

Geese, Ducks, and Swans

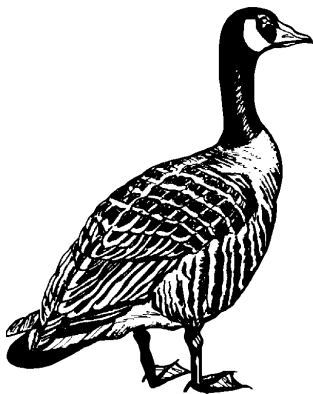
Geese, ducks, and swans have always been a treasured natural resource in Pennsylvania. These birds are enjoyed by millions of people each year, whether they are bird-watchers, hunters, or just those who appreciate their presence. The fall flights of geese and swans in their characteristic "V"-flock formation are familiar and welcome signs of the changing seasons. However, because of recent dramatic increases in waterfowl populations, these birds have become a nuisance in some places. A lack of predators, decreased opportunities for waterfowl hunting, food handouts, and landscapes consisting of large expanses of turfgrass have provided ideal conditions for these birds.

Although most people find a few ducks or geese acceptable, waterfowl populations can quickly get out of hand. For example, one pair of geese can, in five to seven years, easily become 50 to 100 birds that foul ponds and damage lawns, golf courses, and crops. This fact sheet provides information on controlling damage caused by Canada geese, ducks, and swans.

General Biology

Waterfowl have two primary habitat requirements. First, they need a permanent body of water on which to land, escape, rest, and roost. Second, they must have a suitable open feeding area that provides a place to land, has good visibility of the surrounding territory, and has abundant tender young grass and other vegetation for feeding. Mallards are primarily filter feeders and will consume almost anything edible. Swans eat aquatic plants, and geese eat a variety of terrestrial grasses.

All species will come on land to feed, typically twice a day, in the morning and late afternoon. However, they may feed at night if their normal daytime habits are disturbed. Normally, waterfowl roost on open water at night.



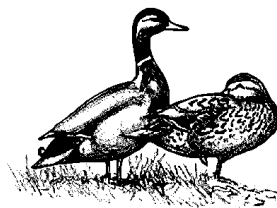
Canada Geese

Canada geese mate for life, with both parents caring for, and aggressively protecting, their young. Canada geese in Pennsylvania consist of both migratory and nonmigratory populations. Migratory populations are the Atlantic population and the Southern James Bay population. These two populations nest

in Canada and migrate south for the winter. Adults of both populations do not breed until three years of age. Both of these migratory populations have declined in size because

of poor survival and low reproduction since 1985.

By contrast, the nonmigratory, or resident, population in Pennsylvania has grown from approximately 2,400 in 1955–1960 to more than 250,000 in 2016. The peak population size was 304,000 in 2004 and the management goal is 150,000, so numbers are well above the goal. Adults in this population can begin breeding at age two and have a higher survival rate than migrating birds. The resident population consists of nonmigratory birds that nest and reside in the Mid-Atlantic states, including Pennsylvania, throughout the year. Because harvest restrictions that protect the migratory populations also have protected the resident population, Pennsylvania has recently established special hunting seasons to target the resident population of geese. These seasons take place when migrant populations are not in the state.



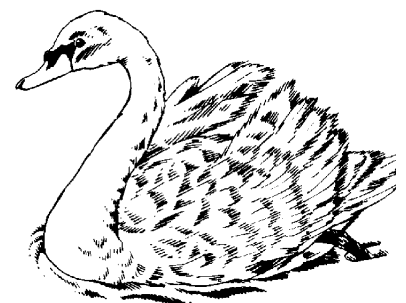
Mallards

The number of mallards in Pennsylvania exceeds 170,000 birds. Most mallards in the state begin breeding as one-year-olds. They seek a new mate each year, and the female raises the young alone. Some nuisance mallards are wild

birds, but many were raised in captivity and released by private individuals or clubs. Many of these birds concentrate in urban and suburban ponds, along with large flocks of domestic ducks. Mallards born in Pennsylvania typically remain in the area until their water source freezes for the winter. They then migrate to southern parts of the state and to Maryland or the Chesapeake Bay.

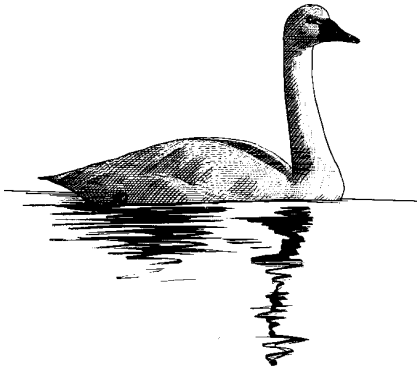
Mute Swans

Mute swans are not native to North America but were first introduced from Europe in the late 1800s. Consequently, they are an unprotected species in Pennsylvania. They begin breeding at two or three years of



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age, and their population has grown to more than 12,500 swans in the Northeast. They mate for life, and both adults care for the young. The adults can be extremely aggressive when protecting their young. Mute swans consume large amounts of aquatic vegetation that other fish and wildlife species depend on for food and shelter. Mute swans usually have an arching neck as they swim.

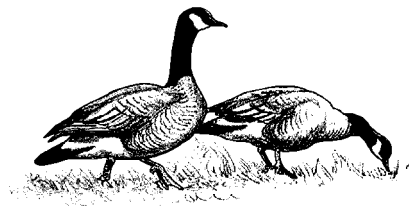


Tundra Swans

Unlike mute swans, tundra swans have a straight neck when swimming. Tundra swans are migrant visitors in Pennsylvania, breeding throughout arctic Canada, Alaska, and northeastern Siberia.

These swans begin

breeding between ages three and five, and they mate for life. Both adults care for, and aggressively defend, their young.



Description of Damage

In Pennsylvania, most complaints about damage come from areas where birds congregate in

public or private ponds and feed in mowed areas in parks and near beaches, and on golf courses and lawns. Fecal droppings damage lawns and golf greens and can limit recreational use of the area. Fecal contamination of water may pose a local pollution problem, although it typically is not a threat to human health. Geese and swans defending their nests or young can injure people who come too close. Waterfowl at airports or on highways can be a threat to public safety.

Agricultural losses caused by waterfowl occur primarily in late winter and spring on wintering and migration areas. Generally, crop damage is light, although losses can be significant for some farmers. In the spring, waterfowl graze and trample crops such as sunflowers and cereal grains. Corn, soybeans, and alfalfa are most vulnerable at this time of year. In autumn, swathed grains can be eaten, trampled, and fouled by ducks and geese. Winter wheat can be pulled and trampled, particularly during wet periods.

Legal Status of Waterfowl

All native waterfowl in the United States are protected by the Federal Migratory Bird Treaty Act, as well as by state laws. Under these laws, it is illegal to hunt, kill, sell, purchase, or possess migratory birds without state and federal permits. In some situations where there is severe damage, wildlife agencies may issue a federal and state permit to remove a certain number of birds (see Lethal Removal Methods). A permit is not required to merely scare away

migratory birds (other than endangered or threatened species) as long as the birds are not harmed. However, nesting birds may not be harassed without a federal permit. Domestic ducks and mute swans are not protected by the Migratory Bird Treaty Act.

Hunting as the Preferred Control Method

Hunting, where safe and legal, is the preferred method of reducing nonmigratory waterfowl populations, and over time may serve to decrease damage. Hunting also makes harassment techniques more effective. In some cases, municipal ordinances would need to be changed to permit hunting in nontraditional hunting areas such as parks, estates, golf courses, and corporate facilities, with perhaps special restrictions on hours and dates open to hunting. The Pennsylvania Game Commission can provide information on current waterfowl hunting regulations and seasons.

Nonlethal Control Measures

There are a number of nonlethal techniques that are effective in discouraging waterfowl. The key to their success is promptness and persistence. It is important to initiate control measures as soon as you notice these unwanted guests—don't wait until a large flock builds up. Once waterfowl become established, they are reluctant to leave and are more tolerant of control methods. A combination of methods works best since waterfowl quickly become accustomed to any single technique.

The following control techniques have been proved successful, but they will work only if they are applied with diligence and persistence.

Discontinue Feeding

Well-fed domestic "park ducks" and geese serve as decoys, encouraging wild birds to congregate in unnaturally high concentrations. Wild waterfowl are capable of finding their own food and will survive without handouts from people. Therefore, eliminating artificial feeding of waterfowl on public and private property should be the first control measure undertaken. Ordinances against feeding can be enacted and enforced by county or local authorities. It is important that a public education campaign accompany any anti-feeding ordinances to stimulate public interest, participation, and support.

Frightening

Waterfowl can be repelled by almost any large foreign object or mechanical noise-making device. Frightening devices should be in place before the start of the damage season to prevent waterfowl from establishing a use pattern. To improve their effectiveness and prevent birds from becoming accustomed to them, these devices should be moved every two to three days and used in varying combinations. All applicable laws must be observed when using these devices, particularly those governing the making of loud noises, discharging of firearms, use of pyrotechnics, and use of free-running dogs. Also consider the possible reaction of neighbors.

Nesting waterfowl cannot be harassed without a federal

permit. In addition, Canada geese molt their flight feathers from June through August and should not be harassed during this time.

Visual repellents such as flags, balloons, and scarecrows can be used at a density of one per 3 to 5 acres before waterfowl settle in the area. If birds have already become accustomed to using an area, an additional one or more per acre may be necessary. Because geese can quickly become acclimated to visual repellents, reinforcement with audio repellents such as automatic exploders, pyrotechnics, or distress calls will be necessary.

Flags can be made by securely fastening 6 by 30 inch strips of orange plastic or silver and red Mylar ribbon to 4-foot poles. Place flags so that waterfowl can see them from all points in the field. Once birds land in a field and begin feeding, the flags' effectiveness may be lost.

Helium balloons staked in open fields or over water also have proved to be effective waterfowl repellents. Tether balloons with enough 75-pound test monofilament line to allow them to rise at least 10 feet into the air. Balloons larger than 2 feet in diameter are not recommended because of their increased wind resistance. Balloons with large contrasting eye spots seem more effective than those without eye spots.

Because adult mute swans aggressively protect their young from Canada geese, swan decoys arranged in "family groups" have been somewhat effective in discouraging geese from settling in an area. Each swan "family" should include two large, 35-inch Styrofoam or wooden "adult" swans surrounding two or three smaller "young" swans. Swan decoys should be anchored on a tether with enough slack in the rope to allow for changes in water level and to allow decoys to move with the wind. To make this approach effective, use frightening devices to remove all waterfowl currently using the lake or pond, install enough swan groups to be visible from all parts of the pond, diminish other attractions in the area, and frighten away any small flocks of geese that land.

Scarecrows also can be used. Three concepts should be incorporated into scarecrow design: movement, bright colors, and large eyes. For maximum effect, the arms and legs should readily move in the wind. Scarecrows can be made of almost any material that has bright colors, such as red, blaze orange, or safety yellow.

Strips of ½-inch-wide Mylar tape have been successfully used to protect crops and other areas from bird damage. When properly installed, Mylar barriers combine three control strategies in one—exclusion, noise making, and visual repellents. Wind blowing over the tape produces a roaring sound, and the tape twists and flashes, reflecting sunlight. To make a Mylar grid, place 1- to 3-foot-tall posts 6 to 30 feet apart. Tie the Mylar tape between the posts. For a 20-foot span, the tape should be twisted one or two times between posts before tying it off. Over-twisting will reduce the flashing and roaring effect. To keep Mylar from breaking at the knot, cover the last foot of Mylar with nylon strapping tape before tying it off.

Automatic exploders, also known as propane cannons, make a loud noise without discharging a projectile. One exploder can protect up to 25 acres under ideal conditions.

The rate of firing is manually adjustable, and exploders should be set to fire about every 5 to 10 minutes. Their effectiveness can be increased by mounting them on a turntable so the cannons rotate a few degrees with each firing. This makes it less likely that birds will become used to the device. Exploders should be turned off after dusk and on again at dawn to reduce complaints from neighbors and to save on fuel. This also reduces the chance of birds getting used to the device. Clock timers or photocells are available for this purpose.

Pyrotechnics, such as shellcrackers, whistle bombs, screamer/banger rockets, and noise bombs, also can be used to repel waterfowl. These devices are fired from a 12-gauge shotgun or a modified .22 pistol, and have a range of 30 to 150 yards, depending on the model of the rocket. These rockets are more effective than firing guns into the air because they launch a charge that explodes in the air just over the birds. Caution should be used with these devices because allowing pyrotechnics to explode on the ground can ignite dry grass or weeds.

Dogs trained to chase waterfowl have been used to protect golf courses and grain fields. In certain situations, they can be very effective. Depending on the location and situation, these dogs can be free running, on slip-wires, tethered, or under the control of a handler.

Habitat Modification

Lakes and Ponds

There are several ways to make a pond and its surrounding area unattractive to waterfowl. Canada geese generally will not establish nesting territories in areas where they cannot easily walk in and out of the water. Therefore, constructing a pond so that there is an abrupt 18- to 24-inch vertical bank at the water's edge will deter geese. In locations such as levees or banks around airport runways, use large boulder rip-rap, which geese cannot easily climb over. Large boulder rip-rap, however, may provide nesting or loafing habitat for gulls.

Waterfowl also can be deterred by eliminating emergent aquatic vegetation with herbicides or an aquatic weed harvester or by temporarily draining the pond. Contact the Pennsylvania Fish and Boat Commission at 814-359-5147 for specific recommendations and permits for vegetation management in ponds. Unfortunately, removing vegetation also will reduce habitat quality for other wildlife and fish species, so use it with caution. If possible, discourage removal of woody brush from shorelines. In winter, shut off aerators to allow water to freeze. Reduce or eliminate fertilizer applications to areas surrounding ponds so that grass is less nutritious for grazing waterfowl. Prohibit feeding of waterfowl and construction of nesting structures around ponds, and plant shrubs on bare shorelines and on islands to reduce attractiveness for feeding, loafing, and nesting.

Lawns

Where feasible, limit lawn size and increase grass height to 10–14 inches, especially along shorelines. Consider replacing large lawn areas with shrubs, ground covers such as pachysandra and myrtle, or grass species that are not palatable to waterfowl. Geese prefer to feed in bluegrass

(*Poa* spp.), so planting tall fescue (*Festuca arundinaceae*) will reduce grazing. Planting trees will interfere with birds' flight paths, and shrubs will reduce birds' ability to see from the ground. Groups of shrubs and trees should be planted to break up the open landscape and reduce visibility. Landscaping techniques that reduce birds' view to less than 25 to 30 feet discourages grazing, especially if harassment programs also are used.

Exclusion

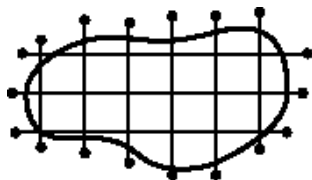
Canada geese may be discouraged from using ponds by installing a 30- to 36-inch-high poultry-wire fence at the water's edge. This technique, however, is not effective for ducks. Three-foot-high woven-wire fences around gardens and yards also will help keep geese out of these places because adult geese with young will not cross a fence and leave their young behind. Geese also are reluctant to pass under a wire fence, so installing a single-strand fence or one made of Mylar flashing tape at a height of about 15 inches may discourage geese from entering an area. A 2- to 3-strand goose-resistant fence can be placed around lawns, gardens, and crop areas. Place the first strand 1 foot above the ground, with each succeeding strand 1.5 feet above the previous strand. Snow drift fences and electric livestock fences have also proven effective.

Good results also have been reported using 20-pound test, or heavier, monofilament line to make a 2- to 3-strand fence in situations where aesthetics preclude the use of wire fencing. String the first line 6 inches off the ground, with each additional line spaced 6 inches above the preceding line. Suspend thin strips of aluminum foil at 3- to 6-foot intervals along the lines to increase visibility of the barrier for wildlife and people. The best results are obtained when the fence is in place before geese start grazing.

To stop waterfowl from using reservoirs, lakes, ponds, and fish-rearing facilities, overhead grids can be constructed of thin cable visible to both humans and waterfowl. White or brightly colored cables may improve visibility. Because these materials are extremely light, several hundred feet can be supported between two standard 5-foot steel fence posts. Grids on 20-foot centers will stop geese, and grids on 10-foot centers will stop most ducks. Where necessary, grid lines should be installed high enough to allow people and equipment to move beneath them. Excessive rubbing will result in line breakage, so grid wires should be tied together wherever two lines cross. Attach lines inde-

pendently to each post, not in a constant run, to prevent having to rebuild the entire grid if a line breaks.

Where total exclusion is needed, use 1- to 1.5-inch-mesh polypropylene UV-protected netting. Support the



netting with at least 0.19-inch, 7 by 19 strand galvanized coated cable on 20-foot centers. Support cables must be well anchored to carry the weight of the netting and to allow the cable to be stretched tight to eliminate sag. High winds are the greatest hazard to this type of netting instal-

lation, so netting should be attached to the support cables to prevent wind-caused abrasion.

Repellents

Although not as effective as exclusion in the long term, repellents can be useful for short-term control. Methyl anthranilate, a chemical that has taste and olfactory repellent properties, is currently registered with the U.S. Environmental Protection Agency (EPA) for controlling waterfowl. This product is currently marketed under the trade name ReJeX-iT. It was developed using food-grade ingredients that have the unique ability to repel birds while remaining safe for birds, humans, and other mammals. There are three different ReJeX-iT products available—one for use on turf and lawns and two for use on nonfishbearing bodies of water.

Agricultural Control Measures

In addition to the methods described above, the following are control measures specific to agricultural areas. The most effective way to keep waterfowl away from agricultural crops is to repel them before they become established. Undisturbed waterfowl that establish a feeding pattern in a particular field will attract others and will become more difficult to eliminate. Legal hunting and scare devices will discourage geese that are beginning to use a field.

Agricultural damage can be reduced by timing planting or harvesting periods so they do not coincide with waterfowl migration. Many grains planted in spring are vulnerable to waterfowl damage during fall migration because they are swathed at harvest time, allowed to dry in the field, and then combined. Where conditions permit, production of winter grains instead of spring grains may limit waterfowl damage because winter grains usually can be straight combined in July and August, long before migrating waterfowl arrive in the area. A winter grain's rosette of leaves is vulnerable to grazing damage by waterfowl in fall and spring; however, research has shown that light grazing of the winter rosette actually can increase grain yield.

When production of winter grains is not practical, conduct spring planting in as short a time as possible, and harvest as quickly as possible to reduce the length of time that crops are vulnerable in the fall. Delay or eliminate fall plowing in areas where waterfowl damage standing or swathed grains.

Normally, Canada geese and tundra swans are wary and prefer to feed in open lands where they can see the surrounding countryside. They also require open areas in which to land and are very reluctant to land in standing corn. Cornfields opened up by silage cutting, or by cutting the outer rows prior to picking, provide a landing space for waterfowl. If possible, do not open fields prior to the main harvest period. Once a field is open, harvest corn as soon as it is ripe and in as short a time as possible, and protect the field with one or more scare devices.

Waterfowl damage to unharvested fields can be limited by encouraging birds to feed in the stubble of harvested crops, in baited fields, or in lure crops that are planted to attract and hold waterfowl. Lure crops can be established in areas known to have high waterfowl damage and should

be planted with grains that are particularly attractive for waterfowl. When using good-quality seed, plant at the normal rate. When using commodity grain or out-of-date seed, increase the planting rate by a factor of 1.5 to 2. Do not allow any hunting or harassment of waterfowl in the lure crop area until all surrounding crops are harvested and the threat of crop damage is over.

Field-baiting involves scattering grain in previously harvested fields or at natural waterfowl feeding areas to attract and hold waterfowl and keep them away from unharvested fields. Field baiting is most effective when done within two to three days of the birds' arrival. There are no set rules about the amount or type of bait to use, but provide enough to ensure that no birds will go elsewhere to feed, and use a grain that birds prefer. Often this can be the same seed that is grown in surrounding fields. Do not allow any harassment of waterfowl in the area of the baited field until all crops are harvested.

Regardless of the method used, it may be necessary to initially scare or herd the waterfowl away from surrounding fields until they have settled in the lure crop or in the baited field and have stopped visiting the other crops. State law requires that all artificial feeding be stopped and all grain removed at least 30 days before hunting waterfowl within the zone of influence of the baited area.

Lethal Methods of Removal (Permit Required)

In situations involving severe damage or threats to human health and safety, it may be possible to obtain permits from the U.S. Fish and Wildlife Service and the Pennsylvania Game Commission to kill migratory game birds, control reproduction, or remove adult birds. Permits will be considered only after it has been determined by the agencies that (1) artificial feeding has been terminated, (2) hunting has been implemented where feasible, and (3) appropriate nonlethal techniques have proven unsuccessful, or (4) there is an immediate and direct threat to human health and safety, such as birds congregating around an airport. Domestic ducks and mute swans are unprotected species in Pennsylvania, and no permit is required to remove or control them. In all cases, the complainant bears all the costs of removal methods. It also is the responsibility of the complainant to obtain support from the local community before lethal removal procedures are applied. Below is a list of phone numbers and addresses of federal and state agencies to contact:

U.S. Fish and Wildlife Service
Migratory Bird Permit Office
PO Box 779
Hadley, MA 01035-0779
Phone: 413-253-8643
Fax: 413-253-8424
Email: permitsR5MB@fws.gov
www.fws.gov/birds/index.php

Pennsylvania Wildlife Services State Director
PO Box 60827
Harrisburg, PA 17106
Phone: 717-236-9451
Toll Free: 1-866-487-3297
<https://www.aphis.usda.gov/aphis/ourfocus/wildlifedamage>

Pennsylvania Game Commission
Law Enforcement
2001 Elmerton Ave.
Harrisburg, PA 17110-9797
717-787-5740
www.pgc.state.pa.us

Regional Offices:

Northwest Region: 814-432-3187, 814-432-3186
Southwest Region: 724-238-9523, 724-238-9524
North-central Region: 570-398-4744, 570-398-4745
South-central Region: 814-643-1831, 814-643-9635
Northeast Region: 570-675-3136, 570-675-1144
Southeast Region: 610-926-3136, 610-926-3137

Summary

The key to controlling nuisance flocks of ducks, geese, or swans is promptness and persistence. Methods of controlling damage will work only as well as their implementation. Once nuisance waterfowl are gone from an area, the area must be made unattractive to waterfowl, so that they will not return. As soon as one duck, goose, or swan lands, it should be frightened until it leaves. Otherwise, the bird will act as a decoy and attract others.

Materials and Suppliers

The following is an incomplete list of waterfowl control products and manufacturers and does not constitute an endorsement by Penn State or the Pennsylvania Game Commission. Many of these products can be purchased in local garden supply centers, feed mills, and department stores.

Frightening Devices

Automatic Exploders and Exploding Shotgun Shells

Reed Joseph International
800 Main St.
Greenville, MS 38701
800-647-5554
(gas cannons, pyrotechnics, 12-gauge shotshell)
www.reedjoseph.com

Orchard Equipment & Supply
PO Box 540
Conway, MA 01341
800-634-5557
Email: info@oescoinc.com
www.oescoinc.com
(Zon Gun)

Sutton Ag. Enterprises, Inc.
1044 Harkins Rd.
Salinas, CA 93901
831-422-9693
(Bird Bombs, Bird Whistles, Shell Cracker)

Stoneco, Inc.
36900 El Moro Rd.
Trinidad, CO 81082
719-846-2853
(Shell Cracker)

Balloons

BirdBusters
707 S. Gulfstream Ave.,
#405
Sarasota, FL 34236
866-915-8225
www.birdbusters.com

Bird-X, Inc.
300 N. Oakley Blvd.
Chicago, IL 60612
800-662-5021
www.bird-x.com

Reflective (Mylar-type) Tape

Orchard Equipment &
Supply
PO Box 540
Conway, MA 01341
800-634-5557
Email: info@oescoinc.com
**www.oescoinc.com/
orchard-nursery/
bird-deer-control.html**

Exclusion Devices

Nixalite of America, Inc.
1025 16th Avenue
East Moline, IL 61244
888-624-1189
www.nixalite.com

Sutton Agricultural
Enterprises, Inc.
1044 Harkins Rd.
Salinas, CA 93901
866-280-6229
or 831-422-9693
Email: info@suttonag.com
www.suttonag.com

Repellents

Martinson-Nicholls, Inc.
4910 East 345th Street
Willoughby, OH 44094
800-876-1312
Email: info@floormat.com
**www.floormat.com/
pest/rejexit.html**
(RejeX-it)

Acknowledgments

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