



Carpenter Bees

Carpenter bees are an annual spring nuisance throughout Kansas. There are several native species, but the most common is *Xylocopa virginica* (Linnaeus). This is also the most common species in the eastern two thirds of the United States.

Carpenter bees are often confused with bumblebees, but there are some relatively easy ways to distinguish them. Bumblebees, even in flight, appear much hairier because their entire bodies are covered in dense, yellow hair. Carpenter bees have a hairy thorax, (middle part of body) but a mostly bare abdomen, causing them to appear shiny (Figure 1). Both carpenter bees and bumblebees are large insects, but bumblebees are generally a little larger ($\frac{5}{16}$ to $1\frac{1}{8}$ inch) than carpenter bees ($\frac{3}{4}$ to $\frac{7}{8}$ inch) or at least stouter.

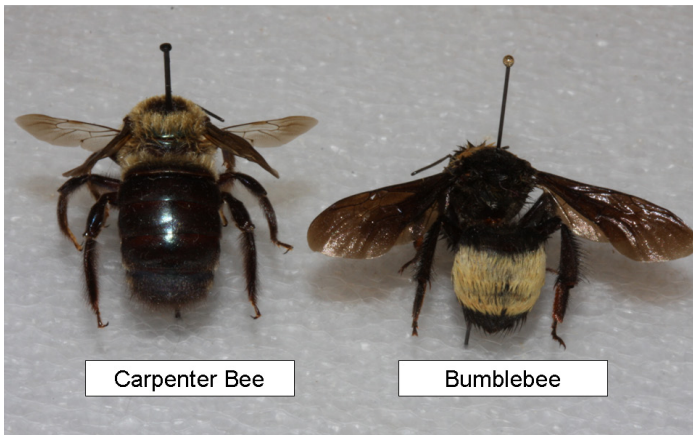


Figure 1: Carpenter bee compared with a bumblebee

Male carpenter bees are easily distinguished from females because they have a whitish or golden (some describe it as bald) face. Females have a dark or black shiny face (Figures 2 and 3). The distinction is important because females can sting, but males cannot.



Figure 2: Female carpenter bee



Figure 3: Male carpenter bee

Biology

The name carpenter bee comes from the wood-boring behavior of the adults. They have large mandibles (jaws), which are used to excavate tunnels and cells through soft and weathered wood. They do not eat wood, but instead forage on pollen and nectar, like other bees. This behavior may contribute to localized pollination if significant numbers of bees are nesting in the area, but because carpenter bees are solitary, large populations are present only where an abundance of suitable nesting sites exist.

Carpenter bees in Kansas are univoltine, which means there is only one generation per year. A new generation is initiated in late May or early June with the emergence of both male and female adults. Males generally exit the nest first and hover in the area, anxiously awaiting the emergence of the females. They become very territorial during this waiting period, and sometimes “dive bomb” intruders to scare away competitors and potential threats to the nesting site. However, these males are harmless and unable to sting. After the females emerge, the males chase after them to mate, and die soon afterward.

After mating, females begin to construct nests by refurbishing old nest sites or excavating new sites. Carpenter bees' nests are relatively large, like the bees themselves. Excavation proceeds slowly, at the rate of about one inch per week in old, soft woods. The females chew through the wood, leaving $\frac{1}{2}$ inch diameter tunnels that are smooth on the inside (Figure 4). They can chew through wood at right angles to the grain, but usually excavate the brood cells along the grain of the wood.



Figure 4: Carpenter bee tunnel entrance

They create a main tunnel with entrances and exits, and several brood cells extending off the main tunnel. There may be six to 12 individual brood cells constructed by each female. Each cell will then be supplied with food collected by the female. Pollen and nectar are mixed together in the female's gut and regurgitated into each brood cell. She then deposits one egg in each cell with this food and seals off individual cells with chewed wood.

All this activity, nest construction, and food gathering is energy intensive. Most females complete their life cycle by July and die soon after depositing eggs.

The larvae consume the food supplied by the female, pupate, and become adults in August. They occasionally chew through the plug to seek pollen and nectar but mainly hang out in their gallery, where they also spend the winter. The next May and June they start the process all over again.

Damage

Carpenter bees cause more concern than actual damage, especially to structural wood. Males' territorial behavior, mainly loud buzzing and "dive bombing" intruders, is a nuisance, but they are harmless. Females only sting if handled.

The females' large holes, often stained yellow or brown with piles of coarse sawdust beneath, can be unsightly and reduce aesthetic value of a wooden structure (Figure 5). However, carpenter bees seem to prefer refurbishing existing sites rather than creating new ones. Thus, tunnels which have been repeatedly utilized by many carpenter bees for multiple years may be up to 10 feet long with many brood cells extending off the main gallery. This repeated excavation of the same site for several years may result in structural damage.

Management

Prevention is the best tactic to manage carpenter bees. They prefer old, soft, untreated, and unpainted wood. Keep all exposed wooden surfaces well painted with a polyurethane or oil-based paint.

Carpenter bees only bore into wood, so any non-wood material, such as vinyl siding or aluminum, may be used as a wood substitute or replacement to prevent attacks.

Structures already infested with bees should have all entrance holes thoroughly treated with an insecticide, either a dust formulation or liquid. Bees may excavate through the paint to get to the outside and reuse the gallery, so painting will not eradicate an existing infestation. If possible, treat individual holes and plug with caulking. Plugging with caulking alone, without insecticide treatment, may be sufficient to control current infestations since the bees do not seem able to chew through caulking. But treating the surfaces around the holes should also be done because bees seek new sites to excavate, and a residual insecticide may control females that are not using existing holes.

Begin insecticide treatment as soon as bees are noticed in the spring or when adults emerge in late summer. Treating at night results in the most effective control and avoids disturbing the bees.



Figure 5: Carpenter bee tunnel entrance with sawdust and pollen trail

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