Pollinator Partnership Spotlight

Pollinator Profile: Mining Bees (*Andrena sp.*)

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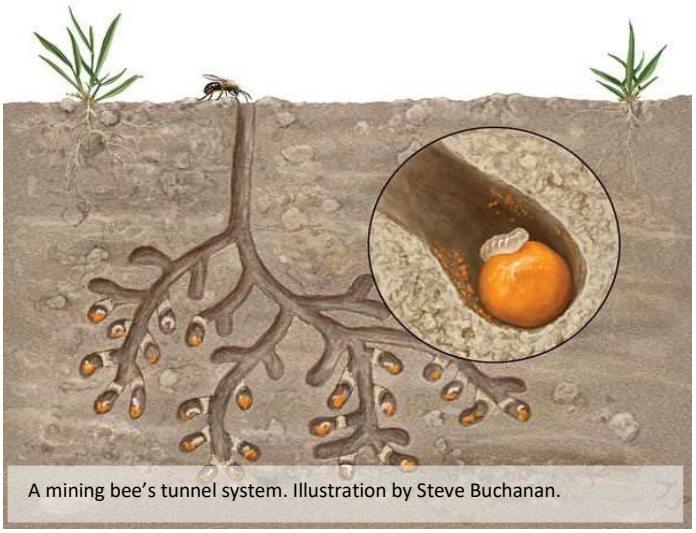
Some of the earliest native pollinators of spring ephemerals are bees from the genus *Andrena*, known as mining bees. These solitary bees build their nests in sandy soils by mining tunnels underground where they lay their eggs and tend to larva. Their nests are often found nearby the wildflowers that they are pollinating. Early spring is a time of year when you might find a mining bee's tunnel, before vegetation has grown thick, and exposed areas of soil are still noticeable. Mining bees usually select bare patches of ground to dig their tunnels, and are often live in close proximity to one another, making it appear that there is a colony, but it is more that they tolerate close neighbors and keep to their solitary nature. These ground-nesting bees are docile, non-aggressive bees, who would have to be stepped on before they sting you.

Mining bee (*Andrena sp.*) on leaf of Golden Alexander, photo credit Amber Barnes, *Pollinator Partnership*

Entrances to mining bee (*Andrena sp.*) nests can be seen with soil piled up next to a small tunnel, photo credit Amber Barnes, *Pollinator Partnership*

Aside from early spring ephemerals, mining bees are excellent pollinators for many of our early-blooming fruit trees, such as apple, cherry, and plum, blueberries, and other flowering trees and shrubs using buzz pollination. Encouraging farmers and landowners to provide bare patches of ground to provide nesting habitat for mining bees would be a great step towards supporting native pollinators who can also help provide pollination services. Dry, sandy soils with diffuse patches of grass are likely to keep soils stabilized, while also providing enough bare ground to allow for mining bees to dig their nesting site. Female mining bees then make balls of pollen and nectar for each egg in the brood cell chambers (see illustration to the left). Minimal disturbance of the site is required, as the new adult bees do not emerge until the following spring, so one can imagine that practices such as tillage would destroy any mining bee nests.



A mining bee's tunnel system. Illustration by Steve Buchanan.

Some mining bees are very particular with their nectar source. Oligolectic bees refer to bees who are specialist pollinators and only rely on a single type of flowering plant, such as a single genus. There are a many *Andrena sp*. that specialize in pollinating one genus of plant (see Illinois Wildflowers "Oligolectic Bees," https://www.illinoiswildflowers.info/flower_insects/files/oligoleges.htm). If you visit a woodland with a nice patch of Spring Beauty (*Claytonia virginica*) in bloom, you will likely see the flowers abuzz with their specialist pollinators, the Spring Beauty Miners (*Andrena erigenidae*) that rely exclusively on Spring Beauty pollen to feed their brood. They fill their scopa (the pollen-collecting hairs on their rear legs and thorax) with the pink pollen of Spring Beauties before flying back to their nest.

Spring Beauty blooming in an oak woodland, notice the many patches of bare soil between plants (left) and a Spring Beauty miner pausing on a bloom before flying to the next one, photo credit Laura Smith, *Pollinator Partnership*

Spring Beauty Mining bee, photo credit Laura Smith, *Pollinator Partnership*

As landowners are becoming increasingly interested in supporting pollinators, more are looking to know what pollinators they have and if their habitat is successfully attracting a diversity of pollinators. For those of you who are new to Bee identification, here is a great quick-start guide to help you differentiate between some of the different types, such as honey bees, bumble bees, leaf cutting-bees, mining bees, sweat bees, carpenter bees, etc.: https://www.pollinator.org/bee-id-blog
Here is an excerpt from the Bee ID blog, by Amber Barnes:

MINING BEES (ANDRENA SPP.)

ID Characteristics: Black with light or dark hairs. Prominent pollen carrying hairs (scopa) on rear legs and side of thorax, appearing to carry pollen in its "armpit". Females will often have a line of light hairs along the inner edge of their eyes (think eyebrows) and males will often have a patch of light fuzzy hair on their face. Many emerge in the spring, but some are present in the summer or fall. 5.5-15mm

Nesting: Solitary, ground nesting. Will excavate nests in a bare patch of soil, at the base of shrubs, or under leaf litter. Prefer sandy soils.

For some more great pictures and information about mining bees, see BugLady's post on mining bees: https://uwm.edu/field-station/mining-bee/

For any questions or conversation, please reach out! Email ljs@pollinator.org. Let me know what pollinator-related resources would help support your work and help you promote NRCS pollinator conservation practices for landowners.