



Air Bee 'n Bee



Most of the UK's native bees are **solitary bees**, which do not form communal nests. Instead, female bees make individual nests, usually in tunnels or tubes. Different species may have very different behaviours: some nest entirely alone; others form 'neighbourhood' aggregations with individuals doing some collective safeguarding of the site; others may even share tunnels but not their brood cells.

Making **bee hotels** to support solitary bees is a popular wildlife gardening action. These typically provide tubes / holes suitable for **cavity nesting** solitary bees, which would naturally use e.g. old plant stems or cracking wood to nest in. Our management of green spaces often removes / tidies away a lot of their potential nesting sites, so providing bee hotels aims to readdress this balance.



There are a lot of bee hotel designs out there; examples above from Buzz Club members.

One size fits... all?

Typically, advice for making (or designing) bee hotels suggests providing holes of about **8mm** in diameter. This is a size known to be used by **mason bees** (a common visitor), but may not be as appealing to other species that are physically smaller or larger.

The Buzz Club are going to investigate the effects of using different sizes of holes in bee hotels. Do we get the same visitors, regardless of room size? Do some residents have specific requirements – or are they willing to compromise?

Equipment

Since there are a **lot** of potential factors that might influence which bees use a bee hotel, we are going to try and keep characteristics of the hotels as **similar as possible** other than the hole size. This means we have decided to use **drilled wooden blocks** in this project, as e.g. one 8mm drill hole is likely to be more like another, than pieces of bamboo cane or other more natural (and variable) material.

You will need:

- A **drill**, suitable for drilling holes into wood.
- Drill bits of **10mm, 9mm, 8mm, 7mm and 6mm** in diameter*.
*(*see 'variations' if you do not have all of these)*
- **Wood**. Enough to drill at least 25 holes in, without going through the back (e.g. thicker than the length of your drill bits) . Multiple pieces are okay.
- **Sandpaper** (to smooth the holes)
- Pencil / ruler for marking positions.
- Something to **randomise** the assigning of hole sizes (see below).

The hotel will need to be placed firmly (e.g. not moving in wind) in a **sunny position**.

Randomising

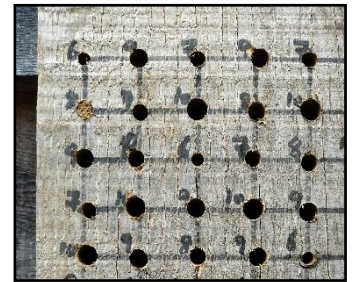
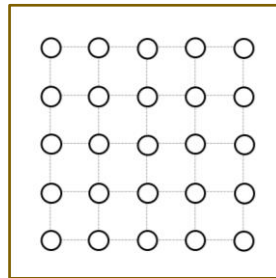
It is important to **randomise** where the hole sizes go on the hotel grid, to make sure we reduce what might affect bee choice. E.g. if all of the 6mm holes go first in the rows, bees **might** avoid them because they are close to the edge, not because they do not like 6mm holes.

A low-tech way to do this is to write each hole sizes on e.g. 5 bits of paper, shake / mix them up in a box, and apply them to the rows in the order you draw them. Or use whatever method you prefer (e.g. dice, <https://www.randomizer.org>).

Making a hotel

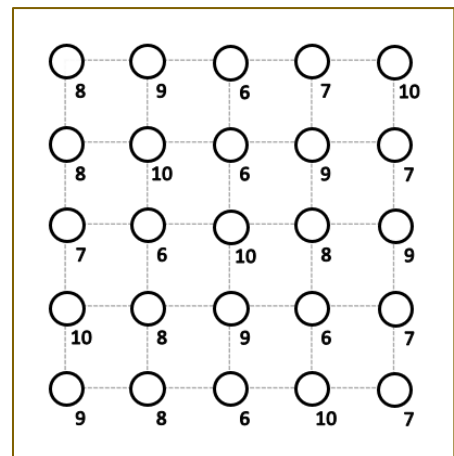
Note: The basic instructions assume you have **all 5** drill bit sizes, and a large enough piece of wood to do a 5x5 grid of holes (25 holes). How to do variations on this (e.g. for fewer hole sizes, or less standard bits of wood) will be shown afterwards.

Step 1: Using your ruler, mark out a grid on the wood, using **rows of five**. Try and make sure that the marks are at least 1cm apart, and an equal distance apart from each other **and** the edge.



Grid of holes approx. 2cm apart

Step 2: Assign the drill bit sizes to the hole positions. Please **randomise** this along each row, using whichever method works best for you. Label the holes.



Randomise and label the holes before drilling

Step 4: Make sure the hole entrances are smooth. Splinters can damage bees' wings.

Step 5: Put your bee hotel up. It should be firmly attached; in a sunny spot (South / East facing); between 1 – 2m up off the ground.

If possible, slightly tilt the hotel forward to prevent rain from running down into the tubes.

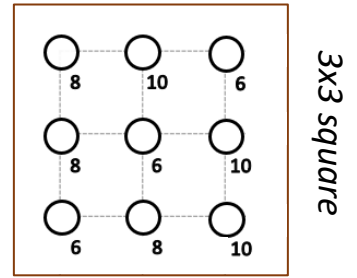


Hotel in place on a sunny wall

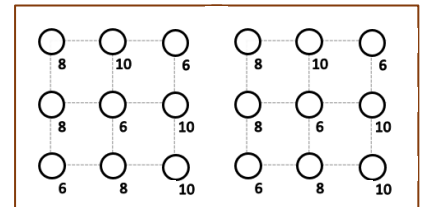
Variations / problem solving

Not enough drill bits

You will still need to have an **8mm** bit, since that is the 'advised' size, but you can still take part if you have not got all four of the others. E.g. only having 6, 8 and 10mm.



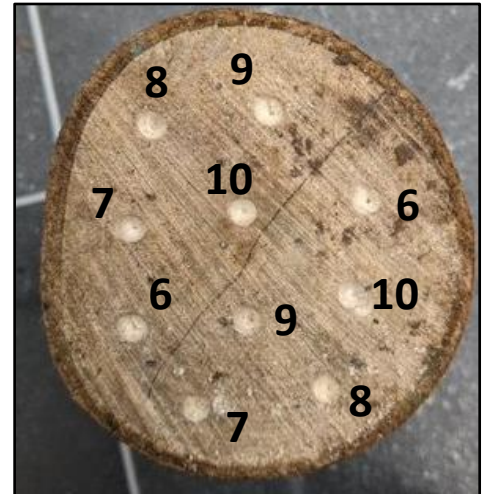
Follow the instruction as before, but with a default group size of e.g. **three** holes rather than five.



Unusual shape of wood

E.g. if you want to use a short log rather than a square piece of wood.

Since we are randomising assignment of hole sizes, it is fine if the holes overall are not in perfect rows. Make sure you have the same **number** of each hole size (so none of them are being over-represented), and that they are still approximately the **same** distance apart from each other. You may need more than one smaller hotel to get up to the 25 suggested holes, placed close together.



Holes marked on a log slice. 2x groups of 5. Would need several of these hotels, close together.

Make sure you **randomise** what goes where still!



*Holes marked **along** a piece of wood.*

Data collection

There are two sections to the information you will need to record for this project, and recording sheets for both are provided overleaf.

Hotel Details

The first section asks for information about your hotel(s). We need to know what **sizes** of holes you have used; how **deep** those holes are; how far **apart** from each other they are; and which **way** your hotel is facing when it is in place.

For depth, either measure the length of the drill bits you used to make the holes, or e.g. poke a thin stick down the hole and measure how far it went in.

Data recording

The second section is the observations you will need to do. **Once a week**, from April – September, choose a sunny day and spend around **15min** observing the hotel.

Record:

- 1) The **total number** of holes where nesting is happening. Either holes that have been capped off, or one that you see a bee provisioning / returning to.
- 2) The **size** of the occupied holes (it's good to leave your labels on them, or have a diagram / list of which ones were which).
- 3) If the holes are closed off, record **what had been used**. This will likely be mud, a mix of mud and leaves (i.e. mud with green bits in), or leaves. There are other things than can be used – if you are not sure, send us a photo!
- 4) Any **bees** you have seen using the hotel. ID if you can, or see if you can get a photo / short video for us to ID.

Any questions? Contact us!

buzzclub.uk@gmail.com

 @The_Buzz_club

Air Bee 'n Bee



Hotel details

*These are the general characteristics of your hotel(s)
You only need to fill in this **once** (per hotel).*

Your name:

Holes	6 mm	7 mm	8 mm	9 mm	10 mm
Number of holes of this diameter:					
Depth of holes of this diameter (mm)					

How far apart are the holes in the hotel (mm)?

Direction hotel is facing (e.g. east / south):

Any other information / comments:

(tip – sketch your hotel out here and label the hole sizes)

Air Bee 'n Bee Recording sheet (Monthly)

Your name:

If you miss / are unable to do a week's count, please mark it as **skipped**.

Please cross out / note if you used different hole sizes.



Month	Recording: Number of occupied holes. Material used in nest / cap. Any specific species ID.				
Recording date	6 mm	7 mm	8 mm	9 mm	10 mm
Week 1					
Week 2					
Week 3					
Week 4					
Week 5 (if needed)					

Example of filled in recording sheet:

Air Bee 'n Bee Recording sheet (Monthly)

Your name:

If you miss / are unable to do a week's count, please mark it as **skipped**.
Please cross out / note if you used different hole sizes.



Month	Recording: Number of occupied holes. Material used in nest / cap. Any specific species ID.					
Recording date	6 mm	7 mm	8 mm	9 mm	10 mm	
Week 1 (1 st May)	May	none	Male mining bee, resting	none	None	
Week 2 (9 th May)	Did not have 6mm holes	none	2x holes; mud	none	none	
Week 3 15 th May		none	8x holes; mud. 3x female mining bees (photo sent)	2x holes; mud	none	
Week 4 24 th May		none	10x holes; mud 5x mining bees seen	3x holes; mud Mining bees Photo sent	2x holes; mud & green bits (leaf?) Photo sent	
Week 5 (if needed)						