

CHAPTER 35 THE BEST CONTROL FOR BIRDS

The eagle that soars in the upper air
does not worry itself as to
how it is to cross rivers.

BIRDS CLASS - Aves

INITIAL DISCUSSION



Generally, birds create 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 over 10 million people. For these reasons, **birds are strongly protected by laws, regulations and public opinion. Most people do not want any bird control performed, especially if it is lethal.** There are only two real control options; either exclude or eliminate them.

Birds can also become pests when they feed on crops, create health hazards, roost in large numbers on buildings, contaminate food, or create a nuisance. Few species can be flatly categorized as good or bad; whether birds are beneficial or harmful depends on specific time, location and activity.

Birds have a high rate of metabolism and spend most of their waking hours gathering food to support it.

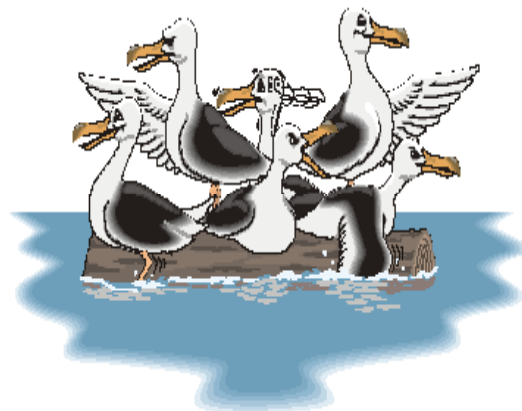
Some birds eat a variety of foods while others will only eat a single food source, e.g., seeds, nectar or insects. For most birds, the male stakes out a nesting territory and attracts a female. Depending on the species, young birds are born naked and helpless or they are born feathered and capable of running about. Some birds fulfill all their needs in the general area where they were hatched while others travel considerable distances for food, nesting sites, etc. Some birds migrate tremendous distances at certain seasons each year, flying at night and resting and feeding during the day.

Intelligent Pest Management® Overview

Birds sometimes can create pest problems in and around buildings. They can be noisy and highly visible animals that attract considerable attention. Birds are generally regarded as highly beneficial creatures, so much so that any control program can create a public relations nightmare. The sight of dead or dying birds can set off a considerable public outcry, so be aware that any bird management program you design had better be very sensitive to the public's feelings. Many bird species are protected by state and federal wildlife laws or local ordinances which further restrict your control efforts. Harming a hawk or raptor can subject you to a \$10,000 fine. All migratory birds are federally protected by law (the Federal Migratory Bird Treaty Act); only pigeons, sparrows and starlings are not protected at the federal level but may be protected by your state, county, and/or city governments. So check **all** applicable federal, state, county and/or city ordinances and regulations before you begin to control any birds.

Birds create problems in and around buildings because of their noise, droppings, feeding, mating and nesting habits.

They also have several external parasites, e. g., the pigeon louse fly (*Pseudolynchia canariensis*), fowl mites (*Ornithonyssus sylviarum* or *O. bursa*) swallow bugs (*Oeciacus vicarius*), which is a relative of the bed bug, and/or pigeon ticks (*Argas reflexus*), associated with their nests which may attack people working or living nearby or their furnishings. Some birds cause physical damage to buildings by pecking holes in roofs, eaves and siding. Several species live and nest inside large warehouses and similar structures and destroy many products with their droppings. Besides being nuisances, birds are serious hazards to aircraft at airports. So dislodge, exclude or relocate them in these areas. More than 68 human pathogens are harbored and spread by pest birds, (e.g. pigeons, sparrows



and starlings); they also have ectoparasites (e.g. mites and fleas). Routinely clean with diluted Safe Solutions Enzyme Cleaner with Peppermint and/or borax.

Some of the more common diseases given to man by the bird or its droppings include:

- **Cryptococcosis** - is an infectious disease caused by the fungus *Cryptococcus neoformans*. People catch this disease when they inhale large numbers of yeast-like vegetative cells present in accumulations of pigeon and starling droppings or excrement - particularly right after the droppings have been disturbed. The infection begins in the lungs and can have up to a 15% fatality rate, but severe headaches and blurred vision are the most commonly recognized symptoms. Use an approved respirator and routinely clean with diluted Safe Solutions Enzyme Cleaners and/or borax.
- **Pigeon-fancier's disease, also called "bird-breeder's lung"**, is an allergic reaction to breathed-in particles of cage droppings or feathers. Pneumonia follows, with coughing and shortness of breath as evidence of lung inflammation. You need to avoid the allergy cause, perhaps with a special ventilated helmet that provides a supply of fresh air. Pigeon-fancier's disease can recur. Use an approved respirator and routinely clean with diluted Safe Solutions, Inc. Enzyme Cleaners and/or borax.
- **Histoplasmosis** is fungal in origin, the fungus, *Histoplasma capsulatum*, is breathed in from particles of the soil in which it grows. Again, mild to severe lung symptoms follow infection. The infected person might be somewhat resistant to a second histoplasmosis infection, but there are no guarantees. Each year there are about a half million infections, but only about 5,000 people are hospitalized and about 800 deaths occur each year in the U. S., from this disease. The national Eye Institute estimates 100,000 U. S. citizens have ocular histoplasmosis syndrome, that can lead to blindness in a rapidly progressive syndrome. Use an approved respirator and routinely clean with diluted Safe Solutions, Inc. Enzyme Cleaners and/or borax.
- **Ornithosis, also called "psittacosis" or "parrot fever,"** involves *chlamydia*, a bacterial-like germ found in sick parrots, parakeets and similar birds. Again, lung symptoms dominate. Patients should report the disease to public health officials. Infected birds are destroyed so they can't infect other birds. Because *chlamydia* is a cousin to a bacterium, antibiotics - specifically tetracycline - help. One infection confers no future protection. Use an approved respirator and routinely clean with diluted enzyme cleaners and/or borax. http://www.cdc.gov/niosh/npptl/topics/respirators/disp_part/n95list1.html

If you must remove or disturb bird droppings, protect yourself - wear disposable clothing, including a hat, booties, an approved respirator, and/or vacuum with a HEPA filter. Keep large amounts of droppings wet down with copious amounts of diluted Safe Solutions, Inc. Enzyme Cleaners and/or borax, or continually mist or spray the area as you work with diluted enzyme cleaner and borax to control mites and keep the fungus from becoming air borne. Carefully double bag the droppings and wet down the bags - remove your disposable clothing and put it in a plastic trash bag - seal the bag and discard; then remove your HEPA respirator, and then shower.

FLICKER



Although any bird has the potential for becoming a pest, pigeons, starlings, house sparrows, cliff swallows, flickers and woodpeckers are the species most typically considered pests.

How can you stop woodpecker damage? Successful control is dependent upon early recognition of damage and prompt action. The longer corrective action is delayed, the more difficult it will be to stop the bird's activity. **A homeowner's effort must be at least as persistent as the drumming of these birds.**

Woodpeckers (Order Piciformes, Family Picidae) choose their locations for several reasons. They drum against hard surfaces to establish their territory and carry out courtship rituals, feed on insects in rotting wood and also make bigger holes for nesting.

RED HEAD



In any of these cases, there are several deterrents to try. However, if you suspect there is a nest with baby birds or eggs, wait until the birds have all left the nest before you take any action.

If the damage is concentrated in one spot, try tacking a soft substance, such as a cloth or foam rubber or netting, over the damaged area. Strips of aluminum foil or disposable pie tins hung in front of the damaged areas may also deter the woodpeckers. Try using a battery-operated (Halloween) spider that is sound activated and will drop down on 18" string and climb back up to scare them away or try lasers or two Not Nice to Critters.

If the problem persists, you can try tacking burlap, fish netting, nylon webbing, plastic or thick cloth (available at hardware stores) or metal barriers or sheathing over all your affected walls. Note: Netting (bird or fish) works best if you hang it 2" - 4" in front of walls and/or affected areas. It will look terrible, but it can be removed once woodpeckers finally get discouraged and move on to another site.

Check your yard for dead trees or large dead limbs. The woodpecker may be attracted to the dead limb or dead tree initially and then to "your" building. Remove the dead material. Bird feeders, especially those for woodpeckers, may be used to lure the bird away; but, more importantly, they may have initially attracted the offending woodpecker to your building. Therefore the feeder may need to be relocated or removed.

Woodpecker Control Conclusions - All members of the woodpecker family are protected by Federal laws as well as many State laws. You need a permit from the U. S. Fish and Wildlife Service to kill or harm them. Try netting the "pecked" area or attaching plastic sheets, scare balloons, plastic owls or hawks, predator silhouette mobiles hung from the eaves, loud noises, windblown mylar or aluminum strips or pans (6" - 24" apart); secure revolving pinwheels at the drumming locations, chimney, antenna, peaks and eaves, or large magnifying mirrors nailed to the siding in order to scare or repel woodpeckers or you can string monofilament fishing line a couple of inches in front of or over landing, drumming and/or perching sites.

Woodpeckers also drill into wood to look for insects. If your siding is providing the birds with food, they will keep coming back for more. Treat with DOT and install vinyl siding or cover with metal and/or 1/4" - 1/2" hardware cloth. If there are small holes in many different areas, and if the birds peck throughout the year, this could be the case. Contact an Intelligent Pest Management® pest control company or your county extension agent for their non-toxic or least toxic recommendations on insect and bird control.



Canada Geese - One goose leaves a pound of goose poop in your yard or pond or sidewalk every day; Damage estimates structures, parks, golf courses, schools and aircraft total more than \$1 billion yearly. Left alone, the resident "Canada" goose will live up to 20 years and goose populations can double every 5 years. They can eat and tramp grass to the ground wherever they feed.

BIRD OVERVIEW

Because many species of birds are protected by federal and state wildlife laws or by local regulations, you must first correctly identify the pest birds and any/all non-pest species associated with them that may be affected by your control efforts. **For control restrictions and management information, first check with the regional offices of the state department of fish and game, the U. S. Fish and Wildlife Service, and the local agricultural commissioner.**

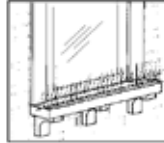
Evaluate the bird problems carefully and determine what reasonable goals should be expected by a control program. Find out what attracted the "pest" birds to a particular building or area - whether it be for roosting and nesting sites, food supplies, or water needed for drinking or bathing.

NIXALITE

Superior stainless steel bird barriers for long-lasting protection of any structure. Protects ledges, beams, walls, lighting fixtures, signs, etc. Also effective as a deterrent for climbing animals, rodents, and humans.

| Model | Applications | Width (3/3/4 in) | Coverage (degrees) |
|-------|--------------------|---------------------|-----------------------|
| N | Pigeons, vultures | 3-3/4 | 180 |
| L | Pigeons, seagulls | 3-3/4 | 180 |
| S | Small - med. birds | 3-3/4 | 180 |
| H | Small ledges < 2" | 2" | 90 |

Available in 16', 24' and 48' lengths with 120 needles per foot on 302 stainless-steel, 1/4" wide base strips. Use approx. 1 strip for every 4" width of treated area. Several mounting systems/hardware available.

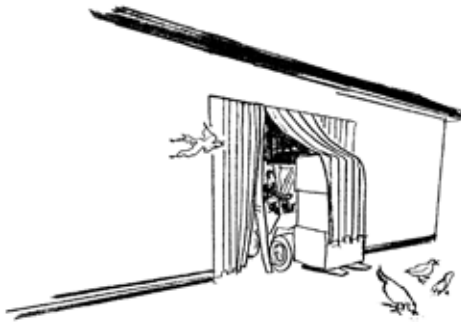


BIRD-B-GONE

Low cost, permanent, installs on any surface. Maintenance free, and made with recycled plastic and ultraviolet inhibitors. Comes in white, stucco tan, blue, and clear (custom colors available).

Easy to install on any flat or curved surface! Mounts on flexible 4' plastic base strips with nails, screws, suction cups, velcro, polyurethane adhesives, wire ties, or clamps. Prongs snap on (8 per foot).

If possible, modify the building or surrounding area to discourage bird roosting or nesting. Build up ledges flat areas so they slope at least 45° and are not suitable for nests or install commercially available metal strips that have pieces of wire protruding in several WMS Nixalite & Bird B-Gone directions. Web sites: <http://www.nixalite.com> or <http://www.birdbgone.com>. Use these metal strips or plastic or wire netting to keep birds away from eaves or other nesting or roosting sites. Exclude birds from large buildings such as warehouses by placing screens, netting, curtains or plastic strips over entrances.



The most effective and safest protection of fruit, grapes, statues, courtyards, trees, vegetables, etc. is done by using netting. Several types are marketed to protect fruit trees and grapes, e.g., plastic-impregnated paper, nylon, cotton polypropylene and polyethylene netting. All are reasonably tough and can be stored and reused for many years. Life-size hawk silhouettes cut from cardboard or sheet metal suspended on string, hanging a few feet above fruit trees can also be effective, but you must change their positions daily.

For birds that roost on homes, schools, churches and offices, exclusion is the most humane and practical method of management. This exclusion process involves the use of a black plastic (polypropylene) netting with hole sizes ranging from 1/2" to 7/8" square. The netting disappears on most surfaces and can be placed in position with clips, epoxy caulking, staples or wood lath strips. It is relatively simple to install, economical and is initially resistant to breakdown by sunlight.

For birds that assemble in your trees in large numbers during the fall and winter, e.g., grackles, blackbirds or starlings, **it is best to frighten them away on their first visit.** Once the area is marked with their odorous white feces, it seems to become even more *attractive* to them. Roost control or management now appears to be the ecologically sound method of preventing roosting by droves of birds. Studies have shown that removal of trees or massive tree trimming can prove so unattractive to blackbirds that they will move and choose other roosts. With active roost trees, either remove them completely and/or prune out more than one-third of the tree's canopy. Birds prefer dense bushy trees to roost in that can afford them protection from foul weather and provide many small branches on which to roost. Trim or remove the *host* trees before the birds arrive. Until the birds find another suitable roost to use each year, it will be necessary to keep your trees trimmed/pruned to create an open space within the favored site. These birds like to cluster and generally avoid roosting in isolated trees.

Carbide exploders have initially proven very successful; however, continued use seems to lose its effectiveness on the birds while increasing their ability to irritate the neighbors/occupants. Firecrackers can be just as

effective (if legal) and less costly. Firecracker ropes can be made by inserting the fuses in the strands of cotton rope which serve as a slow-burning fuse. Silhouettes of large owls placed in the trees have been reported effective in temporarily preventing alighting. Hand clapping in combination with yelling in view of the invaders is also effective. Throwing empty tin cans containing rocks, nails or other noise-producing objects into the occupied trees will also send most birds flying.



For birds that rest on window sills, a single strand of wire, string, fishing line or cord stretched across the ledge and attached to both sides, about breast high on the bird, will prevent them from landing or roosting on these ledges. Also the application of Tanglefoot® <http://www.tanglefoot.com> or other caulk-like sticky chemical to ledges, rain gutters, roof hips, tops and gables and other resting areas can be effective in deterring them at least temporarily. **Remove all standing water, e.g., on roof tops.**

Use netting to permanently exclude birds out of certain outdoor areas, such as small courtyards, adjacent to buildings. Close all visible openings, holes and cracks and crevices with wood or metal or fill in with aerosol foam to keep these areas from being used as nesting sites. Eliminate food and water sources, if possible, that attract birds. Food sources can include: people who feed them, spilled popcorn, garbage, grain, fruit trees, berry plants, ornamental fruiting plants, seeds and insects.



Live trapping, e.g., multiple catch sparrow and pigeon traps, may be a successful method of controlling certain species of birds, e.g., pigeons and sparrows, around buildings. Live traps can be baited with suitable food such as seeds for the seed eaters, etc. **Frightening devices** such as helium-filled eye balloons, artificial snakes or models of predatory birds have limited use in keeping birds away from buildings. These may lose their effectiveness once birds become accustomed to them. Metallic or brightly colored strips, hanging tin foil, aluminum pans attached to wires or the fascia that move with the wind's air currents may help to discourage birds from roosting in some locations, although this technique is also usually not effective after a few days.

Power strobe lights made for police cars, which flash once per second can be useful for repelling birds. Several companies manufacture sound-generating devices for scaring away birds. These devices may have only limited use around buildings because the sounds they generate can also be annoying to people living or working in the area. **Sound-generating devices** are only effective over a limited distance, so several units may be required. Birds may become accustomed to sounds generated by these devices after a short period of time, so you should relocate the sound generators from time to time to help solve this problem. Other devices include rotating wire rods or shots of water. Geese and ducks can be discouraged from entering an area by stringing strong string, cord or bird repellent tape (red and silver aluminum foil coated with mylar) 6" above the ground for ducks and 15" above the ground for geese. "Fence" off at least the waterfront and both sides. If using mylar tape, give each section a few twists. If legal, harass all interlopers and repair the barrier daily. Canada geese can be repelled by ReJex-it AG-36 http://www.beckerunderwood.com/products/productdisplay.asp?product=rejexit_mig which contains methyl anthanilate (MA) or cat urine. MA is the raw material used for making saccharin (which has a health warning). Replace Kentucky bluegrass with tall fescue or another grass species with tough leaves or with a ground cover, e.g., pachysandra or English ivy, so they cannot graze.

One of Get Set's head custodians repels Canada geese with well used kitty litter or she takes the dark material and the stuff stuck to the bottom of the kitty litter tray and soaks with a little water, strains through cloth and spray the liquid "urine" wherever she does not want geese. You could also try using a "canned horn" or a bird dog to drive them off, but you must start early in the season before they become established. Snow geese dislike a 3' x 5' black or white flags flying; use 1 - 2 per acre at least 4' tall. Birds do not have an acute sense of smell, so are, therefore, not affected by olfactory repellents that can be effective with other types of vertebrates. In some limited situations, however, sticky substances can be spread on railings and other surfaces used as perches or roosts to repel birds. You can repel duck and geese with gum turpentine and raw linseed oil. Tall vegetation can deter geese. Birds, such as pigeons, make quite a fecal mess where they roost or loaf. Often this material must be removed. During removal, wear protective clothing and respiratory protection to reduce exposure to the *histoplasma* fungus responsible for the disease known as histoplasmosis that can affect the

lungs, spleen, central nervous system and other internal organs in people. Birds can consume and/or contaminate large quantities of grain and other stored food with their feces and feathers. Bird feces may also contain salmonella bacteria and fungal spores that can produce serious intestinal poisoning of people. **Routinely clean with diluted Safe Solutions, Inc. Enzyme Cleaners and/or borax.**

As we have stated, the most important way to prevent bird damage is simply to exclude the birds from trees, car washes, storage areas and warehouses. If large warehouse doors cannot be kept closed or screened, install nets or strips of plastic or fabric at the entrances. These barriers enable people and vehicles to pass through freely but will typically keep birds out. In all storage facilities, seal cracks and openings that are large enough for birds to pass through. Screen vents and other high-level openings with bird netting, hardware cloth or screen having a mesh of 1/4" or smaller. Remove or modify ledges and/or install nets, wires or other barriers to keep birds from nesting and/or roosting in or on the storage facility. Other attractive nearby roosting sites, such as large trees, may also need to be eliminated or netted.

Maintain good sanitation practices so birds are not attracted to storage areas. Clean up grains or other food or garbage items spilled during loading, transfer or handling. Be sure that conveyors, railings, ledge, and other parts of the storage facility are kept clean and free of food residues. Dispose of spoiled or contaminated products in covered containers and remove these promptly from the storage area. With persistence, certain species such as sparrows and pigeons can be trapped and can be released in an approved area at least 5 miles from where they were caught.

Intelligent Pest Management® Control - We only suggest you try exclusion and/or live trapping.

PIGEONS

CLASS - Aves

ORDER - Columbiformes

FAMILY - Columbidae

BIRD SUMMARY

The domestic or feral pigeon (*Columba livia*; Gmelin) developed from the rock doves of Europe and Asia and was introduced into the U.S. (as a domestic bird) in about 1606, as a domestic bird. Obviously, "some" escaped and they are now found in a feral (wild) state all over the country. Rock doves originally nested in caves, holes, and under overhanging rocks on cliffs, so their descendants comfortably adapt to our window ledges, attics, roofs, eaves, steeples, and other components of our structures. They lay 1 - 2 eggs about 8 - 12 days after mating.



Feral 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 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 10-1,000 miles (the world record is 3,000 mi.).

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 is commonly referred by restaurateurs as "squab," to avoid offending their customer's sensibilities; it is considered a delicacy.

Damages

Pigeons have become the most serious and troublesome bird pest associated with buildings and statues. They may congregate in flocks of a hundred or more, where they roost, loaf, nest and defecate. Although primarily seed or grain eaters, in urban areas pigeons feed on garbage, fruit, spilled grains, insects, food left out by outdoor diners, and food provided by bird lovers who intentionally feed pigeons bread, peanuts, and cookie crumbs. Pigeon droppings deface and accelerate the deterioration of buildings, statues, cars, and equipment. They foul areas where people work, sit, eat and/or walk. Pigeon poop clogs drain pipes, air intakes, contaminates large quantities of livestock feed and makes areas either unusable or hazardous, e.g., fire escapes. **Good sani-**

tation can do much to reduce the attractiveness of any area to pigeons and their ectoparasites. Routinely clean with diluted Safe Solutions, Inc. Enzyme Cleaners and/or borax. The serious health problems they create are greater than any other bird species. They and/or their droppings are infected with pigeon coccidiosis and ornithosis, histoplasmosis, toxoplasmosis and/or their droppings, encephalitis, cryptococcosis, pseudotuberculosis, Newcastle disease, salmonella food poisoning and many different ectoparasites, e.g., ticks, fleas, mites, etc. More than 50 diseases, ectoparasites and miscellaneous pests (e.g., spider beetles and cockroaches) are associated with these “lovable flying rats.” Their very acidic droppings deface and/or etch everything they contact. **The only real permanent control is to build them out.**

HABITS OF PIGEONS

Pigeons are gregarious and feed, roost, loaf, and defecate in each other’s company whenever possible. Feeding, roosting, and loafing sites are usually separate. Roosting sites are typically protected from the elements and are used for nesting, congregating at night, and shelter in bad weather. Loafing sites will be nearby to be used by inactive birds to “hang out” in during the daytime. Feeding sites may be several miles away. Defecation takes place in all three areas. 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, level surfaces on which to land, rest and feed. Unlike most birds, pigeons 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. Typical roosting and loafing sites are building roofs and ledges, under roof-top air conditioners, cooling towers, monuments, bridges, and signs. Typical pigeon feeding sites include: parks, squares, food loading docks, garbage areas, railroad sidings, food plants, and wherever people eat or feed them outdoors. **They hate smooth surfaces!**

Male pigeons are sexually mature at three to four months of age; females at six 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 actually build the nest, with the male often bringing nest materials to the female.

One or two creamy white eggs are laid 8-12 days after mating. (Three or more eggs are sometimes found in a single nest, but this usually occurs when two or more hens share one nest.) The eggs are incubated by both parents for roughly 18 days, usually by the male from mid-morning through afternoon, and the female the rest of the day and evening. **Pigeons do not like nesting in heavy air currents.**

At birth the young pigeons are naked and helpless and fed “pigeon milk” (predigested food), 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 are full grown in less than a month. They are fledged when they are 37 days old. Average flight speed is 36 m.p.h.. 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 about 10 young per year. Pigeon nests that are continually used become solid with droppings, feathers, debris and, sometimes, dead birds. Life span is highly variable, ranging 3-15 years in urban roosts. Pigeons have lived for 30 years in captivity.

Intelligent Pest Management®

CONTROL - The best and only permanent solution is to build them out - exclusion - but everyone usually tries sanitation, lights, trapping, noise, repellents, spikes, toxicants, etc., first before they permanently exclude them. Stretch wires an inch or two above the cable, pipe, ledge, beam, or surface to prevent them from perching. Make sure the (piano-type) wire is too small for them to land on. The best way to keep the wires

taught is to add small springs at each end. Large surfaces need to have wires installed at varying heights 3” apart. You can also add an intermittent current with high voltage, but low amperage to shock them into leaving. You can also live trap them or shoot them with bird shot if legal and safe, or spray them with soapy water or water with a surfactant whenever the temperature drops to less than 40° F. **Routinely clean up their “mess” with diluted Safe Solutions, Inc. Enzyme Cleaners and/or borax. Large oscillating fans and/or strobe lights will move them elsewhere.**

STARLINGS

CLASS - Aves

ORDER - Passeriformes

FAMILY - Sturnidae

The common or European starling, *Sturnus vulgaris* (Linnaeus), was first introduced into the United States in the 1890’s when 60 were brought to New York City. They rapidly expanded into new areas. Today, 140 million starlings range throughout North America and even into Alaska. They are primarily ground feeders.



Starlings are stocky, robin-sized birds that weigh about three ounces and are about 7½ - 8½ inches long. Adults are dark with light speckles on their feathers in winter; the feathers turn glossy or iridescent purplish-black and green in summer. The bill of both sexes is yellow from January to June, and dark blackish at other times. Young starlings are grayish.

Starlings have relatively short tails and appear somewhat chunky and humpbacked. The wings have a triangular shape when stretched out in flight. Starling flight is direct and swift, not rising and falling like many blackbirds. Starlings produce a number of harsh, rasping, squawking or squeaking calls, most of which are very unpleasant to hear.

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 other structures. Starlings average two broods a year with 3 - 8 (average 4 - 5) young per brood. Both parents build the nest, incubate the pale, greenish-blue eggs, and feed the young only insects. The young birds leave the nest when they are about three weeks old and form small flocks. At this time bird mites sometimes abandon the nest and attack the building occupants. **Routinely clean with Safe Solutions Enzyme Cleaners and/or borax.**

Starlings migrate in some parts of the country. As cold weather begins in the fall, starlings begin forming larger flocks. Their 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 into cities and towns. Each day they may fly in flocks up to 70 miles from their roosting sites 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 lines. When they return just before sundown, they do not fly straight in to their roost. They “stage” on high perches such as trees, power lines, bridges and towers. They basically feed on insects but will also eat soft fruit and berries in the summer and seeds and grains in the winter but, in a pinch they will eat garbage. The birds are quite social at these times and remain on pre-roost sites until after sunset, “singing” and calling to each other. The starling flocks make terrible noises as they “settle-in” at roosting time.

Starlings are considered pests because they are very aggressive and 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, e.g., encephalitis, ornithosis, histoplasmosis and hog cholera.

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. Most of their calls are described as harsh, unpleasant to hear, rasping, squeaky and/or squawking.

INTELLIGENT PEST MANAGEMENT®

Control - Starlings are not protected by Federal or State laws, but local ordinances may limit your control efforts. **As with all birds the only real control is exclusion - screen or build them out of and off your buildings and trees.** The best overall urban control is done as an entire city, county or community program. Bird netting can be used to exclude them from specific areas. You can scare them "away" with fire crackers, fireworks, guns or cannons as they first begin to arrive, but you will have to work at it for at least 3 - 4 evenings. Spray them with soapy water at temperatures below 40° F. and they die quickly from hypothermia. Routinely clean up droppings and debris with diluted Safe Solutions, Inc. Enzyme Cleaners and/or borax.

HOUSE OR ENGLISH SPARROWS

CLASS - Aves

ORDER - Passeriformes

FAMILY - Passeridae formerly Ploceidae

The house sparrow, *Passer domesticus* (Linnaeus), also called the English sparrow, because it was introduced into the United States in the 1850's from England. 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. Since the invention of the automobile, the sparrow's primary food source, undigested grain found in horse droppings, has virtually disappeared, causing their numbers to fall dramatically. Even so, it remains one of the most common birds in America.



The house sparrow is a brown, chunky bird 5 - 6½ inches long, and weighing about 1 oz. The male has a distinctive black bib or throat, white cheeks, a chestnut mantle around an ash-gray crown, and chestnut upper wing covers. The female and young birds have a gray breast, light eye stripe, and a streaked back. They are social birds frequently heard singing, and seen eating and flying together in flocks.

Habits of House Sparrows

House sparrows are prolific breeders and have 2 - 7 broods for an average of three broods per season with three to eight eggs per brood or clutch. 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 only stay in the nest another two weeks, then they fledge.

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.

Damages. Sparrows are aggressive and social birds and will often out-compete native species. They have no recognized migration patterns, and will stay in an area as long as enough food and nest sites are available. Young birds, however, can and do move out of an area to establish new territories. Flocks of juvenile birds and non-breeding adults may sometimes travel four or five 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, e.g., warehouses and farms. House sparrows feed preferentially on grain. They will also feed on seedlings, buds, flowers, fruits, seeds, and garbage. During the breeding season they feed mostly insects to their nestlings. They have been called sputzies, aggressive opportunists, animated manure machines, rank hoodlums, impudent parasites and other unprintable terms of disrespect. They can squeeze into an opening only 1½" wide and will nest in virtually anything. 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 wastes inside and outside of buildings, on sidewalks, and under roosting sites. Sparrows can also become a pest when one or a few begin nesting inside a food plant, warehouse, mall or atrium. The birds cause damage by pecking at rigid foam and fiberglass insulation in buildings and nesting inside traffic lights. They create a fire hazard by nesting in transformers and power stations. **Most of their activities occur within a 1 - 2 mile radius of their nest.**

They are a significant factor in the transmission of over 25 diseases and carry both dangerous internal and external parasites. Most significantly they are thought to be a major reservoir of St. Louis encephalitis, salmonellosis and psittacosis.

Intelligent Pest Management®

CONTROL - They are not protected by Federal or State laws, so you can generally have your own way with sparrows (unless local ordinances limit your controls). Regularly destroy their nests (if legally permissible locally) or addle their eggs. Improve sanitation, cover garbage containers and dumpsters. Put up electrical fencing, scare them, trap them, shoot them if legal and safe and/or spray them with soapy water when the temperature drops below 40° F, and they will quickly die of hypothermia. **Build them out; exclude them with “face” netting over buildings, terraces and vines.**

PEST BIRDS

The three birds most often considered 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 can become pests when they “hammer” into house siding looking for insects or trying out the “tones” on a new drumming site. Seagulls can feed at food plants and garbage. Seagulls can also peck holes in flat roofs and/or drop clams and other food onto flat roofs - damaging roofs and/or creating rot, fly and/or rat problems. People have killed seagulls (illegally) by throwing rat poison or pieces of Alka Seltzer® into the air; the seagulls eat these pieces and die from the gas or the poison. Many of these birds have more protection by laws and regulations than the three pest birds discussed previously. Special permits may be required to trap them or to control them by lethal means. **The best approach always emphasizes exclusion or modification of buildings.**



SOME HEALTH HAZARDS ASSOCIATED WITH BIRDS: Histoplasmosis, cryptococcosis, psittacosis, toxoplasmosis, pigeon ornithosis, encephalitis, salmonellosis, ectoparasites, food contamination and property damage. Droppings may create slippery conditions. Worldwide losses from bird strikes to aircraft are estimated at one billion dollars annually. Health risks from birds, their ectoparasites and droppings are often exaggerated. Nevertheless, large populations of roosting birds may present risks of disease to people nearby and pest management technicians. 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, but this risk is usually limited to food manufacturing or processing plants. When parasite-infested birds leave roosts or nests and invade buildings, their parasites migrate and can bite or irritate people. **Routinely clean with diluted Safe Solutions Enzyme Cleaners and/or borax.**

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 capsulotum*) 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 the air or wind, particularly after a roost has been disturbed. Most histoplasmosis infections are mild and can 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. 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), 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. NEI estimates that four 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. **Be sure to wear the proper safety equipment and thoroughly clean the entire area with copious amounts of diluted Safe Solutions Enzyme Cleaner with Peppermint and/or borax.**

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 yeast-like vegetative cells (2 - 3 microns) of the organism. 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 clean-up, or other actions that disturb the old droppings. **Routinely clean with diluted enzyme cleaners with peppermint and/or borax.**

Psittacosis - The bacteria that causes psittacosis is found in the droppings of pigeons, parrots and other birds and can be inhaled by breathing the air introduced by air conditioning systems, which carry the organisms into the building from the bird roosts. **Power spray the ledges with diluted Safe Solutions, Inc. enzyme cleaners.**

Other diseases carried or transmitted by birds affect man to a lesser degree. Pigeon ornithosis and toxoplasmosis are normally mild in man, 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 mosquito-borne encephalitis.

Pigeons, starlings and house sparrows harbor **ectoparasites** that can invade buildings. Some of these parasites can bite and irritate. A long list of mites infest pigeons, but the northern fowl mite (*Ornithonyssus sylviarum*), and chicken mite (*Dermanyssus gallinae*) 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 (*Cimex columbarius*, a type of bed bug), various species of biting lice (*Mallophaga*), the conenose bug (*Triatoma rubrofasciata*), the pigeon tick (*Argas reflexus*), the European chicken flea (*Ceratophyllus gallinae*), and the pigeon fly (*Pseudolynchia canariensis*). Droppings, feathers, food, and dead birds under a roosting or loafing area can also breed flies, fungus, gnats, carpet beetles and other insects that may become major problems in the immediate area. These pests may fly or crawl through windows, ventilators, cracks and crevices, etc., and enter buildings. **Be sure to routinely and properly clean all infested areas with copious amounts of diluted Safe Solutions Enzyme Cleaners with Peppermint and/or borax. Store small infested items in vacuum sealed plastic. If you get them in your car, simply park the car in the sun during the summer with the windows rolled up and have a thermometer visible inside when the temperature reaches 140° F. The mites will be dead. Be careful not to let the windows explode from the heat.**

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. **ACIDIC BIRD DROPPINGS QUICKLY DEGRADE ROOFING AND MANY BUILDING MATERIALS.** Pigeons eat gravel that passes through in their droppings and can clog roof drain lines. Clean-up 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. Downspouts and vents on buildings also become blocked by droppings, nest materials and feathers. This accumulation of debris can attract insect pests such as gnats, carpet beetles and other dermestids, spider beetles and mealworms. Try monthly sprays of diluted Safe Solutions Enzyme Cleaner with Peppermint. **Be very careful when you spray the birds with these diluted sprays when the temperature is less than 40° F. as they can quickly die of hypothermia! But the excrement (if left) indicates to other birds the location is safe.**

LEGAL CONSIDERATIONS - With very few exceptions, all birds are protected by one or more federal

laws and regulations.

- Pigeons, starlings, and house sparrows are not directly protected at the federal level but applications of toxicants or repellents must be according to the product label and under any local ordinances and any 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 be a violation of various federal and state regulations. State and local regulations may require permits or restrict the actions taken against pest birds. When in doubt, contact your state natural resources agency or the United States Fish and Wildlife Service District office in your area for further information.

Intelligent Pest Management® - Any techniques used should only be implemented by skilled persons in the most humane, safe and effective manner. Exclusion should be the primary plan.

TOOLS AND METHODS FOR MANAGING PEST BIRDS - You will need a survey form.

Inspection - 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; non-target bird activity is just as important in order to minimize risk to these birds. The survey should investigate:

- What birds are present? (Bring your binoculars and a field guide or reference manual.)
- How many? What time of day or night do they alter their behavior?
- Are they adults, residents, migrants, juveniles?
- Are they nesting, feeding, roosting, loafing? Note how to reduce these sites and the locations.
- Where do they eat and drink? Note how to limit food and water and locations.
- What is attracting them to the various sites? Note how to correct these areas and locations.
- Are the birds causing a health risk?
- Are the birds causing physical damage? Show all locations on a site plan or map or survey.
- If dispersed, where would they go?
- If poisoned, where would they die?
- Is there risk to nontarget species?
- What are the legal considerations? Be sure to check all federal, state and local laws & regulations.
- Could there be public relations problems?
- Is exclusion or habitat modification practical? Where would you place netting or repellents?
- Where are the nests and eggs? Can they legally be removed every 2 weeks during spring and summer? Better yet, egg addling or shaking the eggs is a very effective bird birth control. Shake the eggs vigorously until the internal fluids can be heard slopping around, then replace the eggs in the nest and the birds will continue trying to incubate the addled eggs. If they lay new eggs, you will have to shake, rattle and roll again.
- Note trees that have to be pruned, windows that need replacement, all repairs, building modifications, cracks and crevices, entries that need to be blocked/screened and/or other additions or corrections.
- Note what needs to be done to change the conditions conducive to bird infestation(s).

HABITAT MODIFICATION - To create long-term results, the habitat should be altered to prevent nesting and all sources of food and water should be removed.

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 might help reduce this source of food; however, many people will pay little attention to requests to stop feeding "their" birds. **Clean up all bird excrement promptly. Mess only creates more mess as it is a strong indication the location is safe.**

The most successful kind of habitat modification is to build them out and/or to exclude the birds from

their roosting and loafing sites. 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 but pruning trees sometimes deters roosting. Some helpful measures include:

- Spray high pressure streams of diluted Safe Solutions Enzyme Cleaner with Peppermint from fire fighting equipment or other high pressure water lines. This 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 high pressure or water will not damage buildings or equipment or contact electricity. Remove all droppings and nest materials from the area. Use a long pole to remove the old nest materials safely from the ground.
- When the nests are on buildings or inhabited sites, you may have to treat the immediate nest area with a toxic insecticide/acaricide or non-toxic Safe Solutions Enzyme Cleaner with Peppermint and/or borax to eliminate ectoparasites.
- Destroy nests every two weeks during the spring and summer months until the birds move to other nesting sites or vigorously shake all eggs. **Be sure this is legal in your area.**

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 putting dunce caps on columns and light pads, installing nets, replacing broken windows, adding screens, eliminating large crevices, blocking openings into vents, cooling towers, and roof-top equipment with hardware cloth or similar material. **Eliminate right angles with flashing.**

Exclusion methods also include: the use of screens, 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.

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. Nets will last from 2 - 5 years depending on exposure to sunlight. Call Bird Barrier America, Inc. at 1-800-503-5444; web site: <http://www.birdbarrier.com>.

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 may eliminate this option on large buildings that have extensive roosting sites; there are long-term advantages. Covers are valid options to keep birds off selected sites, and where aesthetics are an important consideration. A board propped at a 45° angle along the entire length of the ledge will discourage birds. **Remove right angles.**

The covers usually consist of sheet metal installed at a 45° angle to prevent the birds from landing and they usually cannot be seen from below. Sometimes plastic inserts are custom-fit into the indentations in order to block off ledges. Building deterrents installed at the time of construction should be advocated.

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. Call Bird-X at 1-800-662-5021, web site: <http://www.bird-x.com>

- 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 occupants to regularly remove falling autumn leaves and other matter that can cover the spikes and reduce their

effectiveness. Insure that no tree branches hang over protected ledges.

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 a combination of isopolybutene (the same substances used in some adhesive bandages) and 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 hoses with diluted Safe Solutions, Inc. enzyme cleaners, or by steam cleaning.
- Insure 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 are absorbed into porous materials, and stain them permanently.
- 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"; pigeons 1/4"; starlings 1/8"; sparrows 1/16". The pattern of application will depend on the site and personal preference. Apply a straight bead on ledges and roof edges, 1/2" from the outer edge, with another bead three inches in from the first, or they can be applied in a zigzag. For another option combine a straight line 1/2" from the outer edge and an "s" curve three to five 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 first.
- Apply bulk gels with a paint roller, putty knife, or caulking gun.
- Apply liquids with a roller, brush, or compressed-air sprayer to girders, rods, sign supports and roof tops. 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" thick. Liquid application is 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 all old nesting debris and droppings with diluted Safe Solutions, Inc. enzyme cleaners.
- Check state and local regulations which may prohibit destroying or disturbing active 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 all current labels and the manufacturers' technical information (labeling) 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 will repel the birds with little risk of entanglement or death.

Ultrasonic Sound Devices

Ultrasonic sound devices are not normally effective in repelling birds. Research has demonstrated that most birds do not hear sounds in the ultrasonic range (over 20,000 cycles per second), which is why these devices are not effective. Try strobe lights.

Other Repelling Devices

Methol anthranilate, derived from grapes, will stop birds, e.g., blackbirds, geese, etc., from feeding on many crops or lawns. When applied two or more times it renders all food sources unpalatable and/or inedible to birds. Visual devices such as owl decoys, rubber snakes, lasers, etc., may work for a few days, but become ineffective because birds will become accustomed to their presence (habituate). Likewise, noise-making devices, e.g., automatic gas exploders, pyrotechnics, firearms, fireworks, distress calls, warning calls, etc., may be used to disperse birds, such as roosting starlings or black birds, but their effectiveness will diminish as birds habituate. High pressure sprayers or fire fighting equipment with soap or diluted Safe Solutions, Inc. enzyme cleaners can be used to destroy nests and harass roosting birds. Birds cannot abandon their eggs for extended periods or the eggs will die. If you shake the eggs, they will not hatch and the birds will not lay new ones. A new mechanical "repeller" consists of two 6-foot fiberglass rods that rotate at 30 rpm and cover a circle of 12 feet - it acts like a twin-bladed fan. It has a 110-volt motor sealed in a weather-proof box. It can be used to keep birds off specific areas as will bird spikes, fish line and netting. Border collies and other dogs will effectively chase geese and other pests from your yard. If you do not have a fenced yard, you may wish to install invisible fencing to keep your choice of dog inside your own yard.

TRAPPING

Pigeons. In many instances, trapping can be an effective supplemental control measure. Trapping is especially effective against pigeons. Where a group of birds are 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 is best is debatable. Most pigeon trapping programs use large walk-in traps. These can be four to six feet high and are 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 traps are not likely to be vandalized (a major risk in trapping programs). Trap placement is important, and moving an inactive trap just 10-15 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 "pest" birds to feed in a non-feeding 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 lower seeds, peas, greens, bread, or peanuts can be very effective if the "pest" birds are feeding on similar food. Once a few birds have been trapped, putting different 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 bird control specialists leave the caps propped open on the traps 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 font" 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 your "tame" decoys), otherwise other pigeons will be frightened by fluttering trapped "wild" pigeons in the trap. Since pigeons can fly great distances and find their way home, trap and release is not normally effective. In most cases, trapped birds may have to be humanely destroyed. Some experts recommend gassing with carbon dioxide but others feel it is simpler and more humane to kill the bird by wringing or breaking its neck. **We still advocate building birds out rather than killing them.**

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 these areas can be made 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 settled down for the night. The trapped birds can then be captured by hand or with “butterfly” nets.

Sparrows. Sparrow traps come in various sizes and shapes. The sparrow funnel trap is a double funnel that prevent sparrows from escaping after they have traveled through two funnels going for a 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 more effective when placed on the ground. Nest box caps attract a sparrow with a potential nest site. Once inside, the bird trips the mechanism; the floor gives way, dumping the bird into a collecting bag. This trap also works against starlings. Male birds can be attracted by several pieces of string to use as nesting material.

LETHAL ALTERNATIVES (Tje Author does not recommend their or any poison use.)

AVITROL. AVITROL products are restricted use poison baits with flock-alarming properties used to control many kinds of birds. The different AVITROL baits: whole corn for pigeons, smaller grains for sparrows and other birds. Within 15 minutes of eating a toxic dose of AVITROL, birds flutter erratically, sound oral alarms and go into convulsions. They may fly away from the baiting site, or they may “dive bomb” into the ground.

Most affected birds die within a few hours, but some last longer. Only a small percentage of the flock (usually from five percent 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% of the flock will leave the area.

Prebaiting. At most sites, birds must be trained to feed on bait. While baits are different for different birds, whole corn bait for pigeons is the most common and is discussed here:

Careful observations of the birds’ feeding habits must be made to establish proper feeding locations and to determine that no non-target birds are feeding on the pre-bait. The goal is to get at least 40 percent of the birds to accept the untreated pre-bait. Expect the effort to take from 3-days to 3-weeks. Remove all of the pre-bait corn before switching over to AVITROL. The better the acceptance of the bait, the better the chance to move the flock quickly.

AVITROL corn bait kernels are not used alone, but are mixed with untreated corn in ratios ranging from the usual 1-part AVITROL and 29-parts untreated bait to 1-part treated to 19-parts untreated where other bird food is available. No dilution ratio less than 1-part treated to 9-parts untreated is recommended. The higher the proportion of AVITROL, the higher the number and visibility of dead and/or convulsing birds. A ratio of 1:29 will kill 5 percent of the flock; a 1 :9 blend will kill 15 percent.

- The amount of AVITROL bait set out should equal the amount of pre-bait consumed each day.
- Use the ratio that best fits the job.
- Keep in mind that the object is to relocate the flock, not kill every pigeon.

Retrieve all toxic bait mixtures at the end of the day. Sweep or vacuum area.

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. Pick good sites. 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, but it is usually best to switch to another control method.

Use care to follow label 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 since 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 that seed.

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 (9.4% endrin or 11% fenthion) is hazardous to all birds and animals including man. 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 10-12 perches, a large job might require 30. Install and leave the perches up without toxin at first, then add the poison. Be sure your previous observations show only the "pest" birds use the perches.

Toxic perches can only be used in certain sites: inside buildings and structures (non-food areas), on building tops, structural steel, power plants, or substations, and at feed lots, loading docks, and storage yards. Pigeons may 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 can sometimes leak toxicants and can create health and legal problems.

Birds can absorb a toxic dose in less than a minute but may not die for four or more 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 die within 20 - 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.**

Chemosterilants. Chemosterilants (ORNITROL), have often been 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 a treatment may last for up to 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 natural mortality due to an aging, non-reproducing pigeon population. Efficacy on birds associated with agriculture has been reported to be more variable.

The manufacturer recommends chemosterilant 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 will be temporarily sterilized, so care must be taken to avoid feeding non-target species. Research data indicated little or no activity in mammals. There is no secondary poisoning hazard.

Electricity. On 4/17/98, the Associated Press noted that for California Prison officials, electric fences have saved more than \$40 million a year of money otherwise used to pay guards. But for more than 3,000 birds, the fences have meant instant death. Among the victims were 145 burrowing owls, 111 loggerhead shrikes and 10 red-tailed hawks (all of which are on the U.S. Fish & Wildlife Services sensitive list because of their declining populations).

"Ecopic Volt" by the Ecopic Corporation, <http://www.ecopic.com>, is a patented product that deters birds from landing, nesting or roosting on buildings. The device delivers a mild electric shock while producing a mild vibration. It also has raised rods to help prevent birds from creating nesting zones. It has a PVC sole and two stainless steel conductors and comes in 10 yard rolls in various colors and is installed with silicone.

Chase dogs are an effective alternative to removing geese or ducks from an area, but should not be used when the birds are nesting,

Laser Beams. Will disperse birds temporarily.

Shooting. A possible alternative or supplemental method for eliminating birds is shooting with air-powered pellet guns, if legally allowed.

- 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 birdshot or sandshot. However these are noisy, often illegal, and/or too powerful or dangerous for urban sites.]
- Use great care, errant shots can be extremely dangerous to non-target species (e.g. pets and people).

Risks to Non-targets

Most lethal tactics in bird control pose some risk to non-target birds, as well as other animals. No one wants to endanger non-pest birds, or children, pets or wildlife; further, they are protected by various federal, state and local regulations. Care must be taken to minimize the threat to non-targets or to use only those tactics that pose the least risk.

- Identify all of the non-target species in the area.
- Use tactics that pose the least risk to everyone concerned.
- Modify tactics to minimize further risk.
- Monitor operations to be sure that no non-target species are being adversely affected.

PUBLIC RELATIONS

People often react more negatively to a dying bird than to accumulated pigeon droppings or potential risks of parasites and disease from bird roosts. Pigeons and sparrows are sometimes 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 bird control techniques. We do not advocate killing any birds; exclude them!

ECTOPARASITES AND BIRD DROPPING REMOVAL AND CLEAN-UP WITH SAFE SOLUTIONS, INC. ENZYME CLEANER WITH PEPPERMINT AND/OR BORAX

Note: Robins and other birds have been observed standing over ant nests and allowing the ants to climb up and over them to remove lice and mites. Workers removing large quantities of bird droppings should follow these precautions to minimize risk from disease organisms in the droppings and any ectoparasites or miscellaneous pests:

- Wear a full face respirator that can filter particles down to 0.3 microns.
- Wear disposable protective gloves, hat, coveralls, and boots.
- Wet down the droppings with diluted enzyme cleaner to keep spores from becoming airborne.
- Put droppings into sealed plastic garbage bags and wet down the outside of the bags with diluted Safe Solutions Enzyme Cleaner with Peppermint and/or borax.
- Then thoroughly clean the entire area with copious amounts of diluted enzyme cleaners and borax.
- When finished, and while still wearing the respirator, remove the protective clothing and place them in a plastic bag until you can launder them as soon as possible in diluted enzyme cleaners and borax.
- Dispose of trash bags. (Disposal, except for excessive amounts, should be permissible through standard trash pick-up.)
- Wash up or shower as soon as possible.

Intelligent Pest Management® Notes:

Birds create 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, although many birds can become pests in the right (or wrong) situation. Use laser guns to safely "shoot" or move birds.

Birds are protected by many laws and regulations. Although pigeons, starlings, and house sparrows are not directly protected by federal law, their control is often strictly regulated by state and local governments. Public opinion is often strongly against any control measure that kills birds, even pest birds. Non-lethal bird control methods include habitat modification limiting food, water, and shelter), exclusion (with netting, porcupine wire, sticky repellents, lasers, noise, flashing lights, etc.), and trapping. The most common lethal control measures are AVITROL poison baits and toxic perches, some of which have already been withdrawn. Be extremely careful when using bird poisons so that you do not harm non-target birds and animals. **We do not recommend any lethal control measures other than hawks/peregrines. Exclusion is still the most cost effective control.** **Intelligent Pest Management® Bird Control Summary** - (Only if you eliminate the nesting and roosting on

a building, tree, statue or whatever; will you eliminate bird problems.) **Holes** - The simple closing of holes in buildings can solve many bird problems. **Nest cleanup** - Birds can nest deep in dryer vent airflow lines or other openings up to a depth of 15 feet. A simple technique to clean out the nests is to use an industrial vacuum and a flexible copper pipe to slowly pull out the nesting material; then clean the vent with diluted enzyme cleaners and close off any openings with 1/2" hardware cloth or place flashing around any other openings, i.e., damaged dock doors that are not in use. Once holes are blocked or netted, the birds will no longer come into the building. Install plastic curtains or nets on any doors that are open all day. The secret to finding the problem may be the top of the dock doors. Wherever there is a 1" or greater gap, birds are able to enter the building. **Plastic netting** can be used to prevent birds from constantly flying into a warehouse, landfill, court yard, etc. InterNet, 1-800-328-8456; web site: <http://www.internetmesh.net>, has a product line which features a selection of netting from heavy-duty grids to smaller mesh sizes to meet a variety of needs. Birdnetting can be ordered in custom sizes or rolls and easily fabricated to fit most building installations and to seal off areas that attract birds. Helpful installation hints are also included in a descriptive application brochure available from InterNet. Hot Foot Mist Nets, 8' x 40', are very fine nets constructed of strong fibers that birds cannot see. The nets have a unique "pouch" construction, when the birds fly into the net, their feathers become entangled, thereby safely immobilizing them for removal. Different mesh sizes are available for birds of different sizes and the nets can be joined together to cover a greater area. If you have any questions call Hot Foot at 1-800-533-8421; web site: <http://www.hotfoot.com>.

Roosting on ledges can be discouraged by changing the ledge angle to 45° or more. Sheet metal, Styro-foam blocks, wood, stone, etc. can be formed and fastened to ledges to achieve the desired angle.

- Building ventilators should be completely netted over using plastic netting to prevent birds from crowding their nests into ventilator slits.
- Commercial signs should all be repaired and/or screened to prevent any bird roosting space.
- All broken windows should be repaired, sealed off or screened.
- Warehouse doorways that must be left open and/or used frequently during the work day should be screened or blocked to birds by hanging clear plastic strips to the ground in front of the opening. These strips will not impede the warehouse workers' activities, but will present an impassable barrier to the eyes of any bird.
- All places or openings between window air conditioners and the building should be blocked off or screened.
- In locations where birds are utilizing palm trees for nesting sites, the frequent removal of the dead fronds from the trees will aid in eliminating bird roosting sites (as well as roof rat harborage).
- Likewise, if birds are using building vines, the vines can be removed from building sides or covered with inconspicuous plastic nets (in most cases, black is the most inconspicuous color choice).

There are four different types of bird repellents: (1) tactile (touch or taste), (2) sound, (3) odor and (4) visual. For most urban and industrial bird problems, the tactile repellents are the most practical and effective. There are two types: (1) mechanical and (2) chemical. Porcupine wires (Nixalite™ and Cat Claw™ permanent types of mechanical repellents. They are composed of myriad spring-tempered nickel stainless steel prongs with sharp points extending outward at all angles. The prongs are fastened to a solid base which can be installed on window sills, ledges, eaves, roof peaks, ornamental architectural features or wherever birds are prone to roost. The sharp pointed wires inflict temporary discomfort, so birds avoid landing on these surfaces. All ledges and other niches must be completely covered in order for these devices to be completely effective. Wide surfaces may require two or more parallel rows of wires.

Porcupine wires can be very effective, but you must strictly adhere to manufacturers' installation instructions. If excessive space remains available between the building and the wires or between rows of the wires, birds will take advantage and construct nests among the wires creating even more of a problem than if no wires were used at all. Also, the wires must be inspected periodically and cleaned of any debris such as leaves and twigs. Nixalite of America Inc, 1-888-624-1189; website: <http://www.nixalite.com>, offers a wide variety of standard and custom colors.

Coiled wire, charged wire or simple strands of steel wire or fishing line tightly strung slightly above the surface of some narrow ledges or small isolated areas such as window sills, doorway areas, etc., will prevent birds from lighting on these areas. **Wire grids** can be placed over or across an area. Large black

wire - over - large black wire grids creates a 3-dimensional visual illusion to soaring birds that confuses them as they descend and the wires seem to disappear and reappear; the optical effect “blows their minds” and creates a fear they are about to be trapped. **Electrically charged wires**, similar to those used in cattle fences, placed onto ledges, parapet walls and other roosting surfaces have been used with some success.

Raptors - Raptors, e.g., hawks and falcons, like dogs are a highly effective bird control alternative and will not normally harm people or pets.

Jets of water are occasionally used to destroy nests and drive birds from building sites, but this must be done persistently until the birds become discouraged and move elsewhere.

Chemical (tactile) repellents are the pest control industry’s most widely used type of bird repellent. They are available as gels, pastes, sprays from concentrates, and aerosol-type cans for small jobs. Some are thick and tacky, others are jelly-like, and some are viscous enough to be sprayed. The thicker, heavier materials are most suitable for use on ledges and buildings. Most chemical repellents contain chemicals such as polyethylene or polybutylene. They produce a *warm foot* sensation to birds when they light on them, resulting in the birds moving to roost or loaf elsewhere. All potential roosting and/or loafing surfaces on a building must be treated, or the birds will simply move to untreated areas. For best results all surfaces should be wiped clean of all dirt, debris and bird droppings using diluted enzyme cleaner and borax before any repellent is applied. Building surfaces are susceptible to staining from repellent dripping or running during warm temperatures. The effectiveness of chemical repellents is lost over time. **Visual repellents** include the use of flashing lights, fake owls, hawks, snakes, scarecrows, shiny flags, balloons and various other gadgets. Visual repellents are generally not very effective against the pest birds in urban and industrial environments. **Sound repellents** include explosions, gunfire, fireworks, loud piercing alarms, horns and the recorded sounds of birds in distress played over amplifiers. Sound repellents have little permanent effect. Many of these noise devices are not very practical within urban and industrial environments as they are likely to be very irritating to the human inhabitants of the area. **Bird X Peller** is an electronic bird repeller that replays high fidelity recordings of birds’ distress cries from a microchip. Birds, upon hearing these natural sounds/warnings, may become agitated, disoriented and may flee the area. The units are portable and programmable. Call 312-226-2473 for information; web site: <http://www.bird-x.com>. Occasionally, **naphthalene** has been used to repel birds from buildings, but it must be applied at about 5 pounds per 2000 cubic feet of space, and the label cautions that breathing of the vapor by people and pets should be avoided, **so the Author does not recommend the use of volatile naphthalene.**

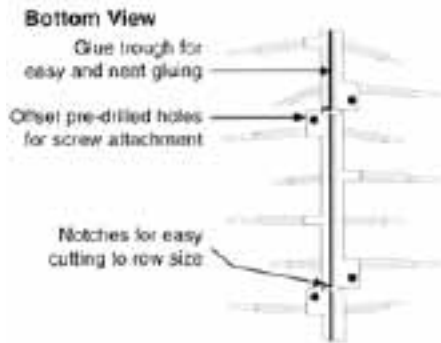
William Gray from Grand Rapids Community College was researching an old Norwegian (Viking) formula for preserving (green) marine wood and found it repelled all ducks and geese from his wooden boat and dock. No other birds were seen to land and defecate there either. The wood sealant is made from raw linseed (flaxseed) oil stirred into (Southern Yellow Sugar Pine) gum turpentine and sprayed or painted onto the wood. If you want it to stick on the surface, mix about 50/50. If you want a more deeper penetration, add more gum turpentine.

Aesthetic Engineering & Design of Thousand Oaks, California is marketing BirdOff®, a low-cost, easy-to-install stainless steel product that deters pigeons and seagulls and is non-injurious to birds. Designed to permanently and decisively end the problems of unsightly and unhealthy bird droppings as well as the cost of cleaning them up, BirdOff mounts at the top of walls, on overhead beams, at the edges of roofs, or anywhere else birds perch, and deters them from landing. Without being harmed, the birds fly off to a new location. Having been field tested for more than a year at amusement parks and on private and public buildings, BirdOff has been highly effective and results are guaranteed according to the Manufacturer, <https://birdoff.com>.



Bird Barrier America, Inc., 1-800-503-5444, <http://www.birdbarrier.com>, has **Daddi Long Legs**, **StealthNet** and **Bird-Coil®**, the coil protects ledges up to 5” wide. These products, according to the Manufacturer, are easily installed, are permanent, cannot hurt birds or workers, and are flexible enough to

protect any type of surface. The coil is priced at between \$1 and \$2 per foot. Bird Barrier Coil has been successfully tested on billboards and electric signs. It is installed with staples to wood, or with a patented bond to metal, concrete or stone. Because it consists of thin stainless steel coils, it is extremely difficult to see from the ground.



Bird-B-Gone, Inc., 1-800-392-6915, <http://www.birdbgone.com>, of Lake Forest, California has introduced **Bird Spike 2000®**, a patented bird deterrent system made from durable recycled plastic with U.V. inhibitors. It offers a low-cost, permanent method of eliminating unsightly bird droppings and related health problems. The product will cause no harm to birds, and can be installed on flat or round surface, ledges, beams, parapets, sills, pies, roof peaks, chimneys, spots, pilings, patio and boat covers, trees and any other surface on which a bird may land or perch. It can also be installed on wood, metal, masonry, brick or canvas. Bird Spike 2000 is non-conductive and comes in four colors: white, dark brown, stucco tan and boat-cover blue. Custom colors are also available.

Glue boards or Snap traps - Rat traps and/or glue boards can be baited with pieces of bread or french fries tied to the trigger or placed in the middle of the glue. But, be careful, they can kill **any** bird attracted to the bait. Rat glue boards can be used to trap and release (if still alive) racing pigeons and/or protected species.

Bird Shock from Bird Barrier (<http://www.birdbarrier.com>) uses low amperage and high voltage to shock birds into moving elsewhere. They even have a solar-powered unit.

Ecopic, 1-810-647-0505; web site: <http://www.ecopic.com>, of Birmingham, Michigan now offers the **Ecopic bird deterrent system** to dissuade pigeons from landing, roosting and nesting on window ledges, cornices and other building facades. The product, which according to the Manufacturer is nearly invisible and harmless, is composed of stainless steel rods arranged in a triangular configuration and stamped into a clear, polystyrene base. It can be installed with 100% silicone on practically any surface. **Ecopic also offer Ecopic Eye®**, a product designed to protect balconies and terraces. Ecopic Eye, a product designed to protect balconies and terraces. Ecopic Eye, which requires four AA 1.5-volt batteries, consists of a rotating disk powered by a small electric motor and an integrated electronic board. A sound synthesizer reproduces distress cries of birds that have previously been recorded digitally, and is effective against many bird species, including several types of seagulls, starlings and pigeons. A switch enables the user to select the distress cries of various birds. As soon as a bird penetrates the protected zone, an infrared cell triggers the motor, which begins rotating the disk, simulating the eye of a predator, and at the same time produces the distress call. After 10 seconds of zone penetration, Ecopic Eye returns to the detect mode. The combination of visual and audible techniques helps ensure maximum deterrence and may decrease the likelihood that birds will become familiar with and ignore the disturbance.



Bird-X, Inc., 1-312-648-2191, <http://www.bird-x.com>, of Chicago has a gel product called **Bird-Proof®** which is applied to beams, ledges, rafters, walls, cornices, trim dormers and other landing areas. Bird-proof gel is odorless, non-poisonous and environmentally safe per the Manufacturer, yet has a tacky feeling that birds shun. Apply with a caulking gun.



Birdbusters, 1-800-NO-BIRDS, <http://www.birdbusters.com>) offers **Birdwire**, a pre-assembled, stainless steel, vertical wire system attached to a plastic base with snap-off sections. The angled wires increase the effectiveness of the system and eliminate the need for multiple rows. The product's wires are made from 315 grade stainless steel, and are 11.5 centimeters in height by 1.3 millimeters in diameter.

Bird control products can also be found at: <http://www.flybye.com>, <http://www.reedjoseph.com> and <http://www.calsota.com>.

Most birds hate to have anything rub against their legs when they are roosting, so nail (or fasten) two end brackets on either gable end, ledge, or wherever you see birds roosting - and string a piece of wire, fishline, string or waxed twine about 4" above the ridge. **This one control works for most people and is simple, non-toxic and inexpensive.**

You can also install an electric fence along the top of the roof or areas where they roost. **The proper safety equipment for bird control includes coveralls, dust and vapor masks, goggles, gloves and a good heavy-duty vacuum cleaner and/or a power washer with diluted enzyme cleaner or peppermint soap and borax.** When the air temperature is below 40° F., spraying birds with water containing a simple wetting agent will cause body temperatures to drop, causing death by hypothermia. Pieces of Alka Seltzer® thrown into the air and swallowed by seagulls will quickly kill them. Remember to remove and bury all dead birds, whether they were a result of natural causes or your "controls." High pressure spraying with diluted Safe Solutions, Inc. enzyme cleaners also cleans the area of droppings, nests, feathers, and ectoparasites.

If seagulls are dropping clams onto your tarmac or concrete, paint circling seagulls on the surface - the seagulls will not drop their clams on these painted surfaces for fear the other seagulls will steal their food. Stainless steel wires or clothesline stretched over areas infested with seagulls 10' - 12' above ground in a random pattern with about 1 yard squares between the wires will keep seagulls from landing. This random pattern will also keep geese and ducks from landing. Keeping a bird dog or border collie in an area fenced with invisible fencing will also keep nuisance birds out of that area.



Large eye spots can also be used to frighten birds. The eye spots can be painted on, put on balloons or flags and/or intermittently projected on to an area. The odor of creosote will often repel birds (but it is not safe for people either).

The Author does not recommend the use of any bird poisons or lethal traps including toxic baits, e.g., Avitrol® and strychnine corn and/or perches or shooting. Exclude them or repel them or ignore them!

On Thursday, July 9, 1998, the Grand Rapids Press noted: **Two hundred animals found dead on coast** Penguins, sea gulls, albatrosses and other birds were among 214 animals found dead along Argentina's Atlantic coast, ecologists said Wednesday. The cause of the deaths over the weekend in Miramar, 265 miles southeast of Buenos Aires, is still under investigation, authorities said. Ecologist Gil Conners told Perfil, the Buenos Aires daily, that he believes pesticides dumped in the ocean caused the deaths.

Strobe lights - If you have birds in dark areas, strobe lights will discourage their presence.

Rippling water - If you have a bird trapped inside, open one door, cover all windows and the sun bouncing off the rippling water will show the bird the way out.

Corn oil - Spraying corn oil on porous bird egg shells. It plugs up the pores and blocks the flow oxygen. Bird embryos need oxygen to penetrate the shell to stay alive. Corn oil oil literally causes the embryos to suffocate.

Used CD's - Place used CD's on strings to blow in the wind and repel birds as they catch and reflect the sun's rays.

Nicarbazin as a Birth Control for Birds - Nicarbazin has been used to prevent coccidiosis, a protozoan-caused intestinal disease in broiler chicken production. Nicarbazin also interfered with egg viability by increasing egg membrane porosity and may also negatively effect other factors that are necessary for bird embryos to complete development. Mixing nicarbazin in bait and feeding pigeons and/or geese (and many other birds) a few weeks before egg laying season on a daily basis greatly inhibits live hatching of goose and/or pigeon eggs. Nicarbazin rapidly passes through a bird's system within a few days of consumption. EPA has not yet approved this chemical for bird control.



Broad Ban Pro, a broadband ultrasonic, programmable unit from Bird-X features distress cries from pigeons, gulls, starlings and other pest birds and predator cries from falcons and hawks. The mixture of sounds, volumes and frequencies add up to an all-encompassing harassment. 1-800-662-5021, <http://www.bird-x.com>

Grape Kool-Aid - Try mixing 9 packages of **grape** (without sugar) Kool-Aid and spraying the mix on plants, fruit and/or grass you want birds to stop eating.

Lasers - Using lasers at night will repel birds from an area at least temporarily.

Raptors - Using hawks, falcons, etc. quickly results in removing pest bird species.

"Watch your thoughts. They become words. Watch your words. They become deeds. Watch your deeds. They become habits. Watch your habits. They become character. Character is everything." — Ralph Waldo Emerson

"I have no particular talent. I am merely inquisitive."— Albert Einstein



*Safe Solutions products may be purchased online at:
<http://www.safesolutionsinc.com>
or by telephone at:
1-888-443-8738.