

# Building & Using Insect Hotels

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## Learning Objectives

- Learners will understand and apply the functions of pollinator hotels, and the differences in design.
- Learners will understand and apply the optimal location and growing environment for pollinator hotels.
- Learners will understand the materials needed, and how to build pollinator hotels.



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## Why Care?

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- $\frac{3}{4}$  of the world's flowers and 35% of the world's food crops depends on animal pollination for production.
- 30% of 5,000 native bee species live in cavities and tunnels above ground.
- Habitat destruction for beneficial insects and pollinators impacts the local and world landscape.



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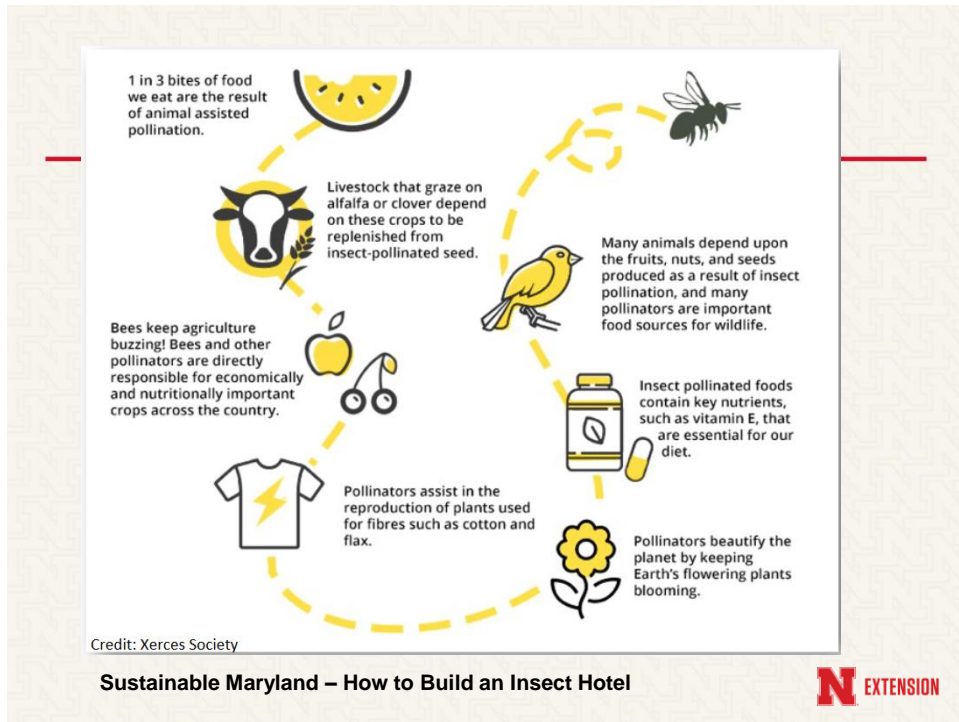
## Why Care Continued...

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- Provide habitat for these insects and conserve populations
- Improve pollination of ornamentals and food crops
- Diversify landscapes to assist these insects
- Add tools to IPM your personal toolbox



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## Hotel Function and Types

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## Function

- Shelter
- Beautification and inspiration
- Support native ecosystems and crop production
- Encourage populations of beneficial insects
- Improve nutrient cycling

Sustainable Maryland – How to Build an Insect Hotel



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## Know Your Insects!



Figure 1. Mason bees. Photos: University of Nebraska-Lincoln



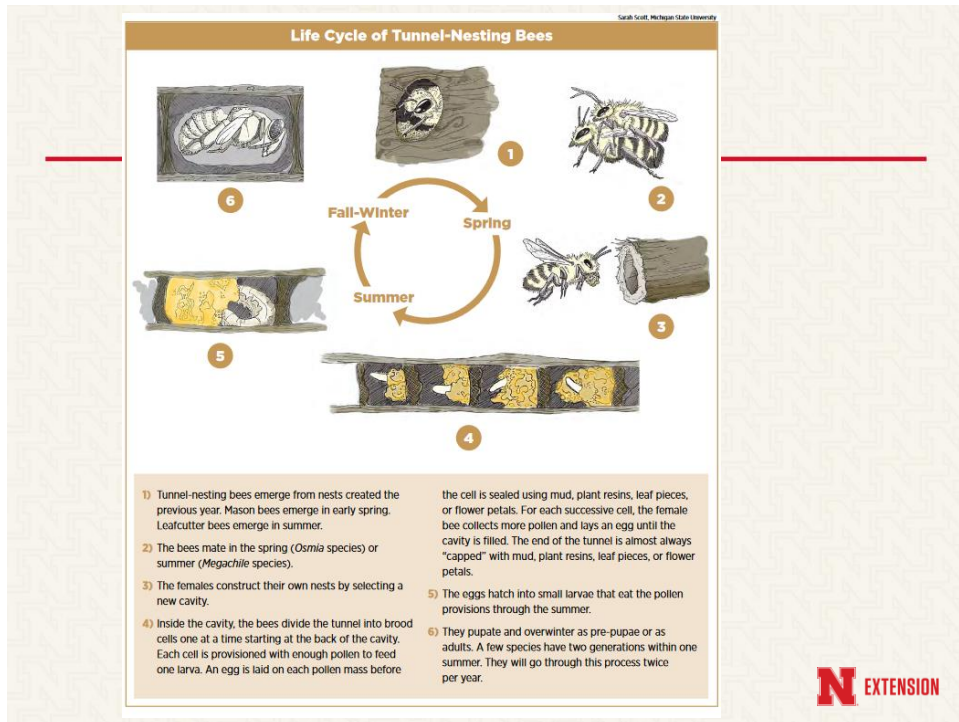
Figure 2. Leafcutter bee nesting. Photo: University of Nebraska-Lincoln



Figure 4. Carder bee. Photo: University of Nebraska-Lincoln



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## Material Needed and Construction

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Building Item	Possible visitor(s)
sawn logs or wooden blocks with pre-drilled holes	solitary bees, such as mason bees and leaf-cutter bees
bamboo or reed stems	solitary bees, such as mason bees and leaf-cutter bees; wasps, such as thread-waist wasps
dry leaves	centipedes, beetles, harvestmen
sticks	ladybird beetles
strips of bark	beetles, woodlice, centipedes, millipedes, spiders

Insect Hotels – University of Michigan - Dearborn



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## Plant Tubes

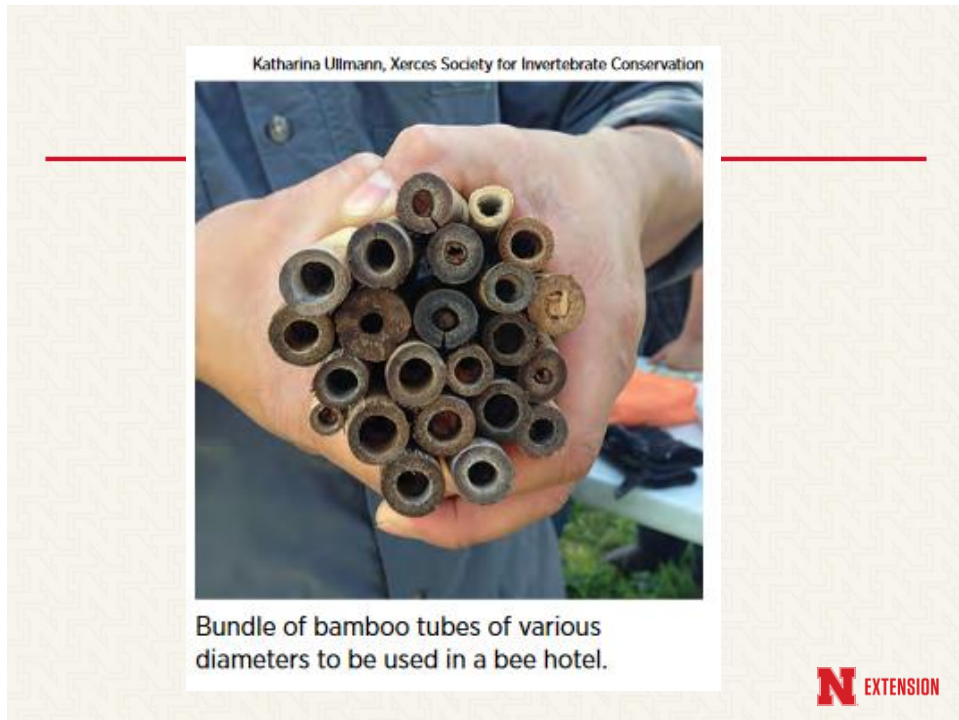
Plants with hollow or pithy stems:

- Asters with large stems (*Symphyotrichum* spp.)
- Bamboo
- Bee balm (*Monarda fistulosa*)
- Common reed (*Phragmites*)
- Cup plant (*Silphium perfoliatum*)
- Honeysuckle (*Lonicera* spp.)
- Joe-Pye weed (*Eupatorium maculatum*)
- Raspberry, blackberry (*Rubus* spp.)
- Sumac (*Rhus* spp.)
- Sunflower (*Helianthus* spp.)
- Wild rose (*Rubus* spp.)

Building and Managing  
Bee Hotels for Wild Bees  
Michigan State Extension



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## Bundles...

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- Vary Bamboo and Stem Sizes – 1/16 in to ½ inch open
- Tubes and Stems – 5 to 8 inches long
- Bind Tightly with String or Zipties
- Bundle Packs in Containers – Cans, Cinder Blocks, Buckets, PVC Pipes, etc.
- Block Open Areas with Screen to Keep Material In

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## Build the Frame...

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- At least 6 inches deep and 10 inches wide
- Lots of different shapes and size possibilities
- Solid Frame Backs
- Slanting Roofs with Overhangs and Slanted Away from Entrances



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Figure 5. Examples of frames. Photo:  
University of Nebraska–Lincoln



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## Blocks...

- Do NOT Use Treated Lumber! Can paint!
- Logs and Boards – Minimum of 4 Inches Deep
- Drill Holes Ranging from 3/32 to 3/8 inch Wide
- Drill hole 3 to 6 Inches Deep
- Variety Attracts More Insect Species



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	Hole Diameter		Bees Expected
	in	mm	
●	3/32	2.4	Polyester bees Hornfaced bee Leafcutter bees
●	7/32	5.6	
●	15/64	6.0	
●	1/4	6.4	Various mason bees
●	19/64	7.5	
●	3/8	9.5	Carder bees Blue orchard bee
●	1/2	12.7	

Figure 8. Hole diameter affects the type of bee that will be attracted to the nesting block. Illustration: University of Nebraska-Lincoln

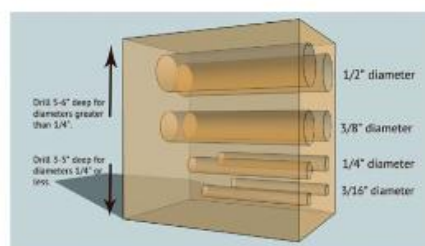


Figure 9. Depth depends on the diameter of the hole, with larger diameters requiring deeper drilling. Illustration: University of Nebraska-Lincoln



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#### Assorted Styles of Bug / Bee Hotel

Left to right: Two wood enclosed bee hotels at Geer St. Learning Garden. Bug hotel placed on the ground at the Guilford County Extension Demonstration Garden. House style hotel with brush section on top. Photos taken by author.

Help Native Pollinators With a Bug Hotel – North Carolina State Extension

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## Optimal Location and Maintenance

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## Location...

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- 4 to 5 feet above the ground or On Pallets
- Eastern exposure – warms up with the morning sun
- Southeast is idea orientation
- Ensures safety – rain, wind, insect predators
- Secured tightly to walls, posts, structures



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Figure 10. Bee hotel mounted on a fence post in a garden. Photo: University of Nebraska–Lincoln



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## Maintenance...

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- Clean out empty tubes each winters with pipe leaners or narrow rod
- Replace nesting materials and paper inserts as needed
- Replace reeds every two years
- Re-bore blocks to remove debris
- Wash blocks in winter with 10 percent bleach solution



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## References

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Building and Maintaining Bee Hotels for Wild Bees:

<https://pollinators.msu.edu/publications/building-and-managing-bee-hotels-for-wild-bees/>

Creating A Solitary Bee Hotel:

<https://extensionpublications.unl.edu/assets/pdf/g2256.pdf>



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Help Native Pollinators With a Bug Hotel:

<https://durham.ces.ncsu.edu/2020/03/welcome-pollinators-with-a-bug-hotel/>

Insect Hotels:

<https://umdearborn.edu/casl/centers-institutes/environmental-interpretive-center/education-programs/pollination-project/insect-hotels>



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## Questions?

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