

# Fine Feathered Friends

## Bird Mitigation for Structures

By Michael S. Teller, A.I.A.

It has been said that when bird droppings fall on your head, you will have good luck. Most of us do not need that kind of luck. In fact, bird control on buildings is one of the more important facility maintenance issues in our country.



Underside of portico is protected from the weather and promotes roosting. Photo by Jim DeStefano, DeStefano Associates.

In Europe, architects and engineers design new buildings which incorporate bird mitigation measures as part of the original construction. That way, those structures never start out as a home for the local flock. In the United States, developers have a more laissez faire attitude, where they build it and wait to see if birds find it attractive. When the birds eventually arrive, the owners have to play catch up and decide how to respond using a variety of existing bird control measures. You have likely seen the spikes that are installed on building ledges, and you may know someone who has a plastic owl on their roof. In this article, we will explore the various bird mitigation techniques available for nuisance birds (not endangered species) and their effectiveness.

First let's discuss some basic concepts about birds:

1. If you build a new building and keep the birds out from the first day, they will not consider your building a home and will not try to find new places to roost. However, if your new building is "open for business" to birds for roosting, it is much harder to discourage them.

2. Birds roost in protected areas on a building that provide cover from rain and

wind. Common locations include places under overhangs, cornices, at inside corners, and under bridges. Open, unprotected areas discourage roosting but may still promote loitering.

3. Birds are very adaptable and fairly intelligent. They may be scared or repelled by a mitigation technique today, but find it amusing a week later when it has not moved or changed.

4. Birds learn if your mitigation techniques are serious and will act accordingly.

Bird Mitigation techniques for buildings come in various designs. The most common include:

a. *Spikes, tensioned wires, and loops of wire* to keep birds off narrow surfaces and ledges.

b. *Electric shock devices.*

c. *Liquid repellants* that are applied to horizontal surfaces that are uncomfortable to bird's feet.

d. *Static scare devices*, such as decoys and reflective mylar stripe.

e. *Sound repellent devices.*

f. *Exclusion systems*, such as netting and wire mesh.



Spikes eliminate places to land, loaf or walk. Photo by Michael Teller, CBI Consulting, Inc.

### Spikes, Tension Wires, and Loops of Wire

Spikes are stiff pieces of wire bundled on a continuous spine in a fan configuration. The spikes are numerous and are intended to deny birds a clear place to land, loaf or walk. The concept of spikes works very well in places where there are flat, open ledges on the side of a building at cornices, sills

or parapets, or under a bridge that provide places for roosting or serious loitering by birds. They can be installed to conform to gentle curves. Spikes are available in stainless steel with various spike patterns, from various manufacturers. If the shiny silver finish of the spike is undesirable, you can find them in clear plastic, as well as with a baked on finish in a color to match the building. Similarly, spring loaded tensioned wire products are also available. Narrow vertical metal rods are attached to each end of the ledge which suspend, above the ledge, thin wires that are stretched fairly close together. These tend to be less visible to the eye, but perform the same task as spikes. Wire loops work similarly.

The drawbacks to these systems are that smaller birds can use these devices as a substrate for building nests and they can catch debris. Spikes are most effective on larger birds and birds with flat or webbed feet. The other disadvantage is that they must be applied to every ledge and flat surface on your building in order to be effective, or the birds will continue to roost on the places that are not treated. This can be expensive if there are many surfaces to address. If the ledge is wide, more rows of spikes will be needed to achieve full coverage as well.



Electric wires — birds remember and avoid locations of electric shock. Photo by Michael Teller, CBI Consulting, Inc.



Cupola restoration included netting at balconies, ledges, and windows. Photo by Michael Teller, CBI Consulting, Inc.

### Electric Shock Devices

Electric shock devices tend to be very effective, and consist of thin metal wires and flat metal strips connected to a power source. The electric source can be a solar charged battery for a modest sized system, or directly wired into the building electrical system for a larger (and appropriately stepped down) system. The electrical charge is not fatal to the birds, but supplies quite a jolt. Birds quickly recognize which areas pose a physical danger and avoid them completely. The wires can be strung along ledges in a similar manner to the spike concept. With the added electrical shock, they are a real deterrent. Flat metal conductors can be bent to conform to intricate building contours, making them virtually invisible from below.

The drawback is that with many ledges or wider ledges, you may need more rows of these elements which can become expensive. Also, the maintenance staff needs to be notified of the potential of electric shock when accessing any areas treated with an electrified system.

### Liquid Repellants

Liquid repellants are also manufactured to deter birds from gathering and roosting. They are applied to the surfaces where the birds walk. In most cases, the liquid feels uncomfortable to bird's feet. In other cases, a chemical is added that actually causes physical discomfort, but is not harmful.

The problems with these types of deterrents are that they only last a limited amount of time, perhaps six months to a year, maximum. They are sticky and collect atmospheric dirt and debris, as well as bird droppings and feathers. This eventually renders them ineffective and they need to be reapplied. More importantly, they are unsightly and are generally banned

from historical buildings, as they will stain building finishes and are aesthetically unpleasing. Liquid repellants should be used for short term problems and in areas that cannot be seen from the ground.

### Scare Devices

Scare devices include animal predator decoys, Mylar coated reflective ribbons, and inflatable balls with large fake eyes on them, which simulate the idea of a larger predator. These devices have very short term effectiveness. While you can hang almost anything over your back porch to keep birds away for a week, they quickly learn that these static/unchanging items pose no real threat and begin to ignore them. You can move them around on a daily basis if you have the time. For example, golf courses use coyote decoys to deter geese, but they have a full time maintenance staff to vary their locations. Most buildings managers prefer a more permanent solution.

### Sound Repellant Devices

Sound repellant devices are also available. They are intended to scare or irritate birds so they will leave a local area. They include high-pitched sonic and ultrasonic noises, distress calls from similar birds, calls of predators, as well as loud noises intended to scare. To be most effective, each device should be programmed for the local bird that is the nuisance. Variable frequencies or a variable program of calls, patterns, and volumes is more effective. Again, because birds are so adaptable, if the noise or pattern of noises does not change, they will soon determine that there is no real danger and will return.

### Exclusion Systems

Exclusion systems, which include netting and wire mesh, are installed as a physical barrier to completely deny birds access to a particular space and are the most effective of all bird mitigation devices. They are often on the high end from a cost standpoint, but compared to installing rows of spike or electric shock devices over hundreds of lineal feet of area, netting can be very competitive. Most importantly, they work very well.

Netting is also virtually impossible to see visually on a building. Most netting is black, polyethylene (which is most long-lasting) or polypropylene (less expensive, used indoors), and come in a variety of netting sizes from ¾-inch square to 4-inch square, depending on the size of the birds you wish to deter. If you have visited Washington, D.C., I am sure that you have passed many installations of black netting on large historical facades and never noticed.

### Non-Building Applications

There are bird mitigation products for non-building applications such as airports, farms, golf courses, and billboards. These include loud sonic blasts, foggers, liquid repellants that have a vile smell or taste to birds that are sprayed on crops or fields, as well as revolving arms that sweep away any bird from the tops of signs.



Netting virtually invisible even at close range. Photo by Michael Teller, CBI Consulting, Inc.

### Conclusion

When engineers consider the types of structural support needed for a project, they need to work with the architect to consider bird mitigation. For example, exposed wide flange steel beams under a bridge provide an excellent place for birds to roost. Substituting a precast concrete section with a sloped profile would eliminate places for the birds to sit. However, this would likely increase the construction cost. This should be compared to the added cost of mitigation, health hazards, and the damage caused by the birds.

Bird droppings cause excessive damage to buildings. The droppings deface and accelerate deterioration of building components and can kill vegetation. Pungent odor and aesthetic appearance can be unpleasant to building occupants and customers. Economic losses can be significant due to cleaning, repairs, and maintenance. Feathers can plug ventilation units. Birds also carry numerous diseases that can be transmitted to humans including dangerous fungi and airborne spores, which if inhaled, can cause serious illness.

Bird mitigation systems must be designed for the type of bird and the type of location appropriate for your building. Cost and aesthetics will lead you to one of the systems described above. Many manufactures have websites with additional information. ■

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