

# Wildlife Damage Management Fact Sheet

## Bird Management on Dairy Farms

Paul D. Curtis, Extension Wildlife Specialist, Department of Natural Resources  
and the Environment, Cornell University, Ithaca, N.Y.

### Introduction

Bird control in agriculture is an age-old problem. Ever since people began producing and storing crops and livestock, birds have been attracted to the food and cover provided. A few species may be particularly problematic on dairy farms, including European starlings (*Sturnus vulgaris*), pigeons (*Columba livia*), and English sparrows (*Passer domesticus*) found in and around barns and grain storage areas. These three species of birds are non-native and are considered unprotected wildlife under both Federal statutes and New York State Environmental Conservation Law. That means these bird species can be taken (killed) at any time by any legal manner when they are causing damage to property, crops, or livestock.

Other species of birds are protected by the Federal Migratory Bird Treaty Act and similar state regulations. For example, Canada geese (*Branta canadensis*) may feed on newly emerging wheat or rye fields in early spring. Hazing or scaring techniques can be used to protect fields or grain storage areas as long as no

birds are physically harmed. Federal and state permits are required to shoot geese and other waterfowl outside of established hunting seasons. If wild turkeys (*Meleagris gallopavo*) are seen damaging and feeding in silage storage bins, permits would also be needed to shoot those birds.

Recently, bird management on farms has become more complicated with the emergence of different strains of Highly Pathogenic Avian Influenza (HPAI) or bird flu. Fortunately, HPAI has rarely been found in starlings to date. However, flocks of starlings or pigeons may feed on grain and contaminate cattle feed with their feces, Canada geese (and other waterfowl) are much more likely to be infected with HPAI. When geese graze in pastures and mingle with livestock, there is a greater chance of passing bird flu on to livestock, pets, barn cats, or people. Consequently, growers need to think about potential risks and develop bird management plans for their farms. In this fact sheet, we focus on bird species most likely to contaminate feed or infect livestock on dairy farms.



Figure 1. European starling, (*Sturnus vulgaris*). Photo by unknown.

### European Starlings

European starlings (Figure 1) damage row crops, nuts, fruit crops, and stored grain. The European starling is a non-native invasive species. In 1890, 100 birds were released in New York's Central Park. Currently, the North American starling population is now estimated at more than 200 million. Genetic evidence suggests that all starlings found in North America are descended from those released in Central Park.

### Identification:

Smaller than blackbirds, with a short tail, pointed head, and triangular wings, starlings look black at a distance, but when seen closer, they are very glossy with a sheen of purples and greens. Their overall length is around 8 inches. Their flight is fast and direct, and they walk and run confidently on the

ground. Noisy and gregarious, starlings spend a lot of the year in flocks.

### Legal Status:

Starlings are not federally protected. Under New York Environmental Conservation Law, starlings are classified as unprotected wildlife. They may be captured and possessed at any time by landowners, lessees, their immediate family members residing on the property, or individuals authorized in writing and employed to cultivate the land (NYS Env. Cons. Law – Sections 11-0105 and 11-0523). However, individuals using firearms or bows to capture starlings must hold a valid hunting license if they are not landowners, lessees, family members, or employees.

### Damage:

Damage can be seen in grapes, blueberries, cherries, strawberries, apples, among other fruit crops, along with grain in newly seeded fields. In cattle feedlots, dairies, and poultry farms, starling excreta is also very damaging, and can lead to food safety concerns (e.g., Shiga toxin-producing *E. coli* and *Salmonella* spp.) in agricultural areas. Starlings are considered the most damaging bird species nationwide, with estimates of damage to the agricultural industry of more than \$1 billion annually.

### Range:

The native range of the European starling extends through Europe, southwest Asia, and northern Africa. They were released into North America in the 1890's. By 1942, starlings were observed across the entire United States. Starlings usually prefer human-altered environments. This includes farms,

ranches, open country, open groves, fields, cities, and more open forest and scrub.

### Biology:

Their nest is built in any tree cavity, hole in a building, or deserted woodpecker hole of suitable size. Nests used in successive seasons become foul-smelling. Two to 8 eggs are laid, with average clutch size of 4 to 6. Average incubation period of eggs is 11 to 13 days, and both sexes assist in this activity.

Age at first flight is 19 to 22 days. The average lifespan of the European starling is 3 to 4 years, although the North American record is 17 years. Annual mortality averages between 40 and 50%, although juvenile mortality is much higher (up to 80% of juveniles do not survive to reproductive age). As fledglings leave the nest, they gather in small family groups of up to 10 birds, including one or two adults. These small groups eventually merge until large flocks are formed. Merging continues until all the birds in a local area are in one large flock. These flocks are scattered throughout the state in summer and are responsible for depredations to soft fruits and other summer crops. Population build-ups in cattle feedlots begin by mid-October. Starlings share a communal roost at night and, during the winter, as many as 5 million birds have been observed in one cattail roost.

The starling's diet is almost 60 percent animal matter, mainly insects and other small invertebrates. Vegetation consumed is largely berries and other fruit with some

seeds and grain. Losses from starlings in feedlots result from fecal-transmitted dysentery in the cattle as well as the value of livestock feed consumed.

### Damage Prevention and Control Methods

#### Exclusion:

Exclusion from nesting sites is possible. Close all openings larger than 1 inch to exclude starlings from buildings and other structures to provide a permanent solution. In barns and other outbuildings, heavy vinyl or rubber strips hung in open doorways have been successful in excluding starlings while still allowing people and machinery to pass through doorways. In such doorways, 10-inch-wide strips should be hung no more than 2 inches apart.



Figure 2. Netting to prevent bird access to a building. Photo by unknown.

Netting can also be an effective option when trying to prevent starlings from nesting in ledges of buildings, as well as from perching in rafters in barns or outbuildings (Figure 2). However, proper installation of netting is essential for it to be an effective means of exclusion, and netting is expensive. Bird spikes (e.g., Nixalite®, Figure 3) can be placed on ledges or roofs of buildings to prevent roosting.

#### Habitat modification:

Dead trees, wires, or other perch sites can serve as entry points into

agricultural fields. Where feasible, removal of such sites (e.g., dead or evergreen trees) can reduce damage to crops.



Figure 3. Nixalite® and Cat Claw® wires to prevent birds from roosting on ledges. Photo in public domain.

Starlings are attracted to the food and water offered at livestock operations, particularly during the winter months. Limiting the availability of food and water wherever possible can yield effective long-term starling control.

For example, the following practices, individually or together, can reduce both ration loss and disease transmission:

1. Maintain a clean barn. Clean feed spills.
2. Store all grains and feed in bird proof containers (sealed).
3. If possible, use bird proof livestock feeders; flip tops, magnetic, or automatic release types are good examples.
4. Alternatively, feed in covered areas where possible.
5. Use feed larger than the starling can digest (e.g., cubes or blocks larger than ½ inch).
6. Starlings prefer to feed morning to midday. Stagger feed schedules where possible. Consider feeding at night.
7. Starlings are attracted to water. Control water levels in livestock water troughs so starlings can-

not access easily. Drain unnecessary water pools.

Secure buildings if possible. Net windows and rafters to prevent bird access and eliminate nesting sites. Hanging vinyl strips on door frames will allow livestock and equipment to enter easily but prevent birds from flying in through open doors.

### **Frightening devices:**

Propane cannons or exploders, alarm and distress calls, shell crackers, Bird bombs®, and Bird whistlers® are used in dispersing starlings from crops. These devices should be used as soon as the birds appear; delays will make bird removal more difficult. A combination of two or more different sounds is sometimes needed to move the birds out of the crop. Propane cannons or biosonic units should be mounted on stands or telescoping tripod towers above the crop. The units should rotate so the sound is projected over a wide area. Field observations will determine the location where the units should be placed, the number of units to use, and how often they should be moved. Typically, frightening devices have limited effectiveness. Efficacy is dependent on availability of alternative food sources and how quickly the frightening devices are implemented following initial starling movements into fields.

### **Shooting:**

Starling numbers are too large to reduce through lethal removal via shooting. However, shooting may be effective as a dispersal technique. Frequent harassment via shooting during early morning and later afternoon hours may be enough to

disperse starlings. However, shooting is time-consuming and potentially costly, so alternative methods may be preferred.

### **Repellents:**

Several chemical repellents have been tried for starlings. The most popular feeding repellent currently used is methyl anthranilate (MA). It is used on numerous fruit and grain crops where it acts as an irritant to pain receptors associated with both the avian sense of smell and taste. For MA to be effective, concentrations need to range anywhere from 5,000-10,000 ppm. This is typically unattainable in production agriculture. As such, most studies have shown either no effect or only short-term repellency when MA was applied. Still, it is possible MA could have some merit in high-value commodities where starling damage is expected to be great (e.g., cherries and blueberries). Local growers and pest control agents would have to try it out on a local scale to determine the utility of MA for their specific growing conditions.

Sticky repellents (consisting of non-toxic polybutenes) are sometimes used to discourage roosting along beams, ledges, or signs. They are easily contaminated with dust and dirt and therefore must occasionally be reapplied. This limits their utility in most farm situations.

### **Trapping:**

Modified Australian crow traps (Figure 4) have been effective for capturing large numbers of starlings. In some instances, the slot entrance has proven more effective, while at other times the wire entrance was more successful. The



location of the trap is important. Observations should be made to determine starling flyways, resting or perching areas, and feeding areas before the traps are placed in operation. These traps have been most effective when placed in the open near, but not necessarily under, perching or feeding areas.



Figure 4. Starling decoy trap. Photo from Baldwin and Meinerz 2015.

Decoy traps for starlings should be at least 5 to 6 feet (1.5 to 1.8 m) high to allow for servicing. A convenient size is 6 x 8 x 6 feet (1.8 x 2.4 x 1.8 m). If desired, the sides and top can be constructed in panels to facilitate transportation and storage. In addition, decoy traps can be set up on a farm wagon and thereby moved to the best places to catch starlings. Place traps where starlings are likely to congregate. Leave a few starlings in the trap as decoys; their feeding behavior and calls attract other starlings that are nearby.

When a trap is first installed, the bottom should be checked to see that an uneven ground surface does not leave holes that birds can escape through. It may be necessary to use a chicken wire bottom to prevent the entry of predators or squirrels.

Starlings can escape through holes dug by squirrels. Trap baits that have been used successfully include cull peaches, other soft fruits, raisins, and poultry pellets. Bait placed on the ground inside the trap in large amounts with a little on the top near the entrances is most effective. Bait materials that the birds feed on in the area should be used for best results.

The use of live decoy starlings is essential in attracting birds to the trap. Five live birds are sufficient for the modified crow trap. Food, water and shade must be supplied continually. Starlings will die rapidly without water in warm weather. The traps must be kept clean and dead birds removed.

Trapped birds can be removed through a small exit hole, which has been cut into the upper corner of the rear of the trap and covered with a closeable door. A small holding cage can be placed over the hole and the starlings herded into this cage. Euthanize with CO<sub>2</sub> from a bottle or cervical dislocation. The birds should be disposed of by burying or in plastic bags in the trash.

### **Toxicants:**

Avitrol® (4-aminopyridine) is a restricted-use pesticide designed to frighten birds away from an area. Several formulations are legal for use in New York State. When birds consume the grain or pellets, they behave erratically and sound alarm calls that frighten other birds in the flock away from the treated area. The birds that consume the bait generally die. Avitrol® is primarily used in feedlots and staging areas. Starlings will exhibit bait shyness

with Avitrol®. Pre-baiting for several days before application of the pesticide will increase bait acceptance. All leftover bait and starling carcasses should be picked up and disposed of after treatments are concluded. There are several label restrictions to prevent losses of non-target birds, and this may limit practical applications.

The avicide DRC-1339 (3-chloro-4-methylaniline hydrochloride, also known as Starlicide®) is an effective option for reducing starling populations around feedlots and poultry barns. This slow acting toxicant is a restricted-use pesticide that can only be used by USDA/APHIS/Wildlife Services personnel. The toxicant requires 1 to 3 days for mortality to occur, thereby reducing potential bait avoidance concerns. If substantial problems with large populations of starlings occur, contact USDA Wildlife Services staff to determine the feasibility of such a baiting program (APHIS Customer Service Center; 844-820-2234; [aphis.customersupport@usda.gov](mailto:aphis.customersupport@usda.gov)).

## **Canada Geese**

Canada geese (Figure 5) eat crops such as corn, soybeans, wheat, rice, and alfalfa. In some areas, crops that are sprouting in spring can be severely damaged by grazing.

Muddy fields can be compacted by trampling, which may result in reduced yields. Canada geese frequent agricultural fields during spring green-up, and again during fall when corn or other grain crops are harvested.



Figure 5. Canada goose, (*Branta canadensis*). Photo in public domain.

### Legal Status:

All Canada geese (*Branta canadensis*), including resident flocks (non-migratory geese that may inhabit areas throughout the year), are protected by federal and state laws and regulations that govern the capture, handling, or killing of Canada geese, including disturbance of nests and eggs. Permits are required for most control activities other than hazing. A federal depredation permit, or state authorization, is not needed to simply harass or scare birds (except eagles and federally-listed threatened or endangered species). For detailed information on Canada goose management options in New York State, please visit: <https://on.ny.gov/nuisance-geese>.

### Identification:

Canada geese are a valuable natural resource; they provide recreation and enjoyment to bird watchers, hunters, and the public. The “V” formation of a flock of flying Canada geese is a sign of the changing seasons. Geese that migrate may cause short-term damage and mix with resident geese. In this fact sheet, we refer mostly to flocks of resident or local-breeding Canada geese.

### Physical Description:

A Canada goose is black and tan with a large, white patch on each cheek. The male (gander) and female (goose) look similar, but males are slightly larger. Geese are 22 to 48 inches tall and weigh up to 24 pounds.

### Health and Safety Concerns:

Canada geese contaminate turf grass and pastures with their feces.



Figure 6. Fresh dropping from a Canada goose. Photo by Stephen M. Vantassel.

People should wash their hands before eating and change shoes before entering their homes or vehicles after walking through areas with goose feces. Droppings from Canada geese may contain cryptosporidium, *Giardia*, toxoplasmosis, campylobacter, chlamydiosis, *E. coli*, listeria, *Pasteurella multocida*, *Salmonella*, avian influenza, and encephalitic viruses. New strains of avian influenza are problematic because they can be passed from geese to livestock and people. The droppings of Canada geese usually are tubular (Figure 6).

### Reproduction:

Geese form life-long pair bonds, but if a member of a pair dies, the other will find another mate. Families migrate together, stay together

in the winter, and return to the same area for nesting each year.

Adult pairs return to nesting areas in late winter, typically in late February or March or as soon as the ice melts. During a 1- to 2-week time span, a goose lays 5 to 6 eggs and incubates them for 4 weeks during late March or April. Eggs hatch in late April or early May, depending on the location. Most geese begin breeding when they are 2 or 3 years old and nest every year for the rest of their lives. Resident geese may live more than 20 years in suburban areas. One female Canada goose has the potential to produce more than 50 young in her lifetime.

Young geese (goslings) weigh 3 to 4 ounces when they hatch. Geese are precocial, and within 24 hours, hatchlings can swim. Goslings hatch with their eyes open, covered in down, and can move about freely. In contrast, altricial birds, such as robins, are born helpless and need parental support. Geese aggressively defend their nests and may attack if approached. After hatching, families of geese may move up to 2 miles from nesting areas to brood-rearing areas, appearing suddenly at ponds bordered by lawns.

Geese that are not breeding often remain nearby in large feeding flocks during the nesting season. A high percentage of non-breeding geese molt-migrate north into Canada in early June and spend the rest of the summer there.

### Nesting Cover:

Canada geese build nests of twigs, grass, bark, leaves, and moss on the



ground near water. Islands are preferred. At one urban pond in Nebraska where virtually no suitable habitat was available on the bank, geese nested on mats of floating, dead cattails. Geese also will nest on the tops of muskrat houses.

### **Behavior:**

Each year geese undergo an annual molt when they shed and re-grow their outer wing feathers. This occurs for a 4- to 5-week period after nesting, from mid-June through mid-July. Birds cannot fly when they are molting. The birds resume flight by late July. During the molt, geese congregate at ponds or lakes that provide a safe place to rest and feed. Severe conflicts with people often occur during the molt because geese concentrate on lawns next to water and cannot leave. Before molting, some geese without young travel hundreds of miles to favored areas for molting and migration, accounting for the disappearance or arrival of some local flocks early in June. After the molt and throughout the fall, geese gradually increase the distance of their feeding flights and are more likely to be found away from water.

Local-breeding or resident Canada geese spend most of their lives in relatively small areas, although some travel hundreds of miles to areas for molting or to over-winter. Resident geese are distinct from the migratory populations that breed in northern Canada. Canada geese have a strong tendency to return to where they hatched and use the same nesting and feeding sites year after year, making them difficult to move once they become settled in an area. In addition, geese disperse from areas of higher concentration to lower concentration. Removal of

geese from a particular pond will not guarantee that geese will not inhabit the pond later the same season or during the following year.

### **Habitat:**

Canada geese prefer habitats with standing water and low sloping banks. Geese need access to growing grass for foraging. Mowed and fertilized lawns or turf areas near water are ideal habitats. Canada geese are herbivores. They eat grasses, a variety of terrestrial plants, aquatic plants, and occasionally agricultural crops such as corn, soybeans, and wheat. They feed during early morning and late afternoon.

## **Damage Prevention and Control Methods**

### **Frightening Devices:**

Frightening devices may be used for short-term control of nuisance behaviors, before geese become habituated to a location. Do not use frightening devices when geese are nesting or flightless. After nests are constructed, hazing is no longer a viable option for family groups until the molt has ended (mid-July). It can be effective to haze adult geese with no young prior to the molt to encourage migration. Human operated frightening devices tend to be more effective than stationary ones.

Locate stationary frightening devices (e.g., scary-eye balloons) where they will not become entangled or obstructed by tree branches or power lines. Devices may be subject to theft or vandalism in areas that are open to the public. Frequently relocate devices that are stationary to avoid acclimation by geese. Geese quickly learn whether

something poses real danger, and they quickly habituate to most devices. When the birds become habituated, the devices lose effectiveness.



Figure 7. Effigies of canines may help frighten geese from an area. Photo by Jan R. Hygnstrom.

### **Visual:**

Visual devices may be used to create an image that geese avoid, especially if they are not already established on a site. Quietness is a key advantage of visual frightening devices and makes them a suitable tool for use in human-populated areas. Visual frightening devices are not likely to be effective in areas where geese have been established for years. Effigies of humans (e.g., scarecrows) or predator models (Figure 7) attempt to depict visual threats to geese. Effigies with moving or flapping parts are more effective than non-moving ones. Reposition effigies every several days.



Figure 8. Irritape®, a type of Mylar® tape for bird control. Photo by Bird-X, Inc.

Mylar-style tape (Figure 8) reflects sunlight to produce a flashing effect and may be an effective deterrent for geese. When the tape moves in the breeze, it pulsates and produces a humming sound that repels birds. Secure 6- x 30-inch strips of Mylar-style tape to 4-foot wooden stakes. Reinforce at the sites of attachment to prevent tearing of tape by the wind.



Figure 9. Scary-eye balloons for bird control. Photo by Jan R. Hygnstrom.

Flags or balloons (Figure 9) can be placed on poles (6 feet or taller) in and around fields to be protected. Geese normally are reluctant to linger beneath an object hovering overhead. Flags can be made of 3- to 6-foot strips of 1-inch colored plastic tape, or 2- x 2-foot pieces of orange flagging. Balloons, with large eye spots filled with helium are sold at some garden supply stores. Several flags or balloons may be needed to protect each acre of open field.

Remote controlled boats have been used successfully to haze geese from ponds. Select boats that are appropriate to the size of the body of water. Boats work best when the water is calm on relatively small ponds that are 5 acres or less. Boats can be used in conjunction with pyrotechnics in some areas to increase effectiveness.

Red and green bird lasers (Figure 10) have proven effective for dispersing geese at night from lakes less than 20 acres in size. Use lasers as soon as darkness permits. Point lasers several yards in front of geese that are floating and slowly move the dot closer. Geese will be easier to move if lasers are used during several successive nights. Always keep the beam below the line of the horizon. Do not point the beam at buildings, people, or planes. High-powered spotlights may produce the same effect.



Figure 10. AVIX Autonomic Bird Laser®. Photo from Bird Control Group.

### Audio:

Geese also may be discouraged from using an area by hazing flocks with noisemakers. Noisemakers work best as preventive measures before geese become established in an area and where they must fly to get away from the noise. At sites with a history of frequent use by geese and people, the birds may become acclimated in 1 to 2 weeks. Noisemakers may be prohibited or unsuitable in urban areas. Check with local law enforcement agencies about ordinances for noise control, codes for fire safety, or restrictions on possession and discharge of firearms before using any of these techniques. Obtain permits if necessary. Starter pistols may be considered handguns, and their possession or use may be regulated.

Pyrotechnics are special fireworks that are launched from a 12-gauge shotgun or starter pistol. Shell crackers are fired from a 12-gauge shotgun that project a firecracker up to 100 yards. Other devices, such as Bird bombs® and Bird whistlers®, are fired into the air from a hand-held, 6-mm pistol launcher. They generally have a range of 25 to 50 yards. Read and follow safety instructions before using pyrotechnics.

Propane cannons ignite propane gas to produce loud explosions at timed intervals. They are effective for migrant geese in agricultural fields but are not suitable for residential or public areas due to the noise.

Alarm and distress calls of Canada geese have been used to disperse geese from areas with varying results. Geese may only move to another side of the pond and may acclimate to the calls, but a commercially available device (Goose-Be-Gone®) is purported to overcome some of the reported limitations.

Where discharge of firearms is allowed, occasional shooting of geese can increase the effectiveness of noisemakers, as geese associate the sound with a real threat. Federal and state permits are needed to shoot geese outside of established hunting seasons.

### Egg and Nest Destruction:

Several methods can be used to lower hatchability of goose eggs, and repeated applications over several nesting seasons could stabilize the growth of goose flocks. These



methods are most suitable for areas with high nesting density, such as island sites. Federal and state permits are needed, although in many states, the process has been simplified to on-line registration: <https://www.fws.gov/eRCGR/>.

Egg control techniques require a multi-year commitment. All eggs laid by a goose in its lifetime (possibly 40–50 eggs or more) must be treated to equal removing one adult female.

Also, nearly all the clutches of eggs in a local population must be treated. If just a few nests or eggs are missed, this recruitment could be sufficient to allow goose populations to grow.

Respiratory gases (CO<sub>2</sub> and O<sub>2</sub>) must pass through an egg's membranes for an embryo to survive. Spraying eggs with oil prevents gas exchange and kills the embryo. Eggs can also be rendered infertile by puncturing the shell with a sharp metal pin. Once treated, the clutch is put back in the nest, and the female will continue incubation unsuccessfully. Destroying or removing the eggs will likely cause the female to lay a second clutch, and the new eggs in the nest will need to be treated again.

To humanely treat eggs, oiling or puncturing should be done as early in incubation as possible, and flotation can be used to determine the time since the eggs were laid. Depending on the stage of incubation, nests may need to be rechecked to treat any new eggs laid later. Only 100% corn oil can legally be used to treat goose eggs in the United States (Federal Register, Wednesday,

March 6, 1996, 66 (45): 8876-8879). To have a chance at reducing goose populations, egg oiling or puncturing needs to be done thoroughly each year, and by itself, may not be successful.

Dummy eggs can be used to fool the nesting goose. The female will continue to incubate the dummy clutch until it is too late to renest. The primary advantage of this method over oiling eggs is that nest sites only must be checked once late in incubation to remove the viable eggs.

### **Dogs:**

Dogs that are trained to chase geese are very effective for controlling damage. Dogs are used to disperse geese from golf courses, parks, athletic fields, airports, and corporate properties. Breeds with instincts for herding, such as border collies, tend to work best. The act of hazing with dogs is most practical where the dog and handler are frequently on-site, or where daily service is available. The dogs must be closely supervised and, except where permitted, in compliance with local leash laws. Initially, chasing must be done several times per day for several weeks, after which less frequent, regular patrols will be needed. Another approach is to allow dogs to roam freely in a fenced (above ground or “invisible” dog fence) area that is not open to the public, but this may be less effective. Geese do not acclimate to being chased by dogs. The use of dogs may not be practical near busy roads, or where a property is divided into many small sections by physical barriers. Dogs cannot easily repel geese from large areas of water but may be able to keep geese

off shorelines or beaches.

### **Shooting:**

Hunt geese to help slow the growth of local resident flocks. Some birds can be removed with hunting (Figure 11), while others will be discouraged from returning. The act of hunting increases the effectiveness of noisemakers, as geese may learn that loud noises may be a real threat.

Opportunities for hunting in urban and suburban areas often are limited by lack of open space and local ordinances prohibiting the discharge of firearms. Open shorelines, reservoirs, and large private properties, such as golf courses where access can be controlled, are good places to try hunting as an option for control.



Figure 11. Successful goose hunt. Photo: Paul D. Curtis.

A Federal Migratory Bird Hunting Stamp is required to hunt waterfowl, including Canada geese, in addition to state hunting permits and licenses. Several states have special seasons to reduce the number of non-migratory geese. Most start in September, before the regular waterfowl hunting seasons and near urban areas where geese congregate. Hunters should check



local laws regarding permits and the discharge of firearms. Contact your state wildlife agency for information about hunting geese.

### Other Birds:

Several other species of birds may frequent dairy farms and occasionally cause conflicts. For example, wild turkeys or crows (*Corvus brachyrhynchos*) may damage stored silage in bunkers. English sparrows (*Passer domesticus*) may feed on spilled grain, contaminate stored feed, or nest in buildings. Exclusion or hazing techniques mentioned for managing damage from starlings or geese will often work for other bird species.

### About the author

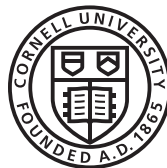
Paul D. Curtis obtained his Ph.D. in Zoology from North Carolina State University in 1990. He is currently a professor in the Department of Natural Resources and the Environment. Paul is a co-author of the National Wildlife Control Training Program, and a Certified Wildlife Biologist® with The Wildlife Society.

During the past 35+ years, Paul has provided leadership for the Wildlife Damage Management Program in the College of Agriculture and Life Sciences. He has published more than 90 papers dealing with the management of human-wildlife interactions. His research interests have included resolving wildlife conflicts in suburban, forested, and agricultural landscapes, wildlife fertility control, and managing community-based wildlife issues. Paul's extension programming has included a variety of booklets, videos, fact sheets, and on-line courses.



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Cornell University