



Wife Mom – 2 kids and *many* pets
Music composition for film and for fun (Visually Hidden on Spotify)
Addicted to musical instruments and clip on macro lenses





- New Yorker to New Jersey to Nebraska
- **B.Sc.** In Biological Sciences, Fairleigh Dickinson University
- **M.Sc.** and **PhD** in Entomology, University of Nebraska-Lincoln
- **Grad Certificates** in Mixed Methods Research (UNL) and One Health (University of Florida)
- “I like science” to wildlife rehabilitation to mosquito biologist to Assistant Professor
- **Advising:** Majors, Minors, sometimes other students, Coordinate Insect Science program
- **Extension:** Nebraska One Health, Tick Tag Go, Mosquitoes, Community Scientists of NE
- **Teaching:** ENTO 115, SCIL 101, Experiential Learning, Capstone
- **Research:** Human subjects research; graduate student – Ariel, perceptions of ticks in young children



Asters and Goldenrod



A vibrant field of purple and yellow flowers, likely asters and goldenrods, with several butterflies fluttering around. The flowers are in full bloom, creating a dense and colorful scene. The background is a soft-focus green, suggesting a lush garden or meadow.

Why are they beautiful together?

- Reciprocity -

“The colored afterimage – occurs because there is energetic reciprocity between purple and yellow pigments, which goldenrod and asters knew well before we did.”

Let's try this out...


Stare at the next image for a SOLID 20 seconds





*“Might science and traditional knowledge
be purple and yellow to one another, might they be goldenrod and asters?
We see the world more fully when we use both.”*



A vibrant field of purple and yellow flowers, likely asters and goldenrods, with several butterflies fluttering around. The scene is captured in a natural, slightly blurred setting, emphasizing the beauty of the flora.

Why are they beautiful together?
Perspectives from an entomologist...



Questions for you

1. **When I think of bees, I feel _____.**
2. **To survive, bees need _____.**
3. **I am interested in helping bees.**
Yes / No / Maybe

Grab a colored flashcard

Bees...

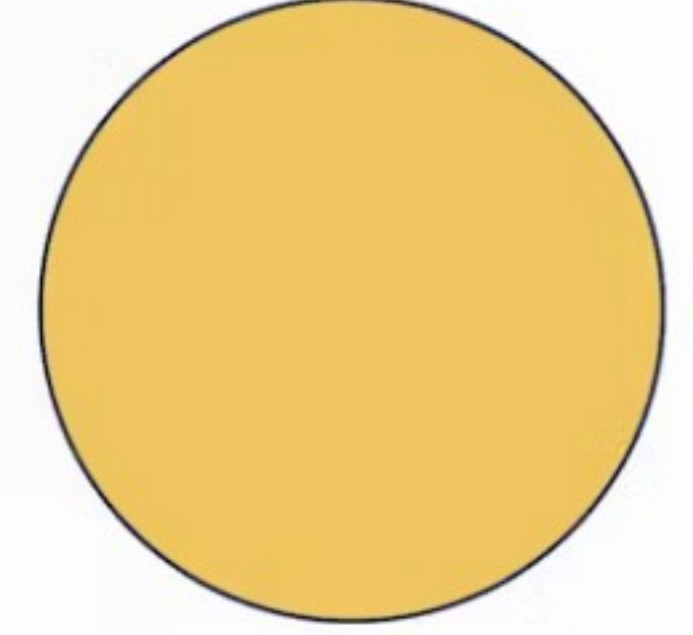
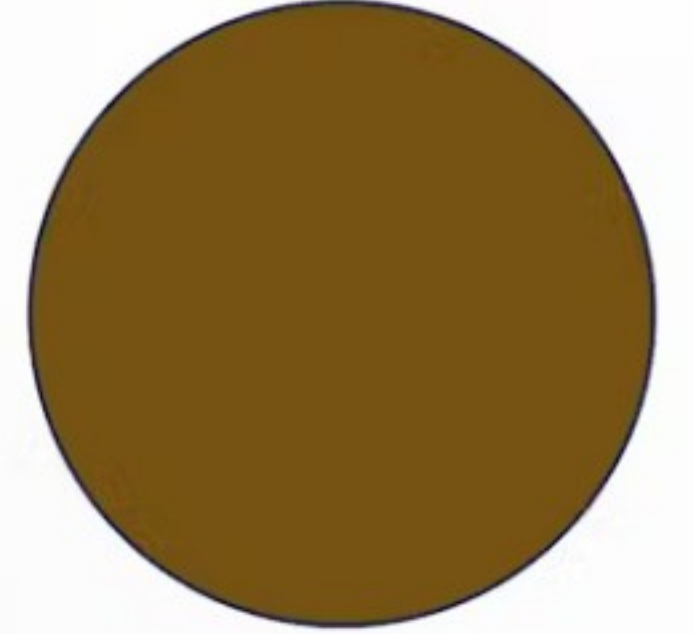
...as a group & on your white boards...

Who comes to mind?

What **colors** come to mind?

Where do they **live**?

What do bees **need** to survive?



Apis mellifera, European Honey Bee



How many bee species are there?





Bees (and insects) are important because...

Plants

- Bees and insects play a part in reproduction for many flowering plants

Humans


- Many fruits and vegetables (~1/3 foods) we enjoy are pollinated by bees and other insects
- Many of the flowers we enjoy are pollinated by bees and other insects

Animals

- Food for other animals (insectivores)
- Feed on plants, need healthy plant populations (herbivores, birds, mammals)

Environment

- Contribute to biodiversity
- Pollination contributes to ecosystem functioning (all those reasons above!)



How can we reciprocate?
What do bees need to survive?
Think. Group. Share.



Foraging Habitat
(Food)



Nesting Habitat
(Building materials)



Water



Hibernation Habitat
(Overwintering)



Foraging Habitat
(Food)



Nesting Habitat
(Building materials)



Respect
for
intrinsic value



Water



Hibernation Habitat
(Overwintering)



Can you match the bee with its
nesting material?



Leafcutter bees



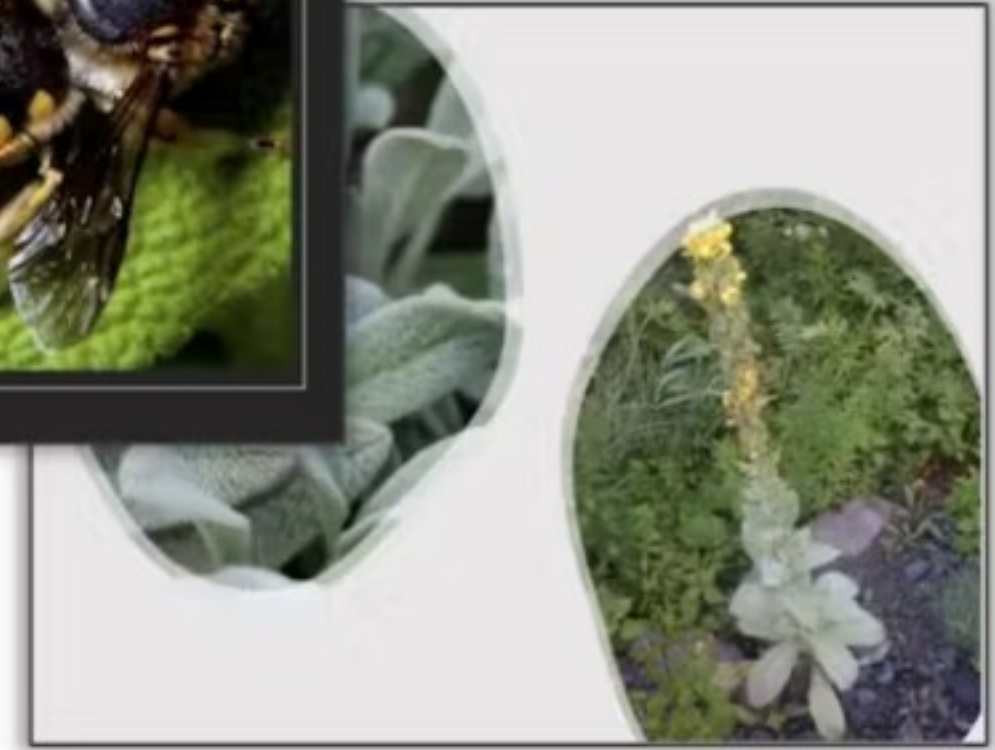
Mason bees



Sweat bees



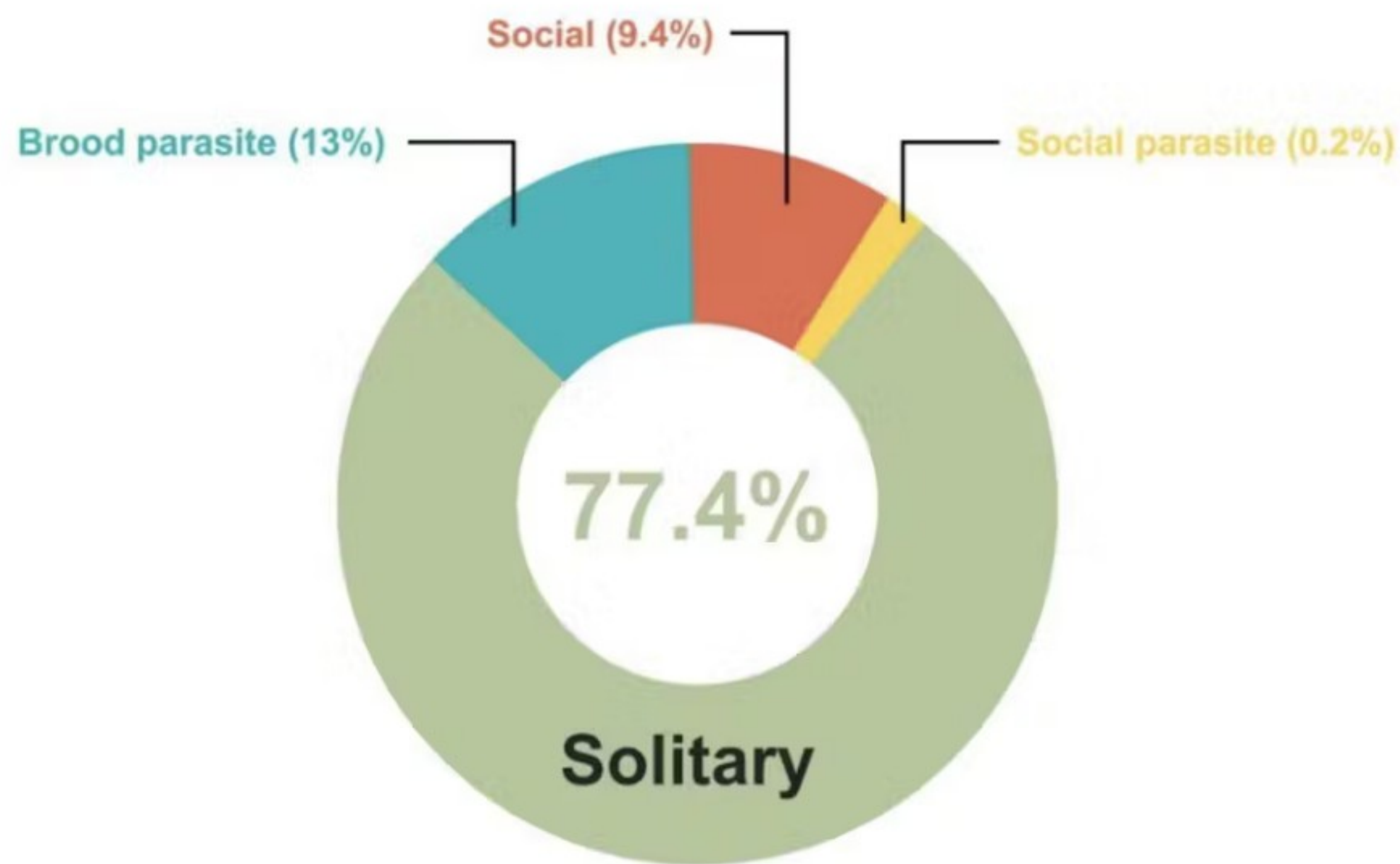
Carder bees



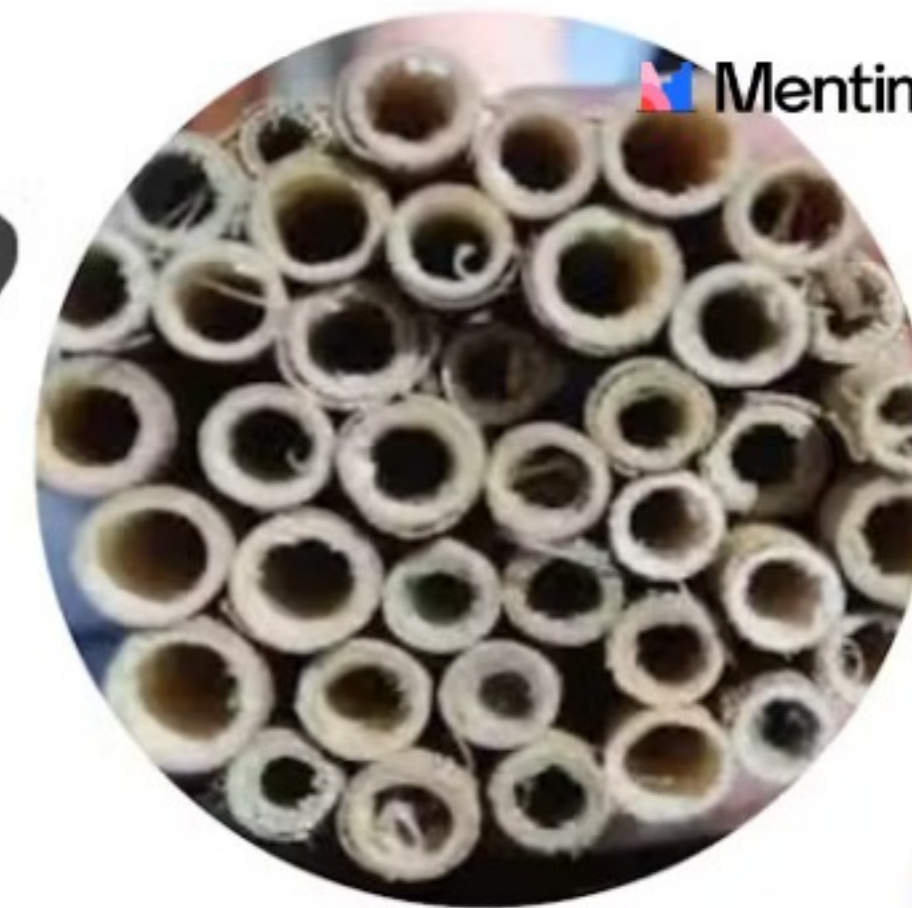
Reminder: pass out boxes

Mentimeter

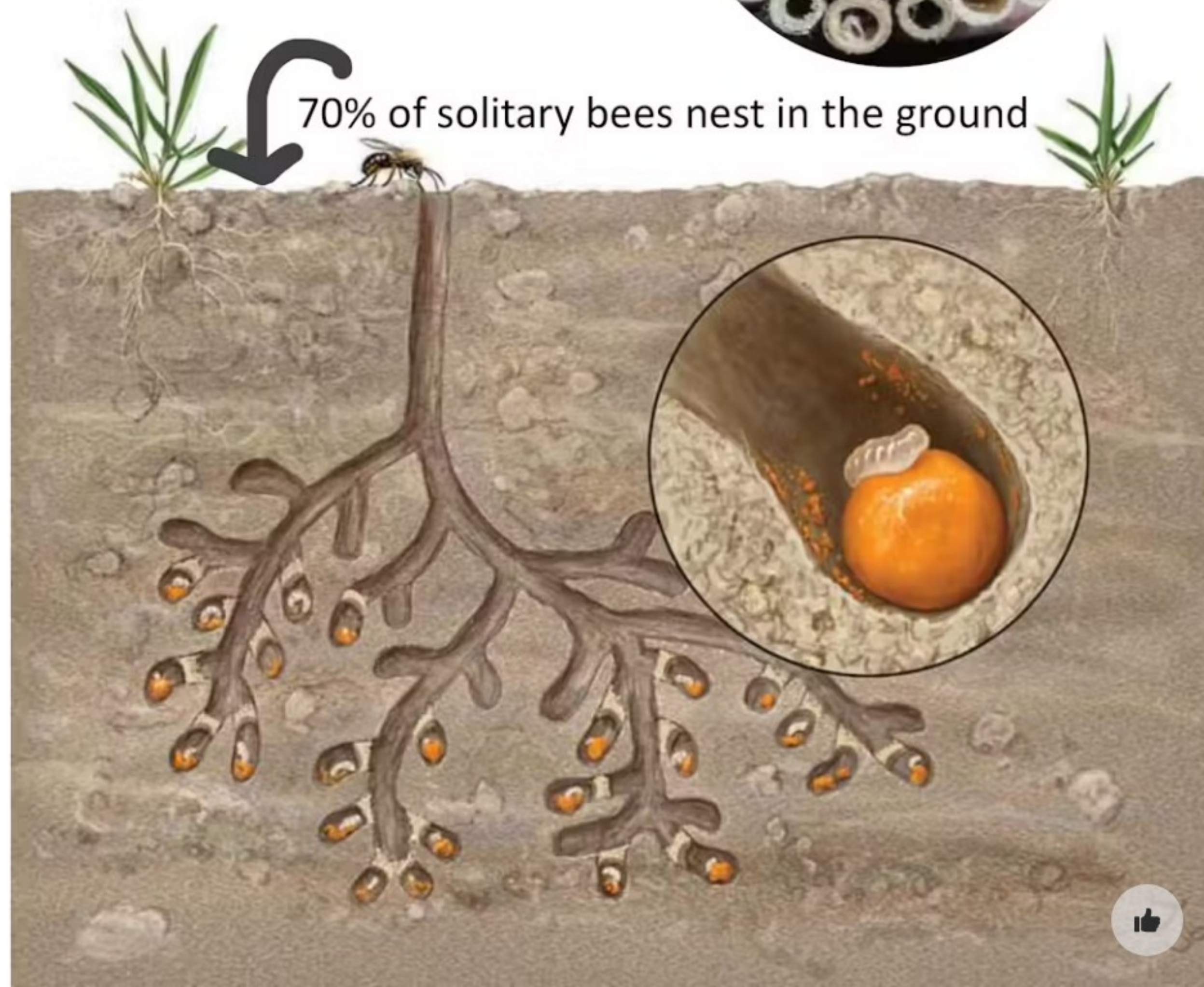
Most bees are...



30% nest in cavities



70% of solitary bees nest in the ground



Creating a Solitary Bee Hotel

Erin C. Bauer, Entomology Lecturer
Louise I. Lynch, Assistant Professor
Doug A. Gelick, Associate Professor
Tom J. Weisling, Associate Professor

This NebGuide will examine the benefits of installing solitary bee hotels in your landscape and how to build them.

Many people are familiar with honeybees, which originate from Europe and are major pollinators of the world's crops. What some people don't realize, however, is that there are thousands of native and non-native solitary bee species that also aid in pollination. Solitary bees, unlike honeybees, do not live in a social structure. Some solitary bees nest in natural and man-made cavities. These can easily be provided with nesting habitats.

Cavity-nesting solitary bees

Each cavity-nesting female bee makes nests in locations where long, tube-like holes are abundant, such as hollow twigs, abandoned beetle burrows and tunnels in sides of buildings, soil, plant stems, or near foundations. Once a female solitary bee has chosen a nesting spot, she will build cells and provide them with a single egg and food (nectar and pollen). In late spring, males emerge first, wait for females to emerge near nests, and mate with them. A mated female will then begin constructing cells for her offspring. Solitary bees will often nest in the same area year after year if the nest site meets their needs. While solitary bees are not social, some are communal and may build nests close to one another. Solitary bees make many trips

to collect nectar and pollen from flowering plants for their nests; thus they serve as important pollinators.

Solitary bees vary in color and size. Many solitary bees are about 1/4–1/2 inches in size and may be dark-colored, or metallic green or blue. Commonly observed solitary bees include mason bees, leafcutter bees, and carder bees. Solitary bees are appealing in landscapes because they rarely exhibit defensive behaviors, only stinging if mishandled or if they become entangled in clothing. Further, a solitary bee sting is often less painful than a honeybee. Many species are even stingless. Active from spring through the summer, these bees are effective pollinators of many orchard fruits and vegetables and aid in crop seed production.

Mason Bees (*Osmia* species)—Mason bees (Figure 1), such as the blue orchard bee (*Osmia lignaria*), are the size of honeybees and black to dark metallic green or blue in color. As the name suggests, blue orchard bees (BOB) are effective pollinators of orchard fruits. The hornfaced bee (*Osmia cornifrons*), a native of Japan, was introduced into the U.S. in the 1970s and is often used to pollinate apple orchards. They are smaller than the blue orchard bee and brownish yellow with light stripes. They have "horn" structures on their heads to help scoop up mud for nest building. New adults develop in the nest over the summer but will not emerge until the following spring. The mason bee carries pollen in a *scopa*, a group of stiff hairs on the underside of its abdomen.

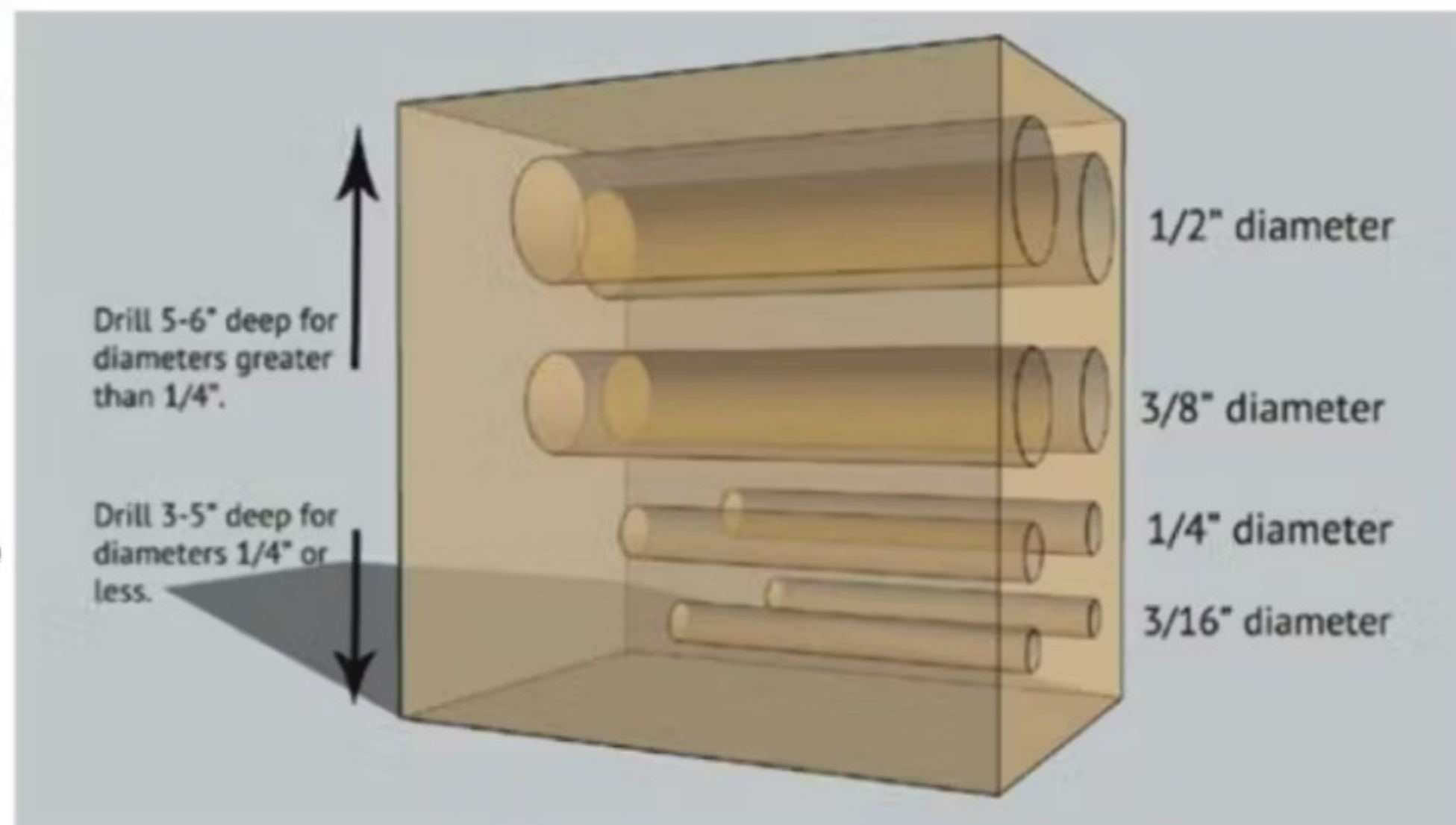


Figure 9. Depth depends on the diameter of the hole, with larger diameters requiring deeper drilling. Illustration: University of Nebraska–Lincoln

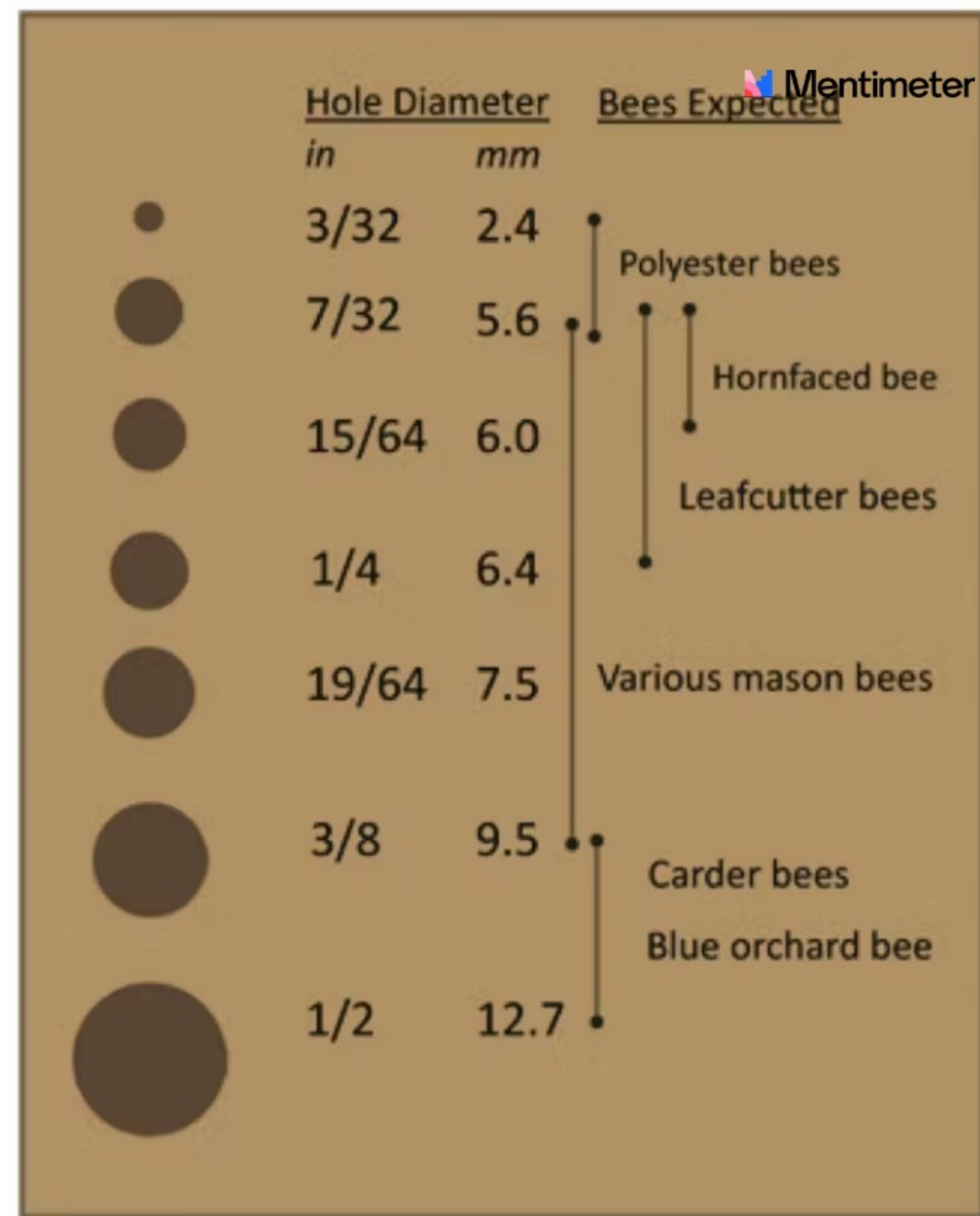


Figure 8. Hole diameter affects the type of bee that will be attracted to the nesting block. Illustration: University of Nebraska–Lincoln

What about these?

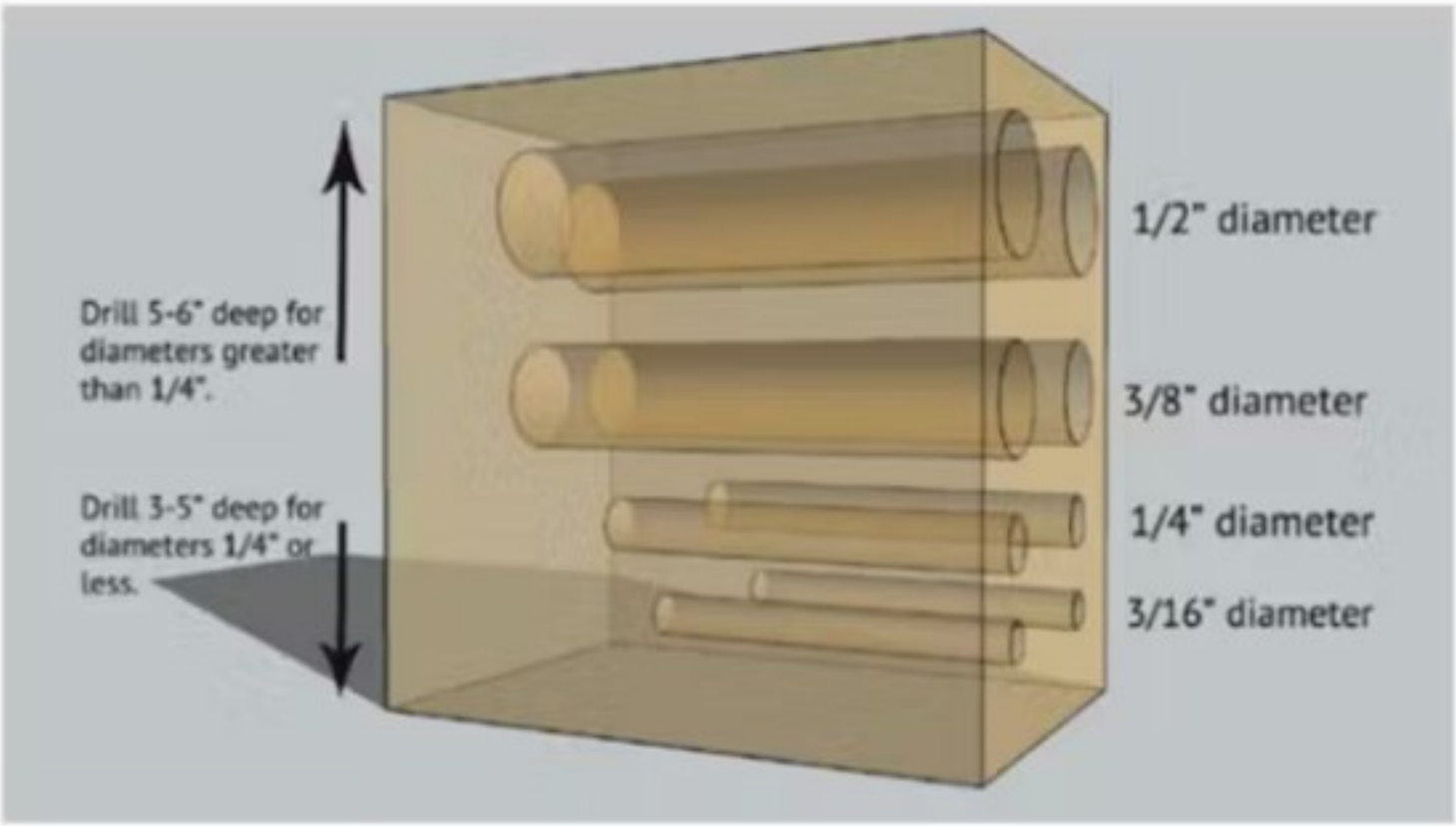


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Let's Make Some
Bee Habitats!







Foraging Habitat
(Food)



Nesting Habitat
(Building materials)



Respect
for
intrinsic value



Water



Hibernation Habitat
(Overwintering)





Blooming Seasons Calendar

When to expect flowers and pollinators



Spring			Summer			Fall		
March	April	May	June	July	August	September	October	November
	01					Wild Bergamot <i>Monarda fistulosa</i>		
			02			Pink-Scale Blazing Star <i>Liatris elegans</i>		
			03				Aniscented Goldenrod <i>Solidago odora</i>	
		04				Rose Mock Vervain <i>Grandularia canadensis</i>		
	05			Nodding Beardtongue <i>Penstemon laxiflorus</i>				
			06			Rattlesnake Master <i>Eryngium yuccifolium</i>		
				07			Giant Coneflower <i>Rudbeckia maxima</i>	
						08		
							Aromatic Aster <i>Symphotrichum oblongifolium</i>	

Bloom Chart — Sunny Pollinator Garden

Plants can be purchased at: www.BlazingStarGardens.com Mentimeter

Visit website for more plant details and pictures!

	April	May	June	July	Aug	Sept	Oct
Prairie Pussytoes (<i>Antennaria neglecta</i>) - 10in tall				<< Watch for painted lady caterpillars! They are black and spiky and make web-like leaf "nests"			
Jacob's Ladder (<i>Polemonium reptans</i>) - 1ft tall							
Bradbury's Monarda (<i>Monarda bradburiana</i>) - 2ft tall							
Star Sedge (<i>Carex radiata</i>) - 1ft tall							
Blue Wild Indigo (<i>Baptisia australis</i>) - 4ft tall							
Blanket Flower (<i>Gaillardia aristata</i>) - 2.5ft tall							
Pale Purple Coneflower (<i>Echinacea pallida</i>) - 3ft tall							
Lance Leaf Coreopsis (<i>Coreopsis lanceolata</i>) - 2.5ft tall							
Butterfly Milkweed (<i>Asclepias tuberosa</i>) - 2ft tall							
Purple Prairie Clover (<i>Dalea purpurea</i>) - 2ft tall							
Cardinal Flower (<i>Lobelia cardinalis</i>) - 3ft tall							<< Hummingbirds often visit at similar times each day
Culver's Root (<i>Veronicastrum virginicum</i>) - 4ft							
Orange Coneflower (<i>Rudbeckia fulgida</i>) - 2.5ft tall							
Nodding Onion (<i>Allium cernuum</i>) - 18in tall							
Meadow Blazing Star (<i>Liatris ligulistylis</i>) - 5ft tall						The "Monarch Magnet" - they love the nectar! >>>	
Prairie Dropseed (<i>Sporobolus heterolepis</i>) - 3ft tall							
Grey Goldenrod (<i>Solidago nemoralis</i>) - 1.5ft tall							
Aromatic Aster (<i>Aster oblongifolius</i>) - 2ft tall							





Blooming Seasons Calendar









When to expect flowers and pollinators



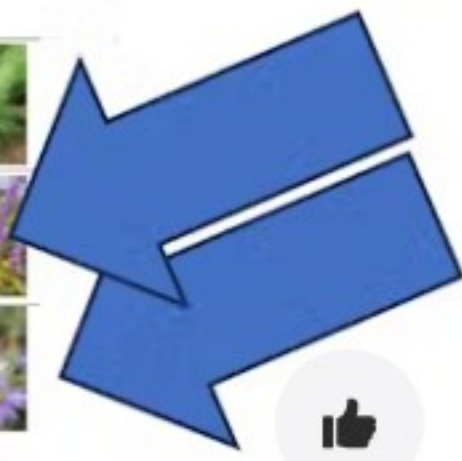
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Pithy-stemmed shrubs (*Rosa* sp.), with stems pruned to >6"



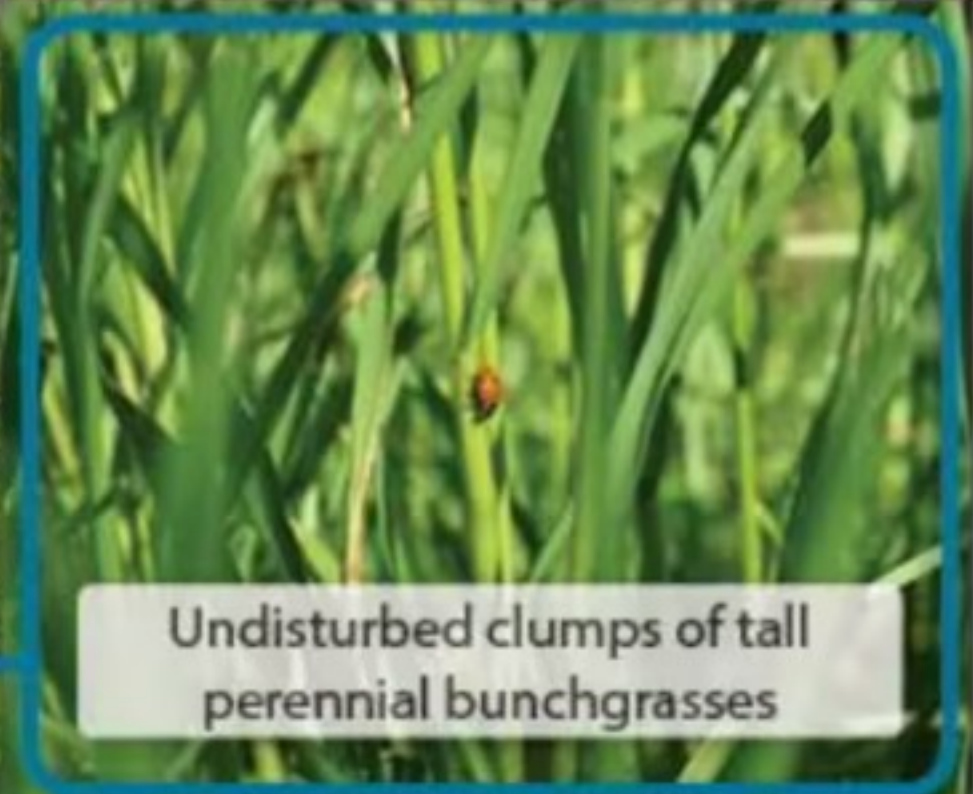
Pithy perennial flowers (*Echinacea purpurea*, *Helianthus maximiliani*)



Patches of "weedy" butterfly host plants (*Malva* sp.)



Easy access to soil under ground cover, like pavers or gravel



Undisturbed clumps of tall perennial bunchgrasses



Undisturbed areas with patchy vegetation





Questions for you

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Grab a white flashcard

Questions, please!

