



Managing Human-Wildlife Interactions: Woodchuck (*Marmota monax*)

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Many homeowners unfortunately have experienced the anguish of going into their garden and finding their nearly ripe tomatoes or prized flowers have been eaten by a woodchuck (*Marmota monax*). Negative human-wildlife interactions such as this have become more common as residential and commercial development continues to modify the landscape, creating conditions favorable for species of wildlife that are tolerant of human presence. Interactions with woodchucks (also known as groundhogs or whistle pigs) always have been common and expected in rural areas, but the occurrence in suburban areas has grown in recent decades due to the woodchuck's resilience and ability to live in close proximity to humans. These interactions most frequently arise where development interfaces with patches of open land along forest or field edges. In recent years, requests for assistance from people experiencing negative interactions with woodchucks have grown steadily.

Because many people who now reside in this exurban environment have had little prior experience with a woodchuck, they often aren't sure how to properly resolve issues that arise with the animal. Having accurate information available helps in the decision-making process and is a key step in fixing problems with woodchucks. With this publication, Virginia Cooperative Extension provides a brief overview of the woodchuck's life history, discusses the benefits and drawbacks of human interactions with woodchucks, and offers guidance on how to deal with problems caused by woodchucks.

Biology and Behavior Physical Characteristics

As the largest North American member of the squirrel (Sciuridae) family, an adult woodchuck can weigh up to 14 pounds and typically measures 16-27 inches in length (including its 6-7 inch tail). Woodchucks are stocky and, while not adept at running long distances, they are surprisingly quick at scampering away into the safety of a nearby burrow. Their thick fur often displays a mix of

brown and reddish cinnamon tones, but the long outer guard hairs are tipped with white, which gives the animal a frosted look (figure 1). Their feet and tail are noticeably darker than the rest of the body. Juveniles often appear darker than adults and display slate-gray overtones, but they will don a typical adult coloration as they approach maturity.



Figure 1. Physical appearance of the woodchuck. ("[Woodchuck \(*Marmota monax*\)](https://wordpress.org/wordpress.org/wordpress.org/), Potato Creek State Park IN DDZ_0068" by NDomer73 online at <https://wordpress.org/wordpress.org/wordpress.org/> <https://creativecommons.org/licenses/by-nc-nd/2.0/>.)

Woodchucks are adapted for living underground. Their eyes, nose, and ears all are aligned at the top of the head, which allows them to peek over the opening of their burrow to assess potential threats without exposing too much of themselves. Their short, powerful legs and clawed feet help them dig and climb into trees; it is not unusual to see a woodchuck resting on a large branch 10 feet up. At the first detection of a potential threat, they will race away into the protection of their burrow, but they will stand their ground and fight back using claws and teeth if cornered away from the protection of

the burrow. Woodchucks keep their claws sharp through constant use and by scraping on rough objects, much like cats do.

Like most rodents, woodchucks have large, chisel-like incisors that grow continuously throughout their life. Their yellowish-orange incisors are slightly offset and, as a result, are sharpened with each bite taken as the upper teeth shear past those on the lower jaw.

Just how much wood?

Despite the notion premised in the age-old query, woodchucks show little to no interest in woody material, aside from the leaves that they can reach. When they climb into a tree's canopy, it is to either find a nice resting spot or to escape the threat of predators, not to forage. So, "How much wood could a woodchuck chuck if a woodchuck could chuck wood?" To the best of our knowledge, the answer is little to none.

Range

Woodchucks are found throughout the eastern and upper midwestern United States and much of southern Canada (figure 2), making them the most widespread member of the North American *Marmota* genus. They are found in every county in Virginia except for several in the far southeastern corner of the state (figure 3). Although multiple subspecies of the woodchuck exist across its range, the recognized subspecies here in Virginia is *Marmota monax monax*.



Figure 2. Geographic distribution of the woodchuck (*Marmota monax*) in North America (Image by Andreyostr online at https://commons.wikimedia.org/wiki/File:Marmota_monax_range.png, licensed under the [GNU Free Documentation License](https://commons.wikimedia.org/wiki/Commons:GNU_Free_Documentation_License), https://commons.wikimedia.org/wiki/Commons:GNU_Free_Documentation_License,_version_1.2.)

Commonwealth of Virginia

County distribution of Woodchuck

(050054) *Marmota monax monax*

City or County Boundary
Known or Likely within county

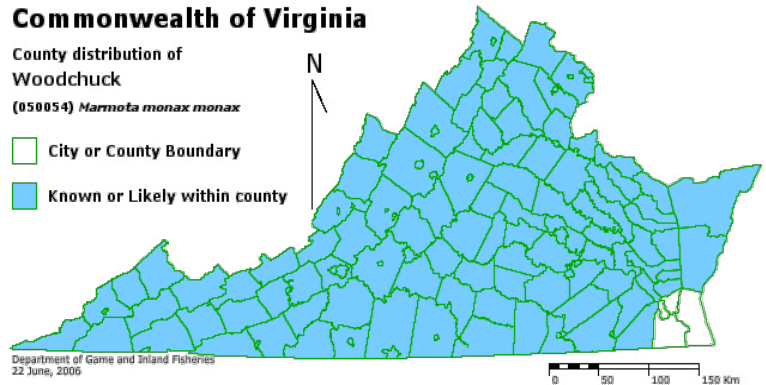


Figure 3. Current distribution of the woodchuck (*Marmota monax*) in Virginia. (Virginia Department of Wildlife Resources, Fish and Wildlife Information Services.)

A woodchuck rarely travels more than 150 yards from the main burrow entrance, yet where food resources are widely dispersed and additional escape tunnels are available, it may travel over 200 yards from the primary burrow to forage. It is not unusual for juvenile woodchucks to travel more than a quarter-mile when dispersing from the natal area. The size of a woodchuck's home range can vary widely, depending mostly upon the quality and abundance of food provided by the habitat. The size of its home range generally is not affected by the level of human activity in the area. As a result, the density of woodchucks in an area also fluctuates, ranging from one per 2 acres on lush territories to as few as one per 11 acres on marginal habitats. Occupied ranges of individual woodchucks rarely overlap, except during the spring mating season.

Habitat

Woodchucks occupy a variety of different habitats, but prefer fallowed or actively farmed fields and pastures, croplands, shrubby woodland edges, and undeveloped areas within suburban residential neighborhoods. They commonly will occupy the edge between a wooded and an open area, wherever they can create a functional burrow system. Both males and females dig burrows, typically near or under a structure of some type, such as a shed, trailer, barn, or even a residential house. In residential areas, burrows frequently are created beneath raised decks that are bordered with lattice material and under concrete sidewalks.

Diet

During daylight hours, woodchucks spend much of their time foraging. Peak activity occurs around midday in spring and summer, but they become crepuscular (i.e., active mostly at dawn and dusk) during the hotter mid- and late summer months. Under normal circumstances, a

woodchuck will make multiple above-ground foraging trips each day (for one to five hours at a time) during the spring and summer.

The woodchuck's diet typically is dominated by green leafy plant matter. Highly nutritious green growth is essential for their survival, especially when they first emerge from the den in March. They frequently select the leaves and stems of broad-leaved legumes and forbs (often referred to as "weeds") over grasses. Preferred foods are high in protein and nutrients, so the tender new growth of commercial crops such as soybeans, peas, beans, carrots, and alfalfa are especially attractive. They also eat fruits and vegetables commonly grown in home gardens, when and wherever available.

Metabolism and food intake of adult woodchucks increase steadily after they emerge from the winter den. Foraging intensity increases through the summer as they strive to rebuild depleted fat reserves for the coming winter hibernation. Over the summer, the woodchuck's diet also broadens and begins to include less digestible items such as buds, grasses, and the inner bark of younger trees as the availability of the preferred leafy green foods declines. One characteristic about their diet remains clear — they rarely eat dry vegetation. In fact, researchers found that woodchucks generally do not consume dry grass even when facing starvation. Woodchucks rarely drink water directly; instead, they satisfy hydration needs by consuming foods that have a high-water content and by foraging at dawn and at dusk, times when plants likely are coated with dew. This behavior helps explain their avoidance of dry forage.

Social Behavior

Only adult woodchucks dig new burrows, which can span 25-50 feet in length and may extend 3 or more feet underground (figure 4). Once completed, the burrow

will be used all year long. As long as the available food resources in the immediate vicinity remain abundant and reliable, a burrow may be used by the same individual for multiple years. The main entrance can be distinguished from an emergency escape hole by its conspicuous apron of excavated dirt (sometimes referred to as "the porch"), which grows continuously as new soil is cleared from inside the burrow. Each burrow system typically will have one or more escape holes that are smaller than the primary entrance, are dug from below (thus no rim of excavated soil), and usually are well-hidden in dense cover or beneath piled debris. The burrow system has several chambers or rooms, each serving a distinct purpose: a large, main chamber used for sleeping and raising young, a hibernation room, and perhaps one or two chambers used as latrines. Animals such as foxes, skunks, weasels, rabbits, and even unrelated young woodchucks will use abandoned woodchuck burrows.

Woodchucks are one of a few mammals that undergo true hibernation. During fall, woodchucks become less active, and, by late October or early November, most woodchucks will have entered the hibernation chamber for the winter. During this period of hibernation, their heart rate, breathing, and metabolism all decline dramatically. They survive exclusively on the fat reserve they have stored in their body and will not awaken or leave their burrow until February or early March. Males typically emerge from hibernation earlier than females and juveniles, often by as much as two weeks. During hibernation and continuing for several weeks after emergence, an individual may lose up to 25%-30% of its body weight.

Male woodchucks are solitary creatures, except when they interact with potential mates during spring. After courtship and mating, males return to a solitary exist-

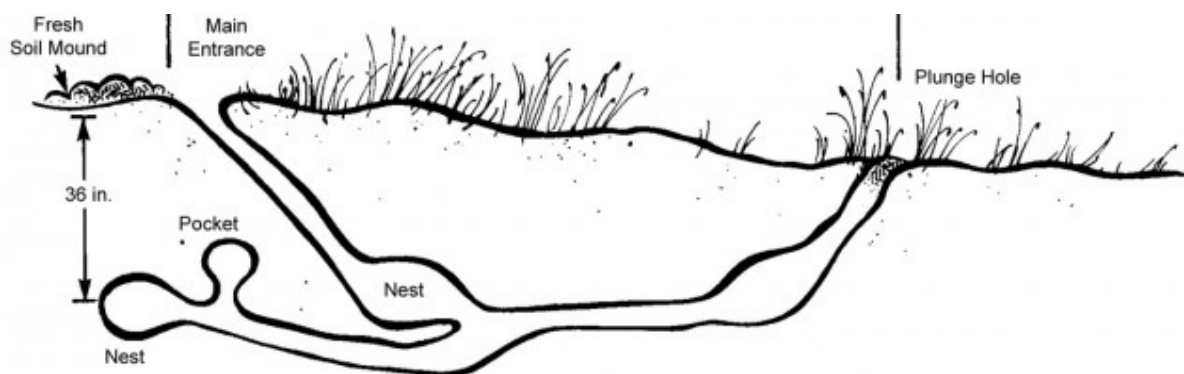


Figure 4. Graphic representation of a woodchuck's underground burrow system. (Reprinted by permission from Purdue University Extension, [Animal Damage Management: Woodchucks](https://bit.ly/3UYWYwM), <https://bit.ly/3UYWYwM>.)

tence and generally avoid further interaction with other woodchucks, especially females with young.

Reproduction, Mortality, and Disease

After a gestation of 31-33 days, females give birth to a litter of two to six young (average of four), usually sometime in April here in Virginia. Females have only a single litter each year, unlike other rodents that typically bear multiple litters. Babies are born blind and hairless and will remain in the burrow six to seven weeks. Following emergence, the young feed voraciously and grow rapidly throughout the summer. After about three months, juveniles set off on their own to establish a home range. Juveniles won't become reproductively active until their second year of life, and after they have established a home range and constructed a burrow system of their own.

The average lifespan of a woodchuck in the wild is about four to five years. Mortality among juvenile woodchucks can be high, especially after first emerging from the burrow. Many young individuals wander too far from the home burrow or into areas lacking protective cover, increasing their vulnerability. Others sometimes flee into an abandoned burrow that lacks a secondary escape route, become trapped, and fall prey to the pursuing predator. Hawks, owls, coyotes, bobcats, weasels, and dogs are known to prey on woodchucks, especially naive juveniles. As noted earlier, experienced adults rarely travel more than 150 yards from the burrow and thus are less vulnerable to predation. Adult mortality often is associated with humans, most notably via roadkill or shooting and trapping efforts conducted in response to property damage.

Although rabies is not common in woodchucks, like all mammals, they are susceptible to infection. The number of confirmed rabies cases among woodchucks across Virginia has remained relatively stable at 10 or fewer cases per year. Still, among Virginia's rodent species, woodchucks exhibit the highest likelihood of infection. Even though some adult woodchucks are known to survive infection after interacting with an infected member of a rabies vector species (raccoon, skunk, another woodchuck), they likely become a carrier of the disease. Patterns noted in the data on rabies incidence suggest that, when an outbreak of rabies occurs in the local raccoon population, woodchucks that occupy the same habitat typically exhibit an increased rate of infection within about three months after the first confirmation in raccoons. Here in the Mid-Atlantic region, nearly all confirmed reports of rabid woodchucks involve the raccoon strain of rabies.

Woodchucks are susceptible to woodchuck hepatitis virus (WHV), which, in the Mid-Atlantic region, infects nearly 60% of all individuals. This disease damages the liver and lungs and can be fatal for infected animals.

Woodchucks serve as hosts for several parasites, both external (e.g., fleas, ticks) and internal (e.g., *Baylisascaris* nematodes), but they rarely display adverse effects unless the parasite load is high, at which point the host may face severe and life-threatening conditions. Most internal parasites carried by woodchucks are not common problems for humans and rarely are transferred through random contact between humans and woodchucks. However, because these parasites can be shed in the feces, care should be taken to minimize exposure of children, pets, or livestock with woodchuck droppings.

Legal Status, Values, and Economic Implications of Interactions with Woodchucks

The woodchuck currently is classified as a Nuisance Species under the Virginia Administrative Code section [4VAC15-20-160](https://law.lis.virginia.gov/admincode/title4/agency15/chapter20/section160/) (<https://law.lis.virginia.gov/admincode/title4/agency15/chapter20/section160/>), which means it does not benefit from regulatory protections afforded to most other native wildlife species. Woodchucks can be taken via legal methods at any time during the year: There is no closed season and no bag limit. However, it is important to note that **in Virginia, it is illegal to:**

- Transport or release a live-trapped woodchuck on property that the landowner does not own, unless authorized by a permit obtained from the Virginia Department of Wildlife Resources to do so, as outlined in section [4VAC15-30-50](https://law.lis.virginia.gov/admincode/title4/agency15/chapter30/section50/) (<https://law.lis.virginia.gov/admincode/title4/agency15/chapter30/section50/>); live-caught animals can be released only on the landowner's own property.
- Poison any animal (including woodchuck) other than rats and mice unless authorized as part of an assisted damage control program, as outlined in section [4VAC15-40-50](https://law.lis.virginia.gov/admincode/title4/agency15/chapter40/section50/) (<https://law.lis.virginia.gov/admincode/title4/agency15/chapter40/section50/>).
- Set a trap for a woodchuck where said device is likely to injure persons, dogs, stock, or fowl, as outlined in section [§29.1-521](https://law.lis.virginia.gov/vacode/title29.1/chapter5/section29.1-521/) (<https://law.lis.virginia.gov/vacode/title29.1/chapter5/section29.1-521/>).
- Fail to visit traps and remove all animals caught in them at least once each day, as outlined in section

[§29.1-521](https://law.lis.virginia.gov/vacode/title29.1/chapter5/section29.1-521/) (<https://law.lis.virginia.gov/vacode/title29.1/chapter5/section29.1-521/>).

As a result of their digging, woodchucks actually enhance soil quality by loosening and turning the soil, improving aeration, and incorporating organic matter and fertilizer in the form of their droppings. The freshly dug and exposed soil distributed around the opening to a woodchuck's burrow often provides a favorable seedbed for plants. Unfortunately, some of the plants observed occupying these seedbeds are invasive or nonnative species, many of which are not especially palatable to woodchucks and thus can lead to a localized proliferation of undesirable plants. Given the preferences of woodchucks for certain types of food plants over others (as described earlier), this selective feeding directly can affect local plant composition and diversity and indirectly impact the presence or abundance of insects, birds, or small mammals that utilize those plants.

Abandoned woodchuck burrows are important resources for many other species, including some that cannot dig a burrow themselves, such as snakes or other reptiles. For species that can dig their own burrow, like foxes, rabbits, and skunks, it may be more efficient to use or enlarge an existing but unoccupied woodchuck burrow rather than digging a new one from scratch. Taking over an existing burrow allows that animal an opportunity to devote saved time and energy to other useful tasks, such as attracting a mate, defending its territory, providing better care to young, or foraging to build fat reserves more quickly for the winter.

Historically, woodchucks played an important role as a readily available food source in the lives of early colonists and explorers. Native Americans also supplemented their diet by trapping these rodents. Because woodchucks eat almost exclusively fresh green plants, many consumers claim the meat is nutritious, tasty, and not "gamey."

Another potential benefit derived from the woodchuck is the value received by those who participate in wildlife watching — woodchucks can be fun to observe, especially when the young are interacting with their mother. Getting to see and learn how woodchucks interact with other organisms in the environment provides interesting educational opportunities, especially for children.

Obviously, not all interactions between humans and woodchucks are positive, given the woodchuck's reputation for damaging gardens, commercial row and field crops, nursery plants, fruit-bearing trees and shrubs, or other landscape plants while foraging. Though not terribly common, woodchucks have been reported to gnaw through underground utility cables (telephone, television,

electric) when digging a burrow, leading to costly repairs and disruptions to service.

Farm tractors and the agricultural equipment they tow are vulnerable to potentially expensive repair costs when implements fall into undetected woodchuck holes. Harvesters and combines can be dulled when their cutting implements dig into the mounds of excavated soil left around a woodchuck hole in a crop field. Both a rider and the horse can sustain serious injury should the horse step into an unseen burrow and stumble to the ground. Finally, sidewalks, patios, retaining walls, and even buildings can settle and potentially lose integrity or collapse when undermined by a burrowing woodchuck.

Options and Strategies for Managing Human-Woodchuck Interactions

People experiencing negative interactions with woodchucks can take steps to find relief. Wildlife experts with Virginia Cooperative Extension recommend using protocols designated under Integrated Pest Management (IPM), a measured, hierarchical approach that applies only as much response as is needed to achieve results that are tolerable. If the first steps don't work, then strategies at the next level can be attempted. Lethal techniques always are viewed as methods of "last resort" and should be considered only when all else fails.

Resolving a human-wildlife conflict is an ongoing process. Resolution of a specific issue should not be viewed as a concluding event, even when lethal methods are used. Unless the underlying conditions and/or human behaviors that led to the conflict are changed, the likelihood of future conflict remains high.

The Importance of Education, Tolerance, and Good Husbandry

For some people, an acceptable way to deal with woodchucks is to do nothing at all and just tolerate their presence. Although this approach may be hard for some to accept, others may decide to take no action after they learn about the positive contributions woodchucks can have on the land (e.g., soil improvements) and that these animals simply are trying to survive.

Anyone not willing to incur damage must take steps to modify either their own practices or find ways to reduce the attractions that bring woodchucks to the backyard. Examples of simple husbandry options include:

- Refraining from planting or removing plants that are highly preferred by woodchucks, such as lush leafy green vegetation, from areas where woodchucks would have free access to them.
- On farms, establishing wide vegetation-free zones around crop fields. To be effective, these zones would have to be wider than a woodchuck's normal travel distance from the burrow, about 150 yards.
- In the home landscape, removing thick weedy or brushy vegetation that serves to provide good hiding cover for woodchucks.

Reducing an abundance of protective vegetative cover increases the exposure of the woodchuck to predation and, as a result, the woodchuck becomes more wary of venturing far from the security of its burrow.

Nonlethal Options

When increased tolerance or adoption of good husbandry practices alone do not reduce the likelihood of negative interactions with a woodchuck, then more stringent measures may be warranted. Among the nonlethal IPM options available are a variety of physical and chemical methods designed to deter woodchucks from gaining access to areas where their presence is not desired.

Harassment

Many commercially available audio and visual deterrents claim to provide relief from problems caused by woodchucks, but the reality is that most provide only temporary or short-term remedies at best. Woodchucks quickly learn what represents a true threat and often will ignore those that pose little or no danger, a process known as habituation. Examples of visual harassment techniques include effigies made to resemble natural predators or human presence (e.g., a scarecrow), bright or flashing lights or strobes, shiny reflective materials, flagging, and any other physical object that attempts to visually scare the animal. Audio harassment techniques rely on loud noises, simulate the sounds made by predators, or emit a threat or distress call of another woodchuck, all of which hopefully will frighten the targeted animal away. However, as is true with visual deterrents, woodchucks quickly habituate to audio scare tactics that pose no real danger. The period of effectiveness before habituation sets in can be extended somewhat by rotating the types of harassment used, changing the location of where deterrents are placed on one's property, and making their use and presence as unpredictable as possible. Eventually, though, if no consequence comes from the perceived threat, animals will habituate and ignore these devices.

Exclusion

When correctly designed, installed, and properly maintained, fencing can provide reliable protection against wild animals. The number of designs and construction options for fencing are numerous and cost will vary with each version, so careful consideration of the cost for materials and labor to construct, operate, and maintain the device over time is needed before deciding whether to use fencing. In general terms, suitable options of non-electrified fencing for woodchucks include various types of poultry wire, braided wire mesh, and sturdier, galvanized welded wire mesh. To prevent young woodchucks from squeezing through the mesh, the opening dimension should be less than 2 inches. Fence height should extend 3-4 feet above ground and the fencing should be buried at least 1 foot below ground, with an additional 8-10 inches bent outward into an "L" shape facing away from the garden; this prevents the animal from digging under the fence. Because woodchucks are adept climbers, the top 15 inches of the fence should be bent outward at a 45-degree angle and the fence itself should not be pulled tight or rigidly fastened to the support posts, but rather left somewhat loose or wobbly to deter climbing.

If non-electrified fencing doesn't seem feasible for a particular setting, an alternative to consider is use of electric fencing. The objective here is to administer a mild shock that will deter an animal from attempting to get past the obstruction posed by a fence. Although the shock delivered will not hurt the animal, it is unpleasant enough to make the animal reconsider getting zapped again. It should be noted that anything coming into contact with this type of fence, including small children and pets, potentially will receive a similar outcome, so precaution should be exercised to avoid unintended exposures. A simple electrified barrier suitable to deter woodchucks can be constructed by mounting a single electric wire 3-4 inches above ground and a second wire spaced 2-4 inches above the first wire around the entire garden perimeter. Another option is to use a prefabricated electrified mesh fence that comes with integrated support posts. These units come in variable mesh dimensions and heights, and some offer the ability to literally "stand it up and plug it in," immediately establishing quick protection. However, the charger typically is not included and must be purchased separately. When using any form of electric fencing, power must be supplied to the fence continuously from the moment it is installed; otherwise animals will learn from experience (i.e., not getting shocked) that the system is vulnerable. Also, vegetation near and especially under an electric fence must be cut back or treated with herbicide regularly to prevent its contact with the fence, which will ground it and cause a

loss of shocking capability. Before installing any form of electrified fencing, check local ordinances and codes to determine if use of this type of fencing is allowed and what form of signage may be required to warn others of the potential safety hazard.

A different form of exclusion can be achieved by using motion-activated devices that spray water in the direction of an approaching animal. To be effective, a sufficient number of such devices will be needed to adequately cover the entire perimeter of the area being protected, which poses several challenges. Obviously, overall cost goes up with each added unit. As the number of units increases, the logistics of how to supply and maintain water pressure to each unit may pose the more difficult challenge. Finally, the height at which the stream of water is delivered must be adjusted to account for the height of the animal of concern; it does little good to have the stream of water pass aimlessly over the head of the target when it should be directed at the face of the approaching animal.

Repellents

A repellent is a pesticide that produces an adverse taste or offensive odor to keep an animal at bay. Only pesticides that are registered by the U.S. Environmental Protection Agency (EPA) and the Virginia Department of Agriculture and Consumer Services (VDACS) are legal for use on woodchucks in Virginia; use also is limited to certain defined crops, sites, or seasons during which application is allowed, all of which are defined by restrictions on the product label. Repellents currently registered for use on woodchucks in Virginia include a number of commercially available products in either granular or ready-to-use liquid formulations that are composed of 1 or more of the following active ingredients: capsaicin, black pepper, piperidine, or coyote or fox urine. However, readers should be cautioned: Just because a product has been granted registration, it implies nothing about the ultimate efficacy of the product — registration simply assures the product is safe for use so long as all product labeling instructions are followed. Overall, those affected by woodchucks should view repellents not as a final solution, but a means to achieve short-term or temporary relief from damage while other permanent fixes can be implemented.

Lethal Options

Lethal options should be viewed as methods of last resort and their use should not be considered unless all other approaches to deter woodchucks have been tried and failed. Methods that are legal for use on woodchucks include several registered pesticide products including fumigants and toxicants, live-capture and/

or body-gripping traps, and shooting. Whenever lethal methods are being considered, proper safety measures must be taken to ensure no livestock, property, people, or nontarget animals will be harmed. Anyone considering their use should become familiar with applicable state regulations and local ordinances before employing such techniques.

Although some lethal methods can reduce local woodchuck numbers temporarily, populations are resilient and likely will recover unless something else is done to correct or modify the conditions that initially attracted woodchucks to the area. A population that has been lowered temporarily will bounce back as new litters are produced on adjacent parcels and individuals move into the affected area during dispersal. Therefore, lethal techniques should not be viewed as a “once and done” approach. As long as the underlying conditions remain unchanged, the problem will recur.

Fumigants and Toxicants

The objective of fumigation is to fill the underground burrow system with a smoky or toxic gas that will asphyxiate the target animal known to be inside. Currently, two chemical formulations are registered by the EPA for use on woodchucks in their burrows. The first uses a cardboard canister filled with sodium or potassium nitrate, sawdust, and charcoal. This is an incendiary device intended to be ignited and allowed to slowly smolder and produce a dense, smoky gas that will fill the underground burrow. A gas cartridge never should be used near or beneath wooden sheds, buildings, or other structures or where dry and flammable surface vegetation is present because these devices could cause a fire under those circumstances.

The second fumigant approach uses pellets or tablets of aluminum phosphide that, when placed in a burrow, will react with the moisture in the soil to produce a toxic phosphine gas. This latter product is considered a “Restricted Use Product,” which imposes strict prohibitions and certification requirements on who is eligible to acquire and apply the product.

If fumigants are to be successful, the target animal must be inside the burrow at the time they are administered. Also, all secondary escape tunnels must be located and sealed with dirt before beginning the fumigation effort to prevent the escape of the gas. Fumigation is most successful when conducted in early spring at the first sign of fresh burrowing and prior to the time when the first litter would be expected.

In some agricultural settings, certified pesticide applicators may be allowed to apply toxicant treated baits to kill woodchucks. Zinc phosphide (Zn_3P_2) Concentrate

currently is registered for use on woodchucks by those who possess a valid Category 7D Pesticide Applicator Certification. Special precautions are required to prevent nontarget animals from gaining access to the chemically treated material.

Trapping

Although property owners are granted certain authority to trap wild animals on their land, especially in situations involving damage caused by nuisance animals, restrictions, established in Virginia Administrative Code section [4VAC15-30-50](https://law.lis.virginia.gov/admincode/title4/agency15/chapter30/section50/) (<https://law.lis.virginia.gov/admincode/title4/agency15/chapter30/section50/>) and Virginia Code [§29.1-521](https://law.lis.virginia.gov/vacode/29.1-521) (<https://law.lis.virginia.gov/vacode/29.1-521>) currently impose limits on how trapping is conducted and, more importantly, what can be done with any animals captured via trapping. Of particular concern to landowners are regulations pertaining to the disposition of wildlife held in live-capture traps. Currently, a landowner has three disposition options: (1) release the animal at the point of capture (i.e., elsewhere on the landowner's property), (2) if the animal exhibits evidence of injury or need for care, the landowner can transport the animal to a licensed wildlife rehabilitation facility, but only upon prior verification of the facility's willingness to accept the animal, or (3) the animal must be killed, using a legal and humane method, as established by the American Veterinary Medical Association. Methods commonly mentioned include administration of carbon dioxide asphyxiation, shooting, or blunt force trauma. However, applying such techniques often is difficult to administer to an animal in a trap or may be prohibited by other restriction or ordinance (for example, it's not legal to discharge firearms in incorporated cities and towns).

Restrictions to prevent moving and releasing animals are justified for several reasons:

- Survival among animals that are relocated by untrained individuals is low (often less than 25%), due primarily to the animal being placed in an unfamiliar or unsuitable habitat, competition the relocated individual faces from animals already in the area, a delayed onset of effects of stress from the trauma of capture, handling, and relocation, or mortality (via roadkill, predation) that occurs as the relocated animal attempts to return to its original home range.
- An infected but asymptomatic animal may spread disease following its release into an uninfected area.

- An inexperienced individual who attempts to capture and relocate a wild animal could sustain infection or injury while performing the activity.

The woodchuck's classification as a nuisance species removes many restrictions imposed by normal closed season and bag limits, but all other applicable trapping statutes and requirements must be followed. Traps must be checked at least once within every 24-hour period, although more frequent inspections are encouraged to prevent undue exposure and stress for the animal. Although not required of individuals trapping on their own property, it still is recommended that these individuals follow the requirement imposed on other trappers to equip all traps with the name and contact information of the operator. Traps must be set in a way to not endanger children, pets, or other nontarget animals that potentially may come in contact with the device.

Shooting

Before any use of firearms takes place, landowners and shooters must comply with all local ordinances and state regulations and also assure that ethical and safety guidelines associated with hunting will be adopted. The weapon chosen should be of the proper caliber to ensure the animal is dispatched humanely and accurately, but not overly powerful to create unnecessary safety issues. Woodchucks are vigilant and wary creatures, so a firearm capable of shooting accurately from a distance usually is necessary. Shooting should be conducted when woodchucks are most active and likely to be outside the burrow, typically in early to mid-morning or again in late afternoon to early evening.

Summary

Because woodchucks have demonstrated an ability to live and thrive in close proximity to humans, the probability for human-woodchuck interactions is expected to grow. Calls for guidance on how best to respond to woodchuck-human interactions already are increasing and have prompted the need for education and assistance in reducing economic loss and property damage. By following the IPM protocol outlined in this publication, affected parties can attain a level of tolerable resolution without unnecessary impact to the environment, the offending animal(s), and those who implement the selected approach. Lethal methods rarely offer a permanent solution to a negative interaction and should not be considered until appropriate husbandry and nonlethal methods have been tested.

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