



Control of Roosting Birds on Transportation Structures

Prepared for
Clear Roads Pooled Fund Study

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April 23, 2007

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Request for Report

Birds, particularly pigeons, roost under bridges and inside open sheds such as those used for storing road salt. Pigeon excrement is known to carry pathogenic organisms and presents a hazard to maintenance personnel and pedestrians or bicyclists passing beneath their roosting areas.

As the lead state for the Clear Roads pooled fund project, Wisconsin DOT asked us to locate research and information on pigeon control strategies, with an emphasis on strategies for urban settings. Ideal strategies would control bird droppings without requiring increased highway maintenance time and resources to install, inspect or monitor bird control devices. If possible, these methods would not require installation, attachment or application of materials to structures like bridges and storage buildings.

Summary

In our research, especially in discussions with experts in the field of wildlife management, our most important conclusion was that there is no single solution that is appropriate for all locations. Rather, successful pigeon control will generally require a blending of more than one approach. Trained wildlife management professionals such as those in USDA's regional Wildlife Services offices can help a DOT select the best strategies for specific situations.

Most of the strategies and practices compiled in this report do require at least some investment of time, equipment or other resources to gain the desired result.

This report reviews common **Pigeon Control Strategies**, grouping them into three primary categories:

1. **Population control:** Lethal methods such as shooting or poisoning, as well as egg and/or nest destruction, and trapping/relocating.
2. **Habitat control:** Strategies that limit access to perch and nest sites, as well as attachments such as spikes, netting, screens and sticky repellants, and devices that frighten birds with sounds or images.
3. **Behavior control:** Removal of food sources, as well as provision of alternative perching and nesting sites.

This review includes states' experiences with strategies in each category. We also identify **Federal Resources** for agencies experiencing pigeon problems, as well as three **Related Research** projects in progress. Finally, **Other Resources** provide background on related topics, and a list of **Temporary Strategies** highlights state DOTs' experiences in controlling nesting during bridge construction.

Pigeon Control Strategies

Strategies used to control pigeons and the damage they cause fall into three main categories: population control, habitat control and behavior control. Some strategies, such as electrified perches, could fit into more than one category. This section lists common pigeon control strategies and states' experiences using them.

Population Control

Strategies that act to control pigeon populations include:

- Removal of birds by **shooting** them while roosting
- **Poison** that is introduced through food sources and baits
- **Trapping** of unwanted birds to euthanize or relocate them
- **Destruction** of eggs or removal of nests prior to breeding
- Introducing **predators** such as falcons

Shooting pigeons will normally not be acceptable in a public, urban environment. Poisons have disadvantages as well; for example, predator birds could become sickened after eating poisoned pigeons, and other wildlife species or pets could eat poisoned food. In addition, potential opposition to destroying bird populations may present public relations issues that are not anticipated, even though pigeons are not protected under the Migratory Bird Treaty Act or other laws.

States' experiences with population control strategies include:

Connecticut DOT: Falcons

<http://www.fhwa.dot.gov/environment/wildlifeprotection/index.cfm?fuseaction=home.viewArticle&articleID=3>

Connecticut DOT's efforts to provide nest sites for peregrine falcons on bridge piers had the added benefit of discouraging pigeons from roosting on the bridge, since falcons are predators of pigeons. Read more about the falcon nest boxes at http://ct.gov/dep/cwp/view.asp?a=2723&q=325922&depNav_GID=1655.

New York State: Falcons

<http://www.nysthruway.gov/about/factbook/part2.html> (scroll halfway down the page to "The Falcon Program")

The New York State Thruway Authority has added falcon nesting boxes to four of its bridges, which have successfully kept pigeons away from the bridges. Previously, pigeon droppings harmed the paint on the bridges. Read more about falcon boxes in New York at

<http://www.fhwa.dot.gov/environment/wildlifeprotection/index.cfm?fuseaction=home.viewArticle&articleID=20>.

Virginia DOT: Falcons

<http://www.fhwa.dot.gov/environment/wildlifeprotection/index.cfm?fuseaction=home.viewArticle&articleID=26>

Virginia DOT has added falcon nesting boxes to eight bridges; pigeon control is not mentioned as a goal in this article.

Habitat Control

Strategies that modify buildings or structures to make them less hospitable to pigeons include:

- **Spikes** that prevent pigeons from landing or perching on a structure. See www.deterapigeon.com for sample images.
- **Netting** that blocks pigeons' access to roosting locations. Netting may be made of nylon, polypropylene, metal or other materials. See <http://www.absolutebirdcontrol.com/ultranet.htm?ABS=Overture> for sample images.
- Sticky **repellants** that are applied to roosts. These sticky substances are uncomfortable to pigeons' feet. See <http://www.absolutebirdcontrol.com/birdrepellent.htm> for a product description.
- **Sonic** and **ultrasonic** devices designed to scare away birds. These include recorded predator sounds, cannons and unpleasant noises that are inaudible to humans.
- **Scarecrows**, including owl images and flashing foil-like streamers. See sample images at http://www.birdstoppers.com/site/439038/page/45029/?google.bird_control_products.
- **Electrified perches** that deliver a mild shock to birds' feet. See <http://www.birdbgone.com/shocktrack.htm> for details.

These strategies generally involve installation and monitoring, and may require equipment costs. Netting may be able to be installed in small, defined areas (for example, where a traffic light controller might be mounted) without extensive costs or labor.

States' experiences with habitat control strategies include:

Iowa: Spikes and metal screens

<http://www.iastate.edu/Inside/2006/0720/bridge.shtml>

Iowa State University's efforts to pigeon-proof a bridge included attaching metal screening to the underside of the bridge and adding spikes to the concrete abutments on either side of it.

Phoenix, Ariz.: Netting

<http://www.azwns.com/Freeway%20Underpass.htm>

Phoenix contracted to have six underpasses cleaned and protected by netting, which was attached to the bottom and inside of the side supports of the bridges. This project took about three months.

Indiana and Kentucky: Bird cannon (ABC News, "Hairy Animal Control Tactics," April 2005)

<http://abcnews.go.com/Entertainment/WolfFiles/story?id=706045> [scroll to "5. Roll Out the Pigeon Cannon"]

This article describes efforts to frighten birds with the noise of a bird cannon; this method was not immediately successful.

For **Arkansas'** approach to using ultrasonic bird deterrents, see "Evaluation of Passive Bird Deterrent Devices to Minimize Nesting on Bridges and Culverts" in [Related Research](#) below.

Other habitat control resources and citations include:

Scotland: Roosting Pigeons & Seagulls—Options for Control & Financial Implications, Protection for Underside of Railway Bridges

<http://www.northlan.gov.uk/living+here/public+health/pest+control/roosting+pigeons+and+seagulls+options+for+control+and+financial+implications+feral+pigeons.html>

This Web page from a city in Scotland compares costs of various pigeon-control methods, including netting, shooting, spikes, live trapping, and installation of alternate nesting sites.

Patent: Assembly for preventing pigeons from entering the space between a pair of adjacent I-beams of a bridge

<http://www.freepatentsonline.com/5209032.html>

This patent describes plastic sheeting that encloses the I-beams of a bridge to prevent pigeons from accessing the understructure.

Behavior Control

Strategies that attempt to change the way birds behave include:

- **Food removal** if possible. Common food sources include open food waste Dumpsters and people who deliberately feed pigeons.
- Provision of **alternate roosting sites**.

States' experiences with behavior control include:

"Pigeon Wars," *New York Times*, October 15, 2006

<http://www.nytimes.com/2006/10/15/magazine/15pigeons.html?pagewanted=1&ei=5088&en=4c08935f5ab3cc0a&ex=1318564800&partner=rssnyt&emc=rss>

This article describes efforts to combat pigeon waste in a major city. Education of the public to stop the feeding of pigeons in public areas could offer some help, but is generally not going to affect the overall access to abundant food in urban environments.

For **Oregon DOT's** approach to providing alternative nesting sites, see the proposed project "Creation of Alternative Nest Sites to Minimize Swallow Conflicts on Transportation Structures" below in [Related Research](#).

Federal Resources

United States Department of Agriculture, Animal and Plant Health Inspection Service, Wildlife Services

http://www.aphis.usda.gov/wildlife_damage/

USDA's Wildlife Services division "provides federal leadership and expertise to resolve wildlife conflicts." We spoke with Jason Suckow, USDA's Director for Wildlife Services in Wisconsin and Minnesota, who recommended that interested DOTs work with Wildlife Services to design a collaborative solution to pigeon problems.

Suckow emphasized that no single procedure or piece of equipment will be the correct strategy for all pigeon control situations. Instead, the solution will normally require a blending of strategies based on the situation: urban or rural, with or without public access, availability of human and other resources, and so on.

The Wildlife Services division has regional staff throughout the country who can help DOTs assess individual situations and develop solutions. Suckow recommended that Utah DOT contact Utah's Director for Wildlife Services, Mike Linnell, at the phone number below. Other state contacts are available at <http://www.aphis.usda.gov/ws/phoneero.html> (eastern region) and <http://www.aphis.usda.gov/ws/phonewro.html> (western region).

Contact: Jason Suckow, Director for Wildlife Services, Wisconsin and Minnesota, (608) 837-2727.
Mike Linnell, Director for Wildlife Services, Utah, (801) 975-3315.

We also contacted Diane Winterboer, a wildlife biologist with Oregon's Wildlife Services, who identified two publications that provide useful background information for states considering pigeon control alternatives:

Prevention and Control of Wildlife Damage, University of Nebraska-Lincoln, 1994, "Pigeons" chapter.

http://icwdm.org/handbook/birds/bird_e87.pdf

Though an older resource, this handbook discusses several pigeon control methods and the outlines the diseases that may be present in pigeon droppings.

Executive Order 13112, Invasive Species, February 3, 1999

<http://ceq.eh.doe.gov/nepa/regs/eos/eo13112.html>

This executive order directs federal agencies to use their programs and authorities to prevent the spread of or to control populations of invasive species that cause economic or environmental harm, or harm to human health.

Winterboer also cited a 1999 decision of the Occupational Safety and Health Administration to fine a Hoboken, N.J., manufacturing company over \$600,000 for failing to abate hazards associated with severe accumulations of pigeon excrement.

Contact: Diane Winterboer, Wildlife Biologist, USDA Wildlife Services–Oregon, (541) 258-2189 or Diane.E.Winterboer@aphis.usda.gov.

We located two documents that describe states' experiences working with Wildlife Services to control bird populations. Both describe several options for bird control, and provide a sense of the types of services that Wildlife Services can provide:

Environmental Assessment Final: Bird Damage Management in the Tennessee Wildlife Services Program

United States Department of Agriculture, Animal and Plant Health Inspection Service, Wildlife Services, April 2002

<http://64.233.167.104/search?q=cache:n0wZf-F6ttgJ:www.aphis.usda.gov/ws/nepa/TNbirdFONSL.pdf>

(The original PDF was recently removed from USDA's Web site, but we located a related document in Google's cache at the link above.)

The environmental assessment evaluated four alternatives that Wildlife Services could use to resolve conflicts with bird species in Tennessee. An excerpt from page 3 describes lethal and nonlethal methods that could be part of a bird damage management program:

Lethal methods used by WS could include shooting, trapping, egg addling/destruction, nest destruction, DRC-1339, also called Starlicide (3-chloro-p-toluidine hydrochloride), Avitrol (4-aminopyridine), or euthanasia following live capture by trapping or use of the tranquilizer alpha-chloralose (A-C). Nonlethal

methods used by WS could include porcupine wire deterrents, wire barriers and deterrents, netting, live capture and translocation using the tranquilizer A-C and/or traps, chemical repellents (e.g., methyl anthranilate, di-methyl anthranilate, or anthraquinone), and harassment with pyrotechnics, lasers, lights, vehicles, audio and visual distress. Bird damage management by WS would be conducted in the state, when requested, on private property sites or public facilities where a need has been documented, upon completion of an *Agreement for Control*. All management actions would comply with appropriate federal, state and local laws.

“Reducing Double-Crested Cormorant Damage Through an Integrated Wildlife Damage Management Program in the State of Michigan,” final amendment to environmental assessment, August 2006.

<http://www.fws.gov/midwest//MICormorantNEPA/documents/AmendmenttoDCCOFinal.pdf>

This document covers a broad spectrum of issues, and two sections may be the most relevant to bird control on structures. Section IV, “Alternatives” (page 16 of the PDF), describes five bird control alternatives that Wildlife Services could implement, while Section V, “Issues” (page 18 of the PDF), describes the impacts of the preferred alternative on cormorant populations, other wildlife species, humans, and aesthetic values, and discusses humaneness and animal welfare.

Related Research

This section describes three state DOTs’ ongoing research projects that are evaluating methods of preventing birds from nesting on bridges.

“Pigeon Droppings Control and Avoidance in Support of Bridge Inspections and Public Perception and Safety”

Colorado DOT problem statement, Study 41.76

<http://www.dot.state.co.us/Research/ProgressReports.pdf> (see page 77 of the PDF)

The original problem statement calls for researchers to prepare a maintenance guide detailing techniques for controlling pigeon droppings, addressing topics such as effectiveness, initial costs and costs over time, and maintenance requirements. CDOT maintenance staff currently clean bird droppings prior to each structure inspection. This problem statement was recently combined with a related problem statement on swallow nesting.

Contact: CDOT study manager Patricia Martinek, (303) 757-9787.

“Creation of Alternative Nest Sites to Minimize Swallow Conflicts on Transportation Structures”

Oregon DOT, FY 2008 problem statement

http://www.oregon.gov/ODOT/TD/TP_RES/NewProblemStatements/2008_StageOneProbStatements/GHE/GHE08_18SwallowsBridges.pdf

This proposed project aims to encourage swallows to nest in sites adjacent to transportation structures rather than on the structures themselves. The problem statement calls for researchers to assess whether swallows will use alternative nest structures, and will evaluate the effects of factors such as use of netting on bridges, removal of existing nests from bridges, and proximity of alternative sites to existing bridge nesting sites.

Contact: Ms. Chris Maguire, ODOT Natural Resources Unit, (503) 986-3385 or christine.c.maguire@ODOT.state.or.us.

Evaluation of Passive Bird Deterrent Devices to Minimize Nesting on Bridges and Culverts

Arkansas State Highway and Transportation Department/FHWA, ongoing research project

<http://rip.trb.org/browse/dproject.asp?n=11099>

This project is evaluating an ultrasonic bird deterrent to prevent birds from nesting on bridges and culverts that are slated for removal. ASHTD currently uses netting to prevent nesting, and has found it to be effective, but this method often requires lane closures during installation, and also requires subsequent monitoring and maintenance.

Contact: David Pearce, ASHTD, (501) 569-2073 or david.pearce@arkansashighways.com. Principal investigator: John Harris, ASHTD, (501) 569-2522 or john.harris@arkansashighways.com.

Other Resources

Migratory Bird Treaty Act

http://www.fws.gov/laws/laws_digest//migtrea.html

This page provides background on the 1918 law, and may be useful background if there are concerns that other bird species may be affected by pigeon control methods. A related page (<http://www.fws.gov/migratorybirds/intrnltr/treatlaw.html>) discusses other relevant laws and treaties.

Pigeon biology and damage

<http://www.globalbirdcontrol.com/pests/pigeons.htm>

Part of a bird control company Web site, this page discusses pigeon history, biology and various types of damage the birds can cause.

Temporary Strategies

The following links describe state DOTs' efforts to prevent birds from nesting on structures that are scheduled for construction.

Delaware: Netting

<https://www.fhwa.dot.gov/environment/wildlifeprotection/index.cfm?fuseaction=home.viewArticle&articleID=4>

Michigan: Tarps

<https://www.fhwa.dot.gov/environment/wildlifeprotection/index.cfm?fuseaction=home.viewArticle&articleID=13>

Montana: Nontoxic gel

<https://www.fhwa.dot.gov/environment/wildlifeprotection/index.cfm?fuseaction=home.viewArticle&articleID=15>

California: Fiberglass and plastic drainage covers

<http://www.fhwa.dot.gov/environment/wildlifeprotection/index.cfm?fuseaction=home.viewArticle&articleID=2>

Colorado: Fabric/plastic curtains

http://www.dot.state.co.us/environmental/docs/Newsletter/Interfacev1_6.pdf (top of page 2)

See also

<http://www.dot.state.co.us/Communications/EmployeeNews/Archives/insnov05.pdf> (page 6)