

Ecology and Lifecycle of Native Bees

For all their brilliant diversity, the vast majority of North America's native bees share one defining characteristic which distinguishes them from the European honey bee – they are solitary species. That is, each female builds and provisions her own nests, usually in the ground or a wood cavity, in which to lay her eggs. She performs these tasks without any assistance from other females of her species. While a few of our native bees demonstrate varying degrees of *annual* sociality, none live in hives, make honey or exhibit the highly organized social order of the honey bee, with its permanent colonies of twenty to eighty thousand female workers.



Solitary female [leafcutter bee](#) carrying a leaf piece to the wood tunnel nest she is constructing. Photo by Celeste Ets-Hokin.

Native bees are sexier

Well at least they're having *more* sex than in the nearly all-female honey bee collectives, because North America's native bee populations are roughly split between males and females. That's not to say, however, that the division of labor is so equitably split between the two genders. The female of the species does all the work to construct and provision the nests for her offspring. She locates an appropriate nest site, often forages for materials to build her nest, creates the nest, visits thousands of flowers to collect pollen and nectar to provision the nest, lays her eggs, seals the nest and then moves on to found another nest if she is able. Sometime prior to all this industrious activity she also finds time to mate. Rest is a luxury a female solitary bee can't afford.



Solitary native bee populations are roughly split between males and females. Each female mates and then constructs and provisions the nests for her offspring. Mating [Habropoda \(digger bee\)](#) pair. Photo by Rollin Coville.

The males of our native bee species, however, have one primary objective – find a mate, or possibly several mates. Males then spend most of their day pursuing females or patrolling a patch of flowers in hopes of attracting an impressionable female to these protected resources. In between, they will drink nectar from available flora to keep up their strength. Possibly exhausted from these amorous endeavors, male native bees are regularly observed resting on plant surfaces or even sleeping together with other males in the flowers during the afternoon and evening. Hmm, drinking, sleeping and having sex – a hard job but someone’s got to do it.



Two male digger bees sleeping on a stem after a rough day of chasing females and drinking nectar. Photo by Rollin Coville.

No sting in our relationship with native bees

Gardeners need not be concerned about being stung by the solitary bees attracted to their gardens. Because solitary bees have no communal hive to defend, they are not aggressive. A female solitary bee will not even defend a nest she is constructing, but rather fly in the opposite direction from any real or perceived threat. Her defensive strategy is rather to begin a new nest in order to avoid potential conflict. Because she is the sole provider, she cannot afford to be harmed or killed prior to completing a nest for her offspring.

A female native bee employs this same strategy when foraging on flowers – she either ignores or moves away from any possible threat, including curious humans. And, although the females of North American bee species are equipped with stingers, none of them are barbed like that of the honey bee. Therefore the stinger does not stay in the skin or deliver much toxin. In fact, the stingers of many of our native bee species are not even strong enough to penetrate human skin.

As for the males of our native bee species, they are all buzz and no bite! Regardless of their sometimes formidable size or display of territoriality towards other insects, male bees lack the necessary equipment to harm humans. No male bees have stingers because the stinger was once an egg-laying appendage called an “ovipositor”. In bees this appendage became the “sting”, and the female bee now lays her eggs through an opening in her abdomen at the base of what is now the sting. Since males don’t lay eggs, they never had an ovipositor to begin with, and so have no stinger today.



Despite their sometimes formidable size and loud buzzing, no male bees have stingers, and so are harmless to humans - all bark and no bite. Male [carpenter bee](#) on [Rosa rugosa](#). Photo by Celeste Ets-Hokin.

Native bee nesting habit

Approximately 70% of our native bees create nests in the ground, while the remaining 30% nest in wood tunnels or other cavities. Wood- and tunnel-nesting bees generally use materials they collect from their environment such as leaves, petals, mud or resin in constructing their nests. Ground nesting bees typically secrete waxy or oily substances from specialized glands in their bodies to line and seal their nests. Cavity nesters are very opportunistic and will utilize a variety of pre-existing, protected spaces such as abandoned rodent burrows, openings under rocks, wall crevices, snail shells and even empty birdhouses or garden hoses. Whatever their medium, the females of our North American native bees are highly skilled and resourceful in the art of nest construction. In fact the common names of our native bees often reflect their nest-building industry, such as leafcutter, mason, mining, carder, digger and carpenter bees.