



Carpenter bees

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What You Should Know

- Carpenter bees cause damage to structural timbers and other wood products such as fence posts, utility poles, firewood, arbors, and lawn furniture. They avoid wood that is painted or covered with bark.
- Carpenter bees are often confused for bumble bees because of their similar size and appearance.
- Only female carpenter bees have a sting, but are considered passive and will sting only if provoked. Male carpenter bees are territorial and aggressive, and will hover in front of people to protect nests.

Carpenter bees are large, hairy bees in the genus *Xylocopa* and order Hymenoptera. There are over 500 species of carpenter bees distributed worldwide. In Utah, we have two common species, *X. californica* and *X. tabaniformis* (Figs. 2-3). Carpenter bees in Utah are most likely found in Washington, Kane and Garfield counties, and are rarely found in Salt Lake and Utah counties. Unlike honey bees or bumble bees, carpenter bees are solitary insects without a caste system. In other words, females take care of their own young by making small nests and providing food. In some cases, some carpenter bees live in tunnels alongside their daughters or sisters.

As their name suggests, carpenter bees use wood to make nests. Carpenter bees do not eat wood, but are capable of chewing through and nesting in a variety of hardwoods and softwoods. Wood that is weathered is preferred. Eastern carpenter bee species prefer softwoods like cedar, redwood, cypress, pine, and fir, while western carpenter bee species often nest in oak, eucalyptus, and redwood. Adults are active from early spring through summer, and are common around houses and other wooden structures.

In general, carpenter bees are robust, heavy-bodied bees ranging from 20 to 25 mm in length. They have bright yellow, orange or white hairs on the thorax, dense hairs on the hind legs, and a black shiny abdomen. The male carpenter bees have white markings on the head.



Fig. 1. Female carpenter bee in her nest.¹

Building the Nest

Females will use buildings that have wood, such as shingles, shutters, roof eaves, fascia boards, and porches. Carpenter bees will make nests in a variety of other wooden structures, including fence posts, utility poles, firewood, lawn furniture, and arbors.

Carpenter bee females make nests by tunneling into wood (Figs. 1, 8). Females construct nests by scraping their mandibles against the wood, excavating a cavity at a rate of 1.5 cm/week. The beginning hole of a tunnel is circular and about 12 mm wide (about the diameter of the adult). Initially, she bores into the wood perpendicular to the grain for 2 to 5 cm, and then turns 90° to tunnel along the wood grain to finish the tunnel. An average tunnel is 10 to 15 cm, but can be up to 3 m when several bees are involved.

The female will then lay an egg at the far end of the tunnel and provision it with a mixture of pollen and regurgitated nectar formed into a ball. The provision will provide all the nourishment needed for the immature bee. She then seals the cell with a plug of chewed wood and continues building more cells until she fills the tunnel. An average tunnel will contain 7 cells/eggs. Gallery construction is labor-intensive, so females prefer to use old nests rather than construct new ones. Often the same nesting area will be active for many years.

Life Cycle

Carpenter bees go through complete metamorphosis cycle (egg, larva, pupa, adult) and typically have one generation per year. The life cycle takes about 7 weeks depending on the temperature. Eggs hatch within the cell, and larvae begin to feed on their respective provisions. Larvae develop in reverse order so that the eggs laid last are the first to emerge from the tunnel. This way, the bee closest to the tunnel exit can leave first. Newly developed adults may remain in the nests for a couple of weeks before attempting to leave. New adults have to chew their way through the cells and will generally wait to emerge from their tunnel until late August. Male and female adults will hibernate in and use these galleries as shelter during winter.



Fig. 2. Female *Xylocopa californica*, note her abdomen is shiny compared to bumble bees.²



Fig. 3. Male *Xylocopa tabaniformis*, note the mandibles for gathering nectar.²

Bumble Bee or Carpenter Bee?

Sometimes carpenter bees are mistaken for bumble bees foraging around the home. Both types of bees have similar body shapes and sizes, and the adults feed on pollen and nectar. Bumble bees and carpenter bees are not aggressive, but will defend their nests if threatened. Both are capable of multiple stings. But in general, bumble bees are covered with long setae, or hair (Figs. 4-5), and have a corbicula, or pollen basket, on the hind legs for collecting pollen. Carpenter bees have less hair, and often have shiny areas on the thorax and abdomen (Figs. 2-3). Bumble bees nest underground and form small colonies, while carpenter bees nest in wood and are solitary insects. Male and female carpenter bees overwinter in their wooden nests, and mated bumble bee queens will overwinter underground.



Fig. 4. Bumble bees are usually black with yellow or white bands.³



Fig. 5. Bumble bees have long setae over the entire body and pick up pollen while foraging.³

Carpenter Bee Damage

Carpenter bees will often nest in bare wood near roof eaves and gables, fascia boards, porches, decks, railings, siding, shingles, and other weathered wood. Nail holes, exposed saw cuts, and unpainted wood are attractive sites for bees to begin excavation. Sometimes carpenter bees will clean out the nest while building galleries; castings of wood particles and excrement will be pushed out the exit hole (Figs. 6-7). Sawdust-like piles around wood may indicate a carpenter bee infestation. Structural damage is not likely unless repeated nesting occurs in the same area or if moisture gets in the wood through the holes. Rarely woodpeckers drill the wood to try and get carpenter bee larvae.



Fig. 6. Carpenter bee castings, including excavated wood dust and excrement.⁴

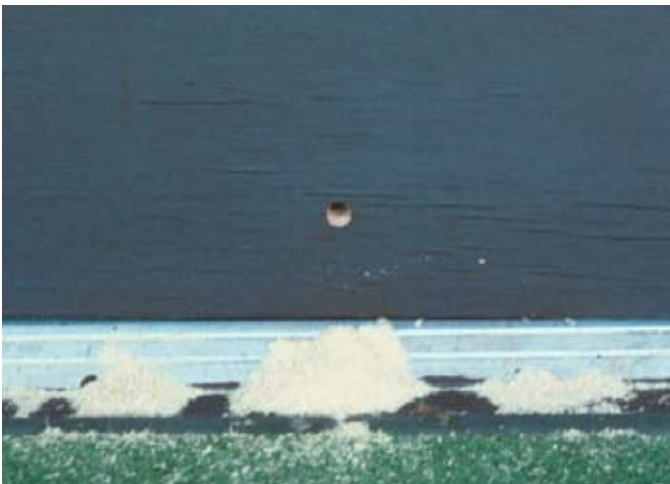


Fig. 7. Carpenter bee exit hole and castings.⁵

Carpenter Bee Prevention and Control

Carpenter bees often reuse or construct new tunnels near old ones, which can create a complex system of galleries that can sometimes cause excessive damage. Repeated infestations and tunneling into structures may require prevention. Locate exit holes during the day when adults are most actively foraging. Wear protective clothing before taking any preventative or control measures during the evening. Control measures for carpenter bees are usually not warranted and insecticides should be considered a last resort.

Fill the nest with an expanding foam or sealant. Consider covering the exit hole with wood putty or a caulking to discourage reinfestations. Insecticidal dusts (cyfluthrin or deltamethrin) may be more effective than liquids. Use in and around exit holes so adults will pick up dust particles and distribute to eggs while constructing cells. Liquid or aerosol insecticides registered for carpenter bee control in Utah include: beta-cyfluthrin, deltamethrin, esfenvalerate, imidacloprid, and permethrin.



Fig. 8. Carpenter bee nest in wood, each cell would include a food provision and egg.⁶

¹ Image courtesy of Mila Zinkova, Wikipedia (http://en.wikipedia.org/wiki/Carpenter_bee).

² Images courtesy of Eugene Zelenko, Wikipedia (<http://commons.wikimedia.org>).

³ Images courtesy of Wikipedia (<http://en.wikipedia.org/wiki/Bumblebee>).

⁴ Image courtesy of Arria Belli, Wikipedia (http://en.wikipedia.org/wiki/Carpenter_bee).

⁵ Image courtesy of Lamar Merck, University of Georgia (www.ipmimages.org).

⁶ Image courtesy of USDA Forest Service Archive (www.ipmimages.org).

Precautionary Statement: All pesticides have benefits and risks, however following the label will maximize the benefits and reduce risks. Pay attention to the directions for use and follow precautionary statements. Pesticide labels are considered legal documents containing instructions and limitations. Inconsistent use of the product or disregarding the label is a violation of both federal and state laws. The pesticide applicator is legally responsible for proper use.

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