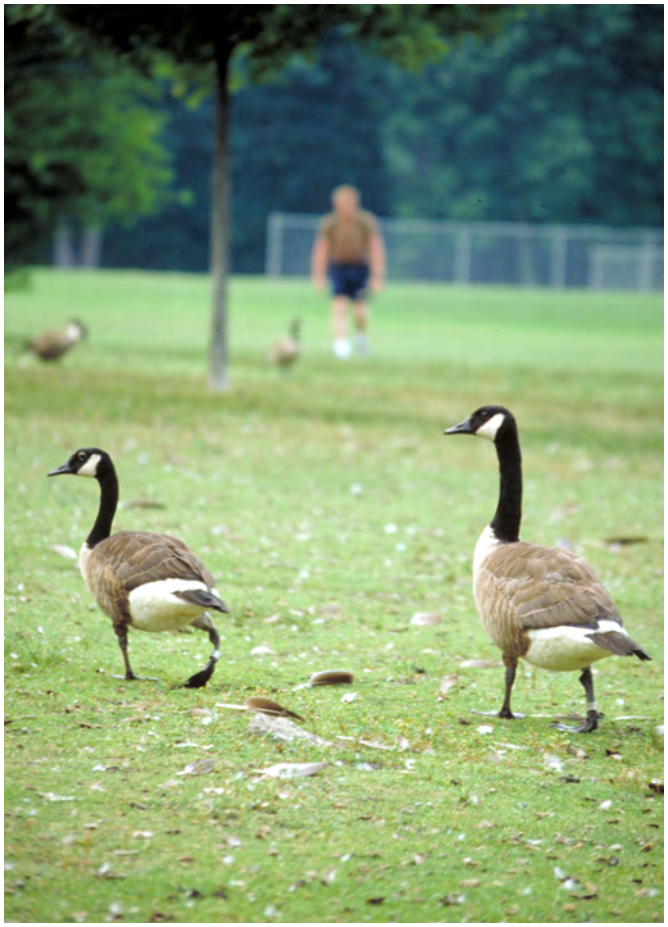
The federal Migratory Bird Treaty Act and its amendments protect virtually all native bird species, including Canada geese. Protected birds, their nests and their eggs cannot be "taken" (harmed) in any way without permission from the USFWS. For most bird species, anyone desiring to addle must apply to the USFWS for a depredation permit for their site.

However, for so-called "resident" Canada geese, the USFWS has established a Nest and Egg Depredation Order that allows property owners and managers to addle on their own property without applying for an individual depredation permit. "Resident" geese are defined as those Canada geese that stay within the lower 48 states year-round and do not migrate north to Canada during nesting season (like "migratory" Canada geese do). The full text of the order is available in USFWS regulations at *epermits.fws.gov/eRCGR/DOC/eRcgrFaq.pdf*

Under the order, landowners and managers do not need a permit from the UWFWS but they **MUST** register their property with the USFWS online before addling each season and report their activity (total numbers of nests and eggs) at the end of the season. Homeowners associations and municipal governments may register their entire association or jurisdiction, get landowner permission for addling on individual properties, and report the season's outcome for the association or jurisdiction. Register at *epermits.fws.gov/eRCGR/geSI.aspx*.

The USFWS order removes the requirement for an individual federal permit but does not remove each state's authority to regulate addling within its borders. Addling programs **MUST** check their state's requirements. At the time of writing this document, 22 states accept USFWS registration with no additional requirement. Eight states accept USFWS registration with additional state requirements. Eleven states do not accept USFWS registration but authorize addling themselves. In seven states and the District of Columbia, there are no regulations in place. The order is not applicable in Alaska or Hawaii. The most comprehensive summary on states' current requirements is available at *epermits.fws.gov/eRCGR/DOC/eRcgrSCL.pdf*.

Anyone seeking to addle the eggs of any bird is responsible for complying with all applicable laws and regulations, including registering with appropriate agencies and obtaining any necessary permits before proceeding. How to register and how to apply for permits is not described here in detail but these are vital first steps before the information in this protocol can be applied.



Biology and nesting behavior

SPECIES BIOLOGY

For an addling program to succeed, it is essential to understand goose biology and behavior. Both guide addling timing and methods and ensure that other species are not affected and Canada geese are not harmed.

Canada geese are easy to recognize by their size, color, markings and—of course—their distinctive "honking" calls. Canada geese tend to eat and loaf in grassy areas with open sight lines and access to a body of water. They typically don't reach sexual maturity until three years old and can live up to 20 years, although the average life expectancy of a wild goose is much shorter. Both parents defend the nest and their goslings until they are approximately 10 weeks old and can fly. (For more details on the biology and natural history of this species, you can supplement this brief summary by referring to field guides and reference works.)

NESTING CHRONOLOGY

For addling to be effective and for developing embryos to be treated humanely, it is critical to know the timing of nesting and egg-laying in your area. Geese start nesting at slightly different dates in different areas: earlier in southern areas and later in northern areas, ranging from March through June with peak activity in April and May in most of the United States. Weather conditions also impact nesting dates, with slightly earlier nesting in warmer years.

Since they tend to start nesting about the same time each year in any particular area, annual records of nest initiation dates are very helpful. Addling programs should record these dates, but it is not necessary to wait until an addling program starts to begin noting nest initiation dates. Also note the dates at which geese incubate (sit on the eggs to keep them warm). If you have not been noting nest initiation and incubation dates, ask knowledgeable local experts about goose nesting periods. State waterfowl biologists and local wildlife rehabilitators frequently have good insight into nesting chronologies.

In addition to these sources of information, the geese themselves will offer insight. Begin checking for mating behavior and nesting activity very early in the spring. Outside of nesting season, people mainly see flocks forage and rest together. Early in spring, mated pairs will begin to stay together near their preferred nest sites and defend those sites against other geese. When you begin to see pairs of geese "hanging around" one spot and chasing other geese away, note that location—the pair might have (or soon will) start a nest near that spot. When you later see only one goose "hanging around" that spot, it is very likely that his mate is sitting on nearby nest.

NESTING LOCATION

Geese prefer nest sites near water with a good view of the surrounding area, especially on islands and peninsulas. Where these sites are not available or are already defended by other geese, they often nest on or near the shores of ponds, lakes and other water bodies. They also prefer sites where a natural or human-built barrier prevents approach on one side and where a good view of the remaining area allows easy defense of the nest. Therefore, nests are frequently found close to

buildings and fences and at the edge of mowed grassy areas where vegetation changes to taller plants. Geese will also nest in less-than-ideal places, such as landscaped areas in parking lots, planters next to busy building entrances, or flat roofs. In more natural settings, look for nests on muskrat houses , beaver lodges, elevated platforms of vegetation, stumps and other raised, protected areas.

Geese tend to nest where they nested before. Some seem to nest exactly at or within feet of their earlier nest sites. Therefore, keeping good records of exactly where nests were found will make work easier in subsequent years.

Once the female goose (or hen) begins to incubate, the male (or gander) will adopt the role of sentinel and will be the only conspicuous one. Although the male will not usually be immediately near the nest, he will be within a few hundred feet at most. A search of the area in which an alert and watchful bird is "standing guard" will generally lead to the discovery of a much less noticeable bird on a nest. She will be crouched low to the ground and may be hard to see. The most conspicuous feature of a sitting goose is often the white cheek patch.

Goose nests are round or oval and made from vegetation, mulch or similar material. The female lines the nest with downy feathers from her breast to protect the eggs. Scattered downy feathers on the ground may be a clue to a nearby nest. When a sitting goose leaves her nest to eat and drink, she covers the eggs with nest material to keep them warm and hidden while she is gone. If you find a nest without a goose sitting on it, touch the eggs. If they are warm, she has started to incubate. Cold eggs, especially if the nest is not yet lined with down, indicate the goose is not finished laying or has abandoned this nesting effort.

Geese lay an average of five to six eggs per clutch (all eggs laid and incubated together by one goose) at about the rate of one egg a day, but you may find nests with anywhere from two to 12 eggs, or—rarely—even more. The goose completes her clutch over several days and begins to incubate when her clutch is complete. While eggs are being laid, but before incubation, the pair will spend little time near the nest to avoid attracting potential predators. Eggs do not begin to develop until the goose incubates; this allows all goslings in a clutch to hatch around the same time. Despite this general rule, occasionally a sitting goose (whose clutch should have been complete) will be found with new eggs a week or two later.

If you find a cold nest, note it and revisit it within a week. Alternatively, you can addle cold eggs, revisit the nest soon to treat any additional eggs.

EGG DEVELOPMENT

Knowing how eggs develop is also essential to a successful humane addling program. **It is imperative to addle eggs early in development**. Humane treatment of developing embryos becomes an issue when an air sac develops inside the egg. An air sac forms as the developing embryo uses the egg's stored food; air

passes through the porous shell and fills the space. At that point, development is typically advanced enough that the procedures described in this protocol may not be humane.

In Canada geese, eggs that have been incubated for fewer than 14 days can be addled humanely. Beyond that time, and when the eggs first begin to float when placed in water (see appendix), you should return the egg to the nest rather than addling it. Note where and when these eggs were found for next year.

Egg addling procedures

APROACHING THE NEST

Addling active nests is not a solo activity. Even experienced wildlife professionals do not attempt to deal with both the eggs and the parents alone. Work in small teams of three or four people. Experienced addlers find that they can manage with just two for most nests, but with larger teams, addlers can specialize and work quicker. Having someone dedicated to recording data makes the work go quicker. A younger helper (such as a teenager) can handle this task while acting as nest spotter and go-fer. We do not recommend that minors take roles that put them in direct contact with wild birds.

When searching for nests, be prepared to come upon nests and defensive geese as soon as you enter the site (perhaps as soon as you step out of your vehicle or building). Once you find a nest, approach cautiously. For most potential addlers, the most pressing question is how they will get defending geese to stay far enough away from the nest for them to addle the eggs. We'll provide some tips below.

Geese are active defenders of their nests and challenge people who approach them. Some even challenge vehicles approaching too close. As you approach a nest, the geese will be very noisy. Some geese will simply leave the nest before (or just as) you get close, although they will generally stay nearby—honking all the while—and may return to challenge you for the nest before you finish addling. If the gander is not immediately obvious, be watchful for his return, perhaps by air, in response to his mate's calls.

MARKING AND RECORDING THE NEST SITE

Depending on the addling technique you choose and your program's goals, once your addlers find a nest they'll likely need some way to find it again. Nests found early in the spring may be lost within a couple of weeks under rapid vegetation growth. New nests can be confused with nests previously found, especially if there are clusters of nests on popular locations (such as islands). It will not be easy to tell nests or geese apart a week or two later.

One option is to mark the nest site either before you move the geese off the nest or after you have completed addling. Plastic surveyors' tape, flags, surveyors' spray-on marking paint or some other system can leave a distinguishing mark. We don't recommend placing markings immediately next to the nest if the public has access to the site. Curiosity about the markings tends to draw people to the site and could also draw egg predators such as crows. Use an agreed distance and direction (e.g., north of the nest at 20 feet) for markings and make note of it.

Marking material can be unsightly and, depending on the material used, require an additional trip to the site to retrieve. In high-traffic locations, markings could draw people into conflicts with defending geese. Given these considerations, addlers may decide to leave nests unmarked.

However, addling teams will often still need to find treated nests again. In these situations, very thorough notes with sketch maps, perhaps supplemented by photos, can help teams find nests again. Place something in the photo to label and identify each nest (i.e., a note with nest site and number). These notes, maps and photos are helpful even where nests are also marked. Global Positioning Systems (GPS) can give approximate locations. The nature of each site and the precision of the readings will determine the usefulness of these position readings.

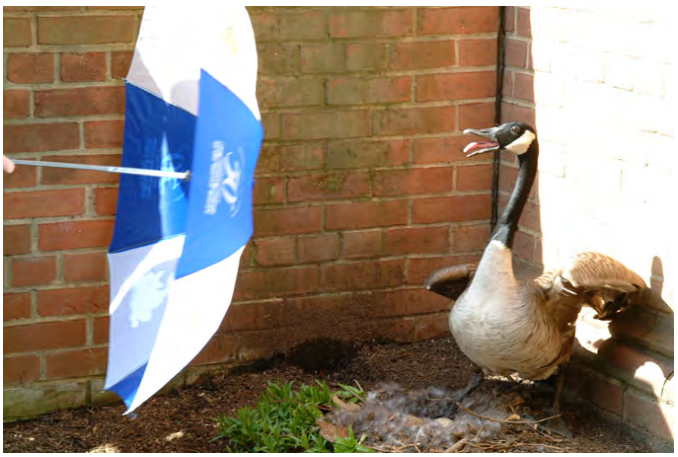
FENDING GEESE OFF NESTS

Some geese remain sitting or standing over the nest, hissing, honking and flapping as people approach. These geese will have to be gently moved off their nests, and active addlers might need a dedicated person to fend them off. Although the male goose is typically the most vigorous nest defender, in some pairs the female might be the stronger defender. In other pairs, both parents might be equally vigorous.

Goose defensive behavior is primarily honking, hissing, flapping wings and running toward approaching threats. Rarely, a goose will make physical contact and actually strike people with his flapping wings, bump them with his body, or peck them with his beak. Geese are large, and they can cause bruises or knock someone off balance, leading to a fall. Bring a means of defense to hold birds at bay.

Umbrellas, trash can lids, brooms or anything similar can hold birds off. Poles (such as swimming pool cleaning poles with a brush or net on the end) often work well. Addlers using these tools find most geese will move away when the pole is simply pointed at them. Cheap umbrellas, the kind without pointed ends, have several advantages. Closing and opening them near the goose with some shaking and noise often works; there is an element of surprise when a solid visual barrier springs opens. (The advantage of using cheap umbrellas is that geese do break some.) A goose can be gently pushed off her nest with the open umbrella canopy, if necessary. While addlers work, you can even place open umbrellas around the nest to discourage the geese's return. Depending on the pair's behavior, you may need two fending tools, one in each hand of the person assigned to fend. Some geese circle around on the ground and challenge the addling team while they are working. A very few fly at addlers, who will need to be alert for this possibility.

If both members of the pair are strong defenders and move at the nest from different directions, you might need two fenders.



It is imperative not to strike at, harm or attempt to harm any protected bird. Injury to any federally protected species is a criminal offense. Legal permission to addle does not include permission to harm the parent birds.

Before you approach the nest, get organized so you're ready to addle quickly—as soon as the hen is off the nest. Have tasks assigned to team members and needed materials at hand before moving her off. For everyone's sakes, hold the bird off her nest for the shortest time needed to complete addling. It is better to mark nest sites, take notes, record data and take reference photos and GPS locations before a bird is fended off or after addling is completed and the bird has been allowed to return.

Before approaching the nest, also determine what direction you will "push" the geese and make sure all team members are working to move the birds in the same direction. Always try to push them toward an open space. You will be hard-pressed to complete work at a

nest if you have pushed the parents into the bushes at your back, where they are stuck between brambles and your umbrella. If possible, push them into or toward the water. Once they are swimming, they are less likely to come back at addlers.

MARKING EGGS AND COLLECTING DATA

If you're using the oiling method to addle (described further below), you might find it helpful to mark each egg. After the goose is off the nest, simply write on them, using either a simple mark or a more elaborate code (for example, 1-1 for the first egg in the first nest). A wide variety of pens and pencils—including number 2 pencils, indelible markers of various kinds, grease pencils and livestock tag markers—work for egg marking, although no one method is universally successful.

As a goose incubates her eggs, she'll turn them in the nest and rub against them. This movement can rub off some marks. Other eggs become rather dirty after a couple of weeks' incubation, hiding the marks. Marks on the short ends of eggs, rather than on the sides, tend to hold up a little better. You can make several marks on each egg to increase the chances that some will be visible when you return. It might help to mark the dry eggs before floating to determine their age (described below). We suggest that oiling programs mark eggs, these programs might not be able to rely on marking alone to determine if a nest or an egg has been treated.

Be sure to consult notes, maps, photos and GPS positions if addlers need to determine whether a particular nest or egg has been oiled. Be aware that the float test (described below) will not help answer this question. An oiled egg may float just like a developing egg due to decomposition gasses inside the oiled egg.

If your team includes enough people, one member can begin recording data while others fend and addle. Use a data sheet to record:

1. The date.
2. The location and number of the nest.
3. The number of eggs in the clutch.
4. The method of addling used.
5. The number of eggs treated (if different from the number in the clutch).
6. The names of addlers.
7. Any other information specific to this nest and site.

Although the USFWS requires you to report only the total numbers of nests and eggs, keeping more detailed data will be very helpful if the team revisits the site again in the same season or returns next season. This data will also help measure progress over time and provide information for the community.

Addlers should record data on each nest as they work. Depending on the number of team members and how many are needed to fend the geese at a particular nest, one member may record data while another addles. If this approach is not practical, record data for each nest as soon as work at that nest is done. Since most geese will eagerly remind addlers that they want their nest back, finish the actual addling quickly (while still being careful and thorough) and then move back while you complete the data for that nest.

DETERMINING INCUBATION

Feel the eggs; if they are warm, incubation has started. If they are cold, the clutch is not complete and the nest can be marked and/or noted and revisited within two weeks.

Alternatively, you can addle cold eggs, but you'll need to revisit the nest within two weeks to treat additional eggs.

DETERMINING EGG AGE

You must determine an egg's age before addling it. For Canada goose eggs, the "float test" or immersion test is an excellent indicator of incubation age. Eggs that have been incubated less than 14 days can be addled humanely. Note that the incubation age is important here, not the number of days since an egg was laid. For eggs incubated longer than 14 days, the addling procedures described below **may not be humane**. Eggs that are pipped (where the gosling has begun hatching by breaking a small hole through the shell) **cannot be legally addled**. The same restriction applies if an egg is not pipped, but you can hear or see the gosling making sounds and/or moving,

The Humane Society of the United States recommends that Canada goose eggs that have been incubated longer than 14 days—at the stage at which they begin to float in water—be returned to the nest to complete development. Remove floating eggs from the water quickly and do not dry them off. Rubbing wet eggs can remove the outermost protective cuticle layer from the shell, potentially allowing germs to enter through the shell pores.

See the appendix for an illustration of the float test that shows how eggs 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 that eggs can float freely. At many sites, you can simply fill a bucket from the pond next to the nest, but at some sites you may need to bring water with you. To perform the float test:

1. Place eggs in the water. Some addlers float every egg; at a minimum float two or three from each nest.
2. Remove eggs from the water.
3. Proceed based on test results.

You may also be able to determine incubation age by careful observation over time. If you regularly observe the geese at your site *before* they build nests and keep good records of specific pairs, their nest sites and their activities, you may be able to determine the incubation age simply from the date incubation began. To use this method to age eggs, you will need to start observing early in the season and keep good records that allow you to differentiate pairs of geese and their nests (ideally by marking) to ensure your observations relate to the correct nests. All nests in an area will not be on exactly the same schedule. You must observe and record activity for each nest. This option might work if staff are already on-site every day attending to other duties and can check on the geese frequently.

EGG ADDLING METHODS AND MATERIALS

Several procedures can stop egg development effectively and humanely at an early stage. Of these, the procedures that physically impede development—specifically piercing and shaking—are more difficult to learn and carry out correctly and completely than oiling, egg replacement and nest destruction (egg removal). Incorrect or incomplete piercing and shaking can leave the embryo alive but deformed. Therefore, we do not recommend these addling procedures. You should weigh the advantages and disadvantages to each of the three recommended procedures (described below) before selecting the most appropriate approach for your site, program or nest.

Regardless of the method you choose, all teams need:

- Proof of federal registration printed from the USFWS website.
- A state permit, if required in your state.
- Proof of the property owner's permission, if you are not the property owner.
- Data sheets.
- Material for marking nests, if they will be marked.
- Something to write with.
- Fending tools (e.g, umbrellas).
- A bucket and water for the float test.

For all methods, you might find it useful to bring:

- A clipboard (for recording data).
- A sheet protector (to keep data sheets and other paperwork dry).
- A camera.
- A GPS tool.
- Disposable gloves.
- Public education handouts.
- This addling protocol—especially the float-test diagram.

Nest destruction (egg removal) method

This method is simple and used extensively in some states. After confirming the eggs are young enough to addle humanely, remove nests and eggs and dispose of them as directed by the USFWS or your state wildlife agency. Make sure the eggs cool and stay cool so that incubation stops; don't leave them in the sun inside dark plastic bags or in the back of a car, for example. Put them in a cool place for a few days before disposing of them. Note that you must dispose of the eggs; it is illegal to keep, consume, use, sell or trade eggs. You can remove or scatter the nesting material to discourage the geese from reusing the nest for a second clutch. The nest material and eggs from several nests may be bulkier and heavier than you expect. Come prepared with plenty of sturdy containers. If using trash bags, we suggest you double the bags and close them securely.

Note that some pairs will build new nests and lay additional eggs. How many geese re-nest is not known, but there some data suggests that if the eggs have been incubated for at least a week, geese are less likely to re-nest..

For this method to succeed, you'll need to return repeatedly to find and remove new nests. Given this consideration, nest destruction may be a good choice in locations where addlers will be frequently on-site for other duties and where the number of goose pairs is relatively small. On the other hand, you might find it useful if you have a site with many nests. In this case, the time needed to oil many nests could be impractical and acquiring an adequate number of replacement eggs difficult and expensive.

Visit nest sites no more than 14 days apart due to the 14-day limit on humanely addling eggs. If you go longer between visits, you'll likely find some eggs that are too old to disturb. Ideally, you'd remove nests between 7 and 14 days of incubation: long enough to reduce the chance of re-nesting but not so long that eggs are too old to remove.

In addition to the supplies needed for all addling methods, you will also need containers to store the eggs.

Oiling method

Oiling is a widely used addling method with a long record of success. You simply use corn oil to coat eggs that are young enough to addle humanely, mark them, then return them to the nest. The oil keeps air from passing through the shell, preventing the embryo from developing. Oiling is reported to be highly effective (between 95 and 100%) in studies. However, in field use, oiled nests have hatched goslings on rare occasions.

Use only 100% food-grade corn oil. This is a USFWS regulation. Although they may seem more convenient, do not use aerosol spray cooking oil, even corn oil. These products have additional ingredients that prevent oil from clogging the spray head and help it spread on a pan. These additives may interfere with the oil's effectiveness in blocking air movement through the shell. Since these spray products are not 100% corn oil, they do not comply with USFWS regulation.

Addlers can rub oil onto eggs, dip eggs in a container of oil or spray oil from pump-type (non-aerosol) containers. If spraying, be sure to oil all surfaces of each egg, not just the exposed surface as the egg lies in the nest. You will need to turn each egg to expose and spray the entire surface. Disposable gloves are very useful to keep hands clean when applying oil. Change them between nests to prevent spreading disease between birds. Whatever coating method you use, the goal is an even coat over the entire egg, using a light to moderate amount of oil.

If you use the float test, make sure eggs are thoroughly dry before oiling them—otherwise the oil won't stick. Bring plenty of rags or towels. Oil eggs in the same order you floated them so they have lots of time to air-dry before oiling. **However, if eggs float and must be returned to the nest untreated, do not dry them.** Rubbing the wet eggs can remove the outermost protective cuticle layer from the shell, potentially allowing germs to enter through the shell pores.

During your program, visit nest sites no more than 14 days apart due to the 14-day limit on humanely addling

eggs. If your visits are more than 14 days apart, you'll likely find some eggs too mature to oil.

Note that oiling requires addlers to spend more time at each nest than other methods, but addlers will likely have fewer eggs to treat overall. Returning the oiled eggs to the nest tricks the goose into continuing to incubate nonviable eggs instead of laying additional eggs. Occasionally, addlers will find new eggs when they revisit the nests. But if you revisit within 14 days, these eggs are clearly young enough to addle. If you revisit after 14 days, you can float-test any new eggs. However, keep in mind that it can be difficult to distinguish oiled eggs from newer eggs if the markings on oiled eggs don't hold up well (see the Marking Eggs section above).

In addition to the supplies needed for all addling methods, you will also need:

- 100% food-grade corn oil (from any grocery store).
- Lots of rag or towels to dry eggs between floating and oiling.
- A marking pen or pencil, if marking eggs.
- Disposable gloves.

Removal and replacement method

Similar to oiling and returning eggs to the nest, placing dummy eggs in the nest can also trick the goose into continuing to incubate and prevent her from laying additional eggs. Addlers simply remove real eggs young enough to be removed humanely and replace them with dummies. In clutches with five or fewer eggs, three

dummy eggs will suffice; for larger clutches, use four. The removed eggs do not need to be addled—by being removed from incubation and allowed to cool, they simply stop developing. Make sure the eggs cool and stay cool; don't leave them in the sun inside dark plastic bags or in the back of a car, for example. Put them in a cool place for a few days before disposing of them as directed by USFWS regulations (review your registration information from the USFWS) or your state wildlife agency. You must dispose of the eggs; it'ss illegal to keep, consume, use, sell or trade them.

Addling programs must find a large quantity of dummy eggs that are about the same size, color and weight as real eggs. You can retrieve them from nests at the end of the nesting season, then clean and store them for next season. Finding a source for appropriate dummy Canada goose eggs is difficult, however, making this method of limited use. At this time, we are aware of only one source of handcrafted wooden eggs (used by GeesePeace St. Louis). You'll find the supplier's contact information at the end of this protocol.

As with other methods, your nest site visits shouldn't be more than 14 days apart to respect the 14-day limit on humanely addling eggs. If your visits are more than 14 days apart, you'll likely find some eggs too mature to replace. In theory, sitting geese should not lay additional eggs after replacement. Occasionally, though, addlers have found nests with both replacement and real eggs.

In addition to the supplies needed for all addling methods, teams using this method will need:

- Dummy eggs.
- Containers for both dummy and real eggs.

REVISITING NESTS AND SITES

Depending on the addling method and the program's goal, you might find it desirable or necessary to revisit treated nests and revisit sites to check for new nests. In the normal course of their work, addlers can revisit nests destroyed or treated early in the season as they search for new nests. Where eggs are replaced, addlers will need to collect dummy eggs at the end of the season.

How many revisits you make depends on your goals and on logistical considerations. Maximum reproductive control requires multiple revisits. Start early and continue until all nesting activity ends for the season—including re-nesting by geese whose first nest failed—to prevent as much hatching as possible. Some programs may need to balance this goal with logistical considerations and/or available resources. Although revisiting the site until the end of the nesting season will give you the best results, visiting during the peak nesting period only will still help you manage the population.

Geese tend to nest around the same time each year, with some variation due to weather conditions, and around the same time as each other. New nests tend to peak during a period of a few weeks;. If you have limited resources, focus on peak nesting weeks to capture the majority of nests. The exact dates of peak nesting will be somewhat different across the continent. In southeast Michigan, peak clutch initiation (the date the first egg is laid) is the last part of March through the middle of April, with a strong peak around April 1st. More than half the clutches are started in the two weeks at the end of March and the beginning of April. Therefore, Michigan's nest destruction program focuses activity on the middle of April. In central Maryland, volunteers find very few completed nests in March but find the greatest number of completed new nests during the first weekend of April, with new nests tapering off through the season. Therefore, visits on the first and third weekends of April yield the greatest returns, with additional visits continuing at two-week intervals as long as nests and volunteers' willingness holds out. If your revisiting opportunities are limited, you might choose the oiling method: It limits re-nesting, and you don't have to retrieve dummy eggs.

While oiling and replacement are supposed to prevent geese from laying additional eggs, real geese sometimes do not act just as the scientists predict. You might find new eggs when you revisit oiled nests and nests with dummy eggs. Perhaps the sitting goose laid more eggs or another goose dumped eggs in her nest. However it happens, you can treat these new eggs just as you treated the eggs in the original clutch. Determine incubation age by float or observation, if possible, then oil, remove or replace. In oiled nests, you may have trouble determining which eggs are new and which were oiled if the marks wore off oiled eggs. In this case, you may have to leave all the eggs without additional treatment.

If you find goslings during a revisit, you probably won't be able to trace them to specific nests. Don't consider a few goslings a failure! As with any form of population management, addling cannot completely eliminate reproduction. A nest or two may have been very well hidden. On rare occasions, goslings hatch from oiled nests. Some geese whose eggs were removed will lay more eggs, and it's easy to miss some of those second clutches. Parents may lead goslings as far as two miles to grass and water if their nest site does not offer these resources, so goslings at your site could come from nests offsite. If you think this is the case, reach out to neighboring property owners to include them in next season's program.

In the past, we recommended addlers revisit oiled nests after two weeks to remove oiled eggs. This recommendation was based on a concern that some geese might sit on nonviable eggs well beyond the natural incubation period. Several years' experience of many addling programs does not support this concern. Geese tend to abandon oiled nests just as they do nests that fail for other reasons, such as flooding or poor incubation. Additionally, determining whether a particular egg was oiled has been difficult when markings don't hold up. And because oiling occasionally fails, some addlers worried that they might inadvertently remove developing eggs that were past the 14-day limit. Compounding these concerns, the float test doesn't distinguish eggs with developing embryos from previously oiled eggs; both can float. For all these reasons, we no longer recommend routine removal of oiled eggs after a set period.

If you must remove oiled eggs later, be aware that nonviable eggs may have spoiled to a point where they have burst or are about to burst. Be careful handling them, and be prepared for offensive smells. Double-bag and dispose of the eggs as directed by USFWS regulations or your state wildlife agency. It's generally best to leave oiled eggs for nature to recycle.

CAUTIONS FOR ADDLERS

Addlers must be aware of risks to their own safety. Any outdoor task done performed in varying weather conditions at multiple sites presents some risks. Preferred nesting sites are commonly near water; as such, water safety is a particular concern for many addling programs—especially if you need boats to reach island nests. It is beyond the scope of this protocol to cover boating, water and outdoor safety in depth beyond this simple reminder. Be sure all your addlers learn and follow appropriate safety rules!

Droppings can potentially contaminate eggs and nesting material. Take sensible steps to avoid disease transmission. Disposable gloves—changed between each nest to avoid spreading germs between birds—also protect addlers. Wash hands thoroughly after handling any potentially contaminated material. You can use waterless hand sanitizer in the field until soap and water are available. Take care to avoid contaminating equipment and supplies.

For the safety of humans and geese alike, do not allow children to addle. Supervised teenagers may be helpful members of addling teams for locating nests, recording data and carrying out tasks that do not require directly handling eggs or birds.

RECORD-KEEPING AND REPORTING

Federal regulations require that you report the total number of nests and eggs treated each season. State agencies might have other record-keeping and reporting stipulations. We suggest collecting as much information as possible beyond the required data to aid and improve your addling program from year to year.

PUBLIC EDUCATION

When addlers work in public places, people may approach them with questions or concerns. Empower addlers to answer these questions by including an education component in your program. You could designate someone on each team to explain the program or create a simple factsheet that team members can share with the public. If you do create a handout, be sure to include your contact information.

The public can be very protective of their geese—either because they do not understand what you are doing or because they disagree with it—and may approach addlers to object. Some addlers might prefer not to add public education to their fieldwork. Scheduling site visits early in the morning (thus avoiding the public) can leave more time to attend to the work at hand. You might also get lucky and find the goose off the nest searching for her breakfast.

Although we can certainly understand scheduling your efforts to avoid a large audience, we strongly recommend against cloaking addling activity in secrecy. Nothing will get conspiracy theories circulating quicker than public perception that the community is being mislead or denied information. The negative consequences of misleading information or stonewalling will be much greater than the hassle of dealing with questions, concerns and disagreement early and openly.

Informing the public as early as feasible usually pays off by preventing problems down the road. Build support by engaging in community outreach: Proactively share information with local media outlets, homeowners association, employee newsletters and other groups about the addling program and other efforts to resolve human-goose conflicts without killing wild birds.

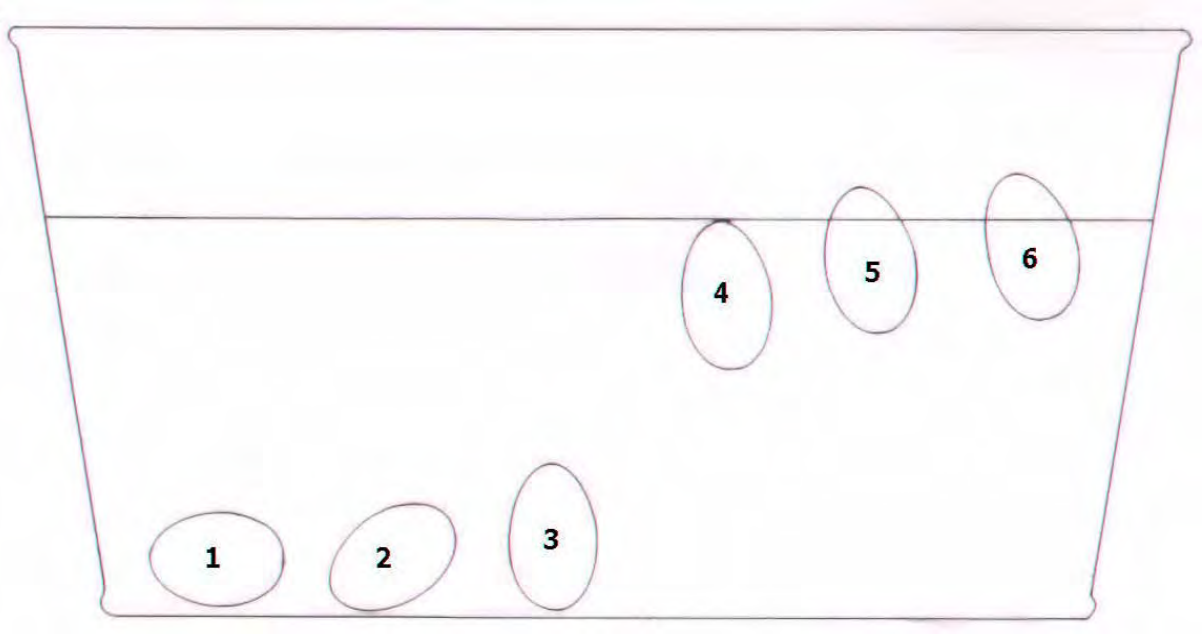
Resources

HSUS Canada Goose Management Plan and Information Guide *humanesociety.org/geese*

Source for wooden replacement eggs:
Nancy Marron
GooseWorks 314-984-9524
Cell: 314-518-8629
nancy38@earthlink.net

Information about OvoControl goose contraceptive:
Erick Wolf
Innolytics, LLC 848-759-8012
erick.wolf@cox.net
ovocontrol.com

Appendix: Float test illustration



Age in days: **0-3** **4-8** **9-13** **14-18** **19-23** **24-27**

(Approximate, from beginning of incubation)

Interpreting this chart: It pictures a cross-section through a large container of water with eggs of various ages. The line across the container represents the water level. Eggs at the very beginning of incubation (number 1 on the left), lay *on* the bottom of the container, clearly not floating. By about 13 days of incubation, eggs will turn upright in the water (as number 3 on the chart) but will remain at the bottom of the container. At about 14 to 18 days of incubation, eggs will clearly float near the top of the water, although they may not break the surface. **Non-floating eggs (like numbers 1, 2 or 3 in the chart) are young enough to be addled humanely.**

Chart based on materials provided by the U.S. Fish and Wildlife Service and the Department of Agriculture's Wildlife Services. Illustration by Lori Baker.

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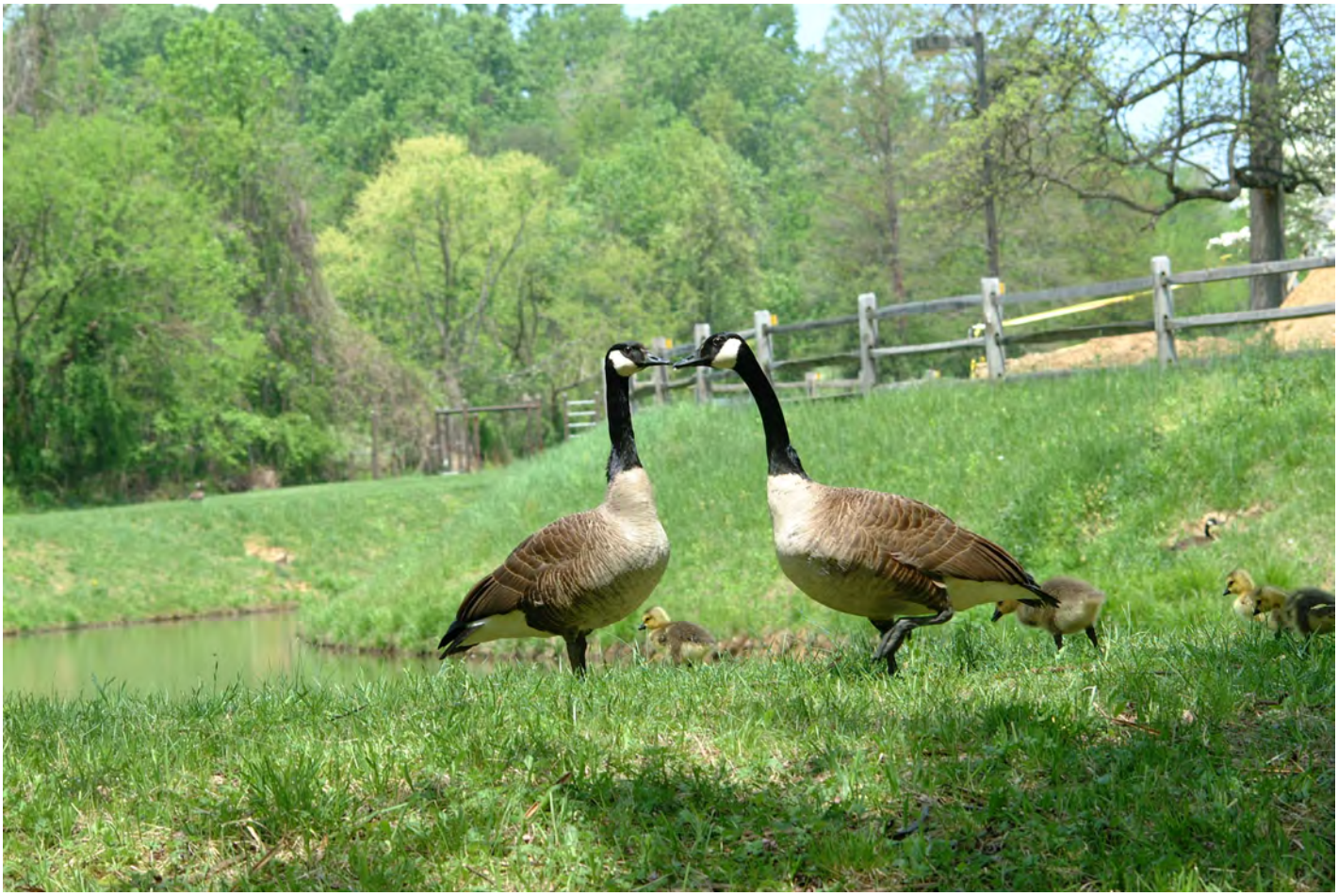

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