

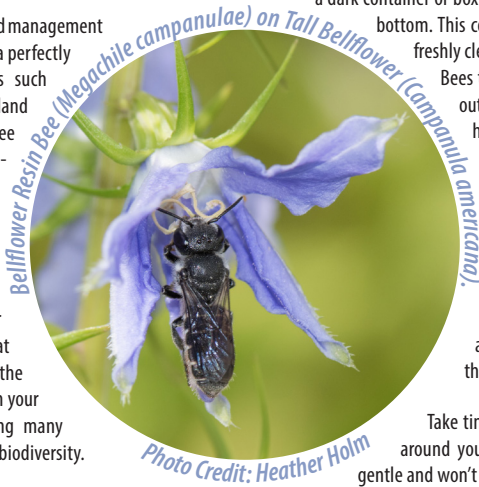
NATIVE BEE NESTING SHELTERS & TUBES

PREPARATION AND MAINTENANCE

HABITAT: Most bees native to North America are solitary, exhibiting occasional tendencies to nest in close proximity to those of the same species. Of nearly 4,000 North American bee species, about 30 percent are tunnel nesting, while the other 70 percent nest in the ground. Tunnel-nesting bees, such as those utilizing your native bee shelter, benefit from dead standing trees and shrubs with hollow stems, while ground nesting bees require open access to sandy or loamy soils. You can attract Native bees by planting varieties of plants that are native to your area.

Pictured below, the Bellflower Resin Bee (*Megachile campanulae*) on Tall Bellflower (*Campanula americana*). This solitary, tunnel-nesting bee was one of the first recorded to use artificial materials for nesting.

Misguided attitudes toward land management have emphasized maintaining a perfectly manicured property. Practices such as the mowing of all unused land or “cleaning up” every dead tree have greatly harmed the well-being of native pollinators. Whenever possible, dead trees are best left alone. Mowing practices should be limited to required areas, and some open ground should be protected for nesting. Attention to habitat needs will greatly improve the number of pollinator species on your property, while also benefiting many species necessary for balanced biodiversity.



LIFE CYCLE: The life cycle for most tunnel-nesting bee species begins with the emergence of males, who wait several days for females to emerge and mate. Once mating has occurred, the female will begin preparing a nesting tunnel. For every egg she will construct a brood cell, partitioned by walls made of plant resins, mud or leaves. Within each brood cell the female provisions a mixture of pollen and nectar, on which she lays one egg. After finishing each individual cell the female will begin work on the next.

The developing bees pass through each stage of growth in the brood cell, with emergence varying by species and climate. Some species will produce a single generation per year, which is called univoltinism, while others experience multiple generations per year, called multivoltinism. Some species endure extended periods in the brood cell, lying dormant for over a year. This life cycle is called parsivoltine. Egg laying

female bees have a unique ability to decide the sex of each egg. The female eggs are laid deep in the nesting tunnel, while male bees are laid closer to the entrance. Because female bees mate with several males, the male bees are more expendable. In the event of predation the male larvae will fall victim first, leaving the developing female larvae safe and out of reach.

NESTING TUBES: The female will nest for several weeks, filling as many nesting tunnels as she can, after which she will die. For this reason it is likely to have nesting tunnels which have not been completely filled but contain developing larvae. Special care should be given to nesting tubes containing brood. Old tubes should be phased out after two years. Tubes designated for replacement should be placed in a dark container or box with a single 3/8” hole drilled in the bottom. This container should be hung next to the freshly cleaned and re-stocked nesting shelter.

Bees that have not yet emerged will crawl out of the exit hole to find a new nest hanging close by.

Note the differences between bees and wasps. Some wasps resemble the markings of bees and are often times more aggressive. Many native wasps play important roles within a well-balanced ecosystem and should not be automatically thought of as enemies.

Take time to watch and observe the activity around your nesting shelter. Solitary bees are gentle and won't sting unless threatened or squeezed. Some species don't possess the ability to sting at all.

Environmental stresses are pushing many of our native pollinators to the edge of ecological collapse. The affects of habitat loss, fragmentation, alien species, climate change and pesticide use are negatively impacting pollinators in substantial and rapidly increasing ways. You can help to slow these trends by joining the movement. xerces.org/bring-back-the-pollinators

You can begin helping pollinators by conserving native habitat, gardening with native plant species, avoiding pesticide use, and by providing native bees with secure nesting sites. Whether setting up dedicated bee houses or simply leaving open soil and deadfall for bees, your assistance in fostering nesting habitat is key to curbing the decline of native pollinators.



HANGING YOUR NATIVE BEE SHELTER

1. The location of your native bee shelter is important. Hang the shelter in an area that is protected from harsh weather. Orient with entrance holes facing **east or southeast**. It is essential that the nesting tubes are kept dry.

- The shelter can be placed at any height, though a height of three to six feet is generally convenient.

- A pre-cut screw mounting hole is in the back of the bee shelter for mounting on standard screw sizes. Mount the shelter firmly to a building, fence, or post to prevent moving in the wind.

- Once installed the shelter should not be moved during months when nesting occurs. Nesting times vary per species and begin in spring and continue through the summer months.

2. Completely fill the shelter with appropriately-sized tubes or reeds, taking care to ensure *horizontal* placement. Use the supplied tubes or make your own. Reeds or hollow stems, such as Cup Plant, may work well. Stems of about six inches in length with an inner diameter of 6-8mm are best. Natural nesting tubes should have hollow or soft centers. Cut the reed to length just before each joint (node), utilizing the built-in partition. Fill the shelter enough to firmly hold the tubes in place.

3. Keep the shelter clean and dry. Parasites and disease affect the brood (larvae), with fungus and mites being of special concern. To prevent disease, tubes should be phased out periodically, usually every two years. If bird predation becomes problematic, chicken wire can be placed over the shelter during winter months (remove when bees are active).

4. Observe and enjoy! Take note of the nesting materials and “mud” being used in the tubes. These signs will tell what species are nesting in your native bee shelter. Solitary bees are docile and can be viewed closely, though a healthy caution and respect should be exercised. Keeping a record of the species of bees nesting in your shelter will strengthen your knowledge of native pollinators and may provide useful data for citizen science groups.



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