

Prime real estate for pollinators: Proximity to floral supermarkets or nesting opportunities?

Wild bees are declining, and conservationists are trying to encourage these important pollinators through habitat restoration, primarily by planting flowers as food resources.

In contrast to honeybees, which build very large nests together as a colony, the majority of bee species in North America are considered “solitary” and build nests separately (albeit near each other) in the ground or the woods. “We want to create better habitats to promote rapid establishment of wild bee communities,” says Sean Griffin, a Michigan State University (MSU) graduate student. “Although a lot of research has looked at bees already in a community, little has been done on what affects the bees’ decision to nest in the first place, such as habitat size, shape or location.”

In response, Griffin conducted a controlled-release study of alfalfa leafcutter bees, a species of solitary wood-nesting bees. The study took place at three different sites: two experimental landscapes at MSU’s Kellogg Biological Station in Hickory Corners, Michigan, and larger established fields at Big Rock Valley, the Edward Lowe Foundation’s 2,000-acre headquarters property outside of Cassopolis.

At the test sites, Griffin mounted boxes containing nesting materials located 100 meters from where the bees were released. The release boxes contained colored fluorescent powder in an area bees had to walk through to exit, and different colors were used for each release point. This enabled Griffin



A member of Nick Kadab's research lab at MSU, Sean Griffin is researching ways to improve habitats for wild bees. Griffin stands with nesting boxes in a soybean field at Big Rock Valley. The boxes contained polystyrene blocks, which measured 3 inches deep with about 450 individual holes for potential nests.

to track the bees’ starting point — and be sure that bees using the nesting boxes were ones he had released. After releasing the bees, Griffin visited the nesting boxes every few days to check for new residents and collect data.

Among results, Griffin found that solitary bees at Big Rock Valley traveled up to a mile to nest. “This is quite a feat for such a small insect,” he says. “It’s been assumed they can travel pretty far, but we haven’t identified to what extent.”

Another surprising finding, bees at Big Rock Valley behaved differently than bees at the other two test sites. “At KBS nesting bees showed a strong preference for non-crop habitats,” Griffin says. “Yet at Big Rock Valley, the bees showed either no preference between nesting in prairie and soybean fields or they showed a preference for soybean fields.” He chalks up this

behavior to the availability of pollen: KBS soybean fields had already finished flowering when he released bees, but soybean fields at Big Rock Valley were still flowering at the time of release.

The take-home message is one of flower power: “Restoration efforts should continue to focus on planting floral resources to encourage healthy bee populations,” Griffin says. “And more research is needed to gain a greater understanding of how solitary bee populations respond to flowering crops like soybeans.”

“Conservationists and land managers need to know what to prioritize as they restore habitats,” he adds. “Prairie seeds are expensive. If the goal is just to restore bee communities, as opposed to prairie restoration, then you may want to prioritize the abundance of flowers rather than floral diversity.”