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Signs of Decline: First Honeybees, Now Bumblebees

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By Adrian Higgins, *The Washington Post*
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The honeybees seem to be bucking the trend and thriving for the moment, at least in my garden. So I have stopped watching them at work and turned my attention to the native bees. The honeybee came over from the Old World, but there are more than 3,500 species of indigenous bee, from the pesky carpenter bee, which buzzes you in April as it starts to tunnel into your woodwork, to the tiny sweat bee, which alights on your arm to take a sip of perspiration. If you look closely and it's the right species, you can see that it shimmers an iridescent green.



With orange pollen stored in a "basket" on its leg, a bumblebee pays a visit to a penstemon flower. (By David W. Inouye)

Of all the native bees, the bumblebee is the cuddliest. All right, you wouldn't want to hug one (it will sting if really threatened), but the bumblebee is quite content to let you watch it work, buzzing from flower to flower in search of pollen and nectar.

"There's something very iconic about bumblebees," said Mace Vaughan, conservation director of the Xerces Society for Invertebrate Conservation, based in Portland, Ore. "They're like little flying bears."

This made me doubly curious, so I looked for bees on my Russian sage the other day and found a bumblebee at work, with a dark gray abdomen, balls of orange pollen on the legs and a creamy mane of hair on the thorax, like the fur stoles that women used to wear for a night on the town.

I called Sheila Colla, a bumblebee expert at York University in Toronto, and described it to her. She said it was either the common eastern bumblebee or the two-spotted bumblebee. A quick Internet search confirmed it as the former. "And they're absolutely everywhere," she said. For now, that is.

Colla is at the forefront of some alarming bumblebee research. As a doctoral student, she has been tracking other formerly common species of bumblebee. Colla took field surveys of bumblebees between 2004 and 2006 in southern Ontario, comparing the results with data gathered in the early 1970s. She could find only 11 species, down from 14, and of those 11, four were in decline. Colla also spent periods in 2005 and 2006 looking for one of the missing species, the rusty-patched bumblebee. She traveled to 43 sites in Ontario,

Quebec and 14 states, including Virginia, Pennsylvania and North Carolina. The sites were chosen because the species had been recorded at those locations in surveys going back a century or more. The result: One rusty-patched bumblebee was found in a park in Ontario in 2005, but none elsewhere. That was her last sighting of the insect.

What is most alarming to entomologists is that the rusty-patched bumblebee used to be one of the most common bumblebees in fields, farms and gardens from Ontario to Georgia. "It was the third or fourth most common species out of 14," she said.

Locally, the bee was last recorded in 2002, said Sam Droege, of the Patuxent Wildlife Research Center in Laurel.

In addition, a second formerly ubiquitous species is in rank decline, the yellow-banded bumblebee. "Surveying this summer, we have found [it] in some places, but it seems to have been pushed into boreal forests," Colla said.

The Xerces Society has placed the rusty-patched bumblebee, the yellow-banded bumblebee and two western species, the western bumblebee and Franklin's bumblebee, on its red list of most-threatened insects. Franklin's, confined to southern Oregon and northern California, has not been found since 2004 and might be extinct.

But other common species are also showing signs of decline, according to the society, including the American bumblebee and the yellow bumblebee.

As with colony collapse disorder in honeybees, the causes of bumblebee decline are not scientifically defined and might be a combination of factors. The honeybee disorder, sometimes called CCD, has galvanized the global scientific community, given the honeybee's importance to crop pollination. The Xerces Society is assembling the data of approximately 30 scientists in North America to document the state of the bumblebee, which is also an important pollinator.

"You look at all their data and what we see is really discouraging," said Scott Hoffman Black, the society's executive director. "It's a picture of a really drastic decline toward extinction."

Black and Vaughan say they hope the public's growing awareness of the honeybee's plight will spill over to the bumblebee and other native bees that might be in trouble.

Vaughan said the decline of many bumblebee species has engendered a number of theories, including habitat loss and the commercial rearing of bumblebees for crop pollination. The vibration of bumblebee wings is so violent that it causes the pollen from one bloom to shake onto another. This "buzz pollination" is particularly effective in fertilizing tomatoes, cranberries and blueberries. Commercial breeders took species of American bumblebees to Europe to perfect breeding techniques and then brought them back to the United States. Researchers theorize that these bees caught a disease from

European bumblebees and have spread it to wild populations via escapees from commercial greenhouses.

Meanwhile, Colla is studying the effects of a relatively new class of pesticides called neonicotinoids, which were introduced in the early 1990s. The pesticides have been linked to the vanishing honeybees. Colla, in lab tests on bumblebees, said that when given doses as low as 12 parts per billion, "they can barely move." The chemical affects the development of the queen bee's ovaries, she said.

Can home gardeners help? Sort of. "We don't have a smoking gun yet," Vaughan said. "Because the declines are so widespread, it signifies to us there's some sort of disease" beyond the control of the homeowner. But the gardener can take steps to help the bumblebee.

By planting lots of flowers that the bumblebee likes, "you're strengthening the immune system, strengthening their ability to produce more young," he said. The society's Web site lists shrubs, perennials and herbs that the gardener can plant to feed bumblebees, including asters, joe pye weed, blueberries, sunflowers, sedums, borage, hyssop and marjoram. (At <http://www.xerces.org>, go to "Xerces Publications," then "Fact Sheets About Native Pollinators," then "Plants for Native Bees in North America.")

The second thing is to minimize the use of pesticides, especially when bees are on the wing. It is also up to a homeowner to monitor spraying by a landscape maintenance company.

"Most people don't know the difference between a bumblebee or a honeybee," Black said, "but we are seeing, since CCD reared its head, more and more people interested in the subject."

But the plight of the bumblebee is still relatively unknown. "They are small animals; people don't think about it," he said. "People are thinking about high gas prices and the war in Iraq."