

How to Make and Use Bee Houses for Cavity-Nesting Bees

Christine Casey, UC Davis Department of Entomology and Nematology

Thirty percent of California's native bee fauna are solitary bees that nest above ground. These bees are referred to as *cavity-nesting*, since they lay their eggs in twigs, abandoned beetle galleries, and other tree cavities. Leafcutter bees (family Megachilidae), which includes the mason bees (*Osmia* spp.) are common cavity-nesting bees that occur in urban gardens and provide important pollination services.

How do the bee houses work?

An egg is laid in the cavity and provisioned with pollen and nectar that serves as food for the developing bee; the egg is then covered with protective material: mud and leaf pieces are the most common. The process is repeated until the cavity is full. Watching a female bee flying in and out of a nest to bring food and protective material is fascinating. The new bees will emerge later that summer if the bee has more than one generation per year, otherwise they will overwinter in the cavity and emerge the next year.

Where should I place my bee house?

The back of the house should be solid so that no light enters. Houses can consist of individual tubes in a container or a block of wood with holes drilled into it. The nesting tube or block should be protected from the afternoon sun and secured so it does not move in the wind. An overhang to protect it from rain is beneficial.

How often and when should I replace the tubes?

To prevent disease, used tubes should be replaced yearly. Both cardboard and bamboo tubes are available; be sure to purchase tubes that are closed in the back or bees will not use them. Replace tubes in the spring once the material filling last year's tubes has been chewed open (see photo below). This indicates that the bees developing in the tube have matured and left.

Can I make my own bee block?

Yes, bee blocks can be drilled in redwood or other untreated lumber. Holes should be 4 inches deep and 3/16, 4/16, and 5/16 inches across to accommodate varying-sized bees. The cavities can be filled with **paper** straws that are changed yearly to keep the block clean. Blocks without straws should be replaced after two years. Purchase straws designed for bees to ensure they're made from pesticide-free paper.



Bee blocks and nesting tube in use. Left photo: a cavity filled with leaf pieces (left); cavities with an exit hole indicating the bees have left (top right); and a cavity filled with white hairs scraped from plant leaves (center). Right photo: a bee about to enter a cavity with a load of pollen (arrow). Leafcutter bees carry pollen on the underside of the abdomen; look carefully and you'll see her abdomen is yellow with pollen.

Haven YouTUBE videos about bee houses

[Making and Using Solitary Bee Houses](#)

[Identifying and Encouraging Leafcutter Bees in the Garden](#)