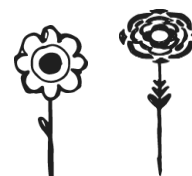


A fortress for the bumblebee queen



This nesting aid is a wooden box that consists of six panels screwed together. The side panels are beveled in order to avoid that water gathers on the roof. The hole for the entrance is framed by a porch to protect it from the rain and facilitate the entering of the bumblebees. The inside of the fortress is made of two cardboard boxes that are plugged into one another and constitute a complete box together.

Material for your fortress:

A. Wooden parts: *The wooden parts should be from solid wood and be 18 mm thick.*

Material	Quantity	Measurements	✓
a. Roof	1	height/length: 440 mm, width: 440 mm	
b. Bars for the roof	2	height/length: 360 mm, width: 20 mm	
c. Side panels	2	height/length: 400 mm, width: 400 mm	
d. Front / back panel	2	height/length: 400 mm, width: 364 mm	
e. Floor panel	1	height/length: 400 mm, width: 400 mm	
f. Bars for the floor	2	height/length: 300 mm, width: 30 mm	
g. Legs	4	height/length: 40 mm, width: 40 mm	
h. Parts for the entrance	2	height/length: 50 mm, width: 40 mm	
i. Parts for the entrance	2	height/length: 100 mm, width: 40 mm	

B. Additional material:

Material	Quantity	Measurements	✓
Roofing felt	1	52 x 52 cm	
j. Robust cardboard (big)	1	35 x 35 x 35 cm (one side should be open)	
k. Robust cardboard (small)	1	20 x 20 x 20 cm (one side should be open)	
Cardboard tube	1	Diameter: 2-3 cm, length: 15 cm	
Screws	60	30mm	
Fill material	1	Hay or dried moss (to fill the small cardboard box)	
Small pet bedding	1		

C. Tools:

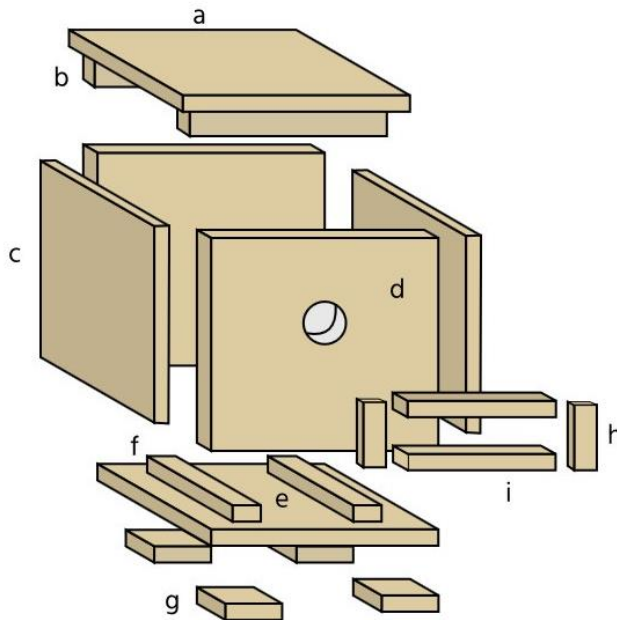
Material	Quantity	Measurements	✓
Nails	20		
Tape	1		
Weatherproof varnish	1		
Jigsaw	1		
Drill	1		
Hammer	1		

Inspired by „Ideenbuch Insektenhotels – 30 Nisthilfen einfach selbst gebaut“
by Melanie von Orlow published in Ulmer Verlag 2013.

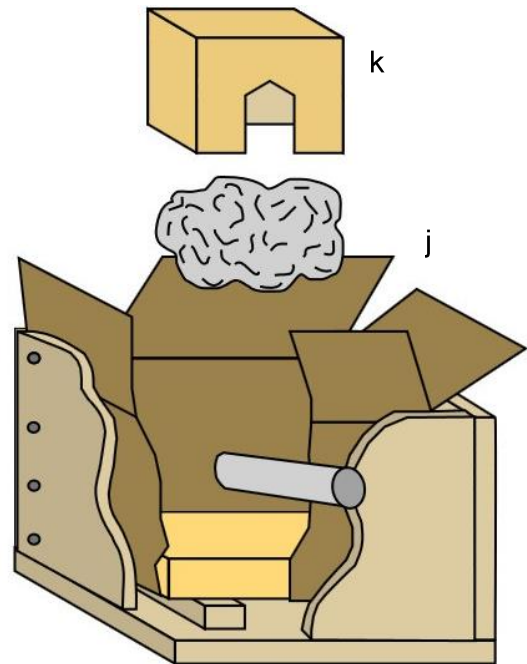


Construction – Figure:

Outside:



Inside:



Construction:

Before you start, please read the general construction and maintenance rules and keep them in mind.

1. Drill a 2-3 cm hole in the front panel (d) for the entrance.
2. Take the four parts for the entrance (h + i) to build a frame to protect the entrance from rain.
3. Fit the frame in front of the hole so that the lower edge allows the inhabitants to land and reach the hole.
4. Now glue the front, back and side panels (c + d) together.
5. Take the floor panel (e) and glue the two bars for the floor (f) on the panel with a distance of 10 cm between them.
6. Then use glue to connect the floor (e) to the other parts of the box.
7. Pre-drill holes to fix the side panels (c) and the floor (e) with screws.
8. You can now screw the box together.
9. The remaining two bars for the roof (b) need to be screwed to the roof panel (a) but you should consider that they have to be within the scope of the side walls.
10. Screw the four blocks (g) under the box as feet.

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11. The box and the roof can now be varnished (e.g. with biological linseed oil).
12. Fix the roofing felt on the roof by turning the roofing felt over the edge of the roof and nailing it down.
13. For test purposes put the small cardboard box (k) upside down into the big cardboard box (j) and place the two into the wooden box. Draw a circle on the big cardboard box at the spot of the front panel's hole for the cardboard tube. Then cut a hole into both cardboard boxes where you drew the circle before. Disassemble the boxes again.
14. Fill the big box with a layer small pet bedding and the small box with hay or dried moss.
15. Then put the big box into the wooden box and place the smaller one with the opening facing downwards into the big cardboard box. Close the outward bigger box by folding its upper flaps together or sealing them with tape.
16. Stick the cardboard tube into the hole to connect the entrance with the small cardboard box.
17. Put the roof onto the box and place it at a shaded site of your garden. Do not relocate it after a queen has found the box.
18. Remove the small cardboard box as soon as you notice the first workers at the fortress to give the colony more space.

*For **ventilation** purposes, it is a good advice to drill holes into multiple sides of the wooden box. The holes should have the diameter of a 1 or 2 Euro coin and be placed closely to the roof. To make those holes mothproof, **steel micromesh guard** (e.g. for frying pans) should be added.*

*Installing a **bumblebee door** at the entrance of the box gives your fortress and its inhabitants additional protection from Galleriinae (moths). In the beginning of the nesting period the door should be open fully to allow the queen to find the box. If she starts flying in and out regularly, the door can be closed a little bit more every day, to train the queen how to use it.*

Important: Please always choose the coolest location of your garden for your bumblebee fortress!

Your bumblebees will thank you. Have fun!