



# Carpenter Ants and Control in Homes

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## Introduction

Carpenter ants are members of the insect order Hymenoptera, which includes bees, wasps, sawflies, and other ants. Carpenter ants can be occasional pests in the home and are noted particularly for the damage they can cause when nesting in wood. In Utah they are more of a nuisance rather than a major structural pest.

Carpenter ants, along with a number of other ant species, utilize cavities in wood, particularly stumps and logs in decayed condition, as nesting sites. They are most abundant in forests and can be easily found under loose bark of dead trees, stumps, or fallen logs. Homeowners may bring them into their homes when they transport infested logs from forests to use as firewood.

## Description

Carpenter ants include species that are among the largest ants found in the United States. They are social insects with a complex and well-defined caste system. The worker ants are sterile females and may occur in different sizes (majors and minors). Members of the reproductive caste (fertile males and females) are usually winged prior to mating.

All ants develop from eggs deposited by a fertilized female (queen). The eggs hatch into grub-like larvae (immatures) which are fed and cared for by the workers. When fully grown, the larvae spin a cocoon and enter the pupal stage. The pupal stage is a period of transformation from the larva to adult.

Ants, including carpenter ants, are often mistaken for termites when infestations occur in or around homes. These two insects can be distinguished by the following differences:

1. Antennae - Ants have elbowed antennae while termite antennae are straight and bead-like.
2. Waist - Ants have a narrow "waist" area at the front of the abdomen while termites are thick waisted.
3. Eyes - Worker ants have compound eyes while termite workers lack these structures.

4. Wings - Both winged termites and winged ants have two pairs of wings. In termites the wings are approximately the same size. In ants the wings are of unequal length with the front pair being much longer than the hind pair.

Depending on species and caste, carpenter ant workers are from one-eighth to five-eighths inch in length and are usually blackish in color (with some exceptions). Carpenter ants have an evenly rounded thorax (when viewed from the side). Other characteristics include 12 antennal segments, a single node (a small-diameter segment) at the front of the abdomen (the "waist"), and a circle of hairs around the tip of the abdomen. Other ants may have some of these characteristics, but not all of them. Any large black ants (about three-eighths inch or more in length) are most likely carpenter ants, but smaller carpenter ants or bicolored species are not as easy to recognize.

There are 12 species of carpenter ants known to occur in Utah. Some of these species are all black or dark brown. Several are bicolored, with portions of their bodies being black or dark brown, and other areas colored with various shades of red or yellow. Worker ants of the various species range in size from around 1/4 inch to over 1/3 inch in length. The queens are larger.

### **Biology and Habits**

Carpenter ants utilize a wide variety of food sources. Unlike termites, they do not utilize the wood in which they tunnel as a food source. They will feed on other insects, related arthropods, and dead animals. They also feed on honeydew (a sweet liquid secreted by plant feeding insects such as aphids, mealybugs, scales, and treehoppers), plant fluids, and various household food items.

Preferred foods of carpenter ants include honeydew, sweets, and insects. Carpenter ants are not especially attracted to protein, oils, seeds, or most plants, although they may feed upon these occasionally. Regardless of the food source utilized, adult ants ingest only liquids or juices extracted from food materials. The reproductive males and females are fed by the worker ants who regurgitate the food material.

Carpenter ants do not eat wood but will tunnel into wood structures to establish new colonies or expand existing ones. They can tunnel into sound lumber but prefer wood that has been softened by water and rot organisms. Consequently, in buildings they often establish themselves initially in window sills, door casings, thresholds, and other areas frequently subjected to moisture. Sawdust and other debris are cleared from the tunnels and dumped in piles outside the colony (In contrast, termite tunnels are usually littered with fecal deposits and soil).

Ant colonies are most noticeable when they swarm. Swarming is the process of releasing the winged male and female ants into the environment. An ant colony must be well established before it can produce a swarm. This is because a high input of food and labor is required to produce the winged reproductive ants. Swarming is triggered by the right combination of environmental conditions, and the combination differs from one species to another.

Carpenter ant swarms are usually observed from late spring to late summer. The presence of one or two winged ants indoors is not necessarily a sign of an infestation, but the source of

large numbers of winged ants should be investigated.

Carpenter ant colonies can become established in a building either by the invasion of a fertilized queen or immigration of an existing colony. A colony that is established in a tree stump, buried wood, or any other site may move to a nearby building if the colony is disturbed. The colony may also extend its foraging range to include nearby buildings without actually moving the colony. Therefore, the presence of carpenter ant workers in a building may not be conclusive proof of an infestation. Foraging ranges can be up to several hundred feet from the actual colony.

### **Inspections and Surveys**

A proper inspection is the first step in determining a treatment approach to a carpenter ant problem. If carpenter ant workers are found indoors during winter or winged forms emerge in the house during late winter and spring, there is probably at least one nest established in the structure. If ants occur singly or are found only in mid-summer, the ants may only be foraging from a nest some distance away (or at least not within the structure). The worker size, as mentioned above, can also be used for guidance here.

Location of carpenter ant nests is the key to effective control. Inspections for the nests should be carried out both indoors and outdoors. In the yard, carefully check any tree stumps, dead or dying shrubbery, overhanging tree limbs, and attached fences for signs of ant activity. Foraging carpenter ants may enter homes along utility wiring attached to the structure and use these wires as "roadways" from an outdoor nest.

Outdoor areas of the structure including wooden porch floors and columns, window and door sills, roof edges, and areas between the roof and the ceiling should be inspected carefully for ant activity, signs of decay, and sawdust. These places are most likely to have wood with a high moisture content, or decayed and rotting wood, as a result of excessive moisture. Carefully examine any wood in contact with the soil under or against the house.

Indoors, inspect under carpeting, in unfinished wood basement areas, in closets and storage rooms, inside electrical boxes, and in the bottoms of fixed wood cabinets for signs of ants, including sawdust. Sawdust may be evident in any of these areas and may also become trapped in cobwebs in basements and crawl spaces. If some area of your house is known to have a moisture or leak problem, inspect such areas thoroughly.

A thorough indoor inspection should include examination behind or under insulation in attics, wall voids, and crawl spaces, where accessible. Pest control professionals may have tools to help inspect inaccessible areas. These tools include equipment to detect sounds produced by carpenter ants or other insects, and a device called an "Insectascope" that can be inserted through a small hole to see inside walls or other voids.

Foraging carpenter ants can sometimes be followed to determine the general direction they are traveling or their point of entry. These ants may lead you to their nest site. Likewise, workers can be followed from an outdoor nest to determine if they are entering the house from outdoors. Carpenter ant trails are often hidden or covered and most foraging activity occurs at night, so trailing them may not be simple.

Surveys of carpenter ants can be useful to locate nests or points of entry. Index cards dabbed with honey can be placed in various areas including window sills, near water sources, around outside doors, and near openings where pipes pass through floors or to the outdoors. Depending on the level of ant activity, the cards can usually be checked after a few hours to determine which ones have attracted ants. Surveys and inspections at night are often more effective since most foraging activity by carpenter ants occurs at night.

If no nests are found in the structure or nearby, the nest(s) might be located outside your property. Also, if one nest is found, the possibility of satellite nests exists.

### **Identification Of Species**

Carpenter ants all belong to the genus *Camponotus*. The identification of carpenter ants to species can be important in making a treatment decision, although this can be difficult for some worker specimens and is impossible for winged specimens.

Certain species, including *Camponotus modoc*, *C. herculeanus*, and *C. vicinus* are more likely to be structural pests. Other species, including *C. essigi* and *C. nearcticus* are more likely to be nuisance pests that are not established in the structure. Other species, though they occur in Utah, may never be found in urban situations.

Worker size can be used as an identification tool to some degree. The structural species usually have larger workers ranging from about one-fourth to five-eighths inch, while nuisance species have workers ranging from about one-eighth to one-fourth inch. For the two types, the size ranges represent the differences between the major and minor castes.

### **Control**

If chemical control becomes necessary there are over 200 Utah-registered products labeled for carpenter ant control in indoor domestic dwelling situations. These insecticides come in the form of aerosols, baits, dusts, granules, and sprays (mixable and ready-to-use). Use the one most appropriate for your needs. Active ingredients in products labeled for this purpose include abamectin, acephate, bendiocarb, bifenthrin, boric acid, chlorpyrifos, cyfluthrin, cypermethrin, D-phenothrin plus tetramethrin, deltamethrin, diazinon, esfenvalerate, fipronil, hydramethylnon, imidacloprid, permethrin, propetamphos, propoxur, sulfluramid, synergized pyrethrins, and tralomethrin.

High moisture conditions should be eliminated as an aid to carpenter ant control. This prevents future attacks and fungus infection. Temporary control of ants in homes can be obtained by spraying them directly with a household aerosol or pump insecticide formulations containing one of the following active ingredients: abamectin, acephate, bifenthrin, boric acid, chlorpyrifos, cyfluthrin, cypermethrin, D-phenothrin plus tetramethrin, diazinon, fipronil, permethrin, propoxur, or synergized pyrethrins. Applications should be restricted to surfaces and areas listed on the product label. Insecticides should be applied to the nest and nest areas to be most effective. Residual insecticides usually are preferred, but the aerosols of contact insecticides are useful in flushing out as well as killing carpenter ants.

In most cases eradication of a colony requires the removal or death of the queen(s). Killing

workers or swarming ants is generally ineffective as a healthy queen will soon replace them with future egg production. Since the queen does not leave the colony, a method of getting the insecticide to her in the colony must be utilized. The simplest way to do this is to use an insecticidal dust or bait.

The dust should be lightly applied to areas frequented by foraging workers and/or puffed into galleries in the wood which are currently being used by the workers. As the workers move over the treated surface, the dust will adhere to their bodies and be carried back to the colony. The dust will gradually be spread through the colony and may be passed to the queen along with food. After treatment the ants may seal off treated galleries or stop foraging in treated areas. If this happens, additional areas being used by the workers will have to be located and treated in order to obtain control. Repeat applications may be required to move enough dust into the colony to kill the queen. Many dust formulations containing one of the following active ingredients may be used indoors: bendiocarb, boric acid, chlorpyrifos, cyfluthrin, or deltamethrin. Follow label directions and do not contaminate food, food processing and handling areas, or utensils.

Baits should be placed in areas where worker activity has been observed. If foraging workers do not come to the bait within a couple of days, a new location should be baited. Bait formulations containing abamectin, boric acid, chlorpyrifos, fipronil, hydramethylnon, propoxur, or sulfluramid are available in ant traps. Ant traps are small, capped metal tins fitted with punch-out discs to permit access to the bait by the ants.

If repairs are required to correct damage from carpenter ants, it may be possible to remove or treat the colony (use household aerosol or pump spray formulations listed above) when it is exposed during the repair process. Again, eradication will require that the queen be removed or killed (the queen is wingless at this time and the largest ant in the colony). If the damage does not require repair, control may be obtained using the dust or bait formulations. The main difficulty in obtaining control is locating the galleries. Considering that individual carpenter ants can live for well over six months without food, it becomes obvious that the galleries of the nest must be treated. Sometimes it is possible to find the openings to the galleries by looking for the small piles of sawdust-like material the ants push out of the tunnels as they work. It may also be possible to locate the galleries by following foraging workers back to the nest.

### **Precautionary Statement**

All pesticides have both benefits and risks. Benefits can be maximized and risks minimized by reading and following the labeling. Pay close attention to the directions for use and the precautionary statements. The information on pesticide labels contains both instructions and limitations. Pesticide labels are legal documents, and it is a violation of both federal and state laws to use a pesticide inconsistent with its labeling. The pesticide applicator is legally responsible for proper use. Always read and follow the label.

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