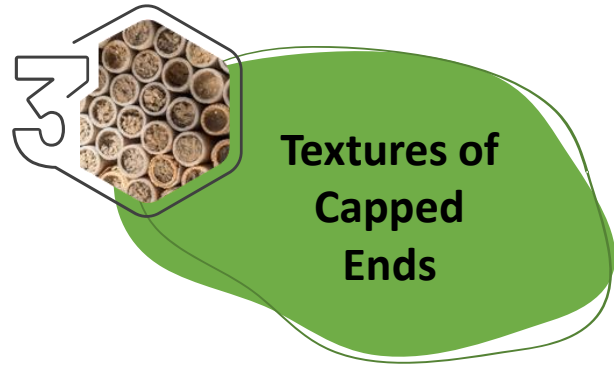
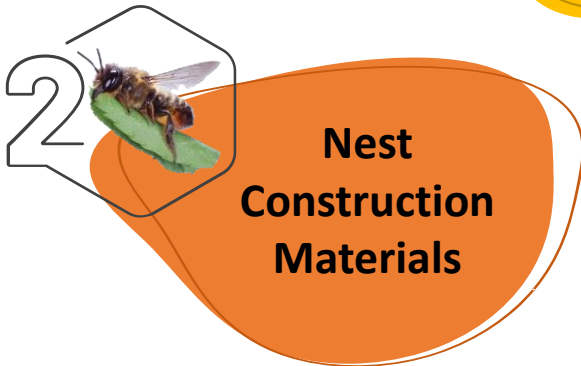
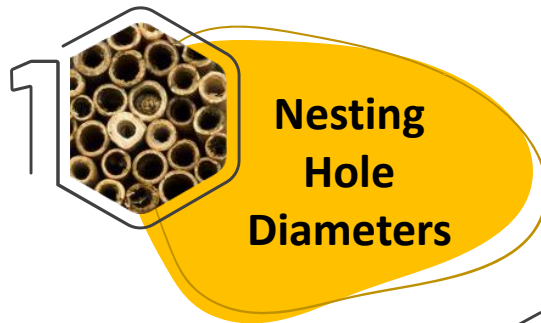


# Capped-End Guide for Cavity-Nesting Bees

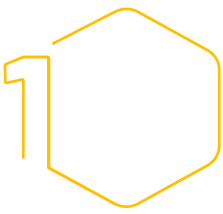


Solitary bees and wasps will be frequent guests of your bee house or bee hotel. Each species has different nesting preferences and construction methods, but some common traits can group them. This guide will help you make a probable identification of cavity-nesting bees and wasps down to the family and genus level by examining nest construction.

Throughout this guide, you'll notice a **range** of:



The range is because there are many different species within each genus, and each species varies in size, shape, and nesting requirements. You won't be able to make a conclusion based on any one indicator alone, but together they can help you significantly narrow down your options.



The first thing to look at is the **nesting hole size**. Cavity-nesting bees and wasps are a variety of sizes, and each species has a preferred diameter. The table below lists the optimal nesting hole size for common cavity-nesting bee and wasp species of North America.

Cavity Nesting Bees/ Wasps	Hole Diameter Approx. Range in		Hole Diameter Approx. Range mm		Photo Example
Mason Bees (Genus: Osmia) <small>Photo: Creative Commons</small>	1/4" – 3/8"	6 – 10			 Blue Orchard Mason Bee
Leafcutter Bees (Genus: Megachile) <small>Photo: Creative Commons</small>	1/8" – 1/4"	4 – 7			 Alfalfa Leafcutter Bee
Bellflower Resin Bees (Genus: Megachile) <small>Photo: Heather Holm</small>	3/16" – 1/4"	5 – 7			 Bellflower Resin Bee
Small Carpenter Bees (Genus: Ceratina) <small>Photo: Creative Commons</small>	3/32" – 3/16"	3 – 5			 Small Carpenter Bee
Masked Bees (Genus: Hylaeus) <small>Photo: Bill Keim</small>	1/8" – 1/4"	4 – 6			 Eastern Modest-Faced Bee
Grass-Carrying Wasps (Genus: Isodontia) <small>Photo: Creative Commons</small>	5/16" – 3/8"	8 – 10			 Grass-Carrying Wasp
Aphid-Hunting Wasps (Genus: Pempredon) <small>Photo: Creative Commons</small>	1/8" – 1/4"	4 – 6			 Aphid-Hunting Wasp

# 2

Next, look at the **nest construction materials** used to cap the end of the nest. Mud, pebbles, leaves, and resin are some of the materials that cavity-nesting bees and wasps use to seal their nests; some use a combination of these materials. The table below shows some of the most common nest materials.

Capped-End Material	Common Bees & Wasps	Photo Example of Capped-End Material
Mud	Some Mason Bees, Thread-waisted Wasps, Mud Daubers	
Whole Leaf Bits, Flower Petals	Leafcutter Bees	
Masticated (Chewed) Leaves, Chewed Pith Material	Some Mason Bees ( <i>Osmia sanrafaelae</i> & <i>Osmia montana</i> ), Small Carpenter Bees	
Resin	Resin Bees	
Cotton-like Plant Fuzz	Carder Bees	
Pebbles/Wood (often mixed with mud and/or resin)	Resin Bees, Mason Bees	
Grass	Grass-Carrying Wasps	
Cellophane-like Material	Masked Bees	

Photo Credit: Heather Holm (Masticated leaves, Pebbles/Wood fiber, Resin)



Finally, look at the **texture of the capped ends**. Solitary wasps that use mud tend to sonicate or vibrate the mud, resulting in a smooth, cement-like capped end. A mason bee may have filled mud-capped ends that appear bumpy or rough.

Smooth



Photo: Jim Cane

Bumpy



Photo: Jim Cane

Another example of texture is the way bees use leaves. Leafcutter bees will often use whole leaf bits. Some mason bee species also use leaves, but instead of using entire leaf bits, they chew the leaves to create a leafy pulp.

Whole Leaf Bits



Photo: Karl Alexander

Leafy Pulp



Photo: Jim Cane