

# Preventing and Controlling Coyote Problems

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The coyote is a medium-sized member of the dog family that includes wolves and foxes. With its pointed ears, slender muzzle, and drooping bushy tail it often resembles a German shepherd or collie. Coyotes are usually grayish brown with reddish tinges behind the ears and around the face (figure 1), but coloration can vary from silver-gray to black. Although coyotes are capable of interbreeding with domestic dogs, hybrids (a.k.a. coydogs) are generally rare. Biologists can distinguish coyotes from dogs and other canids by skull measurements and genetics (DNA). Most adults weigh 25–35 pounds (particularly large individuals weigh 40–45 pounds), although their full coats often make them appear larger.

### Basic ecology

Coyotes are not native to Ohio, but since 1919 when the first occurrence in the state was documented, they are now found in a variety of habitats in all counties in the state. The immigration of coyotes into Ohio is part of a natural range expansion into eastern states following the removal of wolves and fragmentation of forests for agriculture. Coyotes are predators and typically hunt small rodents, rabbits, deer fawns, and fruit during summer, but their diets are variable and occasionally include livestock.

The typical coyote population consists of territorial family groups and solitary transients. A family group generally consists of a mature male and female (the alpha pair), one to three subordinate subadults, and the pups of the year. Transients can be either sex, and they usually have large, overlapping home ranges that may include 20–30 square miles. Mating takes place January through March, with a peak in February. During this time coyote packs increase their territorial behavior. They maintain their high degree of territorial defense through April, when pups are born to the alpha pair (figure 2).

As coyote populations have increased across Ohio, so have reports of conflicts with people. Conflicts are often of two different types: urban and agricultural.



Figure 1. Adult coyote, with typical coloration (photo by Stanley D. Gehrt).



Figure 2. Coyote pup at approximately 6 weeks of age (photo by Stanley D. Gehrt).

In both cases, conflicts often show seasonal patterns. Livestock depredation often peaks during spring because of the availability of lambs and calves, which coincides with an increase in energy demands for alpha pairs raising newborn pups. Studies have shown that resident coyotes usually have little interest in livestock until a litter is born. The alpha pair is usually responsible for most predation events within a territory. Research on large sheep farms has shown that 90% of livestock depredations were caused by one or two coyotes, even though as many as five different packs were in residence. While a rare occurrence in urban areas, coyotes may cause problems such as attacking and threatening pets and people. Small dogs and housecats may be attacked at any time, whereas attacks on medium-to-large dogs tend to occur during mating and litter-rearing seasons. Conflicts with domestic dogs in urban areas often peak during the mating and litter-rearing seasons, when territorial defense is highest. As with all nuisance wildlife problems and damage concerns, an integrated management plan is most successful when it combines tolerance, prevention, and control.

## Damage prevention and control

### Fencing

Fencing to exclude coyotes can be effective in certain situations. In urban areas, privacy fencing may deter coyotes if the fence is at least 5 feet high. The effectiveness of the fence can be enhanced with a roll bar across the top. Because of the expense, this option is most practical for small areas.

In rural areas where livestock need protection, fencing is usually of two types: net-wire fencing and electric fencing. In all cases, keep in mind that coyotes generally prefer to dig under fences rather than jump over them. If properly constructed and maintained, net-wire and/or electric fences can help to reduce predation for short periods.

Net-wire fencing is one fencing design that has been effective at deterring coyotes in certain situations, but it can be expensive. Horizontal spacing of the mesh should be less than 6 inches, and vertical spacing less than 4 inches. A barbed wire at the bottom can discourage digging, as will a buried wire apron (often an expensive option). The fence should be at least 5 feet high to discourage coyotes from jumping over it (coyotes usually jump and climb over fences 5 feet high or taller, they cannot typically clear a fence of that height). Because of its expense, net-wire fencing is usually used for temporary holding in smaller areas.

One fringe benefit to using this type of fencing is that if predation occurs, it is easy to find where the coyote is

getting underneath the fence, which makes removal (such as with snares) that much easier.

An alternative to net-wire fencing is electric fencing, which is often used for livestock. This design is usually cheaper than net-wire fencing, but requires more maintenance. The fences are made of high-tensile wire stretched to a tension of 200 to 300 pounds. The original design of electric fences for controlling predation consisted of multiple, alternately charged and grounded wires, with a charged trip wire installed just above ground level about 8 inches outside the main fence to discourage digging, but most recent designs have every wire charged. The number of wires, and spacing between them, can vary considerably among sites. A standard design uses 13 strands, but other designs have used less, including a popular five-strand design. The fence must produce enough voltage to overcome the insulation resistance of a coyote's long hair and hide. A minimum charge of 3,000 volts is required, but 4,000 to 5,000 volts may be better, depending on the length of fence. Electric fencing is best used in areas of flat terrain with relatively little vegetation. High tensile wire requires adequate bracing at corners.

Labor to keep electric fencing functional can be significant. Wire tension must be maintained, excessive vegetation under the fence must be removed to prevent grounding, damage from livestock and wildlife must be repaired, and the charger must be checked regularly to ensure that it is operational.

Finally, another option is to electrify an existing fence. This can be particularly effective if a net-wire fence is modified with electric wire. In this case a charged trip wire is placed 6 to 8 inches above the ground about 8 to 10 inches outside the fence. One to three additional wires may be added with variable spacing (in each case, maintaining the wires 8 to 10 inches away from the fence, terminating with a top wire to discourage climbing over the fence).

Charged wires can be added to the top and at various intervals if coyotes are climbing or jumping a fence. These wires should be offset outside the fence. Fencing companies offer offset brackets to make installation relatively simple. The number of additional wires depends on the design of the original fence and the predicted habits of the predators.

As with all aspects of predator management, producers must consider the economic loss to predation balanced against the cost of the fence, expected life of the fence, and the relative effectiveness of the design when determining which fencing system is most suitable.

### **Cultural or habitat modification**

Use pastures that have a lower incidence of predation to reduce risk to livestock, especially during coyote breeding season. Pastures that are adjacent to streams, creeks, and rivers tend to have more coyote problems than pastures away from such features. Herding livestock can reduce predation because of greater human presence. In some instances changing the lambing, kidding, or calving seasons to the fall or having them inside of sheds can reduce the attraction of coyotes. Removing livestock carrion is essential to limiting coyote populations on your property, as coyotes may scavenge and subsequently identify livestock as prey.

Most coyotes avoid yards and people, but this can change over time if coyotes are attracted to food near homes and eventually become habituated. If coyotes are observed repeatedly in or near yards, wildlife feeding should stop, including bird feeders, and pet food should not be left outside. Pets should be supervised, as should young children.

### **Guard animals**

Guard dogs, donkeys, or llamas can be effective at reducing coyote predation, if they are well-trained and other conditions (such as size of area, habitat, etc.) are appropriate. Popular breeds of guard dogs include Great Pyrenees and Hungarian Komondor. To develop a good guard dog, start by placing a seven-to-eight-week-old pup with three to six lambs in a pen. Pups must grow up with lambs so that they will bond with sheep and want to live with and protect them. Limit human contact with the pup, but not to the extent that the pup is not comfortable with people or poses a danger to them. Monitor the pup closely to ensure that it doesn't play too roughly or nip at a lamb's ears. At 16 weeks, put the dog and the companion sheep into a larger area. If a strong bond has formed, the dog will become a member of the flock and guard the sheep.

#### **Tips for using donkeys**

##### **Do:**

- Use medium to large donkeys.
- Use females and geldings.
- Use in a small open pasture with a small flock.

##### **Don't:**

- Don't use miniature donkeys.
- Don't use males, as they are aggressive and may injure livestock.
- Don't use more than one donkey in a pasture or place donkeys in adjacent pastures because they will seek each other's company instead of staying with the sheep.

### **Scare tactics**

Noise and visual repellents, such as strobe lights, sirens, and propane exploders, can cause coyotes to avoid an area temporarily. Electronic lights have been used successfully in some urban situations. No chemical or odor repellents are registered for use with coyotes.

In some urban situations, coyotes can be encouraged to avoid yards through harassment, such as yelling, throwing objects, and waving arms, or electronic lights or sounds. However, electronic devices may have only limited application in urban settings where loud noises may be disruptive to neighborhoods.

### **Toxicants and fumigants**

Some toxicants can be used for coyote control under very limited situations. Check with USDA-APHIS Wildlife Services (614-861-6087) for current registration information and potential options available to you.

The livestock protection collar (LPC) was developed primarily for coyotes as a wildlife damage management tool to protect sheep and goats in confined areas from predators, primarily coyotes. The LPC is basically two small rubber bladders placed under the throat with straps (figure 3). Each bladder contains Compound 1080 (sodium fluoroacetate), which is extremely lethal to animals. The design takes advantage of the coyote's propensity to target the throat of a sheep. When the coyote attacks the sheep, it bites the LPC and receives a dose of Compound 1080 in the mouth. The coyote subsequently dies within five hours, with death relatively painless from cardiac failure or central nervous system failure.

The LPC is registered by the Environmental Protection Agency, and its use is heavily regulated. Currently in Ohio, it has been approved only on an experimental basis, and only certified USDA\APHIS\WS personnel are allowed to administer them in specific circumstances.



Figure 3. Application of a livestock protection collar (photo courtesy of USDA/APHIS/WS).

## Pros and cons of LPCs

### **Advantages:**

- This tool specifically targets the offending individual animal.
- Compound 1080 is lethal enough that “education” by the predator is unlikely.
- Compound 1080 in the environment is generally not a threat because soil microbes can break it down, and plants do not accumulate the toxic properties.

### **Disadvantages:**

- Heavily regulated, permit process extensive, only certified WS personnel can deploy LPCs.
- Livestock may be lost to Compound 1080 in addition to the predator, and risk to humans.
- Flock must be fenced and monitored intensively to detect broken LPCs immediately.
- Cost of collars and EPA regulations limit the number of LPCs that can be used in an area (e.g., 20 collars per 100 acres).
- LPCs can only remain on animals temporarily, as they can cause damage to livestock.

## **Trapping and shooting**

Be sure to check with state wildlife officials for permit and regulation information. In Ohio, coyotes are considered game animals with an open season year-round, with no bag limits. A hunting license is required to shoot or trap coyotes. Foothold traps are the most effective and versatile tools for removal in rural areas, and snares may also be effective in some situations (refer to Ohio Division of Wildlife for regulations on acceptable trap types for coyotes). Appropriate trap design and methods of set have been established as part of Best Management Practices published by the Association of Fish and Wildlife Agencies (available online at [www.iafwa.org](http://www.iafwa.org)). Once a coyote is trapped, it is most humanely dispatched by gunshot. Trapped coyotes should not be translocated (moved and released at another location). Shooting is effective, particularly when coyotes are lured within shooting distance with predator calls.

Electronic callers with calls of rabbits or pups in distress can attract coyotes from some distance if there is little wind or other noises. However, care must be taken to use camouflage and remove human scent.

If coyotes repeatedly threaten people or pets in urban areas, or actually attack a person, they must be removed immediately through trapping or shooting. Removal is difficult and should only be attempted by professionals with appropriate permits and conducted under municipal and state regulations.

## **Final points**

1. Coyotes quickly return after a removal program, even over large areas, and any damage reduction will be temporary unless accompanied by preventive measures such as scare tactics and habitat modification.
2. It has been shown that, as predators, coyotes play an important role in ecosystems by helping to control prey. Coyotes can impact rodent and rabbit populations, and in urban areas they may help stem the population growth of white-tailed deer and Canada geese. Indiscriminate coyote population reduction is not only impractical, but may be detrimental in some areas. Any removals are likely to be temporary, as coyotes have tremendous dispersal and immigration abilities, and coyotes also increase reproductive rates in response to lowered densities. Therefore, removed coyotes are usually replaced by new coyotes, and in some cases new immigrant coyotes may be more habituated to people than the previous residents.
3. Ohio is on the edge of a major raccoon rabies outbreak, and raccoon rabies sometimes spills over into other mammals, such as coyotes. The only recorded instance of a coyote attack on a person in Ohio was a coyote that had been infected with raccoon rabies. Any time a person has been bitten by a coyote, authorities should be notified, the victim should seek medical attention (even if the injuries are minor), and measures should be taken to remove the coyote and have it tested for rabies.

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