



PROTECT YOUR GARDEN FROM **MOLES, VOLES, AND GOPHERS**

MOLES

BARRIERS

Amdro Mole, Vole and Gopher
Blocker wire

REPELLENTS

Bonide Mole Max Bonide Gopher
Max Liquid Fence Mole Repellent
Liquid Fence Mole and Vole Repellent
Messina Wildlife Mole and Vole Stopper
Mole Scram Ortho Mole B Gone Mole
and Vole Repellent Repellex Mole, Vole,
& Gopher Repellent Sweeneys Mole
and Gopher Repellent Tom Cat Mole
and Gopher Repellent

TRAPS

Amdro Multi-use Traps Cinch Trap
for Moles Gonzo Dead End Mole
and Gopher Trap Sweeney's Mole
Trap Tom Cat Mole Trap, Victor
Mole Trap

VOLES

Amdro Mole, Vole and Gopher
Blocker wire Gonzo Gopher Shield

Bonide Mole Max Bonide Gopher
Max Liquid Fence Mole and
Vole Repellent Messina Wildlife
Mole and Vole Stopper Ortho
Mole B Gone Mole and Vole
Repellent Repellex Mole, Vole, &
Gopher Repellent Sweeneys Mole
and Gopher Repellent Tom Cat Mole
and Gopher Repellent Vole Scram

Snap-style mouse traps, such as
Victor or Tom Cat

GOPHERS

Amdro Mole, Vole and Gopher
Blocker wire Diggers Root Guard
Baskets and Wire Gonzo Gopher
Shield

Bonide Mole Max Bonide Gopher
Max Gopher Scram Repellex Mole,
Vole, & Gopher Repellent Sweeneys
Mole and Gopher Repellent Tom
Cat Mole and Gopher Repellent

Amdro Multi-use Traps Black
Hole Gopher Trap Cinch Trap for
Gophers Gophinator Gopher
Hawk Gonzo Dead End Mole and
Gopher Trap Macabee Gopher Trap
Revenge Gopher Trap Sweeney's
Gopher Trap Victor Black Box Victor
Gopher Trap Wilco Trap for Gophers

Something is tearing up your garden. Varmints! But what kind?

In most parts of California, the likely culprits are moles, voles, or pocket gophers. All are controllable with non-toxic strategies, combined with accurate pest identification, determination, and perseverance.



MOLE, VOLE, OR GOPHER? HOW DO I KNOW?

- If you see **cone-shaped mounds of soil** or a **network of raised tunnels**, and your plants are not getting eaten, you likely have **moles**.
- If you see a **network of closed or partly exposed tunnels (runways)** and a clean, golf ball-sized entrance hole to a tunnel, you likely have **voles**. Locate the runways by moving aside groundcover.
- If you see a **crescent-shaped mound of soil with a plugged opening**, you likely have **gophers**. A gopher will plug any opening to its burrow system.



Choose eco-friendly products for your home and garden. Look for this symbol before you buy.

KNOW YOUR TARGET PEST!

Moles



Moles (*Scapanus* species) are small mammals (4 to 7 inches long) that eat grubs, other insects, and earthworms. With oversized front claws, sensitive snouts, and poor eyesight, moles are adapted to life underground and are terrific diggers. In a single day, a



Mole hills: a mole heading for the surface will push soil straight up, forming soil mounds that are cone- or volcano-shaped.



Jack Kelly Clark, courtesy UC IPM Program

Moles make feeding tunnels or runways close to the surface.

mole can crisscross a lawn with 150 feet of tunnels, and shallow feeding runs. Moles are most active after rain or irrigation when the soil is easy to work; they are less active during very hot or very cold weather, or during drought. Moles are solitary animals except during the breeding season (late winter to early spring).

Voles



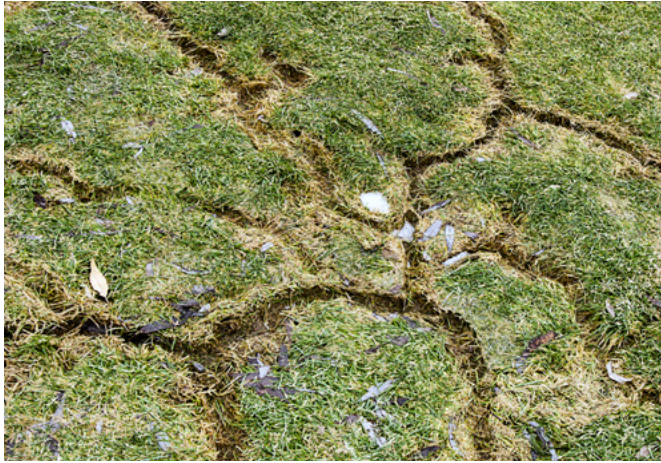
Voles (meadow mice) are rodents with short tails and round bodies. In California, we have six species of voles from the genus *Microtus*. The California vole (*M. californicus*) and the montane vole (*M. montanus*) are the most common garden pests in our state. Adult voles are 5 to 8 inches long, including the tail. Vole populations can be cyclical, which means that their numbers can spike to several thousand per acre in a short time. If you think you have voles, it's important to get them under control quickly.

Voles are vegetarians, feeding on grasses, vegetables, herbaceous plants, bulbs, tubers, tree roots, and bark. Unlike moles and gophers, they're not diggers, so they often take over abandoned gopher or mole burrows.



Missouri Botanical Garden

The openings of vole burrows are relatively smooth and round. Voles construct shallow runways, covered or partly covered with vegetation.



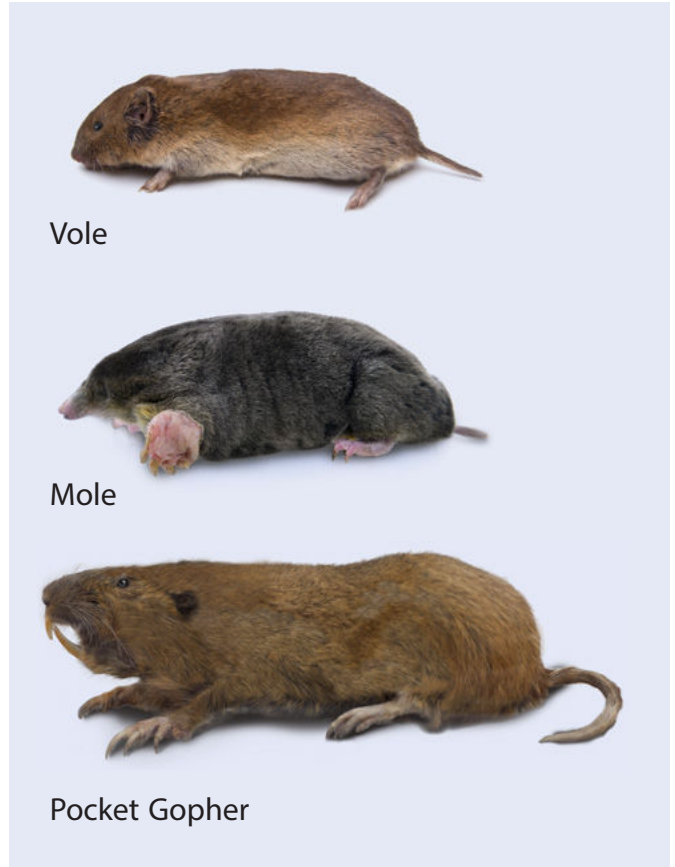
Vole runways are partly exposed and often covered with vegetation.

Pocket Gophers



Photo © walshjo4, Creative Commons License

Pocket gophers (*Thomomys* species) are so called because they carry food and nesting material in furry cheek pouches. Gophers are larger than moles or voles—about 6 to 10 inches long, and have large yellow-orange front teeth and small eyes and ears. Like



Vole

Mole

Pocket Gopher

Voles are small and mouse-like, about 4 to 6 inches in body length plus a short tail. Moles are about the same size, but have short dark fur, no noticeable eyes or ears, and distinctive flat, wide front paws. Gophers are the largest of the three, about 6 to 10 inches long with a short tail and large front teeth.

voles, they are plant eaters, preferring roots and the fleshy underground portion of plants. They're very busy under ground—a gopher's burrow system can cover an area 200 to 2,000 feet square. A typical system includes feeding tunnels 6 to 12 inches below the surface, and nesting and food storage chambers as deep as 6 feet.



Mole mounds are cone- or volcano-shaped because moles tunnel straight up.



Pocket gopher mounds are crescent- or horse shoe-shaped, because gophers tunnel up at an angle. Gopher holes are always plugged.

CONTROLLING BURROWING CRITTERS

The less-toxic, more humane, and generally safer methods of control are barriers, which keep them away from your plants, and trapping. Castor oil-based repellents may be effective temporarily, but are not as effective as barriers or traps.

The Our Water Our World Program doesn't recommend poisons, fumigants, or incendiary devices to control moles, voles, or gophers.

Barriers: Protect your plants from voles and gophers

- Remove weeds and other plant material to help discourage voles, which are attracted to dense foliage where they can hide from owls, hawks, and other predators.
- For voles, bury ¼-inch wire mesh 6 to 10 inches below the surface, extending 12 inches above ground, to keep the animals from tunneling in. A cleared area outside the barrier provides extra protection.
- For gophers, install ¼-inch wire mesh at least 2 feet deep with at least 1 foot extending above ground, bent back away from the planting area you are protecting. This approach is not foolproof, though, as gophers are talented and motivated diggers.
- Plant tender plants in wire "gopher baskets." Be sure to choose a basket large enough to allow room for root growth, and leave a few inches of mesh above the ground.
- For new raised planter beds, cover the entire bottom of the box with half-inch hardware cloth or gopher wire before adding soil. For existing raised beds, remove soil down to 14 to 18 inches and lay ¼-inch wire mesh across the entire bottom and up the inside walls of the bed. Secure with fencing nails.

Trapping moles, voles, and gophers

Call a professional if you plan to trap burrowing pests. Traps can be dangerous! They must be set



Yvonne Rasmussen, UCCE Napa County of Napa

Planting in wire baskets keeps plants safe from voles, moles, and pocket gophers.

properly and placed where they won't harm children or pets. If you call a professional, be sure to ask them not to use poison baits or fumigants.

If you plan to do it yourself, first identify the pest correctly and use a trap that is specific to moles, voles, and gophers. Be sure to follow the instructions on the label, in the packaging, or on the manufacturer's website. Set traps in places where children or pets won't dig them up.

FOR MORE INFORMATION

Moles: ipm.ucanr.edu/PMG/PESTNOTES/pn74115.html

Voies: ipm.ucanr.edu/PMG/PESTNOTES/pn7439.html

Pocket gophers: ipm.ucanr.edu/PMG/PESTNOTES/pn7433.html

Many thanks to the University of California Statewide Integrated Pest Management Program for their excellent Pest Notes, from which we have borrowed much content!



WWW.OURWATEROURWORLD.ORG

Common home and garden pesticides are found in stormwater runoff, treated wastewater, and in local waterways, sometimes at levels that can harm sensitive aquatic life. Our Water Our World is a joint effort by water pollution prevention agencies, participating retail stores, and pesticide distributors and manufacturers—working together to reduce the risks associated with pesticide use.

Our Water Our World fact sheets and store displays educate residents about less-toxic pest management. For the rest of the series of fact sheets, visit www.OurWaterOurWorld.org. Look for the *Eco-friendly* tag next to less-toxic products in participating stores and nurseries. See the *Pesticides and Water Quality* fact sheet for information on active ingredients in common pesticides that may cause water quality problems.

Pest control strategies and methods described in this publication are consistent with integrated pest management (IPM) concepts, and are based on scientific studies and tests in actual home and garden settings. Use suggested products according to label directions and dispose of unwanted or leftover pesticides at a household hazardous waste collection facility or event. For more information on pesticide disposal, visit www.earth911.com. No endorsement of specific brand name products is intended, nor is criticism implied of similar products that are not mentioned.

For more information, contact:

Bio-Integral Resource Center (BIRC), 510.524.2567, www.birc.org

University of California Cooperative Extension Master Gardeners in your area

University of California IPM website, www.ipm.ucanr.edu