

Gardening for NATIVE BEES

Sandy Welches, Editor, MGV '05

North American native bees are under threat from habitat loss, pesticides and climate change. We gardeners can help.



Photo: bugguide.net

making colonies like their better known but non-native counterparts, these indigenous bees are among the most essential pollinators in our natural areas, farm fields, and gardens.

Some North American species even appear to do a better job of pollinating crops than honey bees. For example, researchers have found that the blue orchard mason bees (*Osmia lignaria*) are far more



photo: www.sensesmag.com

effective pollinators of cherry orchards, resulting in over twice the fruit yields of honey bee pollinated orchards. This is not surprising, given that many native bees are often more tolerant of cool or moist conditions and have longer foraging times—giving them the pollution edge.

However, like honeybees, native bee populations have been declining over the last several years. This decline “speaks toward land use and the lack of diversity of our vegetation,” says Deborah Delaney, bee specialist and assistant professor of entomology at the University of Dela-

ware in Newark. Factors such as habitat loss, widespread pesticide use, and climate change all have an impact, but gardeners can help.

Appreciating Diversity

American bees species “come in a jewel box of different colors—from metallic green to bottle blue, gold, brown and glossy black,” says Scott Hoffman Black, the executive director of the Xerces Society, an organization dedicated to invertebrate conservation. Sizes vary from enormous one-inch valley carpenter bee (*Xylocopa varipuncta*) to one of the world’s smallest bees, *Perdita minima*, which is under two millimeters long. Throw in different shapes, hair types, tongue lengths, and other characteristics, and their diversity is staggering.



Xylocopa varipuncta
photo: www.helpabee.org



Perdita minima
photo: www.discoverlife.org

When it comes to nesting, about 90 percent of these species are solitary, while the rest are social and hive-forming. Nests may be underground or above-ground in cavities depending on the species, nests may be constructed from mud (mason and plasterer bees), plants (leafcutter bees), earth (mining bees), or excavated wood (carpenter bees). Solitary bees tend to produce few young (often one to two) in underground nests, while some bumblebees and

sweat bees nest in aboveground crevices and produce small colonies. There is a direct correlation between bee size and flight distances; larger species like bumble bees can fly up to a mile or more when foraging, while medium to small bees may only forage a couple hundred feet from the nest. Most native bees are polylectic, which means they pollinate a wide variety of plant species. Others may be oligolectic (pollinating a few, closely-related plant species) or specialized even further to be monolectic (pollinating one plant species).

Nurturing Natives

With these basic facts in mind, there are several things gardeners can do to support native bees.

1. "If every gardener tried to create a haven for bees, it would increase habitat exponentially," notes Black. Protecting and providing nesting areas and food sources are key.
2. *Equally important is safeguarding bees from pesticides.* All broad-spectrum pesticides can kill bees, but research shows that neonicotinoid pesticides used in agriculture and horticulture—such as clothianidin, thiamethoxam, and imidacloprid—are the most harmful. Some maintain residues in pollen, so they can poison pollinators long after application.
3. *To encourage native ground-dwelling bees to nest,* avoid disturbing areas of bare, friable earth around plants as much as possible, and avoid applying bark mulch. Choose compost or leaf mold instead. *If this is not feasible for you, try doing this in just a small area of your yard that you leave "wild."*
4. *For above-ground nesters, you can create artificial nest sites.* "Nest blocks," either purchased or homemade from wooden blocks drilled with holes, appeal to tunnel-nesting species. *Bundles of hollow stems* cut and positioned crosswise are also attractive to tunnel-nesting bees; bamboo, teasel, and reeds all work well for making these nest bundles.

Most essential to healthy bee habitat is a variety of plants to ensure a steady supply of nectar and pollen. Nectar is a bee's main energy source. Nutritious pollen, rich in protein, nutrients and oils, is primarily used by bees to feed developing larvae. Solitary females typically roll the pollen into nectar-infused balls of "bee bread" and lay a single egg on each ball. The pollen is all the food larvae need to develop and mature into adult bees. *Black recommends planting three good bee plants for spring, three for summer and three for fall so there is a buffet of flowers throughout the growing season.*

Native Plants That Provide a Smorgasbord For Bees

Basket flower (*Centaurea Americana*)
 Blue camas (*Camassia quamash*)
 Blue sage (*Salvia azurea*)
 Common sunflower (*Helianthus annuus*)
 Giant ironweed (*Veronia gigantea*)
 Lanceleaf coreopsis (*Coreopsis lanceolata*)
 Lead plant (*Amorpha canescens*)
 Prairie rose (*Rosa arkansana*)
 Sassafras (*Sassafras albidum*)
 Smooth beardtongue (*Penstemon digitalis*)
 Spotted geranium (*Geranium maculatum*)
 Wild bergamot (*Monarda fistulosa*)

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Resources

Websites

Native Bee Conservancy www.nativebeeconservancy.org
 Pollinator Partnership www.pollinator.org
 University of California-Berkeley Urban Bee Lab
www.helpabee.org
 The Xerces Society www.xerces.org

Books

Attracting Native Pollinators: Protecting North America's Bees and Butterflies, Xerces Society. Storey Publishing, North Adams, MA 2011.
Bumble Bees of North America: An Identification Guide by Paul H. Williams, et al., Princeton University Press, Princeton, NJ, 2014