

CARPENTER ANTS

Integrated Pest Management In and Around the Home

Several species of carpenter ants (*Camponotus* species) are capable of damaging wood in buildings and other structures. The two most destructive species in the Western United States are *C. modoc* and *C. vicinus*, both of which are found in California. Carpenter ants can become pests in any urban setting with ornamental shade trees, but they are particularly common in forested foothill and mountain communities.

IDENTIFICATION

Carpenter ants are among the largest ants in North America with workers of *C. modoc* (Figs. 1 and 2) and *C. vicinus* (Fig. 3) ranging from $\frac{1}{4}$ to $\frac{1}{2}$ inch long. They have only one bulge at their narrow "waist" (the single node on their petiole) and an evenly rounded back, when viewed from the side (known as a smooth dorsal thoracic profile).

The western black carpenter ant, *C. modoc*, is uniformly black with dark red legs, while *C. vicinus* varies in color but usually is red and black. A smaller, yellow and black species, *C. clarithorax* (Fig. 4), which also is common in California, ranges from a little longer than $\frac{1}{8}$ of an inch to not quite $\frac{5}{16}$ of an inch long.

Carpenter ants can't sting but can inflict painful bites with their powerful jaws and spray formic acid into the wound, causing a burning sensation.

Homeowners might confuse the winged males and females that leave the nest on mating flights with termites. Figure 5 illustrates distinguishing features of the two pests. Carpenter ant sawdust is fibrous versus the 6-sided shaped pellets of drywood termites (Fig. 6).

COLONY DYNAMICS AND LIFE CYCLE

Carpenter ants feed on dead and living insects, nectar, fruit juices, and sugary honeydew excreted by plant-sucking insects.

They will enter buildings in search of nesting sites or moisture and can build nests containing several thousand ants. Typically, the nests they construct indoors are satellites of a larger, parent nest located outside in a live or dead tree, a woodpile, or landscaping materials. Several satellite nests can be associated with a single parent nest, where the queen or queens reside, as in the case of *C. vicinus*, which can have as many as 40 queens in a single nest.

New reproductives have wings and leave the nest on mating flights in the spring. The timing of these flights varies for each species. For example, *C. modoc* swarms in the late afternoon, often after a heavy rainfall. After the mating flight, males die, and inseminated queens disperse in search of potential nest sites such as a dead tree or stump. Here, the newly mated queen excavates a chamber, seals herself in, and begins laying eggs. Colony growth is slow at first and only after several years does the colony reach maturity and begin producing a new generation of winged ants to begin the cycle again.

DAMAGE

Carpenter ants don't consume wood like termites but excavate it to make their nests, which in large colonies can consist of an extensive network of galleries and tunnels often beginning in an area where there is damage from water or wood decay (Fig. 7). From here they can expand the nest into sound



Figure 1. Western black carpenter ant, *Camponotus modoc*.



Figure 2. Winged female reproductive western black carpenter ant.



Figure 3. *Camponotus vicinus* worker ants with pupa.



Figure 4. Worker ant from the species *Camponotus clarithorax*.

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wood and compromise structural integrity. They also commonly nest in wall voids, hollow doors, and insulation. Infestations can even occur in new buildings when land clearing in the surrounding area disturbs established colonies, causing them to move into the structure.

In natural settings, they excavate into the heartwood of living trees or into dead trees and stumps. These latter infestations play an important role in the decomposition of wood.

MANAGEMENT

There are several nonchemical measures that can help prevent infestations:

- Trim tree branches and shrubs away from structures to prevent access;
- Seal off potential entry points such as where utility lines enter a structure;
- Reduce mulch around building perimeters to a depth of 2 to 3 inches to discourage nesting;
- Eliminate any earth-to-wood contact of structural elements that might promote wood decay;
- Replace decayed or damaged wood and correct problems that cause decay such as clogged rain gutters or leaky pipes;
- Increase ventilation to damp areas such as attic or subfloor spaces;
- Store firewood off the ground and several feet away from structures; and
- Remove potential food sources inside a structure and store them in tightly sealed containers.

Because ants have a “sweet tooth,” reducing the number of insects that produce honeydew might control ants around structures. For more information on managing these pests, see *Pest Notes: Aphids*, *Pest Notes: Giant Whitefly*, and *Pest Notes: Scales* listed in References.

Before attempting to control an infestation using chemicals, inspect the property for potential nesting sites both inside and outside the structure

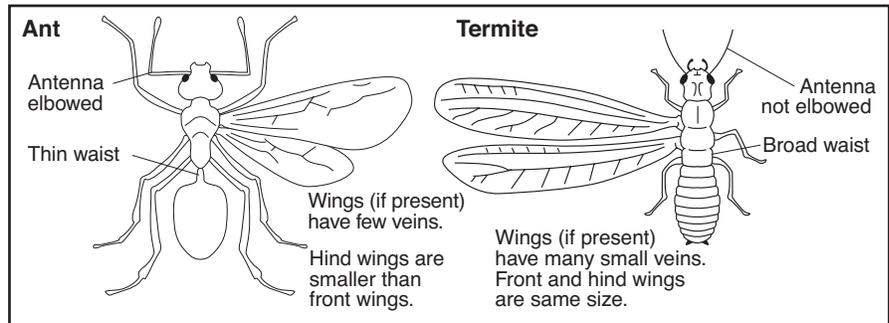


Figure 5. Distinguishing features of ants and termites.

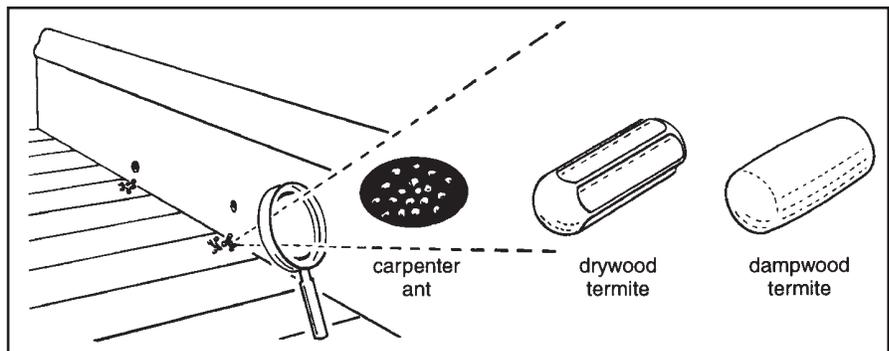


Figure 6. Sawdust from carpenter ants is distinctly different from the pelletized frass termites produce.

by observing ant activity and following trails, preferably after sunset when carpenter ants are most active. To attract these ants, set out nontoxic baits such as sugar milk (equal parts of sugar and milk) or diced crickets or mealworms (which you can purchase at a pet store or bait shop), then follow the workers back to their nest. Look and listen for other signs of infestation such as sawdust; their excrement, or frass; or a faint rustling in walls, floors, and woodwork.

Once you have located a colony, you can apply an insecticide directly into the nest. You may need to drill holes in order to gain access. Insecticide sprays containing pyrethroids, such as permethrin or cyfluthrin, and dusts containing disodium octaborate tetrahydrate or desiccants are effective control products. Desiccants are absorptive powders (diatomaceous earth or silica gel) that destroy insects by removing the protective, waxy outer body layer, causing the ant to dry out, or desiccate. Of the desiccant dusts, diatomaceous



Figure 7. Wood damaged by mature carpenter ants.

earth is readily available in retail stores, but only a licensed pesticide applicator can apply silica gel. Desiccant dusts are low in toxicity to people and don’t lose their effectiveness over time, as long as they remain dry. Avoid inhaling these materials, however, because they can cause serious lung irritation.

Perimeter sprays with fipronil are very effective against carpenter ants, but only a licensed applicator can apply them. If toxic baits are used, they should be slow-acting formulations, so

the ants carry the toxicant back to the nest and share it with the rest of the colony. This is critical, because only about 10% of the ants are out foraging at any one time. Carpenter ants are finicky, so first attract them to a nontoxic food source like sugar milk or diced crickets or mealworms. After the ants start feeding, replace the nontoxic food source with several different toxic baits that are labeled for ant control, and let them choose the one they prefer. When selecting an insecticide bait, make sure that ants are listed as one of the target pests on the label.

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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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