

Pollinators

The work of pollinators benefits all of us every day, whether through the grapefruit we have at breakfast, the carrots we snack on during the day, or the cotton pajamas we put on before we go to bed. Canada's diverse pollinators are forever busy making sure we have the produce we need to survive. Many wildflowers also rely on pollinators. Without their services we would not be able to grow the majority of our food crops or enjoy the flowers around us. And yet many of these valuable creatures are under threat.

What are Pollinators?

Pollinators are organisms that aid in the transfer of flower pollen to allow for the fertilization of plants, which is essential to fruit and seed production. While some plants, such as grasses, have very light pollen that can be carried on the wind, about 80 per cent of flowering plants are dependent on pollinators to help them transfer their pollen.

When people think of pollination, many focus on bees. Bees are the principal pollinators, but there are other pollinators as well. These include insects such as flies, moths, butterflies, wasps and even some beetles. Hummingbirds are also pollinators.

Threats to Pollinators

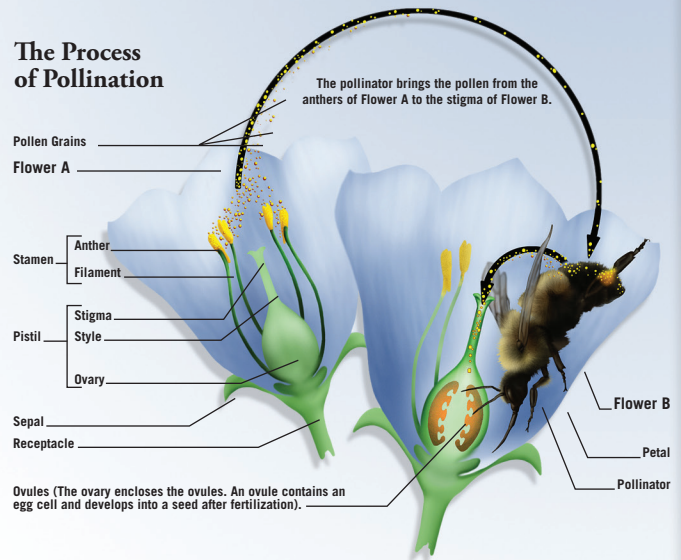
One of the main threats to pollinators is habitat loss. Expanding urbanization and agricultural development eat up the habitat of these creatures and replace it with roadways, large expanses of lawn and exotic garden plants. Through this, pollinators lose the resources that are necessary for their survival.

Pesticides also take their toll. Pesticides can kill pollinators when sprayed directly, but can also contaminate the plants on which pollinators forage. Pollinators absorb these toxins as they move from flower to flower. Due to their small size, many pollinators can be killed by even small quantities of pesticides. The flowers' pollen and nectar can also become contaminated and, when brought back to the nest by female bees as food for their young, can affect the next generation of bees.

The Buzz on Bees

Bees are the most important of our pollinators. And yet they are probably the most misunderstood and the least appreciated. This is because when people

The Process of Pollination



think of bees, most think of the Honey Bee (*Apis mellifera*), which is known for its tendency to aggressively defend its nest.

The Honey Bee is not native to Canada. It was introduced from Europe almost 400 years ago. Valued for its production of honey, beeswax and other products, it is also used by many farmers for crop pollination. Although incredibly valuable, many native bees, such as bumble bees or mason bees, are actually more effective and efficient pollinators. Also, some native bee species emerge earlier in the year than Honey Bees, making them important pollinators of early spring blossoms.

Unlike Honey Bees, the majority of our native bees are solitary. This means that each female prepares her own nest, provisions it with food for her offspring, lays her eggs, and provides little further care. Although solitary bees nest separately, some species may build their nests in groups, possibly to take advantage of a good nesting site. The females of other species may share a common tunnel but build their own egg chambers branching off from the tunnel. Because they do not have large nests or colonies to defend, solitary bees tend to be much less aggressive, stinging only if trapped, slapped or handled. Some don't even defend themselves at all.

Bumble bees are the most social of our native bees. They form a temporary colony that starts in spring





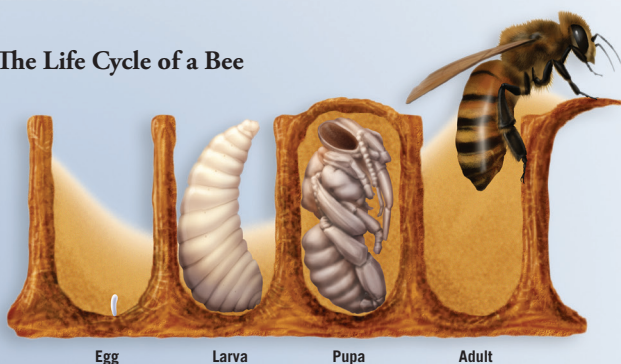
with just the queen. She produces workers, followed by males and new queens, and the colony breaks up with the onset of winter. Bumble bees are aggressive in defending their nest if disturbed. Away from the nest, however, like any bee, they are unlikely to sting unless threatened.

People also confuse bees with wasps. Although bees and wasps belong to the same order (Hymenoptera), they have different manners of living. While many wasps are parasitoids—meaning their larvae develop in or on other insects—it is the stinging wasps that most people fear. These wasps developed stingers to allow them to immobilize their prey. This includes the social wasps, such as yellowjackets and hornets, which are known for their aggressiveness. For help in distinguishing bees from wasps, see our *Wild About Bees* poster online.

The Life Cycle of a Bee

The life cycle of a bee has four stages—egg, larva, pupa and adult. The vast majority of our native bees build their nests in the ground. The rest mostly nest in holes in dead trees or plant stems. The female creates cells within the nest that are first waterproofed and then provisioned with pollen and nectar as food for the larvae. She lays an egg within each cell. Exactly how bees build their nests and line the cells can vary greatly from species to species. Some bees use pieces of leaves or petals to line each cell. Others use mud, tree resin or a cellophane-like substance that they secrete themselves. With approximately 900 species of bees in Canada, there is a fair bit of variety.

The Life Cycle of a Bee



Although it takes an expert to identify different bee species, there are some clues that can help identify a bee as belonging to a particular group of bees. To learn more about our diversity of native bees, see our *Wild About Bees* poster online.

Native North American bee species, like some of our other pollinators, are under threat. You can help our native bees by creating a pollinator-friendly garden. Two key features of good bee habitat are a diversity of bee-friendly flowers and good nesting sites.

Helping Pollinators in Your Garden

We can help pollinators with some thoughtful gardening and a little planning. Follow these tips to provide habitat for a diversity of pollinators:

- Pick a sunny spot, preferably sheltered from the wind.
- Provide the greatest diversity of flowers possible, ensuring there are a number of different flowers in bloom at any time from early spring through summer and into fall.
- Choose flowers with a variety of colours to attract a diversity of pollinators.
- Provide a diversity of flower shapes and sizes. Pollinators vary in size and in the length of their tongues. Short-tongued bees, for example, require shallow flowers in order to reach the nectar, while long-tongued bees can access the nectar of deeper flowers.
- Choose native flowers that are abundant in nectar and pollen, rather than exotic flowers bred for showiness (many of which have diminished nectar and pollen production).
- Do not collect plants from the wild. This puts pressure on plants already threatened through habitat loss. See the plant encyclopedia and native plant suppliers' list at CanadianWildlifeFederation.ca/Gardening.
- If adding non-native flowers, choose heirloom varieties, which are more likely to have retained their ability to produce nectar and pollen.
- Avoid double or triple flowered hybrids that deny pollinators access to nectar or pollen.
- Plant clusters of each flower species—in clumps of three to five plants—to attract the attention of pollinators.
- Provide pollen and/or nectar early in the season when food is scarce with shrubs and trees, such as apple, blueberry, dogwood, cherry and willow.
- Add some late-blooming flowers, such as aster, Cup Plant or goldenrod, to provide nectar and pollen for pollinators active into the fall, such as bumble bees, Monarchs and hummingbirds.
- To satisfy the thirst of pollinators in the hot, dry summer, provide water in a shallow dish or birdbath, with half-submerged stones as perches.

- A muddy spot will provide essential nutrients to butterflies and nesting materials for some bees.
- Allow a corner of your yard to go “wild” with grasses, weeds, wildflowers, logs and brush to provide nesting, sheltering and overwintering sites.
- If you have lawn, add some clover to provide extra sources of nectar.
- If you only have a small balcony or patio, put out a few flowering container plants to provide nectar and pollen for passing pollinators — some bees may even nest in the containers.
- Avoid the use of pesticides. For alternatives, refer to our *Natural Insect Control* handout.
- The availability of nesting sites can seriously limit bee populations. Provide undisturbed, sparsely vegetated soil in warm, well-drained, sandy sites, preferably on a south-facing slope, for ground-nesting bees.
- If you don't have a sloping spot in the sun, you can create your own by making a mound of sandy soil that is about 60 centimetres high and 1.5 metres wide when tamped down.
- If you use mulch in your garden, leave at least some areas that are mulch-free. Avoid choosing dyed mulch.
- Logs and old stumps in sunny areas are good for bees that nest in cavities.
- Shrubs with pithy stems, such as elderberry, raspberry and sumac provide nesting sites for some bees, such as small carpenter bees.
- Leave some areas of thick overgrown grass, hedgerow or abandoned rodent burrows as nesting sites for bumble bees.
- Bees don't travel long distances to forage for nectar, so ensure nesting sites are within 250 metres of flower beds.
- Some bees nest and/or overwinter in plant stems, so never completely cut back an area of shrubs.
- Allow some leaf litter to remain in your garden as an overwintering site for bumble bees.

A Diversity of Pollinators

To attract a variety of pollinators, consider their different preferences:

Pollinator: Bees

Preferences:

- Smaller bees seek out open flowers with easily accessible nectar while larger bees can access more complex flowers.
- Bees can't see reds so tend to be more attracted to blues and purples, as well as to white, yellows and pinks.
- They are attracted to flowers with patterns or lines that lead them to the nectar.
- They build nests in abandoned rodent burrows in the ground or in holes in trees or shrubs.
- Good flower choices include asters, Camassias, coneflowers, Great Blue Lobelia, Joe-pye weeds, native Alliums, sunflowers, vervains and lupines.



Pollinator: Pollinating flies (such as flower, bee or tachinid flies)

Preferences:

- Most prefer open flowers or packed clusters of tiny flowers in white or yellow.
- Dead wood and damp, untidy corners provide egg laying sites.
- Many of these flies have larvae that are predatory or parasitic on aphids and other insects.
- Good flower choices include asters, coneflowers, False Solomon's Seal, goldenrods, Joe-pye weeds and sunflowers.

Pollinator: Butterflies, day-flying moths

Preferences:

- Their long tongues can reach nectar in open or deeper flowers.
- They choose flowers of many colours, including red, though usually blue or violet.
- Some species of butterflies get sugars from overripe fruit or sap.
- They require certain plants as hosts for their caterpillars.
- Good flower choices include Joe-pye weeds, *Liatris* and milkweeds.



Pollinator: Night-flying moths

Preferences:

- Their long tongues can reach nectar in open or deeper flowers.
- In the dark they are able to locate flowers with a strong, sweet scent.
- They choose white, cream or pale green flowers that are visible at night.
- They require certain host plants for their caterpillars.
- Good flower choices include evening primroses and yuccas.

Pollinator: Pollinating beetles (such as soft-winged flower, pollen or metallic wood-boring beetles)

Preferences:

- Wide open flowers (generally cup or bowl-shaped) that allow easy access to their pollen.
- Rotting logs, dead and dying trees, leaf litter and plant galls can provide egg-laying sites.
- Good flower choices include asters, coneflowers, goldenrods and milkweeds.

Pollinator: Hummingbirds

Preferences:

- Because of their longer tongues, they tend to favour trumpet or bell-shaped flowers.
- They are most attracted to red flowers, although they will choose others.
- Good flower choices include Cardinal Flower, Fireweed, Harebell, native lilies, penstemons, Red Flowering Currant and native columbines.



To Help Bees in Particular

(Though most of these plants will also provide good nectar for other pollinators.)

Season of Bloom: Spring

Some Good Bee Plants: Apples, blueberries, cherries, dogwoods, serviceberries, Viburnums, willows, wild strawberries and Wild Geranium.

Season of Bloom: Summer

Some Good Bee Plants: Bergamot, Buttonbush, coneflowers, Culver's Root, hyssops, Meadowsweet, milkweeds, native roses, New Jersey Tea, Purple Prairie Clover and Common Yarrow.

Season of Bloom: Late summer/fall

Some Good Bee Plants: Asters, Black-eyed Susan, Blue Vervain, Cup Plant, False Sunflower, goldenrods, Great Blue Lobelia, Joe-pye weeds and native sunflowers.

Does your garden support pollinators and other wildlife species? Apply for Garden Habitat Certification. Certified wildlife-friendly gardens raise awareness and inspire others in your community. Find out how to make it official at CanadianWildlifeFederation.ca/Certification.

For more plant ideas or information on attracting bees, hummingbirds, butterflies and moths to your garden, visit CanadianWildlifeFederation.ca/Gardening.

Credits

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