

# A SHORT GUIDE TO BUMBLEBEE



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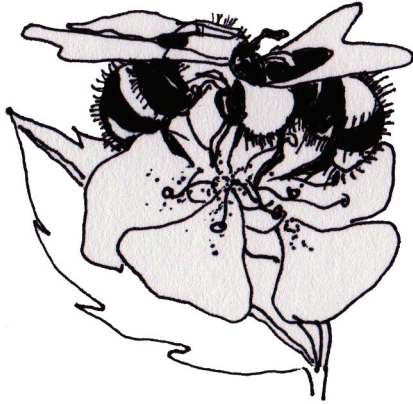


# **A Guide to Bumble Bees**



**by**  
**Border Free Bees**

# About Bumble Bees



- There are 46 species of bumble bees in North America (north of Mexico).
- “Bombus” is the genus name for bumble bees.
- Bumble bees are North America’s only indigenous social bee. They live in colonies of 30 or 40 at a time, with up to 400 bees living in one colony over the summer (way fewer than honey bees!)
- Bumble bee species diversity is high in cool temperate and mountain regions.
- Bumble bee colonies die at the end of each growing season with new ones founded each year.
- Mated queens are the only bumble bees that survive the winter.
- Bumble bees nest in pre-existing cavities, burrows or grassy nests of mice or voles, old bird boxes, and other holes and crevices.
- Bumble bee species vary in the distances they can travel for forage- some have been known to travel up to 10 kilometers BUT closer forage is better for all bees!

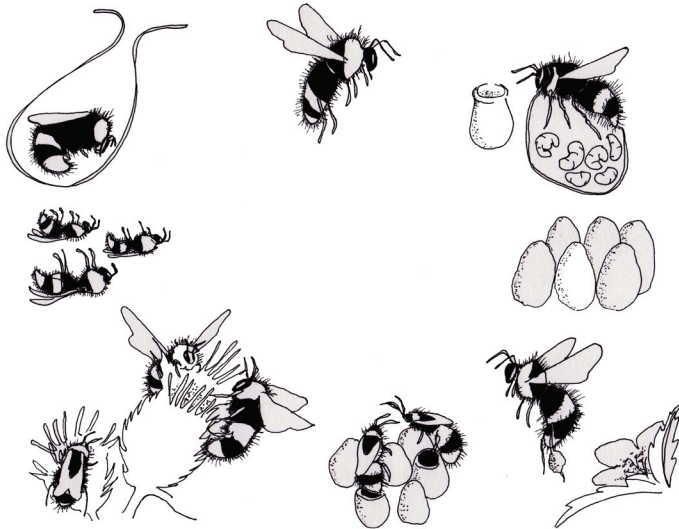
- Female bumble bees can sting if trapped or defending their nests.
- Bumble bees need forage from early spring till late summer.
- Bumble bees excel at pollinating many agricultural crops and native plants.
- Bumble bees have a special pollinating feature- “buzz” pollination which helps certain plants like tomatoes and eggplants flourish—essentially the bumble bees



“sing” to plants to get them to release their pollen!

- Some bumble bee species are declining rapidly because of habitat loss, insecticide use, climate change, and disease (often spread by “managed bees” in greenhouse operations).
- Loss of bumble bees can cause cascading effects on native plant populations and birds and mammals that rely on these plants.
- Over 250 other organisms rely on bumble bee nests to complete their own life cycles.

# The Bumble Bee Life Cycle



1. Mated, overwintered queens emerge from hibernation, some quite early in the spring, others later, depending on the species. The queen searches for a new nest site to found a new colony.
2. When she finds a nest site, she moves in, makes a wax honeypot for nectar storage, and lays her first clutch of eggs on a mass of pollen.
3. The young larvae hatch, feed on the pollen, and spin a cocoon. The queen continues to forage for food. Adult bees hatch from the cocoons.
4. The new adult bees are mostly females and begin to act as workers in the mother's colony while the queen now stays home to lay eggs. The workers forage and tend the new eggs.
5. More bees and workers are produced and, at some point in the summer, the colony switches over to the production of males and queens. Queens and males mate-- new queens hibernate. Other bees die off. Cycle repeats in spring.

# Nest Boxes For Bumble Bees

Providing nesting sites for bumble bees is important- leave some grassy areas unmown and keep some areas of your yard a bit “untidy.” Bumble bees love to nest in pre-existing cavities and holes such as mice or vole nests. But you can also build a nesting box or two for the bees and help create a community of organisms!

## Bumble Bee Nest Design:

There are many designs for bumble bee boxes, both one-chambered and two-chambered, some larger and some smaller. The box we are making here is based on a design by Dr. Ralph Cartar of the University of Calgary.

- A box should be at least 15 cm X 15 cm X 15 cm and it can be made out of most types of material- we are using plywood.
- Boxes do not need to be painted but if they are, paint several weeks before the spring so bees aren't turned off by the smell.
- The roof must be covered with a water-shedding material that overhangs the box by about 3 cm on each side, such as a thick piece of poly used in vapour barriers, stapled to the lid.
- A hinged or closable lid is worth having to easily check the inside.
- The entrance hole should be in the centre of the front wall with a diameter at least 25 mm - you can insert a tube into the entry for water protection and ease of bee access.
- Fill the box about 2/3's full of insulation such as

water repellent upholsterer's cotton (do not use fine bleached or surgical cotton as the bees can get tangled up in it). The insulation will be fluffed up by bees- this fluffing and the presence of yellowish faeces is a sure sign the box is occupied.

- Some of our boxes have one or two ventilation holes covered by a screen. You could make a box with two entrances, which some species like. If you have more than one hole in the box, make sure there is enough insulation so the bees won't suffer if it's cold or windy. Some species will not want ventilation holes. You can try various kinds of entrances and ventilation holes.

## **Placement of Nest Boxes:**

Nest boxes should be set out as early as possible in the spring (February to March) close to sources of spring food. Nest boxes can be placed in-ground, on-ground, or on trees: different species prefer different places. Underground boxes perform best if they are on slopes for drainage. Underground boxes, however, will rot quickly over time. You can put a long entrance tube on a box, bury the tube and leave the box itself on the ground- this tricks the bees into thinking they are going underground. On-ground boxes can attract rodents and ants and must be kept out of direct sun and carefully protected so they aren't knocked over. With a strap, you can mount a box in a tree at about adult eye-level and place on the north side of a tree trunk or wall. Tree-mounted boxes can be susceptible to vandalism and mammals like raccoons and skunks. Usually, boxes buried underground have the highest occupancy rate.





WHERE SHOULD I PUT MY  
BUMBLE BEE HOUSE ?

- ~ SHADE FROM THE SUN
- ~ KEEP THE HOUSE DRY
- ~ POINT THE ENTRANCE TUBE DOWN
- ~ PLANT LOTS OF FLOWERS NEAR BY



HANG IN A TREE  
OR ON A FENCE



SIT IT ON A HILL  
WITH THE PIPE GOING  
UNDER GROUND



BURIED UNDER A HILL OR  
PLANT MATERIAL ~ MAKE SURE  
THE HOUSE STAYS DRY !



SITTING ON  
THE GROUND



## Care of Nest Boxes:

- Boxes can be inspected occasionally to detect occupancy and to ensure there are no water issues or ants, but do this carefully and rarely in spring and summer. **BE CAREFUL TO NOT MOVE THE NEST BOXES!**
- Late autumn is a good time to inspect and clean out boxes and discover if they have been used. Remember, the colony dies out in the fall and the queen will overwinter in the ground, not the box. The box will be empty after the season is over. To prepare for next year, take some good notes about how the box worked and what you see. Save the insulation for reusing by putting the freezer for a few weeks to kill any live organisms. The inside of the box can be cleaned with a mild bleach solution.
- Occupancy of the boxes is usually very low in the first year but increases with successive years as the bees get to know places where there is habitat for them.

## Some things to consider:

- In a good year, only about 10 out of 10,000 queens make it through this whole cycle.
- At several of these stages, colonies can be damaged by cuckoo bumble bees, bad weather, lack of food, disease, and people who deliberately or inadvertently destroy their nests.
- Bumble bees need flower food sources from very early spring into the fall and they need places to nest and overwinter- keep some parts of your yard untouched!

## Other Information:

- Provide lots of flowering plants that bumble bees like from early spring to fall.
- Make sure you leave untouched parts of your yard so the queens can overwinter—they like undisturbed earth and compost heaps. Leave patches of soil, compost, and earth alone from fall to late spring!
- Identify your bumble bees with a good guide book: Williams, P. et al. *Bumble Bees of North America: An Identification Guide*. Princeton: Princeton UP, 2014.
- Keep records of your bee boxes!
- Remember that in a good year, only 10 out of 10,000 queens successfully get their colony through a whole season. Let's help them as much as possible to survive!



*THANKS to Maureen Lisle, Dr. Ralph Cartar, Brian Campbell, and Samuel Roy-Bois. The boxes for this project were repurposed from a community art installation, Small World by Samuel Roy-Bois (Bee Central, Kelowna, July 2015), by Maureen Lisle. Design by Asia Jong and Fionncara MacEoin. Illustrations by Rhythm Hunter*

# Bumble Bee Nest Observation Record

Record information about your bumble bee nest for your own records and to share with others.

[illegible]

Your Name:

Your Contact Info:

Label of Nest/ Identification of Nest Box:

[illegible]

[illegible]

[illegible]

