


Pocket Gopher Control

in the Landscape.

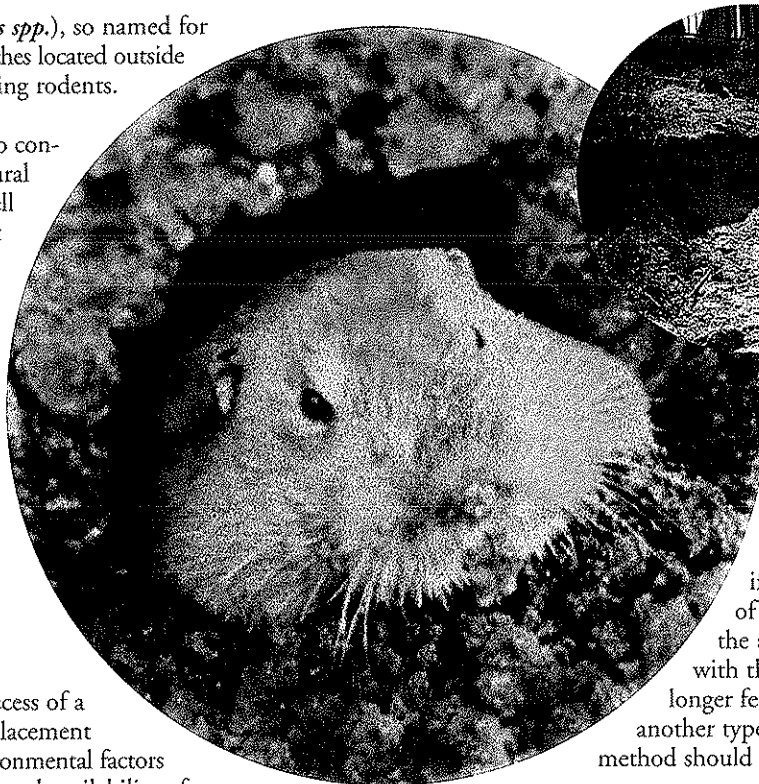
By Dan Fox, A.P.M. President, Principal Biologist  Urban Wildlife Professional

Pocket gophers (*Tomomys spp.*), so named for their fur lined cheek pouches located outside their mouths, are burrowing rodents.

They are serious and difficult to control pests for both the agricultural and landscape industries, as well as for the homeowner. Pocket gophers destroy vegetation, wiring, lower the aesthetic value of the landscape and create safety hazards due to foot, ankle and leg injuries.

Additionally, their burrowing activity on slopes causes erosion and can be a major factor in slope weakening and instability that may ultimately lead to slope failure in a number of recent litigation cases in California.

Many factors influence the success of a baiting program; proper bait placement within the gopher system, environmental factors such as soil type, soil moisture and availability of



green forage. All can enhance or hinder bait acceptance and control results.

For instance, dry sandy soils will often collapse when probed, preventing any bait application. While overly wet soils can cause the bait to become soggy, muddy and quickly mold, thus making it unacceptable to the gopher.

Gophers may become "bait shy" if they ingest sublethal amounts of bait and become sick. Because the animal associates the sickness with the taste of the bait, it will no longer feed on it. Once this occurs, another type of bait or alternative control method should be used.

Large Scale Problems

Controlling gopher infestations on a large scale basis requires the development of a site specific plan that will allow for both reducing the existing infestation to a maintainable level and the implementation of continuous service programs to prevent future 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 and 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.



Control

Selection and timing of the proper control method are the most important factors in controlling gopher 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.

Although many different techniques have been used in gopher control, the most successful programs usually utilize one or more of the following methods: trapping, gassing and poison baits.

Trapping is effective in small areas, such



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as a homeowner situations, or as a follow up to fumigation or baiting. However, this method is time consuming and thus, not very cost effective in a large scale program. The most commonly used traps are the Macabee and the box. When using traps, they should always be placed in the main burrow.

Gassing is very effective when used under ideal conditions. Soil should be moist to accommodate gas formation and to provide a good soil seal. Poison baits offer the quickest and most effective method of controlling a large gopher infestation.

The most commonly used toxicants are chloraphacinone, strychnine, and zinc phosphide pelleted bait. These products can be very hazardous and must be applied by licensed certified applicators according to label directions, as with all pesticides, and some require restricted material permits.

Biology

A thorough understanding of gopher biology and habits is helpful and necessary to a successful control program. They are medium sized rodents, with their head and body ranging in size from 6 -8 inches (15-20 cm) long, have a powerfully built upper body, a short neck, short legs, long clawed forefeet and two pairs of large incisors protruding beyond the mouth. These fossorial features are tremendous adaptations for their underground existence.

Their short and sparsely tail and whiskers serve as sensory organs to help guide the gophers through their burrow systems, and give them a keen sense of touch.

Their fur color is highly variable, ranging from dark brown to very light tan.

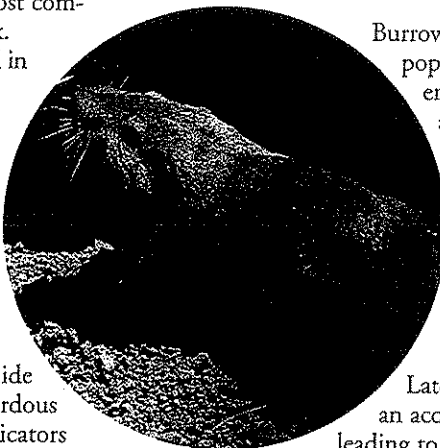
Pocket gophers do not hibernate and are thought to be active year round even with snow on the ground; however, in very hot weather, they noticeably decrease surface feeding and mounding.

Females produce 1-3 litters per year with an average surviving brood of 5-6. In unirrigated natural areas, breeding season starts after the rains begin - which may mean only one litter per year. In irrigated, landscaped areas, the continual source of green foliage allows the female to raise 3 litters per year.

Gophers are territorial and anti-social, living alone except during breeding periods and when their young are being raised.

They live almost exclusively underground, venturing above only to push excavated dirt from the burrow system, graze on vegetation near burrow openings, or for the purpose of migrating into new territory. Adult gophers migrate up to 1/2 mile as well as the young which are expelled by their mothers when they are about half grown. Migration usually occurs as a result of unfavorable environ-

mental conditions and/or habitat destruction (e.g. construction projects).



Burrow systems consist of a main tunnel, lateral runs, pop holes and various other functional tunnels, plus enlargements, which are used for nesting, food storage, resting and eating.

The main burrow is usually 2-4 inches in diameter and is 2-18 inches below and parallel to the ground surface. Burrows of young may be small, covering only one or two hundred square feet while those of older pocket gophers may cover an area as large as three thousand square feet.

Lateral runs branch off the main run and are used as an access for feeding on nearby vegetation. All runs leading to the surface end in a soil mound or plug enclosed, therefore, no light is allowed to enter which stabilizes burrow temperature and humidity as much as possible.

If a gopher dies, irrigation or rain washes the loose soil plugs from lateral runs and pop holes leaving open tunnels that lower the aesthetic value of the landscape.

Drainage tunnels are used for water runoff, thus making it difficult to drown a gopher in a well established system.

The rate of mound building varies with the season, temperature and soil condition but averages 1-3 mounds per day during active periods.

The depth of active burrows is usually deeper under hot conditions, especially in non-irrigated or infrequently irrigated areas. Mounding often sharply decreases in the heat of summer followed by intensive mounding in the fall. This renewed fall activity has often been blamed on reinvasion of areas thought to have been controlled in the early summer.

Animal Pest Management Services, Inc. specializes exclusively in vertebrate and insect pest problems, those that can be most destructive to turf and landscape including but not limited to gophers, ground squirrels, mice, rabbits, birds and general insects. We also offer the unique service of coyote, skunk, opossum and raccoon trapping.

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Rats and Mice

Urban Wildlife in our Community

By Dan Fox, A.P.M. President, Principal Biologist  *Urban Wildlife Professional*

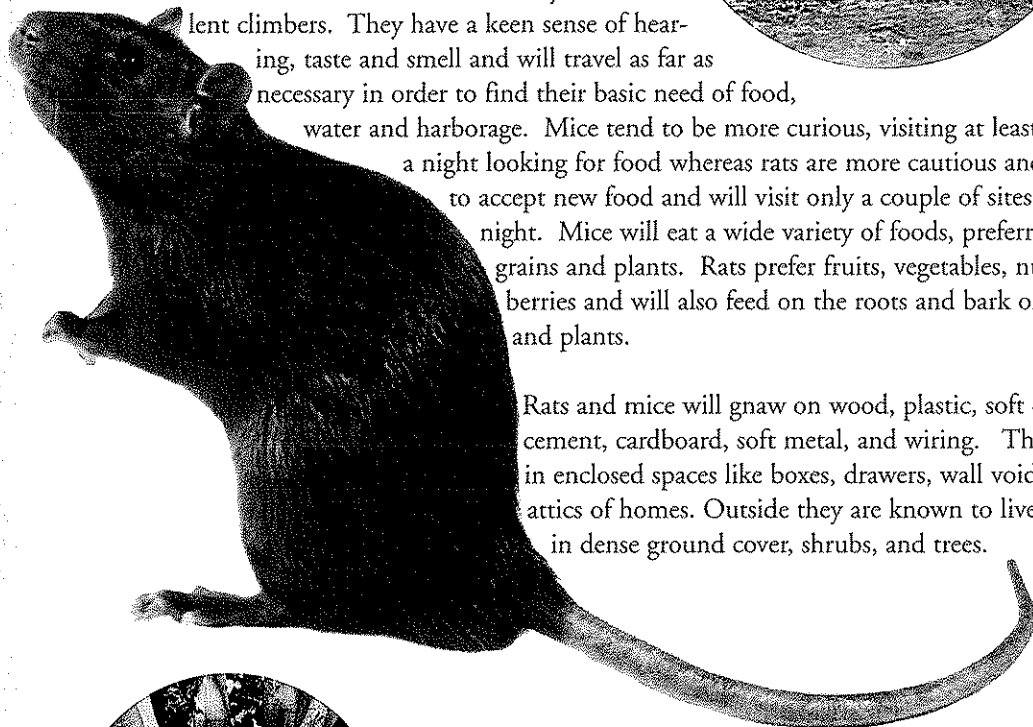


All neighborhoods have to deal with rats and mice in their communities. We create such a welcome environment for rodents to live in our landscaping and homes.

With our lush, nutrient rich landscaping giving rats and mice many places to hide and also providing them with plentiful food and water, no wonder we are constantly trying to keep their population at a manageable level.

It is important to implement an ongoing pest control program to help maintain their population at a low level.

Rats and mice reproduce quickly. House Mice can have five to ten litters a year, averaging five young each. Roof Rats can have an average of 25 - 40 young per year with sexual maturity reached at three to five months. One can see the potential for an increase in rodent populations throughout our communities!



Rats and mice are nocturnal. They are excellent climbers. They have a keen sense of hearing, taste and smell and will travel as far as necessary in order to find their basic need of food,

water and harborage. Mice tend to be more curious, visiting at least 30 sites a night looking for food whereas rats are more cautious and slower to accept new food and will visit only a couple of sites per night. Mice will eat a wide variety of foods, preferring cereal grains and plants. Rats prefer fruits, vegetables, nuts, berries and will also feed on the roots and bark of trees and plants.

Rats and mice will gnaw on wood, plastic, soft or porous cement, cardboard, soft metal, and wiring. They nest in enclosed spaces like boxes, drawers, wall voids, and in attics of homes. Outside they are known to live and nest in dense ground cover, shrubs, and trees.



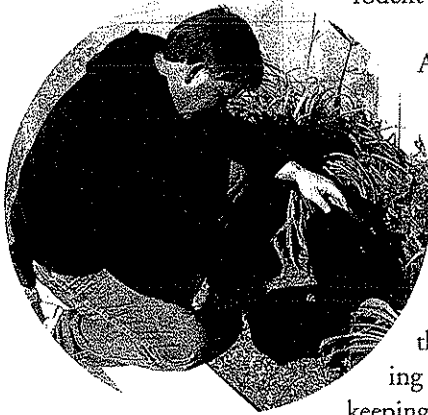
Damage caused from rats feeding on the bark of this tree is harmful & will eventually kill the tree.

A high level of success can be achieved when controlling rodents by using an integrated pest management approach. An integrated pest management program consists of habitat modification, sanitation, trapping, baiting, and exclusion, using precise methods.

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Sanitation and habitat modification consists of keeping ground covers neatly trimmed and dense, keeping tree branches at least 2 feet away from any building structure or wall, keeping any wood, gardening equipment, or boxes neatly stacked and off of the ground.

It is very important to not leave any dog food, cat food, or bird feeders outside for rats to feed on during the night. Garbage and garden cuttings should be placed into a receptacle with a lid that will close tightly. Good housekeeping in and around buildings will help decrease the habitat suitability for rats and mice. Sanitation and habitat modification is extremely fundamental to a successful rodent control program.



Another important aspect of a successful rodent control program are rodent bait stations. Tamper resistant rodent bait stations should be placed throughout your community. This helps maintain the rodents that are migrating from the surrounding areas keeping them at a lower population level. Bait should only be used on the exterior of homes or out in the landscaping.

It is a misnomer that when a rat eats bait they become thirsty and will go outside. They do not get "thirsty" but once the bait takes effect, they will die in wall voids or attic spaces. The worse is still to come - a homeowner is then left with trying to live with a very foul odor for the next few weeks.

If a rat or mouse should make its way inside your home, trapping is the best method to remove the rodent. Based on the signs of rodent activity seen by the technician, a rat or mouse

trapping program would consist of snap traps being placed where the rodent frequents. A typical rat trapping program will run for 10 working days.

Once the rodent has been trapped from the inside of the home, exclusion is the next step. A rat only needs an opening the size of a quarter whereas a mouse only needs an opening the size of a nickel. Exclusion is a physical barrier that prevents the rodents from reentering your home. An exclusion program consists of sealing any openings greater than 1/4 inch using hardware cloth, coarse steel wool, cement, and/or foam. Exclusion can be performed in most homes depending on the type construction and materials used when the home was built. Many openings are found around air conditioning units, vents, water and sewer pipes. Depending on the construction of the home it might take a few attempts to completely rodent proof the home.

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California Ground Squirrels

Serious Urban Landscape Pests

By Dan Fox, A.P.M. President, Principal Biologist  Urban Wildlife Professional

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, levies, 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.

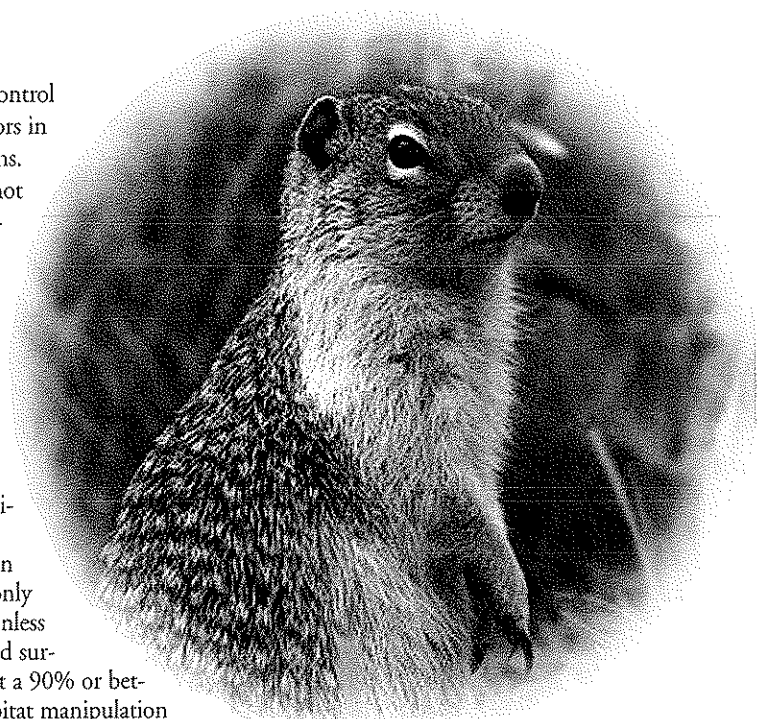
Control

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, chlorophacinone, etc.) which require multiple feedings 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 develop-

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ment 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 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. 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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Honey Bees

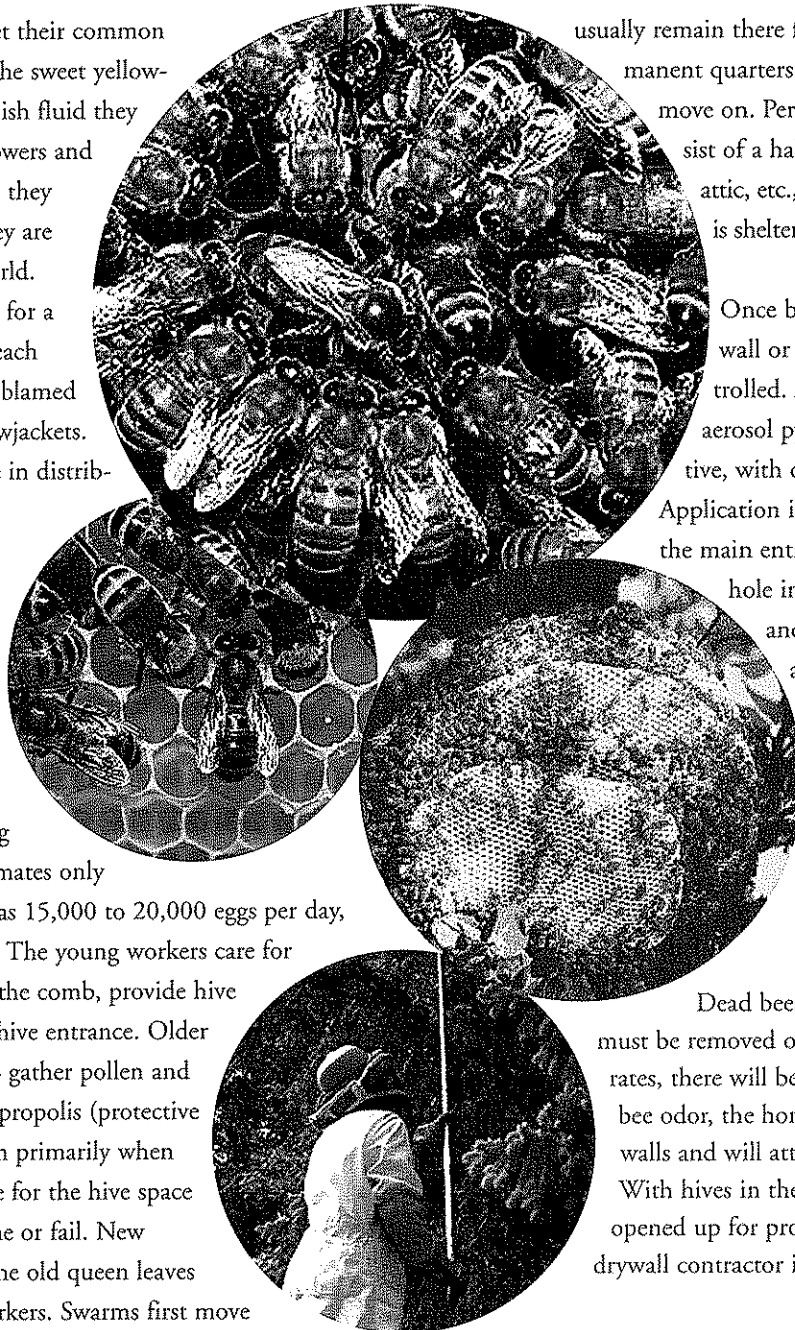
Protecting Your Home

By Dan Fox, A.P.M. President, Principal Consultant, Urban Wildlife Biologist 



Honey Bees get their common name from the sweet yellowish to brownish fluid they make from the nectar of flowers and to use as food. Not only do they provide honey and wax, they are major pollinators of the world. Honey Bees are responsible for a large share of insect stings each year, although many stings blamed on bees are caused by yellowjackets. Honey Bees are world wide in distribution.

Honey Bees are social insects and live as colonies in hives, with mature colonies of 20,000-80,000 individuals. The entire population overwinters. There is one egg-laying queen in the hive and she mates only once. She can lay as many as 15,000 to 20,000 eggs per day, and may live up to 5 years. The young workers care for the young or brood, build the comb, provide hive ventilation, and guard the hive entrance. Older workers serve as foragers to gather pollen and nectar to make honey and propolis (protective lining). Honey Bees swarm primarily when the colony size gets to large for the hive space or the queen begins to wane or fail. New queens are produced and the old queen leaves with a large number of workers. Swarms first move to a temporary site such as a tree branch. The swarm will



usually remain there for 24-48 hours until permanent quarters are located, and then move on. Permanent quarters may consist of a hollow tree, hollow wall, attic, etc., typically some place which is sheltered from the weather.

Once bees enter and establish in a wall or attic they need to be controlled. Appropriate labeled aerosol pyrethroids are most effective, with dusts being second choice. Application is made directly through the main entrance or by drilling a small hole in the wall near the comb and then sealed immediately after application. For attics direct application to the hive is required.

IMPORTANT

Dead bees, the comb and honey must be removed or else as the wax deteriorates, there will be a strong honey and dead bee odor, the honey will seep through the walls and will attract insects and rodents. With hives in the walls, they must be opened up for proper access. Generally a drywall contractor is needed for repairs.

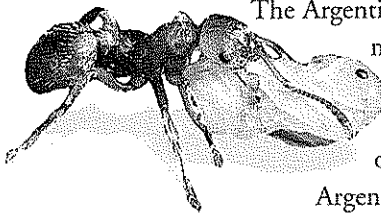
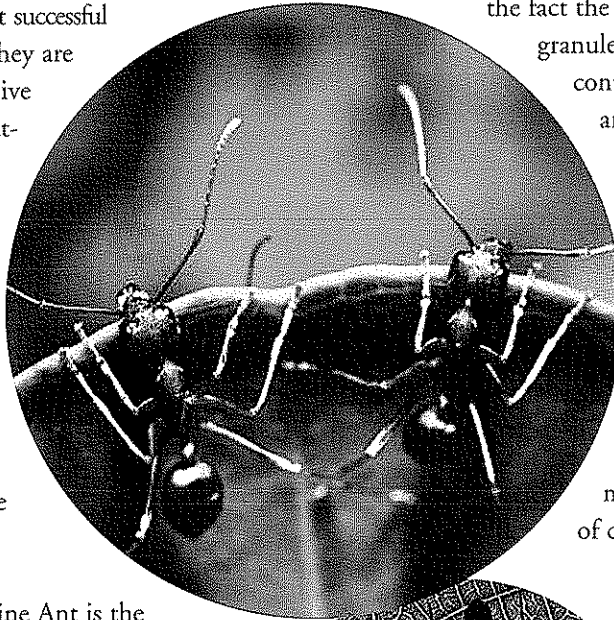
Ant Control

Protecting Your Home and Landscape

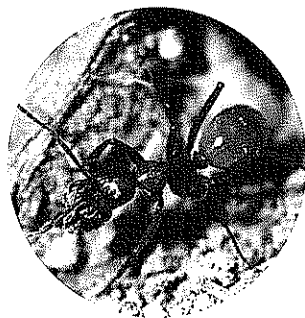
By Dan Fox, A.P.M. President, Principal Consultant, Urban Wildlife Biologist 



Ants are one of the most successful groups of insects. They are social insects that live in colonies, which are usually located in the ground, but may enter buildings for shelter and food. Ants feed practically on every kind of food, but those entering homes are looking for sweets and/or protein base substances. The most commonly encountered ground nesting ants are the Argentine Ant, Pavement Ant, Little Black Ant, Velvety Tree Ant and Fire Ants.

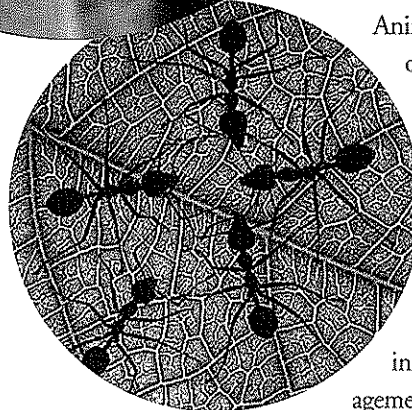


The Argentine Ant is the most common insect we are asked to provide service for by our customers. The Argentine Ant is native to Brazil and Argentina and is found throughout the southern United States and California. Large colonies are formed in the soil in yards and common slope areas near moisture sources such as sprinklers, valve boxes and standing water. Argentine Ants also can nest in wall voids and under foundations of homes. It is quite common for nests and colonies to be interconnected with each other. They feed on a variety of foods like meats, eggs, vegetable oils, and sweets.




Control of ants in common area landscape is done with the use of baits and /or sprays. Baits are used more often due to

the fact the residual is longer than sprays and the granules can be taken back to the nest to control the larvae and the queens. This is an advantage since the colonies divide in the summer and form many nests, which may not be found. We take advantage of their habit, so trails are seen several days after application while they are gathering food and feeding their colony. Sprays work well when a quick knock down is needed. Keep in mind, environmental factors such as excess moisture and heat effect the longevity of control.



Animal Pest Management Services, Inc. offers full service general pest control programs for our customers. This includes but is not limited to Ants, Crickets, Earwigs and Silverfish. The majority of Animal Pest Management Services, Inc.'s 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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