

# National Wildlife Control Training Program



## Structural Pest Control Program Bird Management Manual

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## Disclaimer

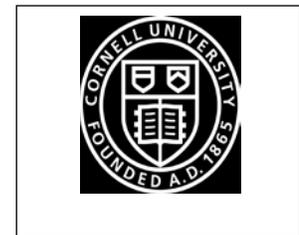
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### Additional information:

Internet Center for Wildlife Damage Management <http://icwdm.org>

National Wildlife Control Training Program <http://WildlifeControlTraining.com>

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## Overview

The following contains a bird's eye view (pun intended) summarizing the training covered in this manual.

**Module 1 Introduction** to dealing with problems caused by birds.

**Module 2 Principles of Wildlife Damage Management** addresses many of the goals, objectives, motivations, and strategies associated with resolving human-wildlife conflicts.

**Module 3 Physical and Disease Safety** reviews how to identify and protect yourself against physical injury and exposure to disease agents.

**Module 4 Bird Management** provides a summary of all the major techniques available for reducing damage caused by birds.

**Module 5 Legal and Ethical Aspects** addresses the federal and state laws and regulations governing the control of birds and some of the moral and ethical issues that must be considered when dealing with wildlife.

**Modules 6 through 10** provides specific biology, identification, and control methods relevant to specific bird species (pigeons, starlings, house sparrows, blackbirds, Canada geese, gulls, and woodpeckers) that commonly conflict with human interests.

# Module 1 - Introduction

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## Learning Objectives

After studying this module, you should be able to:

1. describe the different ways people view birds,
2. understand the various titles that identify people who work with vertebrates, and
3. balance the need to resolve problems while being sensitive to public opinions.

## Vertebrates as Pests

All animals can be separated into one of two broad categories - vertebrates and invertebrates. A vertebrate has a spinal column or backbone. Vertebrates include birds, mammals, fish, reptiles, and amphibians. An invertebrate is an animal that lacks a spine. Examples of invertebrates include insects, worms, and spiders. This training deals with the management of vertebrate species only, specifically certain species of pest birds.

Simply defined, a pest is any unwanted organism in a specific place and time.

Vertebrates are considered pests when their activities conflict with human interests, such as when they damage turf, crops, nurseries, deface buildings, or threaten human health or safety.

A key challenge confronting those who perform vertebrate pest control is that people often disagree about when a vertebrate becomes a pest. Consider pigeons. Their defecation is unsightly and contaminates surfaces. In light of this fact, many urban residents view pigeons as

“rats with wings” that need to be controlled (Figure 1).



Figure 1. Pigeons evoke different emotions in people. Photo courtesy of Stephen M. Vantassel.

We think most Pest Management Professionals (PMPs) will agree that birds harm human interests at various times. Birds can feed on crops, form large roosts or flocks (Figure 2), contaminate food, and endanger aircraft. No particular species can be categorized as always good or always bad. Whether birds are considered beneficial or harmful depends on the time, location, and nature of their activity.



Figure 2. Starlings can form large roosts. Photo by Ron Johnson.

Other people, however, consider pigeons an expected part of city life (Figure 3) rather than as pests that need to be controlled. These people view pigeons as victims in need of legal protection from pesticides or traps to control them.



Figure 3. Pigeons on the mall are considered normal by many people. Photo by Stephen M. Vantassel.

It also is clear that birds provide many benefits to society and the environment. People enjoy observing, photographing, listening to, and learning about birds. In fact, bird watching is the most common form of outdoor recreational activity, involving more than 51 million people in the US. Others enjoy birds through hunting. Through license fees, taxes, and charitable contributions, Americans contribute millions of dollars to protect and preserve habitat for birds. For these reasons, birds are protected by laws, regulations, and public sentiment.

In light of the emotionally charged opinions concerning vertebrates and their control, bird management professionals always must consider how their activities may impact public opinion. Your task is to resolve human-bird conflicts using just enough force to resolve the conflict, thereby balancing these two competing interests, while obeying the law, acting ethically, and protecting the environment. You have a great deal of responsibility. One way to

consider your actions is to ask yourself how they would “look” on television. We suggest that you behave as if you are under constant surveillance. By acting ethically, you will avoid many problems with public relations.

The information provided in this training will help you recognize and resolve conflicts with birds, while obeying the law, considering public attitudes, and protecting the environment.

## Terms

Individuals involved in the control of vertebrates have many different titles. Some like the title of pest control operator, others pest control technicians, and others wildlife control professionals. For the purposes of this training, we have adopted the title of pest management professional (PMP), but readers should be aware that we use this term to include professionals who use pesticides as well as those who do not use them in the control of vertebrates.

## Concluding Thoughts

Understand that your activities must balance the interests of clients, your company, bystanders, and the law. While no one can guarantee that everyone will approve of your control efforts, acting in a manner respectful of the law, wildlife, and people will keep conflict to a minimum.

# Module 2 - Principles of Wildlife Damage Management

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## Learning Objectives

1. Know three reasons why wildlife damage management (WDM) is necessary.
2. Describe the three major objectives of WDM.
3. Understand the differences between biological and sociological carrying capacity, and how each relates to WDM.
4. Understand the concept of carrying capacity, and why the concept of “balance of nature” is misleading.
5. Know the four major strategies of WDM.
6. Provide reasons why the removal of wildlife could fail to control the damage.

## Introduction

Wildlife is an important resource in the US. According to the 2006 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation, 87.5 million US residents fished, hunted, or watched wildlife in 2006. They spent over \$122 billion pursuing these recreational activities, contributing to millions of jobs in industries and businesses that support wildlife-related recreation. Alternatively, estimates of economic losses from damage caused by wildlife approach \$3 billion annually, demonstrating a clear need for effectively addressing wildlife damage.

## Objectives of WDM

The objectives of WDM are (1) to reduce damage to a tolerable level, (2) using methods that are low-risk for humans and the

environment (3) in a cost-effective way. A pest management professional is an individual trained and licensed to solve wildlife damage and nuisance wildlife situations, usually for profit.

## Wildlife Damage Management

Wildlife damage management (WDM) is defined as the process of dealing with vertebrate species that:

1. cause damage to food, fiber, personal property, and natural resources (e.g., feral pigs cause \$800 million of damage to US crops each year);
2. threaten human health and safety through disease, attacks, and strikes (collisions with vehicles or aircraft); and
3. cause a nuisance (e.g., geese on golf courses and woodpeckers on a dead tree).

## Reduce Damage to a Tolerable Level

Set reasonable goals. PMPs should avoid creating fear in clients, as this could lead to an overreaction to wildlife on their property. All parties should acknowledge that a difference exists between pigeons roosting in an attic and a single bird on a sidewalk (Figure 1). Be respectful and prudent when clients explain their negative feelings about an animal. Do not reinforce inappropriate stereotypes or be drawn into a “problem” that does not need solving.



Figure 1. A pigeon on a sidewalk may mean different things to different people. Photo by Stephen M. Vantassel.

The focus of WDM is not to reduce the number of birds in an area, but rather to reduce the damage that they cause to a tolerable level. Remind your client that the goal is to solve a specific problem, not exterminate every bird in the area. The job of a PMP is to target only the animals causing a specific conflict.

### Low-risk Methods

Clients suffering from wildlife damage may be under severe stress, which could lead them to suggest and encourage the use of dangerous techniques. Just because a technique or method works does not mean it should be used. For example, use of undiluted Avitrol® or a mixture of alcohol and corn may be effective in killing birds. However, these techniques are irresponsible and illegal, and non-target poisonings can result in unnecessary suffering of the poisoned animals. Recommend the techniques you believe to be most appropriate for resolving the problem. If clients request something beyond what you believe is legal, reasonable, ethical, or safe, you should consider declining the job.

### Cost-Effective Control

If the expense of resolving a problem costs more than the problem itself, it may not be

practical to control the animal causing the damage. However, a \$250 stainless-steel chimney cap may seem expensive to client, but when clients understand that chimney caps will help prevent the entrapment of birds for decades, the cost may seem inexpensive. If the cap lasts 20 years, the cost of the cap is just \$12.50 per year. Thus, a chimney cap provides a long-term, inexpensive, and permanent solution, where clients obtain peace of mind.

### Key Concept - Overabundance

The concept of **overabundance** involves two factors: a population of wildlife, and the perception that wildlife numbers have exceeded a biological or social carrying capacity.

**Biological carrying capacity** is the number of animals in a population that an environment can sustain without long-term negative impacts to the environment. For example, when an area has too many Canada geese, the turf becomes devoid of grass, muddy, and covered with excrement.

**Social carrying capacity** refers to the number of animals in a population that people are willing to tolerate based on the balance of environmental and social benefits and costs. For example, people often enjoy watching several Canada geese swimming in a lake or pond. Their tolerance of geese quickly ends when their irritation over a sidewalk covered with excrement (Figure 2) exceeds the pleasure derived from watching geese.



Figure 2. Excrement on sidewalks is unsightly and a slip hazard for walkers. Photo by Stephen M. Vantassel.

## Population Dynamics

Effective WDM requires the recognition that dramatic changes can occur in wildlife populations.

### Definitions:

**N= number of animals**

**T= time**

**k= carrying capacity**

**Wildlife populations increase until resource limitations halt their growth.** Supply-side economics considers the following: where a supply of resources (e.g., food) exists, consumption of that resource will increase (demand) until the supply of that resource has been eliminated. Nothing goes to waste in nature. If a client installs a bird feeder, the birds that feed on the seed will continue to reproduce until their population meets the limits of the available supply. Limitation of resources prevents any single species from taking over the planet (Figure 3). When a client asks, “Why have the birds chosen my house and property?” the simple answer is because the house or property supplied resources (e.g., food, cover, water, or resting areas) that the birds required.

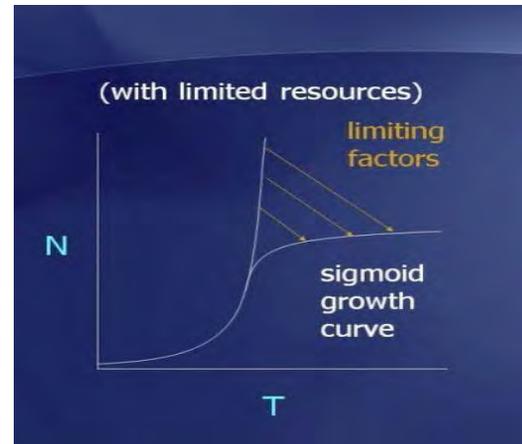


Figure 3. Wildlife populations continue to grow until resources become limited. Image by Scott Hygnstrom.

**Wildlife populations are not static.** Wildlife populations fluctuate dramatically, both within a year and from year to year (Figure 4). Reasons for the fluctuations vary. For example, long cold winters lead to decreased winter survival due to hypothermia and food stress. Drought reduces plant cover and insect populations, which leads to reduced chick survival. Locally, populations can change due to human activity such as timber harvest, agricultural tillage, and urban sprawl. Installation of bird feeders, backyard ponds, and landscape plants can offset some negative impacts.

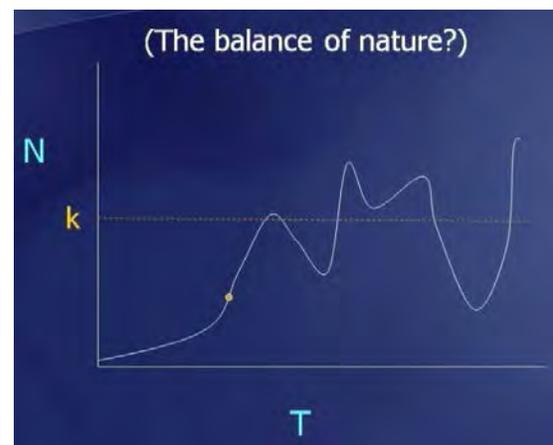


Figure 4. Wildlife population levels can fluctuate dramatically from year to year. Image by Scott Hygnstrom.

## Will Predators Solve the Problem?

A common misconception is that wildlife is “out of balance” with nature because humans have removed predators from the system. While it is true that populations of many top-level predators have been dramatically reduced, it is unlikely that restoring their numbers to pre-Columbus levels would solve human-wildlife conflicts. Human tolerance of damage by wildlife is quite low. Homeowners do not want to have fewer birds roosting on their house; they want NO birds roosting on their house. Predators typically do not control populations of prey. If a predator substantially reduced a prey population, the predator would threaten its own existence by eliminating its food source. For example, having an owl in a backyard will never make the yard free of birds. If the birds all leave, then the owl will too, thereby allowing the prey birds to return (Figure 5). In addition, many predators are not selective in their choice of prey so non-target animals likely will be taken.



Figure 5. A Great-horned owl out in daylight can disturb nearby crows. Photo by Stephen M. Vantassel.

## Strategies to Reduce Wildlife Damage

All methods for WDM fall into four strategies:

1. reduce the biological carrying capacity of the area, which reduces the number of birds the habitat can sustain over time,
2. reduce the number of animals,
3. exclude or prevent animals from accessing the location, and
4. repel or divert animals from the location.

### Reduce Biological Carrying Capacity

Biological carrying capacity can be reduced by decreasing resources necessary for growth of a population. For example, if someone is having conflicts with pigeons, implementing feeding bans and encouraging outdoor restaurants to clean up after diners likely will reduce pigeon numbers in the area (Figure 6). You could aggressively trap to reduce the population, but neighboring pigeons likely will move in to take advantage of the available food.

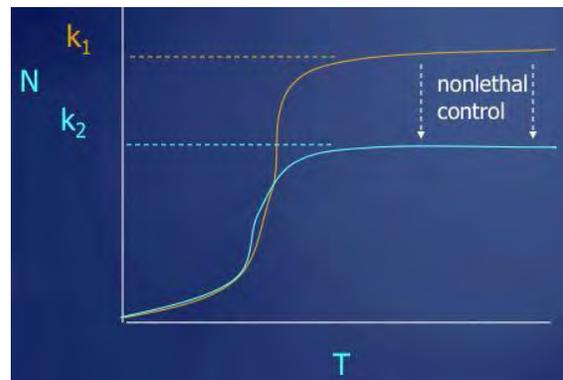


Figure 6. Reduce the carrying capacity to lower population levels. Image by Scott Hygnstrom.

### Reduce the Number of Animals

Numbers of animals can be lowered using toxicants, trapping, and shooting. Such actions typically lead to a quick decrease of the population to a level in which they, or their

associated damage, can be tolerated. Frequent reduction of a bird population typically fails to achieve effective control. To achieve effective control, population levels must be lower than the zone of exponential growth (oval, Figure 7). If the population does not drop below the zone of maximum reproductive growth, it will quickly rebound.

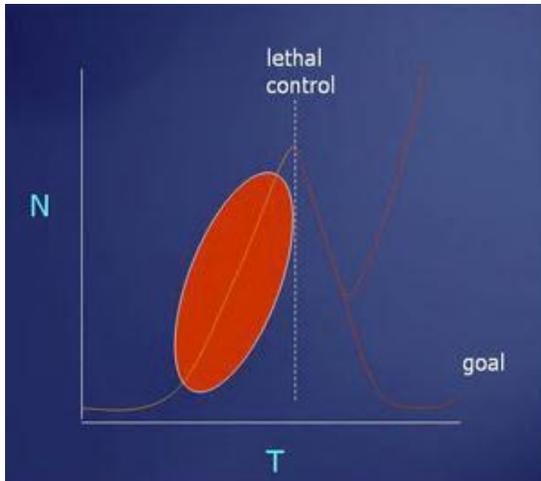


Figure 7. When lethal control is initiated, a population declines dramatically, but rebounds quickly when control stops. The oval red zone is the area of exponential population growth. Image by Scott Hygnstrom.

Habitats with plenty of food and shelter allow animals to eat well. Well-fed animals often have more young and greater success in raising young to maturity.

Dispersal of wildlife also causes population reduction to fail for some clients (Figure 8). For example, a client may ask you to remove a flock of starlings. You remove several hundred, yet several weeks later the client complains that your removal efforts did not work. Your actions were effective; you removed many starlings from the area. What the client did not understand was that other birds moved in from neighboring properties (where you did not have permission to work) and occupied the niche previously used by the starlings you removed.

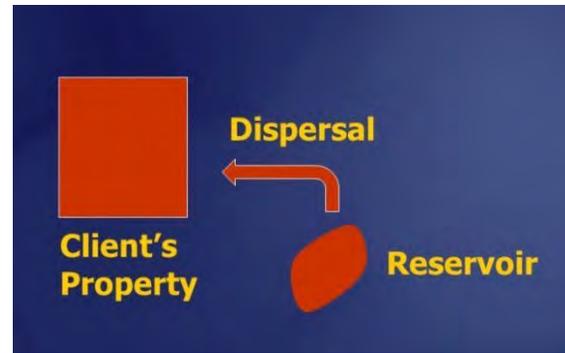


Figure 8. Reduction of a population is effective but often short-term. Animals from protected areas (reservoirs) often disperse back to a client's property. Image by Scott Hygnstrom.

### Exclude Animals

When practical, physically preventing the access of birds to potential damage sites often is the best solution. Exclusion techniques range from simply closing entry holes on buildings to comprehensive installations of bird exclusion devices. Development of exclusion techniques and devices is an active area of invention: new and interesting products frequently appear on the market.

### Repel or Divert Animals

Another WDM strategy is to repel or divert animals from a location. Repellents are based on pain, fear, touch, or conditioned aversion. Diversion is the process of attracting animals away from protected sites; providing an alternative food source is a diversion technique. The effectiveness of techniques greatly depends on how motivated animals are to access the protected location. The impact of repellents and diversions almost always is short-term.

### Whose Home?

Many people believe that wildlife cause damage to property because “humans have taken away their homes.” Although this is an understandable opinion, it is false. Urban sprawl has reduced habitat for some animals such as various song birds, but it has created

and supplied habitat and food to other species, such as pigeons, starlings, and house sparrows. In fact, some animals thrive in human-impacted environments because:

1. urbanization creates novel habitats;
2. urbanization provides food for animals through bird feeders, trash cans, and pet dishes;
3. environmental legislation has allowed some wildlife populations (previously at low levels) to rebound; and
4. lethal control of wildlife (e.g., hunting and trapping) is illegal in some areas due to safety concerns and local regulations.

Populations of Canada geese, for example, have increased dramatically across much of the US for several reasons:

1. expansion of their preferred habitat (e.g., ponds surrounded by gradually sloped banks of grass, shown in Figure 9),
2. reduced hunting pressure (fewer people hunt and more land is closed to hunting), and
3. reduced numbers and effectiveness of natural predators.



Figure 9. Numbers of Canada geese are on the rise due to changes in human behavior and changes to the landscape. Photo by Scott Groepper.

## Concluding Thoughts

Sometimes PMPs rely too much on population reduction to manage complaints concerning problem animals. While methods for population reduction are an essential component of WDM, they are not the only set of tools available. Pest management professionals should always use habitat modification whenever possible because even small changes to the landscape can increase the effectiveness of other methods should the situation require their use.

## Additional Resources

<http://wildlifecontroltraining.com>

<http://icwdm.org/>

<http://wildlifecontrol.info>

# Module 3 - Physical and Disease Safety

This module provides information to prevent injuries and diseases associated with bird control activities. Check state and local guidelines for fall-protection equipment or vehicle safety, as well as regulations by the Occupational Safety and Health Administration (OSHA).

## Learning Objectives

1. Describe important safety considerations when choosing work clothing such as shoes, shirts, pants, coveralls, and hats.
2. Discuss the characteristics of good inspection lights and respirators.
3. Describe how to set up ladders safely.
4. Know how to climb and dismount ladders safely.
5. List four safety considerations before entering attics and crawl spaces.
6. Describe three considerations for safe handling of birds.
7. List the most common zoonotic diseases associated with birds.
8. Describe the groups most vulnerable to disease transmission.
9. Understand the need for protective equipment.
10. Explain the causes of the most common zoonotic diseases associated with bird control work.

Wildlife damage management is a physically demanding job that exposes pest management professionals (PMPs) to a wide variety of threats to their physical well-being. We strongly encourage PMPs to maintain good physical fitness. Risks related to wildlife

damage management (WDM) are associated with:

1. equipment,
2. environmental conditions,
3. handling animals, and
4. zoonotic diseases.

The equipment PMPs use in WDM can be hazardous. Environmental risks include working in hazardous weather conditions, exposure to unknown or unseen materials and substances (e.g., asbestos as in Figure 1), unseen or unknown structural problems, and electrocution from damaged or unseen electrical lines. Birds pose risks of injury by bites, scratches, or diseases.



Figure 1. PMPs may be exposed to environmental risks on the job. The man is wearing a respirator but should also be wearing gloves when inspecting drop ceilings. Photo by Erin Bauer.

## Reducing Risks Related to Equipment

The tools that are necessary for any particular job can pose risks to the user. For example, setting up a 32-foot ladder presents the risk

of back injury as you move the ladder, as well as the risk of falling from the ladder. The proper use of quality equipment prevents many injuries. Always choose quality equipment rated for the level of activity that is needed. Keep all equipment in optimal working condition, read and follow all manufacturer instructions, and obtain training when possible.

## Awareness

Remember the old proverb, “familiarity breeds contempt” when dealing with safety issues. When you become comfortable, you may become complacent. Complacency often results in injuries. The best safety equipment is useless if the PMP lacks awareness of the threats posed by misuse of the equipment.

The following list describes some situations that demand caution, and some appropriate equipment to use in those situations.

1. Entering attics and crawl spaces requires:
  - leather gloves,
  - half-mask respirator,
  - head-lamp and a spare light, and
  - eye protection.
2. The use of power tools requires:
  - eye protection, and
  - dust mask or ½-mask respirator.
3. The use of ladders requires:
  - choice of the right ladder,
  - ensuring it is firmly planted,
  - attaching tie offs and/or ladder straps,
  - consideration if you need help, and
  - awareness of power lines.
4. Handling animals requires:
  - leather gloves, and

- other items, depending on the situation (e.g., cat tongs, snake tongs, or catch poles).

## Clothing

**Shoes** should cover your entire foot and be comfortable to wear. Soles should be soft to reduce damage to roofs and slip resistant to reduce the risk of falling. Safety shoes with impact-resistant toes and insoles protect against injury.

**Shirts** should be comfortable and loose fitting to allow freedom of movement in confined spaces. A long-sleeved shirt or jacket should be worn to protect against the sun, abrasion, and other environmental hazards.

**Pants** should be comfortable and allow for full leg movement. Choose pants made of materials resistant to abrasions incurred from squeezing into small spaces. Generally, long pants are preferred.

**Disposable coveralls** should be used in areas that could be contaminated with diseases or when working with pesticides. If you use pesticides, follow the label directions and instructions on use and laundering of clothing.

**Hats and helmets** are useful for protecting your face from the sun and cushioning bumps to the head. Hats are particularly necessary to protect the eyes of those who wear corrective lenses. Choose hats with adjustable clasps. Helmets provide added protection in case of a fall and reduce the risk of puncture injuries.

## Safety Equipment

The following equipment will help reduce the risk of accidents or injury.

**Flashlights** and good lighting are critical for safety. In fact, good lighting can help you avoid dangerous situations. The following three types of lights will be useful in most situations.

1. A **general inspection light** can be a simple, hand-held light used to illuminate closets and walking areas (Figure 2).



Figure 2. Flashlight for wide-area illumination. Photo by Stephen M. Vantassel.

2. **Special inspection lights** should provide at least 500,000 candles of illumination. They are often powered by rechargeable batteries and used to illuminate dark areas during daylight hours.
3. **Head lamps** are useful when your hands need to be free, such as when inspecting an attic or crawl space, or under a deck.

**Knee pads** protect your knees when crawling in crawlspaces, attics and on roofs.

**Leather gloves** (Figure 3) have multiple uses. Every PMP should have a pair for general protection and a thicker pair for handling animals. Some PMPs prefer welder's gauntlets. Select gloves that you actually will wear. Leather gloves should be large enough so that latex or nitrile gloves will fit inside. You should wear gloves while performing any wildlife control activity.



Figure 3. Plastic and leather gloves are essential safety items. Photo by University of Nebraska-Lincoln (UNL).

A **respirator** may be one of the most frequently used pieces of safety equipment. Before using a respirator, obtain a medical evaluation to ensure you are healthy enough to use it. Proper fit testing is essential. A good feel does not necessarily mean a mask has a good seal. Replace filters according to manufacturer recommendations. Select a half-face respirator with a particulate-filtering face piece rated at N100 by the National Institute for Occupational Safety and Health (NIOSH) (Figure 4). This respirator will be sufficient for most general inspections of attics, crawlspaces and basements.



Figure 4. Half-face mask suitable for routine attic inspections. Photo by Wildlife Control Supplies, LLC.

Use full-face masks when performing cleanouts of attics or when the risk of airborne dust is high. OSHA requires employers to establish and maintain an effective respiratory protection program for employees. The respiratory protection program will cover training, fit testing, cleaning and maintenance of masks, medical evaluations, and work area evaluation. Consult <http://OSHA.gov> for the latest guidelines on how to implement this requirement.

Keep a **first aid kit** in your service vehicle. Cuts and scrapes occur frequently. A kit should include Band-Aids®, gauze bandages, tape, antiseptic ointment, and triangular bandages.

**Waterless hand sanitizer** reduces the risk of infection when soap and water is not available. Choose a brand containing at least 60% alcohol. Smear a light coating over your hands to kill bacteria. Work it around your hands and between your fingers until they are dry. Cloth wipes have the added benefit of helping to scrub away organic material where germs can hide.

**Helmets** that fit properly can be helpful to protect your head in attics. Helmets seldom are worn by PMPs in residential settings. They are cumbersome and sometimes a detriment when they obstruct your view. Headlamp light is diminished by helmets unless you have a hardhat with a headlamp built in. Occasionally, a commercial contract will require you to wear a hardhat while on the jobsite.

A **bump cap** provides an alternative to a helmet. They offer no protection from falling objects, nor are they rated for electrical

protection. They offer sufficient protection, however, for attics.

**Eye protection** is critical when working with materials that can spray or fall into your eyes. A full-face mask should be worn if biologically hazardous dust, aerosolized urine and feces, or other potential contaminants are present.

A **medical history** will alert your doctor to consider some of the wildlife-related diseases that normally would not be considered for other patients. Tell your doctor that you are in contact with wildlife in your occupation.

## Ladders

The term “ladder” will refer to all devices used to reach elevated or descended distances. Choose ladders rated for industrial use (1 or 1A). You should have a 6- to 8-foot stepladder for entering attics or crawl spaces, a 14- to 18-foot ladder for one-story structures, and a 28- to 32-foot ladder for two-story structures.

### Ladder Accessories

**Ladder tie offs** attach ladders to gutter spikes to prevent sliding. Wind gusts can push ladders off of structures, leaving you stranded on the roof. A falling ladder can hit someone on the ground.

**Ladder straps** anchor the base of a ladder to poles or other secure objects to prevent ladder kick outs (when the base of the ladder dislodges from the ground).

**Stabilizers** can reduce lateral motion by widening the contact of a ladder with a structure (Figure 5). Some stabilizers are constructed to allow you to place each leg on a separate wall at the corner of a house.



Figure 5. A stabilizer helps to keep a ladder away from a structure and increases stability. The electrical power line should be shut off before placing a ladder at a location such as this. Photo by Stephen M. Vantassel.

**Fall-protection equipment** may be needed for some jobs. Situations that involve steep roofs require a rope and harness. These tools are outside the scope of this module, but be aware of them.

### Ladder Storage

Protect ladders from the elements. Ladders should be stored by themselves. Nothing should be placed on top of ladders. Follow manufacturer guidelines on the storage of ladders to prevent warping and other damage to ladders.

### Basic Ladder Safety

Choose the correct ladder for the situation. Ensure each ladder is rated for the total amount of weight it will bear when in use.

Several options are available, including step ladders, extension ladders, platform ladders, and mechanical lifts. If time will be spent on a roof, you may need to use fall-protection equipment such as a lifeline, lanyard, and harness. Seek proper training in the use and selection of those materials. Use rope rated for climbing.

Check all ladders for damage and defects before each use. Ladders should not be bent, have splinters, have damaged welds, or have loose or damaged parts. The rubber fittings on the feet of the ladder should be in good condition. If they are not, replace them. Check stabilizers and levelers. If you are in doubt about the integrity of a ladder, mark it as unsafe and discard it. Unsafe parts should be replaced with parts approved by the ladder manufacturer.

Before moving a ladder into place, check the area for potential hazards such as holes, ledges, power lines, tree limbs, or other items that could impede safe placement of the ladder. Get help if you need assistance in placing the ladder safely. As a general rule, ladders taller than 16 feet (extending to 32 feet) require two workers. Never drag or drop a ladder. Ensure that the ladder is level and properly stabilized so it will not wobble.

Never stand on the top two rungs of a ladder. All steps and rungs should be clean and free of debris or other items that could cause slips. Never lean or reach to the side; your shirt pockets should not extend beyond the sides of the ladder.

Never move the ladder while you or anyone else is standing on it. Always move or reposition a ladder while you are standing on the ground. Check for encumbrances that

could interfere with climbing and descending a ladder. Always have your hands free when climbing a ladder. Raise and lower items with a rope and bag or bucket while on a ladder.

Vibration and jostling can damage ladders. Install heavy-duty ladder racks on service vehicles. Quality ladder racks protect the ladder from jostling damage as well as reduce the likelihood of losing ladders during accidents. Always check that ladders are secured properly to the vehicle BEFORE leaving the service site.

### Basic Step Ladder Safety

Select a step ladder appropriate in height and use for your situation. Reduce fatigue by using platform step ladders when you will remain in one location for an extended period of time. Only stand on rungs of a step ladder that are designed to be steps, and never stand on the top two steps. Do not use a step ladder when it is closed. Always stand in the middle of each step and fully extend and press the locks into place before climbing.

### Basic Extension Ladder Safety

Follow manufacturer instructions for placing ladders at a safe angle. For a roof edge that is 20 feet high (rise), the base of the ladder should be 5 feet out from the eave (run) to achieve a 4:1 ratio (Figure 6). The top of the ladder should extend 3 feet above the roof. To test for proper alignment of the ladder, place your feet at the base of the ladder and extend your arms straight forward (parallel to the ground). If the angle is appropriate, the palms of your hands should reach a rung on the ladder.

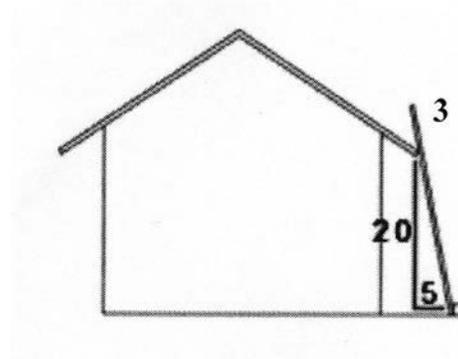


Figure 6. Diagram of the proper positioning of a ladder (note 20:5 = 4:1 ratio of rise to run). Image by NWCO Best Practices Guide.

Ensure that the locks on a ladder are engaged before climbing. Secure ladders properly to a strong structure, especially if you are going to step off the ladder onto a roof or when you will be working on the ladder for any length of time. Keep the bottom of the ladder from slipping by using braces, ladder straps, or an anchor board. Secure the top of the ladder to the structure using tie-offs to prevent horizontal sliding.

### Anchoring Tips - Prevent Kick-Out with Extension Ladders

1. Move a vehicle bumper close to the base of a ladder.
2. On decks or wooden surfaces, get permission to screw a 2 x 4 board behind the ladder.
3. On soil, use long stakes to anchor the base of the ladder to the ground (first call Dig Safe® or a similar company to locate underground utilities).
4. The ladder must be as firm as possible. The base must be flat, level, and secure. Use equipment to stabilize the base if the ladder is on uneven ground. If you cannot secure the base, choose another place for the ladder.

5. Inspect equipment frequently and do not use damaged ladders. Replace lanyards and harness after a fall.
6. Pad ropes so they do not chafe against roof edges.
7. Be aware of electrical services to avoid electrocution. Use fiberglass ladders when working near power lines. Call the electrical company and request them to shield the power line. Consult OSHA safety regulations (29 CFR 1926.450 and 1926.951(c) (1)) for more information.

### Climbing and Dismounting Extension Ladders

If you do not feel safe on a ladder, do not continue. You can rent a bucket lift (Figure 7). The rental agency will provide instructions.



Figure 7. Bucket lifts can provide a safer and more efficient way to work in high areas.  
Photo by Stephen M. Vantassel.

The likelihood of falling from a ladder is not related directly to your weight or size. Climb slowly and surely. Always face the ladder and do not lean off the side. Keep three parts of your body in contact with the ladder at all times (both hands and a foot, or both feet and a hand). Do not carry heavy or bulky items as you climb. Pull items up with a towline, attach them to your tool belt, or

have them handed to you. Wear shoes with strong soles and keep them clean for maximum traction.

Dismount by stepping sideways onto the roof. The ladder should extend 3 feet above the edge of the roof to eliminate the option of stepping over the ladder. Temperature fluctuations in the spring and fall can cause slippery conditions due to condensation. To check traps or other items without climbing onto the roof, fasten a car side-view mirror onto a long pole. Raise the pole to see the item from the ground.

Carry a cell phone. Have two people present on jobs with extensive ladder work. For more details on the proper use of ladders, see the OSHA website (<http://osha.gov>). Other sources of advice include the building industry and ladder manufacturers. Roofers have extensive and relevant experience working with ladders.

### Environmental Safety

Pest management professionals face threats to their physical wellbeing. Environmental conditions where the PMP will be working should be considered. Winter can pose threats of frost bite and hypothermia, while summer can bring heat exhaustion or heat stroke. Rain can reduce surface friction leading to slips and falls. Too often, the urge to finish the job can cause workers to “cut corners” and exposes them to harm.

### Basic Crawl Space Safety

Have the client clear the area to allow access to attic and crawl spaces. Use clean gloves so you do not leave smudge marks on painted surfaces. Perform an exterior inspection to

reduce the need to enter the attic or crawlspace.

Wear HEPA filter masks or the equivalent. Keep a supply of drinking water handy. Take an OSHA-certified training course for working in confined spaces. Wear personal protective equipment. Always carry two sources of light and have two people present.

Whenever possible, distribute your weight on two joists while holding on to rafters (Figure 8). If possible, create a path by laying 2- x 6- or 2- x 8-inch boards across the joists and anchoring them with screws. The boards provide a stable platform and will distribute your weight more evenly. Joists can flex and break. If you sense the joists are bowing too much or appear too weak to hold your weight, **DO NOT CONTINUE**. Leave the attic immediately.

Carefully shine a light around the entire attic or crawl space and look for signs of animals. Beware of hyperthermia, especially in hot weather, and of other hazards such as protruding nails, old or damaged wiring (e.g., knob and tube wiring), previous pesticide use, and fiberglass.

### **Injuries from Wildlife**

Wild animals are unpredictable and PMPs can underestimate their strength, quickness, and agility. While an attack from a bird is unlikely, attacks do occur when animals are startled or are protecting a nest and territory. Birds also can cause injury through bites and scratches.

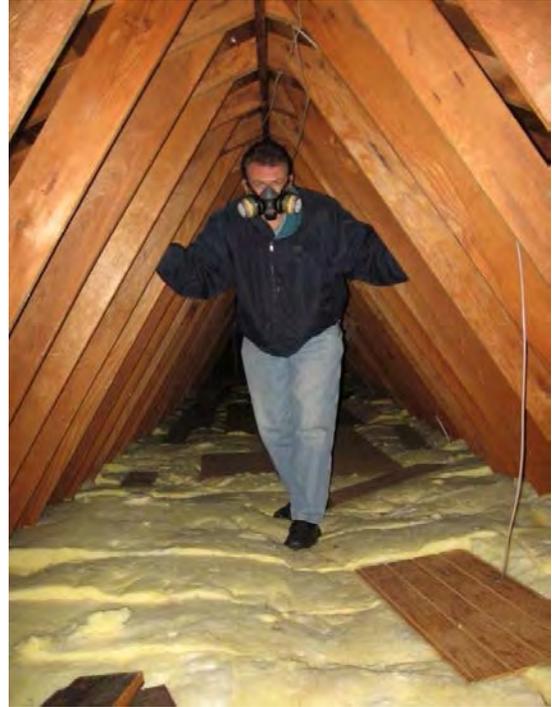


Figure 8. Hold rafters while probing for floorboards. Feel for joists with your feet or hands, or pull back the insulation to locate them.

Photo by Stephen M. Vantassel.

### **Prevent Injury**

Whenever possible, keep your distance from birds. You cannot be bitten or scratched if a bird cannot touch you. In addition, distance helps reduce the possibility of ectoparasites moving from the birds to you. If you cannot keep your distance, use tools such as catch poles, snake tongs, or cat graspers. When there appears to be a choice between getting bitten and the animal escaping, let the animal get away.

Wear PPE such as heavy gauntlet gloves, long pants, and long-sleeved shirts when handling traps. Cover traps with a cloth to help calm captured birds and to protect yourself as you carry the trap. Hold traps away from your body.

## Unseen Danger - Caged Animals on Roofs

One of the most dangerous activities facing PMPs involves carrying caged animals while climbing down a ladder. Carrying a cage on a ladder violates the “three points of contact” rule, as you would be using the ladder with only one hand. The weight shift that occurs when an animal moves from one end of the trap to the other is another danger. It can cause you to lose your balance, drop the cage, and fall. It is best to use a hand-line or tow-line to lower the cage.

## Zoonotics

This section provides basic information on wildlife diseases, specifically those that birds transmit to humans. All PMPs need to be aware of the dangers of wildlife diseases as well as how to avoid infection and transmission of diseases to other people or animals.

Zoonotic diseases, or zoonoses, are infections that animals can pass to people through direct contact or intermediaries. About 200 zoonotic diseases are known at this time. Unfortunately, biological hazards encountered in nature do not come with warning signs (Figure 9).

Some wildlife diseases can be fatal to people, although injuries associated with ladders are far more common for PMPs than contracting a wildlife disease. Even if you are comfortable with your personal risk, unsafe practices can put your clients and family members at risk of disease. You owe it to your customers to be cautious.



Figure 9. Universal warning sign for a biological hazard. Image from Safety Image CD.

Diseases can spread to other species and devastate their populations, which is an especially major concern if the affected species is endangered or considered valuable. As a professional, you are expected to behave in ways that minimize the risk of disease exposure and transmission to people and other species. The potential for zoonotic disease influences procedures for animal handling and disposal, choice of gear, customer education, and clean-up strategies for the site and your equipment.

## Terms

- **Agent or Pathogen** - organism or entity that causes disease
- **Vector** - the route of infection (typically an organism)
- **Reservoir** - organism that harbors or carries the disease but is not harmed by the disease
- **Host** - organism negatively affected by the disease

## Example

**West Nile virus** has a viral **agent**. Certain mosquitos (Figure 10) are the **vectors** that infect a human, the **host**, when they bite. Several species of birds are **reservoirs** that become carriers and maintain the disease agent.



Figure 10. Mosquitos are capable of transmitting the West Nile virus and other disease pathogens. Photo by Jim Kalisch.

## Disease Transmission

Awareness of how humans are infected by diseases will help you take precautions to prevent exposure (Table 1). Disease agents (pathogens) include:

- fungi,
- bacteria,
- viruses,
- protozoans (single-celled organisms),
- rickettsia (microorganisms that combine aspects of both bacteria and viruses),
- nematodes (multi-celled worms), and
- prions (modified proteins).

Agents can enter your body through:

- injection by a vector or wildlife bite,
- ingestion (e.g., biting contaminated fingernails, eating contaminated food),

- inhalation (e.g., breathing contaminated dust or airborne eggs), and
- absorption (organism enters through mucosal membranes around the eyes and mouth, or a through a break in the skin).

## Reduce Risks

### Before you start a job:

1. ensure that your tetanus vaccination is current;
2. have emergency phone numbers handy for your local police, animal control, department of health, state wildlife authority, and your doctor;
3. determine the appropriate protective gear for the situation, and
4. wear it properly.

### While you are working:

1. wash your hands thoroughly and often, especially before you eat;
2. avoid touching your face with your hands;
3. keep your gear clean;
4. record animal contacts in a daily log;
5. avoid handling a sick animal or one that is behaving oddly;
6. remind your doctor about your work with wildlife at every visit;
7. if you have been bitten or scratched, or are sick, consult your physician; and
8. safely dispose of animals and contaminated materials.

**When you are done for the day:**

1. clean your gear and service vehicle,
2. remove work clothing and wash them separately, and
3. shower or bathe before coming into contact with others.

**Table 1. Summary of Important Zoonotic Diseases Associated with Birds**

How people contract diseases	Precautions for PMPs
<p><b>Inhalation</b></p> <ul style="list-style-type: none"> <li>• Histoplasmosis</li> <li>• Aspergillosis</li> <li>• Chlamydiosis (psittacosis, ornithosis)</li> <li>• Newcastle Disease</li> <li>• Hantavirus Pulmonary Syndrome</li> </ul>	<ul style="list-style-type: none"> <li>• Wear a proper fit-tested respirator, disposable clothing, goggles, gloves, and hood</li> <li>• Dampen contaminated materials, wipe with wet sponge</li> <li>• Ventilate the area if possible (without stirring up dust)</li> <li>• Spray contaminated area and dead animals with disinfectant to kill organisms from urine and feces</li> <li>• Schedule job for cool, damp weather, if possible</li> </ul>
<p><b>Injection (via bites and scratches)</b></p> <ul style="list-style-type: none"> <li>• West Nile virus, dengue, and other mosquito-borne diseases</li> <li>• Lyme disease, Rocky Mountain spotted fever, ehrlichiosis and other tick-borne diseases</li> </ul>	<ul style="list-style-type: none"> <li>• Wear long sleeves and light-colored clothing</li> <li>• Tuck pant legs in socks to prevent ticks from crawling up pant legs</li> <li>• Use insect repellent<sup>1</sup></li> <li>• Stay inside when mosquitos are most active (e.g., at night when West Nile virus carrying mosquitoes are active)</li> <li>• Periodically check for ticks on your body when working in tick-infested areas</li> </ul>
<p><b>Ingestion</b></p> <ul style="list-style-type: none"> <li>• Salmonellosis</li> <li>• Campylobacteriosis</li> </ul>	<ul style="list-style-type: none"> <li>• Avoid contact between hands and mouth</li> <li>• Wear gloves</li> <li>• Wash hands and gloves thoroughly after handling birds, equipment, and contaminated surfaces</li> <li>• Wash hands before eating or drinking</li> </ul>

<sup>1</sup> Consult with the CDC for guidance on mosquito repellents (<http://cdc.gov>)

## Common Zoonotic Diseases Associated with Birds

### Histoplasmosis

Histoplasmosis is a lung infection caused by inhaling the spores of the fungus *Histoplasma capsulatum*. Three forms of this disease exist: acute pulmonary, progressive disseminated, and chronic cavitary. The worst-case scenario is death. The spores that cause histoplasmosis are common. The Centers for Disease Prevention and Control (CDC) estimates that 80% of people living where the spores are common have been exposed to histoplasmosis, although most cases are mild.

The *Histoplasma* fungus is extremely common in the central and eastern US, especially along the Ohio, Mississippi, and St. Lawrence River Valleys, and the Rio Grande (Figure 11). Each year, about 500,000 infections, 5,000 hospitalizations, and 800 deaths occur in the US due to histoplasmosis.

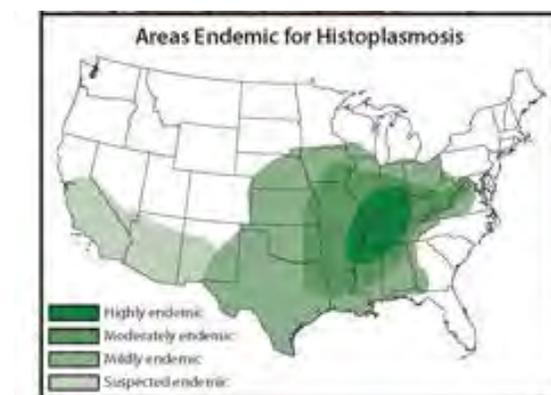


Figure 11. Darker areas indicate where histoplasmosis is most prevalent (source CDC.gov).

Most vulnerable groups include the very young, the very old, and people with compromised immune systems. They are most likely to develop the most dangerous form of the disease. Construction workers, PMPs, and cavers are high-risk groups because they are most likely to encounter the spores. The severity of infection probably depends on the number of spores inhaled and the health and age of the person. Young children, smokers, the elderly, and especially those already suffering from a lung disease are more likely to show symptoms of histoplasmosis.

Most people experience the mildest form, showing no symptoms or suffering a minor, flu-like illness that disappears on its own. If symptoms occur, they commonly are noticeable within ten days of exposure. In fact, many people are unaware that they have been infected. The disease can develop into a chronic form that resembles tuberculosis, with the condition worsening over months or years. The most serious form, progressive disseminated histoplasmosis, affects the fewest people and occurs when the infection has spread from the lungs to other organs. It is most likely to occur in immuno-compromised persons and usually is fatal unless treated.

The fungus occurs naturally and can grow in many soil types, with or without feces (Figure 12).



Figure 12. Droppings of birds provide nutrients needed to encourage fungal growth, particularly in soil.  
Photo by Stephen M. Vantassel.

Although it is almost always associated with soil, the fungus has, in rare cases, been found in droppings alone. The fungus cannot form spores under acidic conditions of fresh droppings. Accordingly, an active roost may give off only a few spores. Droppings must dry and then get wet before spores can be released. Generally, droppings accumulate for three or more years before spores are at dangerous levels under a roost.

Histoplasmosis is not contagious and is not spread from person to person or from other animals. Birds and bats do not carry this disease, but they are associated with it because their droppings enrich the soil and promote the growth of the fungus.

If soil is stirred up under dry conditions, massive numbers of spores may be released. Major outbreaks have occurred in association with bird roosts that were bulldozed during construction projects. Spores are easily carried long distances by wind and are able to infect people who are 100 yards or more from the site of the spore release.

Treatment may not always be needed. Antifungal medications are used for severe cases of histoplasmosis. Mild cases usually resolve without treatment.

Protection on the job requires personal protection equipment. A person must inhale spores in order to be infected with histoplasmosis. Spores often are encountered in old or abandoned bird or bat roosts (especially those that are outside or exposed to rain), in chicken coops, and in caves. The spores are airborne and can be inhaled when contaminated soil or droppings are disturbed.

Take precautions when working around old or abandoned roost sites, especially if they have been exposed to rain. Avoid stirring up dust and inhaling spores. If possible, schedule jobs when the weather is cool and damp. Wear a properly fitting respirator, disposable coveralls, goggles, gloves, and disposable shoe coverings. Wear a hood if materials are likely to fall from overhead. If possible, ventilate the area. Dampen contaminated materials to reduce the amount of dust and keep them damp as you are working. Droppings can be wiped up with a damp sponge and double-bagged, using construction-grade plastic bags, for disposal. Spray dead birds or bats with a household disinfectant and double-bag them in plastic for disposal.

Contact your doctor if you develop flu-like symptoms 3 to 18 days after a potential exposure to spores. Discourage birds and bats from roosting in areas near human-occupied buildings to prevent suitable habitat for *Histoplasma capsulatum*.

## Campylobacteriosis

Campylobacteriosis results from infection with bacteria in the genus *Campylobacter*. The most common mode of infection in humans is by contaminated material entering the mouth. The worst case scenario includes diarrhea (sometimes with blood), cramping, abdominal pain, and fever. In some people, the infection enters the blood stream and causes life threatening illness. Symptoms occur within two to five days of infection. Treatment usually consists of supportive care; severe illness may require antibiotic therapy.

Campylobacteriosis is common. Typically, infections are isolated to individuals but on occasions, large numbers of people are infected. Estimates suggest that 1.3 million people are infected each year in the US. The most vulnerable groups include people with suppressed immune systems. Those who handle birds are at higher risk as well.

*Campylobacter* is a bacterium that dies quickly in dry environments. Protection on the job includes wearing impermeable gloves, avoiding touching your face with contaminated objects, and thorough hand washing prior to eating, drinking, or smoking.

Symptoms occur within 2 to 5 days with infections lasting 2 to 5 days. Contact your doctor if diarrhea persists, if you are becoming dehydrated, or your condition worsens.

## Chlamydiosis/Psittacosis

Chlamydiosis refers to infections caused by bacteria in the genus *Chlamydia*. The most common mode of infection is through exposure to aerosolized droppings of infected birds. The bacteria spread through dried feces and discharges from eyes and nares that

becomes aerosolized. Infected birds may show no signs at low levels of infection, or exhibit weakness, ruffled feathers, and excrete rust- or green-colored feces. Infected pigeons display similar signs except their feces tend to be tinged with blood.

Surveys have found infections occurring in 159 species of wildlife, including feral pigeons. Psittacosis, also known as parrot fever, is caused by *Chlamydia psittaci*. Psittacosis is rare. Less than 50 confirmed cases have been identified since 1996. Researchers, however, believe the illness is underdiagnosed. Vulnerable groups include pet store workers and PMPs exposed to dried bird feces. Individuals with compromised immune systems are at greater risk. Symptoms of infection appear within 5 to 19 days following exposure and include fever, headache, chills, dry cough, and occasionally pneumonia.

Protection on the job includes wearing a full-face respirator and disposable gloves in areas where dry bird droppings are present. Wash promptly after handling animals. Minimize contact with potentially infested gear or clothing.

## Salmonellosis

Salmonellosis results from infection by bacteria from the genus *Salmonella*. By far, the most common mode of infection is through food poisoning, but illness can be caused by ingestion of contaminated materials. To touch a surface frequented by birds, such as a ledge or bird feeder, can be sufficient to transfer bacteria to hands, which may enter your mouth through biting your fingernails or handling food. Infected birds may excrete feces laden with salmonella bacteria for weeks and even months.

Symptoms of salmonellosis include diarrhea, fever, and abdominal cramps. Symptoms typically appear 12 to 72 hours after exposure and may last 4 to 7 days. Treatment of salmonella infection usually consists of supportive care. Severe illness requires hospitalization. Protection on the job includes wearing impermeable gloves, keeping your hands away from your face, and washing hands thoroughly before eating or smoking.

### Newcastle Disease

Newcastle disease is a viral disease that, depending on the virus strain, affects digestive, respiratory, or neurologic tissues of birds. The most common mode of human infection is exposure to infected bird droppings that have been aerosolized. The worst case scenario results in conjunctivitis and a mild flu.

Newcastle disease is rare among humans. Protection on the job includes wearing a full-face respirator.

The real concern with Newcastle disease is the threat it poses to birds. Newcastle disease has been known to cause 100% mortality in flocks. More than 230 species of birds have been affected by this virus, including poultry. Birds affected by Newcastle disease may be unable to move a leg or wing, or hold their head erect. They may have wing droop or abnormal posture.

The virus spreads through the excrement of infected birds that contaminate the environment. Humans spread the virus by moving birds or contaminated equipment to new areas.

The virus can persist in the environment for several weeks. Due to the serious impact of

this virus on wild birds and poultry production operations, PMPs should take special care not to transmit the disease through use of contaminated equipment such as traps. Equipment may be decontaminated by drying, sunlight, or heating to 212°F for at least one minute.

### Hantavirus Pulmonary Syndrome

Hantaviruses are found in wild rodents. In the Midwest, the deer mouse (*Peromyscus maniculatus*) can transmit the virus to humans who contact the urine, feces or saliva of an infected mouse. This occurs by inhaling the virus, when the virus contacts the eye or breaks in the skin, or when a person is bitten by an infected mouse.

Care should be taken to eliminate deer mice living inside structures, and to avoid stirring up dust. Do not vacuum or sweep rooms before they are cleaned, mopped or disinfected. Mouse entry points should be located and sealed. Wear an appropriate respirator with face shield, as well as impermeable gloves when handling dead mice or removing their nests or feces. Dead mice, feces and contaminated items can be sprayed with disinfectants containing phenol or with diluted bleach.

Infected humans may suffer from flu-like symptoms and shortness of breath. Hantavirus Pulmonary Syndrome can be life-threatening, but the disease is rare – only 3 cases have been reported in Illinois (through 2013).

### West Nile Virus and Other Mosquito-Borne Diseases

Most mosquito-borne diseases are caused by viral agents. The most common bird-related, arthropod-transmitted diseases in the United

States are West Nile virus, dengue, LaCrosse encephalitis, eastern and western equine encephalitis, and St. Louis encephalitis. The mode of human infection is by mosquito bite (Figure 13).

West Nile virus is uncommon in people and most infections are mild. Vulnerable groups include people over 50 years of age and those with compromised immune systems.



Figure 13. *Culex* mosquitoes are vectors of West Nile virus. Photo by Jim Kalisch.

West Nile virus affects more than 70 species of domestic and wild birds (especially American crows, jays, hawks, and owls) and mammals (especially people and horses). It has been found in bats, chipmunks, raccoons, skunks, squirrels, domestic rabbits, mountain goats, and reindeer, and was recently identified as a cause of death of American alligators and bald eagles.

West Nile virus lives in the salivary glands of mosquitoes. It causes a variety of symptoms that usually appear 3 to 14 days after the bite. The most common symptoms are mild and flu-like, including fever, rash, lethargy, and loss of appetite. A small percentage of infected people develop an inflammation of the brain (encephalitis) or spinal cord (meningitis), or paralysis. Contact your doctor

if you have symptoms that don't go away or if the symptoms concern you.

The disease was first reported in the eastern US in the summer of 1999 and spread westward across the US by 2003. Birds can spread the disease during migration. To date, 20% to 30% of people infected with West Nile virus have become ill. About 2% of infected people develop an infection of the central nervous system. Of this group, about half will experience muscle weakness, about 10% will suffer paralysis, and about 10% will die. Fatalities are highest among the elderly. According to the CDC, the case fatality rate is 3% to 15%, but less than 1% of all people infected with the West Nile virus develop severe illness.

Mosquitoes transmit the disease but do not develop the disease themselves. The northern house mosquito (*Culex pipiens*) is an important vector of West Nile virus. This is often the most common mosquito around homes in the Northeast US. A person also may be exposed to West Nile virus through blood transfusions, organ transplants, breast milk, or by handling infected birds (the virus may be present in feathers, feces, or dander).

Normally, the virus infects mosquitoes and birds. When an infected mosquito bites a bird, it may transmit the virus to the bird. The virus circulates in the bird's blood for a few days. Uninfected mosquitoes that bite an infected bird can pick up the virus. The virus can replicate in the mosquito's body and be transmitted to another animal by another bite. The virus does not replicate effectively in mammals, so an uninfected mosquito biting an infected mammal probably does not pick up the virus. Thus, mammals are currently

considered “dead-end” hosts for West Nile virus.

Protection on the job includes avoiding mosquito bites. Wear loose-fitting clothing and apply mosquito repellent to reduce your chance of being bitten by an infected mosquito. Light colors are less likely to attract mosquitoes. Long sleeves and long pants are recommended. Do not handle dead birds with bare hands; wrap the carcasses in layers of plastic.

Advice for clients includes reducing breeding habitat for mosquitoes by emptying standing water from rain gutters, recycling bins, tires, tarps, kiddie pools, buckets, and wherever water collects.

Change bird bath water every five days. Regularly change outdoor water dishes for pets. Keep roadside ditches clear so water can flow through them. Clean debris from rain gutters early in the spring and clear garbage piles. Stock ponds with fish that feed on mosquitoes. Aerate ponds by adding aerators or fountains. A variety of pesticides are available that will kill mosquito larvae in water. Always read the labels and know your state’s regulations concerning pesticide applications.

## Lyme and Other Tick-Borne Diseases

While mosquito-borne diseases are usually caused by viruses, most diseases transmitted to humans by ticks are caused by bacteria. Lyme disease is the most common disease transmitted to humans by ticks. It is transmitted through the bite and feeding of the blacklegged tick (*Ixodes scapularis*), also known as the deer tick.

Other diseases that can be acquired from tick bites include ehrlichiosis, anaplasmosis, babesiosis and Rocky Mountain spotted fever.

Tick bites can be avoided by wearing protective clothing, using insect repellent, and checking your body for ticks after exposure to animals, their nests or tick habitat. If you find an attached tick, use forceps or wear gloves to remove them. Grasp the tick as close to the skin as possible and pull firmly. Do not smash, burn or apply chemicals to ticks to remove them. Wash the bite area with soap and water, and apply antiseptic. If ticks are removed within a few hours of attachment, the chance of disease transmission is greatly reduced.

## Concluding Thoughts

If you adopt a healthy lifestyle, maintain risk-awareness, and wear appropriate protective equipment, you will reduce your risk of being injured or contracting a disease.

**ATTN: Medical Personnel**

This person works with wildlife and may have been exposed to certain zoonotic diseases not routinely considered in the differential diagnoses of febrile illnesses. In case of sickness in this individual, please consider zoonotic diseases including, but not limited to the following:

**Anthrax, Arbovirus encephalitis, Brucellosis, Giardiasis, Hantavirus, Hendra Virus, Highly Pathogenic Avian Influenza, Histoplasmosis, Leptospirosis, Lyme Disease, Monkeypox, Mycotoxicosis, Nipah Virus, Psittacosis, Q Fever, Rabies, Rocky Mountain Spotted Fever, Salmonella, Sylvatic Plague, Tularemia, Typhus, & West Nile Virus.**

(continued on back)

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**For more information on the occurrence of these diseases in humans, please contact:**  
The Centers for Disease Control and Prevention  
1600 Clifton Rd.  
Atlanta, GA 30333  
1-800-232-4636 (1-800-CDC-INFO)  
<http://www.cdc.gov/>



**For more information on the occurrence of these diseases in wildlife, please contact:**  
USGS National Wildlife Health Center  
6006 Schroeder Rd.  
Madison, WI 53711-6223  
(608) 270-2400  
<http://www.nwhc.usgs.gov/>



Figure 14. This card can help remind you to inform medical personnel that you work with wildlife. Image by the CDC, US Geological Survey.

## **Additional Resources**

<http://wildlifecontroltraining.com>

<http://icwdm.org/>

<http://wildlifecontrol.info>

[http://www.nwhc.usgs.gov/publications/field\\_manual/](http://www.nwhc.usgs.gov/publications/field_manual/)

# Module 4 - Bird Management

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## Learning Objectives

1. List the tools required for management of birds.
2. Describe the methods for resolving bird-damage conflicts.
3. Identify responsible ways to kill birds and dispose of carcasses.

## Introduction

Wildlife damage management includes a variety of methods and tools to reduce wildlife conflicts to tolerable levels, yet no single technique typically will eliminate all problems encountered with birds. Consider the diversity of species and situations and it becomes apparent that bird management is not a one-size-fits-all activity. Furthermore, many methods can be used in combination with others. It is advisable to implement Integrated Pest Management (IPM), i.e., use several effective control methods when practical, especially when addressing long-standing damage situations. Management methods fall into the categories listed below.

- Habitat Modification
- Exclusion
- Frightening Devices
- Repellents
- Toxicants
- Shooting
- Traps
- Other Methods

## Habitat Modification

All animals need water, food, and shelter. Eliminate any of these and animals cannot survive. Habitat modification addresses all three life requisites. An extreme example of habitat modification is to pave a lawn with asphalt to stop starlings from digging for insects and worms. Although extreme, it would be effective and relatively permanent. Most habitat modifications are more subtle, but they play an important role in long-term WDM. Changes to habitat to reduce one species may encourage population growth in others.

Typical habitat modifications include:

1. modifying bird feeders to reduce attractiveness or access to unwanted birds,
2. removing branches in bushes and trees to open up the canopy and reduce attractiveness to roosting birds, and
3. adjusting mowing and other landscaping practices to make the area less attractive to undesirable birds.

Another example of habitat modification involves adding large rocks (“riprap”) to a pond embankment to discourage Canada geese from using the bank. Even small modifications of habitat can enhance the effectiveness of other techniques.

Habitat modification can provide long-term solutions to difficult wildlife conflicts. Unfortunately, some habitat modifications can be expensive, so expect some client resistance.

When the long-term effects are considered, however, habitat modification may prove cost effective.

## Exclusion

Exclusion includes the use of barriers to prevent wildlife from accessing areas and causing damage. Exclusion can provide immediate and long-term protection. It can be too costly, however, especially when large areas need protection. The principal types of exclusion products are listed below. Consult the species modules for additional information on their use.

## Know the Animals

Effective exclusion requires awareness of animal behavior and physical capabilities. As a general rule, exclusion of birds requires consideration of the entire area or structure impacted by the birds, and special attention to active feeding, perching, and nesting locations.

## Protecting Landscapes

### Fences

Fences increase the difficulty of walking birds (e.g., turkeys and Canada geese) from gaining access to landscapes (e.g., fields, gardens, airports) and structures (e.g., decks, porches, buildings). Fences are either electric or non-electric. Electric fences are both physical and psychological barriers to wildlife. They function as behavioral deterrents, using painful, but harmless, shocks to interfere with wildlife movements. Electric fences fail to prevent wildlife damage when unsuitable designs are used, when not installed according to manufacturer specifications, or when maintenance is inadequate. Frequent monitoring and vegetation control are required to maintain sufficient shocking power (at least 3,000 volts) on the fence.

Electricity can be used exclusively with a fence, as with the poly-tape fence, or in conjunction with a non-electric fence. Electric fence technology has improved dramatically in recent years. Fences can be powered through electrical outlets, disposable batteries, or rechargeable batteries connected to a solar electric panel. Modern low-impedance chargers deliver pulses of electricity that deliver a painful, but not continuous, jolt of electricity. The gap in the pulse allows people and animals to move away from the fence. While the shock generally is “safe” for adults and older children, always consider the presence of young children in the area. Some powerful electric fence chargers can cause serious harm to young children and people with heart pacemakers. Additional ways to improve the safe use of electric fences include placarding fences with warning signs and using timers to limit the duration of electrification. Always check for local ordinances before installing electric fences.

Non-electric fences are physical barriers that block the movement of birds that commonly walk between foraging and loafing sites. While requiring lower maintenance than electric fences, they often cost significantly more to install.

Protect trees and gardens from birds by adding a net over the top of the plants that need protection. Be sure nets are securely installed, as wind, snow, and freezing rain can severely damage them and the items being protected.

## Protecting Structures

### Holes and Openings

A thorough inspection of the structure is required for an exclusion technique to be effective. All potential entry points must be located. As a rule, the smallest opening a bird

can enter is ¼ inch in diameter. Do not ignore smaller crevices, however, as gnawing by rodents can enlarge them.

Never secure openings unless you are certain that animals are not using them. Typically, active holes will have rub marks around the opening, droppings (Figure 1), and odor. When uncertain about whether animals are using an opening, loosely plug it with a sheet of newspaper and monitor it. If the newspaper is untouched after three consecutive days of fair weather, it is reasonable to assume that the opening is no longer in use. Do not use this method if bats may be present.



Figure 1. The white bird droppings (see arrow) provides an important clue where birds are entering a structure. Photo by Stephen M. Vantassel.

Next, consider whether a potential opening may be filled or if it must be screened. If airflow is needed, use screens. If the gap can be filled, several options are available.

Use sealants to secure gaps up to ½ inch in diameter. Sealants have greater elasticity than caulks and are preferable where movement of the substrate is expected. Gaps larger than ½ inch require backing to help hold the sealant. Backer rod, Copper Stuf-it™ (Figure 2), and Xcluder™ have the flexibility to be wedged in crevices. They also provide enough structure to

support sealant as it dries. Select an appropriate caulk or sealant after considering the substrate, exposure to weather, and aesthetics. It is normal to carry several varieties.



Figure 2. Copper Stuf-it™ is used to fill cracks and crevices. Photo courtesy of Wildlife Control Supplies, LLC. .

Limit the use of expanding foams to locations where large voids need to be filled and the foam will be protected against sunlight. Foam will not stop rodent entry.

Ridge vents frequently have missing end-covers that provide openings for birds to exploit (Figure 3). Use Copper Stuf-it™ or Xcluder™ (Figure 4) and sealant to secure the ends. Hardware cloth added to the spot will increase its resistance to animal entry.



Figure 3. The end of this ridge vent is open to wildlife entry. Photo by Stephen M. Vantassel.



Figure 4. X-cluder™ fill fabric.  
Photo courtesy of Wildlife Control Supplies, LLC.

### Nets

The wildlife control industry considers nets to be among the top methods preventing bird access to areas. Nets prevent bird access to roosting and nesting areas (Figure 5). Use of this method has increased in the last decade. Public acceptance is high and components have been improved to increase the efficiency of installation. But installing nets requires skill in estimating costs and ensuring an aesthetically pleasing and effective installation.



Figure 5. A net has been suspended below this bridge to prevent birds from nesting on the I-beams. Photo by Stephen M. Vantassel.

### Ledge Products

Ledge products inhibit birds from roosting or nesting on ledges. Ledge products include lines,

wires, flappers, slants, spikes, coils, and shock tape. Ledge products install easily and are very effective. Like fences, ledge products may be electric or non-electric (Figure 6). As a rule, electric products deter all birds but non-electric products, such as spikes, may be effective only for certain sizes of birds. Consult the manufacturer guidelines for the use and installation of each type of ledge product.



Figure 6. Non-electric ledge products, Cat Claw® (top) and Nixalite® (bottom). Photo courtesy of University of Nebraska-Lincoln (UNL).

### Chimneys

Unprotected chimneys are essentially pit traps for every bird except the chimney swift (*Chaetura pelagica*). Install chimney caps on every flue to prevent entry by birds and other animals. Chimney caps are sold in single-flue (Figure 7) and multi-flue designs (Figure 8).



Figure 7. Single-flue cap. Photo by Hy-C Co., Inc.



Figure 8. Multi-flue cap. Photo by Hy-C Co., Inc.

Avoid installing caps made with galvanized-steel as they do not provide sufficient cost savings to justify their use. Chimney caps have solid roofs that protect the chimney crown from water damage. Check existing chimney caps for damage. Prior to capping, ensure that animals are not residing in the flues. If swifts are present, wait until they migrate in the fall before capping. Chimney screens (also called raccoon screens) provide the same protection against animal entry as chimney caps, but lack a solid roof. They are less expensive and can be placed on flues closer than 6 inches apart.

Install professionally-manufactured chimney caps that meet the standards of your local fire code. Under no circumstances should hardware cloth be used to protect a chimney (Figure 9).

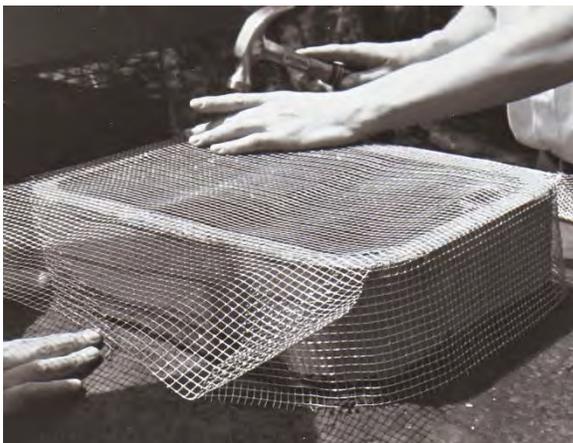


Figure 9. Never use hardware cloth to secure a chimney, as shown in photo. Use professionally manufactured chimney caps. Photo by Stephen M. Vantassel.

Wire mesh eventually rusts and the screen may allow water from snow, rain, or exhaust fumes to freeze and block exhaust gases, forcing them into the home.

## Vents

Consult state building codes before modifying vents. Vents require special care because they must allow air flow. Use of screen with a mesh size less than  $\frac{1}{2}$ - x  $\frac{1}{2}$ -inch may significantly reduce airflow. As a general rule, metal screening is best placed on the exterior of a vent.

Installation of screens on the outside of the vent is especially important when protecting mushroom vents and power exhaust fans. While screening from inside the attic is usually easier, such action creates a platform for birds and squirrels to construct a nest. In turn, the nest restricts air flow and may catch fire from an overheated power-exhaust fan.

When screening vents, particularly on roofs, it is critical to seal screws to prevent leaks. Place a bead of roof sealant under and on top of the shingle where the screw is to be placed. After driving the screw through the sealant, cap the screw with a final dab of sealant. Consult area roofers to adapt these suggestions to local conditions and building practices. Consider whether snow or ice may be blocked by the screen. You may need to install barriers to shift snow and ice to one or both sides of the screen.

Professionally-manufactured screens (stainless steel and galvanized, Figure 10) are available. Stainless-steel screens are preferable for roof vents due to their resistance to rust. Follow manufacturer recommendations for securing the screen to a roof to prevent leaking and ice damming.



Figure 10. Screen for a mushroom vent.  
Photo by Hy-C Co., Inc.

**Dryer exhaust vents** require special consideration, as improper screening hastens the build-up of lint and increases the likelihood of fire. Although some screens have air-activated flaps that seal when not in use, the flaps often become jammed with lint. Consider installing a dryer-vent cover that has a floating ball that secures the vent when the dryer stops (Figure 11).



Figure 11. Floating-ball-type cover for dryer vents.  
Photo by Stephen M. Vantassel.

Whatever methods are chosen, be sure to follow state and local codes, and ask homeowners to check their screens monthly.

**Bathroom exhaust vent covers** made from plastic are sufficient to protect bathroom exhaust vents from entry by birds (Figure 12).



Figure 12. Plastic vent cover suitable for bathroom exhaust vents.  
Photo by Stephen M. Vantassel.

**Sewer vents** can attract birds and other animals to enter, thus raising the possibility of blockage. Crown-vent guards are designed to prevent animal entry (Figure 13). Ensure that exhaust pipes meet Consumer Product Safety standards.



Figure 13. Sewer vent pipe cover.  
Photo by JMC Plumbing Products.

**Other vents** placed on vertical walls may be secured with galvanized  $\frac{1}{4}$ - to  $\frac{1}{2}$ -inch wire mesh. Cut the mesh at least 2 inches wider than the size of the vent to provide space to secure the screen to the structure. For triangular vents, measure the base and height of the triangle, add 2 inches or more to each measurement, and cut a rectangle or square. Place the mesh against the vent, and outline the remaining sides of the triangle with a black marker before cutting (Figure 14).

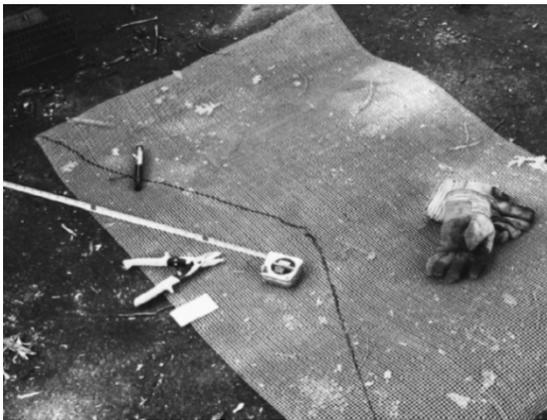


Figure 14. Outline of a triangular vent screen. Photo by Stephen M. Vantassel.

**In livestock buildings** or other structures where ventilation is needed, screens may not be acceptable. In some locations,  $\frac{1}{4}$ -inch screens can become clogged with dust or ice. A screen with a larger opening sometimes is preferable to no screen at all. For most homes, however,  $\frac{1}{4}$ -inch wire mesh is sufficient.

Secure the screen in several places with screws to prevent animals from pulling it off the structure. Screws with washers or expanded heads prevent the screen from popping over the screw. Use staples to secure the screen between the screwed areas. If aesthetics are a concern, paint the screen, screws, and washers to match the color of the building. Although leaks are less of a concern with side screens,

place a bead of waterproof sealant at the spot where the screw will pierce the structure. Crossbars can be added for support if the screen is very large (4 x 7 feet or more). If the opening is an access way, install the screen on a hinged frame.

**Doors** frequently are left open to provide ventilation and worker access. Hang strips of see-through heavy plastic to allow people and equipment through the door while preventing access by birds (Figure 15).



Figure 15. Plastic strips allow access by people and forklifts while preventing entry by birds. Photo by Stephen M. Vantassel.

## Frightening Devices

Frightening devices disperse wildlife from sensitive areas. They fall into four categories: visual, audible, audio-visual, and biological. This manual will cover a chemical frightening device as well. Wildlife often habituate quickly to most frightening devices, perhaps less so to biological frightening devices.

## Visual Frightening Devices

Visual frightening devices include effigies (e.g., plastic owls), balloons, and Mylar® tape. These visual repellents vary in price, sophistication, and effectiveness. For example, some types of scarecrows actually move. Animated “human effigies” tend to be more effective than home-made kinds, which are best considered as garden decorations. Stationary visual frightening devices are the least effective, as birds tend to habituate to these devices in a few days (note the birds standing near the owl in Figure 16).



Figure 16. The owl effigy on this roof does not distress the gulls. Photo by Stephen M. Vantassel.

Whenever possible, choose a frightening device that moves (e.g., swaying in the wind, Figure 17).

Strobe lights are marketed to frighten birds. Manufacturers claim the lights disorient birds. Many birds can be dispersed from a night-time roost by pointing a spotlight, laser pointer, or laser pistol at them. Lasers are particularly effective in dispersing roosts of starlings and pigeons at distances of up to several hundred yards.



Figure 17. Scary-eyes balloon. Image courtesy of Bird-X.

## Audible Frightening Devices

Audible devices include propane cannons, acoustic hailing devices, and distress calls. No evidence is available that supports the claim that ultrasonic devices are effective in repelling wildlife. Propane cannons (Figure 18) emit a loud “boom” that is suitable only for rural settings. HyperSpike® acoustic hailing devices concentrate sound waves so that the decibel level remains high hundreds of yards away. Distress calls have more versatility and can target specific species such as crows. Noise from all these devices can be a concern for neighbors. Check local ordinances and consider the effects on neighbors before using audible frightening devices.



Figure 18. Propane cannon. Photo by UNL.

## Audio-visual Frightening Devices

Audio-visual devices use sound and sight to frighten wildlife. Fireworks-based noisemakers (a.k.a. “pyrotechnic devices”) include the items on the following list.

1. **Bangers** (or “bird bombs”) emit a loud bang. They are launched from a hand-held pistol launcher. Bangers can be used at medium range (100 to 150 feet).
2. **Screamers** emit a long whistle. They can be launched from a hand-held pistol launcher. The shell flies out about 100 feet, screaming and whistling all the way.
3. **Shell-crackers** (or “crackers”) make a loud bang similar to the sound of an exploding firecracker. The shells are fired from a 12-gauge shotgun and explode 75 to 100 yards away.

In 2011, the Bureau of Alcohol, Tobacco, and Firearms increased the restrictions on the purchase of these devices. In addition, these devices usually require permits in urban and suburban areas and may pose fire hazards and risk of bodily injury.

## Biological Frightening Devices

Biological frightening devices use animals perceived as a predator to frighten birds from unwanted areas. Falconers use birds of prey to keep birds away from airports and crops.

Falconers must have trained birds and proper permits to possess the birds. Border collies and other herding dogs are effective in dispersing Canada geese from golf courses and parks. Handlers must ensure that the dogs do not hurt the geese. It may be wise to secure a permit that allows the taking of geese before beginning hazing activities. Even a well-trained dog might accidentally injure a goose while chasing it which, without a permit, would be a violation of the Migratory Bird Treaty Act and most state wildlife protection regulations.

The Migratory Bird Treaty Act prohibits the hazing of birds in their nesting areas during the nesting season. Do not haze geese during their molt (usually June 15 to July 15), because they are vulnerable and cannot fly.

## Repellents

Repellents are chemicals that deter animal activity through, pain, fear, touch, or aversive conditioning. In most states, PMPs must have a commercial pesticide applicator license to use these products. The effectiveness of repellents often is highly variable, depending on the motivation of problem animals, alternative resources, previous experience, and active ingredients of the repellent.

Methyl anthranilate is a grape extract that, when eaten or inhaled, elicits a pain response that birds avoid. It is sprayed on grass to stop feeding by Canada geese and fogged to disperse roosting birds.

PiGNX® is another pain-based repellent. It uses capsaicin suspended in a gel that is applied to surfaces. When the feet of pigeons contact the repellent, they experience a burning sensation that encourages them to leave.

Polybutene-based bird repellents repel birds by touch. Birds do not like the sticky properties of these repellents (Figure 19).



Figure 19. A polybutene-based product being applied to a ledge to repel birds. Photo courtesy of UNL.

Finally, aversive conditioning uses the behavioral tendency of vertebrates to avoid foods that make them sick. Geese that consume grass sprayed with anthraquinone quickly learn that the grass causes nausea and avoid eating it.

## Toxicants

Toxicants are chemical compounds designed to kill unwanted animals. The US Environmental Protection Agency (EPA) has registered only two avicides: Starlicide™ Complete (Figure 20) and Avitrol. Technically, Avitrol is a chemical frightening agent but since some birds will die from eating it, we have placed it in this category.

Toxicants should be integrated with other control methods, such as habitat modification

and exclusion, to increase their effectiveness. Use considerable care to minimize risks to non-target animals and birds. Always read the labels for details and restrictions for use of all toxicants. In addition, all commercial applicators must be trained in pesticide use and certified by the Illinois Department of Public Health.



Figure 20. Starlicide™ Complete avicide for starling control. Photo courtesy of UNL.

The public does not like viewing dying and dead birds. PMPs should consider the likelihood that dead and dying birds will be seen by the public before using an avicide. We strongly encourage applicators to make plans to find and remove dead birds quickly whenever avicides are used.

Consult the control methods in the species modules for additional information on the use of toxicants.

## Shooting

Firearms include pistols, shotguns, rifles (Figure 21), and air rifles (high-end pellet guns). Shooting is appropriate for control of individual birds or flocks. Shooting is effective to reduce bird numbers or to reinforce frightening devices.

Shooting requires training and skill. We suggest that technicians demonstrate that they can shoot a 1-inch group at 20 yards on a consistent

basis before being using a rifle in the field. Shotguns require less accuracy but shooters need to appreciate the limits of their range. In aquatic settings, be sure to use non-toxic shot.



Figure 21. Shotguns and rifles are important tools in WDM. Photo by UNL.

Keep safety and legal requirements foremost in your mind. There is no recall button after the trigger is pulled. Shooters should wear hearing and eye protection when shooting. For proper training in the use of firearms, attend a hunter education course or firearm training course.

## Trapping

Traps are tools that can capture birds without the PMP being present. Trapping offers many advantages. For example, trapping allows you to see what you have caught and demonstrate success to the client. Trapping also prevents birds from dying in inaccessible locations, which is a hazard of using toxicants.

Disadvantages to trapping include the labor required to check and maintain traps, and the risk of capturing non-target animals. If a trap is used improperly, an animal can die in it from lack of food or water, weather extremes, or attacks by wildlife, pets, or people.

Always ensure that traps in elevated locations are secured to prevent their falling and possibly harming people or property.

## Nest and Feeding Traps

Nest traps take advantage of a bird's search for a suitable nesting area (Figure 22). They are most effective during the nesting season.



Figure 22 Nest trap. Photo by Stephen M. Vantassel.

Pre-baiting accustoms birds to traps through the use of food. To increase your chance of success, habituate birds to traps (Figure 23).



Figure 23. Trap for pigeons. Photo by Tomahawk Live Trap Co.

First, put out some bird seed (shelled corn for pigeons) or other appropriate bait. When birds are regularly feeding at the site, place the trap next to the bait and prop open the doors. Place bait outside and inside the trap to encourage the birds to enter the trap. If the birds do not come to the site, choose another area. Finally, when the birds are used to entering the trap,

set the trap and place the bait only inside. Leave a captured bird inside the trap as a decoy to lure others inside. Tie a string to the decoy's foot so that you can recognize and swap it for another after other birds are caught. Ensure that the birds have ample access to water, food, and a sheltered area in the trap where they can obtain protection from rain, wind, and sun.

### Kill Traps

Kill traps are designed to capture and kill the bird that interacts with the device. Since most birds are protected by federal and state laws, kill traps are rarely used.

### Capture Nets

We use the term capture nets to distinguish them from nets used for exclusion. Mist nets are fine-threaded nets used to capture birds, such as sparrows and starlings, inside warehouses. Birds are unable to see the netting and become entangled in it. You will need training, skill, and federal and state permits to use a mist net to capture wild songbirds outdoors. Skill is needed to remove birds from the netting without causing harm to them. Mist nets should be monitored during use and removed immediately afterward. Even veteran users can become frustrated trying to capture a sparrow or two in a net inside a spacious building.

Launchers use compressed air to launch nets up to 40 X 60 feet in size for capturing birds that have been habituated to the site by pre-baiting (Figure 24).



Figure 24. NetBlaster™ in mid-launch. Photo by Stephen M. Vantassel.

Hand-fired nets are useful for the capture of goose-sized birds or smaller. These devices use compressed carbon dioxide containers to project the net (Figure 25). They have an effective range of about 10 yards. Hand nets are very useful for capturing birds inside enclosed areas, such as rooms.



Figure 25. The Super Talon™ net gun. Photo by Stephen M. Vantassel.

Use of capture nets requires careful attention to bird welfare. Netted birds undergo incredible stress. Their attempts to free themselves can result in injuries, including those that threaten their lives. Release birds from nets quickly and efficiently. Keep noise and handling to the minimum needed to achieve results. Ensure enough workers are available to handle the number of birds expected to be captured. Have holding cages ready.

## One-way Doors

One-way doors allow animals to leave but not re-enter a building. Sometimes one-way doors connect to a trap to hold the animal in a system called “positive trapping.” Some one-way doors use a flipper valve; others consist of a long tube suspended at a downward angle or vertically so birds that fall through cannot fly back up (Figure 26). The advantage of one-way doors is that they do not require handling of animals. They are relatively new for wildlife control, but use is increasing.



Figure 26. A BatCone™ can be used as a one-way door to exclude birds. Photo by Jim Dreisacker.

Before installing a one-way door, conduct a thorough inspection to make sure all young that are present are mobile. One-way doors only are effective if the animal can find and use the exit, but cannot find or force its way back through the door or find another way into the building. If a mother has been separated from her young and they are still inside, she will be motivated to find or create another entrance. If an adult bird cannot reach its young, they will die and

possibly release foul odors. Thus, timing is critical when using one-way exclusion devices.

## Other Methods

Following are some other methods to manage wildlife damage and reduce human-wildlife conflicts.

### Chemical Immobilization

Chemical agents can be used to immobilize animals so they are unable to escape approaching humans. Typically, these chemicals are available only to USDA-Animal and Plant Health Inspection Service-Wildlife Services (APHIS -WS), veterinary, state government, and academic personnel.

### Biological Control

Biological control typically involves the introduction of a disease or predator to manage a pest population. Control with diseases is rarely used due to the risk of unexpected consequences. Predator control, such as the release of hawks or free-range house cats, although widely praised by the public, rarely works to achieve desired goals. Predators rarely reduce prey populations low enough to meet public expectations.

### Fertility Control

Fertility control essentially is birth control for wildlife. The public is quite tolerant of fertility control and considers it to be humane. Research on birds suggests that at least 60% of the eggs must be infertile for natural mortality to outpace reproduction. Fertility control will not reduce bird numbers quickly, as it relies on natural mortality.

Fertility control falls into two categories, physical and chemical. Physical fertility control

consists of removing or destroying eggs. For example, a PMP performs fertility control by removing the eggs from the nest of a pigeon.

Chemical fertility control relies on a product to inhibit an egg's ability to hatch. For example, the application of corn oil to the surface of a Canada goose egg will starve the embryo of oxygen. Nicarbazin is an active ingredient that birds such as pigeons consume with treated bait, preventing them from laying fertile eggs.

Be aware that the addling (shaking) and oiling of Canada goose eggs requires a permit from the Illinois Department of Natural Resources. Landowners may designate third party implementation, such as a PMP, but the permit must be in the landowner's name. Permits are time-specific. The USDA-APHIS-Wildlife Services program provides landowners assistance in obtaining federal depredation permits from the U.S. Fish and Wildlife Service. See information at <http://www.aphis.usda.gov/wps/portal/aphis/ourfocus/wildlifedamage>.

These rules are subject to change.

## Disposition of Problem Birds

In recent years, an increasing number of people have become concerned with the treatment of animals, even those considered pests. Although views on this issue vary, wildlife should be treated with respect, and animal suffering should be minimized in ways that balance effectiveness and practicality.

Frequently, people want problem birds to be transported elsewhere and released rather than killed. Before discussing this option in more detail, we need to explain some terms.

## Relocation and Translocation of Wildlife

**Relocation** refers to the movement of an animal from one spot to another within its home range, such as rescuing a bird trapped in a chimney flue and releasing it outside the house.

**Translocation** is the movement and release of an animal to an area outside its home range. For example, transporting a Canada goose from Chicago to Springfield and releasing it is considered translocation.

It should be immediately apparent that relocation of birds is practical only in rescue situations or when efforts have been made to exclude birds from returning to the site. Simply moving birds a mile or two, without installing exclusion materials, will not work because they will quickly return to the site. Birds are too mobile for relocation to work to be effective.

Translocation may appear to offer the possibility of a humane solution, but efforts rarely have achieved the desired results. Even though birds are moved hundreds of miles away, they frequently return. One also must consider the potential for disease transmission and stress to the birds involved in translocation. All in all, relocation and translocation are effective only under limited circumstances.

## Lethal Control

When discussing the humane treatment of wildlife, PMPs should keep three terms in mind -- capture method, humane killing, and euthanasia. Capture method refers to the use of techniques to take possession of free-ranging animals, such as trapping and shooting. Sometimes the capture method does not kill, as in the case of a cage trap for birds. In other instances, such as hunting, the capture method results in the death of the animal.

Humane killing refers to methods employed to intentionally and rapidly kill animals, but not painlessly as required by the euthanasia standard. Shooting of birds is an example of a capture method that is a form of humane killing.

Euthanasia refers to the killing of animals in a manner so they do not experience pain or stress. Use of narcotics by a veterinarian to end the life of a pet is one example of euthanasia. Understandably, euthanasia is the preferred method to kill animals whenever lethal control is required. However, euthanasia often is impractical, as it frequently requires the animal to be under the direct control of a PMP, such as in a cage trap. Therefore, the next best option is the use of humane killing. In some situations, shooting, which simultaneously captures and kills birds, may result in less suffering than using live-capture techniques followed by a euthanasia technique because wild animals can experience stress in cage traps. Contrary to popular belief, cage traps may not be the most humane solution in every situation.

Humane treatment of wildlife is a complex issue that often does not have simple solutions. Always choose methods that reduce animal suffering and are practical. Due to the emotional involvement people have with wildlife, all killing of wildlife, whether by capture device, humane killing, or euthanasia, should occur away from public view. Failure to follow this advice can result in unwanted public scrutiny of WDM activities.

## Euthanasia of Animals

When euthanasia is required, we suggest using methods approved by the American Veterinary Medical Association (AVMA). Whatever euthanasia techniques are used, technicians are advised to reduce animal stress as much as

possible. Keep animals separate from each another and in a quiet area. Cover cage traps with a blanket to keep the animals calm. Reduce noise to reduce animal stress. Handle animals gently and only as necessary before and during the euthanasia process. Euthanize only one animal at a time. Prevent animals from witnessing the euthanasia of other animals. More detailed information on euthanasia can be found at:

<http://www.icwdm.org/wildlife/euthanasia/default.aspx>.

## AVMA-approved Methods

### Shooting

Shooting can be painless and sometimes is the only available method to humanely remove an animal. Before discharging a firearm, you must:

1. be able to handle a firearm and ammunition safely,
2. comply with local laws and regulations regarding the transportation and discharge of firearms, and
3. be capable of producing a quick death by a shot to the brain or other vital area of the animal (Figure 27).

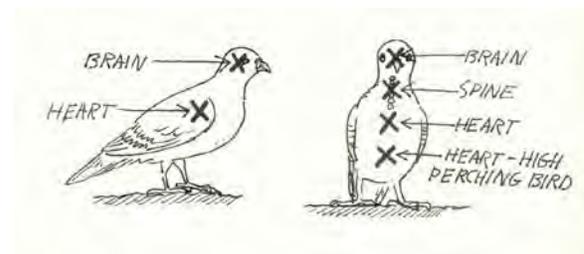


Figure 27. Proper shot placement for shooting birds with bullets. Head shots are considered euthanasia. Other locations are considered humane killing. Image by Bob Noonan.

### Carbon Dioxide

Many in the wildlife control industry consider euthanasia by carbon dioxide (CO<sub>2</sub>) to be the most user-friendly of the AVMA-approved

methods. The animal is rendered unconscious and death follows quickly without injection, handling, or transfer, and the method is relatively safe for PMPs. To euthanize animals by CO<sub>2</sub>, you need a euthanasia chamber, bottled CO<sub>2</sub>, gas regulator, flow meter, and tubing. Details are provided at: <http://www.icwdm.org/wildlife/euthanasia/default.aspx>.

Be aware of all relevant laws and regulations concerning the handling, storage, and transportation of pressurized tanks. Improper handling of tanks can result in serious injuries, property damage, and fines from the US Department of Transportation.

### **Cervical Dislocation**

Cervical dislocation (“wringing the neck”) is appropriate for small birds, provided the technician has been trained in this method. Grasp the legs or base of the wings with one hand and the head between the forefinger and the thumb with the other. Stretch the neck by pulling on the head while twisting the head.

Practice is required to become proficient at cervical dislocation. Failure to pull firmly enough will injure the bird. Pull too hard and the head will twist off. Be prepared for fluttering of wings as this can occur even with proper use of cervical dislocation.

### **Sodium Pentobarbital**

An injection of sodium pentobarbital is considered by many to be the most humane method of euthanasia. Acquisition, possession, and use of this drug is strictly regulated by state and federal laws, so the assistance of a veterinarian or animal shelter will be needed. The carcasses of animals euthanized by drugs

must be disposed of by burial, incineration, or disposal in a landfill to avoid any secondary poisoning of scavengers or other animals.

Pest management professionals interested in more information on euthanasia methods are encouraged to contact their local veterinarian or the report of the AVMA panel on euthanasia (AVMA Guidelines for the Euthanasia of Animals, 2013 Edition). This report is available online at: <https://www.avma.org/KB/Policies/Documents/euthanasia.pdf>.

It is the responsibility of PMPs to use euthanasia practices that are safe and effective.

## **Disposal of Carcasses**

The PMP is responsible for the proper disposal of animal carcasses to protect public health, water supplies, and the beauty of the landscape. Always follow the pesticide label when disposing of carcasses treated with pesticides. Follow the guidelines of the Illinois Dead Animal Disposal Act (8 Illinois Administrative Code Ch. I, 90 Subchapter b).

Safety is a primary concern when disposing of carcasses. Wear gloves, preferably thick leather ones, when handling carcasses. Gloves reduce the risk of receiving scratches and scrapes from claws and teeth. Some use leather welder’s gloves for their durability, low cost, and ability to protect hands and wrists. Nitrile gloves worn inside leather gloves are helpful when exposure to animal fluids is likely.

Additionally, ticks, fleas, and other ectoparasites will leave carcasses in search of new hosts. Be vigilant when handling carcasses

and consider using repellents and insecticides if protection is needed.

Dispose of carcasses immediately or freeze them to prevent odor problems that occur with decomposition. Freezing has an added benefit of reducing the risk of contaminating surfaces with spilled fluids that may harbor infectious diseases.

### **Landfill**

Secure the carcass in a dark-colored 3-mm thick plastic bag or double-bag it to protect sanitation workers from fluids or noxious odors. Dispose of carcasses at a solid waste landfill willing to accept animals. The transporting vehicle should proceed directly to the landfill, should not allow leakage of carcass fluids, and the carcasses should be covered.

### **Burial**

Illinois only allows animal burials on land owned or operated by the PMP. Select burial sites where runoff will not contaminate water supplies. Burial sites must be at least 200 feet away from open water, potable water supplies, and residences not owned by the PMP.

Common sense dictates that carcasses should not be buried in an area with a high groundwater table. Bury carcasses deep enough to allow at least 6 inches of compacted soil above the highest part of the animal. You must take precautions against any disturbance of the site by erosion, animals, and equipment.

You may not use chemicals such as lime to slow decomposition of carcasses. Final cover or settling shall be limited to a 5% or less slope differential from the normal gradient of its general surroundings.

Illinois limits the amount of carcasses that may be buried in a particular location. Burials may not exceed a ratio of 1 pound of dead animal to 1 square foot of surface area on an annual basis. You may not bury more than 3,000 pounds of dead animals in each site location, and the same site shall not be used more frequently than once every two years for burial purposes. You may not have more than three sites within a 120-foot radius.

Burial site locations shall be available for inspection by Department personnel during normal working hours.

Read the pesticide label and avoid burying carcasses dispatched with chemicals that can have a lasting effect on the environment.

### **Incineration**

Any disposal by burning must be performed with an incinerator that is in compliance with the Illinois Environmental Protection Act [415 ILCS 5]. Illinois prohibits the open burning of carcasses. Your veterinarian may be able to help you locate suitable incineration sites. Note that the Avitrol<sup>®</sup> label prohibits the incineration of animals killed by the product.

### **Composting**

This method of disposal rapidly decomposes a carcass using mechanical mixing and naturally occurring bacteria. For this method to be successful you must use the proper equipment, material, and management. View the Illinois Department of Agriculture website for more information on disposal methods (<http://www.epa.state.il.us/agriculture/waste.html>). Composting is not recommended for small volume or one-time disposal events.

## Concluding Thoughts

Pest management professionals have a variety of tools available for the management of human-bird conflicts. It is your responsibility to use the right combination of methods to achieve the needed results in a cost-effective and responsible manner.

## Additional Resources

<http://wildlifecontroltraining.com>

<http://icwdm.org/>

<http://wildlifecontrol.info>

[http://www.nwhc.usgs.gov/publications/field\\_manual/](http://www.nwhc.usgs.gov/publications/field_manual/)

# Module 5 – Legal and Ethical Aspects

In this module, you will learn about the federal and state laws and regulations that govern the management of birds. You also will consider ethical principles to guide your bird management activities.

## Learning Objectives

1. Describe the various federal laws and state regulations that govern the management of birds.
2. Describe under what circumstances permits are required to control birds and what reporting is required.
3. Consider the ethical principles to follow in your bird control work.

Management of vertebrates is governed by federal, state, and local laws and regulations. Only Congress or state legislatures can enact laws or statutes. Regulations are interpretations of the law written by agencies in the executive branches of federal and state governments. Ordinances are rules created by city or county governments.

The various layers of laws and regulations can be confusing. Consider that federal laws address national issues and tend to be less restrictive than state laws, which typically are less restrictive than city or county local ordinances. Also keep in mind that local ordinances can never be less restrictive than state laws and state laws can never be less restrictive than federal laws. In addition, landowners may further restrict the options available to use on their property (Figure 1).

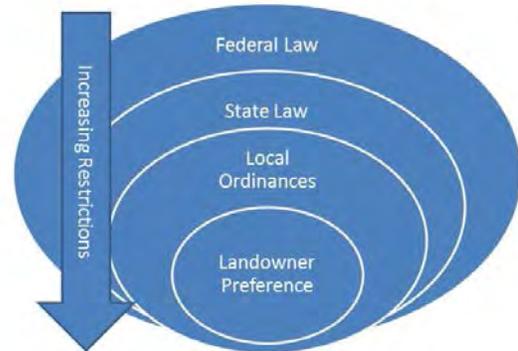


Figure 1. Legal restrictions tend to increase as you move from federal to local levels of government. Image by Stephen M. Vantassel.

All PMPs must pay careful attention to legal issues because several agencies govern the control of vertebrates. The Illinois Department of Public Health (IDPH) regulates commercial structural pest control businesses in Illinois. The US Environmental Protection Agency (EPA) oversees the use of pesticides for vertebrate pest control, and the US Fish and Wildlife Service (USFWS) has authority over issues that impact threatened, endangered, and migratory species of wildlife. In addition, a city council, township board, or county board can restrict methods used to control vertebrates within their jurisdictions.

The number of laws and regulations governing the control of vertebrates reflects the public's concern for the welfare of animals, a desire to reduce the risk of accidental poisonings, as well as the risk of disease and damage caused by birds. Certified applicators must understand current federal, state, and local regulations that affect the management of birds. Failure to comply can result in legal penalties, public outcry, and the loss of reputation and clients.

## Federal Laws

### Federal Insecticide, Fungicide, and Rodenticide Act

The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) enforced by the EPA (Figure 2) and state agencies, enables the regulation of pesticides (their use, handling, storage, transportation, sale, disposal, etc.). The EPA classifies products as “Restricted Use Pesticides” (RUPs) if they pose a higher risk to the public and the environment. Only certified applicators or people under their direct supervision can purchase and use RUPs. Pesticides not classified as RUPs are considered “General Use Pesticides” (GUPs). These pose less risk, and are available for purchase by the general public at hardware stores, garden centers, farm stores, supermarkets, and other stores.



Figure 2. The US Environmental Protection Agency regulates the use of pesticides in the US. Image by the US Government.

The FIFRA also stipulates that people who use pesticides in a manner “inconsistent with the pesticide labeling” are subject to penalties.

### Endangered Species Act

The Endangered Species Act (ESA) was established to protect threatened and endangered species of animals and plants. The USFWS administers the ESA and determines whether permits will be granted to harass, pursue, hunt, trap, collect, harm, kill, or otherwise “take” a threatened or endangered species (Figure 3). The ESA also requires the EPA to ensure that threatened or endangered species and their environments are protected from pesticides that would negatively impact them. The EPA fulfills this mandate by requiring each pesticide label to limit its use in areas where listed species could be harmed.



Figure 3. The US Fish and Wildlife Service protects migratory birds and endangered and threatened species in the US. Image by the US Government.

The state of Illinois also has endangered species regulations. These are enforced by the Illinois Department of Natural Resources, which requires permits (in addition to those required by the USFWS) to manage state threatened and endangered species, some of

which may not be federally listed as such. Threatened and endangered species are particularly vulnerable to the effects of pesticides. Proper use of pesticides significantly reduces the likelihood that non-target plants and animals will be adversely affected.

### **Federal Migratory Bird Treaty Act**

The Federal Migratory Bird Treaty Act (MBTA) is an agreement between Canada, Mexico, and the US to protect birds. All birds except resident species (e.g., quail, grouse, wild turkey) and non-native species (pigeons, house sparrows, and starlings), are protected from being harassed, captured, or otherwise taken (i.e. harmed or killed). The treaty is administered by the USFWS, which decides whether or not to grant Migratory Bird Depredation Permits (50 CFR 21.41). Permittees and sub-permittees are allowed to control migratory birds that are causing or about to cause serious damage to agricultural, horticultural, and aquaculture interests, or threatening human health and safety. The Act also specifies the manner by which the birds may be taken. A Depredation Permit application form can be obtained at <http://www.fws.gov/migratorybirds/mbpermits/ApplicationForms.html>.

One exception in the MBTA (50 CFR 21.43) is that “a federal permit shall not be required to control red-winged and Brewer’s blackbirds; cowbirds; all grackles; crows; and magpies when found committing or about to commit depredations upon ornamental or shade trees, agricultural crops, livestock, or wildlife, or when concentrated in such numbers and manner as to constitute a health hazard or other nuisance.”

In addition to the requirements of the MBTA, Illinois requires a Nuisance Bird Permit for the lethal control of all native migratory birds. A permit must be obtained from the Illinois DNR prior to the control of any federally protected species. County or local governments also may have additional restrictions on the control of birds. Always check with federal, state, and local authorities before attempting to control birds.

A second exception (Federal Register October 5, 2007; Vol. 72, number 193, page 56926-56929; 50 CFR Part 21 RIN 1018-AV10) allows individuals to rescue non-nesting birds (except threatened, endangered, and eagles) from inside buildings where they may be a threat to themselves, public health and safety, or commercial interests, without a permit. Rescued birds must be released immediately outside and be unharmed.

### **Illinois Regulations**

The Illinois Department of Public Health (IDPH) regulates structural pest control. The Department licenses all commercial structural pest control businesses and registers noncommercial businesses that will apply restricted use pesticides (RUPs). Employees of noncommercial facilities are required to be certified only if they will apply RUPs. Individuals are allowed to perform pest control, without compensation, on their own property or properties directly associated with their employer. One example is an apartment maintenance person who installs bird exclusion devices on the apartment building.

## Licensing Requirements

A permit (Class A, B or C) is required from the Illinois Department of Natural Resources to control of protected birds (regardless of whether pesticides are used).

All commercial structural pest control businesses, including businesses performing bird control (again even if using non-pesticide methods), must be licensed by the IDPH. Businesses also must employ at least one individual who is certified by the IDPH. Individuals can be minimally or fully certified. Minimally certified persons are those who pass the General Standards Examination (GSE) and satisfy all other certification requirements. Fully certified persons satisfy all certification requirements and pass the GSE and at least one subcategory examination, such as the Bird Control Examination (Subcategory C).

Note that a certified technician may be employed by more than one company at the same time, but he or she can only provide the required supervision of uncertified employees at one business location. Certification in Subcategory C is only required when RUPs are used for bird management. For persons using only general use pesticides and non-pesticide methods of bird management, certification is not required, as long as the business employs at least one certified technician to satisfy the business's license and supervision requirements.

If a certified technician has a change of home address or employment location, he or she must notify the IDPH in writing within 15 days of the change. The written notice should include the effective date of the change and

both the old and new home or employer addresses.

## Laws Regulating Pesticide Use for Birds

Working with the Illinois Departments of Agriculture and Public Health, the US Environmental Protection Agency (EPA) regulates pesticides under FIFRA, including pesticide use, pesticide business and applicator licensing and certification. To be used legally within Illinois, all pesticides must be registered with the EPA and by the Illinois Department of Agriculture.

The Occupational Safety and Health Administration (OSHA) uses the Occupational Safety and Health Act to ensure worker safety. This includes the Worker Right-to-Know Law requiring that employees receive training on the potential hazards they may encounter when working with pesticides. A Safety Data Sheet must be available for each pesticide that workers may use on the job for review by the workers.

The Environmental Protection Act (415 ILCS 5/14) generally prohibits structural pesticides from being stored within 400 feet of community water supplies and within 200 feet of non-community wells used for drinking water.

## Structural Pest Control Act and the Structural Pest Control Code

In addition to FIFRA, structural pest control technicians in Illinois must abide by the Structural Pest Control Act (ACT; 225 ILCS 235) and Structural Pest Control Code (CODE; 77 IAC 830).

The ACT defines structural pest control as follows, “Structural pest control means and includes the use of any device or the application of any substance to prevent, repel, mitigate, curb, control, or eradicate any structural pest in, on, under, or around a structure, or within a part of, or materials used in building, a structure; the use of any pesticide, including insecticides, fungicides and other wood treatment products, attractants, repellents, rodenticides, fumigants, or mechanical devices for preventing, controlling, eradicating, identifying, mitigating, diminishing, or curbing insects, vermin, rats, mice, or other pests in, on, under, or around a structure, or within a part of, or materials used in building, a structure; vault fumigation and fumigation of box cars, trucks, ships, airplanes, docks, warehouses, and common carriers or soliciting to perform any of the foregoing functions.”

The ACT indicates that even when methods not involving pesticides are being used in bird management, the work still is defined as structural pest control and subject to the same regulations that apply to people who perform, for example, insect or rodent control.

The CODE defines various administrative procedures, including how to apply for a commercial structural pest control license, noncommercial registration, examination and certification. The CODE also requires the certificates of technicians employed at a business location to be prominently displayed at the location along with the business’s license. The CODE defines how pest management seminars are approved by the Illinois Department of Public Health (IDPH) to

fulfill Integrated Pest Management (IPM) requirements and to offer continuing education credits for renewal of certifications, specifying under what conditions credits will be granted to certified technicians. The CODE also imposes requirements for service recordkeeping, and pesticide storage and handling. It also lists and classifies violations of the ACT and CODE, and defines penalties to be imposed on violators.

Illinois has other laws governing structural pest management and the use of pesticides. The Illinois Pesticide Act (415 ILCS 60) specifies pesticide label and registration requirements, requiring pesticides for use in Illinois to be registered with the Illinois Department of Agriculture, in addition to being registered by the EPA. Businesses that sell RUPs also are required to register with the Illinois Department of Agriculture, including licensed structural pest control businesses that intend to sell RUPs.

### **Illinois Administrative Code**

The Illinois Administrative Code (77 IAC 830.870, 29 IAC 430 and 29 IAC 620) requires that certain pesticide incidents, including spills, be reported to the Illinois Emergency Management Agency (IEMA), to the Local Emergency Planning Committee (LEPC), and/or to the Illinois Department of Public Health, depending on the type of incident and pesticide involved.

### **Certification Responsibilities**

Being a certified structural pest management technician comes with certain responsibilities. Responsibilities may include the training and supervision of technicians. Uncertified technicians require on-the-job training with a certified technician (CT). Before doing a

specific type of job without a CT present, an uncertified worker must be supervised on-site by the CT while performing the same type of job at two jobsites. An example would be where a bird repellent is used to repel birds from a building. The CT must advise and observe the uncertified technician apply the repellent to at least two different buildings. Only then is the uncertified technician permitted to apply repellent to buildings without a CT present.

After receiving the required on-the-job training, an uncertified individual still cannot work without supervision. Whenever an uncertified individual performs pest control without the CT present, the CT must ensure the uncertified person is able to:

- review the label of any pesticide used, and
- immediately contact (by radio or telephone) the CT at all times during the pesticide application, and
- if the need arises, have the CT at the job site within 1 hour of contacting the CT.

Even minimally certified technicians require supervision when they apply a RUP. The technician must be supervised in the same manner by a CT certified in the subcategory corresponding to the pesticide application being made. For example, a fellow employee who is certified in Bird Control (Subcategory C) must provide supervision as above to any uncertified or minimally certified individual who applies a RUP for bird control.

To qualify to take a subcategory examination and become fully certified, an individual must:

- pass the General Standards Examination,
- submit a completed application and fee, and
- arrange to take the exam at an approved date, time, and location.

In addition, the individual must have completed one of the following:

- at least 6 months of experience doing pest control of the type specified by the subcategory,
- the equivalent of at least 16 semester hours of college credit in a related field of study, or
- successfully completed a pest control course approved by the Illinois Department of Public Health.

Also among the responsibilities of some certified technicians is reviewing the service records completed by uncertified technicians. A service record includes required information about a pesticide service. Service records must be kept on file at the commercial business location for at least 2 years. Service records of GUP applications must be kept separate from records of RUP applications. Non-commercial business locations also are required to keep service records of their RUP applications for at least 2 years.

Service records must contain the following information:

- name and address of customer or application site,
- name of technician applying the pesticide,
- date and time of application,

- target pest or purpose of application,
- brand or common name of pesticide applied,
- EPA registration number of pesticide applied,
- percentage of active ingredient applied, and
- estimate of amount of pesticide applied.

The supervising CT must review the service records of jobs performed by uncertified technicians to ensure that label directions were followed and appropriate methods used. This review must be verified by the CT signing each paper record with his or her name and certification number. If only electronic service records are kept, the CT's review may be verified by other means.

Another responsibility of certification is to continue to learn about pest management. Certified technicians should continue to familiarize themselves with the regulations, especially the ACT and CODE, as these can change. Not only are CTs encouraged to continue learning, but to renew their certifications they are required to obtain classroom credits by attending pest management seminars.

Certification remains active for 3 years, expiring on December 31. It can be renewed by completing and submitting a renewal application to the Illinois Department of Public Health with the required fee by December 1 of the year the certification is to expire. The CT is required to have completed at least 9 classroom hours of training by the end of the 3-year period. Seminars approved for classroom hour credit are listed on the Illinois Department of Public Health's

Structural Pest Control Program website (<http://www.idph.state.il.us/envhealth/structuralpest.htm>). If a CT fails to renew certification within 1 year of its expiration, the individual must successfully re-examine and pay additional fees to continue his or her certified status.

State university extension agencies may assist in providing training for pesticide applicators.

## Concluding Thoughts

Certification as a bird management professional is more than obtaining an official piece of paper with your name on it. It shows you are interested in your profession and in learning to be a more capable pest management professional (PMP). Certification demonstrates that you take responsibility for your actions as well as the actions of any uncertified technicians you may train and supervise. Certification is not an ending but the beginning of the ongoing process of education and experience that makes a true PMP.

## Wildlife Control Ethics

Ethics are the principles that guide the way you perform your work. Your behavior flows from your moral value system. In short, every action exhibits ethical standards, but not every action represents commendable standards.

Your work with animals must follow the best ethical and humane practices because the public holds wildlife in high regard. Always consider how your actions affect the client and the animal. Many traditions teach that proper ethical behavior requires us to treat others the way we would like to be treated.

This requires you to look at the situation from the perspective of the client. Respect is the quality of treating people and things relative to their inherent value and dignity. Be empathetic and respectful of clients and you are likely to make correct decisions.

An empathetic attitude will help you navigate the emotionally charged nature of WDM. It is imperative to appreciate the wide range of attitudes and values that people show for wildlife. Some clients, even those suffering severe damage, will be conflicted about their attitudes toward offending animals. They want the animals eradicated but may feel guilty if animals are harmed.

## Nine Principles of Wildlife Damage Management

Ethical WDM professionals follow these nine principles:

1. Strictly follow all laws and regulations related to WDM.
2. Behave in a professional manner. Exemplify honesty, sincerity, and dedication.
3. Treat people, property, and wildlife with a great deal of respect.
4. Be sensitive to different viewpoints on WDM.
5. Promote competence and present an image worthy of the profession by supporting high standards of education, employment, and performance.
6. Treat other practitioners in a courteous and honorable manner.
7. Strive to broaden knowledge, skills, and abilities to advance the practice of wildlife damage management.
8. Attempt to resolve wildlife damage conflicts with the most humane, selective, practical, and effective management techniques available.
9. Encourage clients, coworkers, and others involved in the situation to do the same.

## Explanation of the Principles

1. Obey the law. Laws reflect societal standards for the treatment of wildlife. Failure to obey the letter and spirit of the law exhibits contempt for public values and exposes you to criminal and civil liability, including but not limited to, having a criminal record, incarceration, and economic loss from fines, penalties and lost business opportunities.
2. Behave professionally. Just because something is legal does not mean it is correct or advisable in all situations. Education, experience, and good judgment will help maintain high professional standards.
3. Treat clients and wildlife with respect. Behave in a manner that onlookers would agree is appropriate and fair. We recommend that PMPs act in a way that assumes their every action will be front page news or on video.
4. Be sensitive to other viewpoints. Do not argue with clients about wildlife control issues. Explain the law and try to fulfill client expectations as much as is legally and practically possible. Be discrete.
5. Develop your professionalism by improving both your image and the image of the industry. The day you think you know everything about WDM is the day you lose professionalism. Wildlife damage management is a complex process requiring knowledge of animal behavior,

equipment, construction, laws, and public relations. The profession is constantly changing.

6. Avoid the temptation to speak poorly of your competition. Instead of emphasizing what they do wrong, emphasize how your company does it right.
7. Your job is to control damage to a level that the client finds tolerable. Encourage clients to see the benefits of enacting long-term solutions, such as exclusion and habitat modification.
8. Use techniques that have the highest likelihood of catching target animals in the safest and most cost-effective manner.
9. Participate in trade associations and training opportunities and encourage others to employ the highest ethical standards in their bird management work.

### **Concluding Thoughts**

While many decisions are clearly right or wrong, many more depend on the situation. Reasonable people can disagree over specific courses of action, but always consider whether you can defend your decisions. If you will be ashamed if an action comes under scrutiny, then you should not do it. Always consider how your actions will affect the client, your employer, neighbors, on-lookers, the environment, and the animal being controlled. Sometimes no “perfect” options exist, but always choose the options with the fewest negative consequences. While your company wants to service client requests, sometimes those requests are unreasonable, dangerous, or illegal. In those situations, the ethical response is to walk away. Do not take money from a client when you do not

reasonably believe you can provide service that is correct and effective.

## **Additional Resources**

### **US Fish & Wildlife Service**

<http://www.fws.gov>

Migratory Bird Permit Office

5600 America Blvd. West Suite 990

Bloomington, MN 55437-1458

Email: [permitsR3MB@fws.gov](mailto:permitsR3MB@fws.gov)

<http://www.fws.gov/pacific/migratorybirds/Permits/dprd.html>

### **US Environmental Protection Agency**

<http://www.epa.gov>

Region 5

77 W. Jackson Blvd.

Chicago, IL 60604

312-353-2000

<http://www.epa.gov/lawsregs/index.html>

### **USDA-APHIS-Wildlife Services**

<http://www.aphis.usda.gov/wps/portal/aphis/oufocus/wildlifedamage>

### **Illinois Wildlife Services (USDA)**

3430 Constitution Drive, Suite 121

Springfield, IL 62711

217-241-6700

<http://wildlifecontroltraining.com>

<http://icwdm.org/>

<http://wildlifecontrol.info>

# Module 6 - Unprotected Birds

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Figure 1a. Male house sparrow (*Passer domesticus*).  
Photo by Stephen M. Vantassel.



Figure 1b. European starling (*Sturnus vulgaris*).  
Photo author unknown.

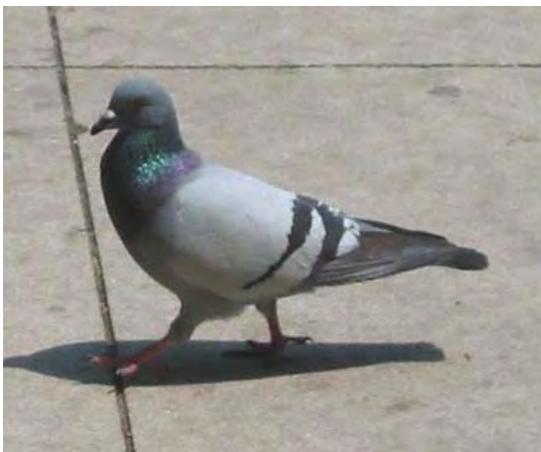


Figure 1c. Pigeon (*Columba livia*). Photo by Erin Bauer.

## Learning Objectives

1. Demonstrate an ability to educate clients about control options.
2. Provide a diagram of traps used to capture unprotected birds.
3. Identify risks involved with buildings infested with invasive birds.

## Overview of Damage Prevention and Control Methods

### Habitat Modification

- Remove bird feeders
- Discourage public feeding
- Eliminate standing water
- Cut down trees or trim up to 1/3 of the branches

### Exclusion

- Close external openings to buildings
- Screen eaves, vents, windows, doors, and other openings with ¼-inch mesh hardware cloth
- Exclude nesting sites with wire mesh or netting
- Ledge products - spikes, wire, coils, electric devices

### Frightening Devices

- Visual - Mylar-style tape, scary-eye balloons, effigies
- Audible - Propane cannons, distress calls, Long Range Acoustic Devices (LRAD)
- Chemical - Avitrol®
- Biological - Falconry (abatement or hazing)

## Repellents

- Pain - Methyl anthranilate
- Tactile - Polybutenes and capsaicin-based products

## Toxicants

- Starlicide™ Complete

## Shooting

- .177 or .22-caliber pellet guns
- .22-caliber rimfire rifle
- Shotgun with No. 7½ shot

## Trapping

- Multiple-capture cage traps
- Single-bird traps
- Cannon nets
- Handheld nets
- Mist netting

## Other Control Methods

- Remove nests
- Remove isolated birds in buildings
- OvoControl® P fertility control (for pigeons only)

## Species Profiles

### Identification

1. House sparrow (*Passer domesticus*)
2. European starling (*Sturnus vulgaris*)
3. Pigeon (*Columba livia*), also known as feral pigeon and rock dove

### Physical Description

This module describes the biology and control techniques for three species of birds that are not native to the US. As exotics, these three species are not protected by the North American Migratory Bird Treaty Act (MBTA).

State and local laws, however, may afford them some protection.

**House sparrows** are the smallest of the unprotected birds at about 6½ inches long and weighing less than an ounce (Figure 1a). Both genders are mostly brown with black streaks above and grayish below. Males have a black throat “bib” flanked by white spots. Immature male house sparrows look like females. Do not confuse house sparrows with native sparrows (i.e., chipping sparrow, grasshopper sparrow, song sparrow) that are beneficial and protected by federal and state regulations. Use a bird field guide for accurate identification.

**European starlings** are robin-sized, short-tailed black birds about 8½ inches long and weigh about 3 ounces. Plumage color changes with gender and season. In summer, adults are glossy black with light speckles (Figure 1b). In winter, birds have larger speckles, making them look browner from a distance. Female starlings typically have less color and more cream color on the tips of their feathers. The dark, pointed beak becomes bright yellow in spring. Both males and females have pinkish-red legs. Other native “black birds” inhabit the US (e.g., red-winged blackbird, yellow-headed blackbird) and are protected by federal and state regulations.

**Pigeons** are larger, at about 12 inches long and weighing 12 to 17 ounces. They typically are blue-gray with two black bands on the wings and one black band on the tail that contrasts with its white rump (Figure 1c). Colors range from all white to mottled brown to sooty black. Pigeons are larger than the tawny-brown mourning doves that are native to the US and protected by federal and state regulations and also found throughout much of the US.

## Species Ranges

All three species of unprotected birds are found wherever there are human-altered environments. All three are diurnal and comfortable around people, making their presence easy to detect.

## Voice and Sounds

Calls of sparrows are easily identified by a loud and repetitive *chirp*. Calls of starlings are quite diverse as they can mimic the sounds of other birds. Calls of pigeons consist of a soft throaty cooing.

## Tracks and Signs

Tracks of house sparrows, starlings, and pigeons vary considerably in size and shape (Figures 2a, b, c).

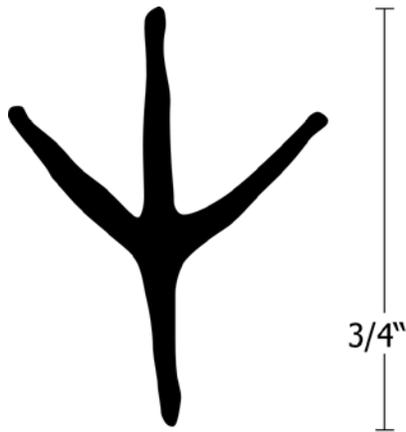


Figure 2a. Track of a house sparrow.  
Image by Dee Ebbeka.

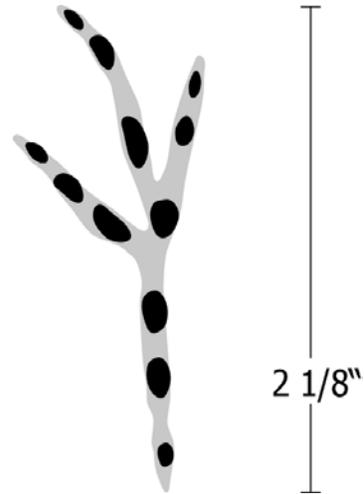


Figure 2b. Track of a starling. Image by Dee Ebbeka.

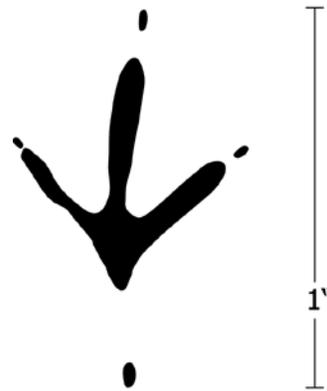


Figure 2c. Track of a pigeon. Image by Dee Ebbeka.

## General Biology

### Reproduction and Nesting

Nests of house sparrows are messy piles of grasses, string, paper, and twigs that fill a void or crevice where the nest is situated (Figure 3a).



Figure 3a. Nest of a house sparrow with male house sparrow standing by on the "S."  
Photo by Stephen M. Vantassel.

Females lay three to nine eggs in a single clutch and can repeat this up to two times a year beginning in early April.

Nests of European starlings are less conspicuous and usually associated with a cavity. Sometimes cavities inhabited by starlings can be identified by the fan-shaped spray of feces on the wall below the cavity. While preferring to construct nests in cavities, starlings, and sometimes house sparrows, have been known to construct very large nests that may fill a void (Figure 3b). Females starlings lay four to six eggs per clutch and may nest twice a year.



Figure 3b. Nest of a starling in an attic.  
Photo by Paul C. Hay.

Pigeons mate year-round, but most of the five to six broods per year are raised when temperatures are above freezing. Nests usually are found on sheltered ledges and consist of sticks and hardened feces (Figure 3c). Females usually lay two eggs per clutch but this can vary from one to three eggs.



Figure 3c. Nest of a pigeon with two eggs.  
Photo by Stephen M. Vantassel.

### Behavior

In winter, starlings form large flocks and cause problems with noise and droppings.

### Habitat

All three species are found in urban and rural areas.

### Food Habits

All three species prefer to eat grains, but each has its own alternative dietary preferences. Pigeons require access to water (approximately 1 ounce per day) and grit to help them grind their food for digestion. Starlings and house sparrows also use grit but do not require it as often when feeding on insects. Sparrows and starlings eat fruit, seeds, and suet. Both species increase consumption of insects during the nesting season.

### Legal Status

The Migratory Bird Treaty Act does not afford protection to these species but some states or communities restrict their control. Before initiating control, accurately identify the species, as they can be confused with protected species. We encourage refraining from novel methods that may impact non-target species.

## Damage Identification

### Damage to Structures

Bird droppings are noticeable as tell-tale white stains. Droppings are acidic and can deface and accelerate deterioration of buildings.

Accumulated droppings can plug gutters, cause water damage, and promote growth of disease organisms. The weight of droppings can collapse ceilings. Nests can obstruct exhaust vents and cause fires.

### Damage to Livestock and Pets

House sparrows and starlings compete with native birds for food and harborage and occasionally kill native birds. They consume livestock feed and contaminate it with feces, raising the risk of disease transmission.

### Damage to Landscapes

Starlings can damage turf when they are looking for insects. Sidewalks covered with droppings are aesthetically displeasing (Figure 4).



Figure 4. Droppings of starlings.  
Photo by Stephen M. Vantassel.

Starlings can damage cultivated fruits such as grapes, peaches, blueberries, strawberries, figs, apples, and cherries. They also damage ripening corn.

## Health and Safety Concerns

Droppings present the risk of disease transmission, as well as being unsightly. In particular, soils contaminated with droppings encourage the growth of the fungus responsible for causing histoplasmosis (see Module 3 for discussion of diseases). While bird droppings provide suitable conditions to grow the histoplasmosis fungus, the birds themselves do not appear to excrete the fungus (bat droppings, however, can host the fungus). Accumulated droppings may weaken bridges or other structures by their weight and acidic nature. Around airports, flocks of birds pose the threat of air-strike, impacting air safety.

All three species host infectious diseases, including some that can harm humans. House sparrows can carry salmonellosis, psittacosis, and various parasites. Starlings have transmitted encephalitis (through the mosquito vector) and ornithosis. Pigeons may spread Newcastle disease and cryptococcosis.

People can reduce their risk of infection by avoiding contaminated areas or by wearing proper protection during bird control and fecal cleanup. Visit <http://icwdm.org> for information on proper safety guidelines. Although rare, people in proximity to roosts can suffer bites from mites associated with birds.

## Nuisance Problems

Pigeons, starlings, and house sparrows are active during daylight and their presence often is noticeable and annoying to people. Besides problems with individual birds, large flocks of these birds raise the most concern in urban areas. Problems range from excessive noise to large quantities of excrement deposited on sidewalks, cars, and buildings. Pigeon excrement and nest debris on gas station

canopies can clog downspouts, leading to their collapse during rainfall. The acidic nature of bird droppings also degrades marble statues and building materials, potentially threatening structural integrity.

## Damage Prevention and Control Methods

### Integrated Pest Management

Successful management of bird damage usually involves an integrated approach, using a variety of cost-effective methods to reduce damage to a tolerable level. No single method is effective in every situation.

### Timing, Economics, and Methods

Any of the three bird species can be controlled when they become a problem and local laws allow. Avoid periods when flightless young may be present. As invasive species, these birds negatively impact native bird species through competition for habitat and resources. For example, house sparrows and starlings often destroy the nests of native bluebirds and occasionally kill the adults. Conversely, even pest birds perform valuable services in removing food waste and/or eating harmful insects. Birds also are beneficial in that many people enjoy feeding them, and some raise pigeons for fun, racing, and showing. Pigeons with leg bands should be considered personal property.

### Habitat Modification

Remove sources of food and water to reduce the attractiveness of the property to birds. Secure trash in covered containers to prevent birds from accessing waste food. Prohibit the feeding of birds on the property and encourage officials to enact local ordinances to ban feeding

of birds in public areas. Reduce the availability of free water by repairing leaky faucets, clearing drains, and grading surfaces to remove water. Ensure that water from air conditioners does not pool on roofs or the ground. Clean and position gutters to permit proper drainage.

Especially in the fall, birds are attracted to trees with dense leaf cover and large numbers of branches. Regular pruning of up to one-third of tree branches can discourage birds from using them as roost sites (Figure 5). Hire a certified arborist for pruning landscape trees. Contact an electric company if trees are near power lines.

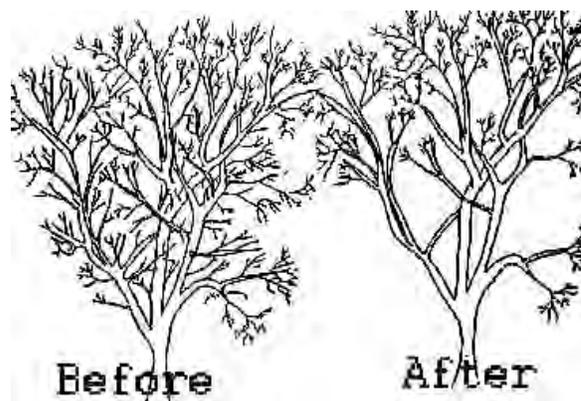


Figure 5. Prune branches to help reduce attractiveness of trees to birds. Image by Prevention and Control of Wildlife Damage (PCWD).

### Exclusion

Many devices are available to help prevent birds from perching and otherwise gaining access to structures. This section provides a brief description of the major categories.

**Nets** with ½-inch mesh will prevent birds from accessing a location. The use of nets is labor intensive, but often is the best way to exclude birds from rafters and building frontage that have too many ledges to be managed by ledge products (Figure 6a). Zippers allow nets to be

used in areas where access is needed, such as to doorways and lights.



Figure 6a. Netting used to exclude birds from a porch. Photo by Unknown.

**Ledge products** prevent birds from roosting on flat surfaces. The non-electric products include spikes (Figure 6b), wires, coils, 45° angle inserts, and specialty products.



Figure 6b. Nixalite® (bottom) and CatClaw® (top) are spiked products used to prevent bird roosting on ledges. Photo courtesy of University of Nebraska-Lincoln (UNL).

Electric shock products (Figure 6c) may be powered by solar chargers or electrical power supplies. When birds land they contact the electrical device and their feet complete the

connection, discharging a mild shock that causes them to flee.



Figure 6c. Bird Shock Flex Track®. Photo by Bird Barrier Inc.

### Frightening Devices

Several devices are available that use visual and/or audible stimuli to frighten birds.

Frightening is most effective when a variety of tactics are used before birds habituate to a site. Frightening rarely provides long-term reduction in damage, as birds often become acclimated to devices that do not change over time. Vary the timing, placement, and selection of frightening devices.

**Visual.** Place Mylar® tape (Figure 7), Mylar® balloons, scary-eye balloons, predator kites, and owl effigies in areas you want birds to avoid.



Figure 7. Mylar® tape used to frighten birds. Image by Paul D. Curtis.

**Audible.** Distress calls can frighten birds for short periods. Long Range Acoustic Devices (LRADs) project high-decibel sound up to 153 dB and out to 200 to 300 yards. The LRADs are useful for hazing birds from trees or surfaces. The farther animals are from the source of the sound, the lower the decibel level.

Avoid ultrasonic devices, as no reliable evidence indicates they are effective.

**Audio-Visual.** Shell crackers and other pyrotechnics are among the most effective of the devices. However, the explosive nature of these projectiles limits their use in urban areas. Always consult local authorities before using pyrotechnics.

**Chemical.** Avitrol® is a chemical frightening agent for birds. The active ingredient is 4-aminopyridine. Birds that eat treated pellets act erratically and emit distress signals, causing other birds to flee. Death often follows for birds that eat the treated bait. Due to the risk of Avitrol® to protected birds, only certified pesticide applicators can purchase and apply the product.

A series of procedures must be followed when using Avitrol®, including pre-baiting and

removal of bait if non-target birds are observed in the area. Do not use Avitrol® as a toxicant. The behavior of treated birds can be quite disturbing to onlookers, although research suggests that treated birds are not in physical pain. Nevertheless, applicators should choose locations, bait concentrations, and time treatments to reduce potential negative public reaction. Although the risk of secondary poisoning is quite low, dead birds should be picked up, placed in a plastic bag, and disposed of as regular waste. Avitrol® cannot be used in all areas, so check state and local pesticide regulations.

**Biological.** At harvest time, invading flocks of pest birds can decimate crops, especially grapes, blueberries, and cherries. Falconry can scare pest birds more effectively than shotguns, visual deterrents, or noisemakers. Raptors (Figure 8), for example, have been used to frighten birds from larger areas such as airports. This method is chemical-free and non-polluting. Unfortunately, perch poles and nest boxes to attract raptors have not been proven to be effective.



Figure 8. A captive bred Harris's hawk on patrol for pigeons at an apartment building. Photo by Michael Beran.

Birds of prey are effective in dispersing birds for short periods. Handlers of raptors must have proper permits to possess raptors.

## Repellents

**Pain-inducing:** Methyl anthranilate (MA) can disperse birds from large spaces such as warehouses when applied with a fogger. Methyl anthranilate is an oil-based chemical derived from grapes. It is believed to pose little risk to humans and has been used as a food additive and flavoring in processed foods for decades. It leaves a lingering grape odor. It irritates birds and, in sufficient concentrations, is effective in repelling all species of birds. It is most useful for dispersing birds roosting in trees and in confined areas, such as hangars, warehouses, and electrical substations. Use a thermal fogger to rapidly disperse birds roosting in trees and open areas. Use cold foggers and haze generators for long-term control inside buildings and areas where a buildup of methyl anthranilate on surfaces would present a hazard of slipping for employees.

**Tactile repellents** such as sticky gels can be used to prevent birds from perching on ledges and other horizontal surfaces. Beware when applying gels directly to surfaces, as they can be difficult to remove. Instead, cover surfaces with wood, plastic, or tape and apply gels on the temporary surface. Repellents that are protected from blowing dust and dirt maintain their repellency for a longer period. Follow product labels carefully as over-application can trap small birds that land on the gel. Even pigeons can be “grounded” if the gel gets into their flight feathers. Be sure non-target birds are not likely to come in contact with the repellent. Choose gels suitable for temperatures above 110°F when treating ledges exposed to sunlight.

## Toxicants

Starlicide™ Complete is an avicide for starling control. Treated birds experience kidney failure

and hypothermia; they usually die within one to three days after feeding at their evening roost. Due to the delay in mortality, the toxicant is metabolized and scavengers are unlikely to experience secondary poisoning. Even so, dead birds should be picked up at roost sites and disposed of properly to reduce negative public reaction. Dispose of birds by incineration or burial at least 2 feet underground and 200 feet from sources of water. Never place bait where non-target birds can feed on it. Only certified pesticide applicators can purchase and apply Starlicide™ Complete. A series of procedures must be followed when using the toxicant, including: 1) determine where birds are feeding, 2) pre-bait with seed or any type of starling food for four days, and 3) if non-target birds are not observed at the baiting site, switch the pre-bait with Starlicide™. After the birds have fed freely on Starlicide™, observe for two to three days to determine if the population has decreased. Carefully follow all label instructions when using any pesticide. Check state and local pesticide regulations, as Starlicide™ Complete cannot be used in all locations.

## Shooting

The number of unprotected birds causing problems can be reduced immediately through shooting. Use .177-caliber or .22-caliber rifles. Shoot at night, when the birds are roosting, as several birds can be shot before the remaining birds become startled and leave. Shotguns with No. 7½ shot are useful when controlling large flocks or when birds are in flight. Birds do not have to be shot at the site of the problem. Check local ordinances before shooting. Always follow shooting safety guidelines and regulations.

## Trapping

Traps (Figure 9a) provide an excellent form of control in situations where other methods are not feasible or there is risk of harm to protected species. Traps range from single-capture devices to multiple-catch traps capable of capturing dozens of birds. Place traps where birds can see them easily, such as rooftops and raised platforms. When trapping large flocks, improve success by leaving a few decoy birds inside multiple-catch traps to lure others. Provide food and water for decoy birds and protect them from the elements. Check traps daily.



Figure 9a. Traps for pigeons.  
Photo by Stephen M. Vantassel.

Use of nest-style traps (Figure 9b) can be effective for sparrows and starlings inside structures.

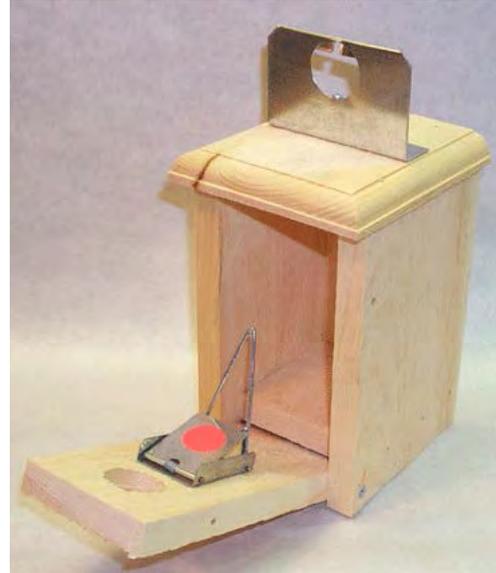


Figure 9b. Sparrow-trap bird house.  
Photo by Wildlife Control Supplies, LLC.

Cannon nets are used in open areas such as parking lots or fields to capture birds. Nets may be propelled by rockets or compressed air. Use hand-held nets propelled by compressed carbon dioxide to capture individual birds.

Mist nets are used to capture birds in flight. These nets are made with thin fibers and thus difficult for birds to see and avoid when suspended in their flight paths. Nets must be used with care to prevent harm to birds as they struggle against the net. Obtain appropriate training before using nets to capture nuisance birds.

## Handling

### Relocation

In rescue situations (e.g., from chimneys or basements), birds can be released on-site, provided the entrance has been secured, preventing reentry.

## Translocation

Translocation of pigeons is not recommended because of their homing ability. Pigeons can fly hundreds of miles to return to their original flock. Translocation of sparrows and starlings also is impractical and not recommended.

## Euthanasia

Carbon dioxide is the preferred method of euthanasia. All birds expire relatively quickly in a carbon dioxide environment. Cervical dislocation is another option for euthanasia by trained and experienced PMPs. Grasp the bird firmly in one arm. With the other hand, grasp its head between the thumb and index finger. Pull and twist in a quick jerk to break the neck. Details on euthanasia can be found at <http://icwdm.org>.

## Disposal

Consult Module 4 and Illinois regulations regarding disposal of carcasses.

## Other Control Methods

### Nest and Egg Removal

The nests of house sparrows and pigeons are conspicuous, and often can be removed easily to reduce reproduction of these problem species. Nests of starlings typically are in cavities and are much less obvious. The nests, eggs, young, and adults of these species are not protected by federal law.

Use a ladder or long pole with a hook at the end to reach nests that are high off the ground. Always use caution when setting and climbing ladders and reaching for nests, especially in the vicinity of overhead wires. To avoid contact with nest parasites, use gloves and place nesting material and eggs in plastic bags for

disposal. If young chicks are present, quickly euthanize them with carbon dioxide or cervical dislocation. Most pest birds are quick to rebuild nests, often in the same location, so block access to the nest site or be persistent and prepared to remove nests and eggs repeatedly from spring through fall.

While the presence of hawks or falcons can immediately disperse birds, long-term control can only be achieved by regular visits by a falconer. Abatement falconry consists of a traditional falconer using specific falconry techniques for the purpose of pest management. Unlike raptors trained for sport or hunting, abatement raptors are trained to haze instead of kill birds. This method can be expensive due to repeated site visits, and few falconers possess birds trained for pest management.

## Removal of Lone Bird in Structure

Birds sometimes enter buildings and are unable or unwilling to leave. These situations can be quite difficult to resolve, particularly when in a public place such as a large retail store or supermarket. If possible, restrict the area where the bird can fly. Birds tend to fly toward light, so darken the area (except for the exit) to encourage a bird to fly in the right direction. The use of hand nets may work, but the bird is often able to evade them. Mist nests can be very effective but require regular monitoring to prevent bird deaths. In some circumstances, trapping or shooting may be the only viable options.

## Fertility Control

OvoControl® P is an oral fertility control agent that prevents pigeon eggs from hatching,

thereby interrupting the reproductive cycle. Female pigeons that consume  $\frac{1}{5}$  ounce of bait per day are effectively sterilized as long as they continue feeding on the product. Populations treated with OvoControl® P may decline significantly. Labor costs can be reduced by installing low-cost, automatic feeders. Fertility control should be considered only in situations that do not require an immediate and substantial reduction in the number of pigeons. Large sites with multiple structures and high

concentrations of pigeons generally are the best candidates. OvoControl® P can be combined with trapping and shooting to expedite population reduction.

### **Additional Resources**

<http://wildlifecontroltraining.com>

<http://icwdm.org/>

<http://wildlifecontrol.info>

# Module 7 - Blackbirds

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Figure 1. Male red-winged blackbird (*Agelaius phoeniceus*).  
Photo courtesy of University of Nebraska-Lincoln (UNL).

## Learning Objectives

1. Identify damage caused by blackbirds.
2. Explain options for the control of blackbirds to clients.

## Overview of Damage Prevention and Control Methods

### Habitat Modification

- Remove or reduce density of cattails
- Cut or thin roost trees

### Exclusion

- Install ½-inch netting over sensitive crops

### Frightening Devices

- Visual - Mylar® tape and balloons
- Audible - Propane cannons, shooting, Long Range Acoustic Devices (LRADs), and distress calls
- Audio-Visual - Pyrotechnics
- Chemical - Avitrol®

### Repellents

- Methyl anthranilate and FeatherDuster

### Toxicants

- DRC-1339 (federal use only)

### Shooting

- .22-caliber or air rifle
- 12-gauge shotgun

### Trapping

- Rocket or cannon netting over bait
- Funnel trap over nests with eggs
- Spotlight and net by hand at night

### Other Control Methods

- Promoting predators is not recommended

## Species Profile

### Identification

The term *blackbird* loosely refers to a diverse group of about 10 species of North American birds of the subfamily Icterinae. In addition to blackbirds, the subfamily includes orioles, meadowlarks, and bobolinks.

This module focuses on the red-winged blackbird (*Agelaius phoeniceus*), the most common blackbird. The red-winged black bird is a little smaller than a robin. The male typically is black with red and yellow shoulder patches (Figure 1), but sometimes the yellow patch is lacking. The female is smaller and brownish with thick black stripes across the length of the body. The female often resembles a large sparrow.

## Physical Description

The various species of blackbirds have several traits in common. Males are predominantly black or iridescent. Females are plain and predominantly brown and tan. All have short beaks. Overall body length varies from 7½ inches for the brown-headed cowbird (*Molothrus ater*) to 18 inches for the great-tailed grackle (*Quiscalus mexicanus*). Red-winged blackbirds have an average length of 8¾ inches and weigh less than 2 ounces.

## Species Range

An abundant nester throughout most of North America, the red-winged blackbird nests in hayfields, marshes, and ditches. Large flocks feed in fields and bottomlands. Red-winged blackbirds winter in the southern US.

## Voice and Sounds

All blackbirds have a variety of calls. In flight, the red-winged blackbird utters a *kek* or *chek*. Its alarm call is a high pitched *teeew* or *zeeer* that descends in pitch.

## Tracks and Signs

Red-winged blackbirds have three toes facing forward and one facing rear (Figure 2). This anatomical design allows it to perch on branches and stalks.

Red-winged blackbirds, like all blackbirds, are active throughout the day and readily noticed due to their flocking behavior.

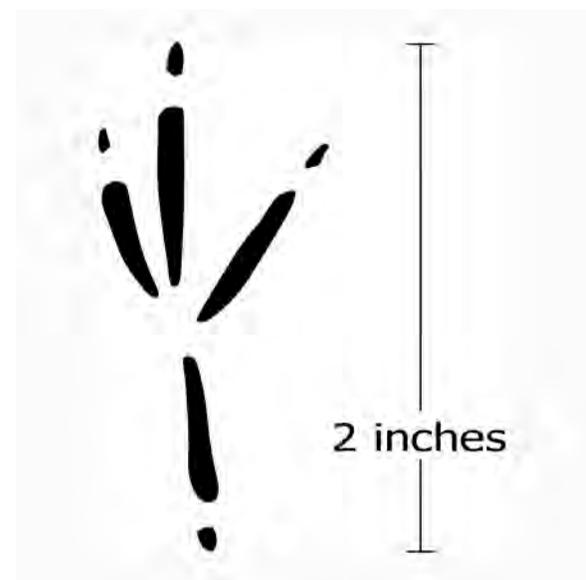


Figure 2. Track of a red-winged blackbird. Image by Dee Ebbeka.

## General Biology

### Reproduction

Females have one to six eggs in their open-cup nests made of grasses and other vegetation. Eggs hatch after 12 days of incubation. The chicks grow rapidly and fledge about 11 days later. Females often re-nest if their initial nest is destroyed. Annual survival rate is only about 50% to 60%. Despite this high mortality rate, two to four young are fledged per female per year.

### Nesting Cover

Red-winged blackbird nest in hayfields, marshes, and ditches. Large flocks feed in fields and bottomlands. Nests are attached to several vertical stems about 6 feet off the ground.

### Behavior

Male red-winged blackbirds are territorial and promiscuous, capable of mating with many females. Except during nesting season, May through July, red-winged blackbirds congregate in large night-time roosts in marshes or woods.

Outside the nesting season, blackbirds generally feed and roost in flocks from a few birds to over a million. Their flocks and roosting congregations sometimes are comprised of a single species, but often several species flock together. Sometimes they are joined by non-blackbird species, notably European starlings (*Sturnus vulgaris*) and American robins (*Turdus migratorius*).

## Habitat

Red-winged blackbirds prefer to nest in cattails over shallow wetlands. They frequent sedge meadows, alfalfa fields, and even wooded areas.

## Food Habits

All blackbirds have an omnivorous diet consisting primarily of grains, weed seeds, fruits, and insects. The relative proportions of these food groups, however, vary considerably among species (Table 1). Insects are the dominant food during the nesting season. Research shows that red-winged blackbirds enter woods to feed on cicadas when available. Their diet shifts predominantly to grain and weed seeds in late summer through winter.

Red-winged blackbird males and females often forage in separate flocks, with females being more insectivorous than males.

## Legal Status

Blackbirds are native migratory birds, and thus come under the jurisdiction of the Federal Migratory Bird Treaty Act. Although blackbirds have federal protection, the government has made an exception for them due to the extensive damage they cause to crops.

Federal and Illinois regulation (50 CFR 21.14) does not require a permit to control these

“blackbird” species: Brewer's blackbird (*Euphagus cyanocephalus*), red-winged blackbird (*Agelaius phoeniceus*), cowbirds (*Molothrus* spp.), grackles (*Quiscalus* spp.), and crows (*Corvus* spp.) – if *all* of the following conditions are met.

- Birds must be committing or about to commit depredation on crops, trees, ornamentals, livestock, or wildlife, or pose a health hazard or other nuisance.
- Non-lethal methods are used before implementing lethal control methods.
- Shooters must use nontoxic shot except in air guns or .22-caliber rimfire guns.
- Allow federal, state, tribal, or territorial law enforcement officers unrestricted access to the areas where depredation control work was performed during reasonable hours.
- Birds must be killed in a manner permitted by state and local regulations.
- Any applicable permits must be obtained to perform depredation control work.
- You may not sell or offer to sell any bird or bird parts under this exemption.

(Continued on page 70)

**Table 1. Characteristics of Common Blackbirds.**

Image	Name	Physical Description	Feeding & Habitat	Damage to Crops
	<b>Brewer's blackbird</b> ( <i>Euphagus cyanocephalus</i> ) Photo by Dave Menke.	Length 9 in Wt 2¼ oz Males > Females	Consumes large numbers of harmful insects during the summer months. Flocks feed in pastures and feedlots, and often are associated with livestock.	Cause generally minor damage to oats, fruit crops, and livestock feed.
	<b>Brown-headed cowbird</b> ( <i>Molothrus ater</i> ) Photo by Alan D. Wilson.	Length 7½ in Wt 1½ oz Males > Females Smallest blackbird	Eats weed seeds and grains. Insects are < 25% of diet. Cowbirds do not build nests or incubate eggs; the female lays her eggs in nests of other songbirds, the only North American songbird to do so.	Damages ripening sorghum, sunflower, and millet. Will consume some livestock feed, but often gleans waste grain and seed from dung.
	<b>Common grackle</b> ( <i>Quiscalus quiscula</i> ) Photo by Thomas G. Barnes.	Length 12½ in Wt 4 oz Males > Females	Feeds on acorns, insects, frogs, fish, and seeds. Prefers fields, lawns, woodlots, and bottomlands. May roost with red-winged blackbirds.	Similar to damage by redwings; but will feed on corn in the dent stage, removing entire kernels. Also, grackles will pull up sprouting corn.
	<b>Great-tailed grackle</b> ( <i>Quiscalus mexicanus</i> ) Photo by John and Karen Hollingsworth.	Length 15-18 in Wt 3½ -7oz Males > Females Similar to common grackle but larger	Omnivorous: insects, aquatic organisms, eggs from nesting birds, fruits, and grains on farms, pastures, and parks. Nests in colonies in shrubs or trees, sometimes in association with herons and egrets.	Damages fruits and melons, although the loss is generally minor. They will peck citrus fruit skin, creating blemishes or holes.
	<b>Rusty blackbird</b> ( <i>Euphagus carolinus</i> ) Photo by Dave Menke.	Length 9 in Wt 2 oz Males > Females Similar to Brewer's blackbird.	More insectivorous than other blackbirds. Over 50% of their food is animal matter. Grain (gleaned from harvested fields), weed seeds, and tree fruits also are eaten. They prefer swampy areas and river bottoms.	This species does little damage to crops.  A specific depredation permit is required to take Rusty blackbirds.
	<b>Yellow-headed blackbird*</b> ( <i>Xanthocephalus xanthocephalus</i> ) Photo by Dave Menke.	Length 9½ in Wt 2¼ oz Males > Females Robin-sized bird	They feed in agricultural fields, meadows, and pastures during late summer and fall, sometimes in association with redwings or other blackbirds. Nests in deep-water marshes.	Cause generally minor damage to ripening corn, sunflower, and oats, often in association with redwings.

\*The yellow-headed blackbird is an endangered species in Illinois. Control requires a permit from the Illinois Department of Natural Resources.

- Submit an annual report of activities under this section to the USFWS Migratory Bird Regional Permit Office, 5600 America Blvd. West Suite 990 Bloomington, MN 55437-1458. Tel. (612) 713-5436 Fax (612) 713-5393, Email [permitsR3MB@fws.gov](mailto:permitsR3MB@fws.gov) by January 31 of the following year. The report must include the following information: (1) your name, address, phone number, and e-mail address; (2) the species and number of birds taken; (3) the months in which the birds were taken; (4) the State(s) and county(ies) in which birds were taken; and (5) the general purpose for which birds were taken (such as for protection of agriculture, human health and safety, property, or natural resources).

## Damage Identification

### Damage to Crops

Blackbird damage to crops can be considerable. Red-winged blackbirds damage ripening corn, sunflower, sorghum, and oats in the milk and dough stages, and to sprouting and ripening rice. These birds provide some benefits by feeding on harmful insects, such as rootworm beetles and corn earworms, and on weed seeds, such as Johnson grass.

Blackbird damage to agricultural crops often is readily identified because of the conspicuous flocks of birds and visible signs of damage. Correct identification of the species of birds in the agricultural field is important, along with evidence that birds are feeding on the crop. For example, starlings superficially resemble blackbirds and sometimes feed in cornfields, yet

they usually feed on concentrations of insects such as armyworms, doing little damage to corn. Red-winged blackbirds often are attracted to agricultural fields, such as corn, initially to feed on rootworm beetles and other insect pests. They will not damage the crop itself until the grain has reached the milk stage.

Blackbirds often forage in newly planted grain fields such as winter wheat, feeding on previous crop residue, weed seeds, and insects without bothering the sprouting grain.

Blackbird damage to corn sometimes is confused with losses caused by raccoons and squirrels. Typically, a corn cob damaged by birds resembles an exploded “firecracker” (Figure 3).



Figure 3. Corn cob damaged by birds. Photo by Stephen M. Vantassel.

Corn stalks remain intact, in contrast to raccoons that pull the stalk down to feed. Birds also puncture the kernels where other animals tend to remove kernels by scraping or biting (Figure 4). In sunflowers, distinguish seed shatter due to wind from bird damage by examining heads for the presence or absence of bird droppings and by looking on the ground for hulls or whole seeds. Careful observation of the birds in the field and a little detective work

usually results in correct identification of the source of damage.



Figure 4. Kernels punctured by blackbirds. Photo by USDA-National Wildlife Research Center (NWRC).

## Health and Safety

Blackbird roosting behavior can enrich soils, making them fertile areas for growth of the fungus that causes histoplasmosis. Flocks near airports can pose air-strike hazards. When roosting in urban areas, blackbird calls can disturb and annoy nearby residents.

## Damage Prevention and Control Methods

### Integrated Pest Management

Use a variety of methods to resolve human-bird conflicts. Rarely will one method consistently provide satisfactory results.

### Timing, Economics, and Methods

Control blackbirds as soon as they become a problem. Failure to act quickly can increase the likelihood that birds will habituate to the site, cause more damage, and become more difficult to evict. Do not employ management activities near active nesting sites.

## Habitat Modification

Thinning cattail stands decreases blackbird roosts in the marsh and increases use by waterfowl for nesting and other activities. Reduce the number of cattails by physically digging up plants or by cutting new growth that emerges above the water surface. Physical removal requires persistent effort to achieve success. Some herbicides are labeled for the control of cattails. As with all pesticides, be sure to follow the label carefully to protect people, property, and the environment, as well as to increase the likelihood of success.

Remove trees or thin branches to eliminate roosting sites for blackbirds. Roost management is particularly important near areas where histoplasmosis can threaten public health.

## Exclusion

Structures can be protected by exclusion devices such as nets, bird spikes, metal flashing, and lines that prevent access by blackbirds. Use lightweight nets or hardware cloth (½-inch weave) to exclude birds from access points, shelves, ledges, and other roosting areas. Place spikes and lines on ledges that are regularly used by blackbirds.

Exclusion of blackbirds is practical for small gardens, experimental plots, and high-value fruit crops. Use lightweight nets (½-inch weave) to cover trees, bushes, or small plots. Ensure several inches of space between the net and plants, to prevent birds from feeding through the net. Protect individual ears of sweet corn in garden plots by placing paper bags over them after silks have turned brown.

## Frightening Devices

The use of frightening devices can be quite effective in dispersing roosts near structures and protecting crops from flocks of blackbirds provided the landowner responds quickly, is persistent, and employs several devices. Use devices in the evening prior to the arrival of blackbirds at roosting sites and in early morning or late afternoon when birds are actively feeding.

Be sure to evaluate whether the technique(s) will disturb or threaten neighbors. Many frightening devices must be used repeatedly over consecutive days to achieve desired results.

**Visual.** Various visual frightening devices have been shown to be somewhat effective on blackbirds. Devices include reflecting tapes made of Mylar®, balloons with large eyes tethered in use areas (Figure 5), and various types of scarecrows. The effectiveness of these devices is highly variable, depending on the persistence of the operator and skill in using the device, the attractiveness of the site, the number of birds, and the availability of alternate use sites.



Figure 5. Scary-Eye Balloon. Photo by Stephen M. Vantassel.

Preliminary research has shown that lasers (both red and green) are not effective in dispersing blackbirds.

**Audible.** Propane exploders (some with timers that automatically turn them on and off each day; Figure 6) are the most popular frightening devices. In general, use at least one exploder for every 10 acres to be protected. Elevate exploders on a barrel, stand, or truck bed to “shoot” over the area, and move them around the area every few days. In addition, reinforce this technique occasionally with other frightening devices.



Figure 6. Propane cannon. Photo by Stephen M. Vantassel.

Discharge of firearms, such as a .22-caliber rifle just over the top of an area can frighten birds from areas of 40 acres or more. Obviously, care must be taken when shooting in this manner, and the use of limited range cartridges is recommended.

Long Range Acoustical Devices (LRADs) emit sound in a highly concentrated fashion so decibel levels remain high even hundreds of yards away from the device. Unlike other audible devices, only those in or near the cone of sound hear the loud noise (Figure 7). The noise disperses birds within range.



Figure 7. HyperSpike® Micro. Photo by Stephen M. Vantassel.

Broadcast of recorded alarm or distress calls have been successful at dispersing roosts of blackbirds.

**Audio-Visual.** Pyrotechnics, such as shell crackers or screamers, are effective in dispersing birds. Follow all safety guidelines for use and be sure to wear eye and hearing protection. Avoid using pyrotechnics in areas where fire hazard is high.

Remote controlled model planes, helicopters, and drones may be useful for dispersing blackbirds. Operators must be skilled at handling aircraft to avoid damage to people, property, and birds.

**Chemical.** Avitrol® is a restricted use pesticide (RUP) registered as a chemical frightening agent for birds including blackbirds. Blackbirds that consume treated bait display distress behaviors that frighten fellow birds. Applicators must survey potential treatment sites to determine the number of birds and the species present. When possible, select sites away from public scrutiny.

Pre-bait selected sites to habituate the birds to feed. Small piles of bait (of about 1 foot diameter) scattered around the area are

preferable to one large pile. Stop pre-baiting in areas used by non-target birds. When target birds take the pre-bait consistently and fair weather is expected, apply the treated bait. Minimum dilution is one part treated grain to nine parts untreated grain (1:9). To increase safety, try to use the more dilute mixtures, such as one part treated bait to twelve parts untreated grain (1:12). Public scrutiny usually occurs when PMPs attempt to use Avitrol as an avicide rather than as a frightening method.

Monitor treated bait to ensure non-target birds do not feed on it. Collect and properly dispose of dead birds. Remove toxic bait following treatment.

## Repellents

**Pain.** Methyl anthranilate is an active ingredient derived from grapes that irritates the trigeminal nerves of birds exposed to it. The chemical may be dispersed as a fog (Figure 8) to move flocks or sprayed on crops, fruits, and turf or surfaces to prevent feeding and roosting respectively. Repeated applications may be necessary to convince birds to leave.



Figure 8. Thermal fogger. Photo by Stephen M. Vantassel.

FeatherDuster is the trade name for a repellent labeled for use on agricultural crops and commodities and non-crop sites (turf, landfills, and ornamentals). The active ingredients

consist of a mixture of several natural oils including garlic oil. It is sprayed on maturing grain, sunflower, or fruit crops. Research has shown that when the entire seed was coated with 2 percent garlic oil, feeding by blackbirds decreased by 80 percent. It is unlikely, however, that full coverage of seeds can be achieved in the field.

Apply all repellents according to label directions. The registration status of these products changes continually, so check with county extension agents or USDA-APHIS-Wildlife Services (WS) biologists for products currently registered.

### Toxicants

Starlicide is a registered toxicant for blackbirds and starlings in livestock feedlot situations. The active ingredient, 3-chloro-*p*-toluidine hydrochloride, is incorporated into pelletized bait at a concentration of 0.1% and sold commercially under the trade name Starlicide™ Complete. Starlicide Technical® (98% active ingredient), which can be custom-mixed with livestock feed or other bait material, also is available through the USDA Wildlife Services Program. Starlicide Technical® can be used only by or under supervision of USDA employees.

Starlicide is a slow-acting toxicant; birds usually die 1 to 3 days after feeding. Baiting programs are most successful in winter, especially with snow cover present, when alternate foods are scarce. A successful program generally requires a period of pre-baiting with nontoxic bait to condition blackbirds and starlings to feed at specific bait sites inaccessible to livestock in the feedlot. Monitor feeding sites to ensure that non-target birds such as doves, song birds, and domestic fowl do not feed on treated bait sites.

### Shooting

Shooting with a .22-caliber or air rifle is effective in removing small numbers of blackbirds.

Shooting birds with a shotgun can kill a few birds but is not as effective in moving birds compared to other frightening devices with greater range. A “shotgun patrol” should not be used as the sole means of frightening birds. When using shotguns, use Nos. 5 or 6 non-toxic shot.

### Trapping

Certain species of blackbirds, particularly red-winged blackbirds, brown-headed cowbirds, common grackles and starlings often can be readily caught in decoy traps. Consult a state wildlife official, such as a conservation officer or game warden, before putting a decoy trap into operation. A decoy trap is a large (for instance, 20 x 20 x 6 feet) poultry wire or net enclosure containing numerous decoy birds, food, and water (Figure 9). Birds enter the trap through an opening (often 2 x 4 feet in the top of the cage that is covered with 2- x 4-inch welded wire mesh. The blackbirds can fold their wings and readily drop through the openings to the food (generally cracked corn, millet, or sunflower seeds). A small (for example, 2 x 2 x 3 feet) gathering cage with a sliding door attached to an opening at an upper corner of the trap can be used to collect trapped birds. A corralling baffle running about two-thirds the length of the trap can aid in driving the birds into the gathering cage.



Figure 9. Decoy trap. Photo by USDA NWRC.

A decoy trap often catches 10 to 50 blackbirds and starlings per day and occasionally up to 300 when located near a large roost. The decoy trap is of questionable value in trying to reduce large roosting populations. They can, however, be used to temporarily reduce local populations of blackbirds in special situations. Decoy traps have been used to reduce cowbird populations to protect the Kirtland's warbler (*Dendroica kirtlandii*), an endangered species whose nests often are parasitized by cowbirds. Decoy traps also may be successful in reducing localized bird populations around feedlots and fruit crops.

Any non-target songbird accidentally captured in decoy traps should be released immediately. Blackbirds to be disposed of should be killed humanely. They can be transferred from the gathering cage to a cardboard box or canvas-covered cage and humanely euthanized with carbon dioxide. All dead birds should be examined for bands, and any bands found should be reported to the United States Geological Service (<https://www/pwrc.usgs.gov/BBL/bblretrv/>). One option for disposal that should not be overlooked is culinary use. Blackbirds, being primarily grain eaters, make good food for humans! Recipes for quail or dove also work for blackbird meat.

## Shooting

Shooting blackbirds is most effective when used occasionally to supplement or reinforce frightening devices. By itself, shooting is not cost-effective for frightening blackbirds from large fields, and is totally ineffective as a means of reducing populations. Pellet rifles or .22-caliber rifles are effective in eliminating small numbers of birds. Follow all state and local rules governing the use of firearms and operate with safety in mind. Examine killed birds for bands.

## Other Control Methods

### Biological Control

Researchers have found that active predators, such as raccoons (*Procyon lotor*), snakes, skunks (*Mephitis mephitis*), and mink (*Mustela vison*), can cause 50% of red-winged blackbird nests to fail. Despite these high losses, however, the bird's high reproductive rate makes it unlikely that an increase in predator numbers will have a noticeable effect.

## Economics of Damage and Control

Surveys have shown that blackbird damage to crops such as corn, rice, and sunflower is limited to 1 to 2% of the total value of the crop. Damage, however, is not equally distributed and a few farms receive significant levels of damage.

## Additional Resources

<http://wildlifecontroltraining.com>

<http://icwdm.org/>

<http://wildlifecontrol.info>

# Module 8 - Canada Goose

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Figure 1. Canada goose (*Branta canadensis*).  
Photo by Stephen M. Vantassel.

## Learning Objectives

1. Understand key elements about the biology of Canada geese important for their control.
2. Understand options for control of Canada geese to clients.

## Overview of Damage Prevention and Control Methods

### Habitat Modification

- Plant trees to interfere with flight lines
- Allow grass to grow tall, avoid fertilizing
- Eliminate public feeding of geese
- Create vegetative or stone barriers near water
- Plant fescue-type grasses

### Exclusion

- Grid wires
- Fences, non-electric and electric

### Frightening Devices

- Visual - Effigies, flags, balloons, Mylar® tape, and lasers
- Audible - Propane cannons and Long Range Acoustic Devices (LRADs)
- Audio-Visual - pyrotechnics and remote controlled boats or aircraft
- Biological - Bio-acoustic alarm and distress calls, and herding dogs

### Repellents

- Pain-inducing - Methyl anthranilate
- Aversive conditioning - Anthraquinone

### Toxicants

- None registered

### Shooting

- Hunting through regular, depredation, and resident Canada goose seasons
- Sharpshooting with shotguns, suppressors, Metrobarrels, and subsonic rounds

### Trapping

- Netting
- Roundups

### Other Control Methods

- Nest control
- Egg-addling, oiling, and puncturing

## Species Profile

### Identification

Canada geese (*Branta canadensis*, Figure 1) are a valuable natural resource that provide recreation and enjoyment to bird watchers, hunters, and the general public. The “V” formation of a flock of flying Canada geese is a sign of the changing seasons. Geese that

migrate do not necessarily cause damage. In this module we refer mostly to flocks of “resident” geese, non-migratory geese that inhabit an area throughout the year.

### Physical Description

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

### Species Range

Canada geese live throughout the US. In the summer, migratory geese fly north to nest in the potholes of North and South Dakota, as well as Canada and Alaska. Canada geese inhabit the rest of the US throughout the year.

### Voice and Sounds

Canada geese communicate through body language, calls, and honking.

### Tracks and Signs

The droppings of Canada geese usually are tubular, and green when geese are eating grasses (Figure 2).



Figure 2. Fresh dropping of a Canada goose. Photo by Stephen M. Vantassel.

Tracks are easy to find in mud, sand, and soft soils (Figure 3).

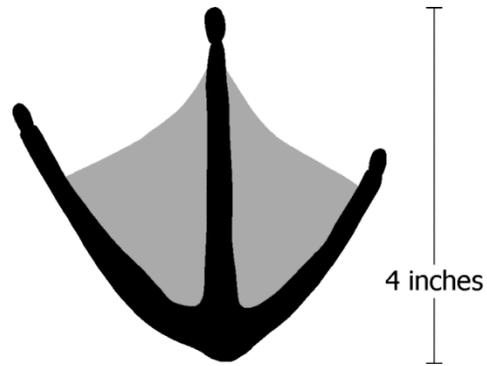


Figure 3. Track of a Canada goose. Image by Dee Ebbeka

### General Biology

#### Reproduction

Canada geese form life-long pair bonds, but if a member of a pair dies, the survivor will find another mate. Families migrate together, stay together in the winter, and return to the same area for nesting each year.

The annual life cycle of a goose begins in late winter when adult pairs return to nest areas in February or March, or as soon as ice melts. Five to six eggs are laid during 1 to 2 weeks and incubated for 4 weeks in March or April. Eggs hatch in late April or early May, depending on 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: within 24 hours, hatchlings are able to swim. Geese hatch with their eyes open, are covered in down, and can move about freely. In contrast, altricial birds (e.g., robins) are born helpless and need parental support.

Geese aggressively defend their nests and may attack if approached. Geese that are not

breeding often remain nearby in large feeding flocks during the nesting season. 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.

### **Nesting Cover**

Canada geese build nests of twigs, grass, bark, leaves, and moss on the ground near water. Islands are preferred. In 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 nest atop muskrat houses.

### **Behavior**

Canada geese undergo an annual molt, a four-to five-week period after nesting when they shed and regrow their outer wing feathers. Birds cannot fly when they are molting. The flightless period occurs from mid-June through late July, and the birds resume flight by August. During the molt, geese congregate at ponds or lakes that provide a safe place to rest, feed, and escape danger. Serious 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.

Resident Canada geese spend most of their lives in relatively small areas, although some travel hundreds of miles to areas for molting or to overwinter. 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 eliminate once they become settled in an area. In addition, geese disperse from areas of higher concentration to areas of lower concentration. Removal of geese from a particular pond will not guarantee that geese will not inhabit the pond during the same season or the following year.

### **Habitat**

Canada geese prefer habitats with standing water with temperatures less than 50° F, and low sloping banks with short grass for foraging.

### **Food Habits**

Canada geese are herbivores that feed during early morning and late afternoon. They eat a variety of terrestrial and aquatic plants, grasses, and occasionally agricultural crops such as corn, soybeans, and wheat.

### **Legal Status**

All Canada geese, including residents, 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. Contact the Illinois Department of Natural Resources for more detailed information.

### **Damage Identification**

Damage caused by Canada geese often is very apparent. Look for over-grazed lawns and accumulations of droppings and feathers on walkways. High numbers of geese can be seen, honking often can be heard, and droppings rapidly accumulate. Even if the birds are not

actively foraging at a particular time of the day, droppings will be present.

## Damage to Structures

Canada geese generally do not damage structures.

## Damage to Livestock and Pets

Canada geese may attack animals that approach a nest or young.

## Damage to Landscapes

Canada geese are particularly attracted to lawns and ponds located near apartment complexes, houses, office areas, and golf courses. The birds can rapidly denude lawns, turning them into barren areas of dirt. The geese eat crops such as corn, soybeans, wheat, rice, alfalfa, and turf of lawns and golf courses. In some areas, crops that are sprouting can be severely damaged. Muddy fields can be compacted by trampling, which can reduce yields.

## Health and Safety Concerns

Canada geese may charge or attack people and pets if nests are approached. They can inflict a painful bite, or strike with the edge of a wing. People can be injured after slipping on goose droppings.

Geese create hazards on roads and traffic accidents in urban areas. At airports they pose a significant threat to public health and safety. Thousands of cases have occurred in which Canada geese have been hit by military and commercial aircraft on takeoff, in the air, or on landing. The most significant military aircraft disaster caused by birds occurred at Elmendorf Air Force Base in 1995, when an aircraft crashed after striking several Canada geese on take-off, killing 24 people. Also of note was US Airways Flight 1549 that was forced to land in the

Hudson River after colliding with a flock of geese in 2009.

Canada geese contaminate turf grasses with their feces, which can become a public health hazard in parks, athletic fields, golf courses, and residential areas. People contacting goose feces should wash their hands before eating and change shoes before entering structures or vehicles. Droppings from Canada geese can contain pathogenic bacteria including *Cryptosporidium*, *Giardia*, *Toxoplasma*, *Campylobacter*, *Chlamyphila psittaci*, *E. coli*, *Listeria*, *Pasteurella multocida*, and *Salmonella*, as well as avian influenza and encephalitis viruses. Although droppings of geese can carry several diseases, few cases of human illness have been attributed to goose feces.

## Nuisance Problems

While most people find a few geese acceptable, problems develop as local flocks grow and droppings become excessive. Nuisance problems include over-grazed lawns, excessive droppings and feathers on walkways, nutrient loading to ponds, public health concerns for beaches and drinking water supplies, aggressive behavior by birds, and hazards near roads and airports.

Large flocks of resident geese, sometimes joined by migrants in the fall, may feed on athletic fields and other large turf areas during the day, and return to lakes and ponds to roost at night. The behavior continues until ice or snow covers feeding areas and forces birds to other open water areas where they remain until milder weather returns and nesting areas become available.

**Goose Droppings.** Most complaints about geese are from people frustrated by droppings. A single goose may defecate every 20 minutes

and up to 1½ pounds of feces each day. Droppings can be aesthetically unpleasant on lawns, beaches, docks, sidewalks, athletic fields, and golf courses. If high numbers of geese persist in areas of shallow water, the levels of fecal coliform bacteria may be elevated: water where people swim should be regularly tested for contamination. Geese should not be permitted to congregate near intake sites of water treatment plants.

**Nest Behavior.** Geese often demonstrate aggressive behavior toward people while defending nesting territory. (Figures 4a to 4d).

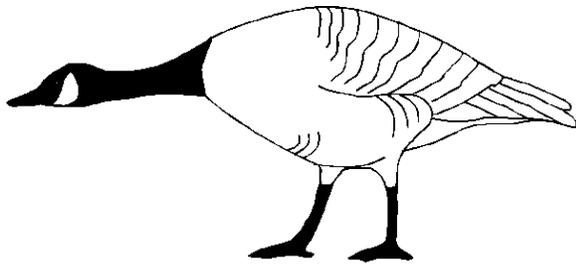


Figure 4a. Threat posture. Image by Dee Ebbeka.

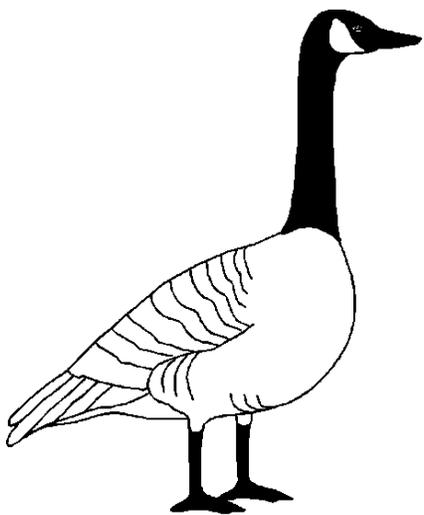


Figure 4b. Alert stance. Image by Dee Ebbeka.

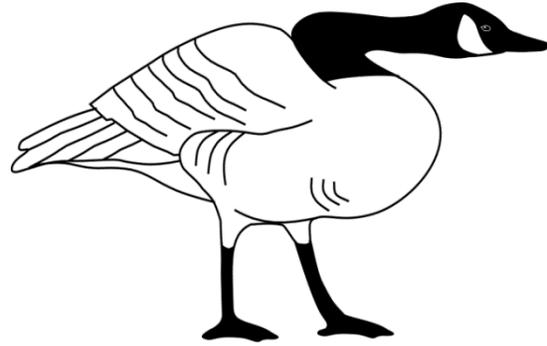


Figure 4c. Conflict stance is often accompanied by a hiss. Image by Dee Ebbeka.

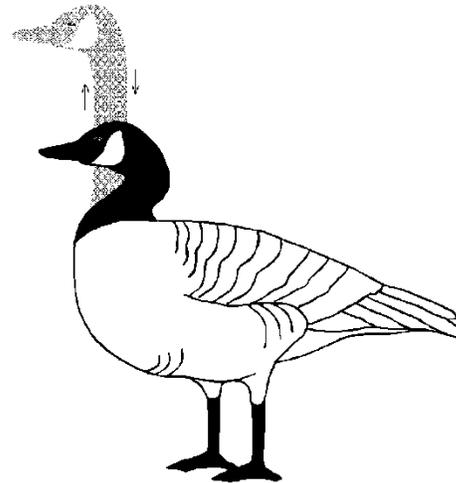


Figure 4d. Head pumping often precedes an attack. Image by Dee Ebbeka.

## Damage Prevention and Control Methods

### Integrated Pest Management

For best results, use a variety of cost-effective methods to manage birds that are causing conflict.

### Timing, Economics, and Methods

Haze geese as soon as they begin to inhabit an area to avoid their becoming established in the location. After nests are constructed, hazing is no longer a viable option for family groups until the molt has ended. It can be effective to haze

adult geese with no young prior to molting, to encourage migration.

Between 1990 and 2112, 131,096 civilian aircraft-wildlife strikes were reported to the Federal Aviation Administration. This number of reported strikes is estimated to be less than half the number that actually occurred. The United States Air Force reports about 3,000 bird strikes each year. About 72% of strikes involving commercial aircraft occur on or near airfields when aircraft are below 500 feet of altitude. Gulls, raptors, geese and other waterfowl were involved in about 80% of reported bird strikes in which damage to aircraft occurred.

### Habitat Modification

Plant trees around small ponds (less than ½ acre) to interfere with lines of flight. Geese prefer short, green grass or other herbaceous vegetation for feeding. Well-manicured lawns and areas that are newly seeded provide excellent habitat. Wherever possible, let grass or other vegetation grow to full height (10 to 14 inches) around bodies of water to make areas less attractive to geese. In time, most geese stop feeding in those areas. Communities should enact ordinances to prohibit people from feeding geese (Figure 5).

Geese prefer clear lines of sight, so avoid straight paths to water: plant native shrubs to block their line of sight. Install large stones or cut steep banks to make travel between water and land more difficult (Figure 6).

Use plant species that are less palatable to geese, including plants that are dormant in the winter, such as ivy, *Pachysandra*, or junipers. Geese tend to prefer grasses including Kentucky bluegrass and ryegrass, and are less attracted to fescue that is infected with high levels of endophytic fungus. Minimize the use of

fertilizers to reduce the nutritional value of grass.



Figure 5. An important part of an integrated approach to management of damage by geese is to prohibit the feeding of geese. Photo by Stephen M. Vantassel.

Islands and peninsulas often are preferred for nesting and support more geese than shorelines. Avoid creating such features during landscaping. Local zoning regulations may be a way to discourage development of habitats for geese.



Figure 6. Large stones can interfere with the movement of

geese between water and land. Photo by Stephen M. Vantassel.

## Exclusion

Geese normally rest on open water or along shorelines and tend to land and take off from open water. Where practical, construct a system of suspended wires over water to deny birds access to such areas. Arrange single strands of 14-gauge wire, 80- to 100-pound test monofilament line, or stainless steel cable in a grid with 10 to 15 feet between wires. Each strand must be secured so that it remains 12 to 18 inches above the water surface. Perimeter fences may be needed to keep geese from walking under the grid. To reduce the risk of birds flying into the strands, attach brightly colored rope, flagging, or other markers to make them more visible.

Golf course ponds, reflecting pools, wastewater ponds, and newly-seeded lawns, where public access is limited, are often suitable for grid wire application. Vandalism of grid wire may be a problem in public areas.

Fences can be effective where geese land on water and walk onto adjacent lawns. Fences should be at least 30 inches tall and solidly constructed. Welded-wire fences made with 2-x 4-inch mesh is durable and will last for many years. Less expensive plastic or nylon netting is effective but must be replaced more often.

Fences work best during the summer molt when geese are unable to fly and must walk between areas for feeding and resting. Fences, dense shrubbery, or other physical barriers installed close to the water's edge are effective ways to control the movements of molting geese. Fences must completely enclose a site to be effective. Fences also may be used to block aggressive birds on nests near buildings or

walkways. Fences around large open areas, such as athletic fields or ponds, have little effect on free-flying birds.

Snow fence or erosion control fabric may be used as a temporary barrier for geese that are molting. Fences made of two parallel monofilament fish lines (20-pound test), strung 6 inches and 12 inches above ground, and secured by stakes at 6-foot intervals can be effective, but are less reliable.

Successful control of geese has been reported with high-voltage electric fences. Two strands of at least 17-gauge wire are needed, 8 inches and 16 inches off the ground respectively, or three strands at 5, 10, and 15 inches off the ground. However, this method is rarely used in urban locations.

## 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. Human-operated frightening devices tend to be more effective than stationary ones. Consider the timing of frightening activities, as geese may flee into traffic or aircraft.

Locate stationary frightening devices where they will not become entangled or obstructed by trees or power lines. Devices may be subject to theft or vandalism in areas open to the public. Relocate stationary devices frequently to avoid acclimation by geese. Geese quickly learn whether something poses a real danger and they quickly habituate to most devices. When the birds become habituated, the device loses effectiveness.

**Visual** devices may be used to create an image that geese avoid, especially if they are not

already established on a site. Visual frightening devices may be advantageous in quiet, populated areas, but they are not likely to be effective on suburban lawns where there are trees or other objects overhead, or in areas where geese have been established for years. Effigies of humans (e.g., scarecrow) or predators (Figure 7) attempt to portray visual threats to geese. Effigies with moving or flapping parts are more effective than non-moving ones. Reposition effigies every few days.



Figure 7. A silhouette of a coyote that is used to frighten geese. Photo by Stephen M. Vantassel.

Flags or balloons can be placed on poles (6 feet or taller) in and around an area 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 and filled with helium are sold at some garden or party supply stores. Several flags or balloons may be needed to protect each acre of open lawn.

Mylar-style tape reflects sunlight to produce a flashing effect and may be an effective deterrent for geese (Figure 8). 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 wind from tearing the tape.



Figure 8. Irri-tape® is Mylar® tape that can be attached to poles to scare geese. Photo by Bird-X, Inc.

Remote controlled boats have been used successfully to haze geese (Figure 9). Select boats that are appropriate to the size of the body of water. Boats work best when the water is calm and on ponds that are five acres or less. Boats can be used in conjunction with pyrotechnics to increase effectiveness.

Red and green lasers 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 horizon. Do not point it at buildings, people, or planes. High-powered spotlights can produce the same effect.



Figure 9. Remote controlled motorboats can be an effective way to haze geese.  
Photo by Stephen M. Vantassel.

**Audible.** Geese also may be discouraged by noise. 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 can become acclimated in one to two weeks.

Pyrotechnics are special fireworks launched from a 12-gauge shotgun or starter pistol. Shell crackers project up to 100 yards. Other devices, such as screamer sirens, bird-bangers, and whistle bombs, are fired into the air from a hand-held 6-mm pistol launcher. They 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.

Long Range Acoustic Devices (LRADs) project a high decibel sound (up to 153 dB) for 200 to 300 yards. The closer the animal, the higher the decibel. The LRAD is useful for hazing birds off of surfaces such as airports, parks, and golf courses.

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. In some areas, starter pistols are considered handguns, and their possession and use is regulated.

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 required to shoot geese outside of established hunting seasons.

Alarm and distress calls of Canada geese have been used to disperse geese from areas with varying results. Geese may simply 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.

**Biological.** Dogs that have been trained to chase geese are very effective at controlling them. 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 dog and handler are on-site at all times, or where daily service is available. The dogs must be closely supervised and, except where permitted, in compliance with local leash laws or park regulations. Initially, chasing must be done several times per day for several weeks, after which less frequent, regular patrols are 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.

## Repellents

Repellents lose effectiveness over time. Geese still may walk across areas that have been treated to get to untreated areas. Active ingredients (such as anthraquinone) in repellents typically are coupled with a chemical that can be seen in the ultraviolet spectrum. Geese can see this spectrum and avoid areas that have been treated. The products are expensive and therefore most practical in small areas. Weekly mowing of turf will remove the repellent, so reapplication may be necessary. Always follow directions on product labels. Special training is necessary to safely apply chemical repellents.

**Pain.** Methyl anthranilate is a human-safe flavoring for food that is derived from grapes. It may be applied by fogging (Figure 10) to cause geese to leave immediately or by spraying grass to prevent feeding.



Figure 10. Methyl anthranilate may be dispersed using a large fan. Photo by Stephen M. Vantassel.

**Aversive conditioning.** Unlike methyl anthranilate, the effect of anthraquinone is delayed. Geese must first eat grass treated with the chemical and later experience intestinal discomfort before they begin to avoid the treated grass.

## Toxicants

No toxicants are registered for the control of Canada geese.

## Shooting

Hunt geese to help slow the growth of resident flocks. Some birds can be removed with hunting, while others will be discouraged from returning. The act of hunting increases the effectiveness of noisemakers, as geese may associate loud noises with 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.

A Federal Migratory Bird Hunting Stamp is required to hunt waterfowl, including Canada

geese, in addition to state hunting permits and licenses. Several states manage special hunting 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 must check local laws regarding permits and the discharge of firearms. Landowners who are concerned about potential conflicts can limit the number of hunters and times they allow hunting on their property. For more information about hunting geese, contact your state wildlife agency.

A high-powered pellet rifle (.177 or .22 caliber) or a .22-caliber rimfire rifle can be used to remove individual or injured birds. A great deal of skill and discretion is required to kill birds quickly and humanely. Subsonic .22-caliber loads can be used to minimize noise in urban areas. The use of guns over water poses a great risk of ricochet. A 12-gauge shotgun with No. 6 non-toxic shot directed at the head and neck (Figure 11) is a better alternative than lead bullets. A Metrobarrel and subsonic loads can be used to minimize noise. Shooting geese outside the regulated hunting season requires special permits.

Note that control Canada geese by shooting requires specific federal and state depredation permits.

## Trapping

Canada geese can be captured by nets that are propelled over a feeding location. This method is used only when geese are able to fly. If geese are molting, roundups typically are used. Nets launched with rockets or other explosive charges require special permits and safety precautions. The WCS Netblaster™ does not require additional permits because it uses compressed air (Figure 12). Users must be

cautioned that the NetBlaster™ is quite loud when it is launched.



Figure 11. Target showing proper placement of a shot for rifle or pellet gun (small circles around eye) and shotgun (large dotted lines). Image by Dee Ebbeka.

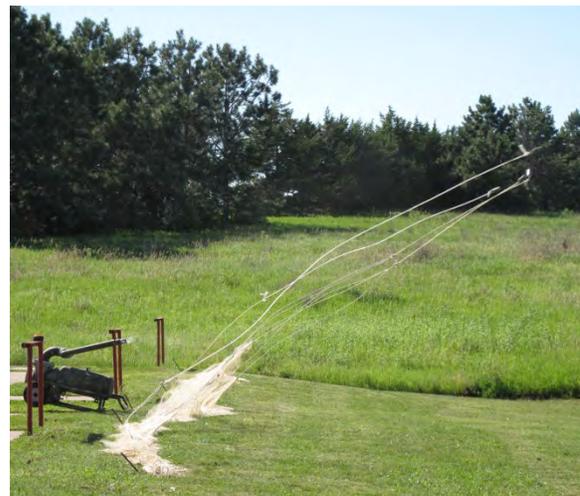


Figure 12. A WCS Netblaster™ uses compressed air to launch a net. Photo by Stephen M. Vantassel.

Prebait an area with corn or other attractants and only launch nets when a large flock is in the target area and feeding. At least two people are required for successful netting and more are better. One person must remain behind the net to launch it and the other must be far to the side to call for the net to be fired. Both people are needed to ensure that geese intended for capture are properly positioned in the area.

After the net is launched, people should rapidly subdue the geese to prevent injuries and escapes. Quickly grab geese by the base of the wings, or hold their wings tightly to the body, and place the birds into holding cages. Canada geese can injure people and each other by hitting with their wings, biting, and scratching.

The capture of geese should be conducted by experienced personnel with appropriate permits. Often, disposition of geese that have been captured is a concern. The public often opposes lethal control and translocation may move problem geese to become a problem in another area. Nets also are used for banding geese and research purposes.

### Roundups

The capture and removal of Canada geese while they are molting is an effective method of control (Figure 13). Geese are flightless for a relatively short period of the year, so this technique is feasible only during early summer. Roundups can significantly reduce the number of geese in a given area. In Illinois, goose roundups are permitted by the Illinois Department of Natural Resources and implemented by the USDA Wildlife Services.



Figure 13. Roundup of Canada geese waiting to be tagged. Photo by Stephen M. Vantassel.

## Handling

### Euthanasia

Federal permits are required to kill Canada geese. Geese are easily euthanized with carbon dioxide. Geese also may be euthanized by cervical dislocation, which requires training, strength, and skill.

### Disposal

Consult Module 4 and Illinois regulations regarding disposal of carcasses.

## Other Control Methods

### Nest Control

Canada geese usually return in spring to the area where they hatched, or where they previously nested, which often leads to an increase in the number of geese in areas that once had just a few birds. Local growth of populations may be controlled by preventing geese from successfully nesting. Although it is difficult to eliminate habitat, harassment in early spring may prevent geese from nesting on a particular site. The geese still may nest nearby where they are not subject to harassment.

### Egg Destruction

If prevention of nesting fails, eggs can be treated by adding to destroy the embryo and prevent hatching. Adding of eggs is done by puncturing, shaking, freezing, or applying corn oil to eggs in a nest. The female goose will continue incubating the eggs until the nesting season is over. If the nest is destroyed, or all the eggs are removed, the female likely will lay new eggs.

Destruction of eggs reduces the number of geese that will be present on a site later in the year. Geese without young will more easily be

repelled from a site after nesting season. If conducted on a large scale (throughout a town), treatment of eggs can help slow the growth of a local population of geese and lead to stable or declining numbers. Treatment of eggs may be necessary for 5 to 10 years before effects on populations are evident.

Federal and state regulations may apply to any disturbance or treatment of Canada goose nests or eggs. In Illinois, nest or egg destruction

requires a permit from the Illinois Department of Natural Resources.

## **Additional Resources**

<http://wildlifecontroltraining.com>

<http://icwdm.org/>

<http://wildlifecontrol.info>

# Module 9 - Gulls

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Figure 1. Herring gull (*Larus argentatus*).  
Photo by Ron Case.

## Learning Objectives

1. Understand how the biology of gulls relates to the types of damage associated with them.
2. Understand the options for controlling gulls.
3. Determine which types of control are appropriate for specific behaviors.

## Overview of Damage Prevention and Control Methods

### Habitat Modification

- Prohibit feeding of gulls
- Remove or reduce nesting and loafing sites
- Control insects
- Remove standing water
- Secure dump and trash sites
- Allow plants to grow at least 18 inches tall

### Exclusion

- Porcupine wires or electric ledge products

- Plastic or wire mesh
- Suspend parallel wire or monofilament strands over areas needing protection

### Frightening Devices

- Visual – Effigies, balloons, lasers, and Daddy-long-legs devices on structures
- Audible – Shell crackers, distress calls
- Chemical - Avitrol®

### Repellents

- Methyl anthranilate
- Polybutenes

### Toxicants

- DRC-1339 (Federal use only)

### Shooting

- Rifle
- Shotgun

### Trapping

- Rocket or cannon nets over bait
- Coulson funnel trap set over nests with eggs
- Spotlight and net by hand at night

### Other Control Methods

- Remove nests, eggs, and young
- Egg oiling or puncture

## Species Profile

### Identification

The term “gull” refers to 23 species of North American birds of the family Laridae, subfamily Larinae.

### Physical Description

Gulls have webbed feet, long wings and a slightly hooked beak. Gulls often are seen

swimming and occasionally diving, but they also are exceptional fliers. Adult gulls are white with varying patterns of gray and black over the back, wings, and head. Juveniles of larger species often are gray. The sexes are similar in appearance. The similarity of plumages can make identification of species difficult. Gulls range in size from the 6-ounce Sabine gull (*Xema sabini*) to the 4-pound great black-backed gull (*Larus marinus*).

### Species Range

Some gull species are limited to coastal habitats, while others may occur inland seasonally or rarely, or in specialized habitats. Herring (*L. argentatus*, Figure 1) and ring-billed gulls (*L. delawarensis*) are the most common gulls. Both are found throughout North America including coastal and inland areas, in unsettled areas, large cities, and farm fields.

### Voice and Sounds

Calls vary from the deep growl or *gaap* to a short *yek* or *ye ye ye* series.

### Tracks and Signs

Gulls have webbed feet, and their tracks have distinct toe marks (Figure 2).

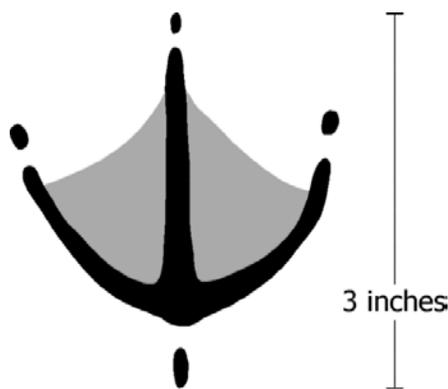


Figure 2. Track of herring gull. Image by Dee Ebbeka.

## General Biology

### Reproduction

Gulls are long-lived and take up to 4 years to reach sexual maturity. They form life-long pair bonds. Both parents assist in building the nest, defending the nest, and caring for eggs and young. Each pair produces one clutch per year of 2 to 4 eggs.

### Nesting Cover

Gulls commonly build nests on the ground as well as on flat rooftops. Most species nest in colonies on sand and gravel-covered shorelines and islands. They frequent places where they can easily spot threats and have quick access to water for escape.

### Behavior

Gulls are migratory and leave areas when bodies of water freeze.

### Habitat

Gulls prefer habitats with standing water and open landscapes with clear lines of vision. In urban areas, landfills, rooftops, and parking lots are attractive sites for loafing and feeding.

### Food Habits

Gulls feed on aquatic and terrestrial vertebrates and invertebrates, remains of plants, carrion, and refuse. Small species, including ring-billed, laughing, and Franklin's gulls, will feed on flying insects in flight. Gulls frequently take the eggs and young of other birds, and steal food from each other and other species. They can negatively impact the breeding performance of other waterbirds.

### Legal Status

Gulls are classified as migratory species and protected by federal and, in most cases, state laws. In the US, gulls may be taken only with a

permits issued by the US Fish and Wildlife Service (USFWS) and the Illinois Department of Natural Resources. Permits are issued only after frightening techniques, physical barriers, or both have been used correctly and qualified personnel certify that these methods have been ineffective. Some states may require an additional permit to kill gulls. No federal permit is needed to frighten or mechanically exclude gulls outside of the nesting season.

## Damage Identification

### Damage to Structures

Gulls may peck at structures and roofs, remove insulation, and drop rocks and clams onto roofs or cars. The droppings of gulls often foul docks and boats, damage polyurethane materials, and contaminate areas where the birds congregate.

### Damage to Livestock and Pets

Gulls prey on young and eggs of their own species and others such as ducks. They consume feed intended for livestock and may contaminate it with droppings.

### Damage to Landscapes

Gulls may damage crops by feeding on cherries, blueberries, grapes, strawberries, tomatoes, and young vegetables.

### Health and Safety Concerns

Gulls threaten the safety of humans at and near airports. They are the most common birds involved in aircraft strikes. Research has shown that gulls can carry pathogenic bacteria including *E. coli*, *Salmonella*, *Campylobacter*, and *Listeria*. Roosts of gulls near reservoirs have the potential to transmit disease to humans, for example by contaminating swimming areas with pathogenic *E. coli* bacteria.

## Nuisance Problems

Gulls are a nuisance when they nest on rooftops and seek food from people eating outdoors.

## Damage Prevention and Control Methods

### Integrated Pest Management

Use a combination of methods to resolve human-bird conflicts, as no single method is effective in every situation. Control gulls as soon as they become a nuisance. Stop management activities during active nesting.

### Habitat Modification

Communities should ban the feeding of gulls. Reduce or eliminate food and fresh water and modify areas suitable for nesting and resting. It is not easy to reduce the availability of food, as gulls are adaptable and omnivorous. Food waste, fruit and vegetable crops, insects, earthworms, and other invertebrates and small vertebrates are potential sources of food that require diligence to reduce their availability. Municipalities may find it useful to modify or eliminate artificial feeding sites such as landfills, fishing piers, food processing plants, sewer outfalls, and livestock feedlots.

Manipulate the height of grass by limiting mowing to discourage gulls from using airports, parks, and playing fields as areas for resting and loafing (Figure 3).



Figure 3. Open fields can be attractive to gulls.  
Photo by John Consolini.

## Exclusion

Exclusion of gulls from attractive areas (e.g., landfills, water transfer stations, sewage discharge areas, drive-in theaters, and catering establishments) near airports can significantly reduce gull threats to aviation safety.

Exclude gulls from areas such as window and roof ledges by covering the surfaces with porcupine wires or electric-shock ledge products. Exclude gulls from large areas such as water reservoirs, crop fields, and landfills by installing wire or plastic netting, or suspending parallel stainless steel wire (28-gauge) or nylon monofilament line (50-pound-test) over the area. Note that monofilament line deteriorates when exposed to sunlight. Spacing of the wire or monofilament should be less than 30 feet for large gulls and less than 15 feet for smaller species. Birds can be excluded from aquaculture ponds by using heavy wires that are easily seen.

Use strong, 28-gauge, stainless-steel wires on long, parallel spans up to 80 feet apart to exclude gulls from water reservoirs. Wires have been used successfully to exclude herring and ring-billed gulls from sanitary landfills. A 30-foot wire spacing may work if the food attraction is not too great, and 15-foot spacing may work even with a very abundant food supply. Widely-spaced monofilament lines may exclude some gulls. Two-millimeter diameter stainless-steel

fishing lines spaced at 7.5 feet may exclude ring-billed gulls from outdoor restaurants and ponds.

It is not clearly understood why gulls rarely fly under or between parallel wires. Other birds, including pigeons, regularly fly under or between wires. Wires and lines are almost invisible at 35 feet or more and may not be easily seen by gulls as they spiral down to land. The avoidance reaction when the wires are seen is spectacular and may disturb other gulls enough to make them avoid the area.

## Frightening Devices

Repeated use of frightening devices will not permanently resolve damage problems by gulls. Research has shown, however, that reinforcing frightening methods with lethal control, where legal, can substantially increase efficacy of frightening devices with less than 2% mortality in the flock. All frightening devices should be used by experienced personnel.

**Visual.** Effigies, balloons, and specially-designed kites can be effective in dispersing gulls for short periods of time. Gulls that are dead (permit required) or gull decoys placed in dead-gull postures can be used, especially in conjunction with other frightening devices. Effigies must be realistic in every detail, and may be enhanced with distress calls.

Lasers are effective in dispersing flocks of gulls in low light or at night. To control birds at night, perform sweeps every 30 minutes. Use lasers with extreme care, and avoid inadvertently aiming laser lights at people. Birds will return during daylight.

Daddy-long-leg devices that move by wind or battery power can be used to prevent gulls

from roosting on structural components such as roof-tops.

**Audible.** Effective frightening devices for gulls include shotgun shells, shell crackers, gas-powered exploders, and broadcasts of distress and alarm calls. Shell crackers can be used to direct the departure of gulls and are most effective when the birds are airborne and have begun to move away from the source of the sound. Most distress and alarm calls are species specific and may even differ between localities. They must be used sparingly to avoid conditioning and are best used from a stationary source. Gulls first will approach the source of sound and will leave the area after 5 to 10 minutes. The use of ultrasound for controlling gulls has not proven effective and is not recommended.

**Chemical.** Avitrol® (4-aminopyridine) is federally registered for the control of herring gulls in the US. The current label allows its use to frighten gulls that are feeding, nesting, loafing, or roosting near or in the vicinity of landfills, airports, and structures. Apply the concentrate to bread as specified on the label. Mortality is minimized by limiting the amount of bait that is offered. Avitrol® is a restricted use pesticide. State and federal permits are required to use Avitrol® on gulls.

**Biological.** Gulls can be harassed by trained dogs, birds of prey, and radio-controlled aircraft that resemble falcons.

## Repellents

**Pain.** Methyl anthranilate (MA) fogging can repel and disperse gulls. Apply fog directly at nuisance birds while they are roosting at a rate of 6 to 8 ounces per acre. Applications also can be made to crops that are ripening.

**Tactile.** Polybutenes can be used as a tactile repellent to keep gulls from landing on beams, posts, and other structural features. Polybutenes lose their effectiveness as dust accumulates and renders them less tacky. Simplify clean-up by applying polybutene to removable tape rather than directly to permanent surfaces.

## Toxicants

The toxicant DRC-1339 is a restricted use pesticide registered in the US for the control of herring gulls, great black-backed gulls, and ring-billed gulls. Legal use of DRC-1339 is limited to personnel of the USDA-APHIS-Wildlife Services. The toxicant is mixed with bread and is placed directly on nests of gulls. DRC-1339 causes death by uremic poisoning. It is slow-acting, apparently painless, and poses little threat of secondary poisoning of non-target animals.

## Shooting

Shooting has been used to deter gulls that habitually fly over airport runways and birds that prey on the eggs and nestlings of protected species. Shooting is less effective for rapidly reducing large colonies due to the relatively small number of gulls that can be shot. Shotguns and rifles can be useful, however, under certain conditions. Federal and state permits are required.

## Trapping

Gulls can be live-trapped by several techniques, including rocket- or cannon-netting over bait.

**Cage Traps.** A funnel trap, also known as a Coulson trap, may be set over an active gull nest to capture adults. Traps should be 22 x 18 x 12 inches (minimum) and constructed with 1½-inch wire-mesh (Figure 4).

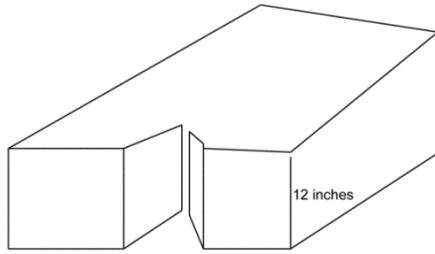


Figure 4. Funnel trap for gulls.  
Image by Stephen M. Vantassel.

The entrance funnel should extend to the height of the cage with the wire ends exposed to discourage escape attempts. Weave 10-gauge wire along the edges of the funnel for reinforcement. Position the trap so the funnel entrance is in line with the normal path the gull uses to attend to the nest.

At night, gulls can be removed effectively by spotlighting and netting. This method works best on dark nights.

## Handling

### Relocation

Gulls are very mobile and often return to their place of capture. Relocation is not recommended.

### Translocation

Gulls are very mobile and often return to their original place of capture. Translocation is not recommended.

### Euthanasia

Gulls should be euthanized with carbon dioxide or by cervical dislocation.

## Disposal

Consult Module 4 and Illinois regulations regarding disposal of carcasses.

## Other Control Methods

### Removal of Nests, Eggs, and Young

Removal of nests, eggs, and young from a colony should be done every 2 weeks. These activities are time-consuming and labor intensive. Gulls usually attempt to re-nest. Permits from state and federal wildlife agencies are required for removing nests, eggs, and young.

### Egg Destruction

Several methods can be used to ensure eggs do not hatch, including puncturing, shaking, and spraying or dipping in 100% corn oil. To prevent re-nesting, return treated eggs to the nest. They should not be visibly damaged. Repeated trips to the nesting colony are required to ensure that all eggs are treated. Permits from state and federal wildlife agencies are required for destroying eggs.

## Additional Resources

<http://wildlifecontroltraining.com>

<http://icwdm.org/>

<http://wildlifecontrol.info>

# Module 10 - Woodpeckers

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Figure 1. Red-headed woodpecker (*Melanerpes erythrocephalus*). Photo by Ron Case.

## Learning Objectives

1. Understand key elements of the biology of woodpeckers important for their control.
2. Understand federal laws and regulations that limit the control of woodpeckers.
3. Explain options for the control of woodpeckers to clients.

## Overview of Damage Prevention and Control Methods

### Habitat Modification

- Remove dead trees
- Use woodpecker-resistant materials for siding
- Use suet as alternative food
- Use nest boxes as alternative cavities
- Apply insecticides for indirect control

### Exclusion

- Netting
- Repair damage quickly
- Metal barriers

### Frightening Devices

- Visual - Irri-Tape®, Mylar® tape, mirrors, models of predators
- Audible - Loud noises, propane exploders, distress calls of woodpeckers

### Repellents

- Pain - Methyl anthranilate
- Tactile - Polybutene

### Toxicants

- None are registered

### Shooting

- .177- and .22-caliber rifles
- Shotgun with No. 7½ shot

### Trapping

- Rat snap trap

## Species Profile

### Identification

Woodpeckers, flickers, and sapsuckers are birds of the Picidae family. Woodpeckers are found throughout the US. Various species are responsible for damage in different regions. The following woodpeckers most often are involved in damaging homes or other wooden structures:

1. red-headed (*Melanerpes erythrocephalus*) (Figure 1),
2. red-bellied (*Melanerpes carolinus*),
3. downy (*Picoides pubescens*) (Figure 2),

4. hairy (*Picoides villosus*),
5. northern flicker (*Colaptes auratus*), and
6. pileated (*Dryocopus pileatus*).

Although woodpeckers become a nuisance in some situations, they also provide valuable ecological services. Woodpeckers consume substantial numbers of insects, some of which are agricultural and forest pests.

### Physical Description

Woodpeckers have a sharply-pointed beak for excavating wood and a long tongue that can be extended to dislodge insects in wood. The tail has stiff feathers that serve as a prop when climbing vertical surfaces. Each foot has two talons facing forward and two facing backward, enabling the birds to cling to wooden structures and trees. Most woodpeckers are 7 to 15 inches in length. Adult males of most species have a pattern of black, white, and red. Females are similar, but most lack red markings (Figure 2).



Figure 2. Female downy woodpecker (*Picoides pubescens*). Photo by Stephen M. Vantassel.

### Species Ranges

Range depends on species. Consult a field guide for more information.

### Voice and Sounds

Each species of woodpecker has characteristic calls. They also use a rhythmic pecking sequence to make their presence known. Referred to as “drumming,” pecking establishes territories and apparently attracts or signals mates. Both sexes drum by striking their bills against a hollow or dried branch or other hollow or resonant objects.

### Tracks and Signs

Tracks of woodpeckers are uncommon because they don’t often roam on soft surfaces (e.g., mud, sand). Although sizes differ by species, nearly all have a characteristic butterfly pattern (Figure 3).

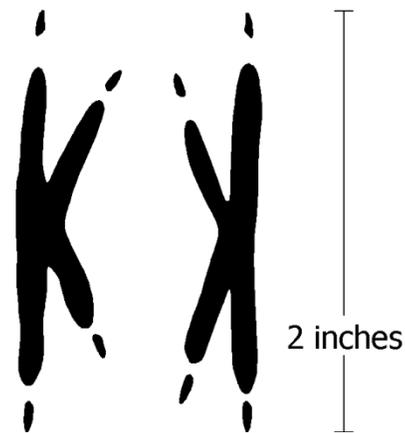


Figure 3. Track of a woodpecker. Image by Dee Ebbeka.

Damage to trees and buildings consists of rows of holes in wooden structures (Figure 4). Pileated woodpeckers make the largest holes of any woodpecker in North America. Other signs may include marks from feeding on trunks and branches of trees, caches of food, and chips of wood on the ground beneath trees. Many signs are species-specific. Signs identifying woodpecker species are especially helpful in winter, when woodpecker calls are less frequently heard.



Figure 4. Damage to a building caused by woodpecker feeding. Photo by Stephen M. Vantassel.

## General Biology

### Reproduction

Woodpeckers breed in the spring, commonly laying two to six eggs. Incubation is short, usually lasting 11 to 14 days, but longer for larger species. The young of most species are hatched naked; some are downy. In all species, young are tended by both parents. The production of two broods per year is common, and some species may have three. Young leave the nest in 20 to 30 days.

### Nesting Cover

Woodpeckers nest in cavities in trees or structures. Nest cavities are hollowed out areas below and perpendicular to the entrance. Cavities may be chiseled into tree trunks, branches or structures, or may be natural or pre-existing cavities. Both sexes sleep in nest cavities throughout the year.

Some species, such as downy and hairy woodpeckers, excavate new cavities each year.

Others, such as northern flickers, return to the same cavity annually. Yellow-bellied sapsuckers prefer to excavate cavities in live trees, while red-headed and pileated woodpeckers favor dead trees.

### Behavior

Most woodpeckers live year-round in the same area in small social groups. A few species, such as northern flickers and redheaded woodpeckers, are migratory. Aptly named, woodpeckers use their bills to peck on wood when searching for food and during spring when establishing territories. The territorial behavior is called drumming.

### Habitat

Woodpeckers are dependent on trees for shelter and food and often are found in or on the edge of wooded areas.

Red-headed woodpeckers reside in areas of low elevation along streams or in open country with extensive grasslands and small woodlots. Red-bellied woodpeckers occupy similar habitat, as well as openings in mature forests, wooded wetlands, and large trees in open pastures. Three-toed and black-backed woodpeckers inhabit mixed coniferous and deciduous forests. Yellow-bellied sapsuckers are found in heavily forested areas. Downy and hairy woodpeckers are widespread and common in almost any habitat where deciduous trees occur. The Northern flicker is common in habitats ranging from city parks to heavily forested areas, although it has experienced significant declines in population in recent years. Pileated woodpeckers are common in mature and extensive forests, except in coastal lowlands.

### Food Habits

Most woodpeckers feed primarily on tree-dwelling or wood-boring insects, but may feed on

a variety of other insects including ants, wasps, and bees found on trees. Northern flickers commonly feed on ants they gather from the ground. Many woodpeckers also feed on berries, fruit, nuts, and seeds, particularly when insects are not available. Woodpeckers use sharp, pointed beaks to drill into trees in search of food and to excavate nest cavities. Bristle-like feathers around their nostrils prevent wood dust from entering their nostrils as they chisel.

Woodpeckers have long tongues that wrap around the skull and anchor at the base of the bill. The tip of the tongue typically is barbed to extract insects from holes, and is coated with sticky saliva helping to hold their insect prey.

Yellow-bellied sapsuckers feed on sap that oozes from horizontal rows of small holes they drill into tree trunks. Their tongues are shorter and have fine, hair-like processes on the tip that help collect sap by capillary action. Sap also serves as a trap from which insects can be harvested.

### Legal Status

All species of woodpeckers are classified as migratory nongame birds and are protected by the Federal Migratory Bird Treaty Act and regulations administered by the Illinois Department of Natural Resources. When warranted, woodpeckers other than endangered species can be killed, but only under depredation permits issued by the Law Enforcement Division of the US Fish and Wildlife Service (USFWS) and the Illinois Department of Natural Resources. Authorization by the relevant state wildlife agency also may be required before lethal control methods are initiated. Sound justification must be present for the issuance of depredation permits. Management by hazing woodpeckers does not require a permit in Illinois.

## Damage Identification

### Damage to Structures

Damage by woodpeckers is easily identified by the drilling noise and excavated holes. Damage to buildings is a relatively infrequent problem nationwide, but may be widespread regionally or locally. Houses or buildings with wooden exteriors near wooded areas or in rural wooded settings are more likely to suffer pecking damage, although structures with synthetic siding also can be damaged. Damage to a building typically involves only one or two birds, but may involve up to six or eight individuals over a season. Most damage occurs from February through June, corresponding with fall dispersal and the breeding season when territories are established.

Woodpeckers can be particularly destructive to vacant homes because damage may go undetected for long periods of time. For the same reason, barns and other wooden outbuildings may suffer significant damage. Damage to wooden buildings takes several forms including holes in wood siding, eaves, window frames, and trim boards.

Woodpeckers prefer cedar and redwood siding, but will damage pine, fir, cypress, and other woods. Natural or stained wood surfaces are preferred over painted wood. New houses often are primary targets. Particularly vulnerable to damage are rustic, channeled plywood with cedar or redwood veneers. Expect new problems to arise as construction techniques and materials change. Woodpeckers also damage plastic used for rooftop solar heating and electric panels.

Imperfections in the exposed layers of laminated plywood may harbor insects. Woodpeckers often exploit these, leaving characteristic narrow horizontal damage patterns in their search for

insects. If a suitable cavity results from feeding, it may be used for roosting or nesting.

Woodpeckers have damaged elevated plastic irrigation lines in California vineyards. Tubes that are used for collection of maple sap also are damaged by woodpeckers. Drilling in utility poles in some regions has necessitated frequent and costly replacement of weakened poles. Similar damage to wooden fence posts can be a serious problem for farmers and ranchers.

### **Damage to Livestock and Pets**

Some woodpeckers kill young birds and destroy eggs. Occasionally, woodpeckers drill into and devastate beehives.

### **Damage to Landscapes**

Sapsuckers bore a series of parallel rows of 1/4- to 3/8-inch closely spaced holes in the bark of healthy trees and use their tongues to remove the sap. Sapsuckers usually feed on just a few ornamental or fruit trees, while nearby trees of the same species may be untouched. Holes may be enlarged through continued pecking and large patches of bark may be removed or sloughed. The girdling of limbs and trunks may kill trees. Wounds of attacked trees may attract insects, porcupines, and tree squirrels. Wounds from feeding also serve as entrances for diseases and wood-decaying organisms. Wood-staining fungi and bacteria can enter the wounds and cause a grade defect called “bird peck” that lowers the value of hardwoods. Certain species of trees are preferred over others, but the list of susceptible trees is extensive.

Vegetable matter constitutes much of the diet of woodpeckers. Native and cultivated fruits and nuts play an important role in their diet. Birds involved in depredation of orchards often are so few in number that damage is limited to only a small percentage of the crop. Control actions to

protect commercial crops are rarely necessary. The crop of isolated backyard fruit or nut trees may, however, be severely reduced. Isolated instances of massive reduction in crop yield mostly occur in the far west where Lewis’ woodpeckers, whose flocks may number several hundred, are most often involved.

### **Health and Safety Concerns**

Woodpeckers are not known to be a significant disease risk for humans or domestic animals.

### **Nuisance Problems**

The act of drumming creates a sound by pecking in rapid rhythmic succession on metal or wood. Drumming causes little damage other than possible paint removal on metal surfaces. The noise often can be heard throughout the house and may be annoying, especially in the early morning hours when occupants are trying to sleep.

Drumming is most common in springtime. Apparently, substrates or surfaces for drumming are selected on the basis of their resonant qualities. Substrates often include metal surfaces such as gutters, downspouts, chimney caps, TV antennas, rooftop plumbing vents, and metal roof valleys. Drumming can occur many times during a single day, and the activity may continue for days to months. Wood surfaces can be disfigured from drumming.

### **Damage Prevention and Control Methods**

#### **Integrated Pest Management**

It is often best to use a variety of methods to resolve human-bird conflicts.

## Timing, Economics, and Methods

Damage by woodpeckers should be controlled as soon as it appears. Little information has been published on the economics of damage to buildings and other structures. Most of what does exist relates to damage to utility poles because companies keep records of these losses and the cost of replacements. For example, from 1981 to 1982 the Central Missouri Electric Cooperative replaced 2,114 woodpecker-damaged poles in their system at an estimated cost of \$1,344,429 in 2012 dollars.

Economic losses to the timber industry in terms of damaged trees and reduction in wood quality have been documented in several regions. Such published information is localized; the extent of damage on a nationwide basis is unknown. Little is published on the economic damage to buildings, although it can be substantial in some instances.

In a survey of woodpecker damage to homes, an average loss of \$300 per incident was reported. Damage to homes was estimated at \$50,000 to \$500,000 annually in Michigan, \$50,000 in Louisiana, and over \$100,000 in Wisconsin. A survey by Cornell University in 2001 to 2002 revealed that 33% of 1,185 houses in Tompkins County, NY, had some type of damage or noise disturbance from woodpeckers. The economics of control are relatively unknown because in most situations it is difficult to predict what the damage might have been if no control was undertaken.

## Habitat Modification

Removal of dead trees and branches may reduce the attractiveness of an area to woodpeckers, but this act often is cost prohibitive and reduces biodiversity. Use of appropriate exterior construction materials may be the best long-term

solution for preventing woodpecker damage to homes and buildings. If a structure is to be located in a wooded area with evidence of woodpecker activity, contractors should use clapboards or synthetic siding. Grooved plywood, wood shakes, tongue-and-groove, and board-and-batten sidings should be avoided at wooded sites, as these are prone to damage by woodpeckers.

Avoid use of stain sealants, especially earth-toned colors, on wooden structures adjacent to wooded areas. Houses with wood siding covered in earth-toned stains are at the highest risk of damage. For houses with wood siding in wooded areas, paint structures rather than reapply stain when it is time for exterior maintenance. Inform developers, builders, house buyers, and city planners of the risk of damage by woodpeckers that may be associated with heavily wooded sites and wood siding materials.

Providing alternate sources of food, or cavities for nesting, has shown limited success in reducing damage caused by downy or hairy woodpeckers.

**Suet.** Place suet stations near damaged buildings, especially in colder parts of the country, to entice woodpeckers away from structural wood. Suet offered in warm weather, however, may be potentially harmful to woodpeckers. Suet gets onto the feathers of the head, which may lead to matting and eventual loss of feathers. Some experts believe that feeding of woodpeckers contributes to damage problems.

**Nest Boxes.** Some species, such as golden-fronted, hairy, red-bellied, and red-headed woodpeckers, occasionally use existing cavities or nest boxes. Some success has been achieved with the placement of cavity-type nest boxes on buildings in the vicinity of damage done by northern flickers. A thick layer of sawdust should be placed in the bottom of the box. Alternatively,

fill the box completely full of sawdust to entice the bird to remove the sawdust to the desired level. Preparation of the new cavity seems to be part of the breeding ritual, which may deter the woodpeckers from using the nest boxes. New cavities often are constructed even where pre-existing empty cavities are available.

The use of nest boxes should be tried in an area where visual or sound frightening methods have failed and where populations of woodpeckers are desired. Nest boxes are constructed of wood with an entrance hole 16 to 20 inches above the floor and about 2½ inches in diameter. Inside floor dimensions should be 6 x 6 inches with a total height of the box at 22 to 26 inches. A front-sloping hinged roof will shed rain and provide easy access. Place the boxes at about the same level as the height of the structural damage.

**Insecticides (Indirect Control).** Based on the assumption that woodpeckers prey on insects, treating insect-infested siding with an appropriate insecticide may be a remedy for damage. While this may have some merit with insect-infested wood, woodpeckers often attack siding, poles, and posts that are sound and without insects. The use of insecticides for indirect control in these instances is not appropriate. Insecticides may harm birds. Where the situation warrants the application of an insecticide, it must be done in a way that will not harm birds.

## Exclusion

Structures with hard compressed wood or wood-fiber siding materials cannot be damaged by woodpeckers. Presumably, their hardness and smooth surfaces serve as deterrents. Aluminum or vinyl siding can be used as an alternative to wood siding.

One of the most effective methods of excluding woodpeckers from wood siding beneath eaves of a house is to place lightweight plastic bird nets over the area. Use a ¾-inch mesh and maintain at least 3 inches of space between the nets and the building so birds cannot access it through the mesh. The nets can be attached to overhanging eaves and angled back to the siding below the damaged area and secured so they are not overly tight (Figure 5).

If installed properly, nets are barely visible from a distance and offer a solution to woodpecker damage. If birds move to another area of the dwelling, the new area also will need to be netted. Repair holes in nets quickly and completely. Nets are increasingly popular as a reliable long-term solution to woodpecker problems.

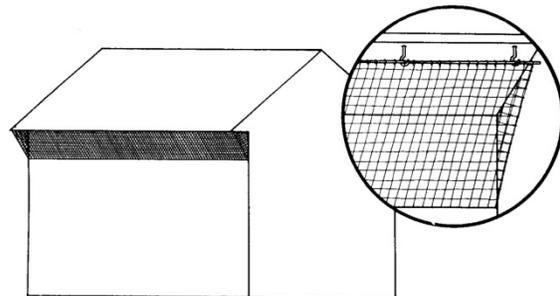


Figure 5. A net to prevent damage by woodpeckers. Image by Prevention and Control of Wildlife Damage (PCWD).

Cut wood plugs to fit snugly into the excavated holes, then caulk and finish them to blend in with the surrounding wood. The sight of existing holes may stimulate woodpeckers to drill more holes.

Place metal or hard-plastic sheeting over pecked areas on siding to offer permanent protection from continued damage. Metal barriers work best if installed as soon as damage begins. Aluminum flashing is easy to work with and can be used to cover damaged areas. Woodpeckers can peck through aluminum if they can secure a foothold from which to drill. Metal sheathing can

be disguised with paint or simulated wood grain to match existing siding.

Use ¼-inch hardware cloth to cover pecked areas and prevent further damage. It can be painted to match the color of the building. The wire can be attached directly to the wood surface being damaged, or raised outward from the wood siding with 1-inch wood spacers.

Structures sided with foam may be protected by Impeckable Foam Coat® Systems. When applied to foam, it provides a hard shell similar to the candy coating of an M & M® candy.

To protect trees from sapsuckers, wrap barriers of ¼-inch hardware cloth, plastic mesh, or burlap around injured areas to discourage further damage. These barriers may be practical for protecting high-value ornamental or shade trees. In orchards and forested areas, it may be best to let the sapsuckers access one or more of their favorite trees. The act of discouraging them from select trees may encourage the birds to disperse and damage more trees.

### Frightening Devices

Woodpeckers can be very persistent and are not easily driven from their territories or pecking sites. Therefore, visual or audible frightening devices intended to protect buildings should be employed as soon as the problem is identified, before territories are well established. After woodpeckers have been discouraged or frightened away, repair the damage by filling the holes with wood patch or covering them. Frightening devices often fail to give desired results.

**Visual** frightening devices come in a variety of types. Devices that combine visual items with motion are believed to be more effective than stationary devices.

Stretch strips of Irri-Tape® or Mylar® tape across the damaged area or hang them from eaves (Figure 6). Irri-Tape® eliminated woodpecker damage at 50% of homes tested in the northeast US.



Figure 6. Arrows point to downy woodpecker holes in the synthetic stucco. The vertical lines are Mylar® tape installed when the damage began. Photo by Stephen M. Vantassel.

One-inch wide strips of aluminum foil, brightly colored plastic strips, and aluminum pie pans hung near the damage may be effective. Toy plastic twirlers or windmills fastened to eaves can frighten woodpeckers. Even motion-activated spiders can be successful in reducing damage in some areas (Figure 7).



Figure 7. A Halloween spider 'crawls' down a building when activated. Photo by Stephen M. Vantassel.

Round, magnifying-type shaving mirrors can be installed over or adjacent to areas that are damaged. These mirrors frighten woodpeckers

with their own larger-than-life reflections. However, woodpeckers are not discouraged from wooden window frames where their own reflections can be seen. In fact, seeing a reflection may intensify the damage as a result of defensive territorial behavior.

Stationary hawks, owls, snakes, and cat silhouettes usually are ineffective as frightening devices. Large rubber balloons painted with owl-like eyes have not been effective in trials.

**Audible.** Loud noises such as clapping hands, toy cap pistols, and banging on garbage can lids have been used to frighten woodpeckers. Such harassment, if repeated when a bird returns, may cause it to relocate permanently. Distress calls also can effectively reduce damage by woodpeckers.

Propane exploders (gas cannons) or other commercial noise-producing devices may have some merit for scaring woodpeckers from commercial orchards for short periods of time. Seldom are they acceptable near inhabited dwellings or residential areas, however, because of the noise they produce. Around homes, radios have little success in discouraging woodpeckers. High-frequency, (e.g., ultrasound) sound-producing devices are marketed for controlling pest birds but rarely are effective. High-frequency sounds are above the normal audible hearing range of humans, and above the hearing range of most birds.

## Repellents

Many chemicals that have objectionable tastes and odors have been tested for treating utility poles and fence posts to discourage woodpeckers. Most have proven ineffective and not cost-effective. Odorous and toxic wood treatments, such as creosote and pentachlorophenol, do not resolve problems

related to damage by woodpeckers and are not registered as woodpecker repellents.

**Pain.** Methyl anthranilate will repel woodpeckers, but applying the product can be difficult. The label lists woodpeckers but allows only for the use of a hand sprayer, and requires the product to be used before eggs or young are present. The label also lists specific instructions for facilities that store feed for animals and barns, stating that animals are to be removed, feed covered, and a power sprayer used to apply the product where birds are roosting or nesting.

**Tactile.** Polybutene is a sticky gel that birds avoid touching with their feet. It is smeared or placed in wavy bands with a caulking gun where woodpeckers perch on buildings. Birds dislike the tacky footing. Avoid applying polybutenes directly to permanent surfaces, as these repellents can discolor surfaces and be hard to remove. Apply the gels to a thin piece of tape, pressed board, ridged plastic, or other suitable material fastened to the area to be protected. Consult the product label for other suggestions. Polybutenes may lose effectiveness when exposed to dirt and dust. Gels may run when exposed to heat or substantial sunlight. Small birds can become entrapped in the gel even when it is applied correctly.

## Toxicants

No toxicants are registered for the control of woodpeckers.

## Shooting

When the proper federal and state permits have been obtained, shooting may be a quick method for dispatching one or a few problem birds. The discharging of firearms often is subject to local regulations in residential areas. With appropriate permits, shooting has been occasionally used to reduce woodpecker damage in commercial fruit and nut orchards.

At close range, air rifles or .22-caliber rifles with bird shot or BB caps can be effective. Shotguns with No. 7½ shot are also effective. Use .22-caliber rifles for birds that must be taken from greater distances. Considerable discretion should be used around dwellings because bullets and shot can travel long distances.

## Trapping

If multiple areas are being damaged, traps can be used to control woodpeckers. Live traps have been tried in attempts to capture woodpeckers for relocation. None were very successful, and more research is needed to develop an effective woodpecker cage or box trap.

**Body-gripping Traps.** Traditional rat-sized snap-traps (expanded trigger) can be effective in killing offending birds. Federal and state permits are required. Secure the trap to the building with the trigger downward alongside the spot sustaining the damage. Bait the trigger with suet or shelled walnuts, almonds, or pecans.

## Handling

### Relocation

Given the mobility of birds, relocation of woodpeckers is only suitable in rescue situations.

### Translocation

Translocation of woodpeckers is only suitable in rescue situations.

### Euthanasia

Lethal control of woodpeckers requires federal and state permits. Carbon dioxide gas and cervical dislocation are appropriate techniques for the euthanasia of birds.

### Disposal

Consult Module 4 and Illinois regulations regarding disposal of carcasses.

## Additional Resources

<http://wildlifecontroltraining.com>

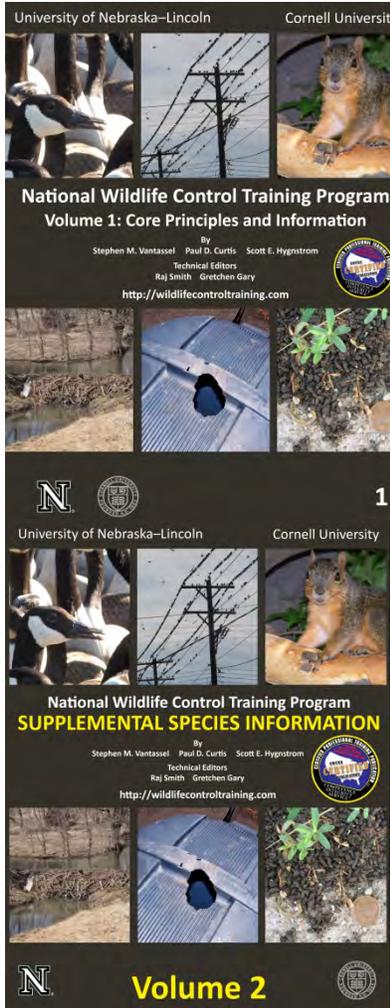
<http://icwdm.org/>

<http://wildlifecontrol.info>

[http://www.nwhc.usgs.gov/publications/field\\_manual/](http://www.nwhc.usgs.gov/publications/field_manual/)

# National Wildlife Control Training Program

Training materials, handling and control techniques, and species information



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## Disclaimer

Implementation of wildlife damage management involves risks. Readers are advised to implement the safety information provided in this Manual.

Some control methods mentioned in this document may not be legal in your location. Always use repellents and toxicants in accordance with EPA-approved labels and your local regulations. Wildlife control operators must consult appropriate authorities before instituting any wildlife control action.

Mention of any products, trademarks, or brand names does not constitute endorsement, nor does omission constitute criticism.

Medical information provided in this document is not intended to replace the medical advice of your doctor or health care provider. Please consult your health care provider for advice about a specific medical condition.

## Request for Comments

We hope you enjoy this book. We welcome your feedback and suggestions as to how we could improve future editions. Send comments to

Stephen M. Vantassel [svantassel2@unl.edu](mailto:svantassel2@unl.edu) or 402-472-8961.

# Structural Pest Control Program Bird Management Manual

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- National Wildlife Control Training Program.  
[WildlifeControlTraining.com](http://WildlifeControlTraining.com)
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