



Managing
**Urban Crow
Roosts**

IN PENNSYLVANIA
AND THE NORTHEAST

PENNSTATE



Cooperative Extension
College of Agricultural Sciences

Contents

Introduction	3
Crow Life History	3
Who's Who	3
Annual Cycle	3
Food Habits	4
Behavior and Social Life	4
Residents and Migrants	4
Nuisance Problems	5
Roost Sites	5
Developing a Crow Management Plan	5
Establish a Working Group	5
Develop a Plan to Monitor Crow Numbers and Damage	6
Review Management Options	6
Establish Tolerance Zones	6
Decide on Management Methods	6
Consider Your Workforce and Coordinate Efforts.....	8
Determine Your Budget	8
Keep the Public Informed.....	8
Monitor the Roost Location and Nuisance-Damage Reports	8
Begin Roost Management Early in the Season.....	8
Manage Expectations	9
Legal Status	9
Management Techniques	9
Harassment.....	9
Effigies	10
Lethal Methods	11
Sources of Supplies	11
For Additional Information	12

Introduction

Crows are social birds that have been roosting communally in winter as far back as there are written accounts of crow behavior. Historically, crows have roosted in rural areas, but by the 1970s there were regular reports of large urban roosts. Whether crows moved into the cities or the cities moved out to where crows roosted is a matter of debate, but today, winter crow roosts are common in urban areas throughout much of the United States and even worldwide.

This guide provides an overview of crow behavior, explaining the annual roosting cycle and what you can expect. The guide also gives a detailed account of how you can establish an urban crow management plan.

Crow Life History

Who's Who

Two species of crows tend to form urban roosts in Pennsylvania in the winter. These are the American crow (*Corvus brachyrhynchos*) and the fish crow (*Corvus ossifragus*). The American crow is much more common and is the primary crow in roosts in most of Pennsylvania and the United States.

Distinguishing between the two species visually can be difficult. The fish crow is smaller than the American crow and tends to have a more upright stance, but these differences are hard to detect unless you have lots of experience watching crows. The best ways to tell them apart is by their voice. Most people are familiar with the “caw caw” call of the American crow. The fish crow has a more nasal call that is often described as “uh-uh,” making them sound like a crow with a bad attitude.

American crows are habitat generalists, meaning that they use a variety of habitats including urban and suburban areas as well as agricultural habitats and field-forest edges. American crows are found throughout the state. Fish crows are more specialized; historically, they have been associated with large bodies of water



and major river systems along the East Coast but have expanded their range westward and are frequently found away from any water source. In Pennsylvania, fish crows are found primarily in the southeastern region and are associated with both agricultural and urban-suburban habitats. The following discussion does not distinguish between the two species but just refers to “crows.”

Annual Cycle

During the breeding season, crows are territorial and are found in pairs or small family groups. They begin breeding in early spring and build a large stick nest or take over an abandoned hawk nest where they lay three to seven eggs. In Pennsylvania, breeding activity and nest building begin in early March, and nests with young are found in April through July.

Crows have one brood per season but will reneest if their nest is destroyed. Young crows leave the nest at about one month old, and the loud and persistent calls of recently fledged young can be heard by the third week in April. Some young crows begin to move away from their parents when a few months old, while others remain with their parents for over a year.

In late fall, many crows from the northern United States and Canada leave their breeding

range and migrate south. These birds often relocate to urban areas where they form large roosts. The urban roosts stay together throughout the winter and begin to break up in late February to early March as the crows leave their winter roosts and migrate back north. Crows are creatures of habit, and the same cycle occurs year after year, with crows often returning to the same roosting location each fall.

Food Habits

Crows are omnivorous, feeding on a wide assortment of items such as grain crops in agricultural fields, seeds and fruits, insects including pest species like European corn borer larvae, bird eggs, earthworms, fish, amphibians, reptiles, carrion and road kills, and a variety of human-associated food ranging from dog food to garbage. Crows often cache or hide surplus food, presumably to return to it at a later date. On average, plant foods make up about 60–70 percent of their diet, with animal foods (primarily insects) making up 20–30 percent. Although we often see crows feeding on carrion and garbage, these items generally make up less than 5 percent of their diet.

Behavior and Social Life

Crows are highly social, particularly during the nonbreeding season when they form large communal roosts. During the breeding season, crows often remain in small family groups, with young from a previous year remaining on the parent's territory and in some cases helping to raise their younger siblings. Crows are known for both their intelligence and their wariness, characteristics that make them interesting to watch, but also a challenge to manage.

Residents and Migrants

In Pennsylvania and throughout much of the Northeast, both resident and migrant crows are present during winter. Resident crows are here all year long and remain on the same home range throughout the year. Migrants are the crows that arrive from the northern United States and Canada and are present over the winter.



bigstockphoto.com



Margaret Brittingham

Droppings on the ground are often one of the first signs that a roost is beginning to form.

Nuisance Problems

Crow roosts can number from the hundreds to the tens or even hundreds of thousands of birds. In the northeastern United States, most large roosts number in the tens of thousands. In Pennsylvania in 2007-08, the largest reported roost, located in Bethlehem, was 30,000 birds. When large numbers of crows congregate, they can cause a variety of nuisance problems. Depending on where they choose to roost, there can be an accumulation of droppings on sidewalks, cars, and buildings. Bird feces on buildings and equipment can shorten their useful life and increase cleanup costs. The loud and raucous calling as birds arrive at night and depart in the predawn hours can be disturbing, and in some rare cases crows cause physical damage to the structure where they are roosting. Large roosts near airports can pose a risk to air traffic safety when crows fly to and from the roost.

Roost Sites

Crows tend to choose medium- to large-sized cities for their roost sites. The specific roost locations tend to be well lit and often in a very urbanized environment. There are usually large trees in close proximity to the roost site, but in

some cases, the birds will roost on the roofs of buildings instead. In cases where crows roost on buildings, damage to roofing material may occur. Crows often change their roost location as the weather changes, selecting more protected locations when it is cold and windy.

Developing a Management Plan

The goal of a crow management plan is to move crows from an area where they cause excessive nuisance and damage problems to an area where they will pose less of a problem. Because you will be moving many crows from one location to another, it is important that you have a coordinated management effort so crows are not continuously moved back and forth from one location to another. Crows have been forming large roosts in winter probably ever since there have been crows, so it is unlikely that you will be able to remove crows from an urban area completely. It is unrealistic to assume you will be able to “solve” the crow problem. Instead, your goal should be to manage it.

Establish a Working Group

Crow management requires a coordinated effort and works best if you can get stakeholders and

interested individuals working together. It is much less successful if each group or individual is working on their own. In most urban areas where crows have been roosting for a number of years, there are people who are interested in managing the crow roost or who have been actively attempting to manage it on their own. They might include local municipal officials as well as local business owners who have been affected. These persons should be included in your management group.

Contacting other communities where crow management has been attempted can help you identify potential conflicts and problems ahead of time. It is also helpful to include a representative from a local law enforcement group. You may also want to include or contact a USDA Wildlife Services biologist (www.aphis.usda.gov/wildlife_damage/) or a representative from your state wildlife agency or cooperative extension office.

Develop a Plan to Monitor Crow Numbers and Damage

The working group should develop baseline information on the amount of damage that crows are causing. Residents and local businesses should be polled about the type of damage and any monetary losses. Monitoring of roost sites should include standardized counts to estimate the number of crows before and after management actions are instituted. Estimates of crow numbers relative to damage are necessary to assess the effects of any management actions and to guide future management.

Review Management Options

Your first step as a group is to establish the extent of the problem and review your management options. It is imperative that everyone is aware of local, state, and federal regulations regarding crow management and the use of explosive noise makers used to scare birds. It is also important for everyone to be aware of the limitations of any type of management. In almost all cases, you will be moving crows from one location to another, and this will need to be

done on a regular basis each year. As you review your management options, also consider the likelihood of public acceptance of each option. In general, the larger the problem is perceived to be, the more tolerant the public will be of more extreme measures.

Some municipalities have been able to accomplish crow management goals using a group of citizen volunteers working with municipal employees. Others have contracted directly with USDA Wildlife Services. Which one is best for a particular community will depend on both budget and management constraints. Be sure to discuss and establish budgetary constraints, whether lethal methods are acceptable, and what types of lethal methods are legal and acceptable within your community.

Establish Tolerance Zones

As a first step, decide which areas are particularly problematic for having roosting crows. These may be heavily trafficked areas, areas where people or cars congregate, parking lots, and areas like schoolyards where children gather. These areas can be established as “no-tolerance” zones, and crows will not be allowed to roost here. Your success will be greatest if you limit these areas to very specific locations as opposed to designating extensive areas of your urban site as no-tolerance zones.

Decide on Management Methods

As a group, you will need to decide what management methods you will use. These can range from no action at all to more extreme methods. A brief description of some options follows:

- *No action*—No coordinated plan of action. Individuals or groups may continue to attempt to move crows from local spots.
- *Public information and education*—Public information and education should be part of any management program. This option should include meetings, news releases, and fact sheets describing where the crows are, why they are there, and management goals. The Lancaster Crow Coalition developed a successful manage-

ment strategy that included a website with information on crows (lancastercrows.org) and a hotline where individuals could report problems and request assistance.

- *Habitat management*—Habitat management involves making the roosting area less attractive to crows. In many but not all cities, crows roost in large trees within urban areas. In some cases, habitat management has focused on thinning or removing the trees. This has worked fairly successfully for dispersing roosts of starlings and blackbirds. There is no indication that this is a successful strategy for moving crow roosts. In addition, large trees within the urban environment provide numerous benefits, so this strategy is generally not recommended.

Crow roosts are often found in well-lighted areas. It is possible that manipulating light levels may be a way to make a roost site more or less attractive, but no one has successfully used this technique to date.

- *Harassment*—Most crow roost relocation efforts involve harassment and moving crows from one location to another. The purpose is to disturb the crows so they will leave the area and choose another site to roost. USDA Wildlife Services and other nuisance wildlife control operators can provide direct assistance and may be able to coordinate and conduct a crow management plan for your municipality. This assistance is generally done on a cost recovery basis.

Alternatively, you may decide to undertake the harassment effort on your own. If so, USDA Wildlife Services may still be available to help train personnel on the use of equipment. See the section on management techniques for a description of specific methods. You will need a team of people to conduct harassment. Their efforts must be coordinated with one another, which requires planning beforehand and a means of communicating with one another during the harassment activity. In addition, you should expect to conduct harassment on multiple nights and possibly throughout the season.



Training is necessary prior to the use of pyrotechnics as a harassment tool.

Consider Your Workforce and Coordinate Efforts

In addition to establishing a working group, you need to designate individuals who will be actively involved in the crow management process. These people will go out on multiple nights and attempt to move the crows by their coordinated harassment efforts. The Lancaster Crow Coalition relies on volunteers whom they solicit through their website. At Penn State, the work is accomplished by a group of employees in the Office of Physical Plant. Whether you depend on volunteers or have an established group of employees, you need to designate one individual as the crow leader to coordinate and monitor all efforts.

Determine Your Budget

Expenses for a control program include purchase of supplies, training costs, and personnel costs. In Lancaster, a control program run almost entirely by volunteers (2006–09) cost between \$3,000 and \$7,000 per year and included 150–250 volunteer hours per year.

Keep the Public Informed

It is essential that you let the public know what you are doing, why you are doing it, and where

you are doing it. Talk to the news media in the days preceding your harassment efforts. Let the local public know of your efforts or if possible include them in all stages of the planning. In addition, it is helpful to maintain close contact with a local reporter who can provide regular updates on municipal efforts in the local paper. It is also useful to have written information available to give to concerned individuals explaining your purpose. At Penn State, news releases are a regular part of ongoing crow management efforts.

Finally, make sure that all individuals involved in the management effort wear something (like brightly colored vests or jackets) that clearly identifies them as part of the crow management team. This step is particularly important if these people are shooting off bangers or other loud pyrotechnics that could be mistaken for gun shots.

Monitor the Roost Location and Nuisance-Damage Reports

Once the crows have relocated, assess the location of the new roost. If it is not problematic, let them stay there. Continue to monitor the original roosting locations, as crows tend to want to return to their original roosting location. Conduct standardized counts at the original and new roosting locations. Reassess nuisance and damage levels after the crows have relocated.

Begin Roost Management Early in the Season

Controlling an urban crow roost and influencing where birds eventually roost will be most successful if control methods are started early in the season. Crow roosts build up over the winter as newly arriving birds are attracted to the already formed roost. It is much easier to move a small number of birds early in the fall than later in winter when numbers are higher and the birds are more habituated to that specific location. If possible, make plans for roost control during the summer and initiate your action plan in October as migrants begin returning to the area and form the nucleus of the roost.



bigstockphoto.com

Manage Expectations

Crows are part of our environment. They provide valuable services throughout the year, including consuming insects that damage crops, cleaning up garbage, feeding on carrion, and serving as both predator and prey in the larger food web of which they are part. A crow management plan should be designed to control very specific problem areas. It is not designed to get rid of crows or to remove noisy crows from every backyard or neighborhood. Encouraging an attitude of acceptance and tolerance of minor nuisance problems is an important part of a successful management plan. Often this comes with an understanding of why the birds are here and knowing when the roost will break up in spring.

Legal Status

Crows are legally protected by the federal Migratory Bird Treaty Act. In Pennsylvania, crows may be legally hunted with a valid Pennsylvania hunting license. For information on days and dates when hunting is permitted, check the hunting seasons and bag limits available in your Hunting and Trapping Digest or on the Pennsylvania Game Commission website at pgc.state.pa.us. In other states, check with your local wildlife agency for their specific laws and regulations.

Management Techniques

Listed below are a variety of management techniques. Management will be most successful if you use an integrated approach that incorporates the use of multiple management tools. Reliance on a single practice is often much less successful.

Harassment

Pyrotechnics

The most common form of harassment involves shooting off bangers, shell crackers, bird whistlers, and screamers that produce a loud sound similar to firecrackers. These are useful for moving birds away from a particular location.

As of May 1, 2011, the Department of Justice, Bureau of Alcohol, Tobacco, Firearms and Explosives division (ATF), started enforcing regulations to require any individual not a representative of the federal, state, local, or a municipal government to obtain a permit to receive and use pyrotechnics. Individuals and companies who want to acquire a federal explosives license or permit or learn more about ATF regulation of explosive pest control devices (EPCDs) are encouraged to visit the ATF web site at atf.gov/explosives/how-to/explosive-pest-control-device-requirements.html. Additional information on pyrotechnics use, storage, and transportation may be obtained from USC 18 Chapter 40 at atf.gov/regulationsrulings/laws.

Distress Calls

Alarm and distress calls are used to communicate danger or warning. Broadcast of species-specific distress calls have been used as an additional deterrent at roosts. These generally work best in combination with other techniques. As with other techniques, birds may habituate to them so their value is usually of short duration. However, used sparingly and with other techniques they can improve the effectiveness of a roost relocation program.

Low-powered Lasers

Low-powered lasers, which give off a beam of red light, have been shown to be effective in moving crows away from a roost location. However, the birds tend to move back to the same roost site unless lasers are used along with other techniques such as pyrotechnics and distress calls. Low-powered lasers do not cause damage to the eye, but they do elicit an avoidance response in crows. A downside of lasers is that they are expensive: a single unit costs around \$1,200. However, some companies will lease lasers for use on a weekly basis.

Methyl-anthranalite

Methyl-anthranalite is the active ingredient in a fogging agent that has been occasionally used on roosting birds. It does not depend on birds eating it, but instead the birds are exposed to the

fog when roosting. The fog acts as an irritant, making the birds uncomfortable. Because it is a contact repellent and only works when birds are exposed to it, repeat applications will likely be needed to maintain effectiveness.

Methyl-anthranalite is generally not chosen because its use is restricted to narrow weather conditions (e.g., no precipitation, temperatures above freezing), and it is most effective for roosts in conifers or in deciduous trees that have not lost their leaves.

Effigies

Effigies are artificial crow models sold commercially for decorative purposes such as Halloween displays. The purpose of using an effigy for roost management is to make the crows returning to the roost see the “dead crow” and conclude that this site is obviously not a good place to roost. Effigies are most successful when used sparingly

and in conjunction with other techniques to reinforce the message that there are hazards associated with a particular roost site.

Effigies should be hung upside down from a tree branch near the top of a centrally located tree. If working with a municipality or large organization, you may have access to equipment such as a cherry picker to use to hang effigies. A lower tech method but one that requires more skill involves using a slingshot or other method to shoot the string over the branch and pull the effigy up. It is essential that the effigy be visible to the crows, so methods to increase visibility may enhance effectiveness. Strategies include placing the effigies in a place where light will shine on them or perhaps even adding a light source. It is best to use effigies sparingly so that crows do not become habituated to them and realize they pose no real threat.



Shooting pyrotechnics is frequently used to disperse roosts.



In Lancaster, effigies were used successfully in concert with other harassment methods to move a crow nest. Their effectiveness was greatest during a mild winter and declined during a very cold winter when crows were more reluctant to move from preferred sites. Effigies were tried at Penn State where they at first appeared effective but lost effectiveness by the end of the season.

Lethal Methods

While nonlethal dispersal methods may be effective, crows may become habituated to them, because of their intelligence and tenacity. Targeted shooting of crows may help to reinforce the message that a particular location is a bad place to roost. However, it often is not a viable option in urban areas where most problems with roosting crows occur. The toxicant DRC-1339 is a restricted-use pesticide that has been approved for use by USDA Wildlife Services personnel in selected states on a case-by-case basis. Toxicants generally do not provide long-term solutions for large urban roosts, and public opposition may not support this option.

SOURCES OF SUPPLIES

A number of vendors have bird control supplies. We have listed some below.

Pyrotechnics (Bangers, Screammers, and Launchers)

Gempler's 800-382-8473, gemplers.com
 Margo Supplies 403-652-1932, margosupplies.com
 Reed-Joseph International 800-647-5554, reedjoseph.com
 Wildlife Control Supplies 800-844-0101, wildlifecontrolsupplies.com

Distress Calls

Absolute Bird Control 949-472-4369, absolutebirdcontrol.com
 Bird Guard 800-331-2973, birdguard.com
 Birdbusters 800-662-4737, birdbusters.com
 Bird-X 800-662-5021, bird-x.com
 Margo Supplies 403-652-1932, margosupplies.com
 Reed-Joseph International 800-647-5554, reedjoseph.com

Fogging Equipment and Repellent

Birdbusters (repellent only) 800-662-4737, birdbusters.com
 Nixalite (fogging equipment and repellent) 888-624-1189, nixalite.com

Effigies

Halloween Mart
halloweenmart.com/halloween-decorations/animal-creatures/crow-open-winged

Low-powered Lasers—"Avian Dissuaders"

Wildlife Control Supplies 800-844-0101, wildlifecontrolsupplies.com
 Birdbusters 800-662-4737, birdbusters.com
 Margo Supplies 403-652-1932, margosupplies.com
 Reed-Joseph International 800-647-5554, reedjoseph.com
 SEA Technology, 888-732-2246, aviandissuader.com

For Additional Information

Background Information

Avery, M. L., E. A. Tillman, and J. S. Humphrey. 2008. Effigies for dispersing urban crow roosts. Proceedings of the Vertebrate Pest Conference 23:84-87.

Gorenzel, W. P., B. F. Blackwell, G. D. Simmons, T. P. Salmon, and R. A. Dolbeer. 2002. Evaluation of lasers to disperse American crows, *Corvus brachyrhynchos*, from urban night roosts. International Journal of Pest Management 48:327-331.

Gorenzel, W. P., and T. P. Salmon. 1993. Tape-recorded calls disperse American crows from urban roosts. Wildlife Society Bulletin 21:334-338.

Gorenzel, W. P., T. P. Salmon, G. D. Simmons, B. Barkhouse, and M. P. Quisenberry. 2000. Urban crow roosts—a nationwide phenomenon? Proceedings of the Wildlife Damage Management Conference 9:157-170.

Community Efforts

The Lancaster County Crow Coalition
lancastercrows.org/index.html

USDA Wildlife Services

U.S. Department of Agriculture, Animal and Plant Health Inspection Service, Wildlife Services
www.aphis.usda.gov/wildlife_damage/Pennsylvania
www.aphis.usda.gov/wildlife_damage/states/pennsylvania/index.shtml

Licensing and Permits for Pyrotechnics

Bureau of Alcohol, Tobacco, Firearms and Explosives
atf.gov/explosives/how-to/explosive-pest-control-device-requirements.html

atf.gov/press/releases/2010/11/111210-open-letter-fel-use-of-epcds.html

Funding for research and outreach on urban crows was provided by the Pennsylvania Department of Agriculture. M. Avery, G. D'Angelo, L. Fuller, H. Glass, G. San Julian, and J. Wood provided helpful comments on an earlier draft of this publication.

Prepared by Margaret C. Brittingham, professor of wildlife resources

An **OUTREACH** program of the College of Agricultural Sciences

Penn State College of Agricultural Sciences research and extension programs are funded in part by Pennsylvania counties, the Commonwealth of Pennsylvania, and the U.S. Department of Agriculture.

Visit Penn State Extension on the web: extension.psu.edu

This publication is available from the Publications Distribution Center, The Pennsylvania State University, 112 Agricultural Administration Building, University Park, PA 16802. For information telephone 814-865-6713.

Where trade names appear, no discrimination is intended, and no endorsement by Penn State Cooperative Extension is implied.

This publication is available in alternative media on request.

The Pennsylvania State University is committed to the policy that all persons shall have equal access to programs, facilities, admission, and employment without regard to personal characteristics not related to ability, performance, or qualifications as determined by University policy or by state or federal authorities. It is the policy of the University to maintain an academic and work environment free of discrimination, including harassment. The Pennsylvania State University prohibits discrimination and harassment against any person because of age, ancestry, color, disability or handicap, national origin, race, religious creed, sex, sexual orientation, gender identity, or veteran status. Discrimination or harassment against faculty, staff, or students will not be tolerated at The Pennsylvania State University. Direct all inquiries regarding the nondiscrimination policy to the Affirmative Action Director, The Pennsylvania State University, 328 Boucke Building, University Park, PA 16802-5901; Tel 814-865-4700/V, 814-863-1150/TTY.

Produced by Ag Communications and Marketing

© The Pennsylvania State University 2011

Code # **EE0016** 1.5M9/11mpc5098