



## **BEE HOTEL BUILDING ADVICE**

Most commercial bee hotels are expensive, and sadly some of them can be inadequate for any of these reasons:

- they offer little protection from wet weather or not enough protection from hot Okanagan weather
- the holes are too large or all the same size—different species need different size holes
- tubes have splinters at the openings and inside
- tubes have no solid back wall and are simply open-ended wind tunnels
- tubes are all the same length—different species need different lengths of tunnels
- they contain glass or plastic tubes which cause condensation and fungus/ moulds
- they are not easy to clean or manage: e.g. drilled blocks should be replaced with brand new ones every two – three years to prevent the build-up of fungus / moulds, mites and other pests and parasites.

### **BUILD A BEE HOTEL**

A bee hotel—or bee condo—is a great way to provide habitat for our dozens and dozens of cavity-nesting, solitary bees. A bee hotel can be a simple bird-house sized box OR it can be a larger structure or frame that holds several boxes.

#### **FRAME:**

1. If you create a larger structure, your frame can be built of wood and you can be very creative about the design. Freshly purchased pressure-treated wood should be avoided, though, as the chemicals inside will deter the bees. Also avoid composite materials (hard boards, chip boards, etc) as they won't stand up to the elements.
2. The frame can be left unfinished, coated with an exterior water-based wood sealant to protect it from the elements, or decorated with water-based paint. The smell of paint and sealant may deter bees for a few weeks until it wears off. Painting the frame can be a fun project for kids and schools.
3. A large bee hotel usually contains several boxes. The large structure needs serious shelter from winter wet including a robust roof. If the boxes get really wet and snow-covered, the structure will not be suitable for over-wintering insects.
4. Since many of our native bees are what are called “solitary” bees, they don't necessarily congregate in large numbers. A large bee hotel should probably not contain more than 8 – 10 boxes.
5. The base of the bee hotel will have to be fixed to the ground to prevent tipping over (bolted to concrete blocks or posts works well). The bottom of the lowest boxes need to be situated 60-90 cm (2-3') off the ground to prevent wetting the boxes from snow or rain splash. Leaving room at the base of the hotel for mud, dirt, and rocks is a great idea as many bees nest in the ground and many need mud for creating their nests.

#### **BOXES: (to be installed in frame OR to be installed individually around a yard or garden)**

1. The frame is filled with boxes (again, you can be creative about how these boxes are arranged in the frame. Patterns are great to create as bees will navigate and find their holes based on patterns they memorize.)

2. To make your boxes, you can use re-cycled or waste wood and logs. Make sure the materials have not been treated with a solvent-based wood preservative or other chemicals. Fresh cedar can also repel some bees.
3. The basic element is a wooden box, open on one side. If the box is stand alone (like a bird-house) it needs a sloping roof and small overhang to deflect rain. If the box is to be installed into a rain-protected structure, the box does not need this overhang.
4. The basic box could be anywhere from 30 – 40 cm (12 – 15 ins) wide and 30 – 40 cm high. The box **MUST** be a minimum of 20cm (8ins) deep.
5. The basic box is filled with blocks of wood or small logs into which you drill holes, and/ or packed with containers that will hold tubes.
6. The drilled holes should be a variety of sizes for different species of bees. Varying diameters can be **between 2.3mm (3/32 ins) and 9.5 mm (3/8 ins)**. Mason bees prefer 7.5 mm to 9.5 mm (19/64 – 3/8 ins) in diameter.
7. The depth of the holes may depend on the length of your drill bits but ideally should be 18 cm (7 ins) — in fact for mason bees, the depth **MUST** be 18 cm (7 ins). Do not make a hole all the way through to the opposite side: bees prefer a closed end tunnel. Shorter tunnels are fine for small bees/ small holes but for the larger holes, make the tunnels 18 cm (7 ins) long.
8. The open ends of these holes should face outwards, and must be **smooth, and free of splinters**, as should the length of the tunnel. Use sandpaper to smooth the entrance to each hole, as the bees will not enter holes with rough splintered wood around them: this can easily damage their delicate wings. Sawdust may also put them off so remove from tunnels as much as possible.
9. A box can also be filled with containers (bricks, cans) that are packed with cardboard or bamboo tubes. Bundles of bamboo canes, sawn into lengths just below a joint and laid horizontally, may be used if they are not blocked with dried pith and solid nodes. You can purchase cardboard tubes from stores that sell mason bees or roll newsprint tubes. A box can be filled with both containers and drilled wooden blocks/ logs. Be creative!
10. Woodpeckers, flickers, or other birds often peck at the tunnels looking for bee larvae to eat. Best practice is to fix a piece of chicken or stucco wire across the front of the bee box or entire bee hotel. This wire does not seem to bother the bees.
11. If you are making a bee hotel with many boxes, you will need to firmly fix the boxes into the larger structure. Again, patterns are good and you can use interesting designs and arrangements.
12. A single box must be able to be fixed to a fence or wall. A bee box must be **firmly fixed**, so that it does not sway in the wind (i.e. don't make it hang it from a branch.)
13. Bee hotels and bee boxes need to be installed so they are **NOT** facing directly west or south. East and southeast are the best—morning sun and afternoon shade are ideal. Naturally, you'll want to make sure there are plenty of flowers or natural areas for food nearby! Place the box or hotel where the bees can easily find them in a more open or simple environment.

Bee hotels and boxes require minimum maintenance but every two or three years the old logs and blocks should be replaced—carefully! You'll need to replace the filler after last year's bees have hatched and before this year's bees are nesting. Ideally, take the old logs, drilled wood, tubes out in spring and leave them outside in a fairly sheltered place for a month or two, discarding once they seem to be empty. Meanwhile, put new filler in the boxes.

There are numerous designs for bee hotels—some are simply gorgeous. Google “Bee Hotels Pinterest!” Also see the wonderful designs created by Evan Hutchinson for Border Free Bees on our website <http://borderfreebees.com/>

For the advice in this resource document, thanks to Brian Campbell, Evan Hutchinson, and Maureen Lisle as well as “Make a Bee Hotel” <http://www.foxleas.com/make-a-bee-hotel.asp> and “Creating a Solitary Bee Hotel” <http://extensionpublications.unl.edu/assets/pdf/g2256.pdf>

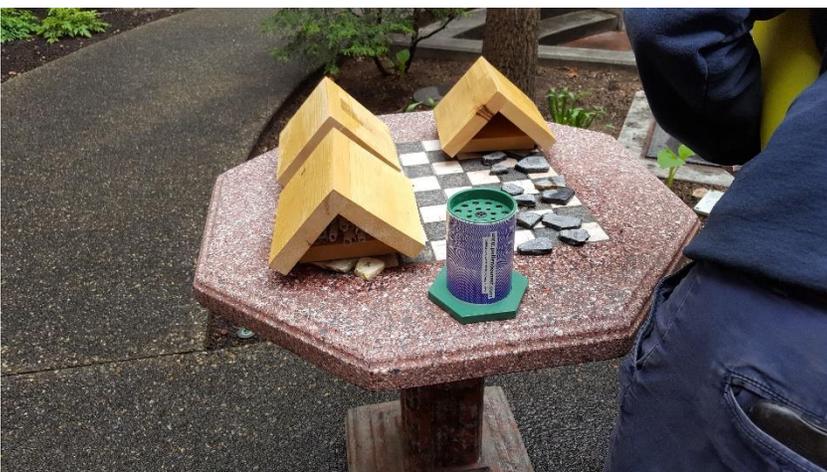
### ***A GALLERY OF BEE HOTELS AND CONDOS***



*Yuhiro's Hotel with Maureen Lisle*



*Pop up Apiary in Victoria BC (BFB)*



*Small bee houses, UBC Garden Club*



*Sun Valley Idaho, Evan Hutchinson (BFB)*



*Kelowna hotel and water catcher (Evan- BFB)*



*Richmond BC, Bee Hotel, Evan Hutchinson (BFB)*



*Terra Nova Bee Hotel, Richmond BC, Evan Hutchinson (BFB)*



*Bee Condo Making Workshop, UBC, Kaila Burke*



*Close up of Kelowna Bee hotel*



*Bee habitat in use!*