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Pollination

By Sabrina Malach

A love story

Have you ever stopped to observe a bee buzzing around the flowers in your garden? If so, you have witnessed the process of pollination, one of nature's most beautiful, complex and interactive processes. You have also witnessed inter-species lovemaking, since pollination is essentially a sexual activity during which pollen is transferred from the male to the female parts of the flowers by wind, water or animals.

Pollinators such as bees, butterflies, flies, hummingbirds and bats flock to flowering plants for food (sugar-rich nectar and protein-rich pollen) and inadvertently assist in the reproduction of plants by moving pollen from one flower to another, resulting in full-bodied fruit and a complete set of viable seeds. From the pollinators' perspective, pollination is an unintentional consequence of their search for food. From our perspective, pollination is essential to our well being in that it enables the reproduction of some 70 percent of the world's flowering plants, including 30 percent of global food crops.

Of all the pollinating insects, bees are the most abundant and efficient. There are approximately twenty thousand species of bees worldwide – honey bees, bumblebees, mason bees, sweat bees, carpenter bees, parasitic bees and orchid bees, to name a few. According to Toronto's bee expert, melittologist Dr. Laurence Packer, "there are more species of bees than there are of birds and reptiles combined; there are approximately as many species of bees as there are of birds, mammals and amphibians put together; there are more species of bees and wasps combined than there are of plants."

Unfortunately, the diversity and abundance of pollinators are declining globally. Suspected threats include habitat loss, industrial-agriculture practices (monoculture farming and pesticide use, to name just a couple), and climate change. While it remains uncertain whether or not there is officially a pollinator crisis, experts believe that these declines pose a serious threat to the integrity of natural ecosystems and global food production and, consequently, our survival.

Urban Toronto is blessed with a relatively healthy bee population. Species here thrive in the abundant, diverse and relatively pesticide-free garden spaces throughout the city. The variety of floral resources nourish a diverse array of bee species, and the nooks and crannies in our buildings, gardens and derelict spaces offer endless nesting possibilities.

Thousands of honey bees work the city's flowers by day and return to their hives to assist in the honey-making process by night. Honey bees reside at some of the city's most desirable properties: Casa Loma, the Fairmont Royal York Hotel, the Canadian Opera Company, Toronto Islands, New College at the University of Toronto, and Portlands Energy Centre in Toronto. Unlike Vancouver, Paris and Manhattan, however, you will not find honey-bee hives in residential neighbourhoods here because of regulations within Ontario's bee laws. The Ontario Bees Act requires that hives be placed at least 30 metres from the property line of a house, community centre or park, making backyard beekeeping almost impossible. Although this law prevents urban apiarists from managing hives at home, it does not prevent anyone with a yard, balcony or community garden plot from creating opportunities to nurture and conserve our wild bee populations.

Toronto's wild bees live and thrive outside of the law and nest and forage where they can. Get to know your beautiful and diverse pollinating neighbours by spending some time sitting in front of a sunflower, Italian oregano, bee balm or broccoli plant, or take a trip to one of the GTA's pollinator oases. Our region is graced with the presence of wild and intentionally planted pollinator habitat where native and wild pollinators nest, frolic and fertilize the flowers. Examples include our entire ravine system, Evergreen Brick Works, the High Park Pollinator Garden, Shores's Kavanah Garden, PACT's Pollinator Project (PPP) gardens, and the Wild Bees Using Toronto Green Spaces Project that has nest boxes set up throughout the city.

The PACT Pollinator Project (PPP) is organized and managed by the PACT Grow to Learn (GTL) Schoolyard Gardening Program and Food Initiative and is generously funded by the Metcalf Foundation. After studying frightening reports about declines in biodiversity – especially among native pollinators in North America – GTL staff felt compelled to take further action to conserve and support the insects upon which we depend. Once staff realized that sustainable agriculture must benefit both humans and beneficial wildlife, they committed to going beyond existing approaches to food production by growing both food and biodiversity.

The objective of the PPP is to create a model for urban agro-ecology that systematically integrates pollinator habitat into food garden designs. Based on established techniques from the Urban Bee Garden at the University of California, Berkeley, PACT's gardens simultaneously educate the public about the essential role pollinators play in food production and conserve wild pollinator populations. The project currently consists

of two pollinator gardens adjacent to PACT's food gardens in the Lawrence Heights neighbourhood of Toronto. Both gardens have the features that include patches of native pollinator-attracting plants that bloom at different times in the season, nesting sites, water sources, and educational signs made by local students so that the public can independently explore the gardens.

Pollinator conservation is essential to any ecological gardening plan. By integrating habitat into your garden, you will nurture biodiversity, revitalize local ecosystems, contribute to food security, and bring more loving to your garden so your plants will be happier and more productive.

Here are some simple steps you can take to better support pollinators in your garden:

- Plant patches of native flowering plants.
- Don't succumb to mulch madness; leave patches of bare soil exposed for ground nesters.
- Don't discard dead wood or hollow raspberry canes; they're great for cavity nesters.
- Leave a shallow bowl of muddy water, with rocks or wood for landing pads, as drinking stations.

You can honour and celebrate pollinators every time you eat. Food production is a three-way partnership between plants, people and pollinators. So the next time you sit down for a meal and give thanks to your farmers, the Earth, and whatever greater spirit you might believe in, consider offering thanks to the little critters that run our world and put food on our tables.

PACT Grow to Learn Project: www.pactprogram.ca

Sabrina Malach is a human pollinator in that her three jobs all require that she buzz around the city building new relationships and helping to create healthier food systems and ecosystems. She is currently a Metcalf Foundation intern for PACT's Grow To Learn Project, the founder and coordinator of the annual Pollinators Festival at Evergreen Brick Works, and the director of outreach and development for Shoresh Jewish Environmental Programs. In 2010, she was awarded the Canadian Pollinator Advocate Award from the North American Pollinator Protection Campaign. She has a master's degree in environmental studies with a focus on emerging urban pollinator cultures and is an aspiring beekeeper and farmer.

The flower is the lover of the bee
Simon Buxton, *The Shamanic Way of the Bee*

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