

8 Page Complimentary Version

Full Priced Version Is Available At

www.gopherout.com

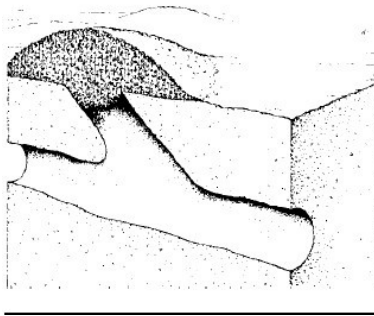
OVERVIEW



Pocket gophers, for convenience usually just called gophers, (*Thomomys* species), are burrowing rodents that get their name from the fur-lined, external cheek pouches, or pockets, they use for carrying food and nesting materials. Pocket gophers are well equipped for digging and tunneling due to their powerfully built forequarters, large-clawed front paws, fine short fur that doesn't cake in wet soils, small eyes and ears, and highly sensitive whiskers that help with moving about in the dark. Gophers can close their mouth behind their four large incisor teeth to keep dirt out of their mouths when using their teeth for digging.

IDENTIFICATION

34 species of pocket gophers are found in the western hemisphere. Of these, 13 reside in the United States. U.S. species are only found in the Midwest and Western states, with the exception of the southeastern pocket gopher, which can be found in parts of Alabama, Florida and Georgia.



Depending on the species, gophers are 6 to 10 inches long. For the most part, gophers remain underground in their system of tunnels and burrows, although you'll sometimes see them feeding at the edge of an open burrow, pushing dirt out of a burrow, or moving to a new area.



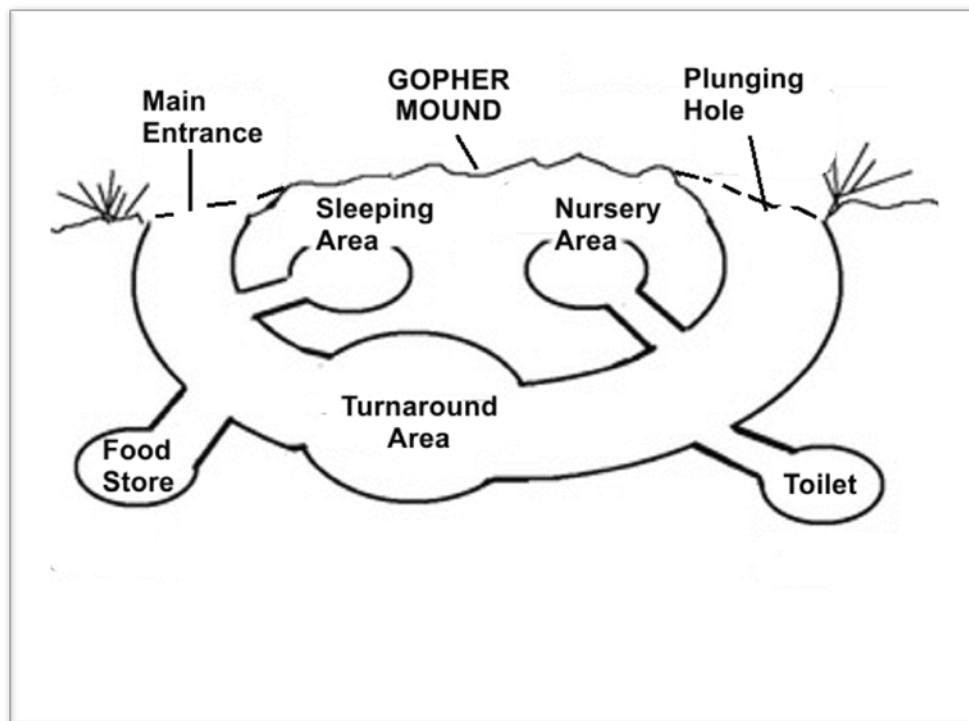
Mounds of fresh soil are the best sign of a gopher's presence. Gophers form mounds as they dig tunnels and push the loose dirt to the surface. Typically mounds are crescent or horseshoe shaped when viewed from above. The hole, which is off to one side of the mound, usually is plugged. Mole

mounds are sometimes mistaken for gopher mounds. Mole mounds, however, are more circular and have a plug in the middle that might not be distinct; in profile they are volcano-shaped. Unlike gophers, moles commonly burrow just beneath the surface, leaving a raised ridge to mark their path.

One gopher can create dozens of mounds in a month. In areas without irrigation, mound building is most pronounced during spring or fall when the soil is naturally moist and easy to dig. In irrigated areas such as lawns, flower beds, gardens, and golf courses, digging conditions usually are optimal year round, and mounds can appear at any time. In northern regions, gophers even create burrows in the snow, resulting in long, earthen cores on the surface when the snow melts.

BIOLOGY AND BEHAVIOR

Pocket gophers live in a burrow system that can cover an area that is anywhere from 200 to 2,000 square feet. The burrows are usually about 2 1/2 to 3 1/2 inches in diameter. Feeding burrows usually are 6 to 12 inches below ground, and the nest and food storage chamber can be as deep as 6 feet. Gophers seal the openings to the burrow system with earthen plugs. Short, sloping lateral tunnels connect the main burrow system to the surface; gophers create these while pushing dirt to the surface to construct the main tunnel.



Gophers don't hibernate and are active year-round, although you might not see any fresh mounding. They also can be active at all hours of the day.

Gophers usually live alone within their burrow system, except when females are caring for their young or during breeding season. Gopher densities can range from 10 or 20 per acre to as many as 200 or more per acre in irrigated alfalfa fields or in vineyards. Gophers reach sexual maturity at 1 year of age and can live up to 3 years. In non-irrigated areas, breeding usually occurs in late winter and early spring, in a 6 month gestation period resulting in 1 litter per year. In irrigated sites, gophers can produce up to 3 litters per year. Litters usually average 5 to 6 young "pups".

Pocket gophers are herbivorous and feed on a wide variety of vegetation but generally prefer herbaceous plants, shrubs, and trees. Gophers use their sense of smell to locate food. Most commonly they feed underground on roots and fleshy portions of plants they encounter while digging. However, they sometimes feed aboveground, venturing only a body length or so from their tunnel opening. Burrow openings used in this manner are called "feed holes." You can identify them by the absence of a dirt mound and by a circular band of clipped vegetation around the hole. Gophers also will pull entire plants into their tunnel from below. In snow-covered regions, gophers can feed on bark several feet up a tree by burrowing through the snow.

DAMAGE

Pocket gophers often invade yards and gardens, feeding on many garden crops, ornamental plants, vines, shrubs, and trees. A single gopher moving down a garden row can inflict considerable damage in a very short time. Gophers also gnaw and damage plastic water lines and lawn sprinkler systems. Their tunnels can divert and carry off irrigation water, which leads to soil erosion and flooding. Mounds on lawns interfere with mowing equipment and ruin the aesthetics of well-kept turf grass as found on golf courses.

LEGAL STATUS

Most states, including California, classify pocket gophers as "nongame mammals". This means if you are the owner or tenant of the premises and you find pocket gophers that are injuring growing crops or other property, including garden and landscape plants, you can control them at any time and in any legal manner. Check local codes regarding firearm use.

MANAGEMENT

The sooner you detect the gopher's presence and take control measures the better. The most common control methods for gophers in lawns, gardens, or small orchards include trapping, repelling, and/or using poison baits.

Locating Mounds



To use repellants (such as [GopherOut](#)) you must first locate the mound. Mounds of fresh soil are the best sign of a gopher's presence. Gophers form mounds as they dig tunnels and push the loose dirt to the surface. Typically mounds are crescent or horseshoe shaped when viewed from above. The hole, which is off to one side of the mound, usually is plugged. You can use

a small shovel or stick to open the plug in preparation for inserting the repellant solution.

Probing for Burrows

Successful trapping or baiting methods depend on accurately locating the gopher's main burrow so you can place the trap or bait. To locate the burrow, you need to use a gopher probe. Probes are commercially available, or you can construct one from a pipe and metal rod. Probes made from dowels or sticks work in soft soil but are difficult to use in hard or dry soils. An enlarged tip that is wider than the shaft of the probe is an important design feature that increases the ease of locating burrows.

To find burrows, first locate areas of recent gopher activity based on fresh mounds of dark, moist soil. Fresh mounds that are visible aboveground are the plugged openings of lateral tunnels. You can find the main burrow by probing about 8 to 12 inches from the plug side of the mound; it usually is located 6 to 12 inches deep. When the probe penetrates the gopher's burrow, there will be a sudden, noticeable drop of about 2 inches. You might have to probe repeatedly to locate the gopher's main burrow, but your skill will improve with experience. Sometimes the gopher might not revisit lateral tunnels, so placing traps or bait in them is not as successful as locating them in the main burrow.

Repellants



Repellants are usually a safe, inexpensive way to eliminate gophers (along with other similar rodents)

from any infested area. When investigating a specific repellent you need to be sure they do not contain any toxic or dangerous chemicals that may be harmful to children and/or animals as well as adults and plants or vegetation. Read the ingredients and look for all natural products and as few ingredients as possible in the listing. Check their advertising or web sites to see if they are listed as safe and/or non-toxic.

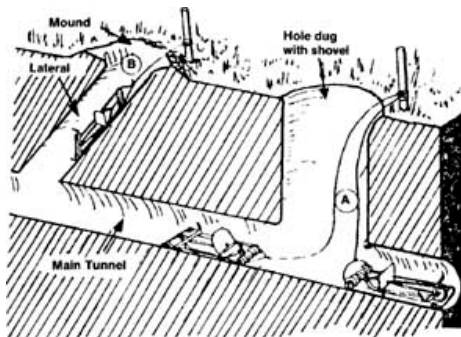
Most repellents consist of a liquid or powder substance that is mixed with water and poured, sprayed, or otherwise placed in or on the mound itself, rather than in a tunnel or burrow. They work by producing an odor or scent that the gopher finds offensive. The gopher will leave the immediate area and move quite a distance away to get as far from the smell as possible.

Trapping



Trapping is an inhumane, but effective method for controlling pocket gophers. Several types and brands of gopher traps are available. The most humane trap is a live-trap similar to standard traps that consist of a cage with a trip-wire door and a baited platform inside. When the gopher takes the bait the door slams behind it and the gopher is trapped, ready to be released somewhere else, but still alive. These traps can be set on the ground surface near the mound.

The most common type of gopher trap is a two-pronged, pincher trap which the gopher triggers when it pushes against a flat, vertical pan. Another popular type is the choker-style box trap. These damage or kill the gopher, and they must be placed within a tunnel or inside an underground burrow to be effective.



To set traps, locate the main tunnel with a probe, as described above. Use a shovel or garden trowel to open the tunnel wide enough to set traps in pairs **facing opposite directions**. Placing traps with their openings facing in opposite directions means you will be able to intercept a gopher coming from

either end of the burrow. The box trap is easier to use if you've never set gopher traps before, but setting it requires more surface excavation than if you are using the pincer-type traps, an important consideration in lawns and some gardens. However, box traps can be especially useful when the diameter of the gopher's main tunnel is smaller than 3 inches.

While it is not absolutely necessary to bait a gopher trap, doing so will produce better results. Lettuce, carrots, apples, alfalfa greens, or peanut butter are the most effective baits. Place the bait at the back of a box trap behind the wire trigger or behind the flat pan of a pincer-type trap. Wire your traps to stakes so you can easily retrieve them from the burrow. Be aware, if you do decide to use baits for your traps, other animals (like cats and dogs) may go after them and be badly injured, but probably not killed, unless your bait is poisonous.

Gophers do not like light in their tunnels or burrows, so after setting the traps, you can exclude light by covering the openings with upended pails, dirt clods, sod, canvas or landscape cloth, cardboard, or plywood. You can sift fine soil around the edges of these covers to ensure a light-tight seal.

Traps should be checked often, no longer than every 2 days. Reset or rebait as required. But if you have not trapped a gopher with 3 or 4 days, place the traps in a different location.

Using Toxic Baits

As dangerous as it might sound, using toxic baits is a very effective method of eliminating gophers. The key to an effective toxic baiting program is bait placement. Always place pocket gopher bait in the main underground tunnel, not the lateral tunnels. Following label directions, place the bait carefully in an opening you made in the tunnel wall. A funnel is useful for preventing spillage.

Toxic baits should be used only after careful consideration. They are very deadly and can be extremely dangerous to children, adults, and pets. Strychnine-treated grain is the most common type of bait used for pocket gopher control. This bait generally contains 0.5% strychnine and is lethal with a single feeding. Baits containing 2.0% zinc phosphide are also available. As with strychnine, these baits are lethal after a single feeding.

Multiple feeding anticoagulants are available as well. When using anticoagulant baits, you'll need to set out a large amount of bait—about 10 times the amount needed when using strychnine baits—so enough will be available for multiple feedings. Although generally less effective than

strychnine baits, anticoagulant baits are less toxic. As such, they are preferred in areas where children and pets might be present.

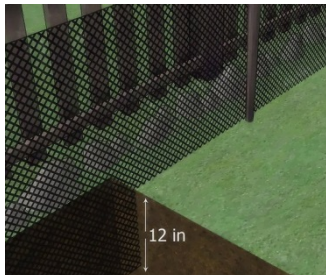
After placing the bait in the main tunnel, close the probe hole with sod, rocks, or some other material that excludes light while preventing dirt from falling on the bait. Several bait placements within a burrow system will increase success. Tamp down or clear existing mounds, so you can distinguish new activity. If new mounds appear more than 2 days after strychnine or zinc phosphide baiting or 7 to 10 days after using anticoagulant baits, you'll need to rebait or try trapping.

Fumigation



Fumigation with smoke or gas cartridges usually isn't effective, because gophers quickly seal off their burrow when they detect smoke or gas. The only effective gas is aluminum phosphide but it is a restricted-use material and Applicators must be certified to use this material, which can limit homeowner use. So if trapping, repelling, and baiting aren't effective, consider hiring a professional.

Exclusion



Underground fencing might be justified for valuable ornamental shrubs or landscape trees. To protect existing plantings, bury hardware cloth or 3/4-inch mesh poultry wire at least 2 feet deep with an additional 6 inches of mesh or wire bent at a 90-degree angle away from the planting. This will help keep gophers from digging around the fencing

boundary. Also extend the fencing at least 1 foot aboveground to deter gophers moving overland. This method is not perfect, however, because persistent gophers can burrow below the wire; also, the wire can restrict and damage root growth of trees.

You can protect small areas such as flower beds by complete underground screening of the bed's sides and bottoms. When constructing raised vegetable or flower beds, underlay the soil with wire to exclude gophers. To protect individual plants, install wire baskets, which you can make at home or buy commercially, at the same time you are putting the plants into the ground. If you use wire, use one that is light gauge and only for shrubs and trees that will need protection while young. Leave enough room to allow for the roots to grow. Galvanized wire provides the longest-lasting protection.

Six to 8 inches of coarse gravel 1 inch or more in diameter around underground sprinkler lines or utility cables also can deter gophers.

Natural Controls



Predators—including owls, snakes, cats, dogs, and coyotes—eat pocket gophers. Predators rarely remove every prey animal but instead move on to hunt at more profitable locations. In addition, gophers have defenses against predators. For example, they can escape snakes in their burrows by rapidly pushing up an earthen plug to block the snake's advance. Relying solely on natural predators might not control gophers to the desired level.

If you have cats or dogs that like to live outdoors you may have already solved your gopher control problem. They will love going after the varmints.

But, if natural predators are not solving your problem fast enough it may be wiser to take immediate effective action through repellants, trapping or baiting.

Other Control Methods

You sometimes can use water flooding to force them from their burrows, which will enable you to use a shovel or a dog or cat to destroy the rodent.

Although many devices designed to frighten pocket gophers are readily commercially available—including vibrating stakes, ultrasonic devices, and wind-powered pinwheels—gophers don't frighten easily, probably because of their repeated exposure to noise and vibrations from sprinklers, lawnmowers, vehicles, and people moving about. Another ineffective control method is placing chewing gum or laxatives in burrows in hopes of killing gophers. They don't work at all.

END

Purchase GopherOut repellant at:

www.gopherout.com