

Bee Identification Review: Common Bees Observed in Colorado



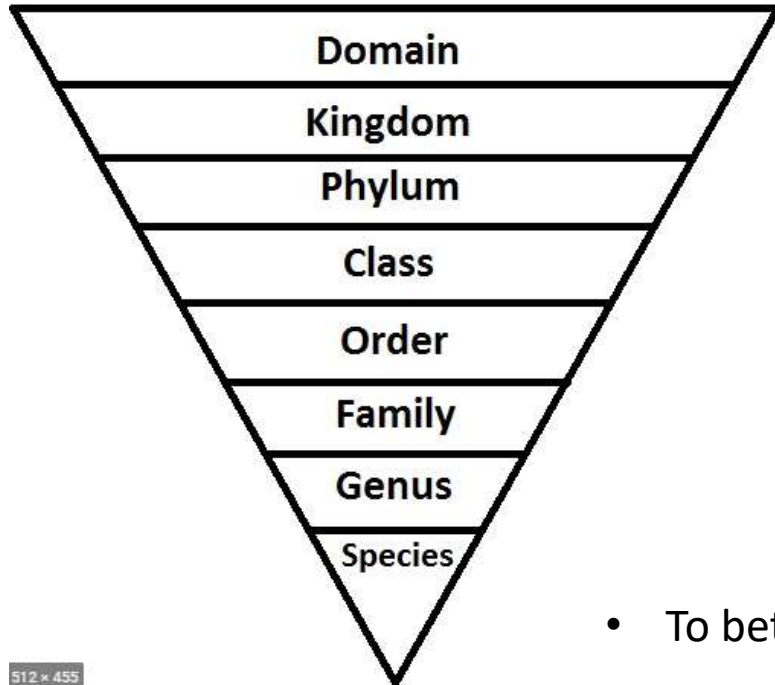
NATIVE BEE WATCH
COLORADO STATE UNIVERSITY
EXTENSION

Special thanks to Boris Kondratieff for his identification expertise.

How to Use this Guide

- Use this guide to further your knowledge on common bees in Colorado.
- For the purposes of the citizen science data collection, we organize the bees into 8 morphospecies categories (e.g. Hairy Leg Bees, Striped Sweat Bee, etc.). Note: These are NOT formal taxonomic names.
- Each morphospecies has a wide variety of bees in shapes, sizes and colors.
- To collect more accurate data, we encourage you to dive deeper and begin learning the formal taxonomic names of bee families and bee genera
- Please let us know if you have any questions: NativeBeeWatch@gmail.com

How Organisms are Classified



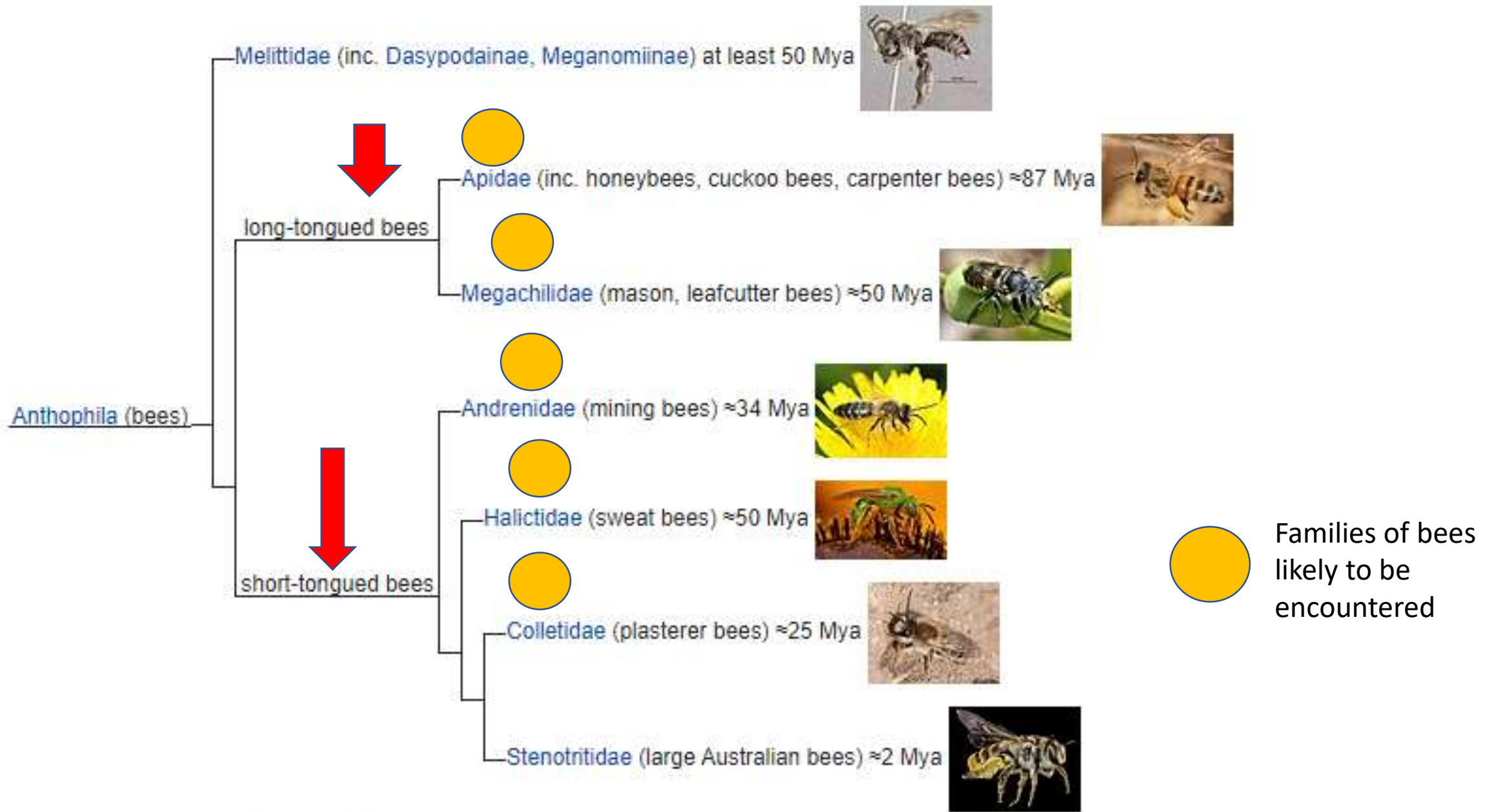
Humans

Domain: Eukaryote
Kingdom: Animalia
Phylum: Chordata
Class: Mammalia
Order: Primates
Family: Hominidae
Genus: *Homo*
Species: *Homo sapiens*

Honey Bee

Domain: Eukaryote
Kingdom: Animalia
Phylum: Arthropoda
Class: Insecta
Order: Hymenoptera
Family: Apidae
Genus: *Apis*
Species: *Apis mellifera*

- To better identify bees, focus on the family and genus of the bee.
- A microscope and a high level of taxonomic expertise is needed to identify bees to a species level.
- From field observations and photos, we strive to get a genus level.



Bee Groups and Scientific Classification				
Bee Group	Bee Subgroup	Common Name	Scientific Name	Family
Honey bee	NA	Honey bee	<i>Apis mellifera</i>	Apidae
Hairy leg bee	NA	Digger bee Flower bee Long-horned bee Sunflower bee	<i>Anthophora</i> sp. <i>Diadasia</i> sp. <i>Melissodes</i> sp. <i>Svastra</i> sp.	Apidae Apidae Apidae Apidae
Hairy belly bee	Wasp-like	Wool carder bee Resin bee	<i>Anthidium</i> sp. <i>Megachile</i> sp.	Megachilidae Megachilidae
	White-striped	Leafcutter bee	<i>Megachile</i> sp.	Megachilidae
	Other hairy belly bees	Mason bee	<i>Megachile</i> sp. <i>Osmia</i> sp. <i>Hoplitis</i> sp.	Megachilidae Megachilidae Megachilidae
Bumble bee	Orange band	Hunt's bumble bee Central bumble bee	<i>Bombus huntii</i> <i>Bombus centralis</i>	Apidae Apidae
	Yellow and black	Brown belted bumble bee Morrison's bumble bee Nevada bumble bee	<i>Bombus griseocollis</i> <i>Bombus morrisoni</i> <i>Bombus nevadensis</i>	Apidae Apidae Apidae
	White or yellow tip	Western bumble bee	<i>Bombus occidentalis</i>	Apidae
	Mostly black	Cuckoo bumble bee	<i>Bombus insularis</i>	Apidae
	Mostly yellow	Golden northern bumble bee	<i>Bombus fervidus</i>	Apidae
Green metallic bee	NA	Sweat bee	<i>Agapostemon</i> sp. <i>Augochlorella</i> sp.	Halictidae Halictidae
Tiny dark bee	NA	Small carpenter bee Small carpenter bee Yellow-faced bee	<i>Ceratina neomexicanum</i> <i>Ceratina</i> sp. <i>Hylaeus</i> sp. <i>Lasioglossum</i> sp.	Apidae Apidae Colletidae Halictidae
Striped sweat bee	Small	Sweat bee Sweat bee, other	<i>Halictus</i> sp. <i>Lasioglossum</i> sp.	Halictidae Halictidae
	Medium	Sweat bee Sweat bee, other	<i>Halictus</i> sp. <i>Lasioglossum</i> sp.	Halictidae Halictidae
Cuckoo bee	Red abdomen	Cuckoo bee Cuckoo bee	<i>Nomada</i> sp. <i>Sphecodes</i> sp.	Apidae Halictidae
	Small	Cuckoo bee Cuckoo bee Cuckoo bee	<i>Epeolus</i> sp. <i>Nomada</i> sp. <i>Sphecodes</i> sp.	Apidae Apidae Halictidae
	Large	Cuckoo bee Cuckoo bee Cuckoo bee	<i>Epeolus</i> sp. <i>Nomada</i> sp. <i>Sphecodes</i> sp.	Apidae Apidae Halictidae

Note: This is not an inclusive list of all bees found in these categories or in Colorado. These are some of the more common bees observed.

This table is on page 18 of the Native Bee Watch Field Guide.

Note the bee families and scientific name columns and which morphospecies level they belong to.

Honey Bees



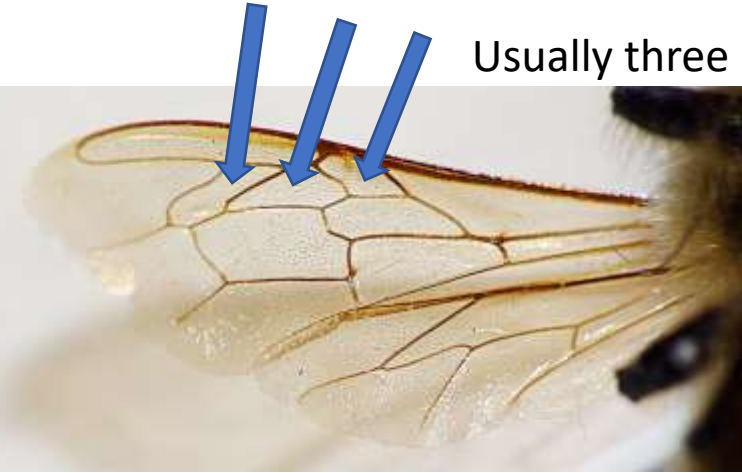
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Apidae Bumble Bees, Honey Bees, Cuckoo Bees, Hairy Leg Bees

Variable, long tongue bees, scopa when present on hind legs

Usually three submarginal cells

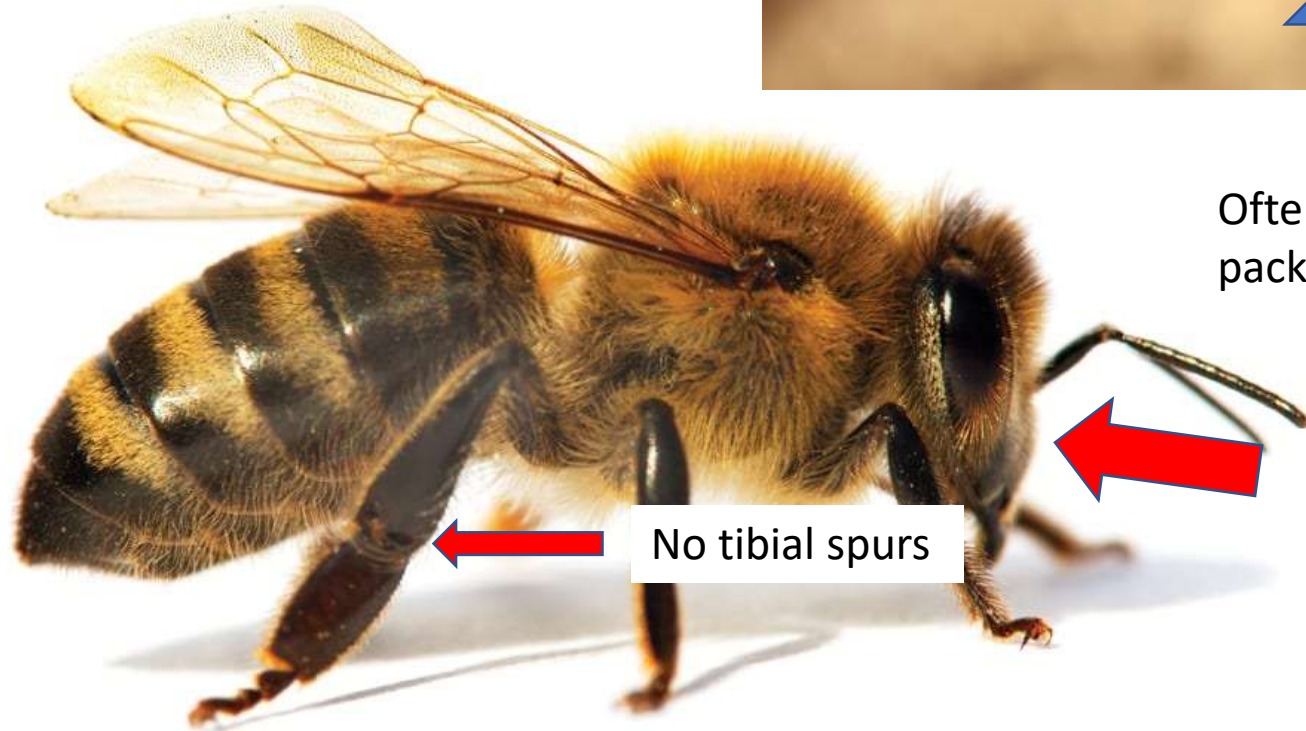


Honey bee, *Apis mellifera*



Often foragers with scopa packed with pollen

Distinct color pattern; hairy eyes and no tibial spurs.



Hairy eyes

No tibial spurs

Hairy Leg Bees



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Apidae continued: “Hairy Leg Bees” including the Emphorini, Eucerini
Numerous very similar large to medium bees, difficult to distinguish



Diadasia sp. cactus bees, “flower bee”
Very hairy, short antennae, flower specialist



Melissodes sp. One of the “long-horned bees”





Svastra sp.



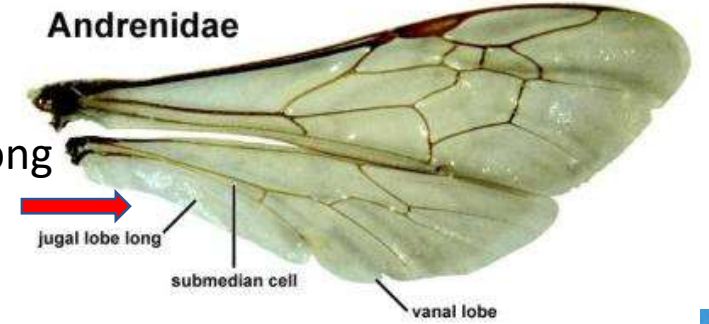
Anthophora



Andrenidae Mining bees

The largest of all bee families, large bees to some of the smallest bees.
Identification is difficult, need to examine under a microscope.

Andrenidae



Facial flovea with dense feltlike pile.

Andrenidae continued

Perdita, some of the smallest bees, **tiny!** These bees are strikingly colored



Bumble Bees



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Bombus sp. Bumble Bees

Large to medium size bees, very hairy, usually white, yellow, orange, red or black



Bombus huntii



Bombus centralis



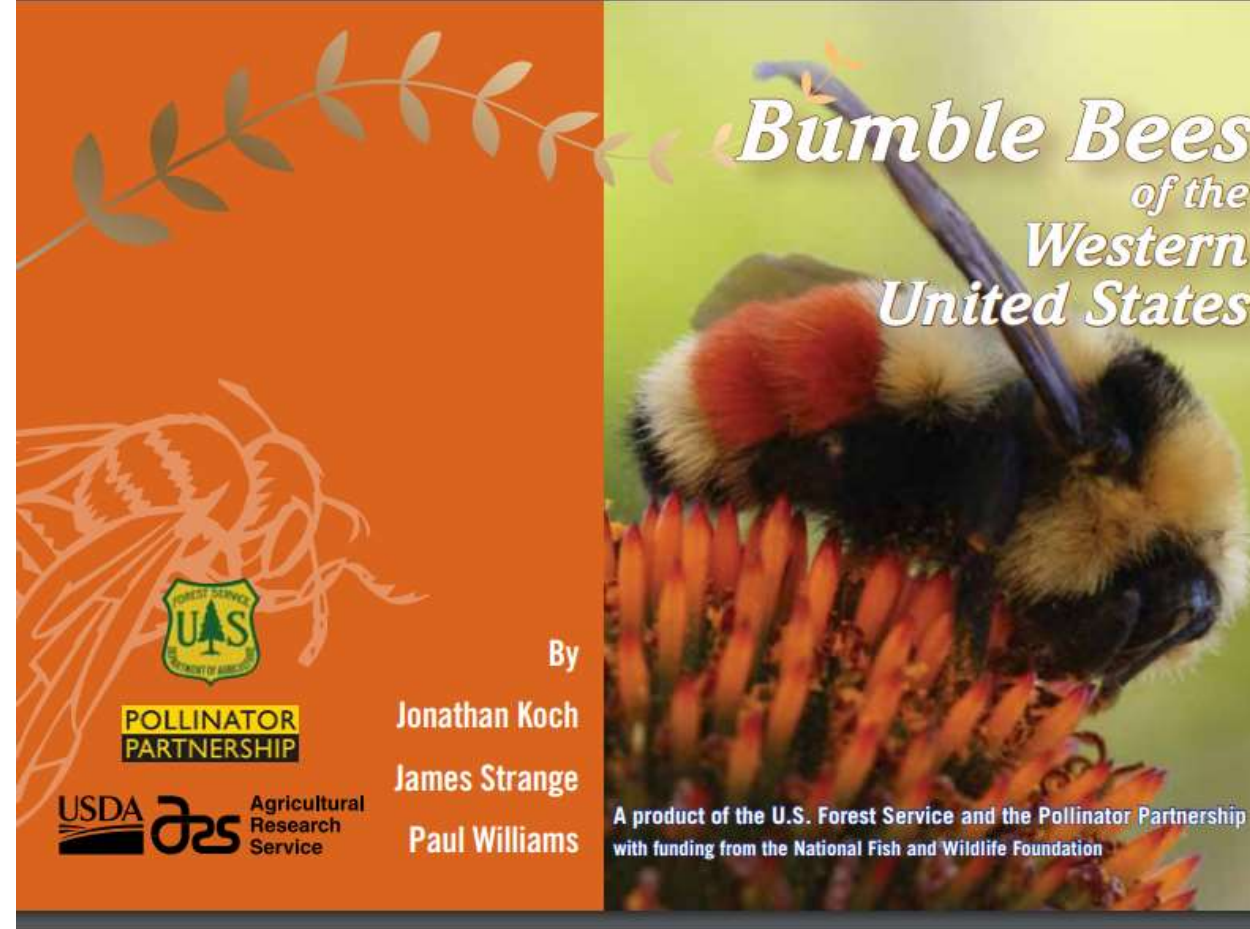
Bombus pensylvanicus

The Bumble Bees of Colorado

A Pictorial Identification and Information Guide



Abigail Wright, Crystal L. Boyd,
M. Deane Bowers, and Virginia L. Scott



Executive Editor **Larry Stritch**, Ph.D., USDA Forest Service
Executive and Managing Editor **Laurie Davies Adams**, The Pollinator Partnership
Graphic Design and Art Direction **Marguerite Meyer**
Administration **Jennifer Tsang**, The Pollinator Partnership
IT Production Support **Elizabeth Sellers**, USGS

Cover: *Bombus huntii* foraging.
Photo Leah Lewis

Alphabetical Quick Reference to Species

<i>B. appositus</i>	110	<i>B. frigidus</i>	46	<i>B. rufocinctus</i>	86
<i>B. balteatus</i>	22	<i>B. griseocollis</i>	90	<i>B. sitkensis</i>	38
<i>B. bifarius</i>	78	<i>B. huntii</i>	66	<i>B. suckleyi</i>	134

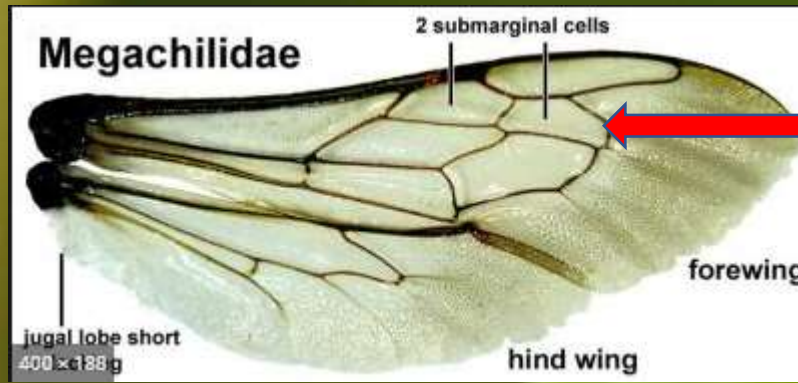
Hairy Belly Bees



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Megachilidae Leafcutting bees



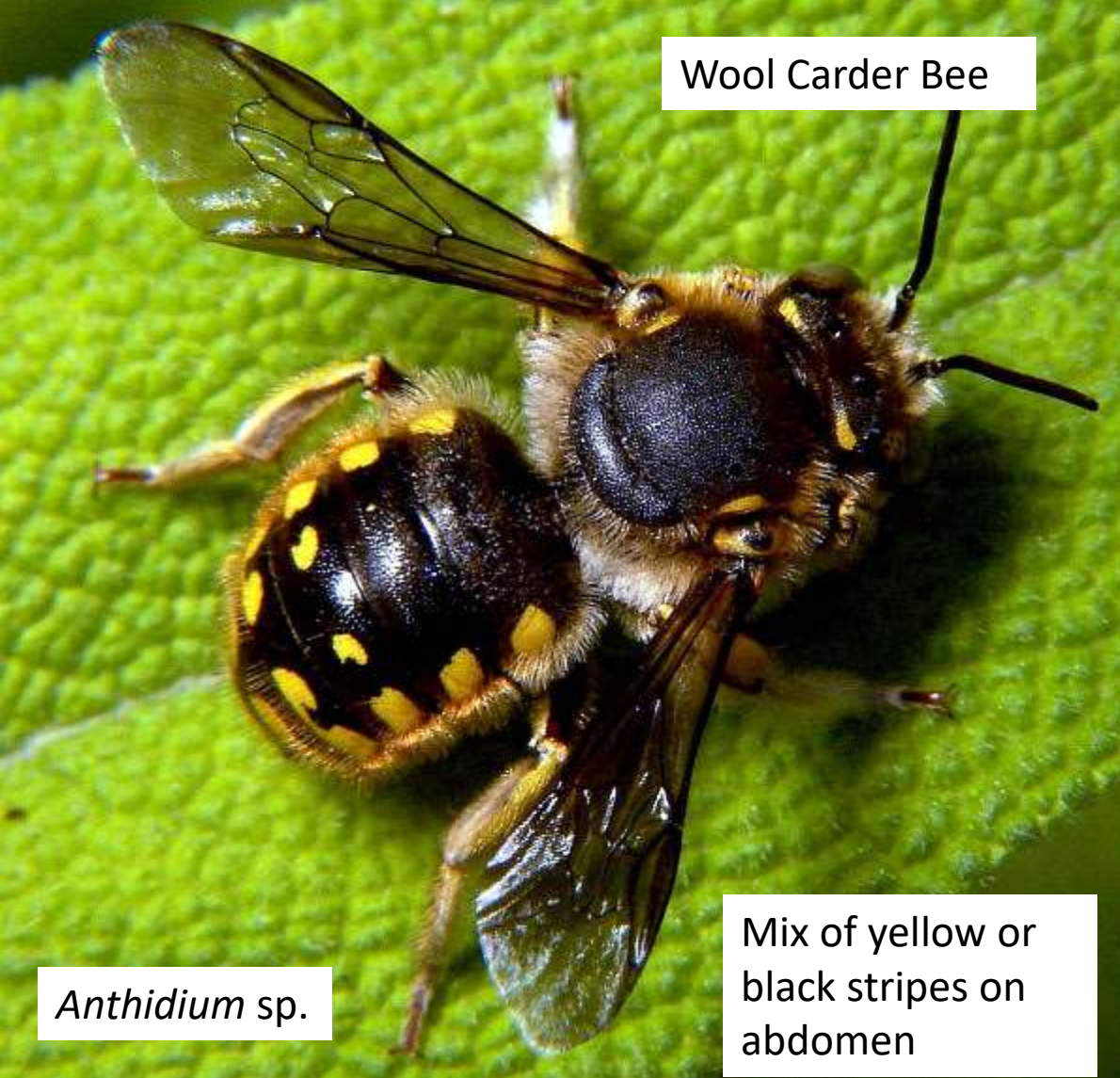
2 submarginal cells

Megachile sp.



Hairs (usually yellow) or scopa for collecting pollen

Wool Carder Bee



Anthidium sp.

Mix of yellow or black stripes on abdomen

Most *Osmia* have a metallic sheen to their bodies, copper, blue or green



Osmia sp.

Green Metallic Sweat Bees



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Green Metallic Sweet Bees



Agapostemon spp.

Agapostemon spp. usually have banded abdomens

Usually brilliant green, blue-green as a group, a commonly observed.



Augochlora sp.



Augochloropsis sp.

Tiny Dark Bees



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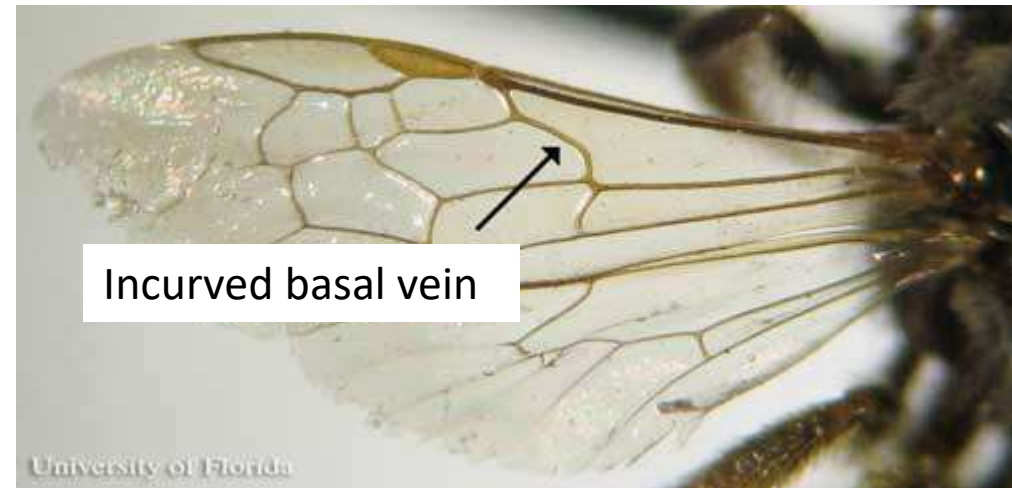
“Tiny Dark Bees”



White
bands

Lasioglossum (Dialictus) spp. female

One of the most common **SMALL** dark bees; many have a subtle metallic sheen; some have distinctive white bands along the top of each abdominal segment; some are mostly bald.



Incurved basal vein

Lasioglossum have a distinctly inwardly **CURVED BASAL VEIN**



Males more slender, longer abdomen

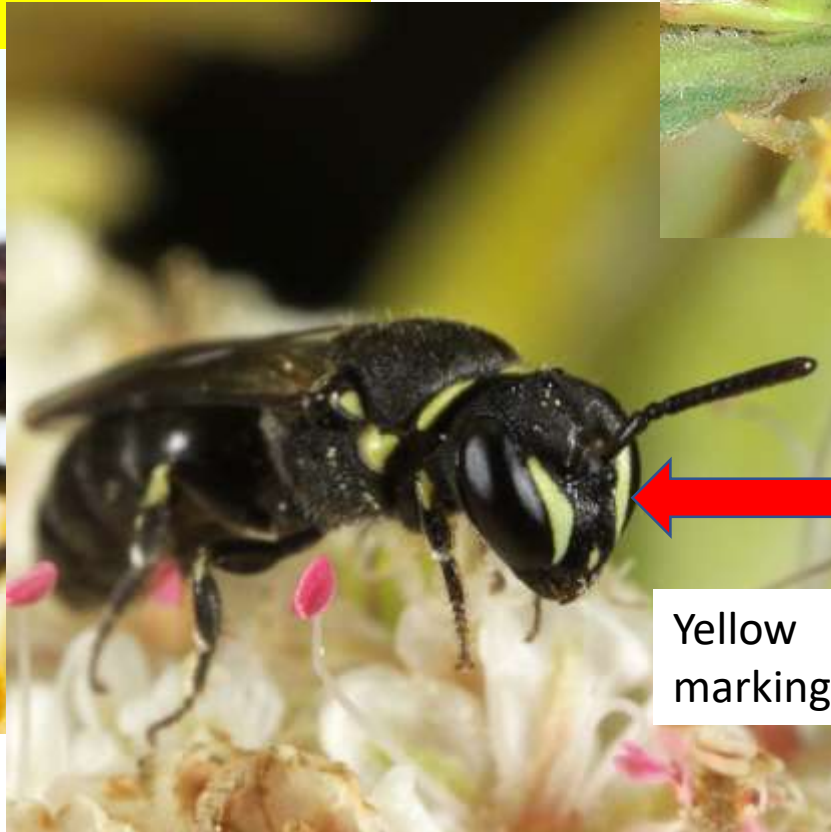
Ceratina, often referred to as **small carpenter bees**,

These are dark, shining, even metallic bees, with sparse body hairs and a weak scopa on the hind leg. Most species have some yellow markings, most often restricted to the face, but often elsewhere on the body. **They are commonly mistaken for "sweat bees" [tiny dark bees] of the family Halictidae, but not as hairy, abdomen usually not obviously banded**



Colletidae Plasterer Bees

As a family difficult to determine, but one of the more common genera, *Hylaeus*, the “yellow faced bees” are easily distinguished, smaller bees, usually dark colored with **yellow markings** on the face



Colletes spp. Similar in appearance to many other bees

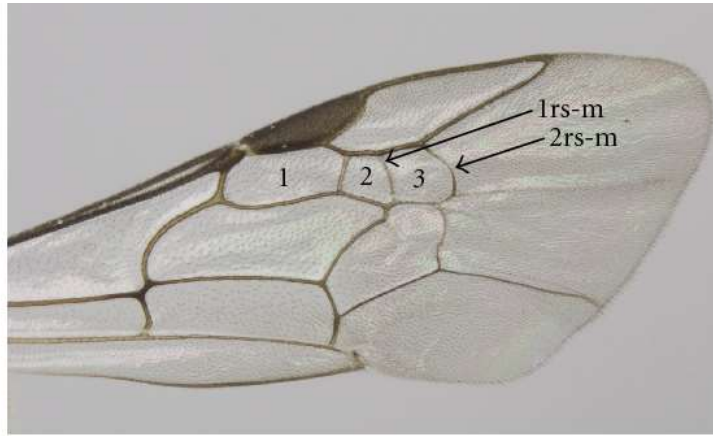
Striped Sweat Bees



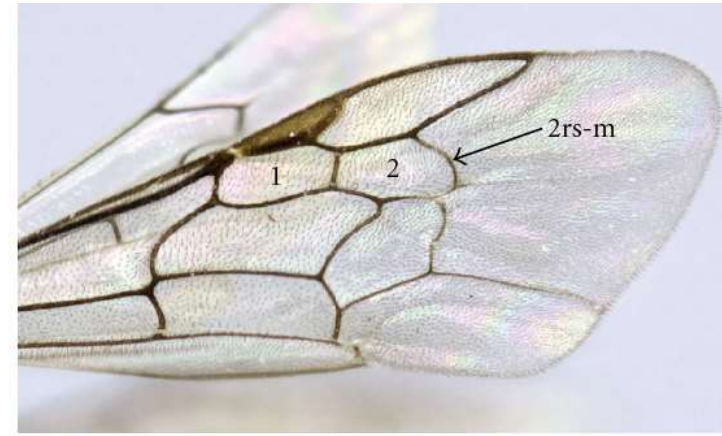
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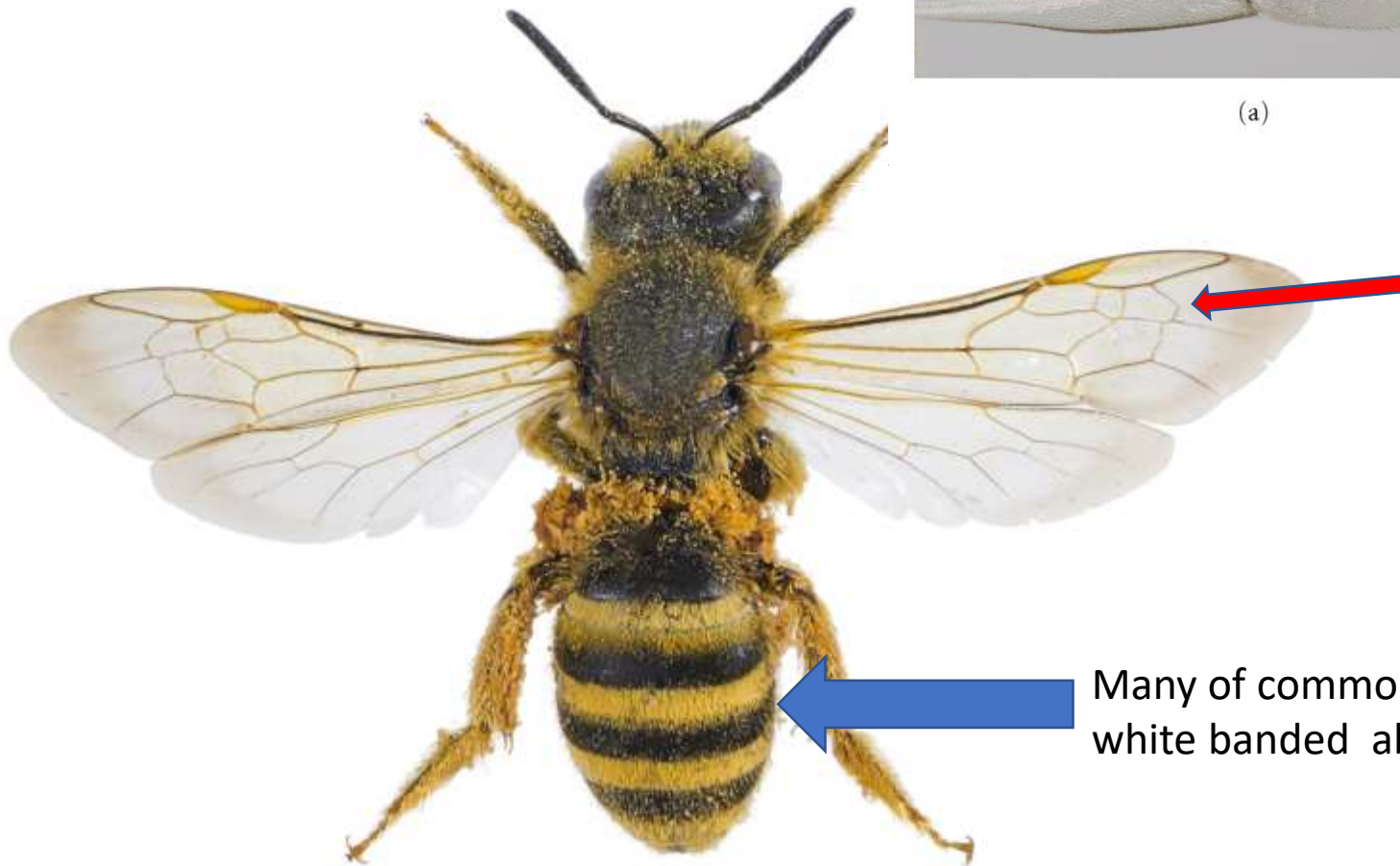
Halictidae "Sweat bees"



(a)



(b)



Most common sweat bees can be distinguished by strongly arched cross vein in the front pair of wings

Many of common dark colored species have yellow or white banded abdomens

1cm

Halictus sp.

“Striped Sweet Bees”

white bands along the
bottom of segment



Sometimes larger than *Lasioglossum*, often with
have distinctive white bands along the bottom of each abdominal
segment; versus white bands along the top of each abdominal segment
for *Lasioglossum*.

Cuckoo Bees



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“The cuckoo Bees”

Includes at least two families, **Apidae** and **Halictidae**

The name is used for a variety of different bees that have evolved the brood parasitism behavior of laying their eggs in the nests of other bees.

General Characteristics: “appear” almost hairless (as compared to most bees), color varies from black, red, yellow, and white. Common species can be divided into those with a **red abdomens**, medium to small bees:



Nomada sp. Apidae

Sphecodes sp. Halictidae

Those small to medium bees that are marked with yellow, orange, and black



Nomada sp.

Those **large** and boldly marked with black and white; the genera *Epeolus* sp. and *Triepeolus* sp.



Epeolus sp.



Triepeolus sp.



Epeolus sp.