MISSISSIPPI STATE UNIVERSITY EXTENSION

Vertebrate Pest Control in the Home Garden and Landscape

Many pests plague Mississippi gardens and landscapes, including invertebrates such as insects, spiders, snails, and slugs, as well as vertebrate pests. Vertebrate pests, as the name implies, are animals that have vertebrae. Mammals and birds are included in this category. These pests damage and destroy gardens by feeding on plants (rabbits), burrowing under the ground (voles), eating roots (moles), rubbing trees (deer), and nesting (birds) in garden areas. While there are many chemical pesticides available to repel invertebrate pests, vertebrates require a more intensive strategy for control.

There are a few basic principles to consider when dealing with vertebrate pests. First, recognize the difference between an animal's habitat and its habit. The area that provides an animal with all of its basic survival needs, such as food, water, shelter, and space, is known as a habitat. "Habit" refers to the behavior of an individual animal or species. Second, know that there are many management options. These options fall into two basic categories: lethal and nonlethal. Lethal methods result in the death of the animal. Nonlethal methods spare the animal's life.

Lethal Methods

Because common animal pests often target wheat, bran, and oats, toxic baits were once based on these foods. Modern baits are often a mixture of grains formed into pellets. Because these baits are less attractive than pure grain baits, they must be presented in their freshest form. Do not use baits that are old, moldy, wet, or in any other state of decay. Before purchasing toxic baits, **read the label**! These labels often provide restrictions on use, placement, and intended species.

Be aware that toxic baits can cause accidental or secondary poisoning. Accidental poisoning results when small children, family pets, or non-target animals consume the bait and become ill. Secondary poisoning results when a predator eats an animal that has been poisoned.

Trapping may be the best lethal method for controlling damage by moles, pocket gophers, mice, and rats. Trapping confirms the identity of the damage-causing pest and helps pinpoint the source of future problems. The biggest benefit is that there is no chance of accidental or secondary poisoning. However, non-target species can sometimes be trapped. The key to effective trapping is practice.

Although shooting an animal pest may provide emotional satisfaction, it is generally a poor choice. In many residential areas, shooting firearms is illegal and dangerous. Even in rural areas, the amount of time it takes to hunt the pest may make this option impractical.

Nonlethal Methods

Nonlethal methods include exclusion, repellents, frightening devices, live trapping, and aversive measures. One of the most effective and long-lasting nonlethal methods is exclusion—the process of putting up fencing, screening, netting, or any other material that acts as a

physical barrier. Several goals can be accomplished with this method: the pest is denied entrance and redirected and, hopefully, its behavior is changed.

Due to the advances in technology, there are a number of new materials for exclusion protection, including high-tensile material for permanent fences and portable electric fences for pests on the move. Some growers have had success with underground materials for burrowing species such as moles, pocket gophers, and ground squirrels. For some pests, particularly birds, exclusion is the only legal option. Other forms of exclusion include low-powered electrical shock and ultrasonic devices.

One of the most popular nonlethal forms of pest management is the use of repellents. Repellents discourage animals with their taste, smell, or visibility. However, repellents are often short-lived, especially in wet weather, as they can be easily washed away by rain or irrigation. Repellants often require multiple applications and may not work for your particular pest. However, repellents are easy to use, and they can be an important part of a nonlethal pest management strategy.

There are a wide variety of scare devices available through nurseries, garden centers, catalogs, and various websites. However, animals can become accustomed to the loud sounds, flashing lights, fake snakes, and most other devices. Rotating the devices to different parts of the garden may increase effectiveness. Scare devices generally do not work alone, but they may be used in combination with other methods.

What Kind of Pest Are You Dealing With?

The first step in your pest-control strategy is to determine what type of pest you have. Does it habitually live belowground, aboveground, or both? Is it a flyer? Belowground pests include moles and pocket gophers. Above and belowground pests include woodchucks, ground squirrels, chipmunks, rabbits, and voles.

Rabbit damage is a common problem in gardens, and it can be easily confused with deer damage. Rabbits feed near ground level on small shrubs, small woody trees, turf, vegetables, and some flowers. There are a variety of methods available for controlling rabbit feeding. Rabbits are not good climbers, so a short fence (about 3 feet high) made of a 2- to 3-inch woven mesh is adequate.

There are also commercially available repellents on the market. The most common active ingredient is thiram, which is intended to reduce gnawing on trunks and limbs. To use a live trap, first identify the route that the rabbit uses most often. Bait the trap with lettuce, carrots, or beet tops. If the trap is located at the rabbit's entrance to the garden, bait may be unnecessary.

Growers have tried many scare devices. Metallic flashing, rattles, noisemakers, and scarecrows have all had varying degrees of success. It is possible to make rabbits voluntarily relocate. Because rabbits need protective cover for escape routes, consider removing brambles and other dense, woody vegetation. In combination with fencing, this is effective and nonlethal.

Birds and bats make up the flyer category of vertebrate pests. A few strategies for controlling birds include the use of bird netting, landing inhibitors (such as steel spikes), ultrasonic bird-repellent devices, or scare devices such as Irri-Tape (a metallic ribbon that irritates birds).

Bats are rarely problem animals. In fact, most of them feed on insects during nightly flights. Some gardeners use bat houses to attract bats. However, be aware that wasps often nest in bat houses. If bats are a problem in your landscape, try netting the plants you wish to protect.

There is an extensive list of aboveground pests. Skunks, opossums, and deer are examples of larger aboveground pests. The best deterrent for skunks in the garden is exclusion and prevention. Remove pet food from outside at night. Do not add food scraps to the compost pile. Surround your production area with a 2-foot-high wire mesh or picket fence, and screen all openings beneath your house and outbuildings. Do not try to trap a skunk yourself. They are a primary source of rabies. If your pets are sprayed, neutralize the smell with a wash of diluted vinegar or tomato juice.

Opossums are the only marsupial native to North America. Because opossums eat almost anything, the best deterrent is to keep the garden clean. Keep trash picked up, and make sure garbage cans are sealed. A short, 4-foot fence of chicken wire with the top foot bent outward should keep opossums out of the nursery. Live traps also work. Bait the trap with bread and jelly, which won't attract cats.

Deer are adaptable animals, often found in unlikely or unexpected areas for such a large species. They can be serious garden pests even in residential areas where

the house density is more than two houses per acre. As our urban communities move farther and farther into rural landscapes, deer damage becomes an increasing occurrence.

Deer are ruminants with four-chambered stomachs. One deer can eat up to 6–8 pounds of plant material each day. Because of their complex digestive system, deer can and will eat anything, including pebbles and twigs! Control strategies for deer are more complicated than for smaller animals. Large-scale exclusion, repellents, and scare devices are all viable control options. Deer have a volmolfactory gland that allows them to not only smell and taste, but actually perform a combination of the two. Therefore, repellent products must deter based on taste and scent. Table 1 lists some common commercial deer-repellent products and their active ingredients.

The key to a successful vertebrate pest-control strategy is to use many methods in rotation because animals have a tendency to adapt quickly to sounds and scents. Patience is critical when dealing with these pests.

Table 1. Commercially available deer-repellent products.

Product	Active Ingredient
Havahart Putrescent Egg Spray	Putrescent whole egg solids
XP-20	Thiram
Hinder	Ammonium salts of higher fatty acids
Grant's	benzyl diethyl [(2,6 xylyl carbomoyl) methyl] ammonium benzoate (also called bitrex)
Ro-Pel	benzyl diethyl [(2,6 xylyl carbomoyl) methyl] ammonium benzoate (also called bitrex)

References

Adler, B. (1996). *Outwitting squirrels: 101 cunning stratagems to reduce dramatically the egregious misappropriation of seed from your birdfeeder by squirrels*. Chicago Review Press.

Adler, B. (1997). *Outwitting critters: A humane guide for confronting devious animals and winning*. Lyons Press.

Adler, B. (1999). *Outwitting deer: 101 truly ingenious methods and proven techniques to prevent deer from devouring your garden and destroying your yard*. Lyons Press.

Harrison, G. (2006). *Squirrel wars: Backyard wildlife battles and how to win them*. Willow Creek Press.

Hart, R. M. (1999). *Squirrel proofing your yard and garden*. Storey Publishing, LLC.

Hart, R. M. (2005). *Deer proofing your yard and garden*. Storey Publishing, LLC.

Hershey, D. (2000). *Controlling crafty critters*. Voyageur Press.

Juhre, R. G. (2011). *Preventing deer damage*. Acres U.S.A.

Mallery, R. E. (2000). *Nuts about squirrels: A guide to coexisting with—and even appreciating—your bushy-tailed friends*. Grand Central Publishing.

Rutledge, C. (1998). *Backyard battle plan: The ultimate guide to controlling wildlife damage in your garden*. Studio.

Publication 3180 (POD-04-24)

By **Christine Coker**, PhD, Extension/Research Professor, Coastal Research and Extension Center.

Copyright 2024 by Mississippi State University. All rights reserved. This publication may be copied and distributed without alteration for nonprofit educational purposes provided that credit is given to the Mississippi State University Extension Service.

Produced by Agricultural Communications.

Mississippi State University is an equal opportunity institution. Discrimination in university employment, programs, or activities based on race, color, ethnicity, sex, pregnancy, religion, national origin, disability, age, sexual orientation, gender identity, genetic information, status as a U.S. veteran, or any other status protected by applicable law is prohibited.

Extension Service of Mississippi State University, cooperating with U.S. Department of Agriculture. Published in furtherance of Acts of Congress, May 8 and June 30, 1914. ANGUS L. CATCHOT JR., Director

MISSISSIPPI STATE UNIVERSITY EXTENSION