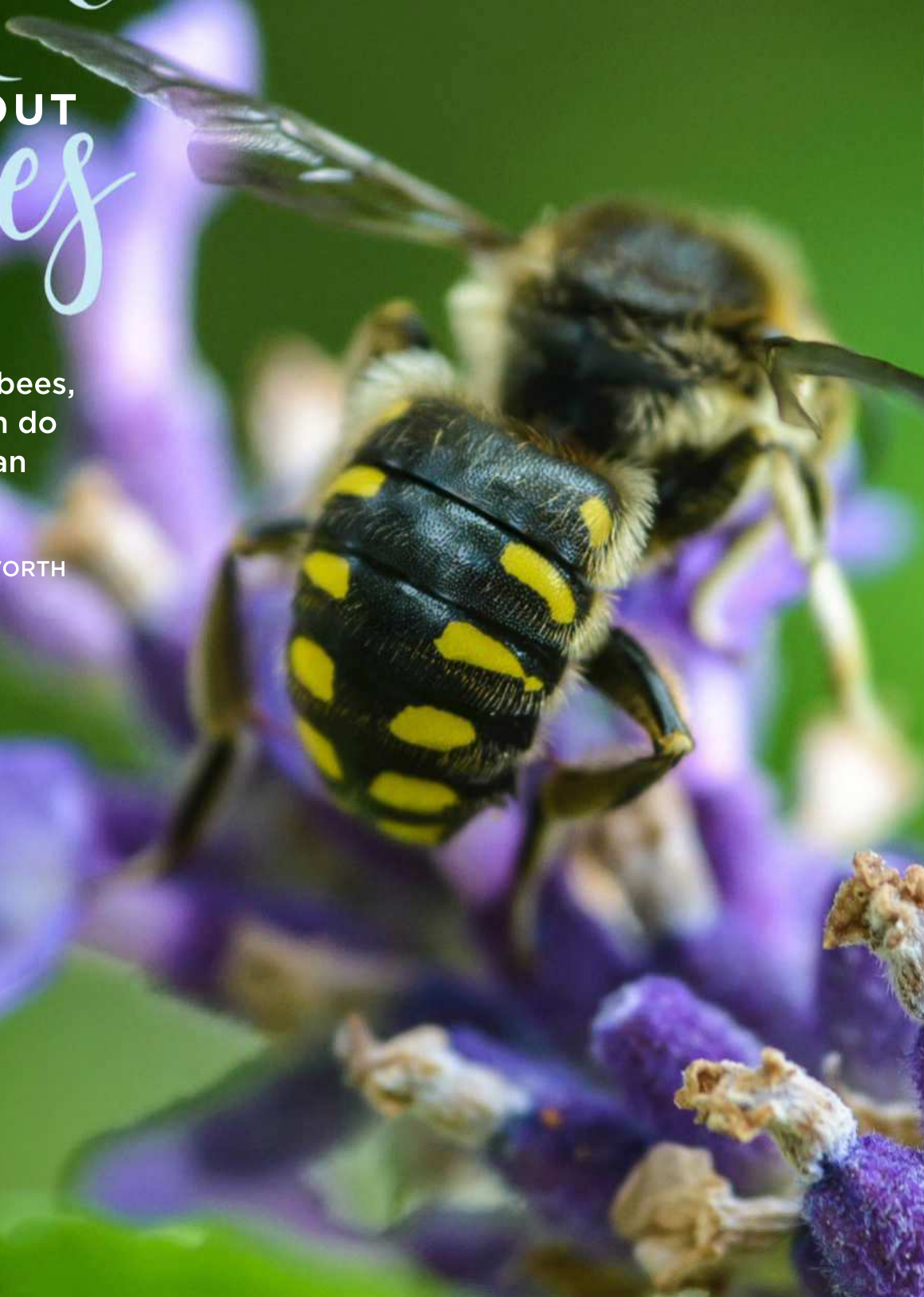


Wild ABOUT Bees

There's more to bees,
and more we can do
to help them, than
most of us think.

BY VANESSA FARNSWORTH





A mining bee (*Andrena*)
on groundsel (*Senecio*).



A snowberry bee (*Dufourea
holocyanea*) on its floral host
(*Symphoricarpos*).



A male mason bee (*Osmia*)
on shrubby penstemon
(*Penstemon fruticosus*).

When Canadians think of bees, it's typically the much-loved honeybee that springs to mind. And while there's no question that honeybees play an important role in our culture, they are just one of more than 800 species of bees found in this country, a figure that often takes people by surprise.

"They know we have bumblebees and they've probably even realized that there's more than one species of bumblebee, but that really is a small part of our bee diversity," says Jessamyn Manson, an adjunct professor in the department of biological sciences at the University of Alberta.

Canada's native bees are divided into six families, which encompass the familiar bumblebees and mason bees, along with the lesser-known carpenter, cuckoo, leafcutter, mining, plasterer, sweat bees and more. Honeybees themselves are not native to Canada but were introduced centuries ago to provide us with honey.

Bee experts suggest that one of the reasons why Canadians don't realize how much diversity there is in our native bees is because many don't look very much like bees to us.

"Honeybees we recognize because we have a visual image," Manson says. "Bumblebees we recognize. [But] many of the solitary bees—and the vast majority of the bees in Canada are solitary bees—don't look like what we think of bees looking like. They're much smaller. And often they're morphologically very different. They can look more like flies or wasps, and so I think people just don't recognize them as bees."

Native bees can even look like flying ants, or they can be brightly

coloured metallic greens or purples or blues, instead of the more familiar yellow-and-black stripes.

"And many of them are very nondescript," Manson continues. "We have a very scientific way of describing huge groups of them as 'little brown bees' and 'little black bees' because they're hard to tell apart without looking at them under a microscope."

Manson also finds that many people believe that honeybees are the best pollinators, but she notes that it's the sheer number of honeybees combined with their generalist tendencies that give them this reputation.

"On a bee-to-bee basis—like, if we talk about one honeybee to one native bee—it's not uncommon for the native bee to do a better job," she says. "And we certainly see that some crops don't do well without native bees."

Intriguingly, some plants require specific bee behaviours in order to be properly pollinated. Manson points to tomatoes, which she says are buzz pollinated, which means that their anthers must be shaken at a specific frequency in order for the

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pollen to come out. Because of this, it’s our native bumblebees that do the best job of pollinating them.

It’s also not unusual for a specific plant species to co-evolve with a specific native bee species. Lincoln Best, a bee taxonomist at the University of Calgary, says that when that happens, the resulting adaptations can be critical to the survival of the bee.

“Some of these specialist bees only collect pollen from one species of flower, and their larvae’s physiology is often designed

specifically to digest that particular type of pollen,” he says. “So it’s definitely possible that if we lose certain plants, we could lose certain bees.”

Which raises the question: Just how healthy are Canada’s native bee populations? It’s a question that even our native bee experts have a difficult time answering.

Manson sums it up best.

“Here’s what I can tell you: In most cases, we don’t know, and that’s a little bit worrisome,” Manson says. “For the vast majority of

species, we don’t have good enough baseline data to know how the populations are doing.”

Bumblebees, however, are the exception.

“Because they’re very charismatic, people have been paying attention to them for a long time. And, unfortunately, we have good data to suggest that several species are in rapid and severe decline,” Manson says.

Indeed, the rusty-patched bumblebee, which at one time was one of the most ubiquitous bees in North America, is now listed as endangered under Canada’s Species at Risk Act. So far it’s the only bee species to have been so listed, although several more are under review.

So what went wrong? No one is quite sure, but experts suspect that a number of factors combined to precipitate the decline, including habitat loss, climate change, pollution, pesticide use and disease.

“One thing that’s becoming more and more recognized is the impact of urbanization and suburbanization on biodiversity,” says Best. “We know that in urban areas, we don’t have very much native habitat left. What is left is in extremely small fragments. The same is true for suburban areas. If we think about areas with extensive residential sprawl, those areas have such a huge impact on not just bees, but on everything that relies on natural landscapes and natural habitats to survive.”

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While the average Canadian has no control over urban or suburban sprawl, there are things we can do to support our native bee populations. This is a subject that Victoria MacPhail knows well. She is co-chair of Pollination Guelph, a non-profit organization dedicated to the conservation and development of pollinator habitats.

She suggests that Canadians can help by filling their gardens with flowers that begin blooming in early spring and carry through to late autumn. “Any time there’s a gap in flowering in your garden, you need to fill that gap,” she says. “So if there’s a two-week period of no bloom, then you need to make sure you find some kind of plant that will bloom in that time period.”

But not all flowers are created equal when it comes to pollinator habitat. MacPhail encourages selecting native, heirloom or heritage plants to fill those flowering gaps. “A lot of the more modern varieties of plants have been bred for certain features, which may be more beautiful, but there’s no reward for the bee,” she says.

And native bees require more than just flowers. They also require adequate nesting sites, which MacPhail says can be provided by leaving patches of soil undisturbed and keeping mulch to a minimum. “Seventy percent of our bees actually nest in the ground,” she says. “So if you can leave a little area of your garden un-mulched, the

pollinators can dig into the ground, which is really beneficial for them.”

The 30 percent of native bees that don’t nest in the ground nest in wood or twigs, and they can also use a little assistance.

“People tend to cut their gardens down in the fall, right to ground level. They cut all the vegetation out and all the plant stems,” MacPhail says. “If you leave the bottom eight to 10 inches or so in place, that actually allows a lot of the stem-nesting bees a place to nest next spring.”

Just as many plant and bee species evolved together over millennia for their mutual benefit, our own gardens can follow a similar path, evolving over many years to benefit native bees, suggests MacPhail. “Usually just making small changes in your garden over time, slowly and surely—as one plant dies, one gap opens up—you can start tweaking your garden to make it even more beneficial for pollinators,” she says.

Such a small gesture can have a great impact, for us all. **H**

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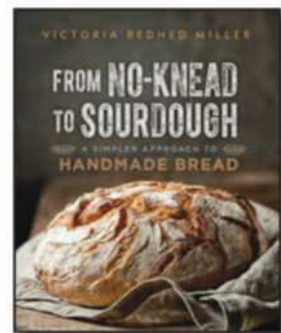
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