

# Carpenter Ants

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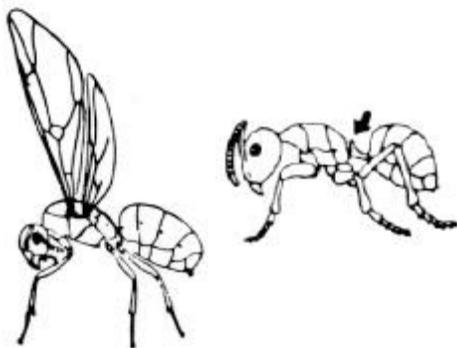
Common Name	Scientific Name
Black Carpenter Ant	<i>Camponotus pennsylvanicus</i> (DeGeer)
Red Carpenter Ant	<i>Camponotus ferrugineus</i> (Fab.)
Smaller Carpenter Ant	<i>Camponotus nearcticus</i> Emery

Carpenter ants are a nuisance by their presence when found in parts of the home such as the kitchen, bathroom, living room and other quarters. When 20 or more large winged and/or wingless ants are found indoors, in the daytime near one location, it is possible that the colony is well established in the home and the nest may have been extended into sound wood, sometimes causing structural damage. They do not eat wood, but often remove quantities of it to expand their nest size. However, if only one to two large wingless ants are erratically crawling, they may simply be foraging for food with the nest located outside. Outdoors, they are frequently seen running over plants and tree trunks or living in moist, partly rotten wood stumps. Nevertheless, carpenter ant inquiries rank first over all other household/structural pests in Ohio.

## Identification

Carpenter ants are among the largest ants found in homes and live in colonies containing three castes consisting of winged and wingless queens, winged males and different sized workers. Winged males are much smaller than winged queens. Wingless queens measure 5/8 inch, winged queens 3/4 inch to the tips of their folded brownish wings, small minor workers 1/4 inch and large major workers 1/2 inch. Workers have some brown on them while queens are black. Workers have large heads and a small thorax while adult swarmers have a smaller head and large thorax. Carpenter ants have a smoothly rounded arched (convex) shape to the top of the thorax when viewed from the side and a pedicel between the thorax and abdomen consisting of only one segment or node. They have constricted waists, elbowed antennae and the reproductive's forewings are larger than the hindwings, transparent or brownish and not easily removed. Adults are usually black with some species red, brown or yellow occurring on parts of the body and legs. Eggs are about 1/8-inch long, cream colored and oval. Larvae are legless and grub-like, later pupating in tough silken, tan-colored cocoons erroneously referred to as "ant eggs."

## Life Cycle and Habits



Queen

Worker

Winged male and female carpenter ants (swarmers) emerge from mature colonies usually from March to July. After mating, males die and newly fertilized females (mated for life), establish a new colony in a small cavity in wood, under bark, etc. and each lays 15 to 20 eggs in 15 days. The egg stage takes about 24 days, larval stage 21 days and pupal stage 21 days or about 66 days from egg to adult at 70 to 90 degrees F. Cool weather may lengthen this period up to 10 months. The colony does not produce swarmers until about three years later. A mature colony, after three to six years, has 2,000 to 4,000 individuals. During the first brood, larvae are fed entirely by a fluid secreted from the queen's mouth where she does not take food, but uses stored fat reserves and wing muscles for her nourishment. The few workers emerging from the first brood assume duties of the colony, collecting food, excavating galleries to enlarge the nest and tending the eggs, larvae and pupae of the second generation. Workers regurgitate food for nourishment of the developing larvae and queen. She has few duties except to lay eggs.

In later generations, workers of various sizes are produced (polymorphism) into major and minor workers, that are all sterile females. Males formed are winged swarmers. Larger "major" workers guard the nest, battle intruders, explore and forage for food while smaller "minor" workers expand the nest and care for the young. workers, when disturbed, carry off the larvae and pupa, which must be fed and tended or they die. In a mature colony, there is usually one queen with 200 to 400 winged individuals produced as swarmers. Workers have strong jaws and readily bite (sharp pinch) when contacted.

Nests are usually established in soft, moist (not wet), decayed wood or occasionally in an existing wood cavity or void area in a structure that is perfectly dry. Workers cut galleries in the wood, expanding the nest size for the enlarging colony. Galleries are irregular, usually excavated with the wood grain (sometimes across the grain) into softer portions of the wood. The walls of the nest are smooth and clean (sandpapered appearance) with shredded sawdust-like wood fragments, like chewed up toothpicks (frass), carried from the nest and deposited outside. These piles of wood fragments, often found beneath special openings (windows) or nest openings, may contain portions of insects, empty seed coats, etc.

Carpenter ants do not eat wood but excavate wood galleries to rear their young ants and carry aphids to plants, placing them on leaves for the production of honey dew. The food diet is of great variety (omnivorous) of both plant and animal origin such as plant juices, fresh fruits, insects (living or dead), meats, syrup, honey, jelly, sugar, grease, fat, honey dew (aphid excrement), etc. They feed readily on termites and usually never co-exist with them in a home. Workers are known to forage for food as far as 100 yards from their nest.

## **Control Measures**

The most important and often most difficult part of carpenter ant control is locating the nest or nests. Once the nest location is found, control is very easy and simple. Sometimes more than one colony is present in the structure or on its grounds, so a thorough inspection is very important. Steps to a successful inspection include an interview with family members, inspection indoors, inspection outdoors and sound detection.

## **Interview**

Often children and adults of the residence know where ants are seen, where large numbers are most prevalent, movement patterns, moisture in the structure, moisture problems of the past, if swarmers were seen, location of sawdust-like material in piles, populations outdoors, etc.

## **Inspection Indoors**

Nests can be found in either moist or dry wood. However, carpenter ants prefer to nest in moist wood with a moisture content considerable over 15 percent, often caused by rain, leaks, condensation, etc. Structural timber is about 12 to 15 percent moisture. A moisture meter can find wet spots to pinpoint possible nest locations. Inspect behind bathroom tiles, around tubs, showers, sinks, dishwashers, washing machines, refrigerator drip pans, etc. Check wood affected by moisture from contact with the soil such as steps, porch supports, siding, seepage from plugged drain gutters, chimney flashing, wooden shingle roofs, hollow porch posts, columns, leaking window and door frames, window boxes, crawl spaces, pipes, poor pitch of porch roofs, flat deck porch roofs, under porches, attics, etc. Sometimes, nests are found in dry environments, such as hollow veneer doors, curtain rods, small void areas between the door casing and ceiling, false beams, or under insulation in attics. Look for damaged timbers, swarmers in spider webs, wood piles indoors, piles of wood debris ejected from the colony (pencil sharpener shaving-like), "windows" or small opening to a nest, etc. Gently tap floor joists, etc. with a hammer. A nest cavity gives a hollow ring. A knife blade will penetrate the wood if infested.

## **Baiting**

Some may use tiny piles of sugar at two to three feet intervals around the kitchen, bathroom, etc. in attempt to determine where the nest is located. Others use drops of honey or corn syrup placed on the back of masking tape. Make observations late at night, following ants back to their nest entrance.

## **Flushing Agent**

A household aerosol spray, containing pyrethrins and piperonyl butoxide, applied directly into cracks, crevices or holes, will excite the ants (repellent action) causing them to come running out revealing the presence of their nest in some instances.

## **Inspection Outdoors**

Look for ants traveling from a tree or stump to the structure. They may travel over tree branches or vines touching the roof, electrical and telephone wires, fences next to the house, piles of firewood, logs, or railroad ties nearby or hollow living trees with entrance knot holes, etc. Workers are most active at night (midnight), traveling from their nest to a food source following trails but no particular trail leading directly to the nest. They do establish chemical (pheromone) trails.

## **Sound Detection**

An active colony may produce a distinct, dry rustling sound (sometimes loud), similar to the crinkling of cellophane. It may be heard in a wall when standing in a room. A listening device, such as a stethoscope, may be useful when conditions are quiet and outside noises are at a minimum. Even a

cat may hear noises in a home caused by ant mandibles (jaws) not from chewing wood or eating food, but as their form of communication, especially if the colony is disturbed.

## Prevention

Homeowners should trim all trees and bushes so branches do not touch or come in contact with the house. Correct moisture problems such as leaking roofs, leaking chimney flashing, or plumbing, poorly ventilated attics or crawl spaces and blocked gutters. Replace rotted or water-damaged wood and eliminate wood to soil contact. Remove dead stumps within 50 feet of the house, if practical, and repair trees with damage at broken limbs, and holes in the trunk. Seal cracks and crevices in the foundation, especially where utility pipes and wiring occur from outside. Be sure to store firewood off the ground away from the house and bring in only enough firewood (first examining it) to be used quickly. Consider non-organic mulches near the house in heavily infested ant areas. High moisture conditions must be eliminated to help control carpenter ants, prevent future attacks and prevent "wood decay" fungus infection.

## Insecticides

If the nest is located in a wall void, it is best to dust directly with bendiocarb (Ficam), boric acid or Diazinon. Drilling 1/4 or 3/8 inch holes into the wall, sills or joists, where the nest is located, will best help the insecticide penetrate. Treat three to six feet on either side of where ants are entering to hopefully contact the nest. Some drill a series of holes at 12-inch intervals in infested timbers to intercept cavities and galleries of the nest. Holes can later be sealed by putting in dowels as plugs, small corks or covering with an appropriate sealant and touched up with paint, leaving no visible damage from the repairs. Spraying or dusting the baseboards or cracks and crevices around the infested area with residual insecticides, without locating and treating the nest, usually does not give complete control. Foraging workers will contact the insecticide and die while ants staying inside the galleries of the nest, along with the queen and developing larvae, may not be greatly affected. Kill might be slow with only crack and crevice treatment since workers need to carry enough insecticide on their feet back into the nest. Ants in the nest can live more than six months without feeding. However, aerosol spray treatments in the nest can be effective if much insulation is present. Vapors may be spread to penetrate inaccessible areas of the nest, aiding in colony eradication. Approaches and areas adjacent to the nest must be thoroughly treated with residual insecticides such as chlorpyrifos (Dursban) or Diazinon (Knox Out). Outside the structure, all breaks where ants can enter the home must be treated, and a perimeter spray applied against the foundation wall at least two feet up and three feet out. Be sure to treat under the lower edge of sidings, around window and door frames and the chimney flashing.

There are many insecticides labelled for ant control. Before using an insecticide, always read the label, follow directions and safety precautions.

Restricted Use Pesticides, available for the licensed pest control operator or applicator, would include bendiocarb+ pyrethrins (Ficam Plus) cyfluthrin (Optem, Tempo), cypermethrin (Cynoff, Cyper-Active, Demon, Vikor), deltamethrin (Suspend), lambda-cyhalothrin (Commodore), permethrin (Dragnet, Flee, Prelude, Torpedo), propetamphos (Safrotin) and tralomethrin (Saga). Outdoor Use only would include fenvalerate (Tribute) and fluvalinate (Mavrik, Yardex). Other labelled materials are acephate (Orthene), ammonium silica gel (Drione, Tri-Die), bendiocarb (Ficam), boric acid (Borid), borate (Bora-Care, Drax, Mop-Up, Niban, Perma-Dust, Tim-Bor), carbaryl (Sevin), chlorpyrifos (Duration, Dursban, Empire, Engage, Killmaster II, Tenure), chlorpyrifos + pyrethrins (Dual Use), diatomaceous earth (Answer), diazinon (Knox Out), esfenvalerate (Conquer), propoxur (Baygon), pyrethrins (Exciter, Kicker, Microcare, Pyrenone, Pyrethrum, Safer, Synerol, Uld, X-Clude), resmethrin (Vectrin), sulfuramid (Pro-Control), and sumithrin (Steri-Fab).

Bait and granular formulations are usually not highly effective against carpenter ants. Dusts, wettable powders, injections, and sprayables are better. It is often best to employ a licensed pest control firm, especially where nests are hard to find. Some firms attempt to locate the nest or nests and treat only in suspected places. Others drill and dust potential nesting sites. Most apply a perimeter spray treatment around the house foundation. Avoid simply spraying each month whenever ants are seen. Infestations will continue unless nests are eliminated. Locating the nest is not always easy, but is essential for control.

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This publication contains pesticide recommendations that are subject to change at any time. These recommendations are provided only as a guide. It is always the pesticide applicator's responsibility, by law, to read and follow all current label directions for the specific pesticide being used. Due to constantly changing labels and product registration, some of the recommendations given in this writing may no longer be legal by the time you read them. If any information in these recommendations disagrees with the label, the recommendation must be disregarded. No endorsement is intended for products mentioned, nor is criticism meant for products not mentioned. The author, The Ohio State University and Ohio State University Extension assume no liability resulting from the use of these recommendations.