

GOPHERS AND MOLES IN THE GARDEN

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Upon examining your veggie garden you discover that some of the plants are wilted with the bottoms eaten off, or just a hole where the plants have been pulled under.

To help you identify whether you are dealing with a pocket gopher or a mole, you should examine the characteristics and habits of each.

THE POCKET GOPHER

The pocket gopher is a rodent. It feeds on roots, bulbs, grasses, seeds, and sometimes even tree bark, plastic irrigation pipe, and underground cables. Gopher tunnels can divert and carry off irrigation water and lead to soil erosion.



Gophers have large incisor teeth projecting outside the mouth, and pocket like, external, fur-lined pouches on either side of the mouth. They have relatively small eyes and ears and a good sense of smell for locating food.

THE MOLE

The mole is not a rodent. It is an *insectivore*, a small insect-

eating mammal, which feeds mainly on insects and earthworms. However, the Townsend's mole may eat roots and tubers.

The mole has short velvety fur, a slender snout, small needlelike teeth, no cheek pouches, poorly developed eyes, and ears that are not visible. It's limbs are short and spadelike.



DAMAGE

GOPHERS

Gophers usually burrow four to 12 inches below the soil surface and do not leave a ridge. The mounds are often in clusters and the soil is usually fine because the gophers dig and carry it to the surface instead of forcing it straight up.

Gopher mounds are relatively flat compared to mole mounds; they are horseshoe or crescent shaped, fanning out from the runway entrance, which is left plugged.

The gopher is intensely antisocial — usually one gopher per burrow system. Clawed forefeet and strong shoulders make them efficient diggers; in 24

hours, a gopher can dig 100 to 150 feet of three-inch diameter tunnel.

Near the surface, gophers dig long winding tunnels searching for food. Deeper down they burrow a main tunnel and separate chambers for sleeping, raising offspring, and storing food (see illustrations on page 3).

A young gopher's tunnel system may cover an area of only 200 square feet, while an old established system may take in up to 2,000 square feet.

MOLES

The mounds formed by moles are pushed up, volcano fashion, from a central hole. The soil may be in chunks. The single mounds often appear in a line over runways connecting them.

The surface feeding burrows appear as ridges which the mole pushes up by forcing, not digging, its way through the soil just below ground level. Moles rarely plug their holes. The burrows and ridges disfigure gardens, lawns, and landscaped areas.

Occasionally, a mole's presence is a signal of other problems, such as white grubs in the lawn. When this problem is treated the mole tends to feed elsewhere.

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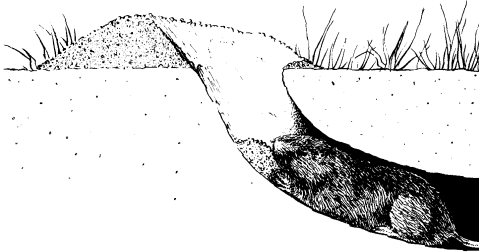
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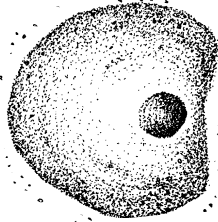
United States Department of Agriculture, University of California, Placer and Nevada Counties cooperating.

MOUND, TUNNEL AND BURROW CONFIGURATIONS FOR GOPHERS AND MOLES

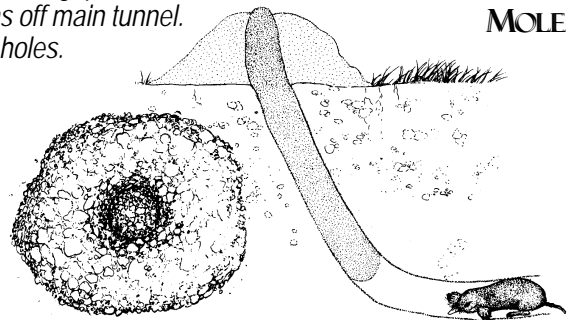
GOPHER



Fan-shaped mound of loose dirt distinguishes gopher hole from molehill. Mounds signify lateral runs off main tunnel. Unlike moles, gophers usually plug their holes.



MOLE



MANAGEMENT TECHNIQUES

GOPHERS

The pocket gopher can do a lot of damage, thus a successful control program depends on early detection and prompt action. Planting in underground baskets of one-half inch mesh fence or chicken wire will often protect your plants' roots without resorting to methods that kill the gophers.

Be sure to place the mesh deep enough to accommodate growth of root crops and bulbs, and leave at least three inches or more of mesh above the ground. Young gophers sometimes pop to the surface as they leave the chamber, thus the three-inch collar will protect plants somewhat at the surface level.

Trapping is probably the surest way to eliminate gophers. Trap only near fresh mounds. Set a pair of traps facing in opposite directions (see illustrations on page 3), in the deep, horizontal main tunnel rather than in the shallow feeder tunnels or lateral mound tunnels.

To find the main tunnel, push a curtain rod size probe (see to right) in a circular area around fresh mounds. When you hit a main runway, your probe will sink deeper into the ground.

Be sure to check traps daily. If you do not have a response within a day, the gopher is probably not in that tunnel. To prevent the gopher from dragging the trap further into the tunnel, anchor the trap with a wire or chain attached to a stake or a crosspiece.

Standard poisons are commercial grain or pellet-type baits laced with strychnine. Anticoagulant baits are sometimes available, but unlike strychnine require multiple feedings by the gopher. Deposit them in the main tunnel.

Strychnine is extremely poisonous to people, birds, fish, and animals. Handle it with great care. Do not get human scent on the bait, and place it where only the gopher is likely to get it. Watch that the gopher doesn't push it out of the tunnel and leave it exposed. Gophers normally die in their burrow.

Any strychnine-laced gophers found above ground should be immediately buried.

Gassing is rarely effective as the gopher usually detects the gas and escapes by plugging off part of its burrow. With the vast network of tunnel, flooding tends to be ineffective and wastes water.

There are many non lethal controls which suggest that their use will send the gopher elsewhere, but few work. Owls, cats, hawks, foxes, badgers, coyotes, weasels, snakes, and occasionally dogs eat gophers; nothing can reduce the gopher population enough to satisfy most gardeners.

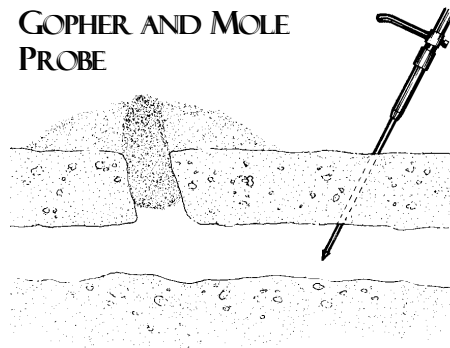
For more information on pocket gophers, see UC IPM Pest Notes publication, **Pocket Gophers**, number 7433.

MOLES

Since the mole's main diet is live earthworms and insects, poisoning with bait is rarely effective. Trapping is the recommended method of control.

Successful trapping requires persistent effort. Moles evade, spring, or heave out improperly set traps, so set them carefully and keep trying until experience leads to success.

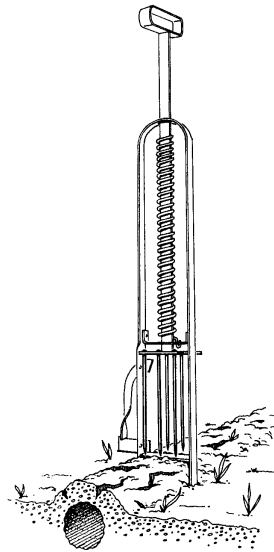
GOPHER AND MOLE PROBE



An understanding of mole behavior helps improve your trap set. When a mole's sensitive snout encounters something strange in the burrow, the mole is likely to plug off that portion and dig around or under the object. For this reason, traps are generally set straddling or encircling the runway, or are suspended above it.

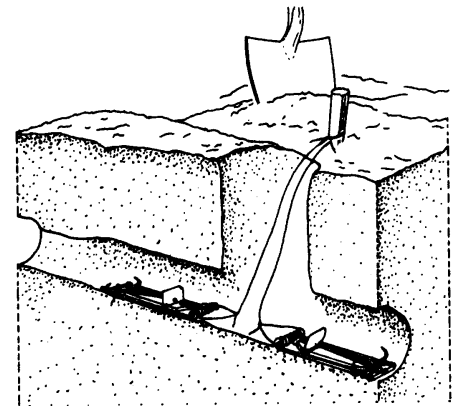
Most mole traps operate on the theory that a mole will push its way through a soil block in its tunnel. Setting a mole trap successfully relies on the fact that moles are not suspicious of fine soil blocks in their runway because cave-ins happen naturally. The mole will readily push its way through the soil block to reopen the tunnel. The trap is sprung by pressure from the mole's body or the movement of the soil against a triggering plate.

SOME TYPES OF GOPHER AND MOLE TRAPS



Above: The Reddick (harpoon type) trap is an effective mole trap.

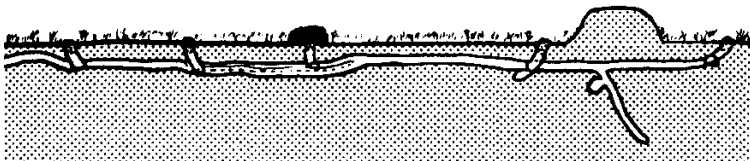
Not Shown: The box type trap, which is easier for most inexperienced trappers to set but requires more excavation.



Below: The Macabee (two-pronged pincher type) trap is an effective gopher trap and can also be used for moles.

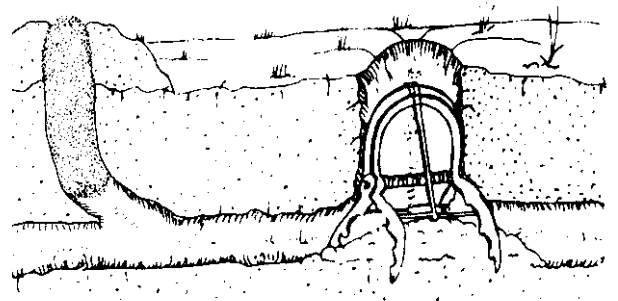
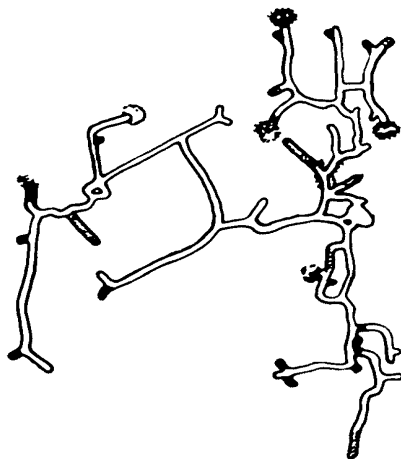
For most effectiveness, locate main burrow/tunnel and place two traps, facing in opposite directions. Fasten each trap by wire or cord to a stake. Push traps well into burrow and cover hole to block any light from entering burrow.

GOPHER BURROW SYSTEMS



Above: Cross-section of typical pocket gopher burrow system.

Below: Aerial view of typical pocket gopher burrow system.



Below: The Out-O-Sight (scissor-jaw type) trap is an effective mole trap and can be used for gophers.

WARNING ON THE USE OF CHEMICALS

Pesticides are poisonous. Always read and carefully follow all precautions and safety recommendations given on the container label. Store all chemicals in the original labeled containers in a locked cabinet or shed, away from food or feeds, and out of the reach of children, unauthorized persons, pets, and livestock.

Confine chemicals to the property being treated. Avoid drift onto neighboring properties, especially gardens containing fruits and/or vegetables ready to be picked.

Dispose of empty containers carefully. Follow label instructions for disposal. Never reuse containers. Make sure empty containers are not accessible to children or animals. Never dispose of containers where they may contaminate water supplies or natural waterways.

Do not pour down sink or toilet. Consult your county agricultural commissioner for correct ways of disposing of excess pesticides. Never burn pesticide containers.