

MAINTENANCE GUIDEBOOK VII TERMITE, INSECT, AND RODENT CONTROL

CHAPTER EIGHTEEN - BIRDS

SECTION A INTRODUCTION

Birds provide enjoyment and recreation, enhancing the quality of life for those who view, enjoy, study, photograph, or hunt them. Bird-watching as a sport and recreational activity involves over 10 million people. For this reason, birds are protected by laws, regulations, and public opinion. However, birds can become pests when they feed on crops, create health hazards, roost in large numbers on buildings, contaminate food, or create a nuisance. Pigeons, for example, can cause human health problems when roosting in large numbers, and their droppings can foul buildings and sidewalks, and damage automobile paint. But no particular species can be flatly categorized as good or bad; whether birds are seen as beneficial or harmful depends on time, location, and activity.

SECTION B CHARACTERISTICS AND RECOGNITION

1. PIGEONS

The domestic pigeon, *Columba livia* (Fig. 18-1), developed from the rock doves of Europe and Asia, was introduced into the U.S. as a domestic bird. Rock doves originally nested in caves, holes, and under overhanging rocks on cliffs, so they comfortably adapt to window ledges, roofs, eaves, steeples, and other components of man-made structures.

Along with house sparrows, pigeons may be the only "friendly" wildlife observed by many people living in an inner city. Park visitors have adopted pigeons that they feed every day.

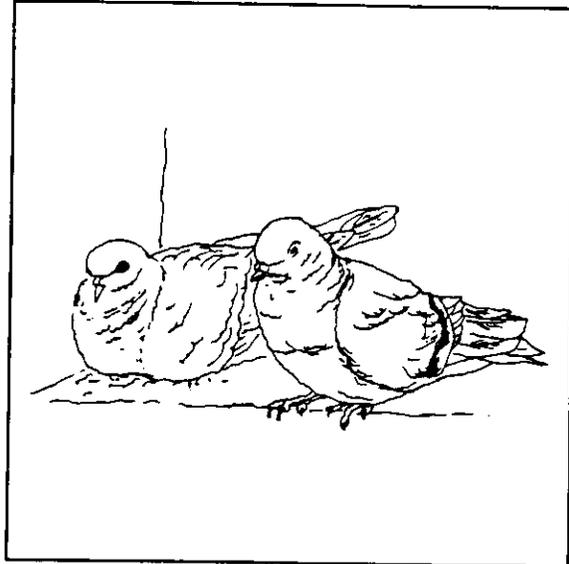


Figure 18-1

But pigeons have also become a serious pest bird. Although primarily seed or grain eaters, in urban areas pigeons feed on garbage, spilled grains, insects, and food left out by outdoor diners and provided by bird lovers.

a. Habits of Pigeons

Pigeons commonly feed, roost, and loaf in each other's company whenever possible. Feeding, roosting, and loafing sites are usually separate. Roosting sites are used for nesting, congregating at night, and shelter in bad weather. Loafing sites will be nearby the roosting sites to be used by inactive birds during the day. Feeding sites may be several miles away. When pigeons are not feeding or mating, most of their day is spent cooing, preening, and sun bathing. Sun bathing is most common in the morning of cool days.

Pigeons prefer flat and smooth surfaces on which to rest and feed. Unlike most birds, they will feed from rooftops, regardless of height, because they like open feeding areas that permit a speedy get-away. They also feed on open ground and occasionally on ledges.

Male pigeons are sexually mature at three to four months of age, females at six months. 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. The male usually selects the nest site, but both adults actually build the nest, with the male often bringing nest materials to the female.

One or two creamy white eggs are laid eight to twelve 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.) The eggs are incubated by both parents for roughly eighteen days, by the male from mid-morning through afternoon, and the female the rest of the day and night.

Young pigeons are born naked, and 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 ten they switch completely to whole grains. During the first week or so, young pigeons double in size daily, and are full-grown in less than a month. They are fledged at 37 days, and are capable of an average flight speed of three to six miles per hour.

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 ten 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 three to fifteen years in urban roosts. They have lived for 30 years in captivity.

2. STARLINGS

European starlings (Fig. 18-2) were introduced into the United States in 1890, when 60 were brought to New York City. They rapidly expanded into new areas, and today 140 million starlings range throughout North America.

Starlings are robin-sized birds weighing about three ounces. Adults are dark with light speckles on their feathers in winter; the feathers turn glossy purplish-black and green in summer. The bill of both sexes is yellow from January to June, and dark at other times. Young birds are grayish.

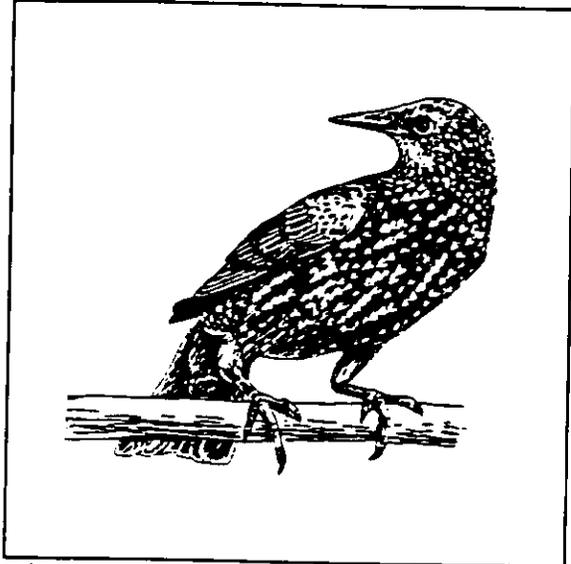


Figure 18-2

Starlings have relatively short tails and appear somewhat chunky and humpbacked. The wings have a triangular shape when stretched in flight. Starling flight is direct and swift, not rising and falling like that of many blackbirds.

a. Habits of Starlings

Starlings nest in holes or cavities in trees or rocks; in urban areas they nest on buildings, in birdhouses, on power stations and water towers, and 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 at about three weeks old.

In some parts of the country, starlings migrate, forming larger flocks as cold weather begins in the fall. Their major sources of food shift from insects and fruits to grains, seeds, livestock rations, and garbage. Roosting areas may shift as well—from rural and suburban sites into cities and towns. Each day they may fly up to 30 miles to their feeding sites. Each starling eats about one ounce of food each day.

Leaving their evening roost at sunrise, they travel to feeding sites over well-established flight routes. Rather than fly straight into their roosts just before sundown, they "stage" on high perches such as trees, power lines, bridges, and towers. They are social at these times, and remain on pre-roost sites until after sunset, singing and calling to each other.

Starlings are considered pests because thousands or tens of thousands can roost at one site.

Droppings at the roost site damage car finishes, tarnish buildings, drop onto 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.

3. HOUSE SPARROWS

The house sparrow, *Passer domesticus* (Fig. 18-3), 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, while still one of the most common birds, its numbers have fallen drastically since the 1920s when food and waste from horses furnished unlimited food. House sparrows feed preferentially on grain, though they will also feed on fruits, seeds, and garbage.

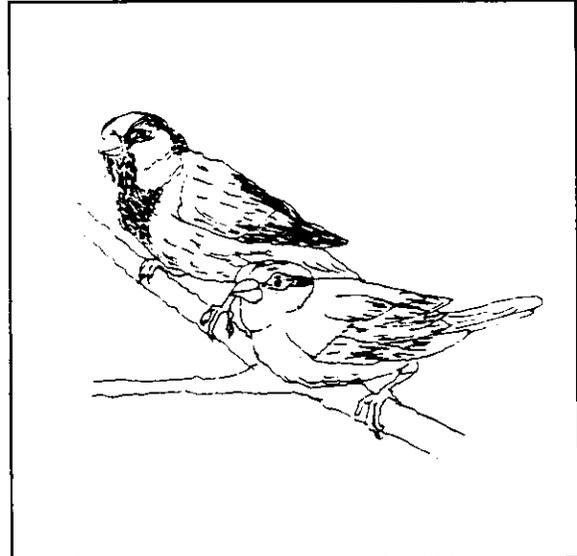


Figure 18-3

The house sparrow is a brown, chunky bird five to six 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.

a. 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 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, and 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, 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 nonbreeding adults may sometimes travel four or five miles from nest sites to feeding areas. Sparrows are tolerant of human activity, and will not hesitate to set up

housekeeping in high traffic areas.

House sparrows can be pests in many situations. Their droppings contaminate stored grain and bulk food. Droppings and feathers make unsanitary, and smelly wastes. Sparrows can also become pests when they nest inside a structure. The birds cause damage by pecking at rigid foam insulation in buildings. Their nesting in transformers creates fire hazards. Sparrows are a factor in the transmission of a number of diseases, internal parasites, and ectoparasites. They are thought to be a major reservoir of St. Louis encephalitis.

4. OTHER BIRDS

Other birds, from hawks to swallows, may occasionally become pests. When blackbirds and crows roost in suburban areas they become pests. Woodpeckers can "hammer" into house siding looking for insects. Some of these birds are protected by laws. Special permits may be required to trap them or to control them by lethal means. The best protection is exclusion or modification of buildings.

SECTION C HAZARDS OF INFESTATION

Health risks from large populations of roosting birds may present risks of disease to 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. Food may be contaminated by birds. When parasite-infested birds leave roosts or nests, their parasites may invade buildings and can bite, irritate, or infest people.

1. HISTOPLASMOSIS

This systemic fungal disease (mold) is transmitted to humans by airborne spores from soil contaminated by pigeon and starling droppings (as well as from 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*) to increase to significant levels. Although 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 flu-like illness. The disease can, on occasion, lead to high fever, blood abnormalities, pneumonia, and even death. The National Eye Institute (NEI) at National Institutes of Health has reported a potentially blinding eye condition, called ocular histoplasmosis syndrome (OHS), that results from infection by the *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.

2. 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, ledges, and other roosting and nesting sites on buildings.

The disease is acquired by inhaling the yeast-like vegetative cells (two to three microns) of the organism. There are two forms of cryptococcosis found 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 clean-up, or other actions that disturb the old droppings.

Other diseases carried or transmitted by birds affect people to a lesser degree. Psittacosis, pigeon ornithosis, and toxoplasmosis are normally mild in human beings; 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.

3. ECTOPARASITES

Pigeons, starlings, and house sparrows harbor ectoparasites that can invade buildings. Some of these parasites can bite and irritate. A long list of mites infests pigeons, but the northern fowl mite and chicken mite are usually the main ones invading buildings from nesting and roosting sites. Other pigeon ectoparasites that may cause problems inside buildings are the pigeon nest bug (a type of bed bug), 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, and cracks and crevices, and enter buildings.

4. DEFACEMENT AND DAMAGE TO STRUCTURES AND EQUIPMENT

Bird droppings under window sills, "whitewashing" down a building face, or accumulating on sidewalks and steps, are the most obvious problem associated with large roosts. Clean-up can be labor-intensive and expensive, particularly on high-rise buildings. Bird droppings are corrosive and will

damage automobile finishes, metal trim, electrical equipment, and machinery. Downspouts and vents on buildings also become blocked by droppings, nest materials, and feathers. This debris can attract insect pests such as carpet beetles and other dermestids, spider beetles, and mealworms.

5. LEGAL CONSIDERATIONS

With very few exceptions, birds are protected by one or more federal laws and regulations. Although pigeons, starlings, and house sparrows are not directly protected at the federal level, toxicants or repellents should be applied according to the product label and under the restrictions of the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA).

Nontarget birds in the treatment area are protected, and any actions that kill or damage protected birds or their habitats would be a violation of various federal and state regulations. State and local regulations may require permits or restrict the actions taken against these three pest birds. When in doubt, contact the state Natural Resources Agency or the local United States Fish and Wildlife Service District office for further information.

SECTION D INSPECTION AND MONITORING

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

- What birds are present;
- How many there are;
- Whether they are residents, migrants, adults, or juveniles;
- Their activities—nesting, feeding, roosting, loafing;
- Where they eat and drink;
- What is attracting them to the various sites;
- Whether they are causing a health risk;
- Whether they are causing physical damage;
- If dispersed, where they would go;
- If poisoned, where they would die;
- Whether there is a risk to nontargets;
- The legal considerations;
- Whether the control method would provoke public relations problems;
- Whether exclusion or habitat modification would be practical.

SECTION E CONTROLS

1. 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; however, in some cases, people will pay little attention to requests to stop feeding the birds.

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

- Pigeons may be induced to move from an infested site by the persistent destruction of nests and eggs. However, nest destruction is ineffective against sparrows and starlings.
- High-pressure streams of water spray is the most cost-effective method of nest destruction. It 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 water will not damage buildings or equipment. Remove all droppings and nest materials from the area.
- When spraying is not safe, 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/acaracide to eliminate ectoparasites.)
- Destroy nests every two weeks during the spring and summer months until the birds move to other nest sites.

2. 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, repairing damaged eaves or ventilation screens, eliminating large crevices, blocking openings into vents, cooling towers, and roof-top equipment with hardware cloth or similar material.

Exclusion methods also includes 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, window sills, 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.

a. Netting

Netting is used to block access of birds to large roosting areas in structures. Netting is especially useful around mechanical-equipment areas where aesthetics are of minor consideration. It has been used successfully on cooling towers. Metal and fiber nets have been replaced by plastic nets, normally extruded black polypropylene made with an ultraviolet inhibitor to reduce UV degradation. Knotted nets are also available. Nets will last from two to five years, depending on exposure to sunlight.

b. 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. However, the high cost of this method may deter HAs from exercising this option on large buildings with 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 in order to block off ledges.

c. 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 fairly well. If aesthetics are important, these devices are usually limited to areas where they cannot be easily seen. 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, and regularly remove leaves and other matter that can cover the spikes and reduce their effectiveness. Ensure that no tree branches hang over protected ledges.

d. 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 covered by bird droppings, feathers, and nest

material with a wire brush, paint scraper, high-pressure hoses, or by 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 different species of pest birds is roughly as follows: crows and sea gulls, 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 the applicator's preference. The caulking gun should be held at an angle of 30-45 degrees. Apply a straight bead on ledges and roof edges, 1/2 inch from the outer edge, with another bead three inches in from the first, or they can be applied in a zig-zag or "s" curve. 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 surface 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. Do not place sticky repellent material where it will become unsightly over time.

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.

Precautions should be followed when sticky repellents are used. Be sure migratory or other nontarget birds are not harmed.

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 different products. Compare the stability of different 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 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.

e. Remove Nests

Check state and local regulations which may prohibit destroying or disturbing nests containing eggs or young.

f. Ultrasonic Devices

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.

3. TRAPPING

In many instances, trapping can be an effective supplemental control measure, especially against pigeons. Where a group of birds roosts or feeds 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, and the best type and size to use is debatable. Most pigeon-trapping programs use large walk-in traps four to six feet high and designed to be disassembled and moved. Another common type is a low-profile bob-trap that is about eight inches to two feet high. The door or entrance through which pigeons are lured is the principle feature of a trap.

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

Feeding areas are the best trap sites, but are rarely on the same property as the roosting sites. Roof tops 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 nonfeeding area so that they will follow the bait into the trap. Whole corn or sorghum are generally the best baits, 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 different foods in for 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 they calmly enter the trap, set it. Put water (a "chick font" is ideal) and bait inside and just a handful or so outside. 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 by fluttering trapped pigeons in the trap. Since pigeons can fly great distances and find their way home, trap and release is not normally effective. 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. By screening all but one or two entrances, such areas can be made into a giant trap. Late in the evening, after a two-week acclimation period, these last entrances can be closed after the pigeons have settled down for the night. The trapped birds can 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 escape after the birds have travelled through two funnels in pursuit of a food bait. Fine cracked corn, millet, wheat, or bread crumbs make good bait. Trap sites should be baited for a few days before trapping is begun. 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, and is dumped into a collecting bag. This trap also works against starlings, as does the center-drop trap. Attracted by food, the birds drop through an opening and cannot escape. However, starlings are not usually good candidates for trapping programs.

4. CHEMICAL

a. Avitrol

Avitrol is a poison bait with flock-alarming properties used to control different 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 fifteen minutes of eating a toxic dose of Avitrol, birds flutter erratically and go into convulsions. They may fly away from the baiting site, into windows, or "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 fifteen hours. Only a small percentage of the flock (usually from five percent to fifteen 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 percent to 85 percent of the flock will leave the area. Avitrol should only be used by a professional who specializes in vertebrate animal-control measures.

b. 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 human beings**. Toxic perches should only be used by a professional who specializes in vertebrate animal-control measures.

c. Ornitrol

Ornitrol is a chemosterilant, often called the "birth control pill" for pigeons, since 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 an aging pigeon population.

The manufacturer recommends applications for ten days twice a year: in the early spring (March) and late summer or early fall. For each 100 pigeons, seven and a half pounds of Ornitrol corn are scattered daily for ten 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 nontarget species. Research data indicated little or no activity in mammals. There is no secondary poisoning hazard.

5. SHOOTING

A possible alternative or supplemental method for eliminating birds is shooting with air-powered pellet guns. Shoot at night or first thing in the morning in roosting areas. Use a high-powered pellet gun because it is relatively accurate, quiet, short-ranged, and will not cause structural damage. Many models are available. Some specialists use .22-caliber smooth-bore rifle loaded with Number 12 or Number 9 bird shot or sand shot. However, these are noisy and too powerful for urban sites.

Errant shots can be dangerous. Most urban jurisdictions have regulations on the use of firearms or pellet guns for bird control. Check with local authorities.

a. Risks to Nontargets

Most lethal tactics in bird control pose some risk to nontarget birds, as well as other animals. All migratory and game birds are considered nontargets, and are protected by various federal, state, and local regulations, as well as by public opinion. Care must be taken to minimize the threat to nontargets or to use tactics that pose the least risk:

- Identify any nontarget birds or animals in the area;
- Use tactics that are least risky;
- Modify tactics to minimize risk;
- Monitor operations to be sure that no nontargets are being adversely affected.

b. 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 can be seen as pets rather than pests. The public's perception of bird-management operations needs to be considered. All bird-management programs should put some effort into avoiding "people problems," particularly when using Avitrol or other toxic control techniques.

SECTION F BIRD DROPPINGS REMOVAL AND CLEAN-UP

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

- Wear a respirator that is labeled to filter particles down to 0.3 microns.
- Wear disposable protective gloves, hat, coveralls, and boots.
- Wet down the droppings to keep disease spores from becoming airborne, and avoid drying them out.
- Put droppings into sealed plastic garbage bags and wet down the outside of bags.
- When finished, and while still wearing the respirator, remove the protective clothing and place it in a plastic bag.
- Dispose of trash bags. Disposal should be permissible through standard trash pick-up.
- Wash up or shower.

END OF CHAPTER EIGHTEEN