



Carpenter bees are the largest bees in Hawaii. Females are all black and the males are golden-orange in color. They are often confused with bumblebees, which occur on the mainland, but not in Hawaii, and are similar in size to carpenter bees.

There are many differences between carpenter bees and bumblebees: female carpenter bees, which are much more abundant than male bees, are solid black, and the top of their abdomen is shiny, with no fuzz. Bumblebees in comparison have fuzzy abdomens, usually with alternating yellow-orange and black bands.

Bumblebees are social bees, with a queen and workers and they often nest underground. Carpenter bees instead are only primitively social, forming a loose aggregation of females, often including mothers and daughters. Each female however will tend to her own brood.

Carpenter bees get their name from the tendency to tunnel into wood. The bees do not eat the wood, but use their strong mandibles to excavate tunnels. Inside the tunnels the females smooth out little cavities in which they will rear their brood. A nest will begin with a female drilling a round hole, about 1/2 inch in diameter. The female will then continue to excavate a series of tunnels and galleries, where she will lay eggs and bring a mixture of pollen to feed the growing larvae. The bees pupate in the cavities.

In nature, the preferred nest site is a dead tree branch or tree stump, but in urban areas they can attack fence posts, roof eaves, railings, and porches (lanais). A single female causes little damage, but large colonies can be destructive.

Preventative measures that aim to discourage the bees from starting a nest are relatively simple. Bees prefer unpainted, untreated wood, roof eaves usually have unpainted areas facing the house, which are not visible from the front, and the bees tend to enter the wood on that unpainted underside. Applying sealers or paint to lanais and fences also makes them less attractive to nesting females. Existing holes from previous nests or large nails that have been removed encourage bees to drill in those areas, so sealing those areas is recommended.



*Carpenter bee female*



*Carpenter bee male*



*Carpenter bee*



*Bumblebee*



*Carpenter bee larvae develop in individual cells.*



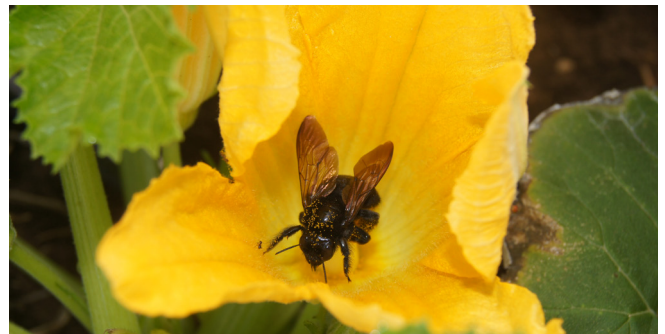
*Carpenter bee pupae.*

In spite of the potential structural damage carpenter bees can cause, these bees contribute greatly to pollination of local vegetables and fruits. Their contribution to the local cuisine is best exemplified by their role in the pollination of the passion fruit or lilikoi. Lilikoi flowers are large and their reproductive parts rely on the visitation of large insects or birds. Most insects are too small to successfully pollinate these large flowers but carpenter bees have the right body size.

Carpenter bees collect large amounts of pollen to feed their young, and their movements between flowers results in the production of larger and heavier fruits. Watermelon, squash, cucumber, zucchini, winter melon, Kabocha pumpkin, are all examples of vegetables that benefit from carpenter bee pollination.

Farmers and backyard growers recognize the important services provided by carpenter bees. It is possible to encourage carpenter bees to nest in alternative sites if the right materials are provided. Pieces of untreated wood can be attractive to bees if they are at least 4 x 4 inches wide and about a foot long. To encourage drilling by the bees, make a couple shallow holes. If the wood piece is standing up, drill on a side, against the grain. The bees will dig a tunnel and then turn to follow the grain of the wood.

If wood pieces are not available bamboo shoots are a good alternative. Tie approximately ten pieces of bamboo together. Each piece should be at least  $\frac{3}{4}$  to 1-inch diameter and about 1 foot long. One end should be open, allowing entrance to the future nest, and another should remain sealed by the natural partition of the bamboo shoots. Hang the bamboo nest bunch from a shaded tree branch, with the open ends pointing down. If there are ants in the area, you may want to put a little Vaseline on the string or wire to prevent ants from attacking the nesting bees.



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