

## Carpenter Ant Management

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*This NebGuide explains how the biology and behavior of carpenter ants relate to control strategies and methods available to both homeowners and pest management professionals (PMPs).*

Carpenter ants play an important role in nature because they feed on other insects and burrow and nest in dead trees, which enhances wood decay. They achieve pest status when a colony invades and damages the integrity of the wood in a house or other building.

**Description.** The black carpenter ant, *Camponotus pennsylvanicus*, is the most common carpenter ant species in Nebraska (Figure 1). Foraging workers are black and quite large, from 1/4" to 5/8" long. At least one other carpenter ant, *Camponotus sayi*, is found in Nebraska. It has no recognized common name; unofficially it is referred to as the "red" carpenter ant because of its reddish-orange head and thorax and black abdomen (Figure 2). It is smaller than the black carpenter ant, from 1/8" to 3/8" long.

Even though these two carpenter ant species have different coloring, they both have a one-segmented pedicel (segment between thorax and abdomen) and the thorax profile is evenly rounded and not bumpy. All carpenter ant species have these characteristics.

Carpenter ant workers are polymorphic, meaning workers are many sizes. Entomologists refer to larger workers as "major" workers and smaller workers as "minor" workers. Minor workers are not baby ants, they just perform different tasks in the colony. Each colony has at least one queen, the egg-laying colony member. More than one queen may be in a colony. During warm weather carpenter

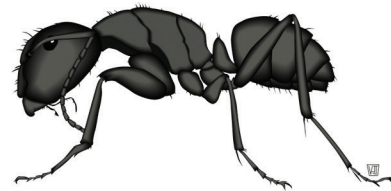


Figure 1. Black Carpenter Ant  
 (Photo credit: Vicki Jedlicka).

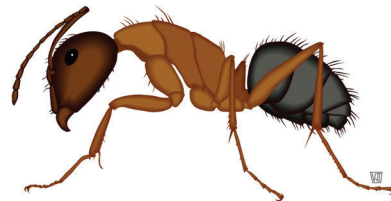


Figure 2. Red Carpenter Ant  
 (Photo credit: Vicki Jedlicka).

ants are generally nocturnal, but it is not uncommon to see them during the day.

**Swarming.** When a colony gets very large (6–10 years old and with more than 2,000 workers), it may produce winged reproductives, called swarmers. Swarming usually occurs during warmer months, but in Nebraska, people have reported swarms of red carpenter ants during warm spells in the winter. Black carpenter ant swarms are more commonly observed from March–June. Males are much smaller than females and often emerge a few days earlier.

**Life cycle.** After mating, a single queen seeks out a suitable nesting site and lays only a few eggs, which hatch into legless grub-like larvae. The queen does not leave the nest to gather food because she uses a reserve food supply



Figure 3. Cross-cut log showing carpenter ant nest. (Photo credit: James Kalisch).



Figure 4. Smooth galleries of a carpenter ant colony in structural lumber. (Photo credit: James Kalisch).



Figure 5. Rotted wood under the window of a log home. (Photo credit: Barbara Ogg).

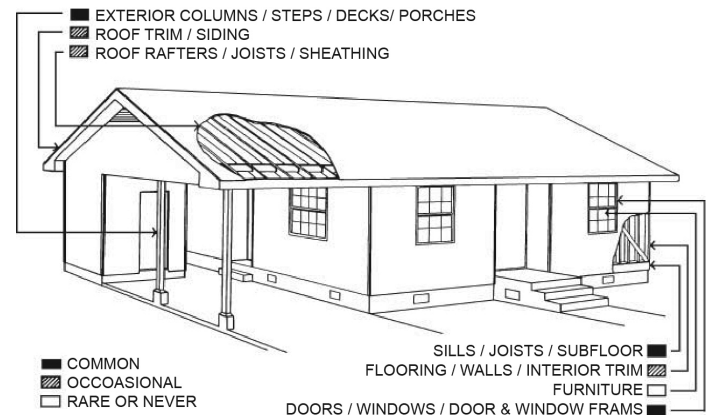


Figure 6. Incidence of carpenter ant damage in different parts of a typical home.

in her own body. The queen feeds and cares for the larvae, which become the colony's first workers. These workers forage for food and take care of the colony while the queen continues laying eggs.

**Food requirements.** The diet of carpenter ants is quite varied and includes living and dead insects, honeydew from aphids, sweets, meat, and fats. They do not eat wood, but only hollow out areas inside wood to form colonies. Workers leave the colony in late afternoon or early evening, forage during the night, and return to the colony in the early morning hours.

Carpenter ants carry food back to the nest intact, or ingest and later regurgitate to feed to non-foraging members in the nest. These ants may forage several hundred feet from the nest to search for food.

While homeowners may be concerned if they see

carpenter ants inside, this does not necessarily mean the house is infested. It could mean the house is simply within foraging distance of a colony.

**Foraging activities.** Carpenter ants use physical guidelines, chemical trails and visual cues, including light from the moon, stars, and artificial sources, in their night-time foraging activities. Outdoors, well-used trails may be observed in lawns, along foundations or sidewalks, and in flower beds. Indoors, carpenter ants may follow edges of rooms or cabinets; inside wall voids they may follow utility lines. The number of foraging carpenter ants on trails depends upon temperature, time of day, season, and colony size. Most activity will occur at night when temperatures are warm.

In the early spring, workers from an indoor colony may start foraging for food before it is available outdoors. These





Figure 7. Typical pile of saw dust discarded from carpenter ant tunneling. Saw dust won't be seen inside wall voids and other inaccessible locations. (Photo credit: Barbara Ogg).

workers are attracted to water in kitchens and bathrooms, and will also feed on sugary items such as candy, fruit, and sodas.

**Nesting habits.** To construct their nests, carpenter ants hollow out dead tree limbs, logs, posts, landscaping timbers, and wood used in homes and other structures (Figure 3). They can also live in creosote-treated railroad ties since they don't actually eat the wood. Carpenter ant galleries are smooth (Figure 4) and very different from termite-damaged areas, which have mud packed into the hollowed-out areas.

Carpenter ants prefer to nest in moist wood, but wood previously saturated may be soft enough for carpenter ants to hollow out as well. They also occasionally nest in dry, sound wood. Carpenter ants may be a serious problem in poorly maintained log houses (Figure 5). Certain parts of a house, such as around and under windows, roof eaves, decks, and porches are more likely to be infested by carpenter ants because these areas are most vulnerable to moisture. Refer to Figure 6 for the most common problem areas of a home.

**Satellite colonies.** Most growing and mature colonies have both a main or parent colony and one or more satellite colonies. Since the main colony usually needs a steady supply of moisture, it is often outdoors; satellite colonies are most common indoors. Satellite colonies consist of workers, larvae, and pupae, but never eggs. The carpenter ant queen always stays in the original parent colony.

**Locate problem areas.** Because carpenter ants are often associated with moist wood, determine if there is a moisture problem and repair it. More serious problems



Figure 8. Looking at carpenter ant sawdust with a magnifying glass shows tiny wood shavings all the same size, like tiny chisels were used. It usually has insect parts in it. (Photo credit: James Kalisch).

associated with moisture include mold growth and structural damage.

A relatively simple and affordable tool to help locate moisture in hidden areas is a moisture meter, of which many different models exist. Pest management professionals (PMPs) should choose a model that is best for their situation, read about it, and learn to use it. Homeowners should consider hiring a home inspector or PMP who owns a moisture meter and is experienced in using it.

Carpenter ants don't always need to tunnel in wood to make their nest. They may use an old abandoned nest or wood "hollowed out" by termites. Nests also may be located in hollow doors, small void areas produced during construction, even in foam insulation.

Carpenter ants keep occupied galleries clean. They remove wood in the form of a coarse sawdust-like material, pushed from the nest (Figure 7). This often results in a cone-shaped pile accumulating just below the nest entrance hole. Besides wood fragments, this pile may include other nest debris such as bits of soil, dead ants, parts of insects, and other food remnants. (Figure 8).

**Prevention.** To prevent carpenter ant infestations:

- Trim all trees and bushes so branches do not touch the house; correct moisture problems such as leaky roofs, windows or doorframes, and plumbing problems.
- Paint and/or seal exposed wood construction before it becomes wet.
- Replace previously ant- or termite-infested wood, rotted or water-damaged wooden parts of the structure, and eliminate wood/soil contacts.

Table I. Examples of some dust products registered in Nebraska for control of carpenter ants in domestic dwellings.

Active Ingredients	Non-repellent	Product Name	Marketed for Professionals (PMPs)
Boric acid	X	Combat Liquid Ant Bait	
		Harris Termite Powder	
		Pic Boric Acid Roach and Ant Killer	
		Terro Ant Killer II Liquid Ant Baits	
		Nibor D	X
Silica gel		Cimexa Insecticide Dust	X
		Tri-Die Silica and Pyrethrum Dust	X
		Drione Insecticide	X
Diatomaceous earth	X	Garden Safe Crawling Insect Killer	
Avermectin	X	Avert Dry Flowable Cockroach Bait I	X
Dinotefuran	X	Alpine Dust Insecticide	X
Pyrethrins		Durvet Flea and Tick Powder	
		Evergreen Pyrethrum Dust	
		Tri-Die Silica and Pyrethrin Dust	X
		Drione Insecticide	X
Cyfluthrin		Tempo Dust RTU	X
Deltamethrin		Delta Dust	X
		D-Fense Dust	
		Enforcer Bugimax Insect Powder	
		Hy_Yield Multi-use Dust	
		Ortho Home Defense Killer Powder	
		Revenge Ant Killer Dust	
		Terro Ant Dust	
Permethrin		Earl May Eight Insect Control Garden Dust	
		Prozap Insectrin Dust	
Carbaryl	X	Apicide <sup>1</sup>	

<sup>1</sup>This product is intended to control bees and wasps in wall voids, but because it is labeled for use in wall voids, it can also be used for carpenter ant control. Some professional-use products can be purchased from online vendors. Always use insecticidal products in ways consistent with label directions.

Carpenter ants will not kill living trees. Openings in living trees, however, are attractive to carpenter ants and should be sealed.

Stacks of firewood and old dead tree stumps also attract carpenter ants, so remove dead stumps and store firewood off the ground, away from the structure. The longer wood remains undisturbed, the more likely it will become infested. Store only the firewood you plan to use during one heating season on a concrete pad above the soil and away from the house. Spraying firewood with insecticides is not recommended.

### Control

**Baits.** Colonies of some ant species can be controlled with baits, but because carpenter ants have such a varied diet, baits usually are not successful.

**Over-the-counter sprays.** Spraying foraging workers with most insecticides is of limited value. Even though some workers will die, the colony will largely be unaffected by the treatment.

**Treating the colonies.** Because carpenter ants live in colonies, use a treatment that effectively targets the main colony and all satellite colonies. Finding the colonies is important. Look for piles of sawdust to locate the entrance, and watch the movement of foraging ants. They are most active at night. Inspect the entire structure and surrounding grounds because nests may be entirely outdoors or a combination of indoors and outdoors.

Outdoor carpenter ant colonies should be treated as potential sources of satellite colonies, which could invade wall voids during warmer months.

Once you find the colonies, the control strategy depends on where they are located.

**If the colony is inside a tree branch or trunk.** Use a dust insecticide (*Table I*) labeled for use *in and around domestic dwellings*. Apply dust directly into the nest cavity. Non-repellent products may be more effective because ants are more likely to track through the dust and transport it deep into the colony.

Also consider using a pressurized liquid product delivered by a crack and crevice applicator tool. Again, non-repellent insecticides may be more effective. The majority of these pressurized liquid insecticide products are only available to PMPs.

**If the colony is in a wall void.** Place a dust insecticide inside the wall. Do not use liquid insecticides (such as concentrates intended to be mixed with water or ready-to-use products already mixed with water) inside wall voids. Water inside a wall void can damage insulation, plaster board, or electrical wiring. Use only products that are labeled for use in *domestic dwellings* or in *wall voids of domestic dwellings*.

Introduce the dust (*Table I*) or pressurized liquid product into the nest through the entrance hole. Use a hand duster equipped with a tube and tip that fits snugly into the entrance, or the crack and crevice tip supplied with the product. It may be necessary to enlarge the hole to better fit the duster tip. It also may be necessary to drill one or more access holes to apply the insecticide.

If a commercial duster is unavailable, you can make a duster from a flexible plastic bottle equipped with a tube tip. An old mustard or catsup bottle with a tip might work. Be sure to label the container and replace the dust into the original container when finished. Fill the plastic bottle no more than one-third full, insert the tip into the entrance hole (making sure it fits tightly) and inject the dust by alternately squeezing and releasing the pressure on the bottle. Fewer over-the-counter, dust-active ingredients are available for homeowners compared to PMPs. (*Table I*). It may be money well spent to hire a PMP who has a greater arsenal of products at his or her disposal and the proper application equipment.

When making any insecticide applications into wall voids, make sure treatments don't come into contact with humans or pets. Store any leftover insecticide in its original container with the label intact. Throw away the empty make-shift duster so it doesn't accidentally get used with food.

Some professional-use products can be purchased from online vendors. Always use insecticidal products in ways consistent with label directions.

**Non-repellent, transferable liquid insecticides.** Several non-repellent insecticide products are slow-acting and are transferred from one carpenter ant to other members of

the colony before causing death. Three such active ingredients are available:

- imidacloprid (Adonis 75 Termite/Insect WSP®, Bithor SC® [imidacloprid and bifenthrin], Dominion 2L®, Fuse® [imidacloprid and fipronil], I Maxxpro 2F®, Premise®, and Temprid FX® [imidacloprid and cyfluthrin]);
- chlorfenapyr (Phantom® and Spectre 25C®); and
- fipronil (Fuse® [imidacloprid and fipronil], Taurus SC®, and Termidor®). ***These products are intended to be used only by PMPs.***

Premise® is labeled for termite barrier treatments, though also can be used to control carpenter ants. The label allows applications to infested areas outdoors such as inside trees, utility poles, fencing and decking materials, landscape timbers, and similar non-structural wood. Inaccessible areas such as wall voids can be treated by drilling, then injecting imidacloprid into the voids. This insecticide also can be used as a perimeter treatment outdoors to prevent carpenter ants from entering a structure.

Phantom® is labeled for termite barrier treatments, but is not commonly used for that purpose. Instead, it can be used to control carpenter ants by applying directly to carpenter ant nests, nesting sites, ant trails, ant-infested wood, and wall voids. It can be used outdoors by making crack and crevice applications to areas where carpenter ants enter homes and other structures around doors, windows, eaves, attic vents, and holes through exterior walls where utilities enter.

Termidor® is used primarily for termite barrier treatments. Its label allows for treating ant paths outdoors so it may be useful for some carpenter ant infestations. But, according to labeled directions, Termidor can be used only twice a year for treatments like this; so it should be used discriminately. It cannot be used inside the home or in wall voids.

**Problem applications.** Remember, the most effective carpenter ant treatments are those that target the colony. Avoid using more insecticide than is needed to control the carpenter ant problem.

1. Don't inject dust into every exterior wall void as a replacement for locating the colony. Spend the time necessary to find the colony because it will be less disruptive, use less insecticide, and be less expensive.
2. Regularly scheduled sprays aren't needed for managing carpenter ants. After treating the colony, follow up by monitoring the treatment's success.
3. Injecting insecticides into the soil perimeter similar to a termite treatment is unnecessary for carpenter

ant control. This approach is very expensive and is not recommended for carpenter ant infestations.

Chemical names are provided as a convenience, but insecticide registrations and labels regularly change. It is the applicator's responsibility to make sure the insecticide is used in accordance with label directions. None of the products listed has been tested by the University of Nebraska–Lincoln.

#### DISCLAIMER

Reference to commercial products or trade names is made with the understanding that no discrimination is intended of those not mentioned and no endorsement by Nebraska Extension is implied for those mentioned.

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