

# California Ground Squirrels

## *Serious Urban Landscape Pests*

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**California Ground Squirrels (*Spermophilus beecheyi*)** They are considered one of the most economically damaging rodent pests in the State. Young ornamental trees and shrubs are often the most damaged; squirrels will gnaw at the bark and roots, and eat the twigs, buds and leaves. In turf, their burrowing activity lowers aesthetic value, damages mowers and other machinery, and creates safety hazards from potential foot, ankle and leg injuries.

Soil erosion is an expensive consequence of slope burrowing, but dams, levees, irrigation ditches, roads and even fence lines are often damaged, as well.

From a health standpoint, ground squirrels and their ectoparasites are potential carriers of plague, relapsing fever tularemia, and other diseases transmissible to man.

## Control

Selection and timing of the proper control method are the most important factors in managing ground squirrel populations. Most often, long term benefits will not be realized unless a program is developed that takes into consideration several important factors: biology and behavior, history of previous control efforts, knowledge of all available control techniques and the utilization of habitat manipulation where feasible.

Primary control methods include poison baits, fumigation, trapping, and shooting. The use of these population reduction techniques, will result in only temporary relief from the problem unless infestations within the target area and surrounding areas are both controlled at a 90% or better success rate. In conjunction, habitat manipulation such as the removal of harborage sites (rock piles, stumps, refuse piles, etc.) and maintaining weed free or mowed buffers around ornamental plantings (similar to a fire break) should be maintained.

The use of poison baits is the most common method of control. Of the registered materials available the anticoagulant type baits (diphacinone, chloraphacinone, etc.) which require multiple feeding are most effective and provide the safest method of control available, especially if non-target animals are in the area. It is essential that sufficient bait supply is maintained to prevent the squirrels from counteracting the blood thinning process by eating foods, such as grass, which contain Vitamin K, an effective antidote.

All baits and toxicants can be very hazardous and should be applied by certified applicators and be used according to label directions. Many require a restricted materials permit for use.



Several types of fumigants are registered for ground squirrel control. Only two types are normally used in urban settings: aluminum phosphide and gas cartridges (smoke bombs). This second method is most effective in spring when soil moisture is high, providing a tight soil seal and a minimum of diffusion out of the burrows.

Traps can be used on small problem areas such as backyards, or where the infestation is minimal. The one most commonly used is the wooden box gopher trap, modified so the trigger is activated by pulling rather than pushing. The trap is baited with nuts or fruit and placed near a burrow entrance or opening. Using traps can be dangerous to other wildlife and children; and care must be exercised to avoid such problems.

As with other rodent control projects (gophers, rabbits, mice, rats, etc.) controlling ground squirrels on a large scale basis is difficult and requires the development of site specific plan that will allow for both reducing the existing infestation to a maintainable level and the implementation of a continuous service program to prevent future

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reinfestation problems. Control strategy is different for every site and involves researching and evaluating many variables that must be considered before implementing any program. These variables include the plant or landscape material involved, irrigation schedule, climate, soil type, time of year, migration potential, history of prior control efforts and the type of degree of infestation for each pest involved. Experience is essential to considering these factors and formulating a control program that will be the most effective for the situation.

## Biology & Ecology

California ground squirrels are medium sized rodents (1.25 to 2 lbs.), with head and body length averaging 9.5 to 11 inches. They have a bushy tail about 6-8 inches long. Coloration varies but they are basically brown with a gray flecked back and sides. Cheek pouches, used to gather food during foraging, are membranous not fur-lined.

When considering and designing a control program, knowledge of their life cycle is especially important.

Unlike gophers, who are active year round, ground squirrels have certain periods of the year when their activity becomes dormant as the animals stay in their burrows for long periods of time.

These periods are not specific as they vary according to climatic conditions and food availability. In the summer when food is plentiful, the adults become exceedingly fat and lazy, remaining in the burrows during heat waves. This summer sleep is known as estivation and can occur as early as June, but most often begins in July or August and is of variable duration. Juvenile or young squirrels usually do not estivate. As the season advances, a decrease in squirrel population



is noted in the valleys and other warm areas. A lack of food or high temperatures may delay or prevent estivation. During periods of estivation and hibernation, the burrow is plugged near the nest, but remains open at the entrance. Inactivity can be detected by cobwebs and debris in the entrance.

Hibernation (inactive period during cold weather or winter) is also of indeterminate length and depends on climatic conditions and food availability. Most inactivity is noticed in November and December. Some ground squirrel activity may be detected year round, especially with the young. Hibernation may also be broken by short periods of activity of adults on warmer days.

Ground Squirrels, unlike gophers, forage above ground during daylight hours for their food and will travel up to 1 mile from native areas into landscape areas.

In most periods of the year their peak activity occurs in the morning and again in late afternoon. They live in a wide variety of natural habitats, but favor areas such as road or ditch banks, fence lines, rocky outcroppings and similar settings providing minimum disturbance.

High points such as rocks, posts, banks, and shrubs are used as observation points from which ground squirrels chirp a warning sound and retreat to burrows at the sign of danger. Also in direct contrast to gophers, they live in groups or colonies (as opposed to individually). They construct underground burrow systems, but do not plug the openings. The burrow diameter averages 4 inches,

but some can be as large as 6-8 inches. Large mounds of excavated earth found near the openings are often 6-12 inches high and 3-4 feet in diameter. Ground squirrels can burrow 10-30 feet into a slope, which weakens it and can cause slope failure.

Breeding usually begins in early spring after hibernation, but can vary depending on geographic and climatic conditions. The gestation period appears to be from 25 to 30 days and the average surviving litter size from 5 to 7. Young are born blind and helpless, and spend about 6 to 8 weeks in and around the parent burrow. The young will dig burrows for itself or occupy abandoned ones near the parent burrow. Sexual maturity is reached in one year. 🐾

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The majority of Animal & Insect Pest Management work is targeted at large scale problems where integrating precision pest management is of the utmost importance. Our experience includes control programs for parks, school districts, developers, homeowners associations, golf courses, water districts, landscapers, Cal Trans and the National Forest Service.

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