

LIVING WITH GROUND SQUIRRELS

Montana is home for six species of ground squirrels, all of which can cause problems, but methods of control are the same for all species. It is important to make sure it is ground squirrels and not pocket gophers, since the control is different. Pocket gophers are 5.5 to 6 inches, have external cheek pouches, exposed teeth, large curved front claws and small eyes and ears. Their mounds are fan-shaped with plugged openings. They spend a great deal of time underground creating extensive burrowing systems. Ground squirrels are diurnal and visible, and hibernate during the winter. They are also burrowers but do not leave mounds of dirt. Their mounds and occupied areas are not as visible as prairie dogs. If you use lethal control methods be sure you are targeting ground squirrels and not the protected white-tailed prairie dog.



Species of ground squirrels in Montana

- Columbian Ground Squirrel
- Golden-mantled Ground Squirrel
- Richardson's Ground squirrel
- Thirteen-lined Ground Squirrel
- Uinta Ground Squirrel
- Wyoming Ground Squirrel

General Ecology

Ground squirrels live in a wide variety of natural habitats. Populations can be particularly high in grazed rangelands and in areas disturbed by humans such as road or ditch banks, fencerows, around buildings, and within or bordering crops.

Ground squirrels live in a burrow system where they sleep, rest, rear young, store food, and avoid danger. Often there is more than one opening in a burrow system. Ground squirrels live in colonies that can include several dozen animals in a complex of burrows. More than one squirrel can live in a burrow.

Ground squirrels are active during the day, mainly from midmorning through late afternoon, especially on warm, sunny days. Ground squirrels have two periods of dormancy during the year. During winter months most hibernate, but some young can be active at this time, particularly where winters are not severe. During the hottest times of the year most adults go into a period of inactivity, called estivation, which can last a few days to a week or more. During these periods, the burrow appears open at the entrance, but the squirrel plugs it with soil near the nest.

They are primarily herbivorous, and their diet changes with the season. After emerging from hibernation, they feed almost exclusively on green grasses and herbaceous plants. When annual plants begin to dry and produce seed, squirrels switch to seeds, grains, and nuts and begin to store food. Ground squirrels usually forage close to their burrows. Their home range typically is within a 75-yard radius of their burrow.

Problems and Concerns

In urban areas gardens, flowers, ornamentals and lawns can be damaged by their eating habits and burrowing. In rural areas agriculture crops and range land is the most often damaged.



Ground squirrels and prairie dogs are hosts to fleas, which can transmit bubonic plague. Die offs of ground squirrels or prairie dogs may signal the populations has been effected by plague. Pets, especially cats, can be infected from feeding on dead or dying animals and can bring home. This can be prevented by controlling fleas on your pets.

Management

The control procedure you select depends heavily upon the unique life cycle and behavior of the ground squirrel. Most effective control, whether with bait stations, traps, or fumigants, varies with the season, animal life-stage, population density, and location.

No matter which control method is used NEVER handle the carcasses without protective gear; you can use a plastic bag slipped over each hand and arm as a glove, hold the animal with one hand and turn the bag inside out while slipping it off your arm and hand.

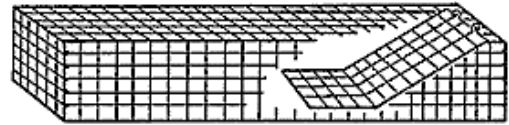
Trapping

Traps are often effective where there is a low population of ground squirrels or in urban areas where a toxicant cannot be used safely. However, they are time-consuming both for preparation and monitoring.

Small cage traps are available from feed stores, sporting goods stores and many garden supply centers. Traps should be baited with peanut butter, grain or oats and placed near the entrance to the burrow. Rat traps are also an effective way to catch smaller ground squirrels.

Use of modified gopher traps involves pre-baiting for several days at the unset traps to encourage squirrels to forage near them. Afterward, traps can be set and monitored daily. To reduce hazards to children, pets, poultry, and nontarget wildlife, place box-type traps in a covered box with a 3-inch diameter entrance. Put the box near active burrows with signs of recent diggings. Inactive burrows will be filled with leaves or straw or have cobwebs across the entrance.

A simple live trap can be made using a 12-inch by 20-inch piece of 1/2-inch mesh hardware cloth. Bend the hardware cloth to form the rectangular body of the trap with 3-inch openings on either end. Secure the free edges with hog rings or wire. Cover one of the open ends with a 3-inch square piece of hardware cloth. Make a trap door at the opposite end by using a 2 3/4-inch by 8-inch piece of hardware cloth. Attach this piece to the top of the trap, recessed about 1/2 inch, and make sure it can swing freely (Cooperative Extension, Institute of Agriculture and Natural Resources, University of Nebraska). The one-way door allows squirrels to enter but not exit.



The Conibear trap No. 110, with a 4 1/2- by 4 1/2-inch jaw spread, also is an effective kill trap. They are most useful during early morning and late afternoon. Conibear traps should be placed directly in the opening of the burrow and have the edges filled in around the trap with soil so the squirrel must pass through it, tripping the trigger. Filling in other burrows with soil might help success by directing the squirrel to the burrow that contains the trap. The wire trigger can be baited, but it's not necessary. Traps should be secured to a stake so they can be monitored and retrieved and to prevent them being carried off by predators. Conibear traps have to be sprung during the evening to avoid non-target animals. Traps need to be monitored and reset as necessary.

Inspect traps at least once a day, and remove dead squirrels.

Keep small children and pets out of the area while traps are in use.

Fumigation

Fumigation is most effective in spring or other times when soil moisture is high, which helps contain the gas within the burrow system. Do not fumigate in summer or when the soil is dry, because the gas more readily diffuses into small cracks present in dry soil, making it less effective. Do not fumigate during hibernation, because the squirrel plugs its burrow with soil, preventing fumes from reaching the nest chamber; you can't see this plug by examining the burrow entrance.

Fumigation is a relatively safe method of control. Some fumigates are only for use by licensed operations and others are available through garden centers or feed stores. Read and follow label instructions EXACTLY with particular regard for nontarget species and safety factors. Some fumigants can produce flames, creating a fire danger. Don't use these types fumigants where a significant fire hazard exists, such as near buildings, dry grass, or other flammable materials. To prevent fumes from

accumulating in enclosed areas, never fumigate beneath buildings or in burrows that might open beneath occupied buildings.

Be aware of the signs of nontarget species inhabiting inactive ground squirrel burrows. Swift foxes will use an old burrow, enlarging the opening. The burrowing owl (*Athene cunicularia*) is another potential occupant of abandoned ground squirrel burrows. Don't treat a burrow if you suspect a nontarget animal is present. Fumigate only active ground squirrel burrows.

Toxic Baits

Rodenticides, anti-coagulants and other poisons provide the most economical method for controlling large populations of ground squirrels; however, they can only be used by a licensed pest control operator. Ground squirrels are not normally active during the cold winter months, these chemicals are ineffective at this time of year. These are poisons which are potentially harmful to people, pets, and other wildlife and therefore should be handled with utmost care. Consequently, we do not recommend poisons for most situations.

Exclusion

Exclusion is impractical for large areas, but in small areas fencing may be effective. Ground squirrels can be excluded from gardens, flower beds, individual trees, or ornamentals with fences made of either sheet metal or ¼ to ½ inch hardware cloth. The fence should be at least 18 inches high, buried 18 to 20 inches deep and should completely surround the area to be protected. Because of the cost and time to construct this type of barrier it is expensive and practical only for small areas. To prevent burrowing beneath an existing fence or deck, attach a 3-foot wide heavy gauge wire mesh screen to the bottom of the fence so it extends >24 inches outward. Secure the screen to the ground with garden staples and backfill over the mesh with rock mulch.

Shooting

Shooting squirrels with a .22 rifle can provide some control, but it is very time consuming. Shooting is recommended only when you can do it safely and you are in a rural location where squirrel numbers are very low. There are no effective "frightening" devices or repellents that will cause ground squirrels to leave their burrows or avoid an area or crop.

Check with your local game warden for more information regarding these areas, and always check local ordinances before using firearms.

Natural Control

Habitat Modification

Generally ground squirrels are in open areas, although they sometimes use available cover. Remove brush piles and debris to make an area less desirable. This also aids in detecting squirrels and their burrows and improves access during control operations.

Ground squirrels can reinvade a site by moving into vacant burrows. Destroy old burrows by deep ripping them to a depth of at least 20 inches, using a tractor and ripping bar(s). Simply filling in the burrows with soil does not prevent reinvasion, as ground squirrels easily find and reopen old burrows.

Habitat manipulation will sometimes discourage ground squirrel activity. Thirteen-lined ground squirrels prefer areas with short grass. Therefore, control can be achieved by allowing the grass to grow into dense stands, which changes the habitat, or by cultivating infested areas, which destroys the burrows.

Many predators, including hawks, eagles, rattlesnakes, and coyotes, eat ground squirrels. In most cases, predators aren't able to keep ground squirrel populations below the level at which they become pests for the home gardener. Dogs might prevent squirrels from entering small areas, but they can't control established squirrel populations.

Cultural Methods

- Tall grass
- Flood irrigation
- Frequent crop rotation
- Tillage

- Eliminate old holes
- Coordinate with neighbors

Follow-up

For those who live next to wildlands or other areas where squirrels are common, an ongoing control program may be necessary, since squirrels will reinvade over time. Once you have controlled ground squirrels, periodically monitor the area for reinfestation. Check for new burrows, and start control actions as soon as you notice new arrivals. It is easier and less expensive to control a small population.

For Further Information

Controlling Ground Squirrel Damage. 1998. Texas Wildlife Damage Management Service. San Antonio, TX.

Franklin, Richardson, Columbian, Washington, and Townsend Ground Squirrels. 1994. Askham, Leonard R., *The Handbook: Prevention and Control of Wildlife Damage*. Paper 25.

Ground Squirrels. 1982. J.A. Chapman and G.A. Feldhamer (eds.), *Wild Mammals of North America*. Baltimore: The Johns Hopkins University Press.

Prevention and Control of Wildlife Damage. 1994. Cooperative Extension Division. Institute of Agriculture and Natural Resources. University of Nebraska, Lincoln, NE.

Wild Neighbors The Humane Approach to Living with Wildlife. 1997. John Hadidian, Guy Hodge and John Grandy, eds. The Humane Society of the United States. Washington, D.C.