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Jeff Mulhollem, Penn State University

Bee Research Shows Benefit of Native Plants, Wild Bees

UNIVERSITY PARK - As scientists struggle to come to grips with Colony Collapse Disorder, a mysterious disease threatening to wipe out domesticated honey bees in the United States, they have begun to cast a worried eye towards wild bees -- trying to gauge their numbers, health and ecological status.

Researchers in Penn State's College of Agricultural Sciences are in the midst of several studies involving wild bees. Their aim is to develop a better understanding of the ecosystem services these wild pollinators provide and the importance of native plants to wild bees.

"Bees are a diverse group of insects," said Nelson DeBarros, a graduate student in ecology from Taunton, Mass., who is doing his master's thesis on wild bees. "There are approximately 4,000 bee species that occur in North America, and at least 340 exist in Pennsylvania.

"Wild bees are extremely important, but the truth is that we don't know an awful lot about them. They have not been studied as extensively as domestic honey bees, and we don't have much baseline data."

But DeBarros has learned a lot about wild bees. He spent much of the last two summers beside plots of native plants at Penn State's Russell E. Larson Agricultural Research Center, nine miles from the University Park campus, observing their comings and goings with binoculars and a camera.

And he did extensive sampling, too, vacuuming bees and other insects off the 25 flowering plant species in his study area -- all the while carefully recording their species, numbers and noting which plants they preferred. DeBarros also noted the wild bees' traits and behavior.

DeBarros then teamed with Tara Gareau, a Penn State post-doctoral researcher in entomology from Garden City, N.Y., in publishing a handsome publication called "Conserving Wild Bees in Pennsylvania," which features 23 of DeBarros' exquisite photos showing bees on the flowers of native plants. The publication folds out into a poster.

Their wild bees publication -- which features sections titled "Plants for Pollination," "Planting Cover Crops," "Selecting Plants for Landscaping," "Landscaping With Native Plants," "Importance of Wild Bees to Agriculture," "Ways to Enhance Wild Bee Populations," "Reduce Bee Exposure to Pesticides," "Preserve or Build Nesting Sites" and "Conserve Natural Habitats" -- is part of Penn State's Agroecology in Practice series.

"The publication summarizes a lot of the information that is out there about wild bees, and it is easily understandable and accessible," DeBarros said.

Gareau said the researchers created the conserving wild bees publication because they want to help people implement conservation practices that would protect or enhance pollinator populations that are critical to both agriculture and natural ecosystems. "We want people to know that wild bees are important for pollination, and we wanted to tell them what they can do -- such as planting and conserving native plants -- to conserve wild bees on their farms and properties," she said.

"Since wild bees are diverse in color, size and body shape, part of our objective with the brochure was to give people a quick reference guide for wild bees, so they can learn to recognize them in their farms, gardens or backyards. Building awareness of wild bees in the landscape is an important first step to conserving their populations."

Gareau noted that recent studies by ecologists such as DeBarros suggest that wild bees are perhaps more important than even agricultural scientists realized. "Wild bees can play a major role in the pollination of crops; some studies show that in certain cases wild bees are providing the majority of pollination," she said. "For instance, an apple grower in Centre County has found that wild bees can pollinate all of her trees."

Wild bees are actively pollinating at lower temperatures when domesticated European honey bees are still in their hives, Gareau pointed out, expanding the window of pollination for crops. "It is best to have a diverse community of pollinators," she said. "Relying solely on domesticated bees -- especially in the face of Colony Collapse Disorder -- may prove to be problematic."

Single copies of *Conserving Wild Bees in Pennsylvania* can be obtained free of charge by Pennsylvania residents through county Penn State Cooperative Extension offices, or by contacting the College of Agricultural Sciences Publications Distribution Center at 814-865-6713 or by e-mail at AgPubsDist@psu.edu. For cost information on out-of-state or bulk orders, contact the Publications Distribution Center.

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