Carpenter bees (Xylocopa spp.) are large and economically important insects that are active from early spring through summer. Like other bees, carpenter bees pollinate crops and home gardens. However, they tend to hover around houses and other wooden structures when searching for mates and favorable sites to construct their nests. They almost totally depend on man-made structures for the wood used to construct their nests.

Homeowners are often frightened about being attacked by the carpenter bees that hover erratically around their homes. Homeowners are also concerned about the holes carpenter bees make in wood, which often lead to more serious damage by woodpeckers when they try to feed on the carpenter larvae deep inside the holes.

Carpenter bees are not stinging bees like honeybees and bumblebees. A male carpenter bee is aggressive when protecting its nesting site, but is harmless because it does not have a stinger. Although a female has a stinger, it will not usually sting unless it is handled or molested.

**Identification**

Among the largest bees, carpenter bees (Figure 1) resemble bumblebees, Bombus spp., (Figure 2) and giant resin bees, Megachile sculpturalis Smith, (Figure 3). All three species of bees have yellow hairs on a black-colored body. Carpenter bees and giant resin bees share more similarities than bumblebees.

The giant resin bees are the largest (1 to 1½ inch), followed by carpenter bees (½ to 1 inch), and bumblebees (¼ to ¾ inch).

**Table 1. Identification of Carpenter Bees, Giant Resin Bees, and Bumblebees**

<table>
<thead>
<tr>
<th>Characters</th>
<th>Carpenter bees and giant resin bees</th>
<th>Bumblebees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biology</td>
<td>Solitary</td>
<td>Social</td>
</tr>
<tr>
<td>Behavior</td>
<td>Not a stinging hazard unless handled</td>
<td>Aggressive - sting</td>
</tr>
<tr>
<td>Nest</td>
<td>Above ground in wood</td>
<td>In the ground</td>
</tr>
<tr>
<td>Body</td>
<td>Thorax is covered with dense yellowish hairs but the dorsal surface of abdomen is bare and shiny black</td>
<td>Thorax and abdomen are covered with hairs</td>
</tr>
</tbody>
</table>

![Figure 1. A carpenter bee visiting a flower (By Xing Ping Hu)](image1)

![Figure 2. A bumblebee visiting a flower (By courtesy of Takumasa Kondo)](image2)

![Figure 3. A female giant resin bee (By courtesy of Takumasa Kondo)](image3)
Carpenter bees and giant resin bees can be distinguished from each other using the following characteristics:

- Carpenter bees excavate their own tunnels; giant resin bees locate and occupy tunnels and holes made by others.
- A carpenter bee has a more robust and heavy body; a giant resin bee has a longer and cylindrical body (Figure 4).

Male and female carpenter bees look different from each other. A male carpenter bee has a white- or cream-colored spot on the head between mandibles and appears to have a white “nose” on the face. A female bee does not have the spot. Most of the congregating bees in the early spring are males. They hover around waiting for the females and defending their territory. You can completely ignore the males because they are incapable of stinging, although they will confront you whenever you enter their territory.

**Carpenter Bee Infestation and Economic Importance**

Because carpenter bees nest in wood, they can cause aesthetic and structural damage. Common nesting sites include house siding, eaves, window trim, fascia boards, shingles, decks, fences, and outdoor furniture.

The most distinguishing sign of carpenter bee infestation is the perfectly round ½-inch entrance holes bored into exposed exterior wooden surfaces (Figure 5). The holes lead to tunnels deeper in the wood.

The second sign is the pile of coarse sawdust underneath freshly drilled holes. The sawdust is cast out while carpenter bees excavate tunnels. The third sign is the yellow or brown excrement stains on the sides of buildings underneath entrance holes.

Carpenter bees are usually nuisance pests, but can cause considerable structural damage from repeated colonization of the same area. Woodpeckers often peck through the wood surface of carpenter bees’ tunnels to prey on the larvae inside, thus causing more severe damage.

**Life Cycle of Carpenter Bees**

Adult carpenter bees overwinter in old nest tunnels in which they have stored small amounts of pollen. Overwintering adults emerge and mate in spring. After mating, fertilized females either reinfest old tunnels or excavate new ones. The female bores into the wood perpendicular to the grain for about the length of her body, makes a sharp 90-degree turn, and tunnels parallel to the grain of the wood. The entrance hole and tunnels are perfectly round and about ½ inch in diameter. Coarse sawdust will often be present beneath the entry hole and burrowing sounds may be heard from within the wood. Normally, the gallery will extend about 4 to 6 inches, but with repeated use, galleries may be much longer.

Females lay their eggs within a series of small cells. After completing a tunnel, the female puts a ball of pollen moistened with nectar at the farthest point from the entrance hole and lays an egg on it. She seals off this cell with a thin wall of wood pulp and repeats the process. Eventually, the tunnel is partitioned into as many as four to eight cells. The egg hatches and the larva feeds on the food ball. Interestingly, adult bees emerge from pupae at nearly the same time within a nest, regardless of age. Adults then chew through the wall of the cell and emerge in late summer.

**Is Prevention Possible?**

Bare, unpainted, or weathered softwood is especially attractive to carpenter bees. To prevent carpenter bee infestation, paint or varnish all wood surfaces. Apply two coats of a good exterior primer and follow up with at least one coat of finish. However, painting is not practical
for the back of most fascia boards and many other wood surfaces. Wood stains provide little repellent action. Carpenter bees do not occupy plywood, but no wood, even painted or pressure-treated lumber, is safe from carpenter bees. The older type of pressure-treated lumber has been phased out and no current borate-treated product manufacturer currently makes the claim that it prevents carpenter bee infestation.

Sometimes standard window screening can be used to keep bees from getting into areas where there may be unpainted surfaces or other places where it might be difficult to paint. Cut strips of metal window screening; don’t use the fabric or plastic type. Wedge or staple the screening into place where the bees are working.

Paints that include an insecticide may repel bees attempting to nest. However, the insecticide does not remain active for more than one season. Nail holes or exposed saw cuts should be filled in with caulk or dowels and painted. If practical, remove severely damaged wood and replace with chemical pressure-treated wood to deter nest construction. Carpenter bees do not damage nonwood surfaces, such as vinyl siding.

**How to Control?**

Spray or dust insecticide directly into the carpenter bees’ entrance holes or adjacent wood surface to reduce carpenter bee activity. These control efforts should be attempted in late afternoon or at night when the bees are inside the wood tunnels. Injecting a pesticide into the tunnels can be effective, but a barrier lasts longer than a poison. Therefore, 24 hours after injecting insecticide, tunnel entrances should be sealed with caulking compound to kill the trapped carpenter bees and to prevent recolonization by other nesting bees. This is challenging and labor-intensive. Do not use the foam insulation that comes out of pressurized cans and expands to fill cavities because carpenter bees go through it easily. Sealing holes can be done at any time of year.

Refer to ANR-500-B, “Alabama Pest Management Handbook Volume 2”, for pesticide recommendations. ALWAYS READ AND FOLLOW LABEL DIRECTIONS FOR SAFE USE OF ANY PESTICIDE!
Xing Ping Hu, Associate Professor, Extension Entomologist, Auburn University

For more information, call your county Extension office. Look in your telephone directory under your county’s name to find the number.

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