

WHY NATIVE BEES ARE IMPORTANT⁴



Pollination: Native bees **transfer pollen** from one flower to another, facilitating the reproduction of plants.



Biodiversity: Bees contribute to the biodiversity of ecosystems by **supporting plants**, which in turn helps other animals like birds.



Agriculture: Crops rely on or benefit from pollination by native bees. **One out of three** bites of **food** are pollinated by bees and other pollinators.

TAKE ACTION: HOW YOU CAN HELP BEES

Plant a diversity of **native flowers**. Select species with **overlapping blooms** from early spring through to fall. Visit growgreenguide.ca for an interactive guide to eco-friendly gardening.

Leave the leaves in your garden to help bees overwinter. About 70% of bee species **nest underground**. Until ground temperatures reach 10°C, help bees stay warm with leaves.

Refrain from spraying **pesticides**. Pesticides are **toxic to bees**; they can kill them, disrupt larvae development and/or change foraging behaviour.

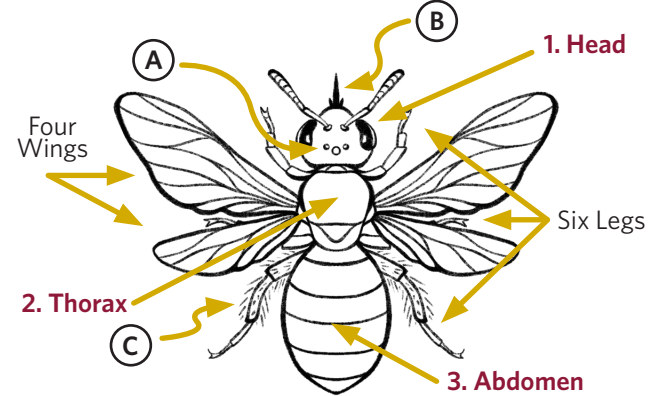
Purchase **organic seeds and foods**. Organic farming tends to promote **healthier ecosystems** and supports biodiversity.

Take photos to contribute to **community science** (Seek/iNaturalist). Scientists can use this data to **track changes** in bee populations.

BEE ANATOMY

Learn about the unique parts of bees that help them navigate, forage, and pollinate.

■ Three main body segments.



- (A) Ocelli** (“uh-SELL-eye”): Simple eyes that detect the orientation of the sun for navigation.
- (B) Proboscis** (“pro-BOSS-CUSS”): A specialized tongue for reaching into the flower to forage nectar (sugar).
- (C) Scopa** (“SKOH-puh”): Dense hairs for collecting and transporting pollen (protein and fat).

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All photos are CC0, open access from iNaturalist.
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Citations

1. Geldmann, J., & González-Varo, J. P. (2018). Conserving honey bees does not help wildlife. *Science*, 359(6374), 392-393.
2. Sheffield & Heron (2018). The bees of British Columbia (Hymenoptera: Apoidea, Apiformes). *Journal of the Entomological Society of British Columbia*, 115, 44-85.
3. Packer (2023). *Bees of the World: A Guide to Every Family* (Vol. 5). Princeton University Press.
4. Potts, et al. (2016). Safeguarding pollinators and their values to human well-being. *Nature*, 540(7632), 220-229.
5. Tosi, et al. (2022). Lethal, sublethal, and combined effects of pesticides on bees: A meta-analysis and new risk assessment tools. *Science of the Total Environment*, 844, 156857.

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BEEES

Native Bee Diversity at UBC Botanical Garden



Prunus Miner Bee
Andrena prunorum

DID YOU KNOW?

- Honey bees are **not native to Canada**, they are originally from Europe, Africa, and the Middle East. Beekeeping, especially in urban or protected areas, can impact native bees through **competition**.¹
- The word ‘pollen’ is latin for **fine dust**. Pollen is a source of **protein, fats, vitamins and minerals** that bees feed to their young.
- Flowers and bees form a **mutualistic relationship**. In exchange for pollination, flowers reward bees (and other pollinators) with **nectar** (sugars).
- Bees are **descendants** of carnivorous wasps. 120 million years ago bee ancestors adopted **vegetarian lifestyles**, getting protein and other nutrients from pollen instead of other insects.
- Bees see in **ultra-violet** (UV) light. This is light that is not visible to humans. Some flowers have **UV markings** that guide bees to land.
- Bumble bees are known for **buzz pollination**, a behaviour where they **vibrate** their flight muscles to release pollen from the flower.

NATIVE BEE SPECIES DIVERSITY

British Columbia has the **highest bee diversity** in Canada with ~500 species.² This is more than the number of bird species in **all of Canada**.

GLOBAL: ~20,000³

CANADA: ~800

UBC BOTANICAL GARDEN:
~100-150²



UBC Botanical Garden

botanicalgarden.ubc.ca

BEES OF UBC BOTANICAL GARDEN

UBC Vancouver is located on the traditional and unceded territory of the *xʷməθkʷəy̓əm* (Musqueam) People, whose ancestors have occupied lands in this area from time immemorial.

FORAGING



Specialist Generalist

SOCIALITY

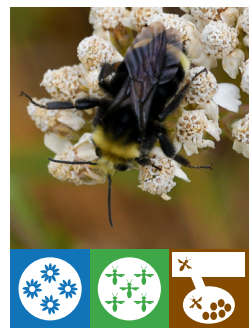


Solitary Social

NESTING



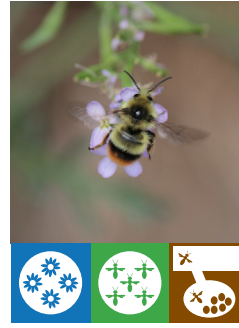
Cavity Ground Tunnel Hive



Yellow-faced Bumble Bee

Bombus vosnesenskii (native)

The yellow-faced bumble bee has a yellow stripe on its abdomen and is common in urban and agricultural areas.



Fuzzy-horned Bumble Bee

Bombus mixtus (native)

This is an extra fuzzy bumble bee with bright yellow hair and two orange stripes at the end of its abdomen.



Small Metallic Sweat Bees

Lasioglossum Dialictus spp. (native)

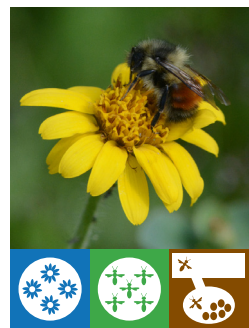
Highly diverse, these small bees (3-10 mm) consist of many species, including some with striking metallic iridescent colouration.



European Wool Carder

Anthidium manicatum (non-native)

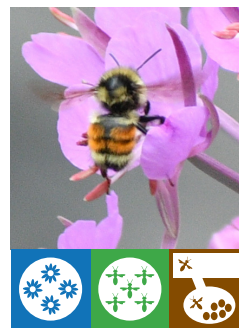
Introduced to Canada in 1863, the males are territorial and display aggression with other members of their species.



Black-tailed Bumble Bee

Bombus melanopygus (native)

This bumble bee has two distinctive orange stripes on its abdomen followed by a black stripe.



Vancouver Bumble Bee

Bombus vancouverensis (native)

Similar in appearance to *B. melanopygus*, this bumble bee has a distinguishable inverted black triangle on the top of its abdomen.



Bicolored Striped Sweat Bee

Agapostemon virescens (native)

These beautiful bright metallic bees have a green head and thorax, with black and yellow (white) striped abdomens.



Western Leafcutter Bee

Megachile perihirta (native)

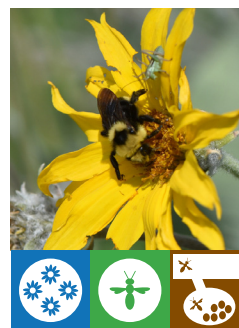
Species of this genus collects pollen on the underside of its abdomen, and uses serrated mandibles for biting off leaves to build nests.



Western Bumble Bee

Bombus occidentalis (native, rare)

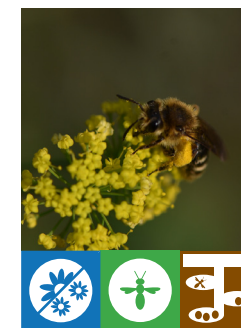
Once very common, this bumble bee's populations have declined. The species can be identified by the white hairs on the tip of its abdomen.



Indiscriminate Cuckoo Bumble Bee

Bombus insularis (native, rare)

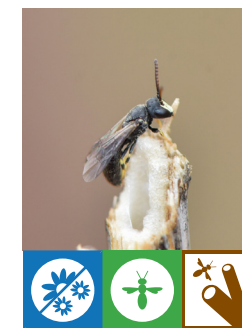
Like cuckoo birds, this bumble bee lays its eggs in the nests of other bumble bees and relies on them to raise their young.



Miner Bees

Andrena spp. (native)

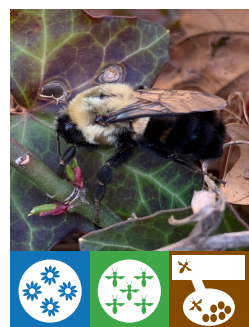
These bees emerge in the early spring and is important for pollinating fruit trees like apple, cherry and pear.



Yellow-faced Masked Bees

Hylaeus spp. (native)

These bees have a unique appearance with yellow markings on their face. Due to their sleek body, they can be mistaken for wasps.



Common Eastern Bumble Bee

Bombus impatiens (non-native)

Commonly used in tomato greenhouses for pollination, this bumble bee escaped and can be found across the Lower Mainland.



Western Honey Bee

Apis mellifera (non-native)

While important for agricultural pollination, honey bees have the potential to compete with native bees and impact native ecosystems.



Blue Orchard Mason Bee

Osmia lignaria (native)

Well known for their blue metallic appearance, these bees use existing holes to build nests with mud and leaves.



Cellophane Bees

Colletes spp. (native)

This bee has a fuzzy broad head and gets its name from a cellophane-like lining they secrete inside their brood cells.

