

# Resolving Human-Nuisance Wildlife Conflicts

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Americans love the outdoors and outdoor recreation, including hunting, fishing, gardening, hiking and camping in addition to adventure sports like rock climbing, whitewater rafting and canoeing, skiing and other activities. Many people enjoy simply watching wildlife. Americans spend large amounts of money feeding wildlife — primarily birds. Many people purchase or construct nest boxes for birds, bats and other wildlife.

While many people enjoy watching wildlife, sometimes wildlife interferes with other human activities. Wildlife eat our birdseed, dig up our gardens and landscape plants, and eat or damage our fruit, flowers and vegetables. When wildlife populate a place where they are unwanted or cause damage to valuable plants or structures, they become a nuisance. This publication discusses some basic principles for dealing humanely with nuisance wildlife.

## Legal Issues

State and federal laws protect nearly all wildlife. These laws regulate which species can be harassed, harvested, trapped, hunted or harmed. Wildlife are generally defined as free-ranging, terrestrial vertebrates. This usually includes snakes, lizards, frogs and toads, and all wild mammals. This definition excludes feral animals like cats. States usually treat fish separately. There are exceptions, and you should learn the laws if you work with nuisance wildlife. These laws can be found on the Web site of the state agency responsible for wildlife protection. In Georgia, that agency is the Wildlife Resources Division (WRD) of the Georgia Department of Natural Resources (DNR) ([www.georgiawildlife.com](http://www.georgiawildlife.com)).

All native birds are federally protected in the United States by the Migratory Bird Treaty Act (<http://laws.fws.gov/lawsdigest/migtrea.html>). Non-native and non-protected exotics include the house sparrow (*Passer domesticus*), European starling (*Sturnus vulgaris*), domestic pigeon or rock dove (*Columba livia*), the monk parakeet (*Myiopitta monachus*) and the Eurasian collared dove (*Streptopelia decaocto*). This strict liability law has

no requirement to prove intent, which means that enforcement is absolute and not discretionary. Citizens may not pursue, hunt, take, capture, kill or possess at any time any migratory bird, nest or egg (including all feathers, shells or other parts).

Federal salvage permits are required to possess any bird. For the purposes of this law, all birds are considered migratory. The best advice is to leave all birds alone or as you find them. Only licensed rehabilitators may care for injured birds. Other bird protection laws include the Bald Eagle Protection Act (<http://ipl.unm.edu/cwl/fedbook/eagleact.html>) and the Endangered Species Act (<http://endangered.fws.gov/ESA/ESA.html>).

However, citizens can protect property from wildlife either committing or about to commit damage. Most homeowners can deal quite effectively with wildlife using safe, non-lethal means. Consider lethal measures as a last resort.

## Help Is Available

Homeowners seeking assistance for dealing with nuisance wildlife have several avenues available to them. Options are outlined here.

**County Agriculture Extension Agent** — In most counties, the county agent will provide advice on nuisance wildlife control, damage prevention and individual removal. He or she may also lend you traps and can supply information for many problems a homeowner is likely to encounter.

**State Wildlife Biologists** — State wildlife biologists may offer advice and programs. Conservation or law enforcement officers (game wardens) may issue permits for taking nuisance wildlife.

**U.S. Department of Agriculture — Wildlife Services** — This federal agency deals with nuisance wildlife in both municipal and agricultural settings. Wildlife Services offers two support levels: technical advice, including handouts, videos, verbal support, traps and field demonstrations; and operational support, in which they will perform certain work for landowners for a fee. A signed contract is required. In Georgia, contact Wildlife Services at 706-546-5637.

**Nuisance Wildlife Control Operators (NWCO; pronounced “newco”)** — These individuals own and operate their own wildlife control business and charge for their services. They are licensed by the state and can often be located in the phone book under “Pest Control” or “Animal Removal Services.” These individuals are different from common termite control service providers and county animal control officers. Animal control usually will not catch a skunk or snake for a homeowner, but there is a lot of variability here and each county and situation is different. A list of local NWCOs is available from most county Extension agents and the Georgia Wildlife Resources Division in Social Circle, Ga. The list is also available at the Warnell School of Forestry and Natural Resources website and publication library (<http://www.warnell.uga.edu/>) – just click on the “OUTREACH” tab. These independent businesses are licensed by the state. Anyone contracting with these business should exercise normal caution when hiring a contractor – check references, ask for proof of license and insurance, get estimates and have a written contract before beginning any work or committing to pay any fees.

## You Are the Solution

There are several options available for do-it-yourself homeowners. What follows are some simple guidelines to help homeowners solve common nuisance wildlife problems.

### RULES OF THUMB

Wildlife need three things: food, water and shelter. Remove any one of these and the animals will go somewhere else. Remember: Treat the problem not the symptom.

**Example No. 1:** There is an opossum in the shed eating the dog/cat food.

*Wrong Answer:* Trap the opossum and relocate it. This will provide a short-term solution but not solve the problem. In a few days, another hungry animal will be back in the shed.

*Right Answer:* Seal the pet food in a container with a tight-fitting lid, seal openings to the shed and relocate the opossum. This removes the problem (pet food in an open and accessible container) and the symptom (a hungry opossum). Problem solved.

**Example No. 2:** Moles are digging up the yard.

*Wrong Answer:* Trap the mole. This kills one mole.

*Right Answer:* Treat yard for grubs, trap the mole and reduce watering. This will remove the offending animal, the food source that attracted the mole and the conditions that favor the grubs. Learn the biology of the animal. Moles eat insects and earthworms. Watering may lure the insects and earthworms near the surface where moles look for food.

### ANIMAL SIGNS

When diagnosing animal damage problems, you should look for signs left by the animal. Almost all animals leave signs. Some are more obvious, and some are easier to identify, but the sign is usually there somewhere.

Droppings are often readily observed, especially for mammals. Fresh droppings are black, shiny

and moist. Old droppings are dry, brown or gray. Black and white droppings could be from a bird, snake or lizard. Size is important for identification. Rats, mice, chipmunks and toads leave droppings the size of a rice grain. Rabbit droppings are pea size and usually brown. Deer droppings are large ovals and could be deposited loosely or in a large clump, depending on diet. Even in a clump, individual pellets can be easily recognized.

Digging is another obvious sign of animal damage. Here again, there are important clues to identify the culprit. The diameter of the hole is a clue to the size of the animal. If a dirt mound is present, this could be a sign of a woodchuck, turtle, armadillo or coyote. If a dirt mound is not present, this could indicate a chipmunk, skunk, mole or vole. Armadillos dig an inverted, cone-shaped hole, 3 to 4 inches deep and 1 to 2 inches in diameter.

Tunnels in the dirt but near the surface are likely from a mole or vole. Remember, moles eat insects, earthworms or grubs. Voles eat plants and plant parts like bulbs, roots, tubers or bark. Try this simple test to distinguish moles from voles.

**Apple Test:** Place a piece of apple in the tunnel under a board. If the apple is eaten, the culprit is a vole; if not, it is a mole.

Another sign is gnawing. Look at the size of the tooth marks and the size of the stem or root gnawed. This will be a clue to vole, chipmunk, squirrel, beaver or rabbit. Also consider deer browsing. Deer lack upper incisors, so if leaves are pulled and have a ragged end, then deer are likely to blame. However, if leaves are clipped or bitten with clean, sharp ends, then the offender is likely to be a rabbit, squirrel or woodrat. If branches are cut, then consider a squirrel or rabbit as the responsible party.

Finally, ask "What was the height where damage occurred?" Deer can easily reach 4½ to 6 feet up the stem while rabbits and woodchucks reach about 1 foot or more. Vole and chipmunk damage is usually close to the ground and could be restricted to roots.

There are others signs of nuisance wildlife as well. One annoying habit of wildlife invaders is noise. Noise inside a wall could be mice. Noise inside the attic or crawl space could be mice, bats, squirrels, raccoons, skunks, opossums or birds. Noise in a chimney often suggests the culprit is a squirrel, raccoon, bird or bat. Attic noise at night could be mice, bats or flying squirrels, while attic noise during the day could be gray squirrels.

Do not overlook some simple clues such as time of day. A nocturnal (active at night) animal like a woodrat, raccoon, skunk or opossum causes holes or other damage to appear overnight. Holes that appear during the day are caused by diurnal (active during the day) animals such as squirrel, chipmunks or woodchucks.

If damage to a birdfeeder is due to squirrel activity, try moving the birdfeeder away from house, deck rail or tree limbs. You could also mount the feeder on a slick pole or add a predator guard.

## Citizen Options for Nuisance Wildlife Issues

Before you panic, spend a lot of money to hire someone or sell your house, think of the model we will define as H-E-R-L. Work through this model and you may be able to solve most problems yourself. The letters in the HERL model stand for specific actions you, as the homeowner, can take to deal with many nuisance wildlife situations: habitat modification, exclusion, removal or repellents, and lethal control. The steps in the model are outlined below.

### STEP 1: H HABITAT MODIFICATION OR HARASSMENT

Take steps to make a habitat unattractive and discourage wildlife from the area. Note that it is often difficult or impossible to both create habitat for wildlife you want to encourage and, at the same time, remove habitat to discourage wildlife. The animals cannot tell the difference and you will often both attract wildlife and deal with nuisance species in the same habitat. By following these rules of thumb, however, you can enhance your enjoyment of wildlife around your home.

**Know Your Wildlife.** Learn the habits, preferences and requirements of the offending animal(s) and remove or modify the habitat to make your yard unattractive to wildlife pests.

**Remove attractive habitat.** Without cover to hide in or food to eat, the animal will leave. Remember this simple equation: No cover = no mice = no snakes.

**Tidy Up.** Mow tall grass — many pest species (such as mice) like weedy, unmowed areas. They also attract predators (such as snakes) to this food source.

Remove piles of brush, logs, firewood, rocks, debris and trash, bricks, stones, concrete, buckets and flower pots, cars, tires and toys. Spray an herbicide such as Roundup®, Spectracide®, Weed-B-Gone® to remove tall weeds, briars and vines. Be sure to read and carefully follow all label restrictions when working with herbicides.

Cut dead trees and limbs to remove roosting and nesting places for bats, flying squirrels and woodpeckers. This will also remove food (insects) for woodpeckers. Also clean out old birdhouses and discard old nests.

**Harassment.** Homeowners can often harass wildlife into leaving an area. Effectiveness of harassment depends on the diligence of the homeowner. An example of a harassment technique would be to hang a scarecrow in a garden. Generally, harassment is not effective because homeowners install the device and forget about it. Wildlife soon become accustomed or habituated to the object and ignore it. To be effective, harassment techniques must be applied regularly and must be changed or moved every one to two days. An effective example is a motion-activated device that rotates and sprays water at the offending animal. The offending animal (for example, a rabbit in a garden) receives a shock of water, hears the noise, and does not become habituated to the device because the device is motion-activated and sprays a harmless shot of water each time the rabbit enters the motion detection zone.

Other forms of repellent work with tactile or visual senses.

**Tactile** — Water spray, motion-activated sprinklers are relatively new to the market and not yet widely tested.

**Light** — Bright lights, strobe lights or lasers have been suggested as repellents for deer, rabbits, roost birds (especially pigeons) and other wildlife. They may work for a time but the long-term effectiveness is unknown.

**Scare** — Eye balloons, scarecrows, silhouettes on windows, an owl or snake figure, and pyrotechnics (noise makers) will provide some relief in some circumstances.

Generally, success or failure depends on the size of the animal population, palatability or growth stage of the plants, type of damage, and the animal's hunger and conditioning.

## STEP 2: E EXCLUSION

This option includes using fencing or other solid materials to exclude wildlife by creating a physical barrier. Fencing and other exclusion methods are likely the best option for solving nuisance wildlife problems. For large animals such as wild pigs or dogs, use welded wire or "hog" wire with a 2" x 4" mesh size about 48" to 60" tall. Chain link and wooden fence also works but is more expensive. Stake or secure the fence firmly to the ground.

For deer, fences should be 8 feet tall or higher. Remember that deer can crawl under a fence, fences can be damaged by falling limbs, and trees or other factors can allow deer inside.

For small animals such as opossum, woodchuck, raccoon, fox or squirrel, use chicken wire, hardware cloth or electric fence. Chicken wire is usually 2 feet tall and buried 6 to 12 inches for diggers like rabbits, skunks, opossums and armadillos. Hardware cloth (a ¼- to ½-inch mesh) is usually 1 to 2 feet tall. Burying it 6 to 12 inches will exclude chipmunks, moles, voles and other small animals from gardens and flower beds. These barrier options can be combined with decorative fence around flowerbeds and shrubbery. For certain large animals, like deer, use an elec-

tric fence. Many brands are available, including single strand “hot-tape,” which consists of vinyl webbing imbedded with fine conducting wires. This is usually hooked to a 12-volt battery or 110-volt household current. Some models use solar power or D-cell batteries and are very effective.

Spreading peanut butter on the wire or wires (or on aluminum foil attached to the wires) will encourage the deer (or other animals) to contact the fence and receive a mild shock, which should deter future contact. These fences will deter some animals but do not have enough energy to injure animals or people.

Also remember to exclude animals from entering dwellings through the following common locations:

- Chimneys — Cap chimneys to prevent raccoons, bats, squirrels and birds from entering the house.
- Soffit vents — Keep vents in good repair since they are often used as an entry point for insects, bats and birds.
- Gabled end of the house / barn — Block animals by using hardware cloth or screens that still maintain airflow to the attic and buildings. Gables are often the entry point for flying squirrels, gray squirrels, bats and birds like pigeons, wrens, house sparrows, European starlings and swallows.
- Windows and doors — These are entry points for snakes, bugs, mice and some large animals like raccoons and opossums if the doors on garages or sheds are not closed or properly sealed. Close doors and windows, repair screens and maintain a proper weather seal.
- Dryer vent — Vents are a common entry point for snakes and mice. Cover the vent with screen large enough to vent hot dryer air but exclude animals. Clean the screen regularly to prevent lint accumulation. Seal around the vent with expanding foam or weather seal.
- Pipes and cables — Mice and bats can enter through the dime-sized holes where electric lines, phone lines, and satellite or cable TV lines connect to the house. Seal these holes with expanding foam or weather seal.

## STEP 3: R REMOVAL OR REPELLENTS

**Removal** — Relocating nuisance wildlife is generally discouraged and may be illegal. Check with local wildlife conservation officers and health department officials before moving any wildlife off your property. In general, it may be acceptable to remove an animal from your house and release it outside on your property. However, you must prevent it from re-entering your home or buildings. Remember: You must have the landowner’s permission and possibly a permit issued by Georgia DNR before relocating wildlife. Check with your local conservation officer. In many states it is illegal to relocate animals. Check with the state wildlife agency before moving animals.

Removal simply moves the offending animal to someone else’s property only treats the symptom, not the problem. Generally, it is illegal to release animals onto someone else’s property, and they likely don’t want the animal in the first place. Furthermore, some research has shown that translocated animals rarely survive the stress of being inserted into a strange habitat because they wander about looking for a territory or are killed by vehicles or resident animals. It is often better to solve the problem using a humane but lethal trap.

If live trapping is a solution, then there are several safe and effective trap designs. Traps such as Hav-a-Hart® or Tomahawk® are live capture traps. Glue boards allow mice and snakes to be released unharmed. Simply pour vegetable oil on the trap to dissolve the glue and release the animal. Traps and glue boards can be purchased online, at home improvement stores, farm and garden suppliers, sporting goods stores or from forestry supply companies. Your county agent or wildlife Extension specialist will often lead you to appropriate suppliers or they may have traps you can borrow.

Always wear gloves, and do not attempt to handle snakes or other animals if you cannot positively identify them. Use a bucket or boxes to remove the animal from the trap or encourage the animal into a box with a stick or broom. Place the bucket over the animal and then slide a piece

**Table 1. Repellents**

Mode of Action	Product	Notes
Fear	Plantskydd®	Soluble powder -- reapply frequently; developed for tree seedlings
Fear	Hinder®	For use on edible fruit or vegetables; water soluble; reapply after rain; relatively inexpensive
Fear	Deer Away Big Game Repellent (BGR)®	Inedible egg solids; not for use on food crops
Taste	Ropel®	Systemic; not water soluble; will not wash off; not for use on edible crops; moderately expensive
Taste	Tree Guard	Latex based; bitter; rain resistant; relatively inexpensive
Taste	Garlic Stick	Plastic stick attaches to plant stem or branch; expensive
Taste	Deer Stopper®	Liquid egg solids and oils; spray on; sticks to plants; not for use on edible plants
Taste	This-1-Works®	Contains Bitrix™; use on woody plants and shrubs; very bitter; weather resistant
Taste	Goose Chase Goose Repellent	Derivative of Concord grapes; may discourage Canada geese from grazing in yards; expensive
Taste	Deer Stopper	Rotten eggs and various oils; effective; not for use on edible plants.
Odor/Taste	Deer-Off®	
Odor	Milorganite®	Specially processed sewage sludge; early testing is very promising; acts as mild fertilizer (6-2-0) and lasts 2-3 weeks; inexpensive -- recommended for most plants

of cardboard under the bucket before turning the bucket right side up.

Use a net to remove frogs, birds or small mammals from garden ponds, window wells or holes.

**Repellents** — Repellents are widely used to discourage animal damage. While there are many types of repellents, and some claim unbelievable success, remember the old adage — “If it sounds too good to be true, it probably is!”

Research strongly suggests, and in some cases has clearly shown, that sound wave devices are not effective in deterring unwanted animals. Car-mounted deer whistles and various ultrasonic sound producing devices are not recommended. Effective repellents work through taste, fear or odor. Taste repellents render a plant unpalatable to the animal. Fear-invoking stimuli are said to elicit an instinctual response, such as a deer reacting to predator urine. Odor repellents smell bad to the animal. Since most animals have a sense of smell hundreds or thousands of times better than our own, even small amounts may prove effective. Some odor repellents may be useless and little more than “urban legends.”

Many repellents work in some situations and not others, or work for a time and then lose their effectiveness. Success seems to depend on timing, animal density, hunger and the animal’s prior conditioning. It is better to prevent an animal from browsing your plants than to stop them once they have learned to enjoy the taste.

Fertilized plants or plants in the early stages of growth are usually damaged more than older, coarse or sick plants.

Most animal repellents are available in ready-to-use form; some require mixing with water. Most are sprayed on plants; however, some are not labeled for use on edible crops or vegetable gardens. Read and follow all label restrictions.

Human hair, soap, cat urine, garlic and many other remedies have been suggested with varying degrees of success. In general, it seems that a combination of repellents and physical barriers provides the most effective solution to preventing damage to landscape and garden plants. Table 1 lists some of the commercially available products, some of which have been tested in controlled experiments.

Here is a list of other products that have been tried as repellents. Homeowners can experiment with each until they find a product or combination of products that produces satisfactory results.

- Capsaicin
- Miller's Hot Sauce®
- Deer Away® — Soluble Powder — not for use on edible crops; place a band around plants or garden — rated #1 in an Auburn University study
- Castor Oil
- Egg Solids mixed with mint oil and sprayed on plants — suggested for moles, untested
- Big Game Repellent® — BGR — non-edible plants only
- Garlic — placed in mesh bags and hung on plants or around garden
- Soap — questionable effectiveness
- Hinder® — may work for deer and rabbits
- Human Hair — questionable
- Naphthalene (moth balls, moth flakes) — said to repel squirrels, rabbits and bats; quantity needed to be effective may sicken most people and should NEVER be used or recommended
- Predator Urine — questionable; may attract unwanted visitors
- Methyl Anthranilate — natural compound found in gardenias and Concord grapes (grape juice may repel Canada geese); water-soluble, must be re-applied after rain. When sprayed on lawns, it seems to deter grazing by Canada geese and other birds such as gulls, starlings, brown-headed cowbirds and ducks.

## STEP 4: L

### LETHAL CONTROL

Lethal control methods may require permits from federal and/or state wildlife agencies, but generally is allowed for homeowners dealing with a small number of pests. Remember that wildlife, especially birds, are protected. Even if only one woodpecker is causing damage, a federal (and possibly state) permit is required.

**Trapping** — Live trapping is not recommended for homeowners dealing with animals such as raccoons or skunks, which can transmit rabies. Generally, the animal is disposed of, and many localities require testing for rabies. Leave this type of trapping to professionals. Generally, home-

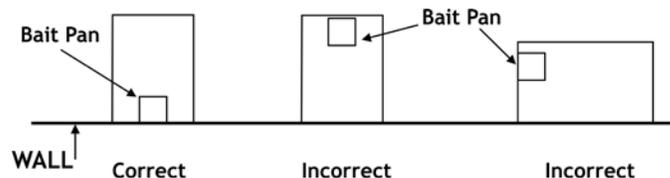
owners should not attempt to live capture wild animals. If, however, you are prepared to undertake live trapping, then consider these guidelines.

Several brands of traps are available for live capturing animals. Most are wire but some are solid or fully enclosed.

Place traps near burrows or runways. Face the trap into an opening or hiding cover. Cover the trap to provide a dark area more attractive to animals. Protect the trap from children and pets. Protect trapped animals from harassment by pets or exposure to sun, rain or snow. Use simple baits similar to natural foods. For predators or carnivores, use canned cat food or sardines. For herbivores, use peanut butter or sliced apples. Peanuts, sunflower seeds, peanut butter and oatmeal balls, walnuts or pecans may also work.

Kill traps, mouse and rat traps are readily available to most homeowners. They are simple to use and relatively harmless to humans.

Bait traps by placing a small amount of peanut butter on the bait pad. Place the trap so the bait pan is next to the wall as shown in this diagram:



Other types of traps include multi-catch mouse-traps, pigeon traps with swinging, one-way doors and numerous other designs. Consult a nuisance wildlife operator for details.

**Poison Bait** — Many homeowners can use a poison bait to control rats and mice or other small rodents. These baits are sold at home improvement stores, lawn and garden stores or hardware stores.

Place bait in areas where animals are active — look for droppings, nest material or food caches. Place bait inside a shoe box that has had one or two holes cut in it to encourage mice into a dark, safe area for feeding. Use caution with poison baits. Remember that animals do not die immediately — it may take several feedings — and the

animal may die in an inaccessible place (attic, duct work, crawl space, inside a wall) and produce unpleasant odors.

Some animals, like chipmunks, may horde the bait, thus leaving a homeowner to think the bait is ineffective. Be patient or try trapping. Protect children and pets from poison baits. Baits are best used in an outside building or under careful observation.

Try a variety of approaches to solving your specific problem and see what works. Remember, many solutions are temporary. Animals learn to avoid traps or get accustomed to various odors, sprays, scare devices or other solutions. In general, noise repellents are not proven to be effective against moles, bats or rodents. Snakes are deaf, so this won't work for them either. Powders such as naphthalene or sulphur may have some limited effectiveness in confined situations but are not likely to be effective when broadcast over a large area. In fact, these common chemicals can be harmful if used incorrectly. Always read and follow labels.

Other products that claim to be effective may not have been tested in controlled environments and should be used with caution. Do not apply pesticides or toxicants without proper safety equipment and training. Do not use in a manner inconsistent with the safety label.

## Additional Resources

Numerous books deal with wildlife control in home and garden situations. County agricultural Extension agents (1-800-ASK-UGA1) are an excellent source of information, knowledge, reading material and, sometimes, they sponsor classes or clinics for gardening and landscaping.

A valuable source of information is the Internet Center for Wildlife Damage Management at the University of Nebraska ([icwdm.org](http://icwdm.org) or [digitalcommons.unl.edu/icwdm/](http://digitalcommons.unl.edu/icwdm/)). Another valuable source of information is the UGA Warnell School of Forestry and Natural Resources online publication library (<http://www.warnell.uga.edu/outreach/index.php>). Other sites include land-grant university Extension service web pages, state wildlife departments, online bookstores, and both private and commercial product web pages.

## Suggested Reading List

- Adler, B. 1992. *Outwitting Critters: A Humane Guide for Confronting Devious Animals and Winning*. The Lyons Press. New York.
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