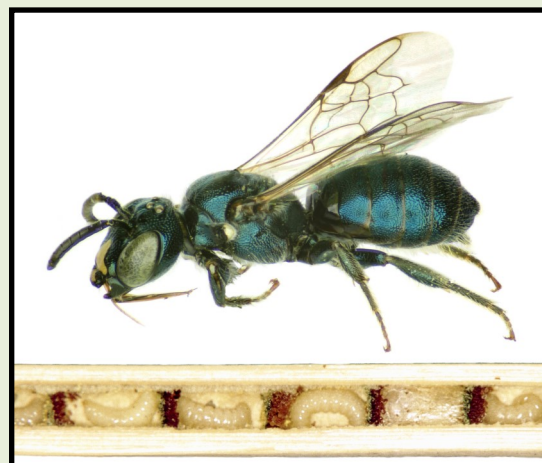


A Deeper Dive into Wild Bees and Their Habitat

By Natalia Bjorklund, Doug Golick, and Rachel Anderson

Honey bees are not wild bees

Most Americans are familiar with the honey bee. This no surprise as honey bees are incredibly important pollinators of many fruits and vegetables we consume. They are one of the only bee species managed for pollination services and produce honey for human consumption. Honey bees are also known for their sociality. They live together in a hive, with one queen, thousands of worker bees (females), and drones (males). All of these bees work together in an organized structure, with roles inside of the hive. They also work together to defend their nest by stinging unwanted visitors. While honey bees are the most well-known bee, there are also over 4,000 other species of bees in North America that are wild, and not kept by humans. Unlike honey bees that are highly social and live in colonies, most wild bees like sweat bees and leaf cutter bees, are solitary. Solitary bees do not share a nest with other bees and do not work together in raising their young. A female solitary bee lays less than a dozen eggs in a nest that she has provisioned with pollen and nectar. These nests can be in the soil or in plant material, depending on the bee species. The eggs are separated by cells divided physically into individual chambers created from soil, mud, plant material, or bee secretions, such as saliva. After a period of time, these eggs will hatch and turn into larvae (the worm-like stage) where they will feed on the stored pollen in their nest cells. The larvae go through several molts and then transform into pupae. During the pupal stage, bees complete maturation of their reproductive organs and wings. The pupae eventually transform into adult bees, emerge to mate, make nests, and lay eggs of their own.



A Ceratina sp. adult bee and developing larvae in their nest

Water

All living creatures need water. When creating a bee friendly habitat, consider including a small replenishable source of water for bees to drink. We recommend a shallow one-foot diameter dish that has wet sand or pebbles placed in it. The water should not cover the pebbles or sand to prevent the drowning of bees. Be aware that mosquitoes lay their eggs in shallow, standing water. Therefore, check your bee water source every few days for small, “wiggler” mosquito larvae. Remove any mosquito larvae by emptying the water dish, and quickly wiping down the surfaces of the bowl with a towel.



*A perfect example of a water source for pollinators
Photo courtesy of Mary Jane Frogge*

Solitary Bee Habitats

Roughly 20-25% of remaining bees nest in plant material. This includes a cavity such as a hollow in a tree and the inside of dead plant stems. Many twig nesting solitary bees use plants with soft, pithy stems to create their nests in. Some twig nesting bees instead like hollow stems found in ornamental grasses. Twig nesting bees have very small nests. Rose and raspberry canes that have a soft, pithy center stems are popular choices with bees. Leave cut stems and garden debris in a safe spot in your yard into early summer as some stems may contain developing twig nesting bees. Some solitary bees also use plant material to line and partition their nests. Depending on the species they may use the leaves, petals, or hairs of plants. Some also use their own saliva or water to bind these plant parts together in forming the nest. Plant utilizing bees use very little plant material to create their nest - damage is cosmetic and will not hurt the plant's health. You can buy or make pre-constructed twig nests. Many twig nest designs can be found on the internet. To avoid spreading disease to the next generation of bees, preconstructed twig nests need their contents removed each year after new bees have emerged.

The majority (over 70%) of all bees nest in the ground. As most of these bees are also solitary, there is often only one nest (with a single mother located in an area). However, if habitat conditions are ideal (e.g. soil type, soil texture, sun exposure, moisture), you may see multiple bees of the same species nesting in close proximity to each other. These individual mother bees provision and lay eggs independently of each other and do not share in raising each others' young or participate in communal defense (this is very similar to apartment living in humans). To provide habitat for wild ground nesting bees, leave bare patches of soil of various types in your landscape.



Leafcutter bees have cut circular pieces out of the leaves of this rose.



Halictus rubicundus nests between bricks, UNL East Campus



Notice the tiny holes in each of the plant stems

Pesticides

If pesticides are going to be used in a landscape setting, please **read and follow label directions**. Understand what you are applying, and know it is the best product for that pest. Some pesticides are available in less toxic formulations (i.e., liquid spray vs granular pellets). Research which is least toxic to pollinators and other non-target organisms. Never apply pesticides to plants that are in bloom. Early morning and late evening applications are also the best times of day to minimize exposure to pollinators.



Photo Credits: Jim Kalisch, UNL Arthropod Library