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## Managing Wyoming (Richardson's) ground squirrels in Colorado

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### Quick Facts

The Wyoming ground squirrel is one of six species of ground squirrels found in Colorado.

Wyoming ground squirrels compete with livestock for forage and can destroy food crops.

Wyoming ground squirrel burrowing can damage hay fields, grasslands, golf courses and lawns.

Damage by Wyoming ground squirrels can be reduced by shooting, trapping, poison grain baits, and fumigation.

The Wyoming ground squirrel is one of six species of ground squirrel found in Colorado. Commonly called "Richardson's ground squirrel", the Wyoming ground squirrel averages 10 to 15 inches in length and weighs 9 to 14 ounces as an adult. Its fur is generally a brownish smoke-gray, with a dappled pattern of cinnamon-buff. The underside of the tail is buff.

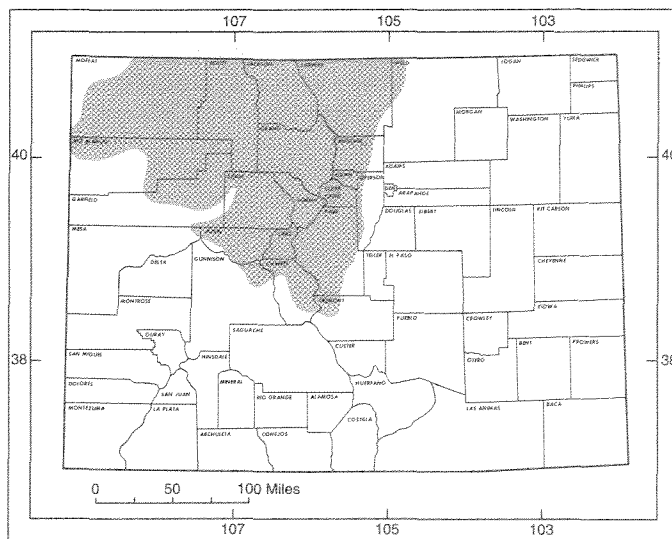
Wyoming ground squirrels are found in Colorado, southern Wyoming, western Nebraska and Utah. The species occupies areas from 5,000 feet to above timberline in the northcentral and northwestern sections of Colorado. Its preferred habitat is open sagebrush, grasslands, and subalpine meadows.

### Food Habits and Biology

Wyoming ground squirrels prefer green foliage, such as grasses, but also eat forbs and shrubs. When green vegetation becomes scarce, the squirrels eat dry grasses and seeds. They also eat insects including grasshoppers, crickets, and caterpillars, and scavenge on eggs from ground nesting birds.

Wyoming ground squirrels construct and live in underground burrows. They also use burrows of mammals such as prairie dogs and gophers. Where

### Approximate WGS Distribution in Colorado



large populations of squirrels live, extensive burrows may perforate the soil. Wyoming ground squirrel burrows can be identified by examining the area downslope from the entrance to the burrow. If a substantial pile of debris covers the area, the burrow belongs to a Wyoming ground squirrel. Squirrels stay in their burrows at night and during the warmest part of summer days. The burrow is the center of a ground squirrel's activity.

The squirrels enter their burrows in late July or early August and hibernate underground until the following March or April. Males usually come above ground one to two weeks before the females. Breeding takes place one to four days after emergence from hibernation. The young are born after a four to five-week gestation period with two to 10 young per litter. Only one litter is produced each year. The young are weaned at five weeks and are above ground foraging by June. Density of Wyoming ground squirrel populations can range from two ground squirrels per acre before young are born in the spring, to 20 or more

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animals per acre in early June when juveniles and adults are active.

Wyoming ground squirrel predators include bullsnakes, coyotes, foxes, badgers, weasels and hawks.

## Economic Damage

High concentrations of Wyoming ground squirrels can pose a serious pest problem. They compete with livestock for forage and can destroy food crops. Ground squirrels are hosts for fleas and because of this may act as carriers for bubonic plague. The mounds of dirt that squirrels excavate to build burrows in hay fields can damage haying equipment and take fields out of production. Burrowing activity also can damage to grasslands, golf courses and lawns.

## Control Methods

Several alternatives are available for Wyoming ground squirrel control. Landowners may conduct control methods themselves, hire a commercial firm, or, in some cases, get assistance from the Colorado Department of Agriculture.

Small, isolated colonies of Wyoming ground squirrels can be effectively controlled by **shooting**. Shooting lowers the population by removing individuals and disrupting their life cycle. However, if there are other colonies of ground squirrels nearby, individuals from those populations will migrate into the area where squirrels are being removed. For effective control of problem ground squirrels, a population must be kept under constant shooting pressure.

For small populations, **wire-mesh box traps** can be set anywhere that squirrels frequent. Place traps on level ground within a few feet of burrows or other high activity areas. Bait for several days with the door wired open to get squirrels accustomed to visiting the trap and unafraid of it. Wooden snap-type rat traps also can be used to remove Wyoming ground squirrels. Bait the traps with rolled oats, peanut butter, fruit, apples, or grain depending on what works best in your area and time of year. If corn is used as bait, it should be cracked.

**Poison grain bait** is the most practical method for controlling large numbers of Wyoming ground squirrels. Baiting is most effective at two points during the Wyoming ground squirrels' annual cycle: either early in spring, or in late June to early July.

In a year of average rainfall, begin poison grain control early in the spring, about one to two weeks after squirrels emerge from their burrows. Continue for one month or until vegetation turns green. Early control is enhanced by cold weather and minimal vegetative growth that makes bait more desirable to ground squirrels. As soon as green vegetation becomes available, bait is less accepted. To achieve successful control in early spring, the entire ground squirrel population must be active when bait is applied. If a portion of the population is still hibernating underground, baiting will not be effective.

Since females emerge one to two weeks after males, baiting should not start at the first sign of activity. Baiting also will not be effective late in the gestation period or shortly after the young are born because females are rarely above ground at these times. The activity level of the population can be easily checked by trapping or shooting at least 10 animals and checking the ratio of males to females. A 1-to-1 ratio usually means that females are active and baiting is appropriate.

Baiting in mid-summer is common in Colorado. Bait after green vegetation is dry and dormant (some time in June or July), but before squirrels disappear into their burrows to hibernate in late July to early August. Bait acceptance is high in June and July because Wyoming ground squirrels are actively eating to build fat reserves for winter. In a very dry spring, control can continue from April until July because of the scarcity of green vegetation.

Two percent zinc phosphide is the only legal grain bait for control of Wyoming ground squirrels in Colorado. Bell Laboratories' ZP Rodent Bait AG, Chempar's Ridall-Zinc, and Hopkins Zinc Phosphide Bait are 2 percent zinc phosphide baits labeled for use on Wyoming ground squirrels in Colorado. Zinc phosphide baits are labeled for use on rangelands, non-crop areas such as lawns, ornamentals, golf courses, parks, and nurseries, and non-crop right-of-ways.

Prebaiting with untreated steam-rolled oats, barley or cracked corn (depending on bait used) two to three days before baiting improves bait acceptance. On rangelands, apply prebait and bait by hand in a 6-inch bait spot near each active burrow. Place no more than 1 teaspoon (4 grams) of bait per spot. Bait should not be placed in the burrows because squirrels forage above ground and are wary of any food found in the burrow. Bait should only be placed after all or most of the prebait is eaten, and only in areas where prebait is consumed.

In non-crop areas, apply prebait and bait by hand near each active burrow or runway. Place bait, no more than 1 teaspoon (4 grams) per burrow, on the grass and allows it to fall to the ground. Avoid placing treated bait in piles.

Two percent zinc phosphide manufactured by Chempar and Hopkins can be broadcast baited on non-crop rights-of-way. Prebait with rolled oats, barley, or cracked corn at a rate of 4 or 6 pounds per acre two to four days prior to baiting. Broadcast bait in 15 to 20 foot swaths (this varies depending on the bait being used) using hand or ground driven equipment. Do not broadcast near homes, water or on roads.

Zinc phosphide is a slow-acting toxicant that can be absorbed in small amounts through human skin. Zinc phosphide baits are classified as restricted use pesticides. This classification means that landowners must obtain private certification from the Environmental Protection Agency before they can purchase or use these products. Certification information can be obtained from your county Cooperative Extension office.

Each of the three zinc phosphide baits approved in Colorado has different directions for application. Follow label directions carefully. Bell Laboratories ZP Rodent Bait AG and Hopkins Zinc Phosphide Bait are approved for use from July through December. Chempar's Ridall Zinc is recommended for use from April through June.

Apply poison bait only once per year. Surviving squirrels from the first treatment sometimes become ill after eating bait. Consequently, these animals will become bait shy and further treatments is unsuccessful.

Use of poison baits applied according to label directions usually results in an 80 percent to 90 percent reduction in Wyoming ground squirrel numbers. Poor results after baiting usually are due to improperly placed bait, failure to prebait, presence of green vegetation, or inactivity of a portion of the ground squirrel population.

Diphacinone (Ramik Green), strychnine, and 1080 grain baits are no longer legal for use on Wyoming ground squirrels in Colorado.

**Fumigants** are used when additional control is required. Aluminum phosphide and gas cartridges are two fumigants registered for use in Colorado. Trade names for aluminum phosphide include: Phostoxin, Rotox, Gastoxin, and Fumitoxin. Aluminum phosphide is classified as a restricted use pesticide and gas cartridges are classified for general use. Aluminum phosphide emits a poisonous gas (hydrogen phosphide), whereas gas cartridges produce a suffocating gas primarily composed of carbon monoxide. Fumigants are most effective when used in moist soils of early spring.

Aluminum phosphide is classified as a flammable solid. Transportation of aluminum phosphide is governed by the U.S. Department of Transportation rules and regulations. These regulations require: individuals to place placards on their vehicle, carry shipping papers, keep the aluminum phosphide in the original canister and box, follow designated routes, keep a log book if transporting aluminum phosphide over 100 miles, carry a fire extinguisher, pass a Department of Transportation written exam and physical, have a vehicle safety inspection before or after the trip, have \$1,000,000 of insurance if

transporting aluminum phosphide in a vehicle greater than 10,000 pounds gross vehicle weight, and the driver must be over 21.

To use aluminum phosphide, insert one to four (usually one) tablets as far back into the burrow as possible. Then, insert a wadded newspaper and cover as noted before. The wadded newspaper, placed in the burrow after application of the aluminum phosphide tablets, prevents the fumigant from being covered and may delay ground squirrels from digging out before the tablets activate. Immediately plug the opening to the burrow with moist soil or a plug of sod placed grass-side down to form an air-tight seal. Do not cover or smother the fumigant. Aluminum phosphide appears to provide the best control when soil temperatures are above 60 F.

To use the gas cartridge, punch at least five or six holes in one end with a nail or ice pick. Insert the sharp point part way and rotate it to loosen the contents so the cartridge will burn more rapidly. Insert and light the fuse. Once the fuse is burning well, gently slide the cartridge as far back into the burrow opening as possible. Immediately plug the opening with moist soil or a plug of sod placed grass-side down to form an air-tight seal. Do not cover or smother the cartridge. As a general rule, gas cartridges do not give satisfactory control if the soil is dry.

The hydrogen phosphide gas produced by aluminum phosphide tablets is toxic to all forms of animal life. Exposure through inhalation produces symptoms such as a pressing sensation in the chest, dizziness, nausea, vomiting and a rapid onset of stupor. Affected people should be exposed to fresh air and receive immediate medical attention.

## Source of Supplies

Rodenticides for controlling Wyoming ground squirrels are available through commercial vendors in Denver, a few farm supply stores outside Denver, or the Colorado Department of Agriculture (303) 239-4157. Traps can be purchased or ordered at hardware stores. Your county Colorado State University Cooperative Extension Office may have a list of suppliers.