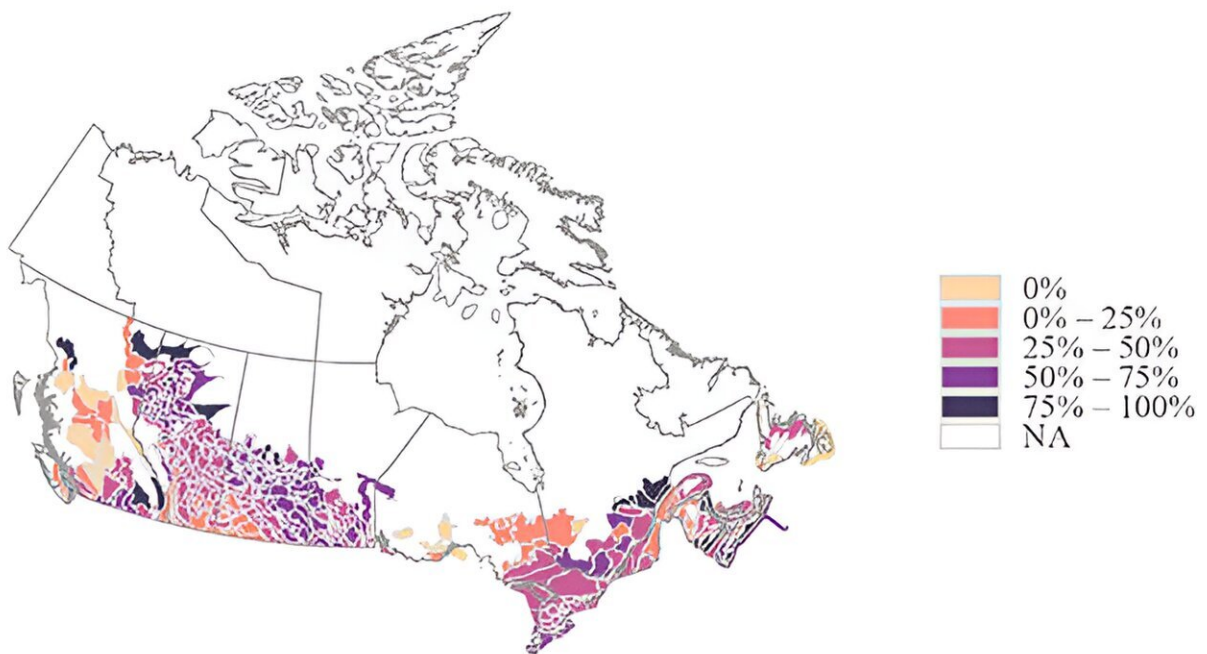


Q&A: Where the wild bees are—and aren't—impacts food supply

April 3 2024, by Lou Corpuz-Bosshart

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Crop dependency and service-providing areas per eco-districtservice-providing. Maps showing: (a) the percentage of the total crop area that is pollinator-dependent; and (b) the total service providing area (thousand hectares). *NA values correspond to eco-districts that have natural areas providing pollination services to neighboring eco-districts, even though they do not contain crops themselves. Credit: *Environmental Research Letters* (2024). DOI: 10.1088/1748-9326/ad2d83

Honey bees—plump, fuzzy, and famed for their honey-making—capture the popular imagination. Yet, wild bees are equally vital for pollination and, by some measures, outshine honey bees as pollinators. This is why UBC researcher Matthew Mitchell and his colleagues are deeply concerned about their declining populations.

Dr. Mitchell, a landscape ecologist in the faculties of forestry and land and [food systems](#), sheds light on the link between diminishing numbers of wild [pollinators](#) and reduced [farm productivity](#) in a [recent study](#) published in *Environmental Research Letters*. In this Q&A, he delves into the research findings and proposes ways the public can contribute to protecting [wild bees](#).

Where can we find wild pollinators, and why are they essential?

Native wild bees—which include mason bees, carpenter bees, sweat bees, and bumble bees—and other wild pollinators like moths, wasps, beetles, and flies are found everywhere: in parks and fields, near farms and forests. There are more than 800 species of just native bees in Canada, not counting other pollinators.

Wild pollinators play a vital role in pollinating various crops, including fruits, vegetables, nuts and oilseeds. Blueberries, cranberries, buckwheat, canola, and orchard crops rely heavily on wild pollinators. Wild pollinators also help preserve biodiversity by facilitating the reproduction of numerous plant species.

Native pollinator populations are declining from [habitat destruction](#) and fragmentation, widespread pesticide use, and the spread of parasites and pathogens like mites and viruses.

What would happen if all wild pollinators were to disappear?

We'd likely witness a loss of native plant species reliant on wild pollinators and significant crop yield reductions where wild pollinators supplement or are the sole pollinators of crops.

Farmers would face [higher costs](#) to cultivate pollinator-dependent crops, as reliance solely on European honey bees wouldn't always be feasible given the current honey bee capacity. In some cases, farmers might shift production away from pollinator-dependent crops, leading to increased costs to consumers or scarcity of fruits and vegetables in supermarkets.

Your study focused on the impact of wild pollinator numbers on food production potential. What did you find?

In Canada, wild pollinators aid in pollinating crops that generate an annual farm income of nearly \$2.8 billion and produce calories and nutrients that could feed the equivalent of around 24 million people (although not all these crops are directly consumed by people, as some go to livestock).

Collaborating with colleagues at the Nature Conservancy Canada, we analyzed publicly available data on crops, farm income, and nearby pollinator habitats such as forests, wetlands, and grasslands to estimate the potential food production and farm income that could be gained if wild pollination was increased.

In Saskatchewan and Alberta, the two provinces most affected by lack of pollinator habitat near croplands, increasing wild pollinator habitat and populations could potentially increase food production by the equivalent

of 11.5 million and 4.3 million people fed, respectively, and increase farm income by approximately \$1.6 billion for Saskatchewan and \$597 million for Alberta.

What can be done to reverse the decline?

Solutions include targeted [conservation efforts](#), such as restoring pollinator habitat in areas where crops depend most on wild pollinators. It's also crucial to promote sustainable farming practices that restore and maintain wild pollinator habitats near croplands.

On an individual or community level, urban gardens, especially if they include pollinator-friendly plants, can greatly benefit wild bees. Advocating for sustainable farming and habitat conservation can influence policymakers.

If addressed, targeted increases in wild pollinator habitat in Canada could help provide additional nutrition for an equivalent of 30 million people annually and increase farmer income by up to \$3 billion every year.

We would ensure the long-term health of native pollinators and enhance the sustainability and stability of Canadian agriculture and food supply. Without these types of actions, farmers will instead have to use other, potentially more costly, ways to increase productivity or will have to rely on honey bees.

More information: Gabriela T Duarte et al, Unveiling the benefits and gaps of wild pollinators on nutrition and income, *Environmental Research Letters* (2024). [DOI: 10.1088/1748-9326/ad2d83](https://doi.org/10.1088/1748-9326/ad2d83)

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