

# YELLOWJACKETS AND OTHER SOCIAL WASPS

Integrated Pest Management for Home Gardeners and Landscape Professionals

Only a few of the very large number of wasp species in California live a social life. These species are referred to as social wasps. Some social wasps are predators for most or all of the year and provide a great benefit by killing large numbers of plant-feeding insects and nuisance flies; others are exclusively scavengers. Wasps become a problem only when they threaten to sting humans. In California, yellowjackets are the primary pests among the social wasps.

## IDENTIFICATION AND LIFE CYCLE

In Western states there are two distinct types of social wasps—yellowjackets and paper wasps. Yellowjackets are by far the most troublesome group, especially ground- and cavity-nesting ones such as the western yellowjacket (Figure 1), which tend to defend their nests vigorously when disturbed. Defensive behavior increases as the season progresses and colony populations become larger while food becomes scarcer. In fall, foraging yellowjackets are primarily scavengers, and they start to show up at picnics and barbecues, around garbage cans, at dishes of dog or cat food placed outside, and where ripe or overripe fruit are accessible. At certain times and places, the number of scavenger wasps can be quite large.

Paper wasps are much less defensive and rarely sting humans. They tend to shy away from human activity except when their nests are located near doors, windows, or other high-traffic areas.

Typically, previously mated, overwintering yellowjacket and paper wasp queens begin their nests in spring when the weather becomes warm. The queen emerges in late winter to early spring to feed and start a new nest. From spring to midsummer, nests are in the growth phase, and larvae require large amounts of protein. Workers forage mainly for protein at this time—usually other insects—and for some sug-



Figure 1. Western yellowjacket.

ars. By late summer, however, the colonies grow more slowly or cease growth and require large amounts of sugar to maintain the queen and workers; foraging wasps are particularly interested in sweet things at this time. Normally, yellowjacket and paper wasp colonies live only one season. In very mild winters or in coastal California south of San Francisco, however, some yellowjacket colonies survive for several years and become quite large.

## Yellowjackets

The term “yellowjacket” refers to a number of different species of wasps in the genera *Vespula* and *Dolichovespula* (family Vespidae). Included in this group of ground-nesting species are the western yellowjacket, *V. pensylvanica*, which is the most commonly encountered species and is sometimes called the “meat bee,” and seven other species of *Vespula*. *V. vulgaris* is common in rotted tree stumps at higher elevations, and *V. germanica*, the German yellowjacket, is becoming more common in many urban areas of California, where it frequently nests in houses.

These wasps tend to be medium sized and black with jagged bands of bright yellow—or white in the case of the aerial-nesting *D. (formerly known as V.) maculata*—on the abdomen and have a very short, narrow “waist,” the area where the thorax attaches to the abdomen.

Yellowjackets commonly build nests in rodent burrows (Figure 2), but they some-

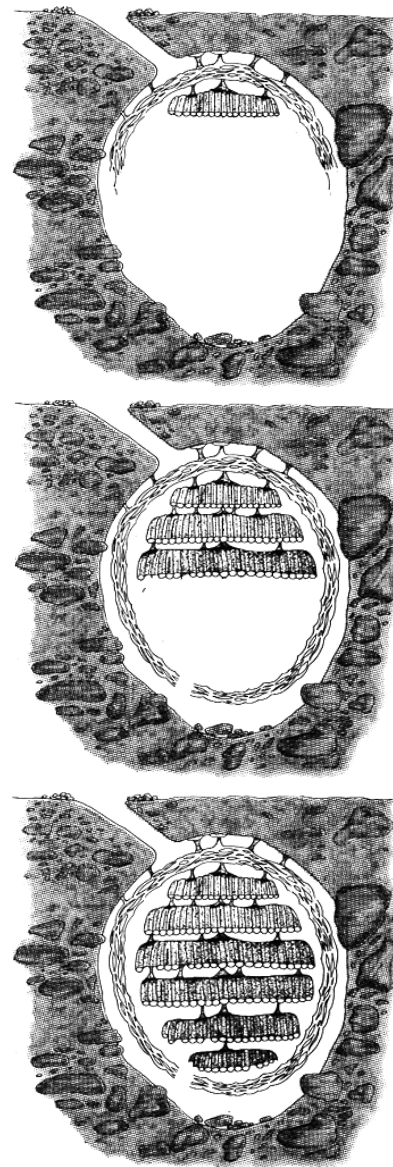


Figure 2. Yellowjacket nest in an underground rodent burrow in spring (top), summer (center), and early fall (bottom). The nest becomes larger during the summer as yellowjackets add new comb layers, each containing developing larvae. The colony declines in late fall when workers die off.

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times select other protected cavities, such as voids in walls and ceilings of houses, as nesting sites. Colonies, which are begun each spring by a single reproductive female, can reach populations of between 1,500 and 15,000 individuals, depending on the species.

The wasps build a nest of paper made from fibers scraped from wood mixed with saliva. It is built as multiple tiers of vertical cells, similar to nests of paper wasps, but enclosed by a paper envelope around the outside that usually contains a single entrance hole. If the rodent hole isn't spacious enough, yellowjackets will increase the size by moistening the soil and digging. Similar behavior inside a house sometimes leads to a wet patch that develops into a hole in a wall or ceiling.

Immature yellowjackets are white grublike larvae that become white pupae. The pupae develop adult coloring just before they emerge as adult wasps. Immatures normally aren't seen unless the nest is torn open or a sudden loss of adult caretakers leads to an exodus of starving larvae.

Aerial-nesting yellowjackets, *D. arenaria* and *D. maculata*, build paper nests that they attach to the eaves of a building or that hang from the limb of a tree. The entrance normally is a hole at the bottom of the nest. These aerial nesters don't become scavengers at the end of the season, but they are extremely defensive when their nests are disturbed. Defending *D. arenaria* sometimes bite and sting simultaneously. Wasp stingers have no barbs and can be used repeatedly, especially when the wasp gets inside clothing. As with any stinging incident, it is best to leave the area of the nest site as quickly as possible if wasps start stinging.

**Paper Wasps**

Paper wasps such as *Polistes fuscatus aurifer*, *P. apachus*, and *P. dominulus* are 1-inch-long slender wasps with long legs and a distinct slender waist (Figure 3). Background colors vary, but most Western species tend to be golden brown or darker with large patches of yellow or red.

Preferring to live in or near orchards or vineyards, they hang their paper nests in protected areas, such as under eaves, in attics, or under tree branches or vines. Each nest hangs like an open umbrella from a pedicel (stalk) and has open cells that can be seen from beneath the nest (Figure 4). Sometimes white, legless, grublike larvae can be seen from below. Paper wasp nests rarely exceed the size of an outstretched hand, and populations vary between 15 to 200 individuals. Most species are relatively unaggressive, but they can be a problem when they nest over doorways or in other areas of human activity such as fruit trees.

**Mud Daubers**

Mud daubers (Figure 5) are black and yellow thread-waisted solitary wasps that build a hard mud nest, usually on ceilings and walls, attended by a single female wasp. They belong to the family Sphecidae and aren't social wasps but might be confused with them. They don't defend their nests and rarely sting. During winter, you can safely remove the nests without spraying.

**INJURY AND DAMAGE**

Concern about yellowjackets is based on their persistent, pugnacious behavior around food sources and their aggressive defense of their colony. Usually stinging behavior is encountered at nesting sites, but sometimes scavenging yellowjackets will sting if someone tries to swat them away from a potential food source. When scavenging at picnics or other outdoor meals, wasps will crawl into soda cans and can sting your lips or the inside of your mouth or throat.

Reactions to wasp stings vary from only short-term, intense sensations to substantial swelling and tenderness, some itching, or life-threatening allergic responses. These reactions are discussed in detail in *Pest Notes: Bee and Wasp Stings*. (See References.) Of specific concern is a condition that results from multiple-sting encounters, sometimes unfamiliar to attending health professionals, that is induced



Figure 3. Paper wasp.



Figure 4. Paper wasp nest.



Figure 5. Mud dauber.

by the volume of foreign protein injected and the tissue damage caused by destructive enzymes in wasp venom. Red blood cells and other tissues in the body become damaged, and tissue debris and other breakdown products are carried to the kidneys, to be eliminated from the body. Too much debris and waste products can cause blockages in the kidneys, resulting in renal insufficiency or renal failure. Patients in this condition require medical intervention, which can include dialysis.

**MANAGEMENT**

Most social wasps provide an extremely beneficial service by eliminating large numbers of other pest insects through predation and should be protected and encouraged to nest in areas of little human or animal activity. Although many animals prey on social wasps—including birds, reptiles, amphibians, skunks,



bears, raccoons, spiders, praying mantids, and bald-faced hornets—none provides satisfactory biological control in home situations.

The best way to prevent unpleasant encounters with social wasps is to avoid them. If you know where they are, try not to go near their nesting places. Wasps can become very defensive when their nest is disturbed. Be on the lookout for nests when outdoors. Wasps that are flying directly in and out of a single location are probably flying to and from their nest.

Usually, scavenging wasps won't become a problem if there is no food around to attract them. When nuisance wasps are present outdoors, keep foods including pet food and drinks covered or inside the house, and keep garbage in tightly sealed garbage cans. Once wasps discover food, they will continue to hunt around that location long after the source has been removed.

If wasp nests must be eliminated, it is easiest and safest to call for professional help. In some areas of California, personnel from a local mosquito and vector control district may be available to remove nests. To determine if this service is available in your area, call the Mosquito & Vector Control Association of California at (916) 440-0826. If a rapid solution to a severe yellowjacket problem is essential, seek the assistance of a professional pest control operator or consider installing bait stations.

**Trapping Wasps**

Trapping is one method that can be employed to try to reduce yellowjacket problems. Trapping isn't suggested for other social wasp species.

**Lure traps.** The easiest to use are lure traps (Figure 6), which are available for purchase at many retail stores that sell pest control supplies. Lure traps can help reduce the number of localized foraging workers, but they don't eliminate large populations. Lure traps contain a chemical that attracts yellowjackets into the traps, but the common lure in traps, heptyl butyrate, attracts

primarily the western yellowjacket and not other species. Meat such as chicken can be added as an attractant and is believed to improve catches of the German yellowjacket and *V. vulgaris*. Replace meat frequently, because yellowjackets aren't attracted to rotting meat. Also, periodically check the trap to remove trapped yellowjackets and make sure workers are still attracted to the trap. Lures need to be replaced periodically; follow trap directions regarding replacement.

To reduce the number of yellowjackets foraging in specific areas such as patios, picnic tables, concession stands, and Dumpsters, place lure traps with heptyl butyrate around the periphery. In large areas such as parks, place traps about 200 feet from the area to be protected and about every 150 feet along the circumference. In backyards, place them along the edge of the property line as far away from the patio or other protected area as possible. To intercept foraging yellowjackets, it is important to place the traps between the area to



Figure 6. Yellowjacket lure trap.

be protected and the native landscapes serving as nesting sites. Typically yellowjackets will forage about 1/4 mile. See Figure 7 for a suggested placement for traps.

**Water traps.** Water traps generally are homemade and consist of a 5-gallon bucket, string, and protein bait such as turkey, ham, fish, or liver. Fill the bucket with soapy water, and suspend the pro-

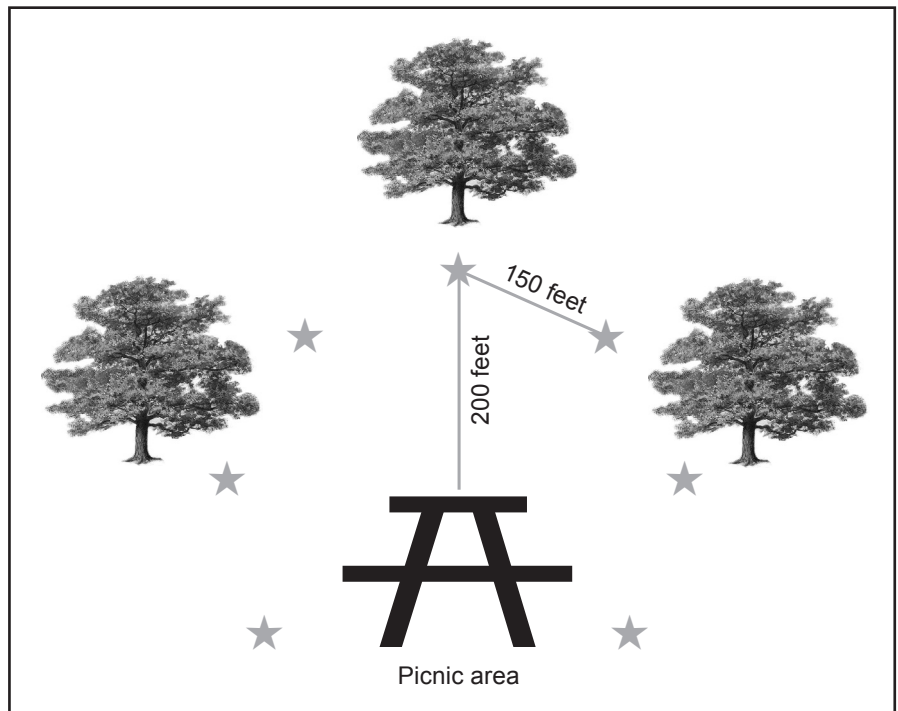


Figure 7. Placement of lure traps (represented by stars) to protect a picnic area in a park. Place the traps about 200 feet from the protected area and about 150 feet apart. In a backyard situation, place the traps around the periphery of the property as far away from the patio or other protected area as possible.

tein bait 1 to 2 inches above the water. A wide mesh screen over the bucket will help prevent other animals from reaching and consuming the bait. After the yellowjacket removes the protein, the yellowjacket flies down and becomes trapped in the water and drowns. Like the lure trap, these traps also work best as queen traps in late winter to early spring. In summer and fall they might assist in reducing localized foraging workers but usually not to acceptable levels. Place water traps away from patio or picnic areas, so wasps aren't attracted to your food as well.

**Bait Stations**

In the past, poison bait products were available to reduce yellowjacket populations later in the season when their prey is no longer available and some species turn to scavenging. However, reliable products were taken off the market in the early 2000s. Esfenvalerate products that recently became available haven't been shown to be effective in research trials.

**Discouraging or Eliminating Nests**

Early in the season, simply knocking down newly started paper wasp nests will cause the founding female to go elsewhere to start again or to join a neighboring nest as a worker. As there is little activity around newly started wasp nests, they are very difficult to find. Wasps are more likely to be noticed after nests and populations grow. Nest removal for controlling subterranean or cavity-dwelling yellowjackets isn't practical, because the nests are underground or otherwise inaccessible.

**Nest Sprays**

Aerosol formulations of insecticides labeled for use on wasp and hornet nests can be effective against yellowjackets and paper wasps, but the products must be used with extreme caution. Wasps will attack if they sense a poison being applied to their nests, and even the freeze-type products aren't guaranteed to stop all wasps that come flying out. It is prudent to wear protective clothing that covers the entire body, including a veil over your face and gloves. In addition, you need to wear protective

eyewear and other clothing to protect yourself from pesticide hazards.

Wasps are most likely to be in the nest at night, but even after dark and using formulations that shoot an insecticide stream up to 20 feet, stinging incidents are likely. Underground nests can be quite a distance from the visible entrance, and the spray might not get back far enough to hit the wasps. Partially intoxicated, agitated wasps are likely to be encountered at some distance from the nest entrance, even the day after an insecticidal treatment. Hiring a pest control professional will reduce risks to you and your family; in some areas of California, this service might be available through your local mosquito and vector control district.

**REFERENCES**

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**SUGGESTED READING**

Sacramento-Yolo Mosquito & Vector Control District, [www.fightthebite.net](http://www.fightthebite.net). ❖

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**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.

Pesticides applied in your home and landscape can move and contaminate creeks, rivers, and oceans. Confine chemicals to the property being treated. Avoid drift onto neighboring properties, especially gardens containing fruits or vegetables ready to be picked.

Do not place containers containing pesticide in the trash or pour pesticides down the sink or toilet. Either use the pesticide according to the label, or take unwanted pesticides to a Household Hazardous Waste Collection site. Contact your county agricultural commissioner for additional information on safe container disposal and for the location of the Household Hazardous Waste Collection site nearest you. Dispose of empty containers by following label directions. Never reuse or burn the containers or dispose of them in such a manner that they may contaminate water supplies or natural waterways.

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