

CHAPTER 2

BIRDS

LEARNING OBJECTIVES

After completely studying this chapter, you should:

- Be able to identify the common types of “pest” birds.
- Be able to describe the life cycles, habits, and habitats of common pest birds.
- Be able to identify situations in which birds are considered pests.
- Be able to describe the health hazards and property damage associated with bird pests.
- Know the chemical and non-chemical alternatives for bird control and management.
- Know techniques for managing pest birds in agricultural situations.
- Understand the legal considerations and know what precautions (protection of non-target birds, personal protective equipment, etc.) to take when managing bird pests.

Birds provide enjoyment and recreation while greatly enhancing the quality of life. These colorful components of natural ecosystems are studied, viewed, photographed, enjoyed, or hunted by most Americans. Bird watching as a sport and recreational activity involves more than 10 million people. For this reason, birds are strongly protected by laws, regulations, and public opinion.

Birds can become pests, however, when they feed on crops, create health hazards, roost in large numbers on buildings, contaminate food, or create a nuisance. No

particular species can be flatly categorized as good or bad. Whether birds are beneficial or harmful depends on time, location, and activity.

The three main pest birds not protected by the federal Migratory Bird Treaty Act (see Chapter 1) are pigeons, house sparrows, and starlings. The state of Michigan requires a **General Wildlife Damage and Nuisance Control Permit** or, under certain conditions, a **Project Control Permit** to control these birds. In addition, local ordinances may protect these birds and/or specify the types of treatments that can be used. Always check local and state laws before attempting control of these birds.

PIGEONS

The domestic pigeon (*Columba livia*) developed from the rock doves of Europe and Asia, was introduced into the United States as a domestic bird. Rock doves originally nested in caves and holes and under overhanging rocks on cliffs, so they comfortably adapted to window ledges, roofs, eaves, steeples, and other components of man-made structures.

Pigeons give pleasure to many people. Along with house sparrows, they may be the only “friendly” wildlife observed by many people living in an inner city. Many park visitors have adopted special pigeons that they feed every day. Pigeons are also bred for racing, stunt flying, and meat production. Pigeon racing is a sport in Europe and in some parts of the United States, with birds racing distances of 10 to 1,000 miles (the record is 3,000 miles).

Pigeons are used for scientific research on heart disease in humans and diseases of domestic chickens. They are raised for food. The meat of pigeons, referred to as “squab,” is considered a delicacy.

Pigeons have become the most serious bird pest associated with buildings. They may congregate in flocks of a hundred or more. Though primarily seed or grain eaters, pigeons in urban areas feed on garbage, spilled grains, insects, food left out by outdoor diners, and food provided by bird lovers, who intentionally feed pigeons bread, peanuts, and cookie crumbs.



Figure 2.1. Pigeon, *Columba livia*

Habits of Pigeons

Pigeons are gregarious—they feed, roost, and loaf together whenever possible. Feeding, roosting, and loafing sites are usually separate. Roosting sites are protected from the elements and used for nesting, congregating at night, and shelter in bad weather. Loafing sites will be nearby and used by inactive birds during the daytime. Feeding sites may be several miles away. When pigeons are not feeding or mating, most of their day is spent cooing, preening, and sunbathing. Sunbathing is most common in the morning of cool days.

Pigeons prefer to rest and feed on flat and smooth surfaces. Unlike most birds, they will feed from rooftops, regardless of height, because they like open feeding areas that permit a speedy getaway. They also feed on open ground and occasionally on ledges. Typical roosting and loafing sites are building roofs and ledges, cooling towers, bridges, and signs. Typical feeding sites are parks, squares, food-loading docks, garbage areas, railroad sidings, food plants, and wherever people eat outdoors.

Male pigeons are sexually mature at 3 to 4 months of age; females at 6 months. Pigeons usually mate for life unless separated by death or accident. If one partner of a mated pair is lost, the survivor will re-mate within a few days. After pairing and mating, nest construction begins.

Pigeons nest on a frail platform of small twigs, straw, and debris in which they make a slight depression. Nests are usually located in protected openings in or on buildings and structures. The male usually selects the nest site, but both adults build the nest, with the male often bringing nest materials to the female.

One or two creamy-white eggs are laid 8 to 12 days after mating. Three or more eggs are sometimes found in a single nest, but this occurs when two or more hens

share one nest. Both parents incubate the eggs for roughly 18 days—the male from midmorning through afternoon, and the female the rest of the day and evening.

At birth, the young pigeons are naked and helpless. They are fed “pigeon milk,” a milky-white fatty substance regurgitated from the parents’ crops. After five days, the parents begin mixing grain and other foods with the pigeon milk, and after 10 days, they switch completely to whole grains.

During the first week or so, the young double in size daily and so are full grown in less than a month. They are fledged when they are 37 days old. Average flight speed is 36 mph. Adult birds can mate again while the young are still in the nest.

Pigeons nest during all seasons when conditions permit. City pigeons generally remain in one area year round and produce 10 young per year. Nests that are continually used become solid with droppings, feathers, debris, and, sometimes, dead birds.

Life span is highly variable, ranging from 3 to 15 years in urban roosts. Pigeons have lived for 30 years in captivity.

STARLINGS

European starlings (*Sturnis vulgaris*) were introduced into the United States in 1890, when 60 were brought to New York City. They rapidly expanded into new areas. Today, 140 million starlings range throughout North America.

Starlings are robin-sized birds that weigh about 3 ounces. Adults are dark with light speckles on their feathers in winter. The feathers turn glossy purplish black and green in summer. The bills of both sexes are yellow from January to June and dark at other times. Young birds are grayish.

Starlings have relatively short tails and appear somewhat chunky and humpbacked. The wings are triangular when stretched out in flight. Starling flight is direct and swift, not rising and falling like the flight of many other black birds.



Figure 2.2. European starling, *Sturnis vulgaris*

Habits of Starlings

Starlings nest in holes or cavities in trees or in rocks, or in urban areas on buildings, in birdhouses, on power stations and water towers, and in and on other structures. Starlings average two broods a year with four to seven young per brood. Both parents build the nest, incubate the eggs, and feed the young. The young birds leave the nest when they are about 3 weeks old.

Starlings migrate in some parts of the country. They begin forming large flocks when temperatures become cooler in the fall. The major sources of food shift from insects and fruits to grains, seeds, livestock rations, and food in garbage. Roosting areas may shift from rural and suburban areas into cities and towns. Each day, they may fly up to 30 miles to their feeding sites. Each starling eats about 1 ounce of food each day.

Leaving their evening roost at sunrise, they travel to feeding sites over well established flight lines. When they return to the roost just before sundown, they do not fly straight into their roost. They “stage” on high perches such as trees, power lines, bridges, and towers. The birds are quite social at these times and remain on pre-roost sites until after sunset, singing and calling to one another.

Starlings are pests because of their high numbers. Thousands or tens of thousands can roost at one site. Droppings at the roost site damage car finishes, tarnish buildings, drop on people below, and build up to such levels that they become a health hazard. Starlings have been responsible for outbreaks of a number of diseases.

When starlings roost in food processing plants or storage areas, they contaminate food. The birds consume large quantities of livestock feed and contaminate water at stockyards. The noise of a large flock can be irritating.

HOUSE SPARROWS

The house sparrow (*Passer domesticus*) also called the English sparrow, was introduced into the United States in the 1850s. Populations now flourish all over the continental United States except in heavy forests, mountains, and deserts. It seems to prefer human-altered habitats in cities and around farm buildings and houses. In fact, though it's still one of the most common birds, its numbers have fallen drastically since the 1920s when food and waste from horses furnished unlimited food.

The house sparrow is a brown, chunky bird 5 to 6 inches long. The male has a distinctive black bib, white cheeks, a chestnut mantle around a gray crown, and chestnut upper wing covers. The female and young birds have a gray breast, buffy eye stripe, and a streaked back.



Figure 2.3. Male house sparrow, *Passer domesticus*

Habits of House Sparrows

House sparrows average three broods per season with four to seven eggs per brood. Breeding can occur in any month; through much of the country, it is most common from March through August. Eggs are incubated for about two weeks, and the young stay in the nest another two weeks.

The male usually selects the nest site. Nests are bulky and roofed over; they are located in trees and shrubs, on building ledges, in signs, on light fixtures, and under bridges. Nests often plug rain gutters or jam power transformers.

Sparrows are aggressive and social birds, often out-competing native species. They have no recognized migration patterns and will stay in an area as long as food and nest sites are available. Young birds, however, move out of an area to establish new territories. Flocks of juvenile birds and non-breeding adults may sometimes travel 4 or 5 miles from nest sites to feeding areas. Sparrows are very tolerant of human activity and will not hesitate to set up housekeeping in high-traffic areas.

House sparrows prefer to feed on grain. They will also feed on fruits, seeds, and garbage.

House sparrows can be pests in many situations. Their droppings contaminate stored grain and bulk food. Droppings and feathers can make hazardous, unsanitary, and smelly messes inside and outside of buildings, on sidewalks, and under roosting sites. Sparrows can also become pests when one or a few begin nesting inside a food plant, warehouse, mall, or atrium.

The birds cause damage by pecking at rigid foam insulation in buildings and nesting inside traffic lights. They create a fire hazard by nesting in transformers and power stations.

They are a factor in the transmission of a number of diseases, internal parasites, and external parasites (i.e., ectoparasites). Most significantly, they are thought to be a major reservoir of St. Louis encephalitis.

OTHER BIRDS

The three birds that most often become pests in the United States in urban areas are pigeons, starlings, and house sparrows. Other birds, from hawks to swallows, may occasionally cause unexpected and unusual pest problems. When blackbirds and crows roost in suburban areas, they become pests. Woodpeckers peck holes into house siding looking for insects. Seagulls can feed at food plants.

Many of these birds are more protected by laws and regulations than the three birds discussed above. Special permits may be required to trap them or to control them by lethal means. The best approach emphasizes exclusion or modification of buildings.

HEALTH HAZARDS ASSOCIATED WITH BIRDS

Though health risks from birds are often exaggerated, large populations of roosting birds may present risk of disease people nearby. The most serious health risks are from disease organisms growing in accumulations of bird droppings, feathers, and debris under a roost. If conditions are right, particularly if roosts have been active for years, disease organisms can grow in these rich nutrients.

Birds may contaminate food, but this risk is usually limited to food manufacturing or processing plants. When parasite-infested birds leave roosts or nests to invade buildings, some of their parasites can bite, irritate, or infest people.

Histoplasmosis

This systemic fungal disease is transmitted to humans by airborne mold spores from soil contaminated by pigeon and starling droppings (as well as the droppings of other birds and bats). The soil under a roost usually has to have been enriched by droppings for three years or more for the disease organism (*Histoplasma capsulatum*) increase to significant levels. Though it is almost always associated with soil, the fungus, in rare instances, has been found in droppings alone, such as in an attic. Infection is by inhalation of the spores, which can be carried by wind, particularly after a roost has been disturbed.

Most infections are mild and produce either no symptoms or a minor flulike illness. The disease can, on occasion, lead to high fever, blood abnormalities, pneumonia, and even death. Based on histoplasmin skin tests given to large numbers of people throughout the United States, it is thought that about 50 million people have had histoplasmosis or been exposed to it. Each year there are about 500,000 infections, 5,000 people hospitalized, and 800 deaths in the United States due to histoplasmosis.

The National Eye Institute (NEI) at the National Institutes of Health has reported a potentially blinding eye condition, called ocular histoplasmosis syndrome

(OHS), which results from infection by *Histoplasma capsulatum*. In this condition, the central part of the retina (the macula, used in straight-ahead vision) becomes inflamed and is damaged as blood vessels grow inside the affected area. The NEI estimates that 4 percent of those exposed to the disease have tiny scars that put them at risk of developing OHS. An estimated 100,000 people have OHS in the rapidly progressive form that can lead to blindness.

Cryptococcosis

Pigeon droppings appear to be the most important source of the disease fungus *Cryptococcus neoformans* in the environment. The fungus is typically found in accumulations of droppings in attics, cupolas, ledges, water towers, and other roosting and nesting sites on structures. It has been found in as many as 84 percent of samples taken from old roosts. Even when old and dry, bird droppings can be a significant source of infection. As many as 50 million colony-forming units have been found in a gram of pigeon manure.

The disease is acquired by inhaling the organism's yeastlike vegetative cells (2 to 3 microns in diameter). There are two forms of cryptococcosis present in humans. The cutaneous form is characterized by acne-like skin eruptions or ulcers with nodules just under the skin. The generalized form begins with a lung infection and spreads to other areas of the body, particularly the central nervous system. It can be fatal. Like histoplasmosis, outbreaks of this disease often occur after building renovation, roost cleanup, or other actions that disturb old droppings.

Other diseases carried or transmitted by birds affect humans to a lesser degree. Psittacosis, pigeon ornithosis, and toxoplasmosis are normally mild in humans. However, serious illness or death can occur in rare cases. Pigeons and sparrows have also been implicated (along with many other species of birds) in outbreaks of encephalitis.

Ectoparasites

Pigeons, starlings, and house sparrows harbor external parasites that can invade buildings. Some of these parasites can bite and irritate. A long list of mites infest pigeons, but the northern fowl mite and the chicken mite are usually the main culprits invading buildings from nesting and roosting sites. Other pigeon ectoparasites that may cause problems inside buildings are the pigeon nest bug (a type of bedbug), various species of biting lice, the pigeon tick, and the pigeon fly.

Droppings, feathers, food, and dead birds under a roosting or loafing area can also breed flies, carpet beetles, and other insects that may become major problems in the immediate area. These pests may fly or walk into windows, ventilators, cracks and crevices, and the like, and enter buildings.

Defacement and Damage to Structures and Equipment

Bird droppings under windowsills, “whitewashing” down a building face, or accumulating on sidewalks and steps are the most obvious problem associated with large roosts. Cleanup can be labor-intensive and expensive, particularly on high-rise buildings. Bird droppings are corrosive and will damage automobile finishes, many types of metal trim, electrical equipment, and machinery. Droppings, nest materials, and feathers also block downspouts and vents on buildings. This accumulation of debris can attract insect pests such as carpet beetles and other dermestids, spider beetles, and mealworms.



Figure 2.4. Defacement of building from pigeon droppings

LEGAL CONSIDERATIONS

Federal Laws

With very few exceptions, all birds are protected by one or more federal laws and regulations (see Chapter 1).

- Pigeons, starlings, and house sparrows are not directly protected at the federal level, but applications of toxicants or repellents must be made according to the product label and under the restrictions that apply under FIFRA.
- Other birds are regulated in some way at the federal level.
- Non-target birds in the treatment area are protected, and any actions that kill or damage protected birds or their habitats will violate various federal and state regulations.

State and Local Laws

Michigan requires applicators certified in Categories 7A or 7D to obtain a General Wildlife Damage and Nuisance Control Permit for control of pigeons, starlings, house sparrows, and crows. However, according to Section 5.53 of the Wildlife Conservation Order, pesticides may be used to control English sparrows, feral pigeons, and starlings only when applied to the exterior of buildings and other structures in recognized industrial areas of cities. Because of the risks of secondary poi-

soning to other bird species and/or direct poisoning of non-target bird species, state regulations are very restrictive in non-industrial areas—i.e., those areas where non-target species are likely to be present. When pesticides are being used to control these three pest birds in outside-of-building non-industrial areas, it is necessary to obtain a Project Control Permit from the DNR Wildlife Division for each project (see Appendix C).

According to Section 5.53 of the WCO, prior to the initial use of pesticides by any permittee, the commercial applicator must contact the Michigan representative of the U.S. Department of Agriculture (USDA) to obtain guidance and technical advice regarding the methods of controlling nuisance birds without threatening protected species. Bait-type pesticides used outside of buildings in non-industrial areas must be preceded by prebaiting, and the treated bait cannot be left unattended. This requires a person to be on the site monitoring the bait to ensure non-target species are not killed. The incidental taking of migratory birds by poison bait ingestion or the killing of hawks and owls or other predatory/scavenger bird species by secondary poisoning may result in severe fines for the unlawful killing. The prompt and proper disposal of target carcasses to ensure that secondary poisoning does not occur is the responsibility of the permittee. If secondary or non-target poisoning occurs, the permittee will be held responsible.

Migratory birds are protected by federal regulations. Therefore, a federal permit is required to control these birds. In addition, local laws concerning acceptable bird control methods must also be complied with. For example, in certain portions of Detroit, Lansing, and Grand Rapids, no pesticide use is permitted for bird control because of the possibility of secondary poisoning to peregrine falcons. When in doubt, contact local natural resource agencies, the state or district DNR Wildlife Division offices, and/or the U.S. Fish and Wildlife Service for further information.

TOOLS AND METHODS FOR MANAGING PEST BIRDS

Inspection

The first step in controlling birds is to conduct a detailed and accurate bird survey. Surveys should be conducted early in the morning, at midday, and again in the evening to correspond to the activity periods of birds. The survey should not be limited to information about pest birds—knowledge of non-target bird activity is just as important to minimize risk to these birds. The survey should investigate:

- What birds are present?
- How many?
- Are they residents, migrants, adults, juveniles?
- Are they nesting, feeding, roosting, loafing?
- Where do they eat and drink?
- What is attracting them to the various sites?

- Are the birds causing a health risk?
- Are the birds causing physical damage?
- If dispersed, where would they go?
- If poisoned, where would they die?
- Is there risk to non-targets?
- What are the legal considerations?
- Could there be public relations problems?
- Is exclusion or habitat modification practical?

Habitat Modification

Habitat modification for birds means limiting a bird's food, water, or shelter. Attempting to limit the food or water of pigeons, starlings, and house sparrows is not practical. These birds will have a number of feeding and watering sites, often far from roosting and loafing sites. Where people are feeding birds in parks or lunch areas, education can help reduce this source of food; but in most cases, people will pay little attention to requests to stop.

The most successful kind of habitat modification is to exclude the birds from their roosting and loafing sites (addressed in the section on exclusion).

Pigeons may be induced to move from an infested site by the persistent destruction of nests and eggs. Nest destruction is ineffective against sparrows and starlings.

- Spray high-pressure streams of water from fire-fighting equipment or other high-pressure water lines. This is the most cost-effective method of nest destruction. This method destroys the nest, eliminates ectoparasites, cleans droppings and feathers from the nest site, and harasses the roosting birds. Use high-pressure sprays only where the high pressure or water will not damage buildings or equipment. Make sure contaminated wash is not sprayed over walks or areas where people are present. Remove all droppings and nest materials from the area.
- When spraying is not safe, a more traditional method is to use a hook fastened to a long pole to remove the nests.
- When the nests are within 20 feet of occupied sites, treat the immediate nest area with an insecticide/acaricide to eliminate ectoparasites.
- Destroy nests every two weeks during the spring and summer months until the birds move to other nest sites.

Exclusion

Some building designs and conditions lend themselves to bird infestation. Flat ledges, openings in water towers and vents, unscreened windows, and other attributes make a building an attractive location for roosting, nesting, and loafing. Modification or repair can exclude birds.

Typical solutions include replacing broken windows, adding screens, eliminating large crevices, and blocking openings into vents, cooling towers, and roof-top equipment with hardware cloth or similar material. Also changing the angle of ledges to 45 degrees or more will discourage roosting.

Exclusion methods also include the use of netting, custom-designed sheet metal or plastic covers, porcupine wire (Nixalite, for example), electrified wires, and sticky repellents to keep birds from roosting on ledges, roof edges, windowsills, building signs, and other surfaces favored by pest birds. Two advantages are that the birds are not killed and the control is comparatively long-lasting.

Netting. Netting is used to block access of birds to large roosting areas in structures. Netting is especially useful in warehouses and around mechanical equipment areas where aesthetics are of minor consideration. It has been used successfully on cooling towers. Plastic nets have replaced metal and fiber nets in bird control. Plastic nets are normally extruded black polypropylene and are made with an ultraviolet inhibitor to reduce UV degradation. Knotted nets are also available. Some newer designs in nets are less obtrusive and come in custom colors. Nets will last from 2 to 5 years or longer, depending on exposure to sunlight.

Covers or Ramps. Custom-designed covers for ledges, window air-conditioning units, and roof edges are the best technical solution to keep birds from infesting these sites. The high cost of this method usually eliminates this option on large buildings that have extensive roosting sites. But covers are valid options where limited applications will keep birds off selected sites, and where aesthetics are an important consideration. The covers usually consist of sheet metal installed at a 45 degree angle to prevent the birds from landing. Sometimes plastic inserts are custom-fit into the indentations to block off ledges. Roosting on ledges can be discouraged by changing the angle to 45 degrees or more. Sheet metal, wood, Styrofoam blocks, stone, and other materials can be fastened to ledges to accomplish the desired angle.



Figure 2.5. A wooden, metal, or plexiglass covering over a ledge at a 45 degree angle (a) or porcupine wire (b) can be used to prevent roosting and nesting.

Spikes. Porcupine wire, sharp metal spikes, or any similar "bed of nails" can stop birds from roosting on ledges. Where they can be used, they usually work fair-

ly well. If aesthetics are important, these devices are usually limited to areas where they cannot be easily seen. Some newer products, such as clear plastic spikes, may be more aesthetically pleasing.

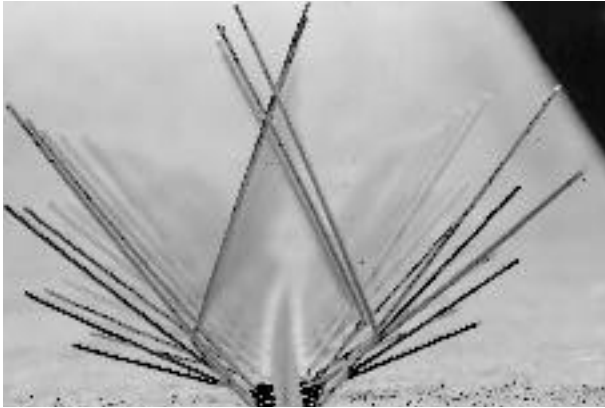


Figure 2.6. Nixalite (porcupine wire)

- If pigeons are likely to drop nest material and other debris on top of the newly installed spikes in an attempt to create a new roosting surface, install metal spikes on potential landing sites **above** the installation.
- Check metal spikes every six months for accumulated debris or nest material. Advise clients to regularly remove fallen autumn leaves and other matter that can cover the spikes and reduce their effectiveness. Ensure that no tree branches hang over protected ledges.

Sticky Repellents. Sticky repellents are tacky gels or liquids. The products are designed to be sticky enough to make a bird uncomfortable, but not so sticky that the birds are trapped. After a few attempts, the birds stop trying to land on treated surfaces. The active ingredient is polybutene or isopolybutene (the same substances used in some adhesive bandages) or petroleum naphthenic oils.

- Before applying sticky repellents, clean ledges that are covered by bird droppings, feathers, and nest material with a wire brush, paint scraper, high-pressure hose, or steam cleaning.
- Ensure that surfaces are clean and dry.
- Seal concrete, unpainted wood, or brownstone with silicone or other sealant, paint, or shellac before applying repellent. Sticky repellents will be absorbed into porous materials.
- Use a caulking gun to apply repellent. The depth of the bead necessary to repel various species of pest birds is roughly as follows: crows and seagulls, 3/8 inch; pigeons, 1/4 inch; starlings, 1/8 inch; sparrows, 1/16 inch. The pattern of application will depend on the site and personal preference. The caulking gun should be held at an angle of 30 to 45 degrees.
- Apply a straight bead on ledges and roof edges 1/2 inch from the outer edge, with another bead 3 inch-

es in from the first. It can also be applied in a zigzag or S curve.

- For another option, combine a straight line 1/2 inch from the outer edge and an S curve 3 to 5 inches back.
- Place breaks in the bead every few feet to avoid trapping rainwater against the building.
- For easy removal and replacement, apply waterproof sticky repellent tape on ledge and roof edges.
- Apply bulk gels with a paint roller, putty knife, or bulk caulking gun.
- Apply liquids with a roller, brush, or compressed-air sprayer to girders, rods, sign supports, and rooftops. They can also be used to treat the upper surfaces of branches in trees and bushes. The repellent should be 1/16 to 1/8 inch thick. Liquid application is not recommended for sites where the appearance of the sticky repellent would be undesirable.

Environmental conditions, particularly dust, make a big difference in the effective life of sticky repellents. In an area with no dust, applications should be expected to remain effective for a year or more. Some sticky repellents come with a liquid coating that is sprayed onto the repellent immediately after application. The liquid dries to a brittle film that protects the material from dust and may allow it to remain effective for as long as two to five years.

Certain precautions should be followed when sticky repellents are used:

- Remove nests.
- Check state and local regulations that may prohibit destroying or disturbing nests containing eggs or young.

Under some conditions, sticky repellents stain the surfaces to which they are applied. Some products melt and run when exposed to direct sun and high temperatures.

- Review labels and the manufacturers' technical information on the effective temperature ranges of various products.
- Compare the stability of various products by running a test on a sunny roof or window ledge.

Birds occasionally get stuck in sticky repellents. When this happens, their feathers will get gummed up and they'll be unable to fly. If a bird becomes gummed up with repellent, it can sometimes be rescued by cleaning with repellent, it can sometimes be rescued by cleaning the flight feathers with a small amount of mineral spirits followed by mineral oil. In most cases, cartridge applications (as described earlier) will repel the birds with little risk of entanglement.

Ultrasonic Devices

It should be noted that numerous tests by university, government, and private independent researchers have failed to demonstrate any efficacy against birds by any of the ultrasonic devices tested. ***These devices do not work against birds.***

Trapping

In many instances, trapping can be an effective supplemental control measure. Trapping is especially effective against pigeons. Where a group of birds is roosting or feeding in a confined and isolated area, trapping should be considered the primary control tactic.

The best time to trap pigeons is in the winter, when their food is at a minimum. There are many pigeon traps to choose from; which type and size are best is debatable. Most pigeon trapping programs use large walk-in traps. These can be 4 to 6 feet high and designed to be disassembled and moved. Another common type is a low-profile bob trap that is about 8 inches to 2 feet high. The door or entrance through which pigeons are lured is the principal feature of a trap.

- Set traps in inconspicuous places where pigeons commonly roost or feed and where traps are not likely to be vandalized (a major risk in trapping programs). Trap placement is important, and moving an inactive trap just 10 to 15 feet may significantly improve catches.

Feeding areas are the best trap sites, but they are rarely on the same property as the roosting sites. Rooftops that have water from cooling towers or air-conditioning units are often good trapping sites in summer.

The most difficult part of trapping is motivating birds to feed in a non-feeding area so that they will follow the bait into the trap. Whole corn or sorghum is generally the best bait, but wheat, milo, oat groats, millet, popcorn, sunflower seeds, peas, greens, bread, or peanuts can be very effective if the birds are feeding on similar food. Once a few birds have been trapped, putting a variety of foods in with the birds can show which bait they prefer.

- In the first few weeks of a program, scatter small quantities of bait throughout the area to start the birds feeding and determine the best trap sites. Some specialists leave traps propped open for the first few days to allow the birds to get used to them.
- When the birds are calmly entering the trap, set it. Put bait and water (a “chick fountain” is ideal) inside the trap and just a handful or so outside the trap. Leave one or two “decoy” birds in the trap to draw in other birds. Light-colored birds make better decoys than drab ones.
- Remove trapped birds regularly (except for decoys)—otherwise, other pigeons will be frightened away by the fluttering of trapped pigeons. Pigeons can fly great distances and find their way home, so trap-and-release is not normally effective. In most cases, trapped birds should be humanely destroyed. Some experts recommend gassing with calcium cyanide, but many feel it is simpler and more humane to kill the bird by breaking its neck.

Sometimes indoor roosting sites can be used as a giant trap. Pigeons often use attics, rooftop elevator houses, or empty floors of poorly maintained structures as nest and roost sites. Screening all but one or two entrances can turn such an area into a giant trap. Late in the evening (after about a two-week acclimation period) these last entrances can be closed down after the pigeons have set-

tled down for the night. The trapped birds can then be captured by hand or with butterfly nets.

Sparrow traps come in various sizes and shapes. The sparrow funnel trap is a double funnel that prevents sparrows from escaping after they have traveled through two funnels going for food bait. Fine cracked corn, millet, wheat, or bread crumbs make good bait. Trap sites should be baited for a few days before you actually begin trapping. Sparrow traps are usually more effective when placed on the ground. Nest box traps attract a sparrow with a potential nest site. Once inside, the bird trips the mechanism, which dumps the bird into a collecting bag. This trap also works against starlings, as does the center drop trap. The birds, attracted by food, drop through an opening and cannot escape. However, starlings are not usually good candidates for trapping programs.

LETHAL ALTERNATIVES

Avitrol

Avitrol is a poison bait with flock-alarming properties used to control many kinds of birds. There are different Avitrol baits for each pest bird species—whole corn for pigeons, smaller grains for sparrows and other birds. Within 15 minutes of eating a toxic dose of Avitrol, birds flutter erratically and go into convulsions. They may fly away from the baiting site, they may fly into windows, or they may “dive bomb” into the ground.

Affected birds convulse for an hour or more. Most die within a few hours, but some last for as long as 15 hours. Only a small percentage of the flock (usually from 5 to 15 percent) needs to be affected for an Avitrol program to be successful. The flock becomes frightened by the convulsions and distress of the poisoned birds, and anywhere from 65 to 85 percent of the flock will leave the area. Use of Avitrol requires consultation with a USDA representative (refer to Section 5.53 of the WCO).

Prebaiting. At most sites, birds must be trained to feed on bait. Though baits are different for each bird, the general process is the same. Here is the procedure for pigeons:

- Place untreated whole corn in numerous piles on flat rooftops, ledges, and similar sites in the treatment area.
- Place many small piles (1/4 pound each) 20 feet apart.
- Place about twenty 1/4-pound piles of bait on a flat 5,000-square-foot roof.

The goal in prebaiting is to get at least 40 percent of the birds to accept the untreated bait. Expect the effort to take from three days to three weeks. When possible, remove all untreated prebait corn before switching over to Avitrol.

Cardinals, blue jays, doves and certain other seed-eating birds also eat whole corn. Do not use Avitrol where non-target birds fed on the prebait unless the site is one

of many. When this happens, continue baiting the isolated site with untreated corn. In this way, non-targets will be kept away from your Avitrol baiting sites.

Avitrol whole corn is not used alone—it is mixed with untreated corn in ratios ranging from 1 part Avitrol and 29 parts untreated bait up to the maximum ratio of 1 to 9. The higher the proportion of Avitrol, the better the chance to move the flock quickly. However, this also increases the number and visibility of dead or convulsing birds.

With good bait acceptance, a ratio of 1:29 (treated:untreated) will generally kill about 5 percent of the flock; a 1:9 blend will generally kill 15 percent or more.

- Use the ratio that best fits the job.
- Keep in mind that you're trying to relocate the flock, not kill every pigeon.

The amount of Avitrol bait set out should be about half the total prebait used each day. For example, if 8 pounds of prebait have been set out each day for a flock of about 100 birds, 4 pounds of the Avitrol blended bait should be set out when you switch over.

One Avitrol application is adequate for most jobs. At large commercial operations (e.g., a freight yard), bait may need to be placed daily for a few days. If pigeons become bait-shy, wait about three weeks, then begin a new prebaiting program. If a site has been getting monthly Avitrol "maintenance" baiting, pigeons can become extremely bait-shy. Prebaiting for as long as three or four months may be necessary, so it is usually best to switch to another control method.

Use care to follow directions for using Avitrol specifically for each species of pest bird. Read the label carefully.

Secondary poisoning, in its classical definition, is not a risk with Avitrol because the chemical is metabolically changed in the tissue of affected birds. However, if a dead or dying bird has a supply of Avitrol-treated bait in its crop, there is potential risk to an animal feeding on this bird.

Toxic Perches

A toxic perch is a metal container with a wick surface that holds a liquid contact poison that birds absorb through their feet when they stand on the perch. The toxicant (fenthion) is hazardous to all birds and animals, **including humans**. Toxic perches are particularly useful where food is in constant supply or Avitrol bait is not accepted. They are applied in locations where birds will perch on them, usually in the evening hours. An average-sized job will require 10 to 12 perches; a large job might require 30.

Toxic perches can be used only in certain sites: inside buildings and structures (non-food areas), on building tops, structural steel, power plants, or substations, and at feedlots, loading docks, and storage yards. Pigeons develop a site-specific aversion to perches placed at feeding, loafing, or watering sites but not usually in roosting sites. Perches usually need refilling twice per year. In hot weather, perches sometimes leak toxicants.

Birds can absorb a toxic dose in less than a minute but may not die for four days. Pigeons will normally find a protected place out of the sun and wind once they begin feeling the effects of the toxicant. They usually don't fly after that time and so usually die with 20 to 30 feet of the perch, if it was set in a roosting site. There is a secondary poisoning hazard if other animals feed on dead birds. There have also been reports of hawks and owls dying after using the perches. By law, dead birds must be picked up, buried, or burned.

Ornitrol

Ornitrol is a chemosterilant, often called the "birth-control pill for pigeons." When fed to pigeons, it inhibits ovulation in the female and sperm production in the male. The effects of treatment last for six months in the female and three months in the male. When applied as directed on the label, it will not kill birds, but populations will slowly decline over the years from the natural mortality in aging pigeon populations. It is used in situations where long-term control is desired with no expectations of immediate results.

The manufacturer recommends applications for 10 days two times per year—in the early spring (March) and late summer or early fall. For each 100 pigeons, 7.5 pounds of Ornitrol corn are scattered daily for 10 days. Prebaiting with whole corn for a week will usually be necessary to achieve bait acceptance. Most birds eating Ornitrol would be temporarily sterilized, so care must be taken to avoid feeding non-target species. Research data indicate little or no activity in mammals. There is no secondary poisoning hazard.

Shooting

A possible alternative or supplemental method for eliminating birds is shooting with air-powered pellet guns. Check with local and state law enforcement before discharging any firearms.

- Shoot at night or first thing in the morning in roosting areas.
- Use a high-powered pellet gun—it is relatively accurate, quiet, and short-ranged, and it will not cause structural damage. Many models are available. Some specialists use .22 caliber smooth-bore rifles loaded with No. 12 or No. 9 birdshot or sandshot. These are noisy, however, and too powerful for urban sites.
- Use care—errant shots can be dangerous.

Risks to Non-targets

Most lethal tactics in bird control pose some risk to non-target birds, as well as other animals. Non-targets are protected by various federal, state, and local regulations, as well as by public opinion. Care must be taken to minimize the threat to non-targets or to use tactics that pose the least risk.

- First, identify the non-targets in the area.
- Second, use low-risk tactics.

- Third, modify tactics to minimize risk.
- Fourth, monitor operations to be sure that non-targets are not being adversely affected.

Public Relations

People often react more negatively to one dying bird than to accumulated pigeon droppings on sidewalks or potential risks of parasites and disease from bird roosts. Pigeons and sparrows are seen as pets rather than pests. Consider the public's perception of bird management operations. All bird management programs should put some effort into avoiding "people problems," particularly when using Avitrol or other toxic control techniques. Care should be taken to place traps or other control measures well out of sight of the public.

BIRD DROPPINGS REMOVAL AND CLEANUP

Workers removing large quantities of bird droppings should follow these precautions to minimize risk from disease organisms in the droppings:

- Wear a respirator that can filter particles down to 0.3 micron.
- Wear disposable protective gloves, hat, coveralls, and boots.
- Wet down the droppings to keep spores from becoming airborne, and keep them wet.
- Put droppings into sealed plastic garbage bags and wet the outsides of the bags.
- When finished, and while still wearing the respirator, remove the protective clothing and place the items in a plastic bag.
- Dispose of trash bags. (Disposal should be permissible through standard trash pickup).
- Wash up or shower.

CONTROL OF PEST BIRDS IN AGRICULTURAL AREAS

Several pest birds, including a variety of blackbirds, can become pests of agricultural crops. Blackbirds may cause major losses in sunflower and corn fields, and are pests around grain storage facilities. Waterfowl and wild turkeys may destroy portions of ripening grain fields or trample newly planted fields in spring. House finches and robins frequently damage soft fruits such as cherries or blueberries. These birds are protected by federal regu-

lations. Though, under special circumstances, a federal permit is not required to control certain blackbirds (see Chapter 1), state and local regulations may require special permits to trap them or to control them by lethal means. Growers require effective control of bird damage in a variety of agricultural situations. Some control methods that apply to agricultural situations are described below. These methods may be used alone or in combination with the other (i.e., trapping, shooting, baiting, etc.) methods described above.

Exclusion

- Netting is the most effective method for controlling bird damage. However, there is a high labor cost for installation and removal of netting, and this method is usually cost-effective for only the most valuable crops.

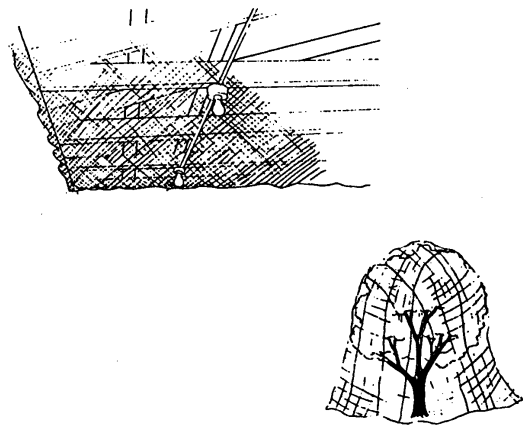


Figure 2.7. Netting can be used to exclude birds from building rafters and from fruit trees.

- Monofilament lines (cords or fine wire) have been used to reduce bird damage at landfills, fish hatcheries, public parks, and agricultural fields. The lines are stretched across the areas in a variety of spacings and configurations (grid patterns, parallel patterns, etc.) and at varying heights, depending on the species to be controlled. Species responses have been quite variable. For example, gulls, crows, and sparrows appear to be particularly sensitive to lines and have been successfully repelled. To protect crops, lines are usually practical only for small plots or home gardens.
- Commercial plastic strips can provide bird-proof barriers for doors to warehouses, grain storage areas, and other buildings. These strips can be hung from the top of the doorframe to ground level, allowing easy access for people and equipment.

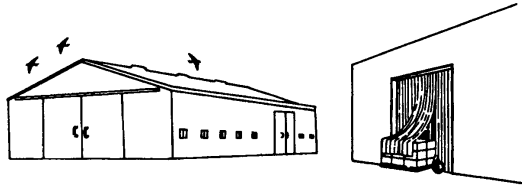


Figure 2.8. Bird-proof buildings to permanently eliminate bird problems inside.

Frightening Devices

Auditory Frightening Devices. Broadcasts of recorded distress or alarm calls have been used successfully to drive birds from fields, orchards, and roosts. Most calls are species-specific, so it is important to identify the birds causing damage. Also, appropriate distress calls may not be available commercially. Propane exploders (some with timers that automatically turn them on and off each day) are also a popular frightening device.

Visual Frightening Devices. Some devices include eye-spot balloons (helium-filled balloons tethered in fields), scarecrows (sometimes used with a propane exploder or a “scary man fall-guy” device), and reflecting tapes made of Mylar placed 3 to 7 yards apart to protect small fields (requires substantial labor).

The use of frightening devices can be effective in protecting crops from flocks of feeding birds, but their use also requires hard work and long hours for the farmer. Devices need to be employed especially in the early morning and in late afternoon when the birds are most actively feeding. In addition, birds tend to adjust or adapt to frightening devices. It is usually best to use two or more devices or methods of bird control.

Chemicals

Avitrol may be available for protecting fields from grackles, red-winged blackbirds, cowbirds, and starlings. Check state and local ordinances.

Cultural Practices

- Controlling insect populations in field crops may sometimes reduce the pest bird populations that feed on them.
- Establish new fields away from cover or perch sites (snags or power lines), or remove attractive habitat features from areas next to plantings.
- To reduce feeding by blackbirds, plant non-attractive crops such as soybeans, wheat, potatoes, or hay.

SUMMARY

Birds provide enjoyment and recreation while greatly enhancing the quality of our lives. Unfortunately, they can become pests at times, too—feeding on crops, creating health hazards, roosting on buildings, contaminating food, or creating a nuisance. The major pest birds are pigeons, starlings, and house sparrows, though many birds can become pests in the right—or wrong—situation.

Many laws and regulations protect birds. Though pigeons, starlings, and house sparrows are not directly protected by federal law, their control is often strictly regulated by state and local law. Public opinion is often strongly against any control measures that kill birds, even pest birds.

Non-lethal bird control methods include habitat modification (limiting food, water, and shelter), exclusion (with netting, porcupine wire, sticky repellents, etc.), and trapping. The most common lethal control measures are Avitrol poison baits and toxic perches. Be extremely careful when using bird poisons so that you do not harm

CHAPTER 2

Review Questions

Chapter 2: Birds

non-target birds and animals.

1-8. Match the following to the appropriate description:

- A. Pigeons
 - B. Starlings
 - C. House sparrows
 - D. All of the above
- ___ 1. Robin-sized bird, yellow beak (January-June), dark with light speckles.
 - ___ 2. Nest on buildings.
 - ___ 3. Introduced into the United States.
 - ___ 4. Usually stay in one area all year long; pairs mate for life; produce 10 young/year.
 - ___ 5. Droppings may carry diseases.
 - ___ 6. Male with black bib, white cheeks, and chestnut upper wing covers.
 - ___ 7. Congregate in large numbers on high perches; singing and calling can be irritating.
 - ___ 8. Average three broods per season with

four to seven eggs per brood.

9. Which of the following is true about pigeons?
- A. They prefer flat surfaces for resting and feeding.
 - B. They will feed on rooftops or on the ground.
 - C. Feeding, roosting, and loafing sites are usually separate.
 - D. All of the above
 - E. None of the above
10. Pigeons usually make a nest of small twigs, straw, or debris on buildings and other structures.
- A. True
 - B. False
11. Which of the following is true about starlings?
- A. They feed at night.
 - B. They may fly up to 30 miles to their feedings sites.
 - C. They usually nest on the ground in low shrubbery.
 - D. All of the above
 - E. None of the above
12. Which of the following is true about house sparrows?
- A. They are nervous around people and will not nest in high-traffic areas.
 - B. They often create fire hazards by nesting inside transformers and power stations.
 - C. They prefer to feed on small grains but will also feed on garbage.
 - D. All of the above
 - E. B and C
13. Which health risk from pest birds is the **most** serious?
- A. Disease transmitted by ectoparasites.
 - B. Inhaling disease organisms from their droppings.
 - C. Food contamination.
 - D. There are no serious health hazards associated with pest birds.
- 14-21. Match the following to the appropriate description:
- A. Histoplasmosis
 - B. Cryptococcosis
 - C. Ectoparasites
- _____14. Transmitted to humans by airborne spores from soil contaminated by droppings.
- _____15. Disease may damage eyes.
- _____16. Pigeon droppings are the main source of this disease.
- _____17. Invade buildings from nesting and roosting sites; can irritate skin.
- _____18. About 50 million people in the U.S. have been exposed to this disease.
- _____19. Disease causes lung infection.
- _____20. One form of the disease produces acne-like skin eruptions or ulcers with nodules.
- _____21. Disease causes flu-like symptoms.
22. FIFRA:
- A. Directly protects pigeons, starlings, and sparrows.
 - B. Directly protects non-target birds.
 - C. Regulates application of toxicants or repellents.
 - D. B & C
 - E. All of the above
23. With a General Damage and Nuisance Control Permit issued by the Michigan DNR, a pest control technician may do the following in relation to bird control:
- A. Use pesticides to control pigeons, starlings, and house sparrows in any location.
 - B. Use pesticides to control all bird species in any location.
 - C. Use pesticides to control pigeons, starlings, and house sparrows only to the exterior of buildings in recognized industrial areas in cities.
 - D. Use pesticides to control pigeons, starlings, and house sparrows only in out-of-building non-industrial areas.
 - E. Use pesticides to control all bird species only in out-of-building non-industrial areas.
24. With a Project Control Permit issued by the Michigan DNR, a pest control technician may do the following in relation to bird control:
- A. Use pesticides to control pigeons, starlings, and house sparrows in any location.
 - B. Use pesticides to control all bird species in any location.
 - C. Use pesticides to control pigeons, starlings, and house sparrows only to the exterior of buildings in recognized industrial areas in cities.
 - D. Use pesticides to control pigeons, starlings, and house sparrows only in out-of-building non-industrial areas.
 - E. Use pesticides to control all bird species only in out-of-building non-industrial areas.

25. According to Michigan's WCO, what steps and precautions must permittees take before the initial use of pesticides in any bird control operation?
26. All local ordinances allow pesticide use for the control of pigeons, starlings, and house sparrows.
- A. True
B. False
27. The first step in controlling pest birds is to:
- A. Attempt to modify habitat.
B. Use exclusion methods.
C. Conduct a thorough survey.
D. Prebait.
28. Nest destruction is ineffective against sparrows and starlings.
- A. True
B. False
29. Which is true about nest destruction?
- A. Destroying nest once in the spring and once in the summer is recommended.
B. Treating nest areas within 50 feet of an occupied site with an insecticide/acaricide is recommended to kill ectoparasites.
C. Nest destruction by spraying nests with high-pressure hoses is cost-effective, eliminates ectoparasites, and cleans droppings and feathers from the nest site.
D. There is no danger that spraying with high-pressure hoses will damage buildings.
E. Removing nests will not induce pigeons to leave the area.
- 30-35. Match the following to the appropriate description:
- A. Netting
B. Covers
C. Spikes
D. Sticky repellents
E. Ultrasonic devices
F. Trapping
- ____ 30. Ineffective at controlling birds.
____ 31. Commonly made of plastic; often used in warehouses, cooling towers, and places where aesthetics are not important.
____ 32. Porcupine wire; stops birds from roosting on ledges.
____ 33. Gel makes birds stop trying to land on treated surfaces.
____ 34. Custom designed for ledges; high cost; use where aesthetics are a concern.
____ 35. Method more effective for pigeons than starlings and sparrows.
36. The best time to trap pigeons is in the spring.
- A. True
B. False
37. When using traps:
- A. Leave "decoy" birds in the trap.
B. Prebait to determine feeding areas/preferences.
C. Place traps in conspicuous places.
D. A & B
E. B & C
38. Place sparrow funnel traps near roosting sites to catch the most sparrows.
- A. True
B. False
39. Which is true about Avitrol?
- A. At least 50 percent of the flock must consume Avitrol to be effective.
B. It is not necessary to prebait when using Avitrol.
C. It does not pose a risk to non-target birds.
D. Mix a ratio of treated to untreated whole corn for pigeon control.
E. A & D
40. The main effect of Avitrol on bird control is:
- A. It kills more than 50 percent of the flock.
B. It inhibits ovulation in females; sperm production in males.
C. It has flock-alarming properties.
D. After receiving a toxic dose, birds die four days later.
E. A & D

41. The main effect of Ornitrol on bird control is:
- It kills more than 50 percent of the flock.
 - It inhibits ovulation in females; sperm production in males.
 - It has flock-alarming properties.
 - After receiving a toxic dose, birds die four days later.
 - A & D
42. When non-lethal bird control is required, which of the following bird-management techniques may be used?
- Netting
 - Avitrol
 - Ornitrol
 - A & C
43. Which is NOT true when using Avitrol whole corn for pigeon control?
- Only 5 to 15 percent of the flock needs to be affected for Avitrol to be successful.
 - Prebaiting with untreated corn may be necessary for three days up to three weeks.
 - Cardinals, blue jays, and doves will not eat whole corn.
 - To prebait, place about twenty 1/4-pound piles of bait on a 5,000-square-foot roof.
 - The goal of prebaiting is to get at least 40 percent of the birds to accept the bait.
44. For Ornitrol to be effective:
- Apply for 10 days two times/year.
 - Prebait with whole corn for a week.
 - Apply for 20 days three times/year.
 - A & B
 - B & C
45. Clients should be made aware that toxic perches do not pose a hazard to humans.
- True
 - False
46. Ornitrol, unlike Avitrol, does not pose a risk to non-target birds.
- True
 - False
47. Non-target birds are protected by federal and state laws but not by local laws.
- True
 - False
48. Public opinion should be considered when deciding on a bird control program.
- True
 - False
49. After cleaning up bird droppings, remove your respirator, then remove your protective clothing and place in a plastic bag.
- True
 - False
50. For the following pest bird situations in rural areas, state what would be the most appropriate exclusion technique and describe your reasoning.
- Keep robins from destroying a high-value cherry orchard crop.
 - Keep blue jays out of grain storage areas.
 - Keep gulls out of a landfill.
51. Describe some of the auditory and visual frightening devices that may be used to control pest birds in rural areas.