

Project Summary

Marvellous Miners



Introduction

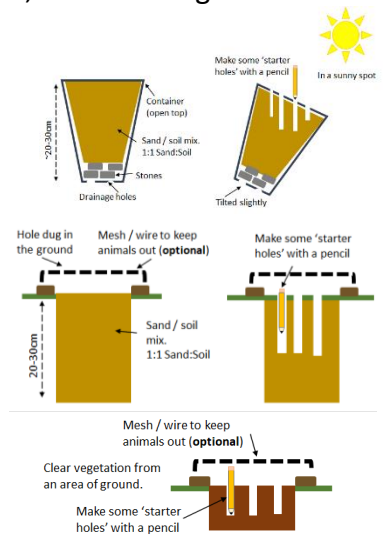
Most of the UK's native bees are solitary bees, which do not form communal nests. Instead, female bees make individual nests, usually in tunnels or tubes. Providing habitat for solitary bees is a popular wildlife gardening action, but such 'bee hotels' tend to focus on cavity nesting bees, which nest above / off the ground. Ground nesting bees ('mining bees') nest in the soil instead.

Providing habitat for these bees on wildlife sites often involves 'scraping' several square meters of ground, or building banks of soil / sand. These techniques are not very practical for garden-sized spaces, so we investigated potential methods of making 'mining bee hotels', suitable for gardens.

Methods

Participants were asked to construct at least two of the following 'hotel' designs, and monitor them for mining bee use. A further 12 hotels were set up on the Sussex campus and monitored.

- 1) A '**Container**' of sandy soil (the most 'bee hotel' style option).
- 2) A '**Sandy Square**' – a hole dug out of the ground, and filled back with sand / soil mix.
- 3) A '**Cleared Space**' of bare soil (the control).



Results

None of these designs worked as a mining bee hotel. Participants reported that they still enjoyed learning about mining bees and looking for them.

A few bees were observed investigating the spaces, but none were actually *used* by mining bees; either in participants' gardens or on the Sussex campus. Even when mining bees were observed to be present in participants' gardens (some even found separate nesting areas that were in use), they did not seem to like the 'hotels' at all.

This project had a retrospective webinar ([accessible here](#)) which discussed the outcomes in detail. Importantly, we wanted to emphasise to participants that the project **did not fail** – it showed that these designs don't work!

Follow-on

Mining bees are interesting and important bees, and we would be interested in doing another project focusing on them – but it seems likely that their habitat requirements do not fit with an 'insect hotel' type of design. Advice for supporting solitary bees in general applies, particularly in regards to planting for early / native flowers and reducing / eliminating pesticide use.

Cob bricks for 'hairy footed flower bees' is a suggestion, as these early, distinctive bees are known to shelter in bee hotels and burrow into brickwork, so may have a hotel-suitable 'lifestyle'.

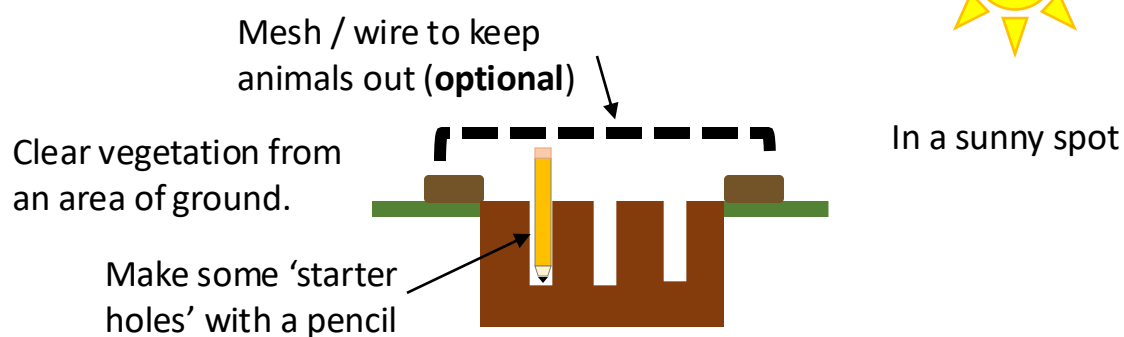
Clearing space in different areas of the garden (e.g. sunny slopes) could be another approach, although again this may be a bit too broad a strategy for a focused citizen science project.



Note: none of these designs actually worked as mining bee hotels. They are reproduced here for information – we do not recommend making them!

The Hotels

Cleared Space (control)



Step 1: Choose a sunny spot in the garden. Bees like it warm!

Step 2: Mark out a space approximately the same size as whichever test hotel you are doing (default: approximately 30cm square). Clear off any vegetation, digging out roots as well if possible.

Step 3: Make some starter holes with a pencil, to about 15cm deep.

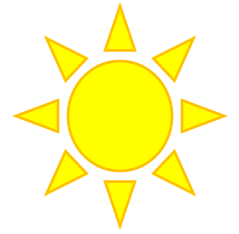
Step 4: Make sure you can find the space again (e.g. mark the edges). Keep clear.



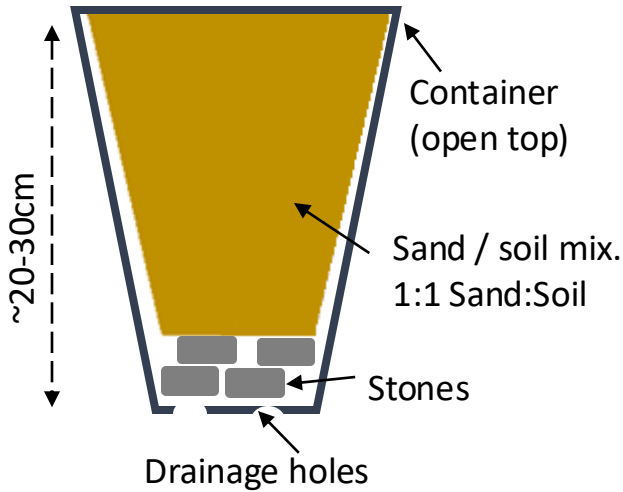
Cleared space with starter holes

The Container hotel

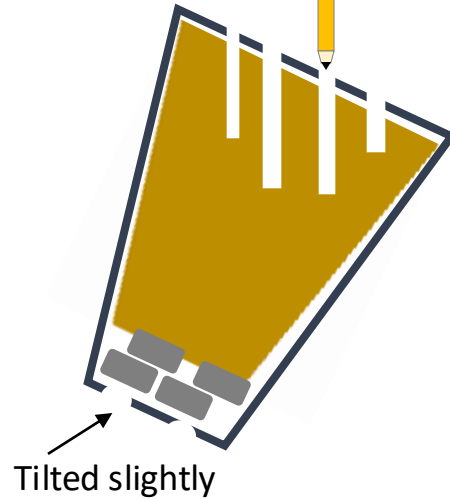
Note – the filled hotel can be **heavy** so you may want to construct it in place, rather than lug a lot of soil around afterwards.



In a sunny spot



Make some 'starter holes' with a pencil



Step 1: A layer of stones / gravel for drainage



Step 2: Mix garden soil and sand 1:1. (Shown above using a spare 5ltr pot to measure volumes before mixing.)



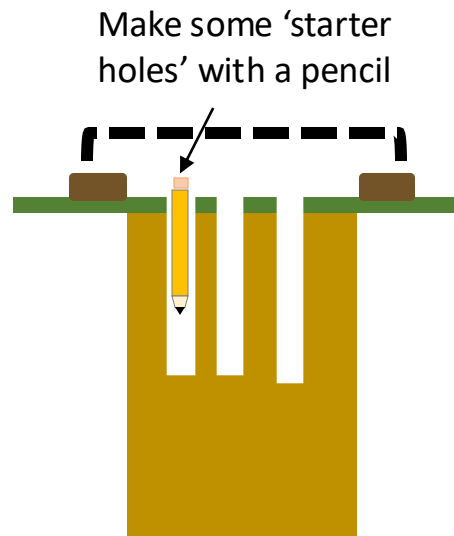
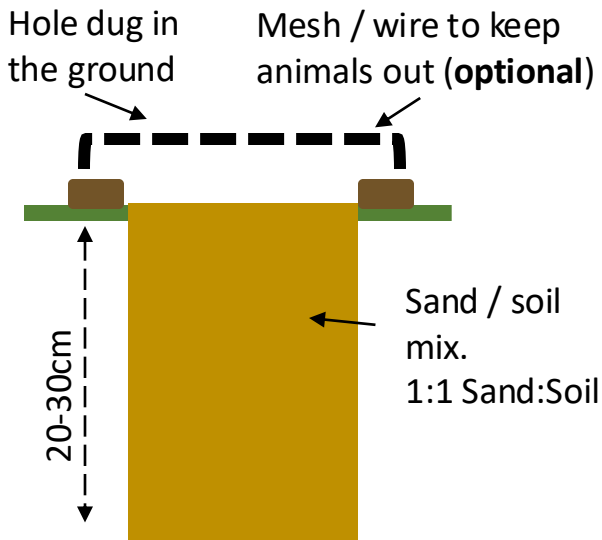
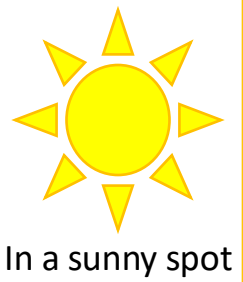
Step 3: Pat down the sand/soil mix firmly. Use a pencil / similar to make some starter holes ~15cm deep.



Step 4: Place hotel in a sunny spot in the garden. It should be slightly tilted to let rain run off.

<-
Tilted and held up with some old bricks

The Sandy Square hotel



Step 1: Find a sunny spot in the garden. Mark out a space, either:

- a) ~30cm square, **or**
- b) approximately the same width as your Container hotel

Step 2: Clear any vegetation away. Dig down, either:

- a) ~30cm deep, **or**
- b) the same depth as your Container (e.g. so it would fit in the hole)

Step 3: Prepare a 1:1 sand:soil mix. Use the soil you just dug out.

Step 4: Fill the hole back up with the sand / soil mix and pat down firmly.

Step 5: Use a pencil / similar to make some starter holes, ~15cm deep.

Step 6: Make sure you can find the space again (e.g. marking the edge out with wood). Keep clear.



Sift out any big roots / rocks from the soil you dig out – we'll use it later.



Sandy square with starter holes