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## G02-1476 Prairie Dogs and Their Control

Scott E. Hygnstrom

*University of Nebraska - Lincoln*, shygnstrom1@unl.edu

Dallas Virchow

*University of Nebraska - Lincoln*

John Hobbs

*USDA-APHIS-Wildlife Services-Nebraska*

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## Prairie Dogs and Their Control

Scott Hygnstrom, Extension Wildlife Damage Specialist; Dallas Virchow, Extension Project Coordinator, Wildlife Damage; John Hobbs, Assistant Director, USDA-APHIS-Wildlife Services-Nebraska

This NebGuide provides information on the life history and legal status of black-tailed prairie dogs and prevention and control of the damage they can cause.

Black-tailed prairie dogs (*Figure 1*) are stocky, burrowing rodents that are members of the squirrel family. They are the only species of prairie dog native to Nebraska and they live across the western three-fourths of the state. Prairie dogs live in colonies called “dog towns.” Prairie dogs are interesting creatures to watch and are an important part of the prairie environment. They cause problems, however, when they conflict with livestock ranching and other land uses, or cause a threat to human health and safety.

Black-tailed prairie dogs have tawny fur, large eyes, short legs, inconspicuous ears and a characteristic black-tipped tail. Adults weigh 2 to 3 pounds and are 10 to 12 inches long without the tail. Prairie dogs live in burrows that are usually about 6 to 9 feet deep and 20 feet long. Nest chambers are located off the main tunnels. Most burrows have one or two entrances. One of the openings usually is mounded higher than the others to serve as a sentinel post and to create air currents that ventilate the burrow system (*Figure 2*). Prairie dog towns usually contain 30 to 75 burrows per acre and numbers of prairie dogs vary from one to 50 or more per acre depending on location, food availability, and time of year. Prairie dog towns in Nebraska range from one to several hundred acres and may contain from a few to thousands of individuals.

Prairie dogs inhabit most soil types but are less likely to occur in extreme sandy or clay soils or in slopes greater than 10 percent. Prairie dogs do not thrive in eastern tallgrass prairie unless it has been heavily grazed. Colonies in the more western mixed and short-grass prairie usually begin and remain

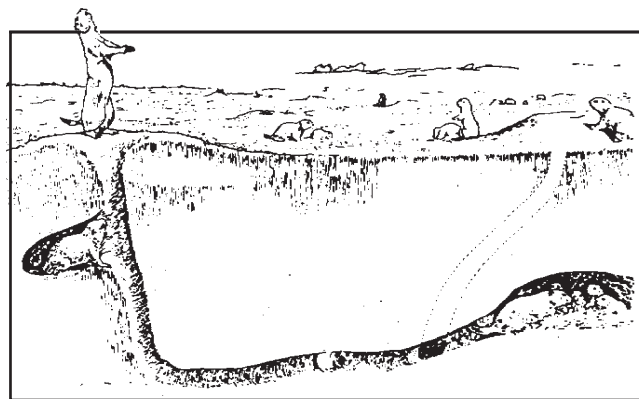


Figure 2. Prairie dog burrow showing raised mounds, tunnels and nest areas.

near where concentrated livestock grazing occurs.

Prairie dog towns are made up of social groups called “coterie,” that typically contain one or two adult males, up to six adult females and several yearlings and juveniles. Almost all mating occurs among unrelated individuals within a coterie. Black-tailed prairie dogs mature in one year, but most don’t breed until they are over 1 1/2 years old. One breeding season occurs per year in February and March, and litters of three to six pups are born in March or April. The pups first emerge from their burrows at about six weeks of age during May, just before weaning.

Males usually leave the coterie as yearlings in the early summer of the following year. Emigration to new or different colonies may also occur by yearlings in the summer or by other members at any time of the year. Prairie dogs often travel several miles to establish new colonies or burrows at the edges of other existing colonies. Prairie dogs readily adapt to areas very close to human or livestock activities. They are active during the day and remain somewhat active during the winter.

Prairie dogs are opportunistic feeders, eating many different kinds of grasses, sedges, and broad-leaved plants. They switch their diet to include more seeds and roots during fall and winter. Prairie dogs have the ability to go without food for long periods of time and fulfill their water needs entirely through plants in their diet.

Prairie dogs use several forms of communication including a “kiss” of recognition, where two of them touch front teeth. Either amicable grooming or chasing and fighting may ensue, depending on whether the animals are competing for mates or nest sites, or protecting their young. Prairie dogs often sit upright at the openings of their burrows, with heads held high to watch and listen for threats of danger from predators. If spotted, a series of barks by the sentinels can send the occupants

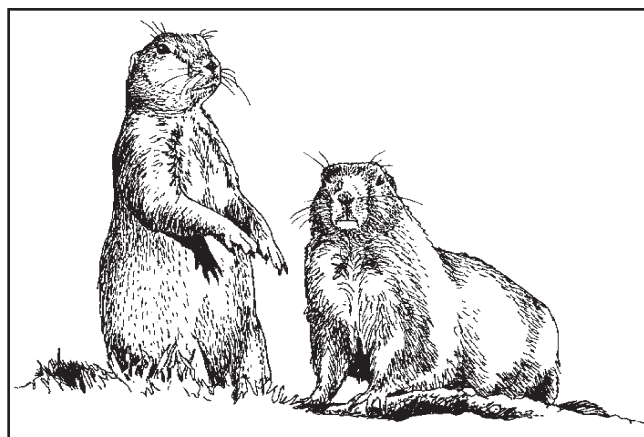


Figure 1. Black-tailed prairie dogs, *Cynomys ludovicianus*.

of the whole dog town underground. Ironically, adult prairie dogs occasionally kill the offspring of other prairie dogs in their nest burrows. Cooperativeness in communication of danger may offset the many disadvantages of competing for food, mates, and nest sites, and infanticide that occurs within a densely populated colonies of prairie dogs.

### Ecological Importance

Immense colonies of prairie dogs were present on the Great Plains before settlement. Although significantly reduced, these colonies still create unique patches of habitat in the extensive grasslands. These patches are used by an abundance of wild creatures, such as, burrowing owls, ferruginous hawks, mountain plovers, and horned larks. Over 200 species of wildlife have been associated with prairie dog towns. Prairie dogs are prey for a variety of predators such as badgers, coyotes, foxes, weasels, hawks, and eagles.

One special animal that is dependent on prairie dogs is the black-footed ferret (*Figure 3*). It is a member of the weasel family, lives in prairie dog towns, and feeds almost exclusively on prairie dogs. Because of habitat loss (prairie dog towns), black-footed ferrets are very rare and are included on the federal endangered species list. Before beginning any type of control, inspect prairie dog towns for signs of black-footed ferrets. The U.S. Fish and Wildlife Service (308-382-6468) can provide information on conducting surveys for black-footed ferrets. If a ferret or ferret sign are observed, contact your local Extension office, a Nebraska Game and Parks Commission conservation officer, or the U.S. Fish and Wildlife Service. Federal law prohibits the willfull killing of a black-footed ferret or poisoning prairie dog towns where ferrets are present.



**Figure 3.** Black-footed ferrets depend primarily on prairie dogs for food and shelter.

### Economic Importance

Surveys indicate that black-tailed prairie dogs have occupied about 30,000 to 80,000 acres of rangeland in Nebraska during the past two decades. Most of this land is privately-owned. The economic impact of prairie dogs on rangeland is difficult to determine. From a livestock managers perspective, prairie dogs can severely reduce annual production of forage and, if present for many years, can reduce the capacity of the land to produce desired grass species. Prairie dogs typically clip and/or graze plants to less than 2 inches high, which is shorter than most livestock will graze. Prairie dogs also graze year-round, whereas most livestock are rotated among pastures. Most grass species lose vigor under continuous grazing pressure. Impacts of prairie dogs on rangeland depends on the range site, range condition, historic grazing use, and demographics and distribution of the prairie dog colony. From 3 to

80 percent of the total annual forage production may be lost to prairie dogs where they occur. On the other hand, reduced forage availability may be partially compensated for by the improved nutrition of newly growing grasses and forbs.

Land uses other than livestock grazing may be affected by prairie dog colonies. Some colonies exist near new home sites or subdivisions, where wildlife disease or animals common to prairie dog towns, such as rattlesnakes and black widow spiders may threaten human health and safety. Other colonies may exist near row crops, where prairie dogs consume young, growing corn or soybeans. Still others, may exist near roadways or water impoundments where erosion or structural integrity may be an issue.

Conversely, colonies may be seen as favorable to wildlife viewing, photography, shooting, and associated revenue generation. Very large and remote colonies of black-tailed prairie dogs enhance wildlife diversity and may be viewed as potential reintroduction locations for the endangered black-footed ferret.

### Legal Status of the Black-tailed Prairie Dog

Recent petitions to the US Fish and Wildlife Service to list the black-tailed prairie dog as a federally “threatened” species resulted in the designation of the species as “warranted but precluded” in January 2000. In Nebraska, the black-tailed prairie dog is currently an unprotected nongame species that can be taken in any manner without restrictions on shooting or control.

### Prevention and Control of Damage

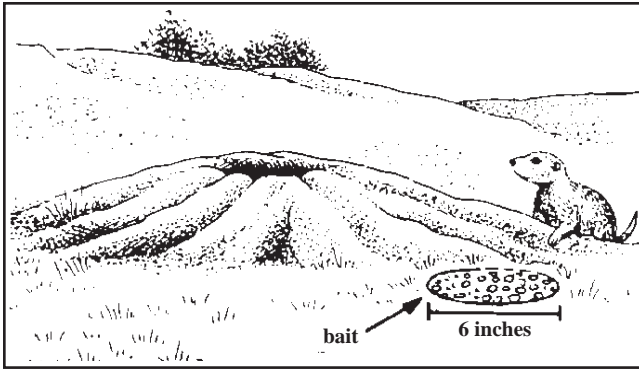
Available methods for direct control of prairie dogs include toxic baits, burrow fumigation, and shooting. Elimination of prairie dogs alone may not result in improved rangeland. In most situations, range improvement is a gradual process that requires a combination of prairie dog removal and proper grazing management.

**Toxic Bait.** Baits that are currently registered for controlling prairie dogs are restricted use pesticides and are available only to certified pesticide applicators. They are the most economical methods for controlling large numbers of prairie dogs. Zinc phosphide-treated (2 percent) grain bait and pellet formulations are the only toxic baits presently registered and legal for use to control prairie dogs. The use of zinc phosphide for controlling prairie dogs is effective and relatively safe to other wildlife when used properly. The baits are available through various retail suppliers and the U.S. Department of Agriculture, Animal and Plant Health Inspection Service, Wildlife Services (USDA-APHIS-WS), Lincoln, Neb. (402-434-2340). No other grain or pelleted toxic bait is registered for use on prairie dogs, even though some sales representatives have suggested so. Before applying, read pesticide labels carefully to ensure that prairie dogs are listed as a target species.

Toxic baits are most effective when prairie dogs have no fresh green feed available. Therefore, bait application should normally be done in late summer or fall. It is only legal to apply zinc phosphide baits from July through February.

**Prebaiting.** Before applying toxic bait, “pre-bait” burrows with clean, fresh rolled or crimped oats. Prebaiting will accustom prairie dogs to eating grain and will make the toxic bait considerably more effective when it is applied. Drop a heaping teaspoon of oats on the edge of each prairie dog mound or in an adjacent feeding area. The bait should scatter, forming





**Figure 4.** Toxic bait should be scattered over a six-inch circle at each burrow entrance.

about a six-inch circle (Figure 4). Do not place bait in piles or inside burrows, on top of mounds, in piles of droppings, or in the vegetation away from the mound. Following this advice increases the likelihood of prairie dogs taking the bait, and decreases hazards to other animals.

About one-third pound of untreated oats will be needed per acre to prebait an established prairie dog colony. Do not apply toxic bait until after the prebait has been readily eaten, which should take only one or two days. Another application of untreated oats may be necessary on a different occasion if prairie dogs do not accept the prebait immediately.

**Bait Application.** Apply zinc phosphide-treated bait in the same way the untreated prebait was applied. Apply about one heaping teaspoon (4 grams) of grain bait per burrow. Excess bait will not be eaten by prairie dogs and can present a hazard to non-target wildlife or livestock. Approximately one-third pound of zinc phosphide bait will be needed per acre.

Follow all label directions and observe all warnings regarding the handling of bait. Wear cloth gloves when handling zinc phosphide-treated baits. Cattle can stay on pastures that are treated with zinc phosphide baits, but we recommend the removal of all livestock, especially horses, sheep and goats from pastures before toxic baits are applied. Baits should be applied when clear, calm weather is expected for the following five-day period. Bait that is dampened by rain is poorly accepted and the toxicity may be reduced. Avoid baiting on windy days since wind may reduce prairie dog activity and also scatter baits.

Inspect treated dog towns two to three days after applying toxic baits. Almost all prairie dogs that succumb to the toxic effects of zinc phosphide die below ground. Bury any dead prairie dogs that die above ground. They may still contain toxic baits within their stomachs and pose a hazard to other animals that may consume the carcasses. Look for evidence of prairie dog activity and plug burrows with soil to aid in identifying burrows that remain occupied. Active burrows will be re-opened by surviving prairie dogs. Prairie dogs that survive the initial bait treatment are likely to be "bait shy" and much less likely to succumb to a second treatment of zinc phosphide bait. Wait at least one year before applying toxic baits to the same prairie dog town. Removal of the survivors by fumigation or shooting reduces the need to conduct yearly treatments with toxic baits.

**Fumigation.** Fumigants, including aluminum phosphide tablets and gas cartridges, can provide satisfactory control of prairie dogs. Fumigation, however, is costly and labor intensive so it is not recommended as the primary means of control for large numbers of prairie dogs. It is also more hazardous to desirable wildlife species than are toxic baits. Fumigation is

best used as a follow-up to toxic bait treatment. Read the pesticide product labels carefully and comply with all directions given. Seek assistance from your local Extension educator or from the USDA-APHIS-WS if needed.

Do not use fumigants in burrows where nontarget species are thought to be present. Black-footed ferrets, burrowing owls, cottontail rabbits and other desirable wildlife may inhabit prairie dog burrows and can be killed by fumigation. Ferret surveys can be conducted during the day or at night with spotlights. Check with the U.S. Fish and Wildlife Service for details on conducting surveys. To protect burrowing owls that nest and roost in prairie dog burrows, avoid applying fumigants between April and October. Be familiar with the signs of nest locations, especially whitewash and finely shredded cow manure at burrow entrances.

**Aluminum phosphide-** Aluminum phosphide is a restricted use pesticide that is available only to certified pesticide applicators. Aluminum phosphide tablets should be rolled deep down into prairie dog burrows, where they will react with moisture in the air and release phosphine gas (Figure 5). Plug the burrow entrance with soil to contain the fumigant. You may have to place crumpled newspaper or other material in the burrow before plugging with soil, to prevent loose soil from smothering the tablets. Fumigants are available through various retail suppliers and from the USDA-APHIS-WS. Aluminum phosphide activates more quickly with high soil moisture and temperature, so they are most effective when used in early spring as a follow-up to toxic baits. Wear cotton gloves and long sleeves when applying aluminum phosphide. Avoid breathing the fumes. Keep the container closed as much as possible and work into the wind. For additional information, refer to NebGuide G02-1477, "*Fumigation of Burrowing Rodents With Aluminum Phosphide or Gas Cartridges.*"

**Gas cartridges-** Gas cartridges are another type of fumigant that burn and produce carbon monoxide, carbon dioxide and other gases when ignited. To use a gas cartridge, stir the contents, insert a fuse, light it, and place the cartridge deep into a burrow. Burrows should be plugged in the same way as with aluminum phosphide tablets. Minimize contact after the cartridge has ignited to avoid severe burns.

**Shooting.** Shooting is a very selective control method that causes no hazard to nontarget wildlife when done responsibly. Prairie dog populations can be reduced but generally not eliminated through shooting alone. The shooting of prairie dogs is most effective in late winter through early summer because it can disrupt their breeding and pup rearing activi-



**Figure 5.** Aluminum phosphide applied to the burrow of a prairie dog.

ties. Landowners can encourage shooters on their land. Local Extension offices may know of landowners who allow the shooting of prairie dogs. Also, the Nebraska Game and Parks Commission (402-464-0641) can provide a list of shooters looking for areas with prairie dogs.

If you plan to control prairie dogs with toxic baits, it is recommended you prohibit shooting one to two months before bait application. Without shooting, prairie dogs will return to their natural activities and bait acceptance will increase.

**Evaluating Effectiveness of Control Methods.** To estimate the effectiveness of your control methods, plug a number of treated burrows and mark them with flagging. After 24 hours, count the number of burrows that have been reopened. The behavior of prairie dogs can affect the accuracy of estimates. Some burrows that are treated may not be occupied, thus exaggerating the effect. On the other hand, some prairie dogs may emerge from burrows and dig out flagged burrows, thus reducing the effect.

**Grazing Management.** Prairie dogs can see approaching predators more easily when the vegetation in and around their colonies is short. Prairie dogs are not as abundant in areas dominated by tall vegetation. Therefore, management of livestock grazing can be useful in preventing colonization of an area or reducing recolonization by prairie dogs.

**Stocking Rate.** Overgrazed pastures are often favorable sites for the establishment, continuance, or expansion of prairie dog towns. Stocking rates should fit the range site, recent weather patterns, and other local site characteristics. Managers should include prairie dogs in the calculations for stocking rates or they may contribute to the overgrazed condition. Consumption rates of prairie dogs during summer range from about 30 to 100 grams of green forage per prairie dog per day.

**Grazing Distribution.** Prairie dogs often establish towns in areas where livestock congregate, such as at wells and mineral licks. Grazing pressure by livestock can be distributed more evenly by placing salt and minerals on areas that are less used by livestock. Prescribed burning in spring can also be used to enhance regrowth and redistribute grazing on areas that are less used by livestock.

**Grazing Strategies.** In some situations, the vigor and productivity of plants will improve if livestock grazing is deferred for part or all of the growing season. Improved grazing management includes practices such as intensive rotational grazing and three- or four-pasture grazing systems instead of season-long continuous grazing. Livestock can be excluded from vacant prairie dog towns with temporary fencing to help vegetation regain vigor and productivity.

Managers that choose to graze livestock on prairie dog towns should do so during early spring through early summer when plant nutrients are relatively higher on towns than in other areas. Such a strategy should be examined carefully each year to ensure that the seasonal needs for nutrients by both the range plants and livestock are in balance.

Any livestock grazing strategy should provide for the health and productivity of the mid- to tall-grass species where they are a part of the natural vegetation. If there are no remnants of these species in a pasture, or if moisture is too limited for the vegetation to respond to a change of livestock grazing, there may be little benefit to grazing strategies alone.

**Other Techniques.** Several other approaches have been used to control prairie dogs—most of which are expensive, ineffective, illegal, or hazardous. Prairie dogs can be captured with live-traps and either flooded or vacuumed out of their burrows, but the costs of such activities are prohibitive on anything but small towns. Barriers that inhibit the view of prairie dogs have been constructed out of snowfence, ditch liner, and winrowed trees. Again, these practices are expensive and their effectiveness is variable. Prairie dogs have been subjected to vehicle exhaust, anhydrous ammonia, and propane explosions with minimal effectiveness and great hazard to the applicator. Burrows can be leveled with a disk to prevent reuse, but cultivation will not exclude prairie dogs from an area. Conventional use of registered toxic baits, fumigants, and proper grazing management are the safest and most cost-effective approaches to controlling prairie dogs.

### Integrated Pest Management

As in most wildlife damage situations, a combination of methods may be more effective than relying on any one method for prairie dog control. Proper livestock grazing rates, rotation of livestock, and deferred or intensive grazing can be used along with proper timing and use of toxic baits, fumigants and shooting. Remember that prairie dogs are beneficial in many respects; consider their importance to the environment and the wildlife that are associated with them.

### Assistance

The University of Nebraska–Lincoln Extension provides a wide range of information on prevention and control of wildlife damage. Landowners can receive information on controlling prairie dogs from their local Extension office.

In addition, the USDA-APHIS-WS has a program that offers materials and on-site assistance for landowners who request help in controlling prairie dogs. Eligibility for assistance may vary. Contact the USDA-APHIS-WS (402-434-2340) for details.

Nebraska Natural Resources Districts (NRDs) may also provide materials or share costs for the application of toxic baits and fumigation to control prairie dogs. Check your local telephone directory for the NRD office nearest you.

Finally, there are several private pest control operators throughout Nebraska and surrounding states that can be hired to control prairie dogs. Check your local yellow pages or contact your local Extension office for information.

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